

STATISTICAL REPORT

OF THE

DISTRICT OF BUDAON.

BY

M. H. COURT, C. S.

1852.

PUBLISHED BY ORDER

OF

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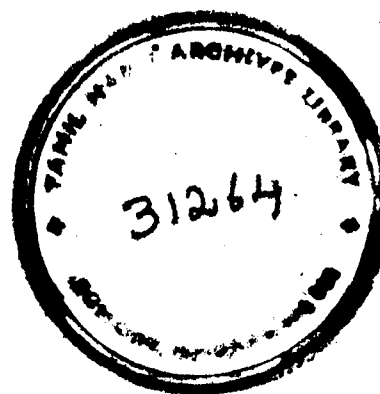
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NOTICE.

This report, of the District of Budaon, was completed during the early part of 1852, and many of the tables and data given are from returns drawn up at the Census made in 1848. The more complete inquiries made in 1853, probably brought to light in the Budaon, as in other districts, trifling errors in the details of area, jumah, and population. The report consequently shows the statistical data of the district, as known three years since.

Publication of the report was, in the first instance, impeded by a misfortune which befel the compiler shortly after its transmission to the Secundra Press; subsequently by loss of health, and compulsory cessation from labor, and eventually by removal to another appointment.

April, 1855.

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STATISTICAL REPORT

OF THE

DISTRICT OF BUDAON.

1. THE District of Saheswan was under orders of Government, dated 31st October 1823, formed of certain Pergunnahs transferred from Moradabad, Bareilly and Alygurh. The following Table will show the Pergunnahs, the District from which transferred, and their assessment at the time of transfer.

No.	Name of Pergunnahs.	District from whence transferred.	Demand 1231 Fuslee.
1	Rajpoorah,	Moradabad,	74,538
2	Asudpoor,	Moradabad,	80,585
3	Islamnuggur,	Moradabad,	73025
4	Bisowlee,	Moradabad,	54974
5	Sutasee,	Moradabad,	34709
6	Kote Salbuan,	Bareilly,	74477
7	Saheswan,	Bareilly,	112402
8	Budaon, { which then in-	Bareilly,	} 2,14,039
9	Oosaith, { cluded	Bareilly,	
10	Oojhanee,	Bareilly,	118590
11	Suleimpoor,	Bareilly,	112403
12	Bilram,	Alygurh,	54508
13	Fyzpoor Budureea,	Alygurh,	58307
14	Soran,	Alygurh,	20865
15	Murhrah,	Alygurh,	43328
		Total, ..	1126250

2.—The formation of the new District was completed in February 1824, and placed in charge of Mr. H. Swetenham.

3.—The Pergunnahs of Alygurh, which are situated to the south of the Ganges, were shortly after separated from this Zillah. They were re-annexed in 1837, again separated in 1845, and are now under the independent jurisdiction of the Deputy

Collector of Putteealee, and will not in consequence come under review. Of the remaining Pergunnahs which now constitute the District of Budaon,* I shall endeavor to give, first, a general account of their former condition and fiscal history, and then proceed to a detailed review of each Pergunnah.

4.—Budaon, according to tradition, is a name of great antiquity; the city is said to have been founded by a Chief named Bodha Sing, from whom it was first called Bodhagaon, from which, in time, the name became corrupted into Budayoon, or, as it is pronounced, Budaon. There is no doubt of its antiquity. "In the year 592 Hijree,† Kutubodeen, Emperor of Delhi, marched towards Budayoon, and obtained by conquest the province of Kuther.‡" From that year, until 1162 Hijree, corresponding with 1746 A. D., these provinces formed part of the dominions subject to the Emperor of Delhi.

5.—On the death of Ahmud Shah,§ these provinces fell into the hands of Alee Mahomed, who on his death-bed entrusted his kingdom to three of his Pathan Chiefs, during the captivity at Delhi of his two eldest sons, Fyzoollah Khan and Abdoollah Khan, and the minority of his two youngest sons, Sadoollah Khan and Mahomed Yar Khan. These Chiefs, by name Hafiz Rehmud Khan, Futteh Khan, (Khansuman), and Doondce Khan, divided Rohilcund amongst themselves, giving to the two youngest sons of Alee Mahomed a provision in money. The two eldest subsequently obtained their freedom, and got, Fyzoollah Khan part of the province of Rampore—Abdoollah Khan, Pergunnah Oojhancee.

6.—Pergunnah Oosaith alone was tributary to Sufdur Jung. On the death of Alee Mahomed, he sent Kaeem Khan (Bungush) with a large army to drive the Pathans out of their newly-acquired territories. The Pathan Chiefs, under Hafiz Rehmud and Bukshee Sirdar Khan, defeated the Bungush at a village called Douree, situated about three miles to the south-east of Budaon. They obtained by this victory complete possession of Rohilcund.

7.—In the division of Rohilcund the Pergunnahs of Budaon were thus allotted :—

Budaon and Oosaith,	To Futteh Khan (Khansuman).
Suleimpoor,	To Hafiz Rehmud Khan.
Oojhancee and Saheswan,	To Abdoollah Khan.
Kote Salbahan,	To Sirdar Khan (Bukshee), given in return for expenses of late war.
Rajpoorah, Asudpoor, Islam- nuggur, Bissowlee and Sutasee,	To Doondce Khan.

8.—Several buildings are still extant in Budaon, Bissowlee, Oojhancee and Oosaith, memorials of Pathan rule. A bridge over the Sote, near Budaon, built by Futteh Khan, is still called the Khansuman Bridge, after its founder.

* The Sudder Station was removed from Saheswan to Budaon in October 1838.

† Corresponding with A. D. 1175.

‡ Elphinstone's History of India, Vol. I.

§ A. D. 1746.

9.—During the Pathan rule, Rohilcund was twice devastated by the Mahrattas. "In 1173 Hijree, the Mahrattas concerted a plan with Ghazi-udeen for the conquest of Oude. Shuja-oo-dowla, the Nuwab, fearing the approach of so formidable an enemy, entered into a compact with the Rohillahs, the most influential of whom was Hafiz Rehmud. Hearing this, Gobind Rao Bandelah despatched an army under Datta Scindia to invade Rohilcund, and so effectually were the orders of the Mahratta Chief carried into effect, that in less than a month 1,300 villages were devastated."*

10.—The second invasion of the Mahrattas took place in 1772. The Rohillahs were on this occasion suppliants of aid from the Nuwab of Oude, and obtained it on promise of a payment of forty lakhs of rupees,—ten to be paid on the expulsion of the Mahrattas, thirty during the following three years. The non-fulfilment of this compact led to the loss to the Pathans of their territories. In consequence of their evasion of payment, Shuja-oo-dowla, aided by a Brigade under Colonel Champion, entered Rohilcund, and on the 23rd April 1774 A. D. completely defeated the Pathans at Futehgunj.

11.—From this time Rohilcund became tributary to the Nuwab Vizier. These Pergunnahs were subjected by him to Aumils, who ruled in the following order in Budaon :—

Khuaja Aftab Khan, ..	1181 Fuslee, Corresponding with A. D. 1774.
Rajah Koondun Lall, ..	1182 & 1183 ditto " " 1775 & 1776.
Rajah Sooruj Singh, ..	1184 " " " 1777.
Rajah Koondun Lall, ..	1185 " " " 1778.
Rajah Dowlut Singh, ..	1186 " " " 1779.
Rajah Koondun Lall and Khuaja Aeenooddeen, ..	1187 " " " 1780.
Khuaja Aeenooddeen, ..	1188 to 1191 " " " 1781 to 1784.
Rajah Jugoonath,	1192 & 1193 " " " 1785 & 1786.
Rajah Bugwan Dass and Jeth Mall,	1194 " " " 1787.
Maiden Alee Khan,	1195 to 1200 " " " 1788 to 1793.
Rajah Mohan Lall,	1201 & 1202 " " " 1794 & 1795.
Almas Alee,	1203 & 1204 " " " 1796 & 1797.
Hosein Alee ruled from ..	1205 " " " 1798 until the cession in 1801 of these Provinces to the Hon'ble East India Company.

12.—Rohilcund is said to have been highly cultivated during the Pathan rule. The frequent incursions of the Mahrattas must have tended greatly to reduce the cultivation, and probably the Pergunnahs forming the south-east part of Budaon were the most affected, being the first and last to suffer; but the exaction of the Aumils under the Nuwab Vizier tended even more than Mahratta invasions to deteriorate the condition of the province. The Aumils, independently of being invested with administrative powers, were also farmers of the Revenue of the Provinces over which they held authority. Their tenure of power was uncertain, and it consequently became their object to collect as much, and to pay as little as they could. They sublet the

* Elphinstone's History of India.

country in estates to the highest bidder. A total want of good faith existed between the Aumil and the sub-tenant. The farmer again, whose tenure of lease was as precarious as that of the Aumil, in his turn exacted all he could from the cultivators of the soil, who were thus reduced to the lowest ebb of misery. Villages were depopulated; cultivation disappeared; and in its stead dense jungle covered the soil.

13.—On the cession being ratified by treaty, a Board of Administration was formed by the Governor General in Council, of which the Hon'ble H. Wellesley was appointed President. To this Board was entrusted the Settlement of the Ceded Provinces.

14.—I regret that I am not able to give more than a brief cursory review of the progress of events from this time until 1824 A. D.; the records until that year furnish only a few letters of correspondence between the Collector of Bareilly and the Secretary of the Board of Revenue. These again have reference only to the Pergunnahs transferred from Bareilly, and chiefly relate to the Jagheer granted to Junghee Khan.

15.—A three years' Settlement was formed, extending from 1210 to 1212 Fuslee.* The assessment appears to have been regulated by the terms procurable. Engagements were taken from the highest bidder. The Tehseeldars, who took these engagements, became responsible for the Revenue, and received in lieu of salary a per-centage on their receipts.

Authority.—Reports of Settlement Officers under Regulation IX. of 1833.

16.—The highest jumma of this Settlement was Rs. 7,40,461.

17.—The year 1210 Fuslee, A. D. 1803, is said to have been a most propitious one, and the Revenue, as reported by the Collector of Bareilly, was realized without trouble. This was followed by a year of drought. The Khurreef of 1211 Fuslee, 1804 A. D., was a complete failure. The Rubbee crops were very scanty. The demands of the Tehseeldars were met in some instances by violence, though generally the malgoozars evaded, by absconding, payment of the Government demand. The proprietary right to fifty-four estates in three Pergunnahs; viz. thirty in Budaon, eighteen in Kote Salbahan, and six in Oosath, were declared by the Civil Courts forfeited to Government in consequence of default and evasion of the malgoozars.† Of these, six were transferred in Jagheer to Junghee Khan. After the resumption of his Jagheer, the property was restored to the Zemindars. In one case only, Oosanwan, was the decree put in force, in consequence of continued acts of violence on the part of the Zemindars, who recovered their property only by payment of Rs. 700. In all the other cases the names of the defaulting proprietors were continued in the Books of the Collector.

18.—At the commencement of 1212 Fuslee, the District appears to have been in a complete state of disorganization. Pergunnahs Kote Salbahan, Budaon and Oojhane, which had hitherto formed part of Moradabad, were in 1805 A. D. transferred to Bareilly. The Collector of the latter District, in a letter dated February 1805, thus writes regarding these Pergunnahs:—"At the time these Pergunnahs were annexed to Bareilly, (eight months of the year had elapsed when the transfer took place,) the

* A. D. 1803 to 1805.

† Statement furnished with Report of Mr. Brown, 10th July 1834.

greater part of Pergunnah Budaon was under Seer (I presume Kham is intended) management, and has been in such confusion for the last year, that no monthly *wasil bakees* have either been transmitted from Moradabad, or have I been able to obtain them; or indeed any accounts from the Tehseeldars. The Pergunnah is now in such a bad state that no Tehseeldar can be found who will take upon himself the responsibility of collecting the Revenue, or at least execute the required security to do so.

"The Proprietors and Farmers of the greater part of Pergunnahs Kote Salbahan and Oojhane absconded during 1211 Fuslee, and I have been compelled in consequence to make a settlement for 1212 on reduced terms."

19.—A second Settlement for three years* was about to be formed. The Board of Revenue directed "that engagements were to be taken in all practicable cases from proprietors, who should be treated with moderation, and their offers, whatever they may be, transmitted to the Board, to accept or refuse as may appear proper." Proprietors were not however to be found, except in a few instances, of large Talooquas held by large Thakoor communities. It might be that the Zemindars who had absconded during 1211 Fuslee had not found it worth their while to return to property, which then possessed little or no value, and the possession of which was attended with little possible profit, but great probable loss and inconvenience in many instances. I doubt whether proprietary title to land existed.† At all events no proprietors were forthcoming. Engagements were in consequence taken from farmers on the best terms procurable; where no terms could be obtained, they were held in Khas management. Pergunnah Suleimpoor was leased out entire to Tej Roy for Rs. 52,001, Zillah Azimabad to Oodehchund for Rs. 17,500, Allahpore to another person for Rs. 18,500.

20.—The highest jumma of the Settlement, amounted to Rs. 7,09,913, being a net decrease on the demand of the first Settlement of Rs. 30,548.

21.—The demand of the third Settlement extending from 1216 to 1219 Fuslee,‡ reached Rs. 7,78,650, being an increase on the previous one of Rs. 68,737. Large balances however accrued. The Board of Revenue, in a letter dated 11th December 1812, ascribed the balances in Pergunnahs Oojhane and Kote Salbahan, chiefly to ~~abuses~~ and exactions committed by the Tehseeldar. Amongst other abuses, they observed that not less than Rs. 17,000 had been levied from the malgoozars of Kote Salbahan as ~~salubana~~ during 1219 Fuslee.

The balances alluded to were subsequently remitted by Government.

22.—The demand of the three first Settlements had been regulated solely by the terms offered by the highest bidder. The demand of the fourth Settlement was formed on a different basis. During the time of Akbur, a code of rates was formed for each Pergunnah. The code formed for Pergunnah Suheswan was in the possession of the Pergunnah Qanungoes. The cultivated area having been ascertained, these

* 1213 to 1215 Fuslee, corresponding with A. D. 1806 to 1808.

† In confirmation of this opinion I will quote the following:—"In 1806 A. D., a Jagheer yielding a net produce of Rs. 15,000 per annum was to be granted to Junghee Khan from Pergunnah Budaon. On the 24th January that year, Mr. A. Seton, the Governor General's Agent at Bareilly, writes to the Collector of Bareilly,—"I do not apprehend that it will be difficult to find in Pergunnah Budaon land of a proper description; viz. improvable, untenanted, and unappropriated. By unappropriated, I mean having no owner or Zemindar." Within six weeks, he congratulates the Collector on his happy selection of lands,—"so well adapted in every way for a Jagheer."

‡ 1809 to 1811 A. D.

rates (commonly called the Shurah Sooltanee) were applied, and the result, after deducting ten per cent., was fixed as the Government demand. The Settlement formed on this calculation was first made for five years, from 1220 to 1224 Fuslee,* but was extended by successive proclamations until 1239 Fuslee.† The code of rates appears to me to possess some interest, and I have therefore filed it in the Appendix.

23.—The capabilities of soil; the condition of the estates, whether improvable or otherwise; its local advantages or disadvantages; the condition of the people, &c. are all points affecting equality of assessment. These were not however taken into consideration; and it cannot be surprising that a Settlement formed solely on the above calculation should be attended with mischievous results.

24.—Pergunnahs Rajpoorah, Bisowlee, Sutasce and Suleimpoor, which were then but very partially cultivated, were but little affected. Large tracts of culturable waste enabled the Malgoozars to meet the Government demand, and yet leave a considerable surplus for themselves. The remainder of the District however suffered severely; the Pergunnahs composing it were during the first years of the Settlement in full cultivation, and consequently highly assessed. The soil, which is to a great extent Bhoor, became, by constant working, exhausted. Prices which were at first high fell considerably; the culturable waste was small and insufficient to enable the malgoozars to encrease their assets, who consequently became involved in difficulties and distress. Sales of estates, for balances of revenue, were frequent; malgoozars threw off their engagements, and their estates were thrown on the hands of the Collector.

The highest jumma of the fourth Settlement amounted to Rs. 9,13,195, being an increase of Rs. 1,31,545.

25.—Regulation VII. of 1822 came into force, and Mr. Swetenham, soon after receiving charge of the newly-formed District of Suheswan, applied for permission to bring the Kham estates, which were very numerous, under Settlement under the above enactment. The Board of Revenue approved of the measure, but subsequently refused to confirm, for more than one year, settlements where the demand was not equivalent to the jumma of 1229 Fuslee (A. D. 1822).

26.—Large balances accrued on these Kham *tehseel* estates. The general failure of Khas management throughout these provinces was remarked on by the Hon'ble Court of Directors, and was by them attributed to a faulty system pursued by the Revenue Collectors of this Presidency, whereas the *Ryotwar* Settlements in the Madras Presidency had been attended with uniform success.

A report on the causes of its failure was called for. Mr. Swetenham replied as follows:—"At the expiration of the 5th Settlement, *i. e.* 1229 Fuslee, the malgoozars were admitted to continue, under engagements on the jumma of 1229 Fuslee, for a further period of five years or resign.

"Estates that were lightly or even moderately assessed they retained; but estates heavily assessed, and estates that had suffered by encroachment of the river they

* A. D. 1812 to 1816.

† A. D. 1832, vide Appendix No. 1.

resigned; and these remained for the Khas management of the Collector * * * *. The jumma of 1229 Fuslee is maintained as the demand in the public accounts of the Collector, which are forwarded to Government, and any difference between the amount realized and that demand is entered as a balance.

"The real jumma of each village is rated according to the amount of agricultural stock, and the quantity and capability of the soil. Thus while the public accounts exhibit a heavy balance, the village accounts are without a fraction of balance.

"Khas management is in many instances difficult, in consequence of extortion and rack-renting of the farmers and malgoozars during the last year of their lease. The estate then passes into the hands of the Collector for Khas management, who no sooner restores it to prosperity by re-establishing the cultivators and equalizing the assessment, than it passes from his hands to the proprietors, farmers or mokuddums. It is in fact only whilst an estate is unprofitable that it remains Kham."

27.—The Board of Revenue, in modification of their former resolution, informed the Collector that they were prepared to sanction Settlements for five years, where the jumma, after the second year, would be equivalent to the demand for 1229 Fuslee. This was not enough, and Mr. Swetenham, in reply, observed "that this order would still throw on his hands, for Kham management, sixty estates in Pergunnah Budaon alone, for he was unable to get engagements corresponding with the terms of their order. The Board in reply, said that the order need not be considered imperative in every case, but where sufficient cause existed for a reduction, that cause was to be fully reported."

Letter dated 29th July.

28.—In the beginning of 1827 A. D., Mr. Swetenham was removed and succeeded by Mr. J. Wyatt. The District, though suffering considerably from over-assessment, had nevertheless been kept in good order. From this time it gradually fell into a state of disorganization. Mr. Wyatt had frequent recourse to Kham management; his system was very properly condemned by Mr. Commissioner Boldero, who observed to him "that he had made no previous settlement of the rents to be demanded from the cultivators, who were thus left in a great measure at the mercy of the Native Officers employed in making the collections. The system was pregnant with evil, and conducted still further to deterioration of estates. The cultivator was deprived of any certainty of enjoying the fruits of his labor, particularly as he had ascertained that the demand made on them depended entirely on the produce of their fields."

Commissioner to Collector, dated January 1830.

29.—Mr. Wyatt was ultimately suspended, and the District placed under charge of Mr. S. S. Brown. The causes that led to the ruin of the District are thus explained to him by Mr. Lowther, then Commissioner of Revenue:—"From the information I have received from various sources, I have reason to believe that Mr. Wyatt took charge of the District in a prosperous state, and that no difficulty was experienced in realizing the Revenue until 1830, when through the intrigues of the Bengalees, inducements were held out to the Zemindars to petition for a decrease on the plea of over-assessment. That petitions to that effect were given in, and that they were favorably received by the late Commissioner stands on record, and to a very great degree led to the ruin which

Commissioner to Acting Collector, dated 25th June 1833.

is so conspicuous throughout the greater part of the District. Had the late Collector exercised a proper discretion when those petitions were referred to him for report; had he paid a proper attention to the discharge of his duty, and had he acted without that dependence on his Amlah, which was so conspicuous on every occasion, the danger to which the District was then exposed through the machinations of the Commissioner's Serishtadar and his own Amlah might have been averted. But in order to give greater effect to their plans, the Peshkar of the Huzoor Tehseel was constituted Serishtadar, and other arrangements made in the Mofussil, with a view to secure the co-operation of the most influential of the Tehseeldars. From that period I believe the District began to fall in pieces, and the state of things became gradually worse from the increasing apathy of the Presiding Officer. There can be no doubt that the late Serishtadar lost no opportunity of working upon the Collector's mind in regard to the alleged over-assessment; nor can it be doubted that an extensive combination existed between the Native Officers and Zemindars, to which may be ascribed the deterioration of the land, and continued outcry against over-assessment."

30.—It may be presumptuous in me to give any opinion on the causes that led to the woeful deterioration of the District under Mr. Wyatt, but from a careful review of the correspondence during 1830, 1831 and 1832, I think the heavy balances that accrued during those years are in some measure attributable to over and unequal assessment; still they were infinitely greater than they ought to have been, and must be ascribed principally to the apathy of the Collector. The over-assessed estates were held by him in *Kham*; the condition of these was deteriorated, and by a want of system, Estates that were held by proprietors and farmers, were generally lightly assessed. The Revenue of these was wilfully withheld by the malgoozars, with a view to obtaining a still lighter assessment. To gain this, they paid to the unprincipled Amlah sums more than sufficient to liquidate the arrears due from them. The apathy of Mr. Wyatt appears to me to amount to insanity, earnestly warned as he constantly had been by Mr. Lowther of the inevitable consequences of continued inattention to his duty. Towjees exhibiting balances amounting to fifty and sixty per cent. were passed by him without the issue of a single order for the realization of the arrears. That he imagined he was zealously performing his work I believe, for he constantly affirms that he had done his best, and could do no more. Six months after his suspension, the unfortunate gentleman destroyed himself.

31.—On assuming charge of the District, Mr. Brown set vigorously to work to repair the evil. The former Amlah were dismissed, Pergunnahs were visited, and their condition ascertained by personal examination. Soon after taking charge, he reports to the Commissioner "that his attention having been directed to the Oojhane Pergunnah, he proceeded there for the purpose of enquiring more particularly into the causes of the ruin with which it was threatened. It was not long before a series of instances of shameless corruption and neglect of duty on the part of the Tehseeldar was brought to his notice, such as he ventures to affirm has seldom been witnessed in this part of the country, even under the Native Government. He has ascertained that the corrupt gains of the Tehseeldar, during the last three years, amounted to Rs. 60,000. From the date of his appointment to the Tehseel the Mehal, which was one of the finest in Rohilkund, began to decline, and its deterioration has since gone on so rapidly, that up to the present time eight annas in the rupee have barely been collected from the Pergunnah. Those who could pay were suffered to

remove their crops from the ground, without an attempt being made on the part of the Tehseeldar to realize the Government dues; those who could not, were overwhelmed by swarms of Dustuck Peons, whose pay swallowed up the share of the proceeds, which might otherwise have found its way into the Government Treasury. If to this be added the systematized embezzlement prevalent in the Tehseel, from the Tehseeldar himself down to the lowest chuprassees, it will not be a matter of surprise that the Pergunnah should be reduced to a state bordering on ruin: this is not common speculation or neglect; the extent of these malpractices, and their lamentable consequences both to Government and the people, constitute a criminal offence of no ordinary degree, and the future interests, not of the Pergunnah alone, but of the whole district, require that the misconduct of the Tehseeldar should undergo a regular investigation, with a view to a criminal prosecution."

The Tehseeldar who had absconded, was some time after apprehended in the territories of the Nuwab of Rampoor, and destroyed himself soon after apprehension by poison.

32.—The Settlements that were made under Regulation VII. of 1822, during a period extending from 1824 to 1833, were made to estates held Kham, either in consequence of over-assessment, or of deterioration from encroachment of the river. No Pergunnah was completed. The (in the first instance) refusal of the Sudder Board of Revenue to confirm Settlements on a reduced jumma, and the searching details required, made the progress of these very slow. Most of the Settlements completed by Mr. Wyatt were not reported by that Officer; and when reported by Mr. Brown in 1833 and 1834, were on his recommendation confirmed only *ta tukmeel bundobust*. Ten estates in Kote Salbuan form an exception to the above. These were held by proprietors and farmers. The Settlements of these were revised by Mr. Wyatt under Regulation VII. of 1822, and the demand on them increased three and four-fold by that Officer, under the instigation, and by the intrigues of, his Amlah. So sudden an increase made the remaining Zemindars tremble, lest their estates should be in the same manner thrown open to revision, and they paid accordingly, to avert such a calamity. The Settlements were reported in 1834 by Mr. Brown, who condemned the terms of the Settlement, and states his three principal objections to be—"1st. The high rates in the jummaundee, which certainly exceed in amount any that has hitherto been levied, and the absence of all data by which their correctness could be determined.—2ndly. The very trifling amount of the deductions for Zemindaree profits and expenses of collection, which considering the vast increase of jumma proposed to be taken should have exceeded considerably the ordinary percentage.—3rdly. The taxation of the culturable lands which should never have been thought of, the cultivation at that period having reached its highest limit; and as a further extension being only to be looked for from an outlay of capital or increase of population, it does not appear on what grounds the culturable area was included in the jummaundee." The whole Pergunnah suffered considerable deterioration in consequence of these ill-judged Settlements, and the Commissioner at first directed that the revision of the Settlement, under Regulation IX. of 1833, should be commenced in Kote Salbuan. Mr. Brown urged the necessity of commencing with Oosaith, but remarked relative to Kote, that "there can be no doubt that the deterioration in the Kote Pergunnah has been carried on to an equal, if not to a greater

Letter to Commissioner, dated
12th July 1834.

extent, considering its former flourishing circumstances, than in the other parts of the District. No other result could be expected from the mode in which the Zemindars of that Pergunnah were tantalized by the prospect of a re-settlement which has been hanging over their heads for the last five years. Their fears on this point were, it must be admitted, amply justified by the Settlement of 10 estates out of the 124, comprised in the Pergunnah at a treble and quadruple increase above the former jumma. The population however remained stationary, and the resources of the estates were rather *suspended* in their operations than annihilated.

33.—Settlements under Regulation VII. of 1822 were drawn up in a regular form made by Mr. Holt Mackenzie. The form consisting of five Parts, was as follows :—

PART I.—NAME AND DESCRIPTION OF THE VILLAGE.

PART II.—CONTENTS OF THE VILLAGE IN BEEGAHS.

- 1st. Barren, including Rent-free lands, tanks, site of village, &c.

Cultivated, .. .. .	.. .. .
Culturable, .. .. .	.. .. .
Total area of Village,	
- 2nd. Details of area excluded from assessment; viz. rent-free baghs, tanks, &c.; site of village, roads, wells, water-courses, service lands, including gorait, mahafiz, chumrout, hulalkhor, kuhar, barber, bhat, dak peon, smith, carpenter; total of minhaee.
- 3rd. Boundaries; particulars of the boundary marks.
- 4th. Explanation of the rent-free area; name of the donor, grantee, date of sunud, amount of land.
- 5th. Explanation of gardens, and rights attached to them.
- 6th. Description of jureeb, and size of the beegah.
- 7th. Number of beegahs cultivated; their different crops, estimated produce, and estimated value of produce.
- 8th. Different sorts of land under tillage; the extent of each, the rates and aggregate rent of each according to Pergunnah rates, according to estimate of the Settlement Officer, according to average rates of adjoining villages; seer land, irrigated and dofussilee lands to be distinctly noticed.
- 9th. Bhutae and Kunkoot lands; the extent of each, estimated produce, share of the cultivator, of the putwaree or other village servant, the share taken as revenue, the value of the latter.
- 10th.* Details of arable, uncultivated land.
- 11th. Explanation of the terms used to express the different denominations of soil.
- 12th. The general character of the village soils; whether fertile or otherwise, whether dependant on the seasons, whether easily irrigated or

otherwise capable of improvement. If the proportion of uncultivated arable land be large, the cause to be assigned.

- 13th. Statement of land ordinarily cultivated with a single plough, or by a single assamee; expences and profits of the cultivation.
- 14th. Details of sewaee collections.
- 15th. Abstract of demands, receipts and balances for preceding five years, according to the Putwaree's Accounts.

PART III.—RIGHTS AND CONDITION OF DIFFERENT CLASSES BELONGING TO THE VILLAGE.

- | | |
|------------------|--|
| Cultivators. | <ol style="list-style-type: none"> 1st. Of parties having a hereditary and transferable property in the village. 2nd. Parties having a hereditary right of occupancy. 3rd. Persons being hereditary cultivators, but having no right of occupancy. 4th. Recent settlers. 5th. Paekhast non-resident cultivators. |
| Proprietors, &c. | <ol style="list-style-type: none"> 1st. Persons receiving rent or rusoom as owners of land cultivated by others, or profits thereof. By what terms, and in what share. 2nd. Mofussil rent collected and how. Management of village, by whom. Village expenses by whom, and by what authority disbursed, and from whence collected. |
| Rents. | <ol style="list-style-type: none"> 3rd. Village servants. Payments whether in land or money; special or occasional fees customarily paid to them. 4th. Laborers' rate of hire. 5th. Slaves. 6th. Suddur Malgoozars. In preceding Settlements in what character and on what grounds admitted to enjoy ^{enjoy} village. Account of all transfers and separation. If village held to a talooqua, relative rights of the talooquadar and inferior holders to be detailed; if the owners are numerous, or beeswadars, the mode of selection of lumberdars and his rights to be given. If village held <i>lakhiraj</i>, to be mentioned. |

PART IV.—MISCELLANEOUS MATTERS.

- 1st. Number of houses.
- 2nd. Population, with specification of the different castes.
- 3rd. Number and value of ploughs and other implements of industry.
- 4th. Number and value of live-stock.
- 5th. Average price of grain during the preceding five years.
- 6th. Weight of seer, pusaerah and maund.
- 7th. Rates of interest.
- 8th. Cultivators how far dependent on loans.
- 9th. Kistbundee.
- 10th. Markets. Produce how and where disposed of.
- 11th. Expenses, if any, which are not included in village accounts.
- 12th. Roads. What, and how repaired.

PART V.—ADJUSTMENT OF GOVERNMENT REVENUE.

- 1st. Average assessment of past Settlements.
- 2nd. Average collections by Putwaree's accounts.
- 3rd. Estimated produce of the year of Settlement. First, according to Pergunnah rates. Second, according to village rates. Third, according to rates of adjoining villages. Fourth, according to estimates of the Officer employed in making the Settlement.
- 4th. Rates for the different kinds of cultivated land taken as the basis of Settlement, and according to which the malgoozar is to collect from the cultivators.
- 5th. Arable lands; rates and conditions under which it is to be cultivated.
- 6th. Mofussil rental, according to rates of Settlement.
- 7th. Calculated addition to rental, on account of present profits from *seer* lands or prospective improvement.
- 8th. Deductions for charges of management, including pay of Putwaree and Police, in addition to any Jagheer or any allowances paid by cultivators.
- 9th. Total deductions allowed to Zemindars, with reference to their rights, or on grounds of special consideration.
- 10th. Distribution of deductions allowed. First, to general body of Zemindars. Second, to the Sudder malgoozar.
- 11th. The Government demand.
- 12th. Character of engagement, and responsibility of the Sudder malgoozar.

34.—Numerous and searching as are the statistical details required by this document, the Settlements under Regulation VII. of 1822 were deficient in one material point. They failed to secure the cultivator from extortion of the malgoozar. This, and other points connected with the Settlements made under this enactment, were the subject of a Despatch from the Court of Directors, from which I take the following interesting extracts. The Despatch bears date 22nd December 1830.

"The correspondence relative to these portions of land more or less extensive called Estates, contains the usual official details, but though voluminous, is deficient in other information. Some facts however transpire which are important, and suggest very serious reflections."

"1st.—The proportion of cases in which the renewal of engagements has been declined by the recorded proprietors. It does not follow that this has arisen from over-assessment, because there are various other causes which induce proprietors to make this demonstration of their dissatisfaction. It is also liable in many instances to happen that the lands, though perfectly able to bear the assessment when imposed by Government, have become unable to bear it through the misconduct of the party himself who declined the engagement. He may, by his exaction and other acts of oppression, have so impoverished the cultivators that they are unable to maintain the cultivation; or have driven them to desert the land, and leave it to a less or greater extent waste * * * *. We believe that this cause is in frequent operation.

It is an evil too of which though you will allow it to be of the first magnitude, it does not appear to us that you duly estimate the danger. What we understood by the word 'Recorded Proprietor' is this, that among the individuals having a hereditary interest in the soil of the village, the name of one or more is entered in the Collector's books as persons entitled to engage with Government for the revenue. That the party so engaging, is in reality a Contractor with Government for a certain amount of revenue, which he collects from those liable to pay in the way which he finds most expedient, with seldom any previous definition on your part, and (unless something very flagrant occurs,) with very little question afterwards. The difference between such contractors and the parties denominated by you 'Farmers' is only this, that the 'Recorded Proprietor' is himself a *cultivator* and resident of the District for which he contracts. The former not. You seem to imagine that the contractor who contracts for the village to which he belongs will find motives sufficient to make his collections with justice and moderation; but that a stranger who enters into such a contract will most commonly obey the motive of extortion. Acknowledging as we do, that the consideration of their belonging to a particular community, and of their being destined to pass their lives in it, will to some men be a motive to justice and liberality; we cannot but fear that in a larger proportion of cases, such motive will be a feeble security against the passion of self-aggrandisement on the part of a 'Recorded Proprietor' when full powers of extortion are placed in his hands. By regarding every situation of a 'Recorded Proprietor' as security for good conduct in the management of his lease, you have not provided, as far as we can see, a single check upon the abuse of his powers.

"Of the contractors whom you denominate 'Farmers,' there are in your correspondence unsparing complaints. The Collector of Moradabad says—"In explanation of the defalcation of the present jumma, I beg leave to draw the attention of the Board to a retrospect of the jumma since the Cession, when it will immediately be perceived that a fall in the jumma has invariably been the result at each succeeding Settlement in all estates held by farmers. The cause of which is evidently that of their possessing no permanent footing in the soil, and the consequent expectation of being superseded by the Zemindars, incites them to extract the utmost they can from the cultivators, who being deprived of the fruits of their labor, and means of subsistence, are compelled to emigrate and settle on the estates of those who can relieve immediate wants, and put them in a state of pursuing their industry."

"Such are the powers of extortion in the hands of a farmer; but the same powers are placed in the hands of the 'Recorded Proprietor.' The same motives to abuse their powers operate upon him as upon the farmer, with only this countervailing circumstance that he is proprietor of part of the land, for the revenue of which he contracts.

"The complaints * * of the evil effects of Khas management are more than usually frequent and strong in the correspondence under review * * *. If Khas management is not accompanied by a ryotwar system of Settlement, that is, a definite agreement with each cultivator, the result is that the lands so held are left to the Tehseeldar, without any definition of what he is to collect from each individual, or of what he is to pay to Government. His interest therefore is to collect as much, and pay as little as he can. The want of moderation in the Government assessment is but one cause

of the disorders which need to be redressed. To look at this circumstance only is not to go to the root of the evil. We have seen that in the various cases of Settlement with Recorded Proprietors of Settlement, with farmers, or under *Khas* management, there is nothing (whatever may be the moderation of the Government demand) to limit the demand which is made upon the individual contributor. The sums to be received from them are not defined. This we doubt not is the great evil to be remedied, and without the definition of what each individual is to pay, we are unable to see in what way it admits of a remedy. It appears to us so obvious and undisputed a truth, that the certainty of what each contributor has to pay is the foundation of any tolerable system of Revenue Administration, that we know not what words we can use to make you sensible of its importance. It is true that besides the definition of the amount demanded, care should be taken that it is a moderate amount, and also that each individual shall have every means of redress, if more than the defined amount is in any way exacted from him. The attainment of these three simple objects seems to comprise all that is most material in a perfect Revenue Administration. To these objects therefore it is most certain that your most earnest endeavors should be directed, and though it is not to be disputed that the difficulties are unusually great, which oppose the perfect attainment of them in India, still we are satisfied that a great approximation to it is completely within your power."

35.—Regulation VII. of 1822 was modified by IX. of 1833. Under this enactment Deputy Collectors were appointed to assist in conducting the Settlement. All in actual possession were admitted to engage, and judicial disputes being decided by arbitration, claimants not in possession were referred to the Civil Courts. Instead of, as heretofore, recording only the name of the proprietor who entered into engagements with Government, the names of all were recorded, with the extent of their share. The proprietors elected the malgoozar. The Sudder Board of Revenue issued a Circular Order, dated 9th April 1837, in which the course of procedure on every point connected with the Settlement was clearly laid down, and the principles on which the Settlement was to be made were explained.

36.—The survey of this District was commenced in 1822, and completed in 1834. The following Table will show its progress:—

Name of Pergunnah.	By whom Surveyed.	Commenced.	Completed.
Saheswan,	Captain Bedford,	1822	1827
Kote Salbuhān,	Ditto,	1827-28	1828-29
Oojhānee,	Ditto,	1828	1829
Allahpore,	Ditto,	1828	1829
Bisowlee,	Ditto,	1829	1830
Sutassce,	Ditto,	1829	1830
Islamnuggur,	Ditto,	1830	1831
Asudpoor,	Ditto,	1830-31	1831-32
Rajpoorah,	Ditto,	1831	1832
Budaon,	Ditto,	1832	1833
Azimabad,	Ditto,	1832	1833
Oosaith and Huzrutpoor,	Lieutenant Fraser,	1833	1834
Suleimpoor,	Ditto,	1833	1834

37.—From this it is shown that the greater part of this District had been surveyed before Regulation IX. of 1833 was enacted, or indeed before the deterioration which the District underwent during Mr. Wyatt's administration had commenced. The professional survey returns were consequently incorrect in their details of the cultivated and culturable areas. They however showed the total area of each estate, and so far furnished a check to the field measurements of the Native Ameens, which were made subsequent to the Settlement. In most districts the survey and field measurements immediately preceded the Settlement, and furnished to the Officer conducting the Settlement, accurate details of the cultivated and of the culturable areas, as also the quantity of every description of soil. In Budaon District, the Settlement Officer had no such information to guide him. The survey returns were in most instances incorrect. Returns of field measurement there were not, so to supply the deficiency, every estate was visited and minutely examined, and then classified by Mr. Brown according to the nature of its soil.

38.—Mr. Brown commenced the work of Settlement in Saheswan and Oosaith. His reason for selecting the latter Pergunnah is thus given in a letter to the Commissioner, dated 20th January 1834:—"This Pergunnah has suffered more than any other * *, and circumstanced as Oosaith is, every succeeding year and season brings with it progressive losses to the Government and people, and increased injury to the estates. Its re-settlement becomes therefore a primary consideration, and the longer it is deferred, the more lasting will be the injury. To my report of each pergunnah I have annexed the Settlement Report of the Officer by whom the Settlement was made; it is therefore unnecessary to detail here the principles under which it was conducted.

39.—The following Table will show the financial result of the Settlement, as proposed for the confirmation of Government:—

Name of Pergunnah.	Settlement Officer.	Year of Settlement.	Jumma of 1st Settlement, 1210 to 1212 Fuslee.	Jumma of 2nd Settlement, 1213 to 1215 Fuslee.	Jumma of 3rd Settlement, 1216 to 1219 Fuslee.	Jumma of 4th Settlement, 1220 to 1224 Fuslee.	Average Jumma of previous five years.	Jumma proposed by Settlement Officer.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Rajpoorah,	R. H. Clarke,	1837-38	48141	47142	62035	73546	70867	73975
Asudpoor,	J. Louis,	1834-35	62890	61197	68737	80728	79807	74460
Islamnuggur,	S. S. Brown,	1835	55644	57185	59770	71353	71058	76065
Bisowlee,	R. H. Clarke,	1836-37	45383	43787	43889	45968	54945	58601
Sutassce,	R. H. Clarke,	1837-38	25606	24779	28919	30807	35100	37091
Kote Salbuhān,	S. S. Brown,	1836	78569	68728	71362	71386	78919	86244
Saheswan,	S. S. Brown,	1834	81023	80838	94965	112544	109059	97922
Budaon,	S. S. Brown,	1835-36	87019	97153	78565	95426	102657	111114
Oojhānee,	S. S. Brown,	1835-36	108939	106830	110289	116546	107606	104631
Suleimpoor,	S. S. Brown,	1835-36	50966	52001	82284	94616	92564	91091
Oosaith and Huzrutpoor,	S. S. Brown,	1834-35	96281	70273	77835	120275	119077	122008
			740461	709913	778650	913195	921659	933202

40.—The completion of the Settlement was followed by a year of drought, and misery unparalleled in the annals of our Indian history. This shook the stability of the Settlement. Besides, remissions amounting to Rs. 3,05,755, permanent relief was

afforded by abandoning the progressive jumma in some Pergunnahs. In others the terms of Settlement were modified. Recoverable arrears of revenue for years previous to Settlement, and for the liquidation of which, by instalments, engagements were taken, were altogether remitted.

41.—In three Pergunnahs a general revision of Settlement was found necessary. The work of revision was performed by Mr Timius, in 1841-1842. The jumma of the District, as eventually sanctioned by Government, amounted to Rs. 8,97,934. The Settlements were confirmed for twenty years, after a few years experience had satisfied the Board of Revenue that the demands of the Settlement were equitable, and no fear of failure existed. The great effects of the Settlement were—

42.—1st. *The equalization of the Assessment.* The fourth Settlement made in 1220 was, as I have before related, made on the cultivation. The terms of it were extended with few alterations by successive proclamations until the last Settlement. When the fourth Settlement was made, the Bhoor lands were in full cultivation. From constant working the soil became exhausted, and there being little or no other culturable land to fall back upon, the assessment, which when first made might have been equitable, became a higher tax than the produce of these lands could meet. The *domutt* and *mutteear* lands on the other hand were at the time of the fourth Settlement under limited cultivation. Large tracts of this soil were subsequently brought under the plough, and enabled the malgoozars not only to pay the Government revenue with facility, but to net large profits. These estates were at the time of the Settlement under IX. of 1833 as lightly, as the Bhoor estates were heavily, assessed. In Pergunnahs Saheswan, Oosait, Oojhanee and Asudpoor, where the soil is chiefly Bhoor, a considerable reduction will be observed; whereas in Pergunnahs Rajpoorah, Bisowlee, Sutasee and Kote, where the soil is rich and fertile, an increase on the demand of the fourth Settlement was obtained.* The assessment was equalized, and though the financial result to Government showed a small loss, the relief afforded was immense.

43.—2ndly. Under previous Settlements, the one of a community with whom engagements were taken, was selected by the Collector. His name only was entered in his books. Misconduct, dishonesty or bad management on his part affected the whole community, and frequently led to the loss of their whole property without their having a voice. The recorded malgoozar, moreover, frequently disposed by sale of the whole estate in which he might have a fourth share only. That he had done so was not known for some time to the under-proprietors. The extent of the share or rights of the under-proprietors was moreover not defined, and although they had a property, it was hardly marketable under the new regulation. Under the new Settlement engagements were taken from the parties in proprietary possession, who selected from amongst themselves a representative through whom the Government revenue should be paid, though (as before) responsible for the Government revenue, they can now, in cases of dishonesty, embezzlement of assets, or other misconduct of the malgoozar, remove him, and appoint another in his stead. The rights, liabilities and share of each member are distinctly recorded, and he can, under certain restrictions, (I allude to the right of preëemption,) transfer his rights by sale, mortgage, or other way most pleasing to him. This, the security against chicanery on the part of the malgoozar, and the extended term of Settlement, has given a value to landed property it did not before possess.

* Vide preceding Table

43.—3rdly. The cultivators are secured from exaction. After the amount of jumma in each estate had been agreed for by the proprietors, the rent-roll of their estate was drawn up. Every field was measured, numbered, and mapped; the fields held by each cultivator were then classed together: the rent of those fields also recorded. If more than the declared rent was in any way exacted, the Assamee could recover the excess by summary suit. The Zemindar, on the other hand, could by the same process recover any balances from his Assamee. The amount to be paid by each was defined, and the evil complained of by the Hon'ble Court of Directors rectified.

44.—The following were the English records furnished under the last Settlement:—

1st.—Professional Survey Map, with Statistics.

2nd.—Details of area of village on which the Settlement was based. In this the extent of lands held rent-free, or service lands, of barren lands, and of the cultivated and culturable lands, was defined. The description of soil, and quantity of land of each soil, declared. The extent of lands cultivated by proprietors as *seer*, and by Assamees, shown. The jumma of past assessments and balances of those Settlements were also shown.

3rd.—Shows the malgoozaree area, its value at assumed revenue rates, and at deduced revenue rates. The proposed assessment calculated on those rates, and the former jumma. Any peculiarities in the condition or soil of the village, or other circumstances that led to the increase or decrease of revenue by the Settlement Officer, are here entered, as also a Statement of the responsibilities of the fractional shares in the estate.

4th.—An Abstract Pergunnah Statement, showing the details of the area, the jumma of previous Settlements, average of previous five years, and the proposed jumma.

5th.—Chowkeedaree Statement, showing the number of chowkeedars, and provision made for them.

6th.—Statement of unregistered maafee lands.

The Vernacular records consist of—

I.—A rough plan of the village, showing the boundaries.

II.—The field map, in which is shown the position of each field.

III.—The *Khusreh*, in which the length and breadth, number and area of each field, the name of the proprietor and cultivator, and the soil, is shown.

IV.—The *Muntukhub Assameewar*; in this the cultivators are numbered. Opposite to each is recorded the number, area, and rental of every field belonging to that Assamee.

V.—The *Teerij*, showing the total cultivation and rental of each Assamee.

VI.—The *Wajib-ool-urz*. This was drawn up by the proprietors, and is in fact a contract entered into by them for mutual guidance and security. The tenure under which they hold the estate; the mode in which the rents shall be collected, and profits distributed; the privileges of the malgoozar; his responsibility, appointment, removal in event of misconduct, generally form the contents of the 1st Clause. The privileges of the coparceners, the extent and rights of their *seer* cultivation, form the 2nd Clause.

The existence or non-existence of the rights of preëemption the 3rd.

The remaining Clauses comprise the rights of the whole community,—rights of irrigation, rights attached to maafee lands, baghs, village servants, fishing, grazing, &c.

45.—These papers comprise, what are here termed, the Thokeputtee papers. Two faults occurred in their formation. 1st.—That instead of being drawn up previous

to, or at the same time with the Settlement, they were not made until four, five and six years had elapsed. In many instances the malgoozars imagined that, by showing a rent-roll smaller than the Government demand, they would obtain a reduction of assessment, and for this object falsified the *Muntukhub Assameewar*. The second error is that the measurement returns were made on a beegah of 3,025 square yards, and the rental made on that, instead of on the *village* beegah, the extent of which was not shown. In the Surveyor's statistics, the pukka beegah is invariably stated to contain 3,025 square yards, and to be equivalent to three cutcha beegahs. The non-definition of the village beegahs has given rise to considerable difficulties, and I think caused considerable litigation, as well as opened a road to extortion. The village accounts are made up on the village beegah, and had the Vernacular Statements been drawn up on this, much labor and much litigation would have been spared.

46.—The following Table will satisfactorily prove the moderation of the assessment. The *nikasee* is taken from the Putwaree's papers for 1256 Fuslee:—

Pergunnah.	Assessment 1258 Fuslee.	Rental paid in 1256 Fuslee.
Rajpoorah,	74431	118665
Asudpoor,	75806	117506
Islamnuggur,	77985	172037
Bisowlee,	56921	99108
Sutasee,	43295	73583
Kote Salbuhun,	96517	185755
Saheswan,	96795	183545
Budaon,	98464	173725
Oojhance,	100195	162368
Suleimpoor,	134570	210614
Oosaith,	70452	111765
Total,	9,25,431	16,08,670

47.—Mr. Swetenham, on taking charge of the newly-formed District in 1824, was directed by the Board of Revenue to select a suitable spot for a Sudder Station. Two places were named, Budaon and Saheswan. Mr. Swetenham in reply observed: "In selecting a Sudder Station I take four things into consideration; viz. centrality, freedom from inundation, good water and climate, and lastly, PROXIMITY OF JUNGLE AND JHEEL FOR SHOOTING; and suggest "that if Budaon be rejected, Saheswan should be chosen. Budaon possessed all four advantages. Saheswan, though somewhat deficient in freedom from inundation and climate, had the advantage in centrality and proximity of jungle and jheel." Saheswan was selected. This was unfortunate, for the climate was found to be so pernicious, that the Collector was forced, during the rainy season, to remove his office to one of the neighbouring Stations. After several recommendations from the Board of Revenue, the Sudder Station was in 1838 removed to Budaon.

48.—The following Table will show the fiscal divisions, according to an arrangement made by Mr. Williams in 1844-45:—

Name of Tehseeldaree.	Pergunnahs.	Number of Mouzahs.	Area in Square Statute Miles.	Popu- lation.	Jumma.	Charges of Establish- ment.	Per-centage.
							Rs. A. P.
1. Goonour,	Rajpoorah,	139	150.4	46128	74431	6360	4 3 9½
	Asudpoor,	151	142.3	49786	75806		
	Islamnuggur,	182	158.1	57632	77985	6060	3 6 5
2. Bisowlee,	Bisowlee,	112	96.2	40353	56921		
	Sutasee,	93	86.4	34043	43295	6720	3 8 2
3. Saheswan,	Saheswan,	141	242.0	84258	96795		
	Kote Salbuhun,	141	175.6	77254	96517	7620	3 13 4½
4. Budaon,	Budaon,	237	241.6	100496	98464		
	Oojhance,	162	222.7	69954	100195	6636	3 3 9½
5. Suleimpoor,	Suleimpoor,	268	229.1	83124	134570		
	Ooseith,	165	166.4	50599	70452		

49.—At the same time several transfers and annexations of Mouzahs, from one Pergunnah to another, and from the Districts of Moradabad and Bareilly, took place: these are noted under the report for each Pergunnah.

50.—The principal products of this District are wheat, gram, bajra, indigo and ~~sugar~~; cotton is grown, but only as much as will suffice for the consumption of the District. Sugarcane is grown chiefly on the low Khadir lands of the Ganges and Ramgunga, the goor being generally exported to Hatrass. The Ganges and Ramgunga afford considerable facility for export and import. The grain of the District, particularly wheat and gram, are in this way largely exported to Cawnpore and Futtehghurh. I had prepared, by the Pergunnah Officers and Putwarees, a statement showing the quantity and value of the produce of land for each Pergunnah. The returns however differed so materially that I have not given them, as I cannot vouch for their accuracy, and unless correct, they would not be valuable as a statistic. The total value of the produce of the District amounted, according to these returns, to sixty-one lakhs of rupees, and I do not think this to be over-rated.

51.—I am indebted to a gentleman,* resident in this District, for the following valuable information. Possessed of a large Zemindaree, and considerable experience in the management of his property, as well as the internal economy of his villages, his returns may safely be put down as accurate.

52.—"An Assamee possessed of one plough and a pair of bullocks will cultivate thirty-six cutcha beegahs of land; viz. twenty for the Khurreef, and sixteen for the Rubbee harvest, a cutcha beegah containing 1,008 square yards.

Sugarcane lands are ploughed from	20 to 25 times.
Bajra,	4 to 6 "
Joar,	5 to 6 "
Indigo,	4 to 6 "
Cotton,	4 to 6 "
Wheat, and Barley,	12 to 14 "
Gram,	10 to 12 "

* John Donald, Esq.

53.—“There is no fixed rule observed for the rotation of crops. The custom is to sow Rubbee one year, Khurreef the next, without consulting the proprietor. In all *nukshes* tenures there is no distinction of rates. A potta for 100 beegahs of good, bad, and indifferent land, is given at a certain stipulated rent, to be sown at the option of the ryot. On the banks of the Ganges the rents differ, and instead of being on the land, are fixed on the nature of the crop sown; *i. e.* sugarcane lands are assessed most highly, wheat higher than barley, &c.

54.—“The rains commence about the end of June. After the first shower the ploughing commences, and the Khurreef is sown immediately after. The Rubbee

Average Expenses and Profits on the Cultivation of fifteen Beegahs of

Quantity of Land.	Description of Crop.	BILSEB.						Expenses.							
		Produce.													
		Quantity.			Price.			Rs.	As.	P.	Rs.	As.	P.		
Mds.	Srs.	Cks.	Rs.	As.	P.										
2 Beegahs,	BAJRA—Bajra, Oord, Rumsa. Til, Bhoosa,	2	20	0	1	8	0	Rent,	1	0	0	0	0	6	
		0	10	0	0	2	0	Seed,	0	0	0	0	0	6	
		0	4	0	0	2	0								
		0	0	0	0	6	0								
		2	34	0	2	2	0					1	0	6	
3 Beegahs,	JOAR—Joar, Oord, Til, Urhur, Bhoosa,	4	20	0	2	4	0	Rent,	1	8	0	0	0	0	
		0	27	0	0	10	6	Seed,	0	3	0	0	0	0	
		0	0	0	0	0	0								
		0	0	0	0	0	0								
		0	0	0	0	6	0								
		5	7	0	3	4	6					1	11	0	
2 Beegahs,	COTTON—Cotton, Benowla, Urhur, Til,	0	18	0	4	0	0	Rent,	1	2	0	0	0	0	
		0	38	0	0	8	0	Seed,	0	1	0	0	0	0	
		0	10	0	0	4	0	Picking,	0	8	0	0	0	0	
		0	12	0	0	5	0								
		1	38	0	5	1	0					1	11	0	
1 Beegah,	SUGARCANE—Goor, Puttree, Castor Oil Seed,	3	20	0	7	11	0	Rent,	1	2	0	0	0	0	
		0	0	0	0	4	0	Seed,	0	12	0	0	0	0	
		0	0	0	0	2	0	Koloo,	0	12	0	0	0	0	
								Carriage, &c., ..	0	4	0	0	0	0	
								Workmen,	1	4	0	0	0	0	
		3	20	0	8	1	0					4	2	0	
3 Beegahs,	WHEAT—Wheat, Bhoosa, Sursoah, Koosoom,	7	20	0	7	8	0	Rent,	1	14	0	0	0	0	
		0	0	0	1	0	0	Seed,	0	6	0	0	0	0	
		0	19	8	0	6	0	Cutting,	1	8	0	0	0	0	
		0	0	0	0	0	0								
		7	39	8	8	14	0					3	12	0	
2 Beegahs,	BARLEY—Barley, Bhoosa, Sursoah,	6	0	0	3	0	0	Rent,	1	0	0	0	0	0	
		6	0	0	0	12	0	Seed,	0	3	0	0	0	0	
		0	10	0	0	3	6	Cutting,	0	8	0	0	0	0	
		12	10	0	3	15	6					1	11	0	
2 Beegahs,	GRAM—Gram, Bhoosa, Surson,	4	0	0	2	8	0	Rent,	0	14	0	0	0	0	
		0	0	0	0	8	0	Seed,	0	3	0	0	0	0	
		0	10	0	0	2	0	Cutting,	0	10	0	0	0	0	
		4	10	0	3	2	0					1	11	0	
Total value of produce,								34	8	0	Total Expense, ..		15	10	6

lands are prepared during the months of July, August and September; the Khurreef is cut during October, and the early part of November. The Rubbee is sown during October in the high, during November in the low lands, and cut during the month of April.

55.—“The following Table will show the expenses and profits attendant on the cultivation of fifteen beegahs (cutcha) of land. It is assumed that the Assamee possesses a plough and pair of bullocks. Ploughing and irrigation are performed by these, and personal labor; the profits have consequently to pay wear and tear of block and stock. The present rates have regulated the price of produce.”

Muteear Land about Bilsee, Oojhane and Bisowlee.

OOJHANE.		Expenses.		BISOWLEE.		Expenses.	
Produce.				Produce.			
Quantity.	Value.			Quantity.	Value.		
Mds. Srs. C.	Rs. A. P.	Mds. Srs. C.	Rs. A. P.	Mds. Srs. C.	Rs. A. P.	Mds. Srs. C.	Rs. A. P.
2 0 0	1 4 0	Rent,	1 0 0	2 0 0	1 7 3	Rent,	0 13 0
0 24 0	0 8 0	Seed,	0 1 0	0 20 0	0 8 0	Seed,	0 0 9
0 12 0	0 6 0		0 0 0	0 5 0	0 2 0		
0 0 0	0 6 0		0 0 0	0 0 0	0 6 0		
2 36 0	2 8 0		1 1 0	2 25 0	2 7 3		0 13 9
4 20 0	3 0 0	Rent,	0 12 0	4 20 0	2 4 0	Rent,	1 13 6
0 0 0	0 0 0	Seed,	0 1 6	0 30 0	0 12 0	Seed,	0 2 10
0 0 0	0 0 0		0 0 0	0 7 8	0 3 0		
0 0 0	0 0 0		0 0 0	0 7 8	0 1 6		
0 0 0	0 0 0		0 0 0	0 0 0	0 11 0		
4 20 0	3 0 0		0 13 6	5 25 0	3 15 6		2 0 4
0 18 0	4 0 0	Rent,	1 0 0	0 12 0	2 6 6	Rent,	0 13 0
0 38 0	0 8 0	Seed,	0 1 0	0 30 0	0 6 0	Seed,	0 1 0
0 0 0	0 0 0	Picking, ..	0 8 0	0 20 0	0 4 0	Picking, ..	0 8 0
0 0 0	0 0 0		0 0 0	0 0 0	0 0 0		
1 16 0	4 8 0		1 9 0	1 22 0	3 0 6		1 6 0
3 0 0	6 0 0	Rent,	1 0 0	5 0 0	10 0 0	Rent,	0 13 0
0 0 0	0 4 0	Seed,	0 8 0	0 0 0	1 8 0	Seed,	0 10 0
Hemp	0 4 0	Koloo,	0 8 0	Castor Oil Seed, }	0 8 0	Koloo,	0 9 0
0 0 0	0 0 0	Conveyance, ..	0 6 0	0 0 0	0 0 0	Workmen, &c.,	1 8 0
0 0 0	0 0 0	Workmen, ..	0 6 0	0 0 0	0 0 0		
3 0 0	6 8 0		2 12 0	5 0 0	12 0 0		3 8 0
6 0 0	6 0 0	Rent,	1 8 0	6 0 0	6 0 0	Rent,	1 3 6
0 0 0	1 0 0	Seed,	0 6 0	0 0 0	1 0 0	Seed,	0 10 4
0 12 0	0 5 0	Cutting, ..	0 12 0	0 7 8	0 3 6	Cutting, ..	0 6 0
0 0 0	0 0 0		0 0 0	0 0 0	0 0 0		
6 12 0	7 5 0		2 10 0	6 7 8	7 3 6		2 3 10
4 0 0	2 0 0	Rent,	1 0 0	5 0 0	2 8 0	Rent,	0 13 0
4 0 0	0 8 0	Seed,	0 3 0	0 0 0	1 0 0	Seed,	0 4 4
0 8 0	0 4 0	Cutting, ..	0 8 0	0 5 0	0 2 3	Cutting, ..	0 4 0
8 8 0	2 12 0		1 11 0	5 5 0	3 10 3		1 5 4
4 0 0	2 8 0	Rent,	1 0 0	4 0 0	2 8 0	Rent,	0 13 0
0 0 0	0 8 0	Seed,	0 4 0	0 8 0	0 8 0	Seed,	0 6 0
0 0 0	0 0 0	Cutting, ..	0 8 0	0 0 0	0 0 0	Cutting, ..	0 4 0
4 0 0	3 0 0		1 12 0	4 8 0	3 0 0		1 7 0
Total value of Produce,	29 9 0	Total Expense,	12 4 6	Total value of Produce,	35 5 0	Total Expense,	12 12 3

56.—Taking the average of the three Pergunnahs, we find that the average produce of fifteen cutcha beegahs of land is worth Rs. 33-2-0; the cost of producing it Rs. 13-8-11, leaving as profit to the cultivator Rs. 19-9-1. Taking thirty-six beegahs cultivated by one Assamce, with one plough and a pair of oxen, his profits are Rs. 46-15-5 on his farm, from which he has to keep up his stock, and maintain himself and family.

Calculating per acre the returns are—

	Rs.	As.	P.
Gross produce per acre,	10	9	7
Cost of produce and rent,	4	5	5
Profit to cultivator,	6	4	2

57.—A square acre contains four beegahs sixteen biswansees, cutcha beegahs. The cultivated area of the District is 7,68,652 square acres, equivalent to 32,28,338 cutcha beegahs; of this 11,34,500 beegahs are cultivated with wheat, which alone would give (assuming the average return per beegah to be two and a half maunds) a produce amounting in value to Rs. 28,36,250; 1,50,000 beegahs of sugarcane would yield twelve lakhs more; 1,00,000 beegahs of cotton, 4,00,000 more; making the total value of these three articles of produce to be Rs. 44,36,250. Allowing the remaining 18,34,000 beegahs of land to give a produce, valued at Rs. 1-8-0 per beegah; i. e. Rs. 27,51,000, the total value of the produce becomes Rs. 71,87,250.

58.—These, it is true, are mere assumptions and calculations, but in making them I have taken a low estimate.

59.—The exports are estimated as follows:—

	Mds.	Rs.	
Wheat,	5,00,000,	value	5,00,000, to Furruckabad and Cawnpore.
Gram,	80,000,	ditto	50,000, to Furruckabad, Cawnpore and Chundowsee.
Other Grains,	3,00,000,	ditto	1,80,000, to Ditto ditto.
Indigo, English manufacture,	600,	ditto	70,000, to Calcutta.
Gaud Indigo,	200,	ditto	2,000, to Delhi and Lahore.
Goor,	1,20,000,	ditto	2,40,000, to Hatrass.
Saltpetre,	5,000,	ditto	15,000, to Furruckabad.
	<u>10,05,800</u>		<u>10,57,000</u>

60.—The imports consist of salt, refined sugar, cotton cleaned, samur salt, brass utensils, clothing apparel, ghee, and timber.

61.—The return for the articles exported is in coin, which is conveyed by the Native Insurance Companies. This is a remitting district. Treasure to the amount of at least eight lakhs per annum is conveyed under Military Escort to Allygurh, or some other station in the Doab. I think it probable, were the issue of Treasury drafts permitted, an impetus would be given to Commerce, and the surplus collections of this Treasury would, in the course of trade, find their way into the Treasuries of Allygurh, Furruckabad and Cawnpore.

62.—In the Appendix will be found a Statement, shewing the Total Receipts and Expenditure of the Road and Ferry Fund. Previous to the establishment of the former, there was not one good straight line of road in the District. The roads were mere tracks,—narrow, rough, and winding about. The Road Fund was established in 1840. Since that time twenty miles of road have been metalled, and 353 miles of earth road, of forty feet in width, have been constructed, and are kept in annual repair. Twelve Bridges, from 15 to 150 feet waterway, have been constructed, and several drains built. The road of the greatest importance is that from Bareilly to Kuchla Ghaut; this is completely bridged, through one part of it, towards Bareilly. From Budaon towards Kuchla two Bridges are in the course of construction. Independent of roads and bridges, serais and wells have been made for the comfort and accommodation of travellers.

63.—The Members of the Committee are now:—The Commissioner of the Division, President; Mr. Campbell, the Collector; Mr. Court, the Deputy Collector; Mr. R. H. Wilson, Deputy Collector under Regulation IX. of 1833; Messrs. A. and J. Donald, Mahomed Abdoolah and Wuzer-ood-deen, the Moonsiffs of Budaon; Raee Dowlut Singh, Shuruf-ood-deen and Moulvee Tofussil Hoossein.

64. A Census of the population was taken in 1847, by Mr. C. W. Fagan. His report will be found in the Appendix. The following was the return:—

HINDOOS.		MUSSULMEN.		
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	Total.
477700	115515	51548	48864	693627

65.—The Burgoojur, Bais, Rehteror and Jungara, are the principal tribes of Thakoors. The Burgoojur are found in Rajpooorah. The Bais in Kote Sulbahan, Bisowlee and Oosaith. The Rehteror in Kote Salbahan and Oosaith. The Jungara in Suleimpoor. At the cession, the whole of Suleimpoor was owned by Jungara Thakoors.

66.—In the Appendix will be found a Statement, showing the Proprietary classes, and the number of estates held by each class. The following is an abstract of it:—

- 732 Estates are held by Thakoors of all tribes.
- 173 Estates are held by Aheers.
- 24 Estates are held by Kuttrees.
- 101 Estates are held by Kaiuths.
- 50 Estates are held by Bakals.
- 87 Estates are held by Brahmins.
- 487 Estates are held by Mussulmen.
- 173 Estates are held by Mussulmen and Hindoos.
- 13 Estates are held by Englishmen.
- 8 Estates are belonging to Government.
- 168 Estates are held by Koormees, Goojurs, &c. and mixed classes.

67.—Their tenures are thus classified:—

Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyacharah.	Total.
1356	292	259	109	2016

68.—The cultivators of the soil muster 1,32,700 persons, of whom 17,681 are proprietors, 1,15,019 are non-proprietors. Each proprietor, on an average, cultivates acres 8-1 of land, each non-proprietor acres 5-1, or twenty-five cutcha beegahs of land.

69.—A Register of Villages contained in each Pergunnah, showing the jumma area in its details, and population of each, will be found in the Appendix.

70.—The Total Receipts and Disbursements of the Government Treasury, during the year 1849-50, are as follows:—

RECEIPTS.

Land Revenue	Abkaree.	Bills and Receipts, including Transfers.	Remittance from other Zillahs.	Stamps.	Post Office.	Miscellaneous.	Total.
(a) 1124195 9 3	40351 13 0	35635 2 5½	(b) 131806 0 3	40084 2 0	1712 11 6	147039 8 5½	1520824 14 11½

DISBURSEMENTS.

Bills and Receipts, including Transfers.	Remittances to other Districts.	Post Office Remittances.	Revenue Charges General.	Judicial Charges General.	Pensions.	Miscellaneous.	Total.
53115 2 10	(c) 1181266 3 5	0 0 0	88196 7 5	80072 14 6	4840 8 0	114888 11 3½	1522379 15 5½

71.—The following is an Abstract of the Total Receipts and Costs of Establishment for year 1849-50.

RECEIPTS.

Revenue.	Judicial.	Total Receipts.	Total Collectory charges.	Foujdaree charges.	Total Charges.
1318870 11 9	23380 10 11	1242251 6 8	85217 5 0	80072 14 6	165290 3 6

Per-centage of charges on Revenue.

Collector, Rs. 6-13-10; Magistrates, Rs. 6-7-1 per cent. (d.)

(a) Includes Revenue of Trans-Gangetic Pergunnahs under the Jurisdiction of Deputy Collector of Putteealee.

(b) Collections of Pergunnah Aunlah, Zillah Bareilly, which are received into Budaon Treasury.

(c) Includes Revenue of Trans-Gangetic Pergunnahs, which are remitted through the Tehseeldar of Khasgunge direct to Allypore.

(d) In the Appendix is a statement, showing the Receipts and Disbursements of the Budaon Treasury, from 1824 A. D. to 1849-50.

72.—The following is a Statement of work instituted, disposed of, and pending in the Collectorate of Budaon, during 1850-51:—

Description of Cases.	Pending at the close of last year.	Instituted during the year.	Total.	DISPOSED OF			Total Disposed off.	Pending at close of the year.
				On trial.	Adjusted or withdrawn.	Struck off on default.		
Settlements,	16	33	49	46	0	0	46	3
Mutations in Zemindaree &c.	133	712	845	765	0	0	765	80
Execution of Decrees of Civil Court,	12	133	145	133	0	0	133	12
Sales,	115	819	934	795	12	21	828	106
Current Balances, Malikana or Tuccavee,	2	330	332	332	0	0	332	0
Applications for Remission, Balances of former years,	0	3	3	2	0	0	2	1
Summary Suits,	2	13	15	13	0	0	13	2
Investigations under II. of 1819,	145	1523	1668	1119	400	4	1523	145
Partitions of Estates,	8	37	45	40	0	0	40	5
Putwaree's complaints, by or against,	27	166	193	112	8	23	143	50
Land required for Government purposes,	53	976	1029	943	0	0	943	86
Adjustment and Maintenance of Boundaries,	0	8	8	8	0	0	8	0
Application for Tuccavee and Malikana,	53	256	309	260	0	0	260	49
Supplies,	2	0	8	8	0	0	8	0
Tolls,	0	5	5	5	0	0	5	0
Complaints preferred against Officers,	0	2	2	2	0	0	2	0
Civil Suits in which Government is a party,	5	133	138	126	0	0	126	12
Translation of letter of Commissioner,	0	5	5	3	0	0	3	2
Proceedings of other Offices,	29	193	222	202	1	0	203	19
Applications rejected,	14	915	929	925	0	0	925	4
Appeals,	0	616	616	616	0	0	616	0
Pensions,	1	26	27	27	0	0	27	0
Gung Shekust Estates,	2	147	149	145	0	0	145	4
Execution of Sumry. Decrees	1	16	17	17	0	0	17	0
Partitions by order of Civil Court,	76	423	499	444	0	0	444	55
Miscellaneous Settlement Cases,	6	23	29	19	1	1	21	8
Nazool,	43	51	94	87	0	0	87	7
Government dues on Pauper Suits,	0	8	8	8	0	0	8	0
Abkaree Balances,	0	14	14	12	0	0	12	2
Stamp Documents,	0	131	131	128	0	0	128	3
Local Agency,	1	2	3	3	0	0	3	0
Proprietary rights VII. of 1822,	0	74	74	74	0	0	74	0
Proprietary rights to Mustajiree Muhals,	15	53	68	64	0	0	64	4
Revision of Settlement of resumed maaftee lands,	51	0	51	51	0	0	51	0
Miscellaneous,	0	94	94	54	0	0	54	40
Total,	0	5	5	5	0	0	5	0
Total,	812	7951	8763	7593	422	49	8064	699

73.—A list of the Revenue Officers appointed to this District will be found in the Appendix.

74.—From the formation of the District, until the early part of 1832 A. D., the Magisterial. Criminal jurisdiction of this District belonged to the Magistrates of Moradabad, Bareilly and Shahjehanpore. In 1832, Mr. Wyatt, the Collector, was invested with Magisterial powers, and from that time the offices of Collector and Magistrate have been united.

75.—The District was at first divided into thirteen Police Divisions; namely, Thanahs Bisowlee, Reonacen, Saheswan, Dhunaree, Dunowrah, Goonour, and Rajpoorah, transferred from Moradabad; Thanahs Datagunj, Budaon, Allapoor, Oojhance and Bilsee, transferred from Bareilly; and Thanah Khyrah Jelalpore, from Shah-jehanpore. In 1844, Mr. Williams, then Magistrate, revised the Police jurisdictions. The number of Thanahs was reduced from thirteen to nine. The following Table will show the extent of each Division:—

No.	Name of Thanah.	Pergunnahs comprising Division.	Area in Acres.	Population.	Jumma.	Charges of Thanah.	Average per-centage on Jumma.
							Rs. As. P.
1	Goonour, ..	Rajpoorah, Asudpoor,	1,87,419	95,914	1,50,237	2,844	1 14 32
2	Islamnuggur,	Islamnuggur, Bisowlee,	1,61,242	57,632	77,985	1,6 8	2 0 11
3	Bisowlee, ..	Sutasee,	1,16,923	74,396	1,00,216	1,752	1 11 11½
4	Bilsee,	Kote Salbuhari,	1,12,457	77,254	96,517	1,416	1 7 6
5	Saheswan, ..	Saheswan,	1,90,500	84,258	96,795	2,568	2 10 5
6	Budaon, ..	Budaon,	1,54,050	1,00,460	98,464	3,600	3 10 6
7	Oojhance, ..	Oojhance,	1,42,041	69,954	1,00,195	2,064	2 0 11½
8	Datagunge, ..	Suleimpoor,	1,40,677	83,124	1,34,570	2,076	1 8 84
9	Oosaith,	Oosaith,	1,06,548	80,599	70,452	1,692	2 6 5
					9,25,431		

76.—A list of the Magisterial Officers appointed to the District will be found in the Appendix.

77.—The Magisterial duties of this office are and have always been heavy. The people of Budaon, more particularly the Mussulman residents of the cities, have always been notorious for litigation and violence. Heinous crime is, however, rare. Highway robbery and dacoitee have been unknown for years. In 1833, a band of Budduks settled in the Budaon and Suleimpoor Pergunnahs, and from the success which attended their petty excursions, they became very daring. Nynsookh and Buldeo, proprietors of Goolurea and Koorao, in Pergunnah Budaon, were their leaders; they plundered the Treasuries of Sukeet and Puttecallee in open day, successfully. Nynsookh, and great part of his band, were surrounded and captured; the rest of the band fled, it is supposed, to Oude, and the Budduk dacoit has not since been known here. From the papers found on Nynsookh, it was clear that they had purchased the connivance of the Police, which will sufficiently account for the success of their excursions.

78.—During August and September 1837, upwards of 200 dacoitees took place; but hunger and famine was the cause of the crime. Food was demanded from the grain merchant. His refusal was followed shortly by an attack on his grain pits. The Police Establishments were inadequate to guard even the persons apprehended. Mr. Clarke, the Magistrate, told the people they must trust to themselves for protection. Military aid was obtained; the town people kept up an establishment of guards; the dacoits were frequently worsted in the attack and beaten back. In the course of a month and a half this species of crime was put down. No dacoitee of any kind has occurred in the District since 1844.

79.—The prevalent crime now is cattle-stealing. A great portion of the population consists of Aheers, who possess 173 estates. The Aheers are notorious cattle-lifters. The shelter the actual thieves get from their brethren, the Zemindars, renders detection or recovery of the cattle difficult. The nature of the crime is thus described by Mr. Brown, in a letter to the Commissioner of Circuit (not dated, but written in 1836):—“Cattle-stealing may be classed under three heads; 1st, the *Thangees* or abettors of the crime; 2ndly, the *Punhaedars* or go-betweens, who are either the friends and accomplices of the thieves, or who act on the part of the Thangees; 3rdly, the actual thieves, who either steal on their own account, or who are the agents of the two former.

“The Thangees are generally the Zemindars or Mocuddums, possessing the chief influence in their respective villages. They fix themselves generally in some small village near the jungle, or at a distance from other villages, where they carry on their trade with the Punhaedars and actual thieves. Their operations extend to the adjoining Pergunnahs and Thanahs, and not unfrequently to the adjoining Districts; they keep themselves always in the back ground, and contrive, almost invariably, to elude punishment. It is no less difficult to obtain any satisfactory proof against the Punhaedars. They undertake the restoration of the stolen cattle on payment of a certain sum by the loser, but from the nature of the transaction, either excluding witnesses or tending to throw doubts on their testimony, the Punhaedars are seldom convicted. The stolen cattle are either sent across the Ganges, or to the District immediately adjoining; they pass quickly from hand to hand, so as to render their recovery by direct means a difficult matter.”

80.—The system perused by these cattle-stealers is the same to this day; in nine cases out of ten that come into Court, the defendant is the Punhaedar, not the thief,—the story of the prosecutor being that his cattle have been stolen, that the defendant has taken from him a certain sum under a promise to restore them. In the majority of cases, the cattle have been stolen from the grazing ground, where they are left without, in many instances, any watchman; or mayhap a boy of ten or twelve years of age is entrusted with the care of 50 to 100 head. The facility thus afforded, the few instances in which the thieves are detected and punished, and the small degree of punishment attached to this species of crime, are amongst the causes that lead to its frequency.

81.—Criminal Statistics will be found in the Appendix.

82.—A provision for the Village Police was made at the last Settlement; the provision was almost universally in land; from twenty to forty cutcha beegahs, (according to the soil,) being the allowance for each Chowkeedar. In the principal Pergunnah Town Chowkeedars have been appointed, and provision made for them under Regulation XXII. of 1816. The Village Police are generally very inefficient. The very small allowance given to them, rarely equivalent to two rupees per mensem, and this even they have to produce by labor, is the chief cause of this. The land again is frequently appropriated by the Zemindars; where it is not, the allowance is apparently granted by the Zemindar, not by the Government; and the chowkeedar, consequently, considers himself the servant of the former, not of the latter. They are moreover, under the existing law, only punishable by dismissal for neglect of duty. Dismissal is in reality no punishment, particularly, as in the generality of cases, the successor is a near relation of the dismissed. The chowkeedars of the villages are, with very few exceptions, men of the lowest caste; no others will accept the office; and the only person who will accept it, being nearly related to the dismissed offender, the penalty awardable is in reality no punishment.

83.—The town chowkeedars, appointed under Act XXII. of 1816, receive generally from Rs. 2-8-0 to Rs. 3 per mensem in money payment, and are vigilant and efficient. Burglaries and thefts, in the towns where they are established, are very unfrequent.

84.—The Budaon Gaol was built in 1840, and is capable of holding 250 prisoners. Previous to 1840, all prisoners sentenced to a longer imprisonment than three months, were sent to the Moradabad or Bareilly Gaols. The present Gaol is insecure, and all prisoners confined for more than three years, undergo their sentence in the Bareilly Gaol.

85.—The Prisoners sentenced to labor, work partly outside, partly inside the jail; those inside, manufacture paper for the use of the office, grind corn, make baskets, and perform all the menial offices formerly performed by hired labor. The system has been revised, and very greatly improved, by the Superintendent of Prisons. Amongst the greatest improvements are, the removal of all privies and drains from within the prison yards, and the system of messing, which was introduced in 1847.

86.—The following is the dietary now in use:—

Description of Prisoner.	Athah.	Dall.	Salt.	Oopla.	Pepper.	Tobacco.	Parched Gram.	Vegetables.	Oil.	REMARKS.
	Ohtks.	Ohtks.	Tolabs.	Ohtks.	Mashas.	Tolabs.	Ohtks.	Ohtks.	Mashas.	
With labor,	10	2	1	12	2	1	1	6	3	12 Mashas, 1 Tolah.
Without labor,	8	2	1	12	2	1	0	6	3	5 Tolabs, 1 Chittack.
In Hospital,	4 to 10	2	1	12	2	1	0	6	3	

87.—The following Table will show the expenditure in the Gaol during 1849, and the average cost for each Prisoner per annum:—

Average number of Prisoners in Gaol during the year.		Total number of Prisoners in Gaol during the year.		PARTICULARS OF EXPENDITURE.								Total Expenditure.	Income, Return of Prisoners' labor.	Cost of Establishment and Guards per head.	Cost of Diet and Clothing per head.	Total average Cost per head.
		Salary of fixed Establishment.	Salary of Contingent Establishment.	Contingent Bill.	Hospital expenses.	Diet of Prisoners.	Clothing and Bedding.	Repairs of Jail.								
		R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	
462	168629	5821 6 11	3617 13 7	100 8 1	207 0 11	4978 10 1	528 10 6	46 11 9	15209 13 10	960 12 4	20 6 11	11 11 3	32 14 9			

88.—The Jail is not capable of holding the Prisoners; nine *biliterus* or sheds have been made outside the Jail, where the Prisoners on short terms of imprisonment are kept.

89.—The existing arrangements for the conveyance of the Mofussil Dawk were made by Mr. Craigie in 1838. The Hurkaras who convey the Dawk are paid by the landholders. The letters and official papers that leave the Thannahs in the evening arrive at the Sudder Station early the next morning.

90.—The following are the Dawk Roads:—

1st.—Goonour to Budaon seven runners. The Dawk leaves Goonour at four P. M., picks up the Saheswan packet at Saheswan, the Oojhanee packet at Jurowleea,

whence it is conveyed from Oojhanee, and arrives at Budaon at seven A. M.; Goonour is distant from Budaon forty-nine miles.

2nd.—Islamnuggur to Budaon six runners; leaves Islamnuggur at six P. M., picks up the Bilsee papers, and arrives at Budaon by six A. M.; thirty-seven miles.

3rd.—Bisowlee to Budaon four runners; reaches Budaon six A. M.; leaving Bisowlee at sunset; distance twenty-three miles.

4th.—Oosaith to Budaon three runners; eighteen miles. The Datagunj packets are conveyed by the general Dawk Hurkaras.

91.—From 1846 A. D. private letters were conveyed by the Thannah Dawk establishments. The postage was fixed at two pice per each packet. The following Statement will show the number of private letters despatched from that time. Were the Mofussil Dawk extended, so as to complete the communication with the neighbouring Districts, the number of letters sent would I am sure be doubled. The expense attending it would be more than covered by the income. Were it not, the expense would be so very trifling, the advantages to the people so great, that this should hardly prove an objection. For instance the trade between Chundowsee in Moradabad, and Bilsee in this District, is not less in value than two lakhs per annum. A merchant of Bilsee sends a letter by the Dawk to Chundowsee; that letter goes round by Budaon, Bareilly and Moradabad, a distance of 150 miles, to get to its destination, distance of about thirty-five miles only. Two extra runners to convey the packets from Islamnuggur to Chundowsee, would complete the communication between these two important towns.

Year.	NUMBER OF LETTERS DESPATCHED		Amount of Postage.	Amount expended during the year.	Balance.	REMARKS.
	From Thannah.	To Thannahs.				
1846..	3507	3250	211 2 6	0 0 0	211 2 6	
1847..	6297	6249	403 2 6	0 0 0	403 2 6	
1848..	6928	6863	446 2 0	30 2 6	415 15 6	
1849..	7456	6624	467 7 0	56 15 6	410 7 6	
1850..	9028	8000	538 3 6	48 0 0	490 3 6	
Total, ..	33216	30936	2066 1 6	135 2 0	1930 15 6	

92.—In the Appendix will be found a Statement, showing the receipt derived from Abkaree. the Abkaree, or excise on spirits and intoxicating drugs.

93.—The articles taxed are native spirits,—taree, or juice of the palm tree, bhung, and opium.

94.—The mode of collecting this revenue has generally been to let out in farm to the highest bidder, who can give substantial security. Each Pergunnah is separately bid for. No balances have occurred for several years.

95.—A Statement, showing the Receipts and Disbursements on account of the Stamps. duty on Stamp paper, will be found in the Appendix.

96.—A report on the Dispensary, built in 1846 by subscription, and other subjects of medical interest, is being drawn up by Ram Narayan Doss, and will be found in the Appendix.

97.—The Dispensary is supported by a Government donation of seventy rupees a month, and private subscriptions, averaging thirty rupees a month. It has mainly, through the attention and skill of the present Sub-Assistant Surgeon Ram Narayan Doss, become a valuable institution. The people have learnt to place considerable confidence in the Sub-Assistant Surgeon, as his Returns will testify.

98.—In 1844, the Fiscal and Police Divisions of the District were revised, and at the same time the limits of the Pergunnahs were altered. The principal changes were in Pergunnahs Islamnuggur, Sutasee, Budaon, Suleimpoor and Oosaith. In Islamnuggur eight villages were transferred to, thirty-one received from, Zillah Bareilly. In Sutasee six villages were transferred to, twelve received from, Zillah Bareilly. In Budaon, Zillah Azimabad, and twelve other estates, were transferred to Oosaith; fifteen villages transferred to Oojhane. In Oosaith, Zillah Huzrutpoor was transferred to Suleimpoor: the villages above related received from Budaon.

99.—The following Table will show the Area, Jumma, and Population of each Pergunnah, according to the last arrangements. The Jumma shows the actual demand for the current year. The Area is from the Surveyor's Returns, except where changed by subsequent measurements. The Population are the Returns of a Census made in 1847:—

Name of Pergunnah.	Jumma 1851-52.	Total Area in Acres.	Population.
Rajpoorah,	74431	96337	46128
Asudpoor,	75806	91112	59786
Islamnuggur,	77985	101242	37632
Bisowlee,	56921	61588	40353
Sutasee,	43295	55335	34043
Kote Salbuan,	96517	112457	77254
Sahaswan,	96795	180500	84258
Budaon,	98464	154050	100496
Oojhane,	100195	142041	69954
Suleimpoor,	134570	146677	83124
Oosaith,	70452	186548	50599
Total,	925431	1247887	693627

100.—The details of these Returns will be found in Appendix.

A report on each Pergunnah, in the order in which they stand in the above Table, is submitted with this General Report of the District of Budaon.

The Jumma proposed for sanction at Settlement amounted to Rs. 9,33,202 after revision; the Jumma sanctioned amounted to Rs. 8,97,934. The Jumma shown here, amounting to Rs. 9,25,431, includes demand on rent-free lands resumed since the Settlement, and every demand on account of recovery of lands from the river, or any other cause.

PERGUNNAH RAJPOORAH.

101.—The Settlement Report of Mr. Clarke, for this Pergunnah, is so precise in its details, and containing as it does nearly all the Statistical information that is required, I do not think that I can do better than give it here *verbatim*.

“Paragraph 2. The Pergunnah of Rajpoorah comprises 124 Mouzahs, and is bounded on the north by the southern Division of Moradabad, on the south it extends to the Asudpoor Pergunnah, eastward a series of swamps separate it from Pergunnah Buhjoe, of the Moradabad District, and on the west its banks are washed by the Ganges.

“The only high road is that leading from Qusbahs Rajpoorah and Gunwan to Chundowsee, which passes through Bharowtee (intersecting the jungle tract of that estate, in a direction almost due east) towards the high Bhoor lands of Buhjoe; but in consequence of the swampy grounds on the eastern border of the Pergunnah, which is impassable for wheel-carriages and laden beasts during the rains, both traders and travellers are compelled to make a detour to the north or south during that season; and as communication with the westward is cut off by the Ganges, very little intercourse takes place with the neighbouring country, between June and October.

“Contiguous to the swamps on the eastern boundary is a shallow and inconsiderable stream, called the Nukhta, entering the Pergunnah at the most northern point of Mouzah Koodarsee, (No. 3 in the Map,) and running in a very irregular course as far as Doonda Bagh, No. 125, on the southern extremity, where its waters separate into two small branches. Between the swamps and this stream there are sixteen and a half villages of various elevation, and different qualities of soil. Another rivulet, called the Undharee, rises near the centre of the area, and after flowing through five or six estates, joins the Nukhta at Mouzah Arthul, No. 33. A third, the Muhawa stream, of greater width and depth than the two former, enters from the north-west at Nureaoollee, No. 20, cutting the Pergunnah into nearly two equal parts, and winding in a serpentine course, and diagonal direction towards the south-east, until it reaches Bughdur, No. 69, where it falls into the Nukhta. There are two other small rills; but as they are generally desiccated during half the year, a description of them appears to be unnecessary. Wells also are numerous, being sunk at an average trifling cost of one rupee, as water is found in the vicinity of the swamps, and the Khadir tract, at a depth varying from three to ten feet, and is nowhere at a greater distance than thirty-five feet below the surface. Where the supply of this necessary fluid is so abundant, and rendered so easily available for the purposes of Agriculture, the harvests can hardly be considered dependent on the periodical rains.

“The Pergunnah was formerly covered with dense dhak and belah jungles, the abode of tigers and other wild animals, with a very scanty population, and limited ex-

tent of cultivation. Under the Puthan administration it began to emerge from its obscurity and backward condition, and was already showing signs of improvement and prosperity, when the tyranny and misrule of the Nawab Vizier's Government caused a retrogression, so that (if any reliance can be placed on historic tradition) on the cession of Rohiklund to the British Government, it was as badly cultivated, and as thinly populated, as at any known period of its history. From the cession, to the first year of the fourth Settlement, or 1220 Fuslee, agricultural improvement continued to advance rapidly and steadily, and by an estimate made in that year, it appears that there were 26,722 square acres of cultivation. The present extent is 46,880 square acres, or nearly double,—a proof of what may be done under an easy assessment, and a mild but strong Government."

The whole area is an alluvial tract of more or less recent formation (which has been gradually formed through long periods of time) at the head or on the north-western boundary of the District. Its form is compact, comprising about 150 square miles,* the length being from twelve to seventeen miles, and the breadth from eight to twenty miles. The undulating character of the entire surface claims particular attention, while the swamps to the westward, the dhak jungle in the centre, and the Khadir to the westward, on the banks of the Ganges, may also be mentioned as being among its distinguishing features. The lowest soil is that situated under the high Bhoor land of the Buhjoe Pergunnah, whence it arises irregularly, with a gradual ascent, towards the body of the Pergunnah, leaving some lands as Mouzah Bhacelloor, so high with reference to those around them, that it carries with it the highest degree of probability of their having (admitting the lapse of a very long period) originally formed Islands in the bed of a river, and that the ancient channel of the Ganges once occupied the low level, where the swamps now alone remain, or that the whole area was overwhelmed by a violent inundation.

From the middle of the Pergunnah the land dips gently on the westward, until its limits are arrested by the river. The dhak jungle is heaviest in the neighbourhood of the swamps, where the process of clearance has not been carried on with the same vigor and activity as in other parts. Towards the westward it gradually becomes thinner, until all traces of it are lost on approaching the low Khadir, where jow jungle, reeds, and the poolah grass valuable for thatching, with various esculents, affording abundant pasture to the herds of the highly cultivated Mouzahs, occupy the uncultivated land. Mangoe groves are scarce, and in comparison with other parts of the District, there are but few trees, the peepul excepted, (which religion propagates and preserves,) capable of affording shade and shelter.

"The agricultural productions are chiefly wheat and rice, bajrah, jowar, cotton, barley, peas and vetches, with various kinds of other grains for domestic use. Tobacco and garden vegetables are also cultivated to a partial extent. Sugarcane is grown in very small quantities, and only in the Khadir, as the cane is deficient in size and saccharine matter, and the sugar has a dark colour, which depreciates its price in the market.

* Cultivated, square miles, ... 73

Culturable, ... 50

Total Malgozaree Area, ... 123

"The whole of the lands originally belonged to Thakoors of the Burgoojur tribe, (a ramification of the Kuchwars,) who, at some very distant period, emigrated from Jyepoor, but for a long time antecedent to the cession, had given way to a race of Ahirs, who would appear at first to have been mere serfs of the soil, under Rajpoot masters; but having acquired, through their energy of character, both influence and wealth, subsequently became nearly co-equal with their former lords in extent of landed property, and their superiors in numerical amount of population. The present number of estates held by Thakoors is fifty-seven, paying a revenue of Rs. 30,014, and forty-three by Ahirs, assessed at Rs. 28,752; seventeen Mouzahs, paying Rs. 11,530, belonging to Thakoor Uckbar Allee Khan, an opulent Talooqdar of the Boolundshuhur District, and a few other co-parceners; three are held by Brahmins at Rs. 2,250; two by Ahirs and a Mosoolman in partnership, at a revenue of Rs. 1,030; one by a Bunneah and a Mosoolman at Rs. 300, and one by a Bunneah at Rs. 400.

"The professional survey was accomplished in the seasons of 1830-31; but owing to the constant encroachment or recession of the river, considerable changes have necessarily occurred, during so long an interval, in the extent and limits of the Areas of several villages as exhibited in the following Statement:—

	Unculturable Square Acres.	Waste fit for Cultivation.	Cultivated Acres.	Total Malgozaree Land.	Total Area Square Acres.
Revenue Survey Measurement Area in Tabular Form No. 1., }	14461	33342	46008	79350	93811
Revenue Survey Measurement Area in Tabular Form No. IV., by the present estimate, .. }	17346	32354	46888	79242	96588

"Subjoined is a list of the Mouzahs in which, through alluvion, or other adventitious causes, a variation exists between the recorded Rugbahs of the Revenue Survey and those of the present estimate, the particulars connected with each case being given in the explanatory village remarks:—

Number in Tabular Form No. IV.	Name of Mouzahs in which the Rugbahs by the present estimate are in excess of the Survey Measurement.	Extent in Square Acres.	Number in Tabular Form No. IV.	Names of Mouzahs in which the Rugbahs by the present estimate are less than those of the Survey Measurement.	Extent in Square Acres.	Difference of land in ex- cess by the present esti- mate in Acres.
29	Hurroapoor, Puttee Jodh Singh, }	22	25	Eevuzpoor,	140	
108	Singhoolee Kulloo,	140	51	Shahjehanabad, . .	62	
27	Temecreea Ghaut,	52	31	Shahpoor,	52	
122	Bhoputpoor,	88	35	Jumalpoor,	238	
121	Deepoor,	159	123	Secunderpoor Lucha,	716	
124	Seesowna,	3762	49	Molanpoor,	266	
		4223		Total,	1472	2777

" But as an error occurred in Tabular Form No. I. from forty-eight Acres having been entered in excess of the actual Area of the Pergunnah, the real increase will amount to only 2,729 Square Acres. At the same time, it should be borne in mind that, although the Pergunnah has gained by the protrusion of its limits through diluvian, it has lost in the extent of its Malgoozaree Ruqbah, and suffered materially in the destruction of some of its best soil, of at least ten times the value of the newly-acquired land.

" The prevailing soils are Muttyar and Khadir; the Dhoomut, Bhoor and Belah forming exceptions.

" The Muttyar tract is a rich, argillaceous soil, which has been reclaimed from a

Average Rent-rates assumed per Acre on the cultivation.		Rs. A. P.	
Muttyar 1st, ...	...	2	18 6
Ditto 2nd, ...	...	2	11 2

heavy dhak jungle, and is known among the people for its capacity of absorbing a great quantity of water, and retaining it, when exposed to the sun, more tenaciously than any other land, owing to its strong marly texture, which being almost impervious to water, the process of filtration after rain goes on but slowly. Even when indurated by heat and drought, the

crops will continue for a long time to vegetate on it, while they wither and die in the immediate neighborhood, in the lighter and more porous soils. Wheat is principally grown on this land, and the produce is superior of its kind to that grown on any other soil; but in the culturable waste of the Muttyar estates recorded in the Survey Measurement, it is necessary to bear in mind that there are large blotches of " Oosur" or " Shoor Kulah" perfectly barren, being strongly impregnated with saline properties, and covered with a dull dusty powder, inclining to grey, which increases after the periodical rains, and diminishes during the cold and hot seasons. As these sterile patches border on, and gradually pass into the better Muttyar lands, there were no determinate grounds left for the Native Officers of the Revenue Survey to distinguish them by, and it would have been almost an impracticable task to have defined, in an intelligible manner, and with accuracy, the culturable waste of such Ruqbahs by any measurement, even had time and leisure been allowed for that object. With the view therefore of ascertaining, as far as possible, the character and nature of the waste lands of these Mouzahs, they have been personally and carefully inspected, in company with the Malgoozars and Cultivators, and I must acknowledge (without intending the slightest disparagement to the Native Surveyors, or reflection on the Officer who conducted the survey) that I have amply satisfied myself of the inadequate definitions given in the Statistical records on this point, as a standard to be guided by in assuming the assessment.

" In several estates where mixed soils of Dhoomut and Muttyar exist in juxtaposition to each other, the limit of the continuous portions of each, defied demarcation from the intimate mixture of the constituent ingredients of one with the other; but it was generally observed that the capability of the Muttyar seemed to be in an inverse ratio to its proximity to the Dhoomut. A slight difference has therefore been allowed in favor of the Muttyar lands of the villages of mixed soils in the assumed average Rent-rates, which reduced them to an equality with those fixed in the Khadir tract.

" The Dhoomut and Bhoor divisions are the high lands caused by the irregular undulating character of the surface before alluded to in paragraph 6. The Dhoomut

is a light, permeable soil, compounded of earthy materials more frangible than the

Average Rent-rates assumed per Acre on the cultivation.		Rs. A. P.	
Dhoomut, ...	...	2	1 7
Bhoor, ...	...	1	8 0

Muttyar, to which it is always found adjacent, and with a considerable mixture of sand. The Bhoor is of a formation still more arenaceous and elevated, and the least valuable to the agriculturist. Strictly speaking, they may be considered as the only *dry lands* in the Pergunnah, and are therefore more immediately dependent on the periodical rains. Both the Dhoomut and Bhoor frequently enter into, and form component parts of the Ruqbah of an estate: but there are few instances where the area of a village is composed entirely of either. In mentioning these Bhoor lands, I would not be understood as alluding to the sterile, sandy Bhoor ridge of Saheswan and other Pergunnahs in the District, but merely to an inferior Dhoomut, or a high light soil in contradistinction to a low heavy loam as the Khadir.

" The Khadir has been formed by the sedimentary deposits of the river, the

Average Rent-rates assumed per Acre on the cultivation.		Rs. A. P.	
		2	11 2

degree or fertility being in proportion to its depth, and the due disposition of its earthy materials, which have been from time to time brought down and deposited by the water. It is a purely derivative soil, owing its origin to the disintegration of various other soils on either side of the channel, which being now intimately blended together, form a tract of land capable of yielding almost every kind of agricultural product; and wherever cultivation is not extended, affording nutritious esculents for the cattle of the surrounding country, and excellent grass for thatching. The upper stratum is a more porous clay than the Muttyar, but it possesses abundant supplies of water within a few feet of the surface, while the energy and productiveness of some isolated patches admit of two harvests of rice and peas in the year, and a constant rotation of crops; but there is little or no Khurreef, and if the rains are very plentiful, the water acts too much on so damp a soil, so that the Rubbee is in some seasons either very scanty, or almost totally destroyed in some villages from excessive wet and moisture. Rice is grown in great abundance, and is of a good quality; but the wheat and barley is less vigorous and strong than on the Muttyar land.

" The Belah has at present the appearance of a large Savannah, and affords

Average Rent-rates assumed per Acre on the cultivation.		Rs. A. P.	
Belah, ...	...	1	12 9½

abundance of pasture. There are only four villages in the class, and they are almost completely covered with jungle. The soil is known among the cultivators by the name of "Kamp," and the process by which it is formed is obvious. A fresh crust of debris is at first deposited, and spread over a bed of sand by the river, on its subsiding after the rains, from three or four inches to three or four feet in depth; its fertility being in proportion to its cubic thickness, and the proper admixture of its constituent parts. For the first year it is generally unfit for any vegetation; but in the second year, after it has settled, it acquires sufficient strength to produce grass and jhow jungle, which, during the periodical overflowing of the river in the rainy season, intercept the earthy material, with which the water is then laden, and an artificial soil is thus mechanically formed by the ingredients sinking down and reposing into beds of mud.

" The new land is only fit for the first two years for the growth of vetches and the coarsest grains; but afterwards (should it escape inundation and disturbance) for

every kind of crop; when it emerges under the new name of Khadir in a more ameliorated condition of fertility. There are several villages in the Khadir class, which have a small proportion of the same description of alluvion undergoing a change, either through the accretion of new land, or some of the old being swept away by irruptions of the river: wherever such is the case, it has been duly taken into account.

"On the habitations and lands of the Belah estates being destroyed since the professional survey, about seven years ago, by inundation and encroachment, the residents retired to the contiguous villages, waiting for the recession of the river, and the formation of a new soil; and at the time of Settlement there were large tracts of alluvial land unoccupied, lying on the banks, or in the bed of the river, the proprietary claim to which was claimed by different parties. These disputes being regularly adjudicated, the rightful owners prepared to settle again on the site of the houses of their forefathers. In consequence also of the extent of alluvial formation on the one side, and the losses sustained on the other, from the destruction of good land, a measurement of some estates, and a local enquiry on the spot respecting others noted in the margin, became indispensable as a preliminary measure, before proceeding to assume their Jummas, which was accordingly done.

"Having thus far ventured into an explication of the various qualities of the soil, and the distinction by which they are characterized, the next subject that comes under consideration is the examination of the grounds on which the classification of estates was determined. It was obviously desirable to preserve the integrity of the natural geographical positions of the Pergunnah, and to have as few divisions as possible. The marked features and disposition of the Muttyar, Khadir, and Belah tracts pointed out the propriety (*prima facie*) of arranging the whole of the villages under one or the other of those three classes; but where there were such various and dissimilar conditions of soil in the same tract, every attempt to affect this object when the rates came to be applied to some of the Mouzahs proved abortive, and the endeavor to fix on any rate that should be generally applicable and give satisfaction to the people was found to be impracticable. I was therefore under the necessity of adding three more subsidiary divisions; two for the mixed soils and one for the Dhoomut, by which each village was accommodated with an appropriate class, with reference to the structure of its soil. There may be novelty in this system of classification, but owing to the variety and uneven surface of the land, and the manner in which it was intersected with low swamps and nullahs, it could not be avoided. In looking therefore at the Pergunnah Map, it will at first appear that some estates have been irregularly transmitted from their natural class, and placed in others to which they did not geographically belong; but such a derangement and violation of general rules was not ventured on in an arbitrary manner, and when viewed with reference to the true relations of one soil to the other, will, I think, be found in accordance with reason, and justified by sufficient data.

"Having classed the Mouzahs accordingly to their respective soils from personal inspection, local enquiries, and information gathered from official records, and satisfied myself of the validity of the division which has not in any instance, I believe, been

No. in Table for Form II.	Names of Mouzahs.
49	Molunpoor.
51	Shahjehanabad.
55	Jumalpoor Jafarabad.
121	Deepoor.
122	Bhoputpoor.
123	Seemundurpoor Lucha.
124	Seemona.

claim to which was claimed by different parties. These disputes being regularly adjudicated, the rightful owners prepared to settle again on the site of the houses of their forefathers. In consequence also of the extent of alluvial formation on the one side, and the losses sustained on the other, from the destruction of good land, a measurement of some estates, and a local enquiry on the spot respecting others noted in the margin, became

disallowed by the Malgoozars, who are most capable of judging of its propriety or defects, the next step was to assume average Rent-rates for each class. In this stage of the proceedings, I experienced more difficulty than I had found before in Bisowlee and Sutasee, where the soil was of one name, and the rents almost invariably paid in money, while in the Pergunnah under report, there were six classes of soil, and the prevailing rents were Jinswaree, or those paid in kind."

It was particularly desirable to substitute, first, money rents for the more fluctuating rents paid in kind, by taking an average of the produce and prices for the last ten years; but the uncertainty of the harvests, owing to the exposure of the whole Pergunnah, from its locality, to inundation of the river and periodical rains, added to prejudice in favor of long-established custom, rendering any proposition for introducing the measure very unpopular even among the cultivators, for whose special benefit the change was proposed; and I therefore abstained from interference. Subjoined is a Statement exhibiting the relative proportions of the "Putka and other monied tenures, compared with those coming under the head of Butaee:—

Quantity of land held by Cultivators under Putka tenures, or on payment of money rents in Square Acres.	Quantity of land held by Cultivators under Butaee tenures in Square Acres.	Extent of seer lands held by Proprietors and their brethren, without any fixed rate, in Square Acres.	Extent of seer lands held by Proprietors and their brethren at fixed rates.
17986	23891	4678	338

An assiduous and careful enquiry was therefore essentially necessary into the various products of the Butaee villages, the proportion of the produce received as rent by the Malgoozars from each kind of soil and each caste of cultivators, which necessarily occupied considerable time and attention; but in this part of the work, I was much assisted by a reference to the assumed rates on the same kinds of soil in the other Pergunnahs lying along the banks of the Ganges, the Settlements of which had been confirmed by Government, and from the proceedings of Pergunnah Asudpoor as it adjoins, and is more closely assimilated to Rajpoorah in position and capabilities than any other Pergunnah in the District. I beg to quote the following extract as an assumed standard of comparison:—

Pergunnah.	Total contents of Area in Square Acres.	Culturable waste in Square Acres.	Square Acres under cultivation.	Total Malgoozaree Area in Square Acres.	Jumma.	Name of the Classes.	AVERAGE RATE OF ASSESSMENT PER ACRE.		AVERAGE RATE OF ASSESSMENT ON THE PERGUNNAH PER ACRE.	
							On the Malgoozaree Area.	On the Cultivation.	On the Malgoozaree Area.	On the Cultivation.
					Rs.		Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
Assudpoor,	89540	28986	45042	74028	72029	Muttyar 1st,	1 7 0	1 12 0	0 0 0	0 0 0
						Dhoomut,	0 13 11	1 8 0	0 0 0	0 0 0
						Muttyar 2d,	0 9 8	1 1 8	0 0 0	0 0 0
						Bhoor, . . .	0 4 0	1 12 0	0 15 0	1 9 7
						Khadir, . .				
						Belah,				

The subjoined Table will also exhibit, at one view, the division of classes, their assumed average Rent-rates, and the average Revenue rates of each class, after Settlement with other details regarding the assessment of the Pergunnah under Report.

STATEMENT OF PERGUNNAH RAJPOORAH.

Names of the Class.	Assumed average Rent rates per Acre on the cultivation.	Number of Villages.	Total extent in Acres.	MALGOOZAREE RUGHAN IN ACRES.			JUMMAH OF PAST SETTLEMENT.					ASSESSMENT PER ACRE.		
				Culturable.	Cultivated.		Highest Jumma of 1st Settlement.	Highest Jumma of 2nd Settlement.	Highest Jumma of 3rd Settlement.	Highest Jumma of 4th Settlement.	Average Jumma of past 5 years.	Proposed Jumma from 1243 to 1264 Fuzlee.	On Total Malgoozaree land.	On the cultivation.
					Irrigated.	Not Irrigated.								
Muttyar, ..	2 13 6	40	28233	9643	41	14233	14274	23917	14620	18123	19562	1245, 22606 1246, 22736	0 12 9½ 0 12 11½	1 9 4 1 9 8½
Khadir,	2 11 2	32	20437	6946	37	10484	10521	17467	9326	13906	21944	1245, 18575 1246, 18794	0 14 6	1 12 3
Dhoomut, { Muttyar, {	2 1 7 2 11 2	26	84342	8598	62	12017	12079	20677	13065	15351	16231	1245, 17765 1246, 16276	0 10 8	1 5 10½
Bhoor, .. { Khadir, .. {	1 8 0 2 11 2	18	15488	4783	50	9287	8337	13120	7741	10306	12127	1245, 12355 1246, 12164	0 12 9	1 7 8½
Dhoomut, ..	2 1 7	4	2193	369	4	1495	1499	1868	872	1524	1524	1245, 1520 1246, 1520	0 11 1	1 0 2½
Belah,	1 12 9½	4	5895	215	0	178	178	2193	1518	2825	2158	1245, 750 1246, 850	0 2 0½	4 3 5
Total,	0 0 0	124	96588	32354	194*	46694	46898	79242	47142	62035	73546	1245, 73571 1246, 73851	0 12 2½	1 9 1½
												1247, 74176	0 12 3½	1 9 3½

* Those only are classed here as irrigated lands, which are cultivated in the immediate vicinity of a village, all the year round, with tobacco, garden vegetables, &c. &c. &c., a principle that has been observed by Mr. Brown and the late Mr. Louis, in the Settlement of the other Pergunnahs of the District.

Although the average rate of assessment in both is equal, (fractions excepted,) the condition of the two Pergunnahs at the time of Settlement was very different. Rajpoorah was flourishing from the blessings of an easy assessment, and had been steadily advancing ever since the fourth Settlement, the cultivation having been nearly doubled. Its villages, from being poor hamlets, had become rich and populous, while the character, respectability, and condition of the landholders had become ameliorated in an equal ratio, and, although at the same time it was well known that great evils arising from inequality existed, they were not experienced in the same degree that they were felt in the other parts of the District, as a great portion of the Pergunnah was in the hands of substantial Talookdars, and the majority of villages were in a very backward state at the period of the fourth Settlement, the basis of which was the extent of land under cultivation. Asudpoor, on the other hand, where landed property happened to be more divided, and many of the Muttyar villages had reached the limits of agricultural improvement, became completely impoverished with unequal pressure, over-assessment and over-cropping; many years before, relief was afforded by a revision of Settlement. I am happy to be able to add, that it is now gradually recovering from the exhaustion and decay, which has well nigh ruined it.

A question may arise why the rate of assessment in Pergunnah Rajpoorah should not exceed, with all its superior advantages, that of Asudpoor? But it must be borne in mind that an increase of Rs. 3,615 has been assumed on the revenue of the former, while a reduction of Rs. 7,778 has been granted on the Jumma of the latter. It was also necessary to keep in view the greater respectability of the Rajpoorah land owners, which required that they should be treated with some indulgence; and although there remains but little or no doubt that the probable profits of their capital and industry, in the course of agricultural improvement, will generally equal, or nearly equal, the amount of the Government demand before the expiration of the lease, it would have been both unfair and impolitic to have enhanced the revenue beyond a certain limit, on the assumption that such profits would be enjoyed; especially where the whole Pergunnah is exposed to the contingency of inundation, and the partial destruction of its crops from damp.

The anomaly of the Muttyar tract being assessed below the Khadir, although the average Rent-rates of the former exceed those of the latter, and the fertility of the Muttyar is usually considered the superior of the two, is explained, 1st, by the large increase assumed on the Muttyar villages, the Jummas of 28 out of 40 having been more or less enhanced, and in the Khadir class of only 12; 2ndly, the inaccuracy of the professional survey measurement in which a considerable extent of recorded culturable waste Muttyar land is barren, "Shoor Kulah;" 3rdly, the fact of the estates in that class being almost exclusively held by Talookdars, who are necessarily exposed to extra expenses; 4thly, the culturable waste of the Khadir tract, on the other hand, being of a highly productive quality, and though in some parts cultivation may not be carried on from a fear of inundation, it is always valuable as a rich pasturage; and lastly, the locality of the Khadir in the vicinity of the river giving it an advantage over the Muttyar Mouzahs for the disposal of agricultural produce,—circumstances which came into consideration in regulating the demand.

It is scarcely necessary to state that the Belah, as also some of the Gung Shikust Mouzahs required being treated with special leniency, to afford encouragement to industry, to allow for the contingencies of inundation, and to give them a fair prospect of

recovery and improvement. It was also quite impossible to apply any general Rent-rates to estates in such a predicament. Even the most moderate assessment per Acre in detail on the Malgoozaree Area of such lands would have proved exorbitant in the aggregate. The Jummas have therefore been calculated with reference to the general capabilities and means of future improvement, and the rates must be considered as merely nominal.

To provide against an evil in some measure, which had created many groundless and vexatious claims, frequently at the instigation of the Native officers, in consequence of the changes that annually occur to a greater or less extent in the vicinity of the Ganges, the following agreement has been entered into by all those Malgoozars, whose estates border on the channel of the river, "declaring on the one hand that they shall be fully entitled to the proceeds of all alluvial formations of land in those estates to which they may become annexed during the term of Settlement without any lien of the state to an enhancement of Jumma, if the increase (were the lands brought under assessment) would not exceed 10 per cent. of the present demand; and, on the other hand, if the land carried away, by the encroachment of the river, shall not involve the loss of more than 10 per cent. of the revenue of the estate, no claim to any remission on account of Gung Shikust is it to be preferred or admitted, which will effectually deprive both the Tehseeldars and Malgoozars of a plausible handle too often used for the object of obtaining a reduction on frivolous and insufficient grounds.

"The established usage that prevails throughout the Pergunnah in respect to alluvion, is the "Dhar Dhora," which simply provides that all land of alluvial formation appertains to the proprietor of the estate, to which a change in the channel of the river has annexed it, or in the event of an island being formed in the bed of the stream, on whichever side the river may be fordable at any season of the year, the Zemindar on that side possesses a preferential right, co-equal with that by which they hold the estate to which it may belong. If the identity of the land be destroyed, it remains the property of the proprietor from whose estate it was removed; but should the channel of the river not be fordable at any period of the year, (an event which has never occurred,) and the land not identified, in that case it becomes the property of Government.

"There is no instance of a proprietor having declined a continuance of his engagements, and the stability of the Settlement being thus based on the security of landed property is guaranteed.

"The total number of souls by the late Census taken after Settlement, amounts to 30,027, or about 6,000 families, who inhabit 8,181 houses, and are thus divided :—

Hindoo Males,	10969	Moosalman Males,	973
Ditto Females,	8597	Ditto Females,	803
Ditto Children of both sexes,	7913	Ditto Children of both sexes,	772
Total,	27472	Total,	2548

Total Males,	11942
Ditto Females	9400
Ditto Children of both sexes,	8685
Grand Total,	30027

"Which gives about 200 souls to the Square Mile, and 410 on the cultivated

Population.	Population in Square Miles.	On cultivated Area per Square Mile.
Pergunnah Bisowlee, ..	306	468
Ditto Sutasee,	220	454

land on the Total Area,—a scanty number if compared with the average of the more highly cultivated land of Bisowlee and Sutasee, but not with reference to the former population of this part of the country; neither must it be forgotten that the habitability of a considerable portion of the Belah

is very questionable, and that many of the villages had been infected with the epidemic fever for two years prior to Settlement, which caused dreadful mortality in many parts of Rohilcund. That the disease was not produced from the exhalations of the stagnant water, or the effluvia from the jungle, is shown by its having raged where there was neither one nor the other, in different parts of the District; but that when generated, its insalubrity was increased by the mephitic air from the marshes and muddy banks of the river can be easily imagined; thus where famine has spared, the population has been swept off by pestilence. The number of deaths ascertained to have taken place from January 1835 to April 1837, from the epidemic fever, amounts to—

1,478 Males.
853 Females. } Total, 3,461;
1,130 Children.

Or more than 10 per cent. If 10,000 of the present population be assumed as the number of working cultivators, the proposed revenue will be produced at the rate of Rs. 7-12-6 per man.

"The strength of the Village Police amounts to 126 men, who hold Jagheers or service land to the extent of 786 acres, of which the estimated rents, at the average village rates, amount to Rs. 1,979, or about Rs. 15-8-0 each man per annum. This sum may appear too small a remuneration, but there are various other perquisites to which the watchmen of every village are entitled at the cutting of the crops, marriage festivals, &c. &c. increasing the emoluments of the office, sufficiently to make it sought after. Many of the chowkeedars were paid prior to the revision of Settlement by money stipends, nominally amounting to Rs. 3 per mensem; but such were the evils of the system, owing to the zemindars withholding payment on the one hand, and the interference of the Government Police on the other to enforce payment, in which they seldom lost an opportunity of taking a share, that scarcely half the sum ever reached the hands of the watchmen. It may further be added, in support of the plan of apportioning service land in lieu of money salaries, that not a single instance of demur or complaint on the part of any individual has been preferred, which would scarcely have been the case, had the watchmen formerly been in the actual receipt of Rs. 36 per annum.

"The intermediate changes of Jumma between the fourth and revised Settlements are confined to fifteen instances, the total decrease granted being Rs. 3,959, and the total increase assumed Rs. 147. The villages noted in the margin are the estates whose Jummas have been revised since the fourth Settlement, under the provisions of Regulation VII. of 1822, in the year 1240 Fuslee. None of those Settlements have been approved of by competent authority, and as several of their Jummas were found on examination to be either too heavy or too light, they have been corrected accordingly to the satisfaction of the parties concerned.

"The total extent of registered maaffee land is 1401 acres, and the revenue, if assessed at the average class rates, would amount to Rs. 2,275-14-0; the unregistered land resumed is 601 acres, of which 223 acres are under the plough, and 378 acres culturable

Number in Tabular Form IV.	Jumma of fourth Settlement.	Revised Jumma under Regulation VII. of 1822.	Proposed Jumma.
28	600	426	525
65	1500	965	775
68	500	366	300
98	870	652	750
101	1700	972	1000
121	400	300	300
Total, ..	5570	3671	3650

waste. The assessment on the cultivated area, if assumed at the above rates, would be Rs. 348-14-0. There are only 23 acres of unregistered maafee land exempted from assessment, which are *bona fide* appropriated to useful or religious purposes. Their estimated revenue, at the average of the village rates, is Rs. 36-5-6.

"The number of claims brought forward before Settlement to proprietary rights and

ABSTRACT ACCOUNT OF CLAIMS TO PROPRIETARY IMMUNITIES.

Number of Cases.	Number of Cases in which claimants were admitted to engage.	Adjusted by Raseenamah.	Referred to the Civil Court.	Summarily dismissed.
73	2	87	27	9

immunities.

"The investigation of these cases, with the duty of registering the assameewar jumma-bundees after Settlement, was conducted by the Native Deputy Collector, Mahommed Syed Khan. These rentals cannot certainly always be depended on, especially where

privileges is noted in the margin. They consist of claims to be admitted as Malgoozars, or to the enjoyment of various proprietary

STATE-

Number.	Names of Talooqdars.	Names of the Class.	Number of Mou- zahs.	RUQBAAH IN ACRES.		Former Jumma.
				Malgoo- zaree area.	Cultiva- tion.	
A.	{ Dowlut Singh, Mokund Singh, Ajeet Singh, Thakoors,	Muttyar,	12	7861	5034	6980
		Khadir,	10	3666	2256	4060
		Dhoomut and Muttyar,	7	3826	3374	3680
		Bhoor and Khadir,	3	2078	1009	1675
		Belah,	4	2193	178	975
		Total,	36	19624	11851	17370
B.	{ Ukbar Ally Khan, Ajcet Singh, Mahommed Ally Khan, Dowlut Singh, Thakoors, Mussulman, ..	Muttyar,	4	2314	862	1900
		Khadir,	11	7763	4255	7605
		Bhoor and Khadir,	2	1319	995	1835
		Total,	17	11396	6112	11340
C.	{ Lutchee Singh, { Aheer,	Muttyar,	1	1005	226	409
		Dhoomut and Muttyar,	2	2031	1051	1402
		Total,	3	3036	1277	1811
D.	Ameechund, Aheer, { Khadir, Dhoomut and Muttyar,	Khadir,	2	960	776	1550
		Dhoomut and Muttyar,	1	908	825	1000
		Total,	3	1868	1601	2550
E.	{ Ramsahoy, Aheer, Unnee Singh, Aheer, { Muttyar, Khadir, Dhoomut and Muttyar, Bhoor and Khadir, Dhoomut,	Muttyar,	6	8021	1677	2838
		Khadir,	1	211	124	150
		Dhoomut and Muttyar,	3	2277	1403	2905
		Bhoor and Khadir,	1	761	334	346
		Dhoomut,	2	805	489	620
		Total,	13	7075	4027	6859
	{ Unnee Singh, Aheer, { Muttyar, Khadir, Dhoomut and Muttyar, Bhoor and Khadir,	Muttyar,	1	458	373	426
		Khadir,	3	1735	1210	1946
		Dhoomut and Muttyar,	1	411	207	190
		Bhoor and Khadir,	2	1058	707	1720
		Total,	7	3662	2497	4282
Grand Total,			79	46661	27365	44212

the proprietors are of the same caste with the cultivating community, as under such circumstances they are sometimes disposed to combine with each other, with the view of concealment; but these are only exceptions, and generally I think the jumma-bundees may be relied on as approximating very closely to the truth.

"Subjoined is a list of the principal talooquas. The Jummas were apportioned by myself on the several villages comprised in each illaqua, agreeably to their respective resources and local peculiarities. In the first and largest talooq, the demand might have been enhanced beyond what has been assumed; but the result would have been unimportant, while, with reference to the increase already taken, and the necessity of supporting the appearance and position of the proprietors in the pergunnah, I forebore pushing the demand to a limit, which might otherwise have been justified by sufficient data. The other illaquas, it is well known, will yield, under their modified jummas, a handsome profit amply sufficient for securing the stability of the revenue, future prosperity, and the respectability of the talooqdars."

MENT.

AVERAGE RATE OF ASSESSMENT ON		Present Jumma.	AVERAGE RATE OF ASSESSMENT ON		EXTENT OF UNREGISTERED RESUMED MAAFFEE TENURES IN ACRES.			Amount of Revenue assumed at the average village rates of the proposed Jumma on the cultivation.
Malgoozaree Area.	Cultivation.		Malgoozaree Area.	Cultivation.	Culturable.	Cultivated.	Total.	
		Rs.						Rs. As. P.
0 14 2½	1 6 2½	8130	1 0 6½	1 10 10	30	7	37	12 9 9
1 3 2½	1 12 9½	3575	0 15 9½	1 9 4½	2	4	6	4 11 0
0 15 4½	1 1 4	4000	1 0 8½	1 2 8½	12	10	22	11 4 4
0 13 10½	1 1 6½	1725	0 13 3½	1 2 2½	27	26	53	43 14 0
0 7 1½	5 3 1½	1050	0 7 8	5 14 4½	0	0	0	0 0 0
0 14 2	1 7 5½	18490	0 15 0½	1 8 11½	71	47	118	72 7 1
0 13 1½	2 3 3½	1775	0 12 3½	2 0 11½	6	0	6	0 0 0
0 15 8	1 13 2½	8455	1 1 5	1 15 9½	46	37	83	74 15 0
1 6 3	1 13 6	1300	0 15 9½	1 4 10½	8	0	8	0 0 0
0 15 11	1 13 8½	11530	1 0 2½	1 14 4½	60	37	97	74 15 0
0 6 6	1 2 11½	550	0 8 9	2 6 11½	0	0	0	0 0 0
0 11 0½	1 5 4	1550	0 12 2½	1 7 7½	62	21	83	44 11 0
0 9 6½	1 6 8½	2100	0 11 0½	1 10 3½	62	21	83	44 11 0
1 9 10	1 15 11½	1350	1 6 6	1 11 10	0	3	3	6 7 6
1 1 7½	1 3 4½	1200	1 5 0½	1 7 3½	0	0	0	0 0 0
1 5 10	1 9 6	2550	1 5 10	1 9 6	0	3	3	6 7 6
0 15 0½	1 11 1	2995	0 15 10½	1 12 7	3	0	3	0 0 0
0 11 4½	1 3 4½	200	0 15 2	1 9 9½	0	0	0	0 0 0
1 4 6	2 1 1½	2875	1 4 3	2 0 9½	0	0	0	0 0 0
0 7 3½	1 0 7	650	0 13 8	1 15 1½	11	0	11	0 0 0
0 12 4	1 4 3½	620	0 12 4	1 4 3½	9	2	11	2 7 0
0 15 6	1 11 3	7340	1 0 7½	1 13 5	23	2	25	2 7 0
0 14 10½	1 2 3½	525	1 2 4½	1 6 6½	9	0	9	0 0 0
1 1 11½	1 9 8½	1775	1 0 4½	1 7 5½	4	0	4	0 0 0
0 7 4½	0 15 8½	250	0 9 8½	1 3 4	0	0	0	0 0 0
1 10 0	2 6 11	1800	1 10 8½	2 8 9	8	0	8	0 0 0
1 2 7½	1 11 5½	4350	1 2 10½	1 11 10½	21	0	21	0 0 0
0 11 8½	1 9 10½	46350	0 12 5½	1 11 1½	237	110	347	200 15 7

In the two first illaques, Dowlut Singh and Ukhbar Allee Khan are looked up to as the principal managing parties, by their co-sharers or brethren. Both are substantial and influential landholders, with good credit and disposable capital at their command. The Hindoo malgoozars, in the two first talooquas marked A. B., are related to each other; Mahommed Ally is the son of Uckbar Ally Khan, who resides at Paprole, in the Boolundshuhur district. The ancestors of the family were Rajpoots, of the Burgoojur tribe, and embraced the Mahomedan creed, to secure their landed property from confiscation. The individuals in the four remaining talooquas are brothers, who divided their hereditary property many years ago, owing to a deadly feud which broke out among them.

Considerable inequality in the rates of particular mouzahs comprised in the above illaques, more especially on the cultivation, will be observed on a reference to the mouzahwar explanatory remarks; but the rates cannot be considered as a safe or efficient guide under such circumstances in forming an estimate of the adequacy or otherwise of the assumed Revenue, because in these talooquas, where a considerable increase had to be taken, it was necessary to show some leniency, and to raise the demand to what may be termed its legal limit, while with respect to others, where the culturable waste was in excess, the malgoozaree, and not the cultivated area, was invariably kept in view as the basis of assessment; the object being to secure prospectively, as far as practicable, equal pressure on each estate, so that in the event of an illaqua being broken up and divided in the interim, or sold in detail before the expiration of the term of lease, no difficulty could be experienced in effecting a partition or a sale of individual estates.

The inconvenience to which the Malgoozars have hitherto been subjected by the usage of collecting in anticipation has been remedied, and the talooqdars, as well as all other malgoozars, whose means and respectability of character admitted, were allowed the privilege of arranging their own kistbundeas after Settlement, accommodated to the agricultural products grown on their several estates, which documents, if found on examination to be reasonable, were sanctioned, pending the confirmation of higher authority.

The balances of the past five years are entered in the margin. The greatest

LAND REVENUE.		R. A. P.
In train of liquidation,	430	6 6
Reduction of Jumma,	38611	9 9
Kham Tehseel,		
Gung Shikust,		
Irrecoverable,	4035	11 6
Deserving of Remission,	6063	7 3
Total,	49171	3 0

TUCCAVEE.		R. A. P.
In train of liquidation,	92	0 0
Irrecoverable,	122	0 0
Deserving of remission,	92	14 0
Total realizable Malkana, and Tuccavee,	522	6 6
Total Nominal Irrecoverable and deserving of remission, Malkana and Tuccavee,	4863	12 6

There are no Hindoo schools, but twenty-three boys are taught reading, writing, and arithmetic, at four Mahomedan muktubs.

In conclusion, I would suggest the propriety of the leases of this Pergunnah being fixed for twenty years with reference to the extent of culturable waste land, and the superior means of the malgoozars for bringing it under the plough, before the expiration of that period.

That the assessment is fair and moderate may, I think, be presumed from the circumstance of no remonstrances against the Jummas having been presented, two petitions only having been received in this office for report, the one disputing the right of an individual to be allowed to engage as a joint malgoozar, the other impugning the integrity of the professional survey as an assumed standard of assessment. This fact certainly affords reasonable and satisfactory evidence of the practical well-working of the system: indeed, as compared with the former obscure method pursued, the enhanced security that the present process of Settlement holds out against self-deception by the numerous auxiliary branches of enquiry which it necessarily opens in the course of the preliminary investigation is manifest, unveiling as it does at one view the resources and adaptation of a pergunnah to the growth of particular products and the support of its inhabitants, with the various changes in both assessment and ruqbah, that have from time to time transpired since the cession to the British Government, whereby the settling Officer is enabled to come to a just and impartial decision on each case before him, without difficulty or delay, and on evidence and data that can rarely be impeached.

(Signed) R. H. CLARKE.

102.—Little remains to be added to this report.

103.—In two instances the Settlement made by Mr. Clarke was revised by the Commissioner; viz. Hurownee, Gobindpore, the assessment of which was reduced from Rs. 2,100 to Rs. 1,900, and Lehra Rutoo, reduced from Rs. 650 to Rs. 550.

104.—Since the Settlement one mouzah has been transferred to this pergunnah from pergunnah Hussunpoor, zillah Moradabad; viz.—

Name of Mouzah.	Area in Acres.	Jumma.	Population.	Date of Transfer.
Bhowaolah,	575	208	145	1845 A. D.

105.—The pergunnah now contains 139 mouzahs; viz.—

At Settlement,	124	Mouzahs.
Transferred from zillah Moradabad,	1	"
Created by partition under Regulation XIX. of 1814,	14	"
Total,	139	"

106.—The proprietary classes are as follows:—

	<i>Thakoors.</i>	<i>Aheers.</i>	<i>Brahmins.</i>	<i>Mussulmen.</i>	<i>Mussulmen and Hindoos.</i>	<i>Bukals.</i>	<i>Miscellaneous.</i>	<i>Total.</i>
Number of Estates.	55	50	6	16	5	1	6	139

Their tenures being—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Bhyacharah.</i>	<i>Total</i>
102	27	7	3	139

107.—The principal towns are Rajpoorah, Gunwan, Bhiraotee, Shahjehanabad; none of these however are of any importance. They all have a small bazaar, and a market is held in them, and also in the village of Mujolrah Futtehpore every week. The two most flourishing towns are Gunwan and Bhiraotee. The latter has increased much of late years, through the enterprise of the proprietors (aheers). The population of Bhiraotee at the time of Settlement, *i. e.* 1837 A. D., consisted of 994 souls, inhabiting 117 houses. In 1847 the population amounted to 2572 persons, inhabiting 393 houses. I do not think the latter census over-estimated, as the increase in the size of the town is striking to the eye. It is probable that the town may become a large and important one.

108.—The total population of the Pergunnah, according to a census made in 1847, was as follows:—

<i>HINDOOS.</i>		<i>MUSSULMEN AND OTHERS NOT HINDOOS.</i>		<i>Total.</i>
<i>Cultivators.</i>	<i>Non-Cultivators.</i>	<i>Cultivators.</i>	<i>Non-Cultivators.</i>	
36035	6129	2672	1292	46128

Of the cultivators, 9,629 are male adults, actual cultivators of 50,595 acres of land. Each holds, on an average, five acres one rood of land, and pays on an average seven rupees twelve annas of Revenue.

109.—The total nikasee of the pergunnah, according to the putwaree's papers for 1257 Fuslee, amounted to Rs. 118,664. The malgoozaree profits, therefore, amount to Rs. 44,283, distributable amongst 804 proprietors.

110.—The following will show the number and description of schools in the Pergunnah:—

<i>Description of School.</i>	<i>Number.</i>	<i>Number of Teachers.</i>	<i>Scholars.</i>	<i>Pay of Teachers per Month.</i>
Hindee,	1	1	2	2
Persian,	8	8	51	36
Total, ..	9	9	53	38

111.—At the cession, the largest talooqdar in the pergunnah was Rajah Shere Singh, a Burgoojur Thakoor, resident of Anoopshuhur. He possessed thirty-six estates. His surviving widow, the Ranee Chowan, now holds but five. Shere Singh was a man of weak intellect, incapable of managing his property, and moreover of extravagant habits. His karindahs and dependents enriched themselves from the proceeds of his estates. What he actually received he spent in folly. Of his thirty-six estates, thirteen were sold for arrears of Revenue, and bought by the Bhiraotee and Gunwan talooqdars; five were sold by decree of Civil Court; two were bought by private sale, by Bhiraotee talooqdars; eleven were mortgaged to Akbar Allee Khan; five only remaining in the possession of his widow. The fall of this talooqua is ascribable solely to the imbecility and folly of its former Proprietor, not to any over-assessment. The generality of the estates that formed the talooqua were situated on the Muttyar and Khadir tract, and were entirely exempt from the deterioration which the Bhoor mouzahs underwent during the fourth, fifth and sixth Settlements.

112.—Rajah Girdharee Singh held at the cession twelve estates. The whole talooqua was, in 1215 Fuslee, sold for arrears of Revenue. They now form part of the talooqua of the Bhiraotee Aheers.

113.—Bahadoor Singh, a Burgoojur Thakoor, resident of Gunwan, held at the cession twenty-two estates; during his life-time, the talooqua was increased by private purchase, till it amounted to thirty-six estates. Bahadoor Singh died in 1836, and was succeeded by Dowlut Singh as the acknowledged head of the family. Hitherto the name of Bahadoor Singh only had been recorded in the Collector's books, Kishen Singh and Ajeet Singh, his brothers, receiving from him their share of the profits of the estates. When the Settlement, under Regulation IX. of 1833, was commenced, it became necessary to record the extent and nature of the rights and interest of all the sharers. Dowlut Singh refused then to acknowledge the existence of any claims to a share preferred by his uncle Kishen Singh, or Motee Singh, son of Ajeet Singh, who had in the interim died. The dispute was, by consent of the parties, referred to arbitrators, who decreed to Kishen Singh ten biswahs, to Dowlut Singh five biswahs, and to Motee Singh five biswahs, giving to Dowlut Singh one estate, as *huq sirdaree*. Dowlut Singh refused to acknowledge this decision, and in consequence became involved in a Civil suit, which has caused his ruin. The greater part of his estates are held in mortgage by mahajuns of Moradabad; independently of this, he is involved in debts amounting, it is reported, I believe with truth, to Rs. 50,000; it is not difficult in consequence to foretell his downfall.

114.—Motee Singh and Kishen Singh are possessed of considerable wealth, but are not at all amicably disposed towards Dowlut Singh, whom they nevertheless acknowledge as the head of their family.

115.—The talooqua of Thakoor Akbar Allee Khan has risen since the cession from the downfall of Shere Singh; and of the estates comprising the latter property, four were bought at public sale, and eleven are held in mortgage by the heirs of Akbar Allee Khan.

116.—The wealthiest, and by far the most influential proprietors in the pergunnah, are the Bhiraotee Ahcers. The family hold nearly a third of the pergunnah, the greater part of which has been obtained since the cession. They owe their influence less to their wealth, than to their being the heads of the Aheer tribe, who form three-fourths of the population of the pergunnah. The Ahcers are noted for horse-breeding. The Bhiraotee zemindars keep some fifty or sixty mares for this purpose.

The Revenue and Police establishments are attached to the Asudpoor pergunnah; the charges on these heads will therefore be noticed in the report on Asudpoor.

PERGUNNAH ASUDPOOR.

117.—Pergunnah Asudpoor is bounded on the north by Pergunnah Rajpoorah and Pergunnah Bijoe, Zillah Moradabad; on the east by Pergunnah Saheswan, its southern and western limits being washed by the waters of the Ganges, which separate it from the District of Boolundshuhur.

118.—The Pergunnah comprises 151 Mouzahs, covering an area of 91,112 acres, which are thus distributed:—

<i>Rent-free.</i>	<i>Barren.</i>	<i>Cultivated.</i>	<i>Culturable.</i>	<i>Total.</i>
1032	12915	48170	28995	91112

119.—Asudpoor, previous to the formation of this District, appertained to the southern division of Moradabad. Its Jumma in 1824 A. D., when transferred to Budaon, amounted to Rs. 80,585.

120.—This Pergunnah is one of those that suffered most from the high and unequal assessment of the fourth Settlement. The demand of the third Settlement amounted to Rs. 68,737. The Bhoor lands, which comprise a great part of the Pergunnah, were at that time in high cultivation, and the Pergunnah in a flourishing condition. At the fourth Settlement, the demand was raised to Rs. 80,728. The evils of over-assessment had commenced before the transfer to Budaon was made. Mr. Swetenham, soon after taking charge, reported that several estates in this Pergunnah were held *kham* by the Collector. Under the administration of Mr. Wyatt, the condition of this, (in common with the other pergunnahs of this class) fell rapidly. In consequence of this, Mr. Brown selected Asudpoor as one of the first for revision of Settlement under Regulations VII. of 1822 and IX. of 1833. That Officer was at the time engaged in making the Settlement of Oosaith, and on his recommendation Mr. Louis was entrusted with the revision of this Pergunnah. Mr. Louis's Settlement Report is annexed to this; a reference to that will shew the principles which guided him in his work.

121.—A Jumma, progressing from Rs. 71,342 in 1242 Fuslee, to Rs. 74,460 in 1250 Fuslee, was fixed by that Officer, and confirmed by Government for twenty years; viz. from 1242 to 1261 Fuslee, corresponding with 1835 to 1854 A. D.

122.—Since the Settlement, one Mouzah (Jussoopoor Sesay) has been transferred to Boolundshuhur, one Mouzah (Khuleelpoor) annexed from Pergunnah Byjoe, Zillah Moradabad.

123.—The population of the Pergunnah, according to the last census, stands thus :—

HINDOOS.		MUSSULMEN.		Total.
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	
34277	9098	3468	2943	49786

124.—The Aheers are the greater mass of the people; they are proprietors of nearly half the Pergunnah, and cultivators of four-fifths of it. Though numerous, the Aheers have little influence in the Pergunnah; their holdings are single and distinct; forty-six Estates are held by Mussulmen, (Sheikhs and Kazees,) eighteen are held by Aheers and Mussulmen in partnership, four by Kaiuths, five by Bukals. The Sheikhs of Goonour are the most influential residents in the Pergunnah; but there are no talooquas worth mentioning.

125.—The tenures are classified as follows :—

Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyacharah.	Total.
88	24	18	21	151

126.—The principal towns are—Goonour, Asudpoor, Dulthurah, Kadirabad, Khuleelpoor, Jugurnathpoor and Dhoonwarah.

127.—Goonour is now the seat of the Tehseeldaree and Thannah stations. Until 1841, Rajpoorah was under a Tehseeldar and Thannahdar of its own, the Tehseeldaree and Thannah stations of this Pergunnah being at Asudpoor. In 1841 these fiscal divisions were united, a Tehseeldaree was built during that year at Goonour, and the Revenue and Police Offices of Rajpoorah and Asudpoor united.

128.—Jugurnathpoor is famous for a large cattle market held in it every Saturday. From 100 to 300 head of cattle are exposed for sale. The Zemindars and Putwarees receive each one anna for each head of cattle sold, and in return give to the purchaser a certificate of sale.

129.—In the remaining towns above specified, markets are held once a week; the goods brought for sale consist of grain, cotton, &c., the produce of the surrounding Pergunnahs.

130.—The Ganges borders the length of the Pergunnah, which is intersected by the Burdmar, Muhawar, and Chooeeah nuddees. These are used for irrigation, when required, but are not navigable.

131.—The soil of the Pergunnah is described in the Settlement Report, and requires no further comment.

132.—Blankets of a coarse description are made by about twenty-five families. This is the only manufacture.

133.—From enquiries that I have made, the following are the number of Schools in the Pergunnah :—

Number of Schools.	Description of Schools.	Number of Masters.	Number of Scholars.	Amount of Pay of each Teacher.	Remarks.
10	Persian,	10	76	Rs. A. P. 30 8 0	The Teachers of the Hindee and Sanscrit Schools receive their food and other presents, on festivals and other occasions.
1	Hindee,	1	2	0 8 0	
1	Sanscrit,	1	2	1 0 0	

134.—There are no roads of any importance in the Pergunnah; one road from Goonour to Saheswan has been made by the Road Fund Committee. This is kept in good repair.

135.—I now annex the Settlement Report of Mr. Louis, to which little can be added.

SETTLEMENT REPORT.

PERGUNNAH ASUDPOOR comprises a tract of low land, lying between the Ganges and the high ridge of Bhoor, which in this part of the country runs parallel to the river, at a distance of from ten to twelve miles from its bank, and bears a great similarity, in station and soil, to that part of the adjoining Pergunnah of Saheswan, which lies equally near the river.

The whole of this tract appears to have been at some time or other washed by the Ganges, and to be alluvial land of more or less recent formation. It contains three strips of land, which exhibit a marked difference in both soil and level.

The first of these lies immediately on the bank of the river, and is covered almost entirely with Jhow and grass Jungle, interspersed here and there with an occasional plot of cultivation, and is very subject to inundation during the rainy season.

Beyond this is a belt of fine land, which is very thickly peopled, and almost entirely cultivated. The villages here are numerous and large, and this part of the Pergunnah has undergone but little improvement since the cession. The cultivation was then almost as extensive as now, and the agricultural community generally in easier circumstances. The next strip, which reaches close to the foot of the Bhoor, is composed of soil of inferior qualities to that of the last, and contains a much smaller proportion of cultivated ground. The villages are smaller, and the population more scanty.

A very large portion of this tract is covered with Dhak jungle, which is gradually disappearing, and of which there will probably not be a trace left in the course of a few years. It is watered by two streams, neither of them of any considerable size or depth: besides the villages in these three strips of land, there are a few small ones lying just on the slope of the Bhoor, in the north-east corner of the pergunnah.

Of the two harvests, the Rubbee is here by far the most important,—the staple produce of the Pergunnah being corn. In the Khureef, there is a good deal of cotton grown on the best land, and some sorts of pulse and grain on the poorer soils; but the quantity of these is comparatively small. The greater part of the land is sown with wheat and barley, for the growth of which the soil seems peculiarly proper, and of which, in a good season, the crops are generally very fine. The autumn crops may yield, on an average, five or six annas of the revenue; the rest is realized from the collections of the Rubbee: and the facility or otherwise with which the revenue is paid, must consequently depend greatly on the promising appearance of this harvest; on the contrary some of the Khadir land lying in the immediate vicinity of the Ganges gives two crops, the produce of the first being the poorer kind of rice. The excessive moisture of the soil is said to be unfavorable to the cultivation of sugar-cane, which has been often tried, but always unsuccessfully; the sugar made having proved of a very inferior quality. The expense attending the culture of this,

and the inability of the Zemindars to extract from it sugar that could compete in the markets with the produce of the higher table land to the north and south-west are, I believe, the causes of its scarcity here. A little indigo was grown in one or two villages, but since the failure of the Commercial houses, and reduction of their trading establishments, the demand for it, in this part of the country, has been so slight, that its cultivation has been almost entirely given up.

Irrigation is very little practised, though the numerous jheels and tanks afford the husbandman every possible facility; and water is everywhere found so near the surface, that the digging of wells is attended with very slight expence. Wheat, however, which is universally grown, to the exclusion of almost every other kind of Spring produce, does not, except in an unfavorable season, require watering.

The causes which have rendered its cultivation so general, in preference to that of the other kinds of grain, may be looked for principally in the situation of the Pergunnah on the bank of a large navigable river, affording the means of a direct and easy conveyance to the large markets of Futtehghurh and Cawnpore, where the demand is unlimited, and whence large sums are every year remitted for its purchase. Chundowsee also, in the Moradabad district, about twenty-five miles from Asudpoor, is a very large mart, where grain of every kind finds a ready sale: much of the cotton grown in the pergunnah is sent there, and the rest to Futtehghurh. The return is generally in coin.

There are two or three weekly markets held in some of the largest villages in the Pergunnah, which are much frequented; but the general poverty of the Zemindars, and the want of capital in the Pergunnah, are sufficient reasons for the absence of any thing like trade. The latter that was formerly carried on by a few of the more influential men has entirely ceased of late years.

The standard Jumma now borne on the books is generally that of the fourth Settlement. This has, in almost all the Muttyar Mouzahs and in some few of the estates of mixed soils, been an unsupported burthen to the malgoozars. The Settlement of many of these villages have fallen to the ground within the last few years, and when the Revenue has been hitherto paid, it has been at the expence of much of both the personal and landed property of their managers. The Jumma of this Settlement seems to have been fixed on a calculation of the estimated assets, yielded by the cultivated land in each estate, the deductions, if any were allowed, being very small.

The pressure of the demand, therefore, in the well-cultivated Mouzahs was unvarying, and no room was left the zemindars to increase their profits, or make any provision against future losses. The great change in the condition of this Pergunnah since then, and the gradual deterioration of villages, which, to have borne at all the rate of assessment then levied, must have been in the highest possible state of agricultural prosperity, affords a striking proof of the instability of a Settlement made on such principles. The greater number of the Muttyar Mouzahs were at that time very much cultivated, and in some of these the shock was felt almost immediately, and in the course of a year or two they were alienated from their owners both by public and private sale. A few favorable seasons and high market prices enabled the malgoozars of the rest to fulfil

their engagements for some time longer, and many of them were tempted by a slight decrease, granted at the commencement of the sixth Settlement, to hold on rather than lose the management of their estates, and with it their former respectability and consideration amongst their neighbours. These men soon became more or less involved, and many who had been possessed of some personal property sunk into the condition of mere cultivators.

In the seventh Settlement, the daily increasing difficulty of realizing the revenue became more apparent. The husbandmen had no longer high prices to look to as remuneration for labor, and agricultural depression was generally gaining ground, whilst the land was becoming exhausted by repeated cropping. Under these circumstances, measures of coercion were pursued, which were attended with the most unhappy effects, and the prosperity of the agricultural community, already at a low ebb, received a shock from which it will be long in recovering. The collections were almost everywhere made by the Tehseel officers, whose undue interference in the province of the malgoozar, was allowed on the plea of necessity, and when the distraint of all their tangible property failed to satisfy the demand against them, the assamees were subjected to a system of rack renting, which in many instances induced them to desert their villages. Added to this, the seasons of 1239-40 proved unfavorable, and the mortality that was so generally prevalent amongst the cattle, destroyed an immense number in this Pergunnah.

Of the mouzahs of the second class, however, few were sufferers during this time from similar causes, and those more particularly only in which, owing to their proximity to the Bhoor, the poorness of their soil, the two last seasons were felt as excessively unfavorable. In these villages, at the time of the fourth Settlement, there was abundance of good waste lands; many were indeed almost untouched, and only contained a few fields cultivated at low rates by the residents of the surrounding estates. In these the cultivation has been gradually extending and keeping pace, while the means of the Zemindars has enabled them to escape the difficulties and distress that have been prevalent in the other part of the Pergunnah. The arrangements that were made in 1241 Fuslee relieved many of the estates that were in the most ruinous condition from the vexatious and harassing continuance of Kham Tehseel management, and the measures that were taken to restore confidence to the dispirited community were very successful. The fallow land has been again brought into cultivation, the Zemindars appear disposed to make great efforts to regain somewhat of their former prosperity, and it is my earnest hope that the settlements I have now made, may in no way interrupt their prospects of future comfort and independence.

The Revenue Survey of the Pergunnah was carried on during the year 1831-32, and was finished before any considerable decrease of cultivation took place; its results have therefore been assumed as the basis of the present Settlement. Although the condition of many of the villages has been much changed for the worse, since they were measured, the improvement that has taken place within the last year has pretty well restored them to their former state, inasmuch as regards the quantity of cultivated land; and whilst perfect dependence can be placed on the records of this survey, the employment of a number of Mirdahs and Mootsuddees for the purpose of measurement, would have been attended with unnecessary expense, and have subjected the people to

the annoyance of plunders, generally consequent on this kind of job, however carefully conducted. The only point in which the statistical returns of the professional survey required to be checked was the recorded quality of the soil in each Mouzah, on which no reliance could be placed, and in this the mode in which the villages were classed obviated every difficulty. In the survey of this Pergunnah, a fair distinction seems to have been made between the culturable land and that unfit for agricultural purposes, no more ground having been written down under the latter head than was occupied by the site of the village, tanks, roads, or was really worthless. In some of the other Pergunnahs, the error of the Surveyor appears to have been his noting, as unculturable, a great deal too much land; in this however I do not think he has done so.

The first step taken in the Settlement work was the classification, and this the marked difference in the soil and level of the strips of land composing the Pergunnah rendered an easy matter. The whole of the second tract abovementioned, lying sufficiently far from the river to be out of reach of inundation, is composed of a fine clayey loam, varying slightly in places in its productiveness and quality of course, but not sufficiently to prove any obstacle to the determination of a fair average rate on it.

The Mouzahs in this tract have therefore been classed together, and called *Muttyar* or 1st Class Mouzahs; the remainder of the Pergunnah being classed under the head of mixed soils, 2nd Class.

Of these latter, the Belah mouzahs lying immediately on the bank of the river, and a few on the slope, were taken separately into consideration,—the peculiar situation of the former, and the great inferiority of soil of the latter, rendering their assessment with the rest of the villages of the 2nd Class, inexpedient. In some few villages of the 1st Class there is a mixture of soil of a decidedly secondary quality, and one or two of the 2nd Class are composed of remarkably fine rich loam; but I did not think proper to alter my arrangement on this account, or attempt to substitute an arbitrary classification of my own, for the natural one laid for me. Any instances of this kind have been noticed in the remarks of each village.

In determining the average rates of rent for the different kinds of soil I had little difficulty. Money rates have been for many years established in this Pergunnah; the only land paying in kind being the Bhoor, and a little of the newly cultivated ground in some of the Belah mouzahs. Enquiries were made of the most respectable putwarees, and an average taken of the rates common for the last ten years in some of the estates of each class that appeared to have been fairly assessed. The rates assumed by Mr. Brown in the adjoining and similarly situated Pergunnah Saheswan, and a record of the rates paid for the different kinds of produce at the time of the fourth Settlement were in the office, and from these data the following were assumed as the average rates for the different kinds of soil:—

For irrigated land (under which head merely the few fields round a village set apart for the growth of Vegetables and Tobacco are noted),...	3	0	0	Per Beegah.
For the Muttyar of the 1st Class villages,	1	14	0	"
On the Muttyar of the 2nd Class villages,	1	8	0	"
On the Dhoomut,	1	2	0	"
On the Khadir,	1	8	0	"
On the Bhoor,	0	9	0	"

The sum yielded by the application of these rates to the gross quantity of each kind of soil was compared with the former Jumma of the Pergunnah, and with reference to its past and present condition, the proper deductions were determined on a gross Jumma fixed. In the division of this on the different classes of Mouzahs, much the same process was observed, but the limited capabilities of the Muttyar villages, and the comparative poverty of the mass of their owners, called for a much larger deduction from the gross rental assumed, than was necessary in the villages of mixed soils. After testing my work therefore by the rates on the Malgoozaree and cultivated land of the former Jumma on some of the villages of each class that I knew to have been equally assessed, and to have borne them without difficulty, and those on the totals yielded by the gross Jumma now proposed to be taken, I fixed their revenue with a deduction of about forty per cent. in the Muttyar villages, and about twenty-five of those of mixed soils. The average revenue rates on the cultivation and Malgoozaree land of each class being thus obtained, the revenue of each estate of the first class was determined, entirely by these, checked by a due consideration of its local or other advantages, present and prospective means of improvement, the condition, habits and number of its proprietors and cultivators, and the rates of, and facility or difficulty with which its former Jumma had been paid. The same course was pursued with the other villages, except that in these the presence of inequalities of soil, rendered a rental found by the application of the average rates on soils, necessary in the first instances to prevent any mistakes arising from a disproportion in the quality of each. This was tested by the rates in the mode abovementioned, and the Jumma fixed on the same principles. The average revenue rates on the Malgoozaree land was used as a standard of approximation to that on the cultivated area, serving as a check in those cases in which too close an adherence to the other would have been liable to cause excessive assessment.

The Nikasees given in by the Putwarees are too often mere fabrications made up at the dictation of the Zemindars, to allow of any reliance being placed in them. These persons may be very useful as accountants, but they are in general so completely subservient to the landholders, in whose good will must depend so much of their comfort, that any accounts at all opposed to their supposed interests can hardly be expected from them.

The Jumma thus determined was proposed to the Zemindars, and after hearing any objections they advanced, their durkhwasts were taken, and only two instances of recusancy occurred. A few disputes arose as to the proper parties to be selected as Malgoozars and these were easily settled; a preference was generally given to the managers of former Settlements when they came forward, or to their immediate heirs, unless good reason was assigned by the majority of the village community for their exclusion. The Jumma of the Putteedaree estates was fixed on the whole mouzah, and the owners encouraged to apportion it in the several puttees themselves, and few cases occurred in which my interference was necessary. When, from personal enmity or other cause, they were unable to agree, and were unwilling to refer the question to arbitration, I divided it myself, on the same principles on which the gross Jumma had been distributed in the several Mouzahs; and this was easily done, without fear of affording any just grounds of dissatisfaction, as these puttees had been everywhere measured separately by the professional surveyor. The record

of the respective rights and shares of the several holders was next verified, and the requisite iqarnamah for the security of the revenue taken from them.

The tenures in this Pergunnah are Zemindaree and Putteedaree. Under the former head I include all those in which no recorded separation of land and interests has taken place amongst the several proprietors, without reference to the mode of management. By the latter name I should call all those in which a regular division of puttees has been recorded, the rights and interests of the proprietors of one puttee having been for years distinct from those of another, though they all originally sprung from one family. In this Pergunnah, which is peopled chiefly by large families of Aheers, many of the former kind will undoubtedly ere long resolve themselves into regular putteedaree tenures, whilst these again in some villages approach nearly to the bhyachara form, which they will probably assume ere many years have passed. The mode of management generally prevalent here, is that in which the sum wanting to make up the revenue, after the collection of the Assamee's dues, is levied by a baach on the shares. This *baach* is a money rate fluctuating with the demand, and paid by all the sharers according to the quantity of land in the possession of each without any reference to his hereditary share of the estate. The village expences are levied in the same way, and the profit of the Sudder Malgoozars varies, exceedingly,—in some villages their *khood kasht* being free from rent, and in others paying less than the baach rate. All the Aheer estates are managed thus, whilst in those held by Mussulmen the system is different. The collections of these are made in common by the Sudder Malgoozars, who either divide the profits, or make good the losses at the end of the year, according to their respective shares, whilst the demand on their brethren does not fluctuate. These cultivate at a fixed rate below that of the ryot, and are exempt from all further risk of profit or loss after the payment of their rent. In a few villages, the joint property of Mussulmans and Aheers, a division of Assamees has by mutual consent taken place, and in these both modes of management prevail.

In this state of the business all claims to a share in the proprietary right were settled. The fact of the claimants' possession or otherwise was easily ascertained, and the case, if thus supported, was referred to a punchayet of the most respectable Zemindars in the Pergunnah. To these persons the point on which they were called on to decide was explained by me in the first instance, and I found their decisions in by far the greater number of cases very satisfactory; occasional complaints were of course made, but as I allowed the parties concerned to object at the outset to any individual on assigning satisfactory reasons, I am inclined to believe that these complaints were instituted and dictated by vexation. The only benefit obtained by any claimant on the substantiation of his cause was the record of his name and share, and his admission to the payment of the baach rate, common to the rest of the sub-sharers on the land actually in his possession, or that he might hereafter cultivate with the consent of the community. I was not of course authorized to adjudge possession to any man according to his ascertained hereditary right, nor would the exercise of such power, even if legal, have been in my opinion expedient. It would have been an infringement of long established custom, and would have been productive only of much discontent and discord amongst the community.

The only other kind of claim preferred was to the proprietary right of several Mouzahs, in which, since these provinces came into our possession, there has been

no recorded owner. When two or more parties appeared as claimants for one village, I have referred them at once to the Civil Court; but in these cases in which opposite interests would not be affected by an investigation, and the claim of the party derived to right from long residence in the village, enquiries are still on foot as to the propriety of recommending to the Government a favorable consideration of the case.

The rents proposed to be taken by the Malgoozars were then made known to the Assamees, and their concurrence obtained. A portion of land was also set aside for the Jagheer of the Village Police. The quantity varies according to the quality of the soil, the size of the village, and their receipt of money payments or otherwise. In some cases the chowkeedars wished to receive both land and money, and when the Zemindars acceded readily to this, I did not think proper to object.

The investigation of the maaffee tenures has been postponed till the completion of the various settlement statements allowed more leisure. They will now be commenced upon immediately, but I was unwilling to permit the interference of any thing that might tend to delay the transmission of the settlement proceedings for sanction.

I have little more to add: the celerity, with which the work of re-settlement is proceeding under the new system in these Provinces, speaks loudly in its favor, and appears to be peculiarly well calculated to secure general equality of assessment, and thereby check the tendency to run into excess that almost invariably marked the progress of settlements made in detail. My views on this subject will I trust be borne out by the result. The fixed principle by which I was guided in the progress of any work has been to consider the interests of Government and its subjects as inseparable, and whilst securing the just rights of the one, never to lose sight of the necessity of promoting as much as possible the comfort and prosperity of the other. Having been now for the first time employed in this duty, this statement is perhaps rather longer than may be necessary in future, but I have endeavoured to make it as brief as was consistent with the clear explanation of my mode and principles of proceeding. I have confined myself as closely as I could to the remarks requisite to convey a just idea of the condition of the Pergunnah.

(Signed) H. LOUIS,

Offg. Deputy Collector.

136.—The settlement made by Mr. Louis has stood to this day. Not one estate has been sold for balance of revenue. The assessment is considered very light: the revenue is paid up with regularity and ease.

137.—The cultivation has increased from 48,170 acres to 55,090 acres, of these 6,556 are cultivated by proprietors on reduced rates. The rental paid for land by the Putwaree's Returns, for 1856 Fuslee, amounted to Rs. 1,17,056.

138.—The following Table will show the designation and salary of the Revenue and Police Establishments, and their per-centage of charge on the two Pergunnahs of Asudpoor and Rajpoorah:—

TEHSEELDAREE ESTABLISHMENT.

Number of Officers.	Designation of Office.	Amount of Salary per Month.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
1	Tehseeldar	175	2,100			
1	Peishkar,	30	360			
2	Qanoongoes,	40	480			
1	Wasil bakee Nuves, .. .	15	180			
1	Dakhila Nuves,	10	120			
1	Secaha Nuves,	15	180			
1	Idlaq Nuves,	10	120			
1	Aracez Nuves,	10	120			
1	Tehveeldar,	15	180			
1	Purkheea,	10	120			
1	Jemadar,	8	96			
2	Mirdhas,	12	144			
40	Peons,	160	1,920			
1	Dufurce,	5	60			
	Contingencies,	15	180			
55		530	6,360	95,914	150,237	Rs. As. P. 4 8 9½

THANNAH ESTABLISHMENT.

Number of Officers.	Designation of Office.	Amount of Salary per Month.	Amount of Salary per Annum.	Population.	Jumma.	Per-centage on Jumma.
1	Thannahdar,	40	480			
1	Mohurrir,	8	96			
1	Jemadar,	8	96			
1	Mududgar,	5	60			
4	Dufadars,	24	288			
35	Burkundazes,	140	1,680			
	Contingencies and Repairs, ..	12	144			
		237	2,844	95,914	150,237	Rs. A. P. 1 14 8

PERGUNNAH ISLAMNUGGUR.

139.—Is bounded on the north and west by Moradabad, on the east by Pergunnah Bisowlee and Kote Salbuan, on the south by Pergunnah Saheswan. It comprises 182 Mouzahs, covering an area of 1,01,242 square acres; viz. :—

<i>Rent-free.</i>	<i>Barren.</i>	<i>Cultivated.</i>	<i>Culturable.</i>	<i>Barren.</i>	<i>Total.</i>
2,483	15,836	63,022	19,901	101,242	

The population being—

<i>HINDOOS.</i>		<i>MUSSULMEN.</i>		<i>TOTAL.</i>
<i>Cultivators.</i>	<i>Non-Cultivators.</i>	<i>Cultivators.</i>	<i>Non-Cultivators.</i>	
41,205	9,683	4,701	2,043	57,632

140.—The soil of the Pergunnah is of three kinds :—

1st.—A hardish clay of good quality and productive, denominated *Kuthere*. It is better adapted to the *Khurreef* crops than the Rubbee.

2nd.—*Khadir* and *Dhoomut*. The Mouzahs comprising these qualities of soil, border on the Sote, or Yarwafadar, which intersects the Pergunnah.

3rd.—The *Bhoor* class, comprising a few Mouzahs, bordering on the Saheswan Pergunnah.

141.—Islamnuggur Khas, containing 4,614 inhabitants, is the only town in the Pergunnah. Previous to the Puthan rule, it was a place of some importance; nearly half of the present population consists of Mussulmen; it has a small bazaar, and markets are held in the town every Monday and Friday. Weekly markets are held in the following Villages, Chundoe, Chumurpoorah, Sisirka, Roodaen, Khirah Doss, Kureeawyn, Daonree, Kurunpoor, and Noorpoor Penonee: grain, cotton, and coarse kinds of cloth are disposed of in these markets. The produce of the Pergunnah finds a ready market in the neighboring town of Chundowsee.

142.—The Sote, or Yarwafadar, is the only river in the Pergunnah. It affords irrigation when required, but is unnavigable.

The Estates are held as follows :—

Thakoors,	85	Mouzahs.
Aheers,	5	"
Khuthrees,	22	"
Kaiuths,	3	"
Bukals,	11	"
Brahmins,	9	"
Mussulmen,	26	"
Mixed Classes,	21	"
	182	Mouzahs.

143.—The tenures are thus classified :—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Bhyachara.</i>
156	14	2	10

144.—The Pergunnah was surveyed in 1830 by Captain Bedford; the revised Settlement under VII. of 1822 and IX. of 1833 made by Mr. S. S. Brown in 1835.

145.—Mr. Brown evidently considered the Pergunnah a flourishing one. He says in his Settlement Report :—"The changes in the total demands, as well as the balances, have been comparatively few and trifling, and the general condition of the Pergunnah throughout that period, not accepting the few last years, exhibits a progressive improvement."

Paragraph 2. 146.—The Pergunnah was classified by Mr. Brown as follows :—

1st Class, *Kuthere*; 2nd Class, *Kuthere*, *Khadir*, *Dhoomut*, and *Bhoor*.

"The average rent-rates assumed were Rs. 2-6-0 on the first class; Rs. 1-12-6 on the second class *Kuthere*; Rs. 1-9-4 on the *Dhoomut* and *Khadir*; and Rs. 1-7-9 on the *Bhoor*. The demand was calculated in the first instance on the totals of each class, and distributed afterwards on the mouzahs comprising them, the *Malgozaree* area being principally looked to in every instance; the amount of the deduction left by the application of the average rates to the cultivated area in individual instances formed but a small part of the calculation.

147.—The assessment proposed by Mr. Brown amounted to Rs. 75,122 for 1243 Fuslee, progressing to Rs. 76,065 in 1248 Fuslee, being an increase on the standard Jumma, (i. e. for 1224 Fuslee) of Rs. 2,456.

148.—The Pergunnah was subsequently visited by the Senior Member of the Board of Revenue, Mr. Bird. One illaqua of twenty-seven estates was found to be palpably over-assessed, and a reduction of Rs. 1,691 was made on its assessment by his order; subsequently a revision of the whole Pergunnah was found necessary. The

Secretary to the Board of Revenue, in a letter No. 402, to Secretary to Government, writes as follows regarding the settlement to be revised in this Pergunnah:—
 “After hearing the statement of the Collector and the Commissioner, the Member of the Board on Circuit could have no hesitation in directing a revisal, it being obviously impossible either that the Jumma, as fixed by Mr. Brown, could be collected, or that the people could bear up under its pressure. The moderation of the demand in the remainder of the District renders the condition of this Pergunnah the more distressing, as the rates of rent, which the high demand would oblige the Zemindars to enforce, would have the effect of driving away the cultivators to places where better terms could be obtained.”

The settlements were accordingly revised by Mr. Timins, whose report I annex. The total reductions made on the Jumma fixed by Mr. Brown, amounted to Rs. 8,589. The Jumma fixed by Mr. Timins, viz. Rs. 69,476, was confirmed by Government.

149.—Since the Settlement considerable changes have been made in the boundaries of the Pergunnah; nine villages have been transferred to, thirty-one villages annexed from, Moradabad.

150.—The villages transferred to Moradabad are:—

Number.	Name of Village.	Total Area.	Jumma of Settlement.	
1	Rustamghur,	693	480	Population not known, as no Census had been made.
2	Syapoor,	865	800	
3	Jhurolee,	1,087	1,300	
4	Adunpoor,	751	625	
5	Aacetowl,	381	225	
6	Futehpoor,	1,994	1,900	
7	Bhoorungur Khundwa,	2,103	375	
8	Keshopoor,	219	0	
9	Buhadoor Nugur,	537	500	
		8,620	6,305	

151.—The thirty-one Villages annexed to this Pergunnah from Moradabad are—

Number.	Name of Village.	Total Area.	Jumma.	Population.
1	Allahpoor Shumushpoor,	1,849	1,799	848
2	Allahpoor Khoord,	324	474	219
3	Aorungabad,	971	488	182
4	Afzulpoor,	681	235	84
5	Bhumunpooree Khoord,	261	309	168
6	Bichpooree Khoord,	214	102	0
7	Bundrye Kulnalgurh,	437	250	105
8	Bhoor Bisowlee,	883	1,155	604
9	Tikhoree,	135	275	0
10	Judwar,	814	455	198
11	Ch'hutra,	993	401	235
12	Rajtikolee,	713	775	302
13	Tikhora,	770	833	360
14	Suroleea,	425	189	9
15	Sultangurh,	1,752	680	794
16	Sugrorah,	428	450	252
17	Santholee,	649	290	178
18	Shahpoor,	337	142	64
19	Kishunpoor,	319	275	121
20	Kishunpoor Sheampoer,	600	356	121
21	Khizoorpoor,	344	168	36
22	Kheerutpoor,	243	125	93
23	Koorkheerah,	320	150	5
24	Khurpoorah,	410	117	0
25	Kisnowree Bhoor,	373	201	136
26	Khujoorah,	940	500	563
27	Goorarpoorah,	553	666	365
28	Gurhee Bichola,	1,140	410	221
29	Lehra Bhoor,	323	231	87
30	Manickpoor Chandpoor,	1,627	1,126	703
31	Nuseerpoor,	110	51	0

152.—The changes noted above had the effect of raising the Jumma of the Pergunnah from Rs. 67,476 to Rs. 75,309.

153.—The assessment of rent-free lands, resumed subsequent to the general revision of settlement, has raised the Jumma of the Pergunnah to Rs. 77,985, at which it now stands.

154.—By the Putwaree's papers for 1256 Fuslee, the cultivated area had increased from 63,022 to 69,970 acres, the Nikasee for that year being Rs. 1,72,037. Islamnuggur is the only Pergunnah in this District where the rents paid for lands double the Government revenue, and it is on this account somewhat surprising that a revision of Mr. Brown's settlement should have been considered necessary. The soil of the Pergunnah is generally more adapted for Khurreef than Rubbee crops, and the former are in a great measure dependant on the periodical rains. The drought of 1837 was, I

believe, more severely felt in this, than in any other Pergunnah. The shock the Pergunnah sustained was more lasting, and this probably made the revision appear necessary.

155.—In 1806 A. D. twenty-two estates, comprising an area of 14,849 acres, were sold for balances of revenue, and realized Rs. 5,624. These form the property of Poordamun Kishun, and could not now be purchased for ten times that sum.

156.—In 1819 A. D. three estates, containing an area of 861 acres, were sold on the same account, and realized Rs. 1,710. From that year there has not been a single instance of sale for arrears of revenue, and the Pergunnah is now in a highly flourishing condition.

157.—The following is a Statement of the number and description of Schools in the Pergunnah:—

Number of Schools.	Description.	Number of Teachers.	Number of Scholars.	Pay of Teachers.
11	Persian.	11	58	Rs. A. P. 33 8 0
5	Hindee.	5	26	10 0 0
16		16	84	43 8 0 per Month.

158.—There are seven Shewallahs and one Hindoo Temple in the Pergunnah: none of them however worthy of further mention.

159.—The revenue is under the Tehseeldar of Bisowlee; the revenue charges will therefore be noted under the latter Pergunnah. The charges for the Thannah Establishment are as follows:—

Number of Officers.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
1	Thannahdar,	25	300			
	Mohurrir,	8	96			
	Jemadar,	8	96			
	Mududgar,	5	60			
	Duffadar,	0	0			
20	Burkundazes,	80	960			
	Contingencies and Repairs, ..	8	96			
		134	1,608	57,632	77,985	Rs. As. P. 2 0 11

160.—In conclusion, I annex Mr. Timins's report on the Revision of Settlement made by him. The Settlement made by Mr. Brown having been cancelled, I have thought it unnecessary to give his report.

To F. H. ROBINSON, Esq.,

Officiating Commissioner

SIR,

" I have the honor to forward the revised Settlement statements for Pergunnah Islamnuggur.

" The state of this Pergunnah was brought to the notice of the Senior Member of the Board of Revenue on Circuit, and the Commissioner of the Division, Mr. F. H. Robinson, and the measures I proposed for its relief submitted to them. I received permission to enter at once upon a revision of the Assessment.

" The Jumma of the year before the late Settlement was Rs. 73,366. The revised Jumma was Rs. 76,065, falling at an average of Re. 1-5-10 on the cultivated ruqbah and Re. 1-1-11 on the total malgoozaree area.

" The average collections of the ten years preceding the Settlement, were Rs. 69,856, and the average collections since have been Rs. 71,174.

" The Settlement of an ilaqah, comprising twenty-seven Mouzahs, has already been revised by the Board of Revenue, and the Jumma lowered. The modified assessment fall at an average upon the cultivated and total malgoozaree area of the villages, according to their classification of the Settlement, as follows:—

	Total Malgoozaree.			Cultivation.		
	Rs.	A.	P.	Rs.	A.	P.
Kuthere, 1st Class,	1	2	4	1	4	4
Ditto, 2nd ditto,	0	12	9	0	14	11
Dhoomut, Khadir,	0	12	10	1	1	6
Bhoor,	0	8	2	0	12	8

" The average of the remaining villages of the Pergunnah, on the same classification, is as follows:—

	On Malgoozaree.			On Cultivated.		
	Rs.	A.	P.	Rs.	A.	P.
Kuthere, 1st Class,	1	4	11	1	9	4
Ditto, 2nd ditto,	1	0	1	1	4	0
Dhoomut, Khadir,	0	15	4	1	4	3
Bhoor,	0	11	11	1	1	7

" The difference on the rate of assessment between this and the adjoining Pergunnahs of Kote, which is superior to it; and Bisowlee and Sufasee, which, in the general character of its soil, Islamnuggur closely resembles, is very striking.

"In Islamnuggur, the Jumma of the late settlement fell on the Kuthere mouzahs of the first class, seventy-four in number, at an average upon the cultivated area of nearly Re. 1-10-0 per acre. In Kote there are only five villages, whose rate of assessment exceeds this, and five whose rates equal it. The seventy-four Mouzahs of Islamnuggur constitute in number, and amount of Jumma, more than half the Pergunnah; the ten villages in Kote not more than one-twelfth.

"The revised Jumma of Pergunnah Kote falls at an average on the whole Pergunnah of Re. 1-4-7 on the cultivated, and Re. 1-1-2 on the total malgoozaree area.

"In Bisowlee and Sutasee two classes of soil were assumed, and the assessment falls at the following rates:—

Bisowlee.	On Malgoozaree.			On Cultivation.			Sutasee.	On Malgoozaree.			On Cultivation.		
	Rs.	A.	P.	Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.
Kuthere, 1st Class, ..	1	3	9	1	6	7	Kuthere, 1st Class, ..	1	1	4	1	4	11
Ditto, 2nd ditto, ..	0	15	10	1	1	6	Ditto, 2nd ditto, ..	0	14	8	1	2	4
Whole Pergunnah, ..	1	1	5	1	3	7	Whole Pergunnah, ..	0	15	8	1	3	5

"The assessment of Ramdial's ilaqah remains as modified by the Board. The Jumma of the rest of the Pergunnah was Rs. 65,374. A rate of Re. 1-1-0 upon the total malgoozaree area of these Mouzahs, which I have assumed as corresponding with that of Bisowlee, Sutasee and Kote, gave me an assessment of Rs. 60,085, or Rs. 5,289 less than the former Jumma; a rate of Re. 1-4-6 upon the cultivated area gave an assessment of Rs. 58,502.

"Many of these estates have suffered severely under the pressure of their former assessments, and I was induced therefore to assume a standard somewhat lower than that given me by the rate on the malgoozaree area, which I should otherwise have taken as my Jumma.

"I assumed Rs. 6,500, or Rs. 1,000 more than that given by the rate as the amount of reduction to be granted, and proceeded to distribute it upon the Mouzahs, whose Settlements have already failed, or might be expected to fail, from their high rate of assessment. In doing so, I found the sum I had fixed upon still rather below what was required.

"The result has been a reduction upon the Kamil Jumma, as fixed at the settlement of Rs. 6,698. The revised Jumma of the whole Pergunnah, including Ramdial's ilaqah, is Rs. 67,476, falling at an average of Re. 1-1-6 upon the cultivated area, and 15 annas 10 pie upon the total malgoozaree area.

"The whole of the balances outstanding, up to the end of 1247 Fulsees, are recommended for remission. The revised Jumma have effect from 1248."

(Signed) W. TIMMINS.

(Copy.)

M. H. COURT,
Deputy Collector.

PERGUNNAH BISOWLEE

161.—The revision of Settlement of this Pergunnah was made by Mr. R. H. Clarke, in 1836-37. His Settlement Report, which is annexed, is so complete in its details, not only of the principles which guided him in making that Settlement, but also in its details of boundary, soil, population, &c. that there is little left to report on here.

162.—Since the Settlement, the following alterations have been made in the boundaries of the Pergunnah.

Two villages transferred to Pergunnah Sutasee; viz.:—

	Area.	Jumma.	Population.
Bhutanees,	168	190	317
Dhimurpoor,	251	255	170

And two villages transferred to Zillah Moradabad; viz.:—

Etaruh,	500	Not known.
Darnee,	500	"

163.—The Pergunnah now comprises 112 Mouzahs, covering an area as follows:—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
1131	7172	47726	5559	61588

164.—The population, according to a census made in 1847, being—

HINDOOS.		MUSSULMEN.		Total.
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	
27451	8817	2083	2002	40353

165.—In five instances, the assessment fixed by Mr. Clarke was revised by Mr. Officiating Commissioner Robinson; namely:—

Name of Village.	Jumma fixed by Mr. Clarke.	Revised Jumma.	Reduction.
Adpoor,	1050	911	139
Bhurtpoor,	2200	1801	399
Beedha Nagla,	1171	1001	170
Kooah Danda,	370	334	36
Goolureeah Yakoobpoor,	831	800	31

The Jumma of the Pergunnah now stands at Rs. 56,921.

166.—The estates are held as follows :—

Thakoor,	71
Aheers,	6
Kalutha,	2
Bukas,	2
Brahmins,	7
Musulmen,	19
Other Classes,	5
	112

zimpoor and Suhawur Sah.

169.—The town of Bisowlee, though of no importance, is of some note, having been the residence of Doondee Khan, one of the Puthan Chiefs, by whom it was greatly embellished, several handsome buildings, in a greater or less state of preservation, exist to this day in the town. About a mile outside the town stands a large Masonry Fort, built by him, and now the property of Messrs. A. and J. Donald. Bisowlee is now the seat of the Moonsiff, Tehseeldar and Thannah Offices.

170.—The principal Khurreef crop are Joar, Bajra, Cotton and Indigo. The soil of the Pergunnah is well adapted to the growth of Cotton, which is however of an inferior description, being coarse, and of a dusty colour: this may be owing to the seed. Indigo is extensively cultivated round about Bisowlee, where the Messrs. Donald have a factory, producing about 120 factory maunds of Indigo per annum. The principal Rubbee crops are Wheat, Gram, Barley and Tobacco.

171.—The Pergunnah is intersected by good roads, many of them made since the establishment of the one per cent. Road Fund. The principal are from Bisowlee to Budaon, Bisowlee to Bilsee, Bisowlee to Saheswan, to Chundowsee, and to Seondarah;—a cross road running from Bareilly to Chundowsee, runs through Luchmeepoor and Asufpoor, in the northern part of the Pergunnah.

172.—In 1806 A. D. nineteen estates, having an area of 15,637 square acres, were sold for balance of revenue, and realized Rs. 5,160. In 1808 A. D. one estate, Luchmeepoor, with an area of 2,136 acres, realized but Rs. 520: this is one of the finest estates in the Pergunnah, and it is said could not now be purchased for Rs. 18,000: this is nothing extraordinary. Land in every other Pergunnah has increased as much in value as in this. I mention this instance as a sample. Not one sale for arrears of revenue has taken place since 1808 A. D.

173.—Gunput Singh, proprietor of Nizamooddeenpoor Sah, has employed a youth, educated at the Bareilly College, to educate his sons, teach them the English language, &c., giving him, as salary, Rs. 12 per mensem. Besides this, the following are the number of Indigenous Schools in the Pergunnah :—

Number of Schools.	Description.	Number of Teachers.	Scholars.	Pay of Teachers per mensem.
8	Persian,	8	40	24 8 0
2	Hindee,	2	25	4 0 0
10		10	65	28 8 0

167.—The tenures of these, with the exception of seven Putteedaree villages, are entirely Zemindaree.

168.—The market towns are Asifpoor, Bisowlee Khass, Bissowmaen, Bhartpoor, Beedha Nagla, Luchmeepoor, Mohumudpoor Mace, Moa-

174.—There are three Thakoor Deowallahs in the Pergunnah.

175.—Mr. Clarke, in his Settlement report, seems to consider the Pergunnah might be improved by cutting water-courses between the three streams by which it is watered. The Arril waters the northern, the Sote the southern extremity. The soil between the two is high. The bed of the Arril is at a higher elevation than that of the Sote; its waters could, in consequence, be united with the Sote; but the Arril, during the dry months of the year, has little water in it. Were a water-course cut between the two, it might turn the Arril from the extremity to the centre of the Pergunnah; but there could not be a sufficiency of water to supply both. The Choeeah, except after rain, is all but dry.

176.—The Tehseeldaree of Bisowlee comprises three Pergunnahs,—Islamnuggur, Bisowlee, and Sutasee.

The following Table will show the strength of the Establishment, and the Percentage of charge on the Jumma.

Number of Officers.	Office.	Pay per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage.
1	Tehseeldar,	175	2100			
1	Peshkar,	35	420			
1	Wasil Bakee Nuvees,	15	180			
1	Seeah Nuvees,	15	180			
1	Dakhilla Nuvees,	10	120			
1	Araze Nuvees,	10	120			
1	Itlaq Nuvees,	10	120			
2	Qanoongoes,	40	480			
1	Tehveeldar,	15	180			
1	Purkayah,	10	120			
2	Mirdahas,	12	144			
1	Jemadar,	8	96			
1	Dufturee,	5	60			
30	Peons,	120	1440			
	Stationery,	20	240			
	Rent,	5	60			
		505	6060	132028	178201	Rs. A. P. 3 6 5

177.—The jurisdiction of the Thannah Police of Bisowlee extends over Pergunnah Sutasee. The Police Establishment is as follows :—

Number of Officers.	Office.	Pay per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage.
1	Thannadar,	30	360			
	Mohurrir,	8	96			
	Jemadar,	8	96			
	Mududgar,	5	60			
	Duffadar,	6	72			
20	Burkundazes,	80	960			
	Stationery and Repairs,	9	108			
		146	1752	74396	100216	Rs. A. P. 1 11 11½

To R. DAVIDSON, Esq.,

Commissioner of Rohilcund.

Sir,

I have the honor to submit for transmission to the Sudder Board of Revenue, the English and Persian Statements on the Settlement of Pergunnah Bisowlee, in the District of Budyoon.

2nd.—The work was completed in the month of February 1837, and I had hoped to have been able to forward the Statements to the Board in September last, but the disturbances that prevailed in Rohilcund in August that year, which demanded my undivided attention, together with continued ill-health during the hot season, and my subsequent removal through severe illness before the reports could be drawn out, have given rise to an unforeseen delay, which I trust will meet with indulgent consideration.

3rd.—The Pergunnah of Bisowlee is bounded on the north by Pergunnahs Nerowlee, Sihondarah, Serowlee of the Moradabad District, and a part of the Rampoor Jageer; on the south by the Kote Salbuhap and Sutasee Pergunnahs; on the east by the Sutasee Pergunnah and Aonlah, a Pergunnah of the Bareilly District, and on the west by Pergunnahs Sihondarah and Islamnuggur. It is watered by three narrow shallow streams, one of which, the Sote, is navigable for very small boats during the rains. That named the Aril sweeps round the Pergunnah in both a northerly and easterly direction. The second, called Sote, flows along the south-western boundary; and the third, the Chooeah Nuddee, flows for a few miles down the north-eastern boundary, when it joins the Aril and loses its name.

4th.—The high road from Budyoon and Furruckabad to Chundowsee and Moradabad, leads through the Pergunnah in almost a straight line from south to north.

5th.—The total area, which is of an irregular breadth and length by the revenue survey, contains ninety-eight square miles, three furlongs, six and half poles, or 62,973 square acres; the cultivated area is sixty-four square miles, five furlongs, three and a half poles, or 41,423 square acres; and the culturable area is seventeen square miles, five furlongs, two and a half poles, or 11,285 square acres; making a total of eighty-one square miles, ten furlongs, thirty-four poles of malgoozaree area, or 52,708 square acres. The village of Doogoon, the total area of which is 304 acres geographically, belonged to Sutasee, and has therefore been excluded from the settlement of Bisowlee, being transferred to the former Pergunnah, in conformity with the Board's orders of the 24th December 1833. Its ruqbah is included in the above data.

6th.—The general aspect of the area is a level plain in a state of high cultivation, with slight undulations, and some ravines caused by the periodical rains in the vicinity of the streams before mentioned, interspersed throughout with mangoe orchards. It appears to have been cleared and brought under cultivation at an early period, and more completely so than most of the other Pergunnahs of the District.

7th.—Although some glaring inequalities of the former assessment existed, the demand in the aggregate has always been moderate, the benefits of which have been experienced by the proprietary interests in the comparative freedom they have enjoyed from vexatious official interference, and alienation of their landed property by public sales; while to this circumstance may also be traced the exaggerated notion that prevailed of the Pergunnah's capacity to yield a large increase,—an opinion which, when exposed to the ordeal of a critical examination, was proved to be founded in error.

8th.—The former Jumma, with few exceptions, were the same as those assumed by Mr. Collector Batson in 1220, at the fourth Settlement, which appears to have been based on the estimated assets of the land under cultivation; and as at that period a great portion of the best soil had not been brought under the plough, and many villages were highly cultivated, while others with large areas were in a very backward state, striking instances of inequality of assessment necessarily soon followed.

1st.—Because the holders of the uncultivated good lands could afford to lease them at low rates; or if they cultivated their *Khood Kasht*, the capital and labour applied brought in a handsome return, their remuneration continuing to improve in the ratio of the increase of population and competition for land stimulated by low rates.

2nd.—As the new land was capable of producing food for many times, the number of individuals engaged in its cultivation, the price of agricultural produce, was reduced, which was the case throughout Rohilcund, from the operation of the same cause, more especially in Bisowlee, where, from the inland situation of the Pergunnah, no facilities of the export by water carriage are available, the people being exposed to an expensive land carriage of twenty-five miles to Chundowsee, the great Grain market of Rohilcund, before they can dispose of their surplus produce: and consequently the condition of these villages, whose cultivation pressed against the limits of their malgoozaree acres at the time of the fourth Settlement, was materially affected, and exhibited in a very unfavorable contrast with their more fortunate neighbors, the proprietors of which were enabled to make up for the fall in price by an extension in cultivation. A different scene however is now presented; no longer does new waste land to any extent, of a good quality, remain, and the Mouzahs of the whole Pergunnah are, I feel confident, practically placed on an equal footing with each other, every village being rather dependent for future improvement on the agricultural energy of its inhabitants, in forcing increase crops by the employment of an increased quantity of capital and labor on the soil already under culture, than on the cultivation of new land.

9th.—The Pergunnah comprises one town, formerly the residence of the Puthan Chieftain, Doondee Khan, from whom it took its name, and 107 Mouzahs (inclusive of Doogoon). It is divided into thirty-three single Villages and twenty-three small Talooqahs, of which the following is a detail:—

No. of Talooqahs.	No. of Mouzahs in each Talooqah.
12	2
2	3
4	4
2	5
1	6
2	7
Total, ... 23	76
	Add, ... 33
	Total, ... 109

N. B.—Three Villages were mapped off and entered as one number, in Tabular form No. I.

10th.—There are 8,412 houses, of which 973 are uninhabited, and 7,439 occupied.

District.	Population to Square Miles.
Meerut,	333
Muttra,	332
Bolundshehur,	237
Saharunpoor,	323
Humeerpoor,	132

The total number of souls is estimated at 30,000, or 6,000 families, which are thus divided:—Male adults 10,200, Female adults 9,600, Children of the both sexes, 10,200. These, if spread over the total area, will give 306 souls to the square mile,—a denser population than that of the adjoining District of Bolundshehur or Bundelcund, but less numerous

than that of Meerut, Muttra or Saharunpoor. Of the population, eight-ninth are of the Hindoo, and one-ninth of the Mussulmen persuasion.

11th.—This census was formed after the Settlement, when motives for concealing the truth were most probably allayed, and suspicion lulled. The Tehseeldar and Thannahdar proceeded separately in person through the Pergunnah, and each officer made out his own statement with the assistance of the Village Putwarees and Zemindars, checked by local enquiries: these accounts were on their receipt compared together, and after a personal communication with several of the proprietors and others, in whom I could place reliance as to the manner in which each statement had been compiled, with its probable approximation to accuracy or otherwise, I found my own estimate on the data before me. If two-thirds be deducted for women, (the lower castes only of whom engage in field labor) children, tradesmen, and non-operative agriculturists, the smallest number that can I think be safely assumed, it leaves 10,000 working cultivators, who will produce the revised Jumma at the rate of Rs. 5-13-6½ per man.

12th.—The principal *castes* are the Gour and Kutheriah Rajpoots, who compose about four-sixth of the inhabitants. A few Syuds, Sheik and Puthan families, with some Ahcers, and the usual number of subordinate classes found in each village community, compose the remaining portion. An air of comfort and cheerfulness seemed generally to prevail among the proprietors and proprietary cultivators, affording pleasing evidence of those blessings which are inseparable from an easy assessment. I wish it were in my power to continue this testimony to the condition of the lower orders or non-proprietary cultivators. They appeared to be still mere serfs, poor, and dependent on their Bunias for subsistence; but to have been depressed more from their rights having been left undefined, than from any other cause;—an evil that has been remedied in a substantial and efficient manner by the present Settlement.

13th.—The tenures are either purely Zemindaree, where the entire estate is possessed by two or three proprietors as a joint undivided property, who manage, and collect the public revenue, and have no other co-parceners or sharers possessing any heritable property in the lands or in its produce, or they are Zemindaree tenures partaking, to a partial degree, also of the putteedaree system; in which, although no partition of lands or separate allotment of assessment has been recorded, an heritable and transferrable property, with right of occupancy on the part of a number of sharers, who have never been admitted to engage for the payment of the Government revenue, have, from time to time immemorial, been recognized and respected by the Sudder Malgoozars, who are usually possessed of the greatest interest in the estate. In these instances the holdings of the subordinate sharers are generally,

though not always subjected to the payment of certain fluctuating rates varying from year to year determined by the principal of *baach*, in the enjoyment of which rights and interests they have been confirmed by the terms of the revised Settlement, responsibility being specifically declared at the same time to extend to the whole property in the event of a default, and a document admitting the above lien of Government on the part of all concerned has been duly registered in each Settlement Missil. There is no estate in which a regular division or separation of the land and holdings has been registered,—a condition which appears necessary to constitute a purely Putteedaree Mouzah.

14th.—If a general view be taken of the trade of the Pergunnah, it must be allowed that it is on the whole flourishing and progressive. The export trade consists principally of Wheat and Indigo, the former is sold at Chundowsee, distance from sixteen to thirty-five miles, the chief grain emporium in Rohilcund, where a constant effectual demand ensures a ready sale. The latter amounting to about 200 maunds, is conveyed by land carriage to boat on the Ganges, about thirty miles distant, and thence to Calcutta, and disposed of to purchasers for the English market.

The credit, capital, and enterprize of Messrs. A. and J. Donald, Indigo Planters, one of whom resides at Bisowlee, are producing a healthy activity among the inhabitants, and adding considerably to the improvement of the Pergunnah. The manufacturing skill and knowledge of their business enabled those Gentlemen to produce the best Indigo in the North Western Provinces in 1836. The returns are in coin, clothes, salt, &c. &c. &c.

15th.—The internal trade is trifling, except in Moondea, and one or two other villages of greater importance, where weekly markets are held, and a brisk trade on the system of partly barter and partly money payments carried on during and after the cuttings of the Spring and Autumnal harvests.

16th.—The long period which elapsed since the English survey in the years 1829-30 prevented any reliance being placed on the recorded quantities of cultivated and culturable areas in those estates which had not approached the limit of agricultural improvement prior to survey, while the registered qualities of soil were found to be so thoroughly incorrect, that I at once threw them aside. Not that I here intend to impute the slightest blame on the Surveying Officer, as I feel assured it must have been quite impracticable for that Gentleman to have made any correct classification of the soils of each estates, on the system on which the survey was then conducted. Errors also existed on the recorded proportions of malgoozaree and unculturable areas of some villages, and in two instances, in the total areas, which have been duly noticed in the detailed remarks.

17th.—The chief staple of the Pergunnah is Wheat, (but its system of agriculture embraces many other products to a limited extent,) Sugar, Indigo, Oil, Cotton, Rice, Bajerah, Joar, and several inferior kinds of farinaceous crops, with Tobacco and various garden vegetables. The average amount of revenue yielded by the Autumnal harvest may be estimated at six annas, and ten annas by the Spring harvest. Owing to the high

state of cultivation and nature of the soil, grass lands are uncommon, and horses, buffaloes, and sheep, are kept only in small numbers.

18th.—The soil of one class, Kuthere, is without any natural divisions of high or low lands to warrant a separate classification, though abrupt terraces producing elevation and subsidence are found on the banks of the three streams before alluded to, the low land of which undergoes in some places partial submersion during the rains. It has a brown looking colour, and is of a thirsty tenacious nature, with a subjacent sandy stratum affording abundant crops when supplied with a large quantity of water; but losing its energies if not supported by the agency of copious rain or irrigation. When dry, the surface soon hardens and cakes, and vegetation is burnt up, proving a want of power in the soil to appropriate atmospheric moisture,—a circumstance that may perhaps partly account for the small quantity of sugarcane grown. It varies in quality and productiveness in places, but not sufficiently to prove any obstacle to the determination of general average rates, or to render necessary the application of different names to specify its properties. In those instances where, on personal inspection, and from other sources, greater or less value and fertility of the land was discovered, either from its proximity to water-mixed soils or other local peculiarities, the causes were carefully sifted and considered, and the villages rated accordingly in the first or second class “Kuthere” (there being twenty-nine of the former and seventy-nine of the latter,) the only distinction that it was found necessary to observe. It will here be perceived that no classification was made of *soils* in each village, but that the villages were classed both with reference to locality and due advertence to the general superior or inferior quality of their soils. The name “Kuthere” is recognized throughout the Pergunnah; it is a definitive term, and intelligible to the poorest ryot; and it appeared only over-straining a good principle to attempt any nicer classification which would have caused almost certain complexity and confusion. The simplest arrangement has, I believe, been adopted, that could be arrived at on sufficient data.

19th.—Having classified the villages on the above principle, my next step in forming the Settlement was to ascertain fair average rates for the two classes of villages into which I had divided the Pergunnah. Good information was acquired on this head from the rents being paid throughout, with some few exceptions, in money; the rates of the same kind of soil in Pergunnahs Kote Salbuhan and Islamnuggur, with other miscellaneous Mouzahs which adjoined the boundaries, were ascertained; putwarees’ papers and summary suits were analyzed and examined; the rates common for ten years in estates of each class that were generally acknowledged to be fairly assessed were collated and compared; the native Revenue Officers and agricultural classes were freely and confidently communicated with; the data afforded by the Settlement proceedings of my predecessor, Mr. Brown, were liberally resorted to, and a variety of facts deduced and drawn from authentic sources, added to the above evidence, gave effectual security against any material error.

20th.—The average rent assumed on the Kuthere land of Kote Salbuhan is Rs. 2-6-5 throughout.

	Rs.	A.	P.	
The Revenue-rate assumed is	1	1	2	on Malgoozaree.
Ditto ditto ditto,	1	4	7	on Cultivation.

The average rent-rates on the first and second class Kuthere lands in the adjoining Pergunnah of Islamnuggur are—

	Rs.	A.	P.	
Per Acre,	2	9	7	on the 1st Class.
Per Acre,	1	12	10	on the 2nd Class.
The Revenue-rate assumed on the first Class is per Acre, ..	1	5	0½	on the Malgoozaree area.
Ditto ditto ditto ditto,	1	9	0½	on the Cultivation.
The Revenue-rate assumed on the 2nd Class,	1	0	1	on Malgoozaree area.
Ditto ditto ditto,	1	3	8½	on Cultivation.

21st.—I have already stated that there are twenty-nine Mouzahs of the first class; their total acre is 26,313 square acres, of which 853 square acres are Lakhiraj, and 3,501 square acres barren waste = total 4,354 square acres. 2,785 square acres are culturable, and 19,174 square acres cultivated; making a total malgoozaree area of 21,959 square acres. The rent-rate assumed on this class is Rs. 2-6-5 per acre on the cultivation, and the average revenue-rate deduced according to the Board’s rules would be Re. 1-5-10 on the cultivation. The revised assessment is Re. 1-3-8½ on malgoozaree area, and Re. 1-6-7 on land under cultivation.

The rent-rate assumed on the 2nd class is as follows:—

	Rs.	A.	P.	
Per Acre,	1	12	10	on Cultivation.
Average Revenue-rate deduced by the Board’s rules is per Acre, ..	1	1	6	on Cultivation.
The rate of the Revised Assessments is per Acre,	0	15	10	on Malgoozaree area.
Ditto ditto ditto,	1	1	6½	on land in Cultivation.

The second class comprises seventy-nine Villages, the total area of which is 36,779 square acres; of this 1,253 square acres are Lakhiraj, and 3,718 square acres barren waste, = to 4,971 square acres. 3,095 square acres are culturable waste, and 28,713 square acres cultivated; making a total of 31,808 square acres malgoozaree area.

22nd.—A close approximation will be perceived between the rates assessed on the *malgoozaree areas* (which I have invariably considered as the main point to be kept in view) of the above three Pergunnahs, and as I am well informed of the feelings of the people in favor of the revised Settlement, and its practical working in the two Pergunnahs (more particularly in Kote Salbuhan) that have been brought forward for comparison, the coincidence will I hope be considered as satisfactory.

23rd.—The classification and rates being arranged and determined on, I then proceeded to apply those rates to the whole malgoozaree and cultivated areas of each class of villages, comparing the aggregate amount yielded with the former Jumma of the Pergunnah. I next enquired how the former revenue had borne on the resources of the Pergunnah. The receipts and balances of past years, public sales of landed property of revenue defaulters, private transfers and mortgages, were carefully ascertained. The Tabular Form No. 1, also afforded an useful index for exposing not only inequalities, but the general pressure or otherwise of the Assessment, as compared with the contiguous Pergunnahs; and when to these and other sources of information was added the private opinion of all classes with whom a free and easy personal intercourse was kept up, I was able to determine with confidence a gross Jumma, and the propriety of a moderate enhancement of the former demand.

24th.—In fixing the limit of the increase, my judgment was influenced by the approach of the Pergunnah to the verge of its agricultural prosperity, and the consequent fear of decay and exhaustion from the system of over-cropping (the soil not being of a quality heavy enough to admit of constant culture without losing its fertility,) the evils of which have been exemplified in the contiguous Pergunnah of Kote Salbulan, where of late years the crops have materially fallen off, and the land decreased in its productive powers from not being allowed occasionally to lie fallow. The reason for the prevalence of this practice seems to exist in the constitution of things in the present backward state of agricultural knowledge in this country, the growers growing as much as they can, with the view of present gain, until a diminution of produce and profits caused by decreasing fertility in the land compels them to abandon the over-worked soils for a period, to admit of their recovery,—an uneconomical process, which has been the cause of much deterioration in the District, especially where the soils are light. It was necessary therefore to avoid placing too much reliance on future capabilities. The proprietors also appeared to possess a just and legitimate claim to a share in the profits of their industry. The force of habit and opinion had regulated for many years past the rate of profit necessary to enable them to live in a respectable manner; their energies had dilated the resources of the soil to their present flourishing condition. From a tract of thick Dawk jungle, they had converted it into a large corn field, and it therefore appeared to me an essential duty to be careful that the revision of Settlement should not operate as a check on their career of improvement.

25th.—Having compared the former Jumma with that intended to be fixed in the aggregate, and satisfied myself with its fairness, I then proceeded to apportion it on the two classes of Mouzahs. The demand which fell in detail on each estate was used only as a guide to assist in arriving at a fair Jumma; in every instance it was compared with the former Assessment where material variations existed. Enquiries were renewed, errors detected and rectified, and after all tangible doubts were removed, the Jummas were given out with reference to the social condition of the people, and the past and present state of each Mouzah, with an average deduction of about thirty-five per cent. on the assumed rental. Those who objected to the demand were allowed full opportunity for stating the causes of their dissatisfaction, which were openly canvassed in the presence of the congregated proprietors, and in a few instances, where satisfactory reasons were adduced, and the appeal seemed supported by the general voice of the people, the revenue assessed was altered; in most cases the grounds of objection were answered and the terms acceded to; nor is there a single estate in which the Settlement has been concluded with a farmer to the exclusion of the proprietor or mortgagee.

26th.—The state of the proceedings having been completed, *i. e.* the Jummas defined wherever a village was held by a community of proprietors holding joint heritable and transferrable property in the same; the sharers were summoned, and agents appointed for the management and collection of the revenue with their consent and approval, a *razeenamah* being taken from all parties concerned, in which the interests and share of each, and every one of the proprietors collectively were distinctly declared to be held answerable for any default of the *Malgoozars*. The names of non-engaging parcners were carefully recorded in the "*Biswahdaree Phauta-*

bundee" registered subsequent to Settlement,—a registry founded on the basis of actual possession, and containing specific details of the names of the *Sudder Malgoozars* and sharers, the amount of each individual share in *biswahs*, and the quantity of seer land held by each parcnener, with a brief statement of the conditions and limitations under which the proprietors hold their lands, whether free of rent, subjected to a fixed rent, or on the principle of *baach* system. The rates payable, with the quantity of land occupied by other cultivators, resident or otherwise, were registered in a separate record called the "*Assameewar Phautabundec*." The principle observed by the proprietors in arranging these matters was generally—as the whole assets are to the whole gain or loss, so is each co-parcnener's share in the village to his share of the gain or loss. As has already been remarked in paragraph 13, there is no instance of any *Putteedaree* village in which a partition of lands and holding has been effected and recorded, nor any estate where purely *Bhyacharah* tenures prevail, and in which the lands are exclusively occupied and cultivated by proprietary cultivators.

27th.—In the simple *zemindaree* tenures, after *durkhasts* were taken, a rent-roll was demanded from the individuals engaging, distinctly specifying the land occupied or held by each cultivator, and the rent demandable from him forming a complete *Khusrah*; this register of rights was drawn up by the *Putwaree*, aided and controlled by the proprietary and cultivating interests. Few disputes arose that were not adjusted by open verbal discussion; but when the matter would not admit of this summary process, a *punchayet* was appointed, and the question tried and fairly adjudicated.

28th.—I would here beg to submit that I derived the greatest advantage by enforcing the immediate register of this record on all parties. It was in the first place obviously a great object to secure such an important document at a time when the subject was fresh, and the large proportion of the agricultural community were present, for they not only acted as an efficient check against unfair dealings, but afforded the means of all disputed questions being at once arbitrated and decided upon,

Total Number of	Admitted as Malgoozars in	Adjusted by Razeenamah or recognized as coparceners in the records registered after Settlement.	Referred to the Civil Court.	Summarily dismissed.
Cases.	Cases.	Cases.	Cases.	Cases.
98	2	11	28	52

thereby avoiding subsequent delay and procrastination, which created much evil in some instances in other Pergunnahs. This miscellaneous duty, as also investigation of claims (as noted in the margin) of sharers brought forward prior to Settlement, has been conducted without any

appeal in a very efficient and satisfactory manner, by the *Nawab Mahummud Syud Khan*, the Native Deputy Collector.

29th.—The total quantity of resumed unregistered *Maaffee* land is 536 acres, of which 404 acres are under cultivation, and 132 acres culturable: the amount of rent taken at an estimate is Rs. 1,040-10-0. The tenures are, with some few exceptions, divided into small parcels of from three acres to ten acres, and have been taken into account in assuming the Jumma of the Mouzahs to which they respectively belong. Wherever the resumed land was in excess, an easy and light assessment has been fixed. No instance occurred of the resumption of an entire village, and wherever small patches of ground were resumed, the *Lakhirajdars*, if occupying and cultivating the soil, have been secured in possession, and their rents duly adjusted.

30th.—The quantity of unregistered land relinquished is 175 acres, consisting principally of small parcels of ground appropriated to religious purposes, gardens, groves, &c., of which fifty-three acres are under the plough, the rent, if assessed, would amount to Rs. 190-8-0, of which a detailed report has been furnished.

31st.—Among them are some Lakhiraj lands held by Nawab Neeamutoollah Khan, and other descendants of the late Nawab Doondee Khan, (who was relative of Hafiz Rahmut Khan, and late ruler of a part of Rohileund, including the Pergunnah of Bisowlee) which for special reasons, and with reference to the letter of the Sudder Board, dated 15th December 1835, have been excluded from assessment.

32nd.—The right to hold the lands in question exempt from the payment of revenue has never been recognized by Government, but they have, since the cession, been left in the undisturbed possession of the present occupants, members of Doondee Khan's family.

33rd.—By a letter, dated 1st May 1812, from Government, and a letter from the Secretary to the Board of Commissioners, of the 29th of that month, it appears that in the District of Barcilly the lands held by the descendants of Nawab Hafiz Rahmut Khan after the cession, were exempted from resumption or assessment; but no orders seem to have been ever passed with respect to the Maaffee possessions of the family in the late Saheswan, now Budyoon District.

34th.—The lands are divided into small portions, and situated at considerable distances from each other; each parcel actually in possession of the claimants has been carefully ascertained by a measurement conducted under my supervision, of which the following Abstract Statement exhibits the results:—

Name of Town or Village.	Quantity of Land claimed in Acres.	Quantity of Land in possession of the claimant by present measurement in Acres.
In Bisowlee,	77	93
„ Huthsa,	14	17
„ Hutowra,	46	28
„ Banjureca,	6	6

35th.—The land is principally occupied by mangoe trees, gardens, dismantled old brick buildings and burial grounds; there being only twenty-two acres of cultivation.

36th.—The Nawab possesses no sunuds of any description in support of his claim; but he accounts for his not having them, by the circumstance of the Government of the country being formerly held by his ancestor Doondee Khan, whereby the descendants of the family were left unprovided with the necessary documentary proofs to establish the validity of their right of succession to such property.

37th.—Strictly speaking, the rules regarding escheats might I think be considered applicable to such lands, houses, gardens and orchards. And if that law were

enforced, they would be liable to confiscation to Government; but the rigorous execution of the law, in this particular instance, would not I think be expedient, and would certainly be viewed by the family and extensive connections of the late Doondee Khan as a harsh and severe measure, while the benefit to Government, in point of revenue, would be almost next to nominal. I would therefore beg to submit a recommendation that the present occupants or holders, and their heirs, be maintained in the possession of the lands ascertained to be held by them by the recent measurement exempt from the payment of the revenue.

38th.—The only other means of support enjoyed by Neeamutoollah Khan is, as far as I have been able to ascertain, a pension of Rs. 75 per mensem from Government, which is shared between himself, two brothers, and the widow of another brother, deceased, with their families, and a share in 1,184 beegahs of Lakhiraj land in the District of Moradabad.

39th.—No investigation has been made into the claims of registered Maaffeedars; they have been allowed to lie over, and their lands included in the Settlement under the head of Minhaee; but an order has been passed for recording the quantity of land actually in the possession of the Lakhirajdars, on the backs of their petitions.

40th.—The average Jumma of the fourth Settlement amounted to Rs. 45,968. The average nominal demand of the past five years was Rs. 56,595, from which, if Rs. 1,859 be deducted on account of unconfirmed reduction of assessment under Regulation VII. of 1822, the real average demand will stand at Rs. 54,945. The average rent-rate of assessment during the same period was—

	Rs.	As.	P.
On the Malgoozaree area	1	0	6½
On Cultivation area	1	5	1

The proposed Jumma is Rs. 58,601, exclusive of Mouzah Doogoon, (No. 80 in Tabular form No. 1,) transferred to Sutasee, the Jumma of which is Rs. 209, exhibiting an increase, partly nominal, of Rs. 3,865—Rs. 612-11-0 the estimated revenue at average deduced rates of the resumed unregistered lands (*vide* paragraph 28), leaving the actual increase of the demand, Rs. 3,252-5-0+209=3,461-5-0.—Included in the Jumma of the revised Settlement is a quit rent of Rs. 50 per annum, paid by Messrs. A. and J. Donald, for the old fort of Bisowlee, and the ground attached to it sold under the orders of Government, dated 17th March 1839; the total extent of land amounts to sixty-seven acres, which was written off in the Statistical accounts of the Revenue survey as barren waste. About forty-eight acres are now cultivated with indigo, garden vegetables, &c. &c. With reference to the condition on which the property was disposed of to the above Gentleman, the original assessment fixed by Government has not been altered.

The rate of Assessment under the proposed Jumma is—

	Rs.	As.	P.
On the Total area,	0	14	10½ per Acre.
On the Malgoozaree area,	1	1	5 „
On the Cultivated area,	1	3	6½ „

The total amount of cultivation by the Revenue survey in 1829-30 was 41,423 acres, and the present estimate is 48,114 acres, inclusive of Mouzah Doogoon, being an increase of 6,691 acres in seven years, which explains the cause of the reduction of the rate of the proposed Jumma on the cultivated area, notwithstanding the increase assumed.

41st.—In conformity with the spirit of the instructions of the Board's letter, dated 13th June 1834, throughout the Pergunnah parcels of land have been set apart for the maintenance of the Village Police, averaging six acres and a fraction for each watchman; in addition to the trifling perquisites in common usage which have not been interfered with. Arrangements have been made for defining and fixing the boundaries of each Jagcer, the whole, when completed, to form a book of reference, signed by the Zemindars, Putwarees and Watchmen of each Village, and finally by the Tehseeldar and Qanoongoes. The great superiority of this system of remuneration over that of monied stipends seems scarcely to admit of a question :—

1stly.—It sets at rest for ever the constant disputes arising about the payment of the monthly wages, and renders unnecessary, vexatious interference of the Police, for levying from the Zemindars the salaries fixed for their support, usually accompanied with extortion from one party or the other.

2ndly.—It affords complete security to the village for receiving a fair compensation for their vigilance, thereby holding out the best inducement to good behaviour.

3rdly.—It creates a permanent attachment on the part of the Village Police to the interest and welfare of the community.

4thly.—While it adds considerably to the respectability of the watchmen, it releases them from too great a dependence on the caprice and will of the Zemindar, who is often found abusing his influence and authority over them.

42nd.—In the villages noted in the margin no owner's name has been recorded

ESTATES IN WHICH NO PROPRIETORS' NAME WAS RECORDED HOW SETTLED.	
Number.	Number in Tabular Form No. IV.
1	Becharoopoor, ... 30
2	Muthupoor, ... 40
3	Hashumpoor, ... 60
4	Jooglaypoora, ... 65
5	Futtoollapoor, ... 79
6	Keechukpoor, ... 95

since the cession of Rohilcund province, and they have now been settled with the old farmers in the capacity of Zemindars, whose proprietary right seemed to be established by long residence and possession, and whose claims were not disputed.

The refusal to recognize their right would have only operated as an impediment to improvement, while there appeared to be no legitimate or sound reason for excluding them any longer from the privilege to which they have now been admitted. If I have exceeded my powers, the necessary remedy can be applied.

43rd.—In the Talooqahs the plan of allowing the Talooqdars to distribute and apportion the Jumma on the separate Mouzahs has been avoided, and the allotment of revenue on each estate has been fixed with reference to its individual means and resources.

44th.—The Mouzahs noted in the margin were settled under Regulation VII. of

VILLAGES SETTLED UNDER REGULATION VII. OF 1822.	
Number.	Number in Tabular Statement No. IV.
1	Bejouray, ... 8
2	Paharpoor, ... 12
3	Sherampoor, ... 55
4	Asufpoor, ... 57
5	Doondpoor, ... 190

1822. In every instance, excepting No. 97 in Tabular Statement No. IV., the Jumma fixed under the provisions of that enactment have been upheld for the whole term of the Settlement. In the Mouzah alluded to, special reasons existed for modifying the assessment from the first year of the revised Settlement, on which a separate report has been submitted for orders.

45th.—There are no canals or watercourses cut for the purposes of irrigation in the Pergunnah, and wells, owing to the sandy substratum before mentioned in paragraph 18, are less common than in many other parts of the District. By irrigated lands, I have been here led to understand those prepared for the cultivation of garden vegetables, tobacco, &c. on a system of rotative husbandry, entirely dependent on artificial irrigation, in contra-distinction to cereal and other articles of culture, which are usually more dependent on periodical rains, though they may be raised also by artificial irrigation. The extent of the former description of land is trifling, except in Bisowlee Khass, where it exceeds, owing to accidental fertility caused by the mixture of pulverized ruins of old brick buildings,—a circumstance which renders the soil peculiarly well adapted for the cultivation of Tobacco. No separate classification of the irrigated lands therefore appeared necessary, but wherever they have been found in excess, they have been taken into calculation.

46th.—Owing to the nature of the soil, which has been before explained (in paragraph 18) the Kuthere lands have suffered more severely from the late severe drought than any other part of the District; and it appears highly deserving of consideration whether watercourses might not be established between the three streams by which the Pergunnah is watered. The difference of the levels have not, I believe, ever been determined, but as far as I am able to form an opinion, there appears to be no reason for assuming that their variation, or nature of the currents, would offer any great obstacle to such an undertaking. If this work could be effected, the capital of the Pergunnah would be materially augmented, industry stimulated, and much misery, in seasons of drought, prevented.

47th.—The Pergunnah, in common with other parts of Rohilcund, has suffered from a malignant and fatal fever, and several villages have been half depopulated. The deaths, as far as they could be ascertained, amount to 6,443, from the commencement of 1835, to April 1837. There is no stagnant water or marsh to generate miasmata, and the origin of the disease does not yet appear to have been detected.

48th.—There are six Hindee Patsalas, at which thirty-nine boys are instructed in reading, writing, and arithmetic, and seven Persian Schools, where thirty-five children are taught to read and write.

49th.—The statement noted in the margin will be found to embrace the information required regarding the balances of the past

Total amount balance of past 5 years.	Reduction of Settlement.	Recoverable.	Recommended for Remission.	Average recoverable balance of past 5 years.
Rs. A. P. 9213 12 0	Rs. A. P. 7238 0 0	Rs. A. P. 1422 0 0	Rs. A. P. 453 12 0	Rs. A. P. 284 0 0

five years, a large portion of which is nominal, being the difference between the recorded and revised Jumma of estates. The necessary arrangements have been made for the liquidation of the amount recoverable. There are also some small items of Tuccavee, amounting to Rs. 350, for the recovery of which engagements have been taken from the defaulters.

50th.—The total quantity of seer lands amounts to 4,842 acres, of which 3,576 acres are held by proprietors, and 1,266 acres by their brethren, being in the aggregate a little less than one-tenth of 47,893 square acres: the whole cultivated area.

51st.—In conclusion, I would beg to submit that, throughout this report, it has been my aim and object to adhere as far as possible to facts and proofs, without digressing into speculative matters, and to lay before the Board, in a digested form, as concise a view as I was able, of the broad principles, by which I was governed, and the method in which the details of their system of Settlement have been worked out, which it will be unnecessary for me in future to repeat, I cannot at the same time but feel aware of the length of this report, as also of several of the miscellaneous remarks on the Village Statements, but I trust that the circumstances of my having never been before employed on Settlement duty will be admitted in extenuation of this or any other small errors into which I may have fallen. I will only add that the people appeared well satisfied with the Settlement, that the registered rent-rolls, recorded after fixing the Jumma, in most instances confirm the propriety of the assessment assumed, and that as far as I am aware, only one petition of complaint has been preferred against any act connected with the Settlement, on which the Board considered it unnecessary to pass any order.

(True Copy.)

(Signed) M. H. COURT,

Deputy Collector.

PERGUNNAH SUTASEE.

178.—The word Sutasee means 87; and it is related that in the time of Akbar, the country was first measured and divided into Pergunnahs, and the Village boundaries were also defined; that this Pergunnah, containing eighty-seven Villages, was from that time called 'Sutasee.'

179.—The Pergunnah is bounded on the north by Pergunnah Bisowlee; on the east by Pergunnah Aonlah, Zillah Bareilly; on the west by Bisowlee and Kote Salbuhan; on the south by Kote Salbuhan.

180.—At the time of Settlement, one Village, Dogaon, was annexed from Pergunnah Bisowlee. Since the Settlement, the following are the changes that have taken place in the boundaries of the Pergunnah:—

Six estates have been transferred to Zillah Bareilly; viz.—

Name of Village.	Area.	Jumma.
Munownah,	1839	1194
Noorpoor,	737	650
Goolalee,	618	451
Kuntree Jajupoor,	875	550
Munpoorah,	237	200
Bijay Nugla,	231	180
Total,	4537	3225

181.—Twelve estates have been received from Pergunnah Aonlah, Zillah Bareilly, two from Bisowlee; viz.:—

Name of Village.	Area.	Jumma.	Population.
Bheekumpoor,	139	116	110
Bhowaneepoor,	488	156	377
Bugreir,	1514	1172	1204
Oodeepoor,	414	258	114
Atooar,	421	601	434
Alhooah,	372	259	205
Baroe Amanoolahpoor,	1636	1305	503
Bakurpoor,	488	500	358
Kurenjee,	578	440	159
Kusair,	1398	1145	532
Moondeeah,	906	725	334
Hurnathpoor,	416	600	223
Bhutancee,	168	190	317
Dhimurpoor,	251	255	170
Total,	9189	7722	5040

From Zillah Bareilly.

From Pergunnah Bisowlee.

182.—The Pergunnah now comprises ninety-three Mouzahs, covering an area of 55,335 square acres, which are thus divided according to the Settlement returns:—

<i>Rent-free.</i>	<i>Barren.</i>	<i>Cultivated.</i>	<i>Culturable.</i>	<i>Total.</i>
1731	7079	36352	10173	55335

183.—The population of the Pergunnah is as follows:—

<i>HINDOOS.</i>		<i>MUSSULMEN AND OTHERS.</i>		<i>TOTAL.</i>
<i>Cultivators.</i>	<i>Non-Cultivators.</i>	<i>Cultivators.</i>	<i>Non-Cultivators.</i>	
22587	6449	2855	2152	34043

184.—The Estates are held as follows:—

Thakoors hold	55	Estates.
Kaiuths,	17	"
Mussulmen,	9	"
Mussulmen and Thakoors in partnership,	7	"
Other Classes,	5	"
	93	Estates.

185.—The tenures being—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Bhyacharah.</i>
74	13	1	5

186.—The only river is the Sote, which flows along the southern extremity of the Pergunnah. Numerous jheels, some of them of considerable extent, afford ample irrigation when required.

187.—The market towns are Bujreir, Sydpoor and Wuzeergunge. The latter is a somewhat large grain mart. The grain is purchased by the Bunneahs of the village, who send it thence to the Ganges, for transport to Futtehghur and Cawnpore.

188.—The following are the Schools, number of Scholars, &c. in the Pergunnah:—

<i>Number.</i>	<i>Description of Schools.</i>	<i>Teachers.</i>	<i>Scholars.</i>	<i>Pay of Teachers.</i>		
				<i>Rs.</i>	<i>As.</i>	<i>P.</i>
9	Persian,	9	51	25	8	0
5	Hindee,	5	34	11	0	0
14	Total,	14	85	36	8	0

189.—The two principal roads are, one from Budaon to Bisowlee, the other from Aonlah to Bilsee: these intersect each other at Wuzeergunge.

190.—The Pergunnah was surveyed in 1829-30 by Captain Bedford. The revised Settlement, under Regulation IX. of 1833, made by Mr. Clarke in the early part of 1837. Sutasee is very similar to Bisowlee in its soil and past conditions. The classes of the people are also the same as in the former Pergunnah. In consequence of this, the classification of Villages into first and second class Kuthere was made, and the same rent-rates were assumed in this as in the Bisowlee Pergunnah. Mr. Clarke's Settlement report is appended to this; I need not therefore enter into further detail of the method by which the Settlement was revised.

191.—In 1806 A. D., four estates, comprising an area of 13,413 acres, were sold for balances of revenue, and realized but Rs. 341. The assessment of the fourth Settlement fell very light on the Pergunnah, and no transfer of estates for revenue balances has taken place since 1806 A. D.

192.—The cultivated area, as measured at the survey, amounted to 28,183 square acres. At the Settlement, the area was estimated as 30,599 square acres. By the Putwaree's papers for 1256 Fuslee it had risen to 38,790 acres.

193.—In one instance, Mouzah Nuwudah, Pergunnah Register No. 88, the terms of the Settlement made by Mr. Clarke were revised by the Officiating Commissioner, Mr. F. H. Robinson, and the Jumma reduced from Rs. 255 to 201.

194.—The revenue and police charges on this Pergunnah have been given in the Bisowlee report.

To J. DAVIDSON, Esq.,

Commissioner of Rohilcund.

SIR,

I beg to submit for transmission to the Sudder Board, the English and Persian Statements noted in the margin, on the revised Settlement of Pergunnah Sutasee, in the Budyoon District.

1. Statements Nos. II. and III. English and Persian.
2. Pergunnah Statements, Nos. IV. and III.
3. Statements of Village Police.
4. Ditto of Maul Balucoe.
5. Ditto unregistered Lakhiraj Lands exempted from assessment.
6. Ditto Ditto resumed.
7. Copies of Persian Roohakarees.
8. Alphabetical List of Villages.
- 9, 10. Missils, complete.

2nd.—The Pergunnah of Sutasee was invaded, overrun, and colonized by the Puthans, in common with other parts of Rohilcund. It is bounded on the north by Pergunnahs Aonlah of the Bareilly and Bisowlee of the Budyoon Districts; on the south by Pergunnahs Oojhance and Budyoon; on the east by Aonlah aforesaid, and on the west by the Sote stream.

3rd.—The only running water at the command of the people is the Nuddee above-mentioned, on the western boundary.

4th.—The high roads to Chundowsee and Moradabad, from Budyoon, intersects the Pergunnah at the village of Wuzeergunge, No. 53 on the Map, running almost due north to Bisowlee Khass, eight coss distant.

5th.—Having already entered fully, both into the principles and details of the method by which the Settlement of Pergunnah Bisowlee was revised in my report of the 9th ultimo, it appears unnecessary to trouble the Board with a repetition of the same in the present note.

6th.—The remarks on the general aspect of the area of Pergunnah Bisowlee; the moderation and inequality of the former assessment; its agricultural products, census, and mode in which it was taken; castes, &c. &c., are all strictly applicable to Sutasee.

7th.—The structure and quality of the soil was also found to bear a close affinity to that of Bisowlee, and being thus identified, a classification of villages has been made into first and second class Kuthere, with the same assumed rent-rates as in the Pergunnah.

8th.—The length and breadth of the Pergunnah varies, spreading at some parts to ten miles and twenty-six poles, and contracting its dimensions to two furlongs seven and a half poles at others; the surface presenting a highly cultivated level plain, excepting in the vicinity of the Sote, where in some places the soil has received a tilt, leaving patches of low land, on which rice crops are usually grown. Numerous mangoe groves, with a few babool, neem, and peepul trees, are agreeably scattered over the area.

9th.—It contains (including Jumalpoor No. 66, and Dooragoon No. 69, transferred from Bisowlee, from their being geographically situated in Sutasee) 78 square miles, or 48,838 square acres; the cultivated area being 47 square miles, or 30,599 square acres, and the culturable, 11 square miles, or 7,147 square acres, making in the aggregate 58 square miles, or 37,746 square acres Malgoozaree area.

10th.—The total number of Asilee Mouzahs amounts to seventy-four, which are divided into thirty-three single Estates, and fourteen small Talooquahs; viz. :—

Talooquahs,	7 of 2 Mouzahs.
Talooquahs,	3 of 5 „
Talooquahs,	4 of 3 „

The following account exhibits, in a succinct view, their classification, and the relative proportion of the areas of each class :—There are twenty-three estates entered in the 1st class Kuthere, comprising 20,258 square acres, of which 1,705 square acres are Lakhiraj, and 3,409 square acres barren waste; 2,672 square acres culturable, and 12,472 square acres cultivated; the total Malgoozaree acres being 15,144 square acres. The rent-rate assumed on the cultivation is Rs. 2-6-5 per acre; the deduced revenue-rate, Re. 1-7-2½, and the rate of the revised assessment Re. 1-1-0¼ on the Malgoozaree area; Re. 1-4-11½ on cultivation.

11th.—In the second class there are fifty-one Villages, their total area being 28,580 square acres, of which 2,211 square acres are Lakhiraj, and 3,767 square acres barren waste; the culturable land 4,575 square acres, and the cultivation 18,127 square acres; making 22,702 square acres of Malgoozaree area. The rent-rate assumed is Re. 1-12-10 on the cultivation. The deduced revenue-rate Re. 1-1-0, and the rate of the proposed Jumma, Re. 0-14-8 on the Malgoozaree area; Re. 1-2-4 on cultivation.

12th.—The English Revenue Survey was accomplished in 1829-30, since which period a considerable extension of cultivation has taken place, the present estimate being 30,599 square acres, while the extent in 1829-30 was 28,183 square acres, showing an increase of 2,406 square acres in seven years. The recorded proportions of cultivated and culturable areas could not consequently be relied upon, wherever a village had not, at the time of measurement, reached the limits of its arable area. In the Mouzahs noted in the margin, discrepancies existed in the recorded total areas; those of Nos. 49 and 74 being more, and that of No. 71 being less than are entered in the Statistical accounts. For further particulars, see the Explanatory Remarks.

13th.—The resumed unregistered Maaffee lands amount to 532 acres, of which 432 acres are cultivated, and 100 acres fit for cultivation. Their Jumma, taken at an estimate, would be Rs. 666. They consist chiefly of small parcels of land scattered over the Pergunnah, and occupied by individuals possessing no right or title whatever.

14th.—There are twenty-nine acres of unregistered lands exempted from assessment, which are *bond fide* appropriated to useful and religious purposes: these lands would yield Rs. 38-3-0 at an arbitrated rent. No claims of registered Maaffedars have been interfered with.

15th.—There are eighty-one Chowkeedars entertained as Village Police, holding 443 acres of Jageer lands, yielding at average rates Rs. 927-8-0. Pecuniary stipends, to the amount of Rs. 72, are also paid by the Bunias and other householders of Wuzceergunge No. 37, and Huthia No. 60; making a total of Rs. 999-8-0.

16th.—The road fund, with the consent of all parties, has been established, the proceeds of which, at the rate of one per cent., amount to Rs. 371 per annum.

17th.—The number of houses may be estimated at 7,000, thus: 6,500 occupied, 500 untenanted. The total population is calculated at 21,344 souls, and 4,268 families, of which 7,478 are male adults, 6,688 female adults, and 7,178 children of both sexes. The proportion of Hindoos is 17,750 to 3,594 Mussulmen. If two-thirds of the total population be deducted for those not actually employed in field agriculture, the result shows that the remainder or working Cultivators produce the revenue at Rs. 5-3-4 per man. The castes are the same as those in Bisowlee, principally Gour and Kutheireah Rajpoots, with a few scattered families of Mussulmen and subordinate classes.

18th.—It is known as a familiar fact that the former assessment, as in Pergunnah Bisowlee, was in the aggregate decidedly moderate, but not to such a degree as to warrant any sudden large increase of revenue being demanded, for although the proprietors and their brethren were in easy circumstances, their profits were not much more than sufficient to enable them to live comfortably, and meet the demands of the Government against them, without falling into arrears or getting into other difficulties. At the same time, from those causes which have already been stated in paragraphs 7 and 8 in the report on Bisowlee, namely, the assessment of 1220 Fuslee having been leased on the amount of cultivation alone, when the Pergunnah was in a very backward condition, great inequalities of pressure were necessarily found to prevail, which continued to cause an increasing dissatisfaction among the Malgoozars.

19th.—The Jumma before the last general Settlement in 1220, inclusive of the revenue of Doogoon and Jummalpore, transferred from Bisowlee, stood as noted in the margin. In 1220, an exorbitant increase was assumed, the Settlement being leased on the land under-cultivation, which caused a temporary depression; but from the large quantity of good arable land that remained available for improvement, the Pergunnah withstood the shock and recovered its position, escaping the evils of deterioration and decay, from which other parts of Rohileund, not equally favored by such circumstances, have severely suffered.

20th.—The average demand of the past five years is almost the same as that of the last year of the Settlement made in 1220, which has been

upheld from that time with very few alterations, and is now acknowledged to be both paid and collected with facility. The proposed Jumma is Rs. 37,091, exhibiting an increase of Rs. 1,991, from which Rs. 666, the revenue of the resumed unregistered lands at deduced rates, be deducted. The actual increase will stand at Rs. 1,325.

The rate in the revised assessment is—

	R.	A.	P.	
On the Total area,	0	12	1½	Per Acre.
On the Malgoozaree area,	0	15	8½	"
On the Cultivation area,	1	3	9	"

The rate in Bisowlee—

	R.	A.	P.	
On the Total area,	0	14	10½	Per Acre.
On the Malgoozaree area,	1	1	5	"
On the Cultivated area,	1	3	6½	"

In Sutasee, although the soil is of the same fertility as that of Bisowlee, the Cultivators have not the same command of water for the purposes of irrigation, and the bad effects of a long continuance of dry weather are consequently more likely to cause distress in the former than in the latter, while the amount in seer lands in Sutasee is in excess of those in Bisowlee, as exhibited in the following Statement, which facts came into consideration in fixing the assessment.

Pergunnah.	Total Cultivated Area.	Seer lands in Square Acres.	Held by Proprietors.	Held by Brethren.
Sutasee,	30599	5640	4414	1226
Bisowlee,	47893	4842	3576	1266

21st.—The balances of the past five years are noted in the margin. Arrangements have been made for the recoverable portion by instalments.

Recoverable.	Reduction of Settlement.	Recommend- ed for remission.	Irrecoverable.	Average recoverable balance of past five years.	Total amount balances of past five years.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs. A. P.
1096	205	2591	1506	217	5388 4 0

The arrears recommended for remission are generally of very long standing, and the enforcement of their payment would in most instances cause distress, and probably shake the stability of the current revenue. The irrecoverable portion, or the residue, is due from deceased farmers and insolvents, who, I am fully satisfied, are unable to discharge the claims against them.

22nd.—It is very difficult to say by what tenures the lands were formerly held under the Native Government, excepting that the right of permanent ownership had never (it would seem) been acknowledged in the occupants. The tenures, as they now exist, are, with the exception of five estates noted in the margin, the same as those described in the thirteenth paragraph of the report on Bisowlee. In the above five villages, no portion of land has been publicly registered; but the tenures are based on a Puttecdaree system, a division of cultivated lands, and a

separate allotment of assessment having been arranged and adjusted by the proprietors among themselves, the under-sharers enjoying the privilege of cultivating at fixed reduced rates. In some, each Puttee being held individually responsible *by the community* for any deficiency in the revenue assessed upon it, while in others a want of assets is made up by a "baach" on all the seer lands of the Putteedars collectively, as in No. 14. In each case the culturable waste area is held as common, for grazing cattle on, for the benefit of the whole community.

23rd.—Doogoon, No. 69, is the whole community in which the assessment has been revised under the provisions of Regulation VII. of 1822, and as the Jumma fixed under the enactment appeared to require no alteration, it has been continued until the expiration of the other leases of the revised Settlement.

24th.—There are four Hindoo, and six Mahomedan Schools, at which sixty-five boys are taught Arithmetic, Reading, and Writing.

25th.—There is very little trade carried on. The only exports are the surplus produce of wheat and other inferior grains to the Chundowsee market, and a little indigo cultivated by the Messrs. A. and J. Donalds, the return being in coin, clothes, salt, and other necessaries of life. In the Qusbah of Wuzeergunge twice a week, and in a few other estates weekly markets are held, where an interchange of commodities for the convenience of the people, on a system principally of barter, with some few money payments, is established. A few scattered families throughout the Pergunnah pursue the handicraft trades of the country.

26th.—The miscellaneous duty, consisting of the investigation of claims, brought forward prior to the revision of Settlement, as entered in the margin, with the due adjustment of the record of rights drawn up by the agricultural interests after Settlement, was performed in a

Number of Cases.	Number of Cases in which the Claimants were admitted as Malgoozars.	Adjusted by Kaseenamah.	Referred to the Civil Court.	Summarily dismissed.
87	2	23	25	37

very satisfactory manner by the Native Deputy Collector, Mahomed Syed Khan.

27th.—The above precis of Statistical materials will, I hope, be found to embrace all that is required, and the result of the revision of Settlement evidenced in the improved stability of the revenue. The least advantage perhaps that has been derived from it is the increase assumed, and the greatest, the rectification of inequalities by the reduction of exorbitant profits, and the concession of relief wherever pressure was felt. Hindrances to improvement have thus been removed, and the accomplishment of all the important object of satisfying the people has, as far as I am able to judge, been attained; exact equality can never be acquired, but the present system and process of Settlement affords the best security of the nearest approximation to truth and fairness that can reasonably be expected.

I have, &c.,

(Signed) R. H. P. CLARKE,
Officiating Collector.

SAHESWAN COLLECTORSHIP,
Simla, 31st July 1838. }

(True Copy.)

(Signed) M. H. COURT.

PERGUNNAH KOTE SALBUHAN.

195.—The present small and insignificant village of Kote Salbuhān stands on the ruins of a once large and important Fort, built by Rajah Salvahan, or Salbuhān, a Prince of the Nerbudda Territories. The occasion of his building this Fort is thus related:—Vikramadit, Rajah of Dehlie, went to war with Rajah Salbuhān. In the fight he was mortally wounded by the latter. Rajah Salbuhān, who was but a petty prince, was grieved at having, with his own hands, killed Vikramadit, a priest of the highest order, who had moreover married a daughter of Indur. Seeing his grief, Vikramadit told him, the anger of the gods would be appeased by his building a Fort, and keeping up his *Sumbut*, or Era. In compliance with this, Salbuhān built this Fort. The era of Salbuhān is still used by the Hindoos. It commenced about the year of Our Lord 78. This would make Kote Salbuhān about 1774 years old.*

196.—A mound, and a few scattered masonry remains, are all that is traceable of this building, from which the Pergunnah takes its name.

197.—The Pergunnah is the most central one in the District, bounded on the north by Pergunnahs Islamnuggur, Bisowlee and Sutasee, on the east by Budaon, on the south by Oojhaneer and Saheswan, on the west by Saheswan.

198.—The Pergunnah comprises 141 Mouzahs, covering an area of 1,12,457 square acres, distributed as follows:—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
3089	16799	76514	16055	112457

199.—The population, according to a census made in 1847 by Mr. Collector Fagan, was as follows:—

HINDOOS.		MUSSULMEN.		
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	Total.
56759	13729	3966	2800	77254

* The above account of Salbuhān is corroborated in some measure by Ward, who writes:—"The famous Vikramadityā, in the 14th year of the reign of Shukādityā, pretending to espouse the cause of Rajah Paldi, attacked and destroyed Shukādityā, and ascended the throne of Dehlie; but afterwards lost his life in a war with Shalivān, King of Prustist'hana, a country on the south of the river Nerbudda."

"The era of Shalwahanu is now used by the Hindoos in their births, marriages, &c.***. The era commenced in 78 A. D." Vide Ward's History, Literature and Mythology of the Hindoos, vol. I., page 24.

200.—This return gave a higher population to the square mile than was found in any other Pergunnah in the District, whereas in the neighbouring Pergunnah of Saheswan, the population per square mile was lower than in any other. This is accounted for by the difference of soil in a great measure. In this Pergunnah the soil is a rich *Doomut*, very productive. The villages are large, and thickly populated. In Saheswan, where the soil is principally *Bhoor*, the villages are small and scattered.

201.—The Pergunnah was a flourishing one during the whole course of the fourth Settlement, when the remaining part of the District became, from over-assessment, on a state bordering on ruin. During Mr. Wyatt's administration the Pergunnah became considerably deteriorated; the cause is thus described by Mr. Brown:—The Pergunnah had been surveyed in 1827-28, and from its flourishing condition it was considered advisable to bring it under an early revision of Settlement under Regulation VII. of 1822. Mr. Wyatt selected ten estates; the Jumma of these he quadrupled; there the work stopped. The Omlah, however, held over the heads of the Zemindars the fear of a Settlement of the remaining estates; the Zemindars paid the Omlah to keep off so great a calamity, and in the meantime reduced the cultivation, to avert so sudden an increase in the Jumma. By the time the District was to come under revision of Settlement, under Regulation IX. of 1833, the Pergunnah had become so deteriorated in its conditions, that Mr. Commissioner Lowther recommended that the work of Settlement should commence in Kote Salbuhan. Mr. Brown objected to this, for the reasons detailed in my thirty-second paragraph of the District report, which I need not repeat here.

202.—The revision of Settlement was completed by Mr. Brown, during 1836. The Jumma proposed by him amounted to Rs. 86,244. In a few instances, a decrease in the Jumma was given by the Commissioner, and the Jumma ultimately confirmed by Government, amounted to Rs. 84,857.

203.—Subsequent to the Settlement, the following alterations in the limits of the Pergunnah have occurred.

Seven estates have been annexed from Pergunnah Oojhancee; viz. :—

Name of Village.	Area.	Jumma.	Population.
Oolya,	764	763	488
Behtah Jubbee,	815	888	567
Pusgawan,	2463	1962	866
Jinourah Sidowrah,	1265	1185	771
Shahzadnuggur,	675	901	1114
Khoolhut,	475	492	207
Khairah,	1145	1150	676
Total,	7602	7338	4689

204.—Six estates have been annexed from Pergunnah Saheswan, as follows :—

Name of Village.	Area.	Jumma.	Population.
Reonaeo, Puttee Dillac,	2197	1710	1320
Reonee, Puttee Koondun,	701	442	319
Rufaatpoor,	790	290	358
Suray Sunwul,	890	900	561
Koonwaree,	474	206	289
Muhdoodah,	370	80	110
Total,	5422	3628	2956

205.—The total additions to the Pergunnah being—

Area.	Jumma.	Population.
13024	10966	7645

206.—The estates are held as follows :—

Thakoors hold	101	Mouzahs.
Kaiuths hold	4	"
Bakals hold	2	"
Brahmins hold	2	"
Mussulmen hold	9	"
British hold	1	"
Miscellaneous hold	22	"
Total,	141	Mouzahs.

207.—The tenures being—

Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyacharah.
83	33	24	1

208.—The Thakoors are chiefly Bais and Rahtour. There are a few families of Bakal, Gour, Salookhee, Chowhan, and Tomur, rajpoots. Chundun Singh and Petumber Singh, Zemindars of Bhanpoor, are the heads of the Bais Thakoors, and possess considerable influence. The original Thakoors of the Pergunnah were of the Gerad tribe. About 300 years since, Dhuleep Singh, a Bais Thakoor, came at the head of his tribe, and turned out the Gerad Thakoors; he had two sons, Raee Singh and Kurun Singh. The descendants of the former, the Bhanpoor Thakoors, are called Raee; the descendants of the latter, Bukht Singh, Zemindars of Gundroulee, are called Chowdraces.

209.—The market towns are Bilsce, Burowlecah, Shurah Burowlecah, Anbeepoor, Behtah Goshacen, Beerumpoor and Futehpoor. Of these, Bilsce is the largest and most important, not in the Pergunnah only, but in the whole District. It possesses a large bazaar; the Merchants in it carry on an extensive trade with Bareilly, Chundowsee, Hattrass, Furruckabad, and Cawnpore, in grain, sugar, cotton, brass utensils, clothes, &c. The export, wheat alone, to Furruckabad and Cawnpore, is estimated at one-and-a-half lac per annum; of sugar to Hattrass, at two lacs more. The principal imports consist of cotton, ghee, brass utensils, English and country cloths. The town is of recent origin, having been first built during the government of the Nawab Wuzeer. At the cession, it was a place of small size, and has acquired its present importance during the time of the English rule. Good roads, connecting the town with Chundowsee, Bisowlee, Budaon, Oojhance, and the Piproul Ghaut, have been made since the establishment of the One per cent. Road Fund: these roads have probably tended considerably to enhance its importance; the town has since, during the last six years, visibly increased in size, and masonry houses have taken the place of mud huts.

210.—Contiguous to the town of Bilsce, within the precincts of Mouzah Anbeepoor, is a large indigo factory, the property of Messrs. A. and J. Donald. These gentlemen have also smaller factories in the villages of Burowleca and Doodhownee, each distant about two miles from Bilsce. The out-turn of these factories amounts to from 250 to 350 maunds of manufactured indigo, per annum. The enterprise and capital of these gentlemen, the employment given by their factories, and their liberality as Malgoozars, have tended not a little to enhance the prosperity of this Pergunnah. The gentlemen are extensive Malgoozars; their estates are profitable, rendered so by their wise management. Mouzah Khundoah, first given to them in farm, and subsequently purchased by them at public sale, is a remarkable instance of what good management will do. This estate was constantly in balance, and was transferred to them in farm on this account. It now pays them an yearly income of Rs. 4,000, and yet not one summary suit has been instituted by them against their assamees, or by their assamees against them, for the last seven years. The *secret* given by them for the management of a village is "to be just in taking what has been agreed upon between landlord and tenant; not to harass the assamees in petty matters; to assist them in their little difficulties, and to stand between them and the Courts of law."

211.—The cultivated area, by the Putwaree's papers, for 1256 Fuslee, amounted to 89,121 square acres, being an increase, since the Settlement, of 12,507 acres. The number of Cultivators is 15,781, of whom 1,769 were Proprietors, cultivating 17,682 acres.

212.—The nikasee, or rents paid for land during the same year, amounted to Rs. 1,85,755.

213.—There are seven Sheowallahs, four Thakoor Deowallahs, five Hindoo Temples, and two Mussulmen Musjids in the Pergunnah: none however of note.

214.—The following Table will show the number and description of the Schools, Scholars, &c. in the Pergunnah:—

Number.	Description.	Teachers.	Scholars.	Pay of Teachers.		
				Rs.	A.	P.
8	Persian,	8	53	32	0	0
3	Hindee,	3	72	9	0	0
3	Sanscrit,	3	14	0	0	0
14	Total, ..	14	139	41	0	0

215.—The revenue of the Pergunnah is collected by the Tehseeldar of Saheswan. The costs of the Tehseeldaree establishment will therefore be shown in that Pergunnah report.

216.—The following Table will show the number, designation, and salary of the Police establishment stationed at Bilsce:—

Number of Officers.	Office.	Amount of Salary per mensem.	Total per annum.	Population.	Jumma.	Per-centage on Jumma.		
		Rs.	Rs.					
1	Thannadar,	25	300					
1	Mohurrir,	8	96					
1	Jemadar,	8	96					
1	Mududgar,	5	60					
16	Burkundazes, ..	64	768					
	Repairs, &c., ..	8	96					
20	Total, ..	118	1416	77254	Rs. 96517	Re. 1	A. 7	P. 6

No. —.

To H. S. BOULDERSON, Esq.,

Officiating Commissioner of Revenue, Moradabad.

SIR,

I have the honor to forward the Settlement Statements for Pergunnah Kote.

- 1.—Statement No. I.
- 2.—Statement Nos. II. and III., English and Persian.
- 3.—Statement No. IV., Ditto
- 4.—Chowkedaree Statement.
- 5.—Statement of Mal and Tuccanee Balances.
- 6.—Statement of unregistered Lakhiraj lands.
- 7.—Persian Statement, Roobakaree Copies.

2nd.—The Jumma of this Pergunnah, during the third Settlement, was Rs. 71,362. The standard Jumma of the fourth Settlement amounted to Rs. 71,186, at which it remained

until 1235 Fuslee.

3rd.—The Pergunnah had borne the character of a flourishing and profitable one, for several years previous to 1235 Fuslee, and it had been selected accordingly by the Collector, Mr. Swetenham, for a revision of Settlement under Regulation VII. of 1822. The Ishtecharnamahs prescribed in Clause 4, Section 2, Regulation II. of 1826, were written out, and every preparation was made for the expected Settlement, when the late Collector, Mr. Wyatt, arrived, and the intention of his predecessor having been purposely concealed from that gentleman, no further steps were taken towards the re-settlement of the Pergunnah for the next year.

4th.—In 1236 Fuslee, the survey having been set on foot in the Pergunnah, nine estates were selected for re-settlement in the first instance, and the revision of their Jumma was effected in the course of that year; the former demand, in the aggregate, being Rs. 5,463, and the Kamil Jumma of the revised one, Rs. 12,159. The proprietors, shortly afterwards, appealed to the Commissioner; 1st, against the Settlement; and 2nd, against its irregularity; the notification directed in the Section of the Regulation of 1826, above quoted, not having been issued prior to the Settlement. It appearing, on enquiry, that such was the case, the operation of the Settlement, which was never confirmed, was postponed by the Commissioner until the year 1240 Fuslee. No further progress was made or attempted in the re-settlement subsequently, and in the instance of these Mouzahs, no notice seems to have been taken by the Local Officers of the orders regarding them, when the time came for the realization of the revised Jumma, nor were the Ikrarnamahs or Durkhasts altered. The Jumma of 1225 Fuslee was realized, as formerly, in that year, and on my assuming charge in May 1833, the recovery of the nominal balances in these estates, *i. e.* the difference between the revised and former Jumma, was found to be next to impossible. The Settlements have, in consequence, taken effect from 1241 Fuslee. In one instance, No. 2, the revised Jumma proved totally unrealizable, and in the other estates the enhanced demand has been realized during the last three years with distress and difficulty.

Note.—The present revised Jumma of these estates stands at Rs. 9,003.

5th.—The enormous increase made on the former Jumma of these estates thoroughly frightened the rest of the Zemindars, and, I am compelled to add, that advantage was taken of their fears by the Native Officers in the interim between 1236 and 1240 Fuslee; every year they were threatened with a Settlement, and every year they had to contribute their quota to ward off what they looked upon as a calamity. In the meantime all the practices common to Malgoozars, under these circumstances, were put in force; rents were purposely lowered, in anticipation of the pending Settlement, which, on the fear being removed, occasioned a struggle between the Malgoozars and his Assamees, which was sure to end in the deterioration of the property. Cultivation was temporarily diminished, and the year 1240 Fuslee closed with a heavy arrear of revenue in the Pergunnah, which was recovered eventually with considerable difficulty. The Pergunnah is still a rich and flourishing one, but it is not what it was ten years ago; and some further time must elapse before the Zemindars will be able to recover from the losses sustained by them in the interim.

6th.—I have thought it incumbent on me to bring these circumstances clearly to the notice of the Board. They unavoidably influenced me in the determination of the total Jumma, and, if you are of opinion that I exceeded my powers in admitting considerations which had no direct connexion with the duties of a Settlement Officer, the error can be remedied without difficulty.

7th.—The soil of the Pergunnah is known by the name of "Kuthere," and is the same as the soil of a large portion of the Islamnuggur Pergunnah, described in paragraph second of the General Remarks on that Settlement, and of the Dhoomut portion of the Oojhanee Pergunnah, noticed in the remarks submitted previously to the Settlement, in a letter dated the 19th November 1835. It lies between those Pergunnahs, and the quality of its soil being eventually the same, the difference in its kinds is observable in this as in every other tract of the same extent, and no classification appeared to be called for.

Note.—Copy of the Extract is annexed for the sake of reference.

8th.—Irrigation, by which term I mean the preparation of lands for the more valuable products, is as little practised in this Pergunnah as in the other parts of the District. In fact I am not sure that I could point out amongst the eleven Pergunnahs comprised in it, (some few villages inhabited solely by the Koormee caste of cultivators excepted,) a single instance in which the cultivation is carried on in the systematic manner practised in the Dooab, or in parts of the Bareilly and Moradabad District.

The Goothane lands, cultivated by the Moorao or Gardeners, in the immediate vicinity of the village, are so trifling in extent, as not to admit of any separate classification under the head of Irrigated, although they necessarily came into account in the description of the demand in the individual Mouzahs.

9th.—Pergunnah Kote possesses no striking advantages in point of soil over the other Pergunnahs in the District, which may be classed as Kuthere. Its prosperity may be traced to its having been generally cleared and cultivated at an earlier period, and more completely than the latter, and to the effects of a very moderate and equable Settlement during the last thirty years; the benefits of which have been reaped by its numerous proprietors, high and low in their several degree, and this, perhaps, more

than any thing else, has led to its being held up to notice as one in which an immense increase in the Government revenue might be expected in its re-settlement, especially when a contrast was drawn between it, and the neighbouring Pergunnahs bordering on the Ganges.

10th.—The cultivated area of the survey has been assumed as a basis of the present Settlement in the totals, as well as in the individual villages. The actual cultivation, in many instances, falls short of the cultivated area of 1236 Fuslee, and in a few estates, in which the deterioration from various causes was more glaring, allowance was made for the decrease in the Settlement; but it would have been useless labor to have attempted to ascertain the exact increase or decrease in each instance, and the present estimate, in the Nuksha No. II., may therefore be understood as the area of the survey, with the addition of the unregistered Lakhiraj lands now resumed and included in the Settlement.

11th.—The average rate assumed is Rs. 2-3-0 per acre, or seven annas per beegah Kham throughout the Pergunnah, including the several descriptions of land; and the Gohana irrigated. I was assisted in forming it by a mass of former papers in the office, and by the information furnished by the Tehseel Officers, aided by comparison with the rates of the same class of soil in the settled Pergunnahs. As far as an average rate can be correct, I believe it to be a fair and just one, both for the people and the Government. Applied to the cultivated area, it yielded the following result:—

Jumma, obtained.		Deduct 1/3rd of the Jumma-bundee of the cultivated area of the Pergunnah yielded by the average rate.	Remain the Jumma demandable by Government.	Jumma Assessed.	Average rate.	Reduced rates.
On Khalsa,	Rs. 134519					
On resumed Lakhiraj,	6208					
Total, ..	140727	Rs. 46909	93818	86244	Rs. A. P. 2 2 0	Rs. A. P. 1 5 0

12th.—The Pergunnah assessment was fixed at Rs. 88,000, but in the course of its distribution on the individual estates at the time of Settlement, circumstances induced me to lower the demand in several instances, so as to leave the present revised Jumma at Rs. 86,244; Rs. 93,000 would, under any other circumstances, have been a reasonable Jumma, and I should have assessed accordingly, had it not been for the considerations abovementioned.

13th.—A few brief remarks have been added to the Village Statements, in those instances in which any apparent deviation from the rates of assessment appeared to call for them.

14th.—In regard to the other duties and miscellaneous work connected with the settlement, I have nothing to observe beyond what has been already said in preceding reports. They have been conducted wholly by the Native Deputy Collector, and in a very satisfactory manner.

15th.—You will observe that a decrease has been allowed in all the estates assessed by the late Collector. The difficulties of collection, since 1241 Fuslee, have been considerable, and although they have no doubt arisen in a great measure from the unfavorable position in which the proprietors found themselves, compared with the rest of the estates in the Pergunnah, in their having been selected to bear a heavy burden from which the others were free, yet the fact of the demand being in itself excessive, has been established beyond doubt by the result of the last three years, which have also served the purpose of pointing out the limit to be observed in the assessment of the other estates comprised in it. The revised Jumma of these Mouzahs bears date from 1250 Fuslee, when the leases granted in 1236 Fuslee expire, and the Ikrarnamahs have been filed accordingly; but, under all the circumstances, the operation of their revised Settlement should, I think, commence from 1244 Fuslee.

I have, &c.

(Signed) S. S. BROWN,
Officiating Collector.

SAHESWAN COLLECTORSHIP, }
The 10th October 1836. }

PERGUNNAH SAHESWAN.

217.—PERGUNNAH SAHESWAN is bounded on the north by Pergunnahs Islamnugur and Kote Salbuhan, on the east by Oojhancee, on the west by Asudpoor; the Ganges washing its southern limits.

218.—It comprehends 366 Mouzahs, covering an area of 1,80,500 square acres; viz.

<i>Rent-free.</i>	<i>Barren.</i>	<i>Cultivated.</i>	<i>Culturable.</i>	<i>Total.</i>
11432	37467	73158	58443	*180500

219.—The population by the last census is as follows:—

<i>HINDOOS.</i>		<i>MUSSULMEN.</i>		
<i>Cultivators.</i>	<i>Non-Cultivators.</i>	<i>Cultivators.</i>	<i>Non-Cultivators.</i>	<i>Total.</i>
53599	12895	10279	7525	84298

220.—The proprietary holdings are according to the following Table:—

Thakoors hold	71	Estates.
Aheers hold	30	"
Kaiuths hold	31	"
Bukals hold	2	"
Brahmins hold	8	"
Mussulmen hold	169	"
Mussulmen and Hindoos hold	22	"
British hold	6	"
Government hold	1	"
Mixed Classes hold	25	"
	366	"

221.—The tenures are classified as follows:—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Bhyacharah.</i>
269	75	21	1

* This area is according to the Professional Survey Returns. In several instances the Survey Returns appear incorrect.—Vide Appendix to Pergunnah Register of Saheswan.

222.—The Mussulmen proprietors are very numerous, partly consisting of Sheikhs, partly of Puthans; the former hold some of the finest estates in the Pergunnah, the latter are the most numerous; their villages are generally small, the proprietary body large. The Aheers abound in the villages bordering on Asudpoor Pergunnah.

223.—The soil of the Pergunnah is of three kinds; Bhoor, Muttyar Khadir, and thirdly a mixture of the two. The Bhoor occupies one-third of the Pergunnah; it varies considerably in its quality; in some parts it is little better than sand; this, except in good rainy seasons, is almost unproductive. In the hollows the Bhoor is richer, approaching to *Muttyar*; these two qualities were classified by Mr. Brown as wet and dry Bhoor. The Muttyar Khadir estates lay along the banks of the Ganges, extending inwards to the Mahawah Nuddee, which intersects the Pergunnah. The mixed soils are found in estates lying between the Bhoor and the Muttyar Khadir, and vary in quality according to the proportion of *Muttyar* lands which they contain.

224.—The survey of the Pergunnah was commenced in 1822 A. D. by Captain Bedford, and not completed until 1827 A. D. The survey was made in Circles or Divisions, called Tuppahs. When the survey commenced, the Pergunnah was in a flourishing condition; the cultivation, particularly in the Bhoor estates, very extended; the Pergunnah was on this account first selected for measurement, preparatory to re-settlement under Regulation VII. of 1822. A revision of settlement, under that enactment, was however only effected in a few detached Mouzahs. The cultivation fell considerably, and in consequence the survey returns of the cultivated and culturable areas could not be relied on, when the Pergunnah was thrown open to revision of Settlement under Regulation IX. of 1833.

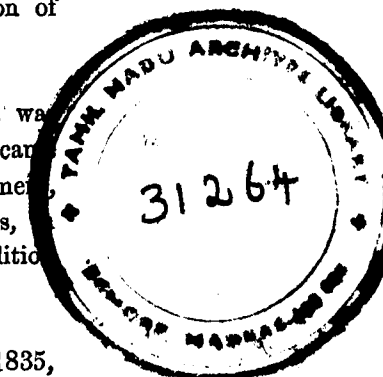
225.—The deterioration which took place between 1822 and 1836 A. D. was ascribed "to the uninterrupted use of the inferior soils, by which they became exhausted, and their fertility much diminished; and as the pressure of the assessments, which was always high, was felt with increased severity by the Malgoozars, proportion as the produce of these lands diminished, the deterioration in the condition of the people kept pace with that of the land.*"

226.—The Settlement of the Pergunnah was commenced by Mr. Brown in 1835, and concluded in the beginning of 1836 A. D.; the Jumma proposed by him, and recommended by the Sudder Board of Revenue for confirmation, was fixed at an amount progressively increasing in the first ten years from Rs. 95,377 to Rs. 97,897: this was at first confirmed by orders of the Lieutenant-Governor of the North Western Provinces, No. 1306, dated 28th May 1836. In consequence of the shock occasioned by the famine of 1837-38, the progressive Jumma was abandoned;† and balances of former years, amounting to Rs. 18,854, and for the liquidation of which, engagements had been taken, were also remitted.

227.—Since the settlement, six Mouzahs have been transferred to Pergunnah Kote Salbuhan. These have been detailed in the report on that Pergunnah, and need not to be repeated.

* Secretary of Sudder Board of Revenue, to Secretary to Government, N. W. P., dated 10th May 1836.

† By order of Government, sent with Commissioner's letter, dated 5th December 1836.



X. 25227. 5ms2

ms5

228.—In the year 1815, two estates, comprising an area of 918 acres, were sold for balances of revenue, and realized Rs. 175. In 1817, eight estates, comprising an area of 2,596 square acres, were sold for the same cause, and realized Rs. 950. Since the last Settlement, two estates, comprising an area of 2,109 acres, were sold on the same account, and realized Rs. 392: this occurred in 1837. Since that year, no estate has been transferred by sale on account of defalcation.

229.—From the formation of the District, until 1838 A. D., Saheswan was the Sudder Station of the Collector's Office. A large bungalow stood near the town, which was built by Mr. Swetenham at a cost of Rs. 18,000. It was ultimately purchased by a native gentleman, resident at Saheswan. In the year 1845, it was destroyed by fire. A small burial ground is all that remains of the station.

230.—The town of Saheswan comprises eleven distinct mohullahs. Nine of these mohullahs are situated within the limits of nine several Mouzahs, viz. Akburabad, Syfoollagunj, Sh'hubazpoor, Fazilpoor Poopureea, Bhugta Nugla, Kusbah Puttee Kanoongoe, Kusbah Puttee Yakeen Mahomed, Kusbah Chumurpoorah, Humurpoorah, and Gopalgunj. Saheswan is no Mouzah in itself, but the name of a town, of which these form portions. The word Saheswan is said to mean "Thousand Altars." The Sanscrit word सहस्र (Sahuse), means, I believe, a *thousand*; आबन, a stone or altar.

231.—There are no towns of any importance in the Pergunnah. Weekly markets are held in the following Villages: Bazeedpoor, Bhowaneepoor Ruklee, Dhurmpoor, Dehguwan Deora Sheipoor, Russoolpoor Kulan, Seersa Kureeawyn, Khurukwaree Bhoees, Kairree Suray, Murtowlee, Nadur, Nudail, and Muhumudpoor Kooday.

232.—There are three Sheowallahs, four Thakoor Deowallahs, and two Musjids in the Pergunnah. On the north side of the Saheswan Jheel is a small masonry tank and Dhurmsala, built a few years since by a Bunneeah of the town; from it is reported the profits of merchandize carried by a single pony. The place is called Sihsota, or the *Three Springs*.

233.—The following Table will show the number and designation of the Schools in the Pergunnah:—

Number.	Description.	Teachers.	Scholars.	Pay of Teachers per Mensem.
				Rs.
13	Persian,	13	104	52
4	Hindee,	4	30	12
3	Sanscrit,	3	15	2
20	Total,	20	149	66

Of the thirteen Persian Schools, nine are in the town of Saheswan.

234.—The following Table will show the costs of the Tehseeldaree Establishment, which is chargeable to Pergunnahs Saheswan and Kote Salbuhan.

Number of Officers.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
		Rs. A. P.	Rs. A. P.		Rs.	Rs. A. P.
1	Tehseeldar,	200 0 0	2400 0 0			
1	Peishkar,	30 0 0	360 0 0			
2	Qanoongoes,	40 0 0	480 0 0			
1	Wasil Bakee Nuvees, ..	15 0 0	180 0 0			
1	Secah Nuvees,	15 0 0	180 0 0			
1	Araz Nuvees,	10 0 0	120 0 0			
1	Itlaq Nuvees,	10 0 0	120 0 0			
1	Dakhilla Nuvees,	10 0 0	120 0 0			
1	Tehveeldar,	15 0 0	180 0 0			
1	Purkheyah,	10 0 0	120 0 0			
2	Mirdahs,	12 0 0	144 0 0			
1	Dufturee,	5 0 0	60 0 0			
1	Jemadar,	8 0 0	96 0 0			
40	Peons,	160 0 0	1920 0 0			
	Stationery,	20 0 0	240 0 0			
	Total,	560 0 0	6720 0 0	161512	193312	3 8 2

235.—The cost of the Thannah Establishment at Saheswan is as follows:—

Number of Officers.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
		Rs. A. P.	Rs. A. P.		Rs.	Rs. A. P.
1	Thannahdar,	40 0 0	480 0 0			
1	Mohurrir,	8 0 0	96 0 0			
1	Jemadar,	8 0 0	96 0 0			
4	Duffadars,	24 0 0	288 0 0			
1	Mududgar,	5 0 0	60 0 0			
30	Burkundazes,	120 0 0	1440 0 0			
	Repairs, &c.,	9 0 0	108 0 0			
	Total,	214 0 0	2568 0 0	84258	96795	2 10 5

SETTLEMENT REPORT
OF THE
PERGUNNAH SAHESWAN.

PERGUNNAH SAHESWAN comprises 408 Mouzahs, Uslee and Dakhilec. The surface of its area, like those of the other Pergunnahs bordering on the Ganges, is uneven, and divided into several soils, widely varying in their quality and productiveness, of which the Bhoor occupies nearly one-third, and the mixed and richer soils the remainder, in a relative proportion of five to three.

2nd.—The Jumma of the Pergunnah, for the year 1220 Fuslee, amounted to Rs. 99,445; that of 1225 Fuslee, or the standard Jumma, to Rs. 1,11,735. The Jumma sunk intermediately to Rs. 1,10,243 in 1232 Fuslee, and eventually to Rs. 99,384 in 1241 Fuslee. The Settlement for the present year has been concluded at Rs. 92,858, progressing to Rs. 95,018 in 1245 Fuslee. The balances that have accrued, amount in all to Rs. 98,115-9-6.

3rd.—The progressive decrease in the demand and collections for the last fifteen years will serve as an index, but an imperfect one, to its condition during that period. The causes below mentioned had rendered the Pergunnah a flourishing one in the interval between the fourth and sixth Settlements, and it was I believe on this account that it was first selected for survey preparatory to its Settlement, according to Regulation VII. of 1822. The survey commenced in the year 1822, and was brought to a close, with some interruptions, in 1827; but the Settlement, with exception of a few detached Mouzahs, was not entered upon, and all things now considered, its postponement may perhaps be looked upon as fortunate.

4th.—One of the principal causes of its decline may be found in the change for the worse, to which the Bhoor lands have been exposed. The Bhoor soil was comparatively fresh and productive at that period, and under the high prices that then prevailed, every available beegah of land was brought into cultivation; but the prices abated after a few years, the soil became thoroughly exhausted, and to this deterioration (the natural consequence of a rise and fall in prices, and in which the tracts of Bhoor, in the other Pergunnahs and District, have equally shared) were super-added, general neglect and mismanagement on the part of the dispirited Malgoozars; the effects of the hopes they were led indirectly to entertain, year after year, of a reduction of Jumma. The Settlements of many of these Mouzahs have fallen to the ground within the last few years, and the Malgoozars of the remainder have been involved in difficulties, which have increased yearly, and which were bidding fair in the end to reduce their estates and themselves to ruin.

These remarks are also applicable to the mixed soils, and scarcely less strongly.—Agricultural depression is contagious; and the condition of the Mouzahs of the latter class has altered greatly for the worse, either from similar causes, or from the force of example, or perhaps from both combined.

5th.—The soil of the Muttyar Khadir Mouzahs, situated on the strip of land adjoining the Ganges, is the richest and most productive in the Pergunnah. Many of the Mouzahs of this class were very highly assessed in the former Settlement, but the Malgoozars have in most instances contrived to make good the demand in the interim, without actual loss, and the general condition of their Villages at the present time presents a favorable contrast with those of the other portion of the Pergunnah.

6th.—My first step in the preliminaries of the Settlement was to class all the Mouzahs in the Pergunnah under three heads; viz. :—

1stly.—The Bhoor.

2ndly.—The mixed soils.

3rdly.—The Muttyar; the principles of the assessment of each division requiring to be taken into consideration separately in this classification, the natural distinctions were followed. The Bhoor tract comprises many Mouzahs, the soil of which, in point of quality, is infinitely superior to the others in their vicinity, and mixed soils may be found occasionally in the Muttyar tract as elsewhere; but to have shifted individual Mouzahs from one class to another, on the ground of any superiority or otherwise in the kind of soil, would have been to have substituted an arbitrary classification for a natural one. In the specification of the soil of individual Mouzahs in each of these classes, (the mixed soils excepted,) the only distinction preserved was that of wet and dry Bhoor, Gohanee lands being noted as Dhoomut. The same distinction has been followed by me in the Settlement of Pergunnah Oosaith, and under the same names, with a view to uniformity no less than to the easy institution of a comparison between the relative assessment of the several Pergunnahs.

7th.—The rates yielded by the application of the standard Jumma, and the realizable demand of the past year to the totals of the Malgoozaree and cultivated areas, next came under consideration, and they were tested with the average rate per acre assumed at the time of Settlement. The general condition of the Mouzahs in each class being known before hand, the latter, if borne out by the comparison, was adopted and applied to the cultivated and culturable area: this process gave a rough, but a tolerably correct rental for the whole, which, after a deduction of thirty per cent., was apportioned amongst the Mouzahs, the distribution being primarily guided by the rates on the Malgoozaree in the totals; a deduction of thirty per cent. did not however appear to me calculated to afford the people the relief which circumstances called for. The necessity of a further deduction was established, still more strongly in the progress of the apportionment of the Jumma of the Mouzahs, more particularly with reference to their future limited capabilities; and the gross calculated demand was in consequence lowered, so as to leave a deduction in the total of thirty-six per cent. at which the Settlement now stands.

8th.—I ought to add that the above method was not pursued by me in so systematic a form in the early part of the Settlement of the Saheswan Pergunnah. The Jumma of the Muttyar Mouzahs having been calculated on the assumed average rates were checked by the rates of the former, and proposed assessments on the Malgoozaree areas of the respective Mouzahs considered separately, and with reference to a few Mouzahs which I had assumed as standards of equable assessments, and not to the totals. I have however since that time tested the result with those yielded by the average

method. The difference proved fortunately very trifling, and in the few Mouzahs in which they perceptibly differed, the assessments have been revised accordingly.

9th.—In the above remarks the Muttyar Mouzahs, which alone afforded any certain basis for the calculation, are chiefly referred to. In the two 1st classes, which comprise every variety of soils, and in which six Mouzahs out of ten form exceptions to any rule that can be laid down, I have been principally guided by the consideration noticed in the body of these remarks; and on further consideration, I do not see cause to repent the conclusion arrived at, either in the gross or detail. A just demand appears to have been secured to the Government, and the people have every cause to be satisfied with their assessments.

10th.—The survey having been carried on at a time when the condition of the Pergunnah was far more prosperous than it is at present, or than it has since been, or, I may add, than it is likely to be for some time to come, (unless the same causes again combine in its favor,) the result would not obviously be assumed as the basis of the present Settlement, in the greater number of the Mouzahs comprised in the mixed soils, far less in any of the Bhoor Mouzahs. In the latter classes in particular, I found myself under the necessity of putting the cultivated areas of the survey, no less than the estimated rentals yielded by the application of the average rates of assessment to the present cultivation, out of sight altogether, as only calculated to mislead, and of confining myself in the determination of the Jumma, to general considerations, checked and corrected by the rates, or the Malgoozaree areas of the total, and of its component parts.

11th.—The particular circumstances and condition of each Mouzah, the extent to which its deterioration or improvement had been carried of late years, and the causes, whether adventitious or forced, were of course well known. To the ample information obtainable on these points from various sources were added, in points of enquiry, the means of cultivation at hand, whether to be found in the number of resident ploughers, or the situation of the Mouzah, the habits of the people, and last, not least, the relative quality of the various kinds of soil of the individual Mouzahs comprised in each class. In the Bhoor in particular, a vast difference is discernible between the soil of the respective Villages; that in the hollow, as is the case with all sandy tracts, is comparatively rich and productive. The soil of the more elevated Mouzahs is invariably inferior, and that of the Mouzahs situated on the slope of the Bhoor hills, is in many instances literally worthless for any purpose but pasturage; hence the wide discrepancies observable in the rates of assessment in the Malgoozaree area of the several Mouzahs in the Bhoor tract exhibited in Statement No. IV., which vary from 2 annas per acre to 12 annas. I can only add in this place that these discrepancies were foreseen, and that they were unavoidable.

12th.—The same may be said of the mixed soils, which exhibit a great but not an equal variety. Many in the second sub-division of this class, which I have denominated Muttyar Dhoomut, approach closely to the Muttyar Mouzahs; while others are of a quality wholly inferior. In short, I may observe that in any Pergunnah, and in the Saheswan Pergunnah in particular, the rates of assessment of the Mouzahs included in any general classifications of soil must vary considerably, and that unless an

arbitrary appointment, or a minute classification, be adopted, either of which would be far from expedient, discrepancies cannot, and I may say ought not, to be attempted to be got rid off.

13th.—I have already stated that the cultivated area of the survey was not taken into consideration in the determination of the Jumma of the Bhoor Mouzahs of many of those in the second class. The same reasons rendered it unnecessary for me to push the enquiry into the exact number of beegahs and biswahs of the present cultivated areas, with the information available in regard to the circumstances and condition of each Village. Any gross error in the Putwaree's return was easy of detection. Measurement was had recourse to only in a very few instances in the outset of the work, and simply as a check: the points which required to be taken into consideration, in fixing the Jumma, happily superseding the necessity of letting loose on the country a host of Mirdahs and Mutsudees.

14th.—In the Muttyar Mouzahs, on the other hand, I was willing to assume, with some exceptions, the survey results as the basis of Settlement checked by the rates on the Malgoozaree areas. The impulse to improvement had been so strong for several years previous to the survey, that the assumption of the cultivation of that year could not occasion any loss to Government, whilst it appeared to me but fair that the proprietors should be allowed to reap the benefit of any further improvements, which their spirit or industry might have effected in the interim. It should at the same time be observed that the capabilities of these Mouzahs, particularly when compared with those of the other classes, are confined, and their Ruqbah limited.

15th.—The average rates assumed on the different kinds of soil were arrived at by striking an average of the Village rents prevalent during the last ten or fifteen years, on any number of equally assessed Mouzahs of each class, which had withstood the changes of that interval, selected with reference to the different kinds of soil, and more strongly marked of each class, a due allowance being made for seasons and other casualties. A Pergunnah rental would not have afforded the same result, under the changes to which the mass of Villages have been subjected of late years, and I was very little disposed to rely on the accuracy of any calculations formed on average produce or value. The rates assumed by me on the above principles are as follows:—

1stly.—On the irrigated Gohan lands, Rs. 3 per puckah beegah.

2ndly.—On other irrigated soils, Rs. 2-4-0.

3rdly.—On the Muttyar Khadir or rich land, Re. 1-14-0.

4thly.—On the Dhoomut or Miloe, or, in other words, on the clayey soils, mixed more or less with sand, which in some instances are far superior in quality and produce, and in others little better than the Bhoor itself, Re. 1-2-0.

5thly.—On the Khadir, or marshy soils at the foot of the Bhoor hills, which, if properly cultivated, are valuable for Dofuslee produce and sugarcane, Re. 1-8-0, and on the Bhoor, As. 12: these classifications may appear too minute, but the variety of soils in the Pergunnah stood in the way of more general headings.

16th.—The deviations from the above rates are not frequent, and will only be found in those instances in which, from any striking inferiority or superiority of soil,

or other local peculiarity of circumstances, led me to believe that a rise to the average standard could not reasonably or desirably be looked for at any future period. An average, if once attempted to be struck, should be adhered to as closely as possible; but there must be occasional exceptions.

17th.—I should mention, in this place, that many thousand areas of excellent land were erroneously written off, at the time of the Survey, under the head of "waste" all tracts of culturable jungle being included under that denomination, together with the uncultivated lands bordering on the Ganges. The distinctions recorded in the Survey papers have been adhered to for the sake of uniformity, but this explanation will account for any apparent inequality in the rent of assessment in the Malgootaree area of individual Mouzahs observable in Statement No. IV.

18th.—The amount of the deductions allowed in many instances may appear to require some notice. In the Bhoor, the Bhoor Khadir estates, where the existing estimated rental of any Mouzah formed no, or at all events a very, unimportant part of the enquiry, and where the proposed Jumma admits of no deduction at all for the present year in some Mouzahs, and in others, a reduction has been granted, the rental of which had previously left more than a thirty per cent. profit to the Proprietor.* To have acted upon a different principle would have been in effect to have made the industrious portion of the community pay for the idle, and to have settled on the chance assets of one year, instead of carrying the enquiry back to the last ten. Generally speaking, I am of opinion that, under an ordinary state of things, a deduction of not less than fifty per cent. would be requisite to secure the stability of the Settlement of any Bhoor tract for so long a period, and preserve the Malgootar from the consequences of sudden casualties of seasons. A recurrence of the circumstances which operated in their favor fifteen years ago cannot be looked for; at all events cannot be counted on; but their recovery from their present depressed condition may now, I trust confidently, be expected, and the Jumma has been regulated (in as far as calculations can be formed with any correctness on probabilities,) so as to admit of a profit to that extent being reaped in a short time by the commonest industry. In other classes, the deductions for the present year will be found to vary with the actual condition of the Mouzahs, and the causes of its improvement or decline. In all estates which have been subjected for the last few years to mismanagement and neglect, the average of the Village rates for the present year fall far short of the average assumed by me. In these cases, the estimated rental rather exhibits the amount of the probable rental, a year or two hence, on a return of confidence and industry, than the actual assets of the present year, which it far exceeds, and the amount of the real deductions will, in consequence, be found to have diminished in proportion.

19th.—In the Muttyar Khadir Mouzahs, where the soil is more valuable, and the means of cultivation abundant, the Zemindars of a highly cultivated Village were obviously entitled to more indulgence, than the Malgootars of a neglected property, and I believe it will be admitted that an estate, chiefly cultivated by a Thakoor community, as are the greater number of the Mouzahs in this class, cannot either safely

* There is apparently a mistake here; the sentence agrees with the office copy. The original report is lost.

or justly be taxed in the same proportion as a simple Zemindaree property, where the profits and management are vested in one or more individuals.

20th.—The Statements of the shares in each Mouzah, recorded by the parties concerned, are filed in the Settlement proceedings, but the detail has been omitted in the Settlement Nuqshas. The statement of responsibilities has been limited to those cases in which a distribution of the Jumma may have been effected by mutual consent at the time of Settlement; such distribution to be followed up by a division of the lands, according to Regulation XIX. of 1814.

21st.—The rights and receipts of the Village servants were determined at the same time, between forty and fifty beegahs of Kham land being set aside for the Chowkeedars in the Bhoor Mouzahs, and in the other soils in proportion, their Jagheer in no instance falling short of thirty beegahs.

22nd.—The exclusion of proprietors from the Settlement, may require a few additional observations. Conceiving that the dear-bought experience acquired by the events and losses of the last ten years, in regard to the character and fitness of the Zemindars for the future Malgootaree, should be turned to some account in the present Settlement, I did not hesitate, in instances of former wilful default, when coupled with habitual idleness and misconduct, to conclude the Settlement with those amongst the more respectable landholders in the Pergunnah, who might possess the means and inclination to undertake the management. Every Pergunnah has many Zemindars of such a hackneyed stamp, (I allude to the practised deteriorators and defaulters of the last ten years,) that no Settlement formed with them can ever permanently prosper, whilst continuance in the Malgootaree only holds out a prospect of the perpetuation of the odious system of "Shahungee," and the other shifts and tricks in the collection of the revenue, that prove so troublesome to the officers of Government, and so mischievous to the people themselves. My views in this point have not been approved of, but having had recourse to the step in the Settlement of the Pergunnahs of Saheswan and Oosaith before your sentiments were ascertained, more frequently than I shall now consider expedient, I have availed myself of this opportunity to state the grounds on which I proceeded.

(Signed) S. S. BROWN,

SAHESWAN COLLECTORSHIP, }
7th May 1835.

Officiating Collector.

PERGUNNAH BUDAON.

236.—This Pergunnah, at the time of Settlement under Regulation VII. of 1822, and XI. of 1833, comprised three sub-divisions; viz. Huvelee Budaon, Zillahs Allahpore and Azimabad. Until 1844 A. D., Budaon, as thus constituted, and Pergunnah Oosaith, formed the Tehseeldaree Division of Budaon, Pergunnahs Oojhane and Kote Salbuhan being under a separate Tehseeldar, whose office was at Oojhane. In 1844 A. D., this latter Tehseeldaree Division was broken up, Pergunnah Oojhane being attached to the Budaon Tehseeldaree, from which Oosaith was transferred to Suleimpoor. At the same time that these changes took place in the Tehseeldaree Divisions, changes were effected in the limits of the Pergunnahs; Zillah Azimabad was annexed to Suleimpoor Pergunnah, and the following transfer of Villages took place:—

237.—Eleven estates were transferred to Pergunnah Oojhane; viz.:—

Number.	Name of Mouzah.	Area.	Jumma.	Population.
			Rs.	
1	Busturah,	497	500	259
2	Banceadpoor,	684	528	0
3	Bhurkoea,	734	1000	756
4	Ramzanpoor,	1741	0	1482
5	Surac Salikpoor,	159	90	343
6	Ferozepoor Eklaree,	272	165	58
7	Kulpeca,	307	0	75
8	Gungchora,	446	0	0
9	Kooraw,	730	717	673
10	Lounda Bheera,	1035	314	56
11	Nugur,	146	0	134
Total,		6751	3314	3836

238.—Twelve estates were transferred to Pergunnah Oosaith; viz.:—

Number.	Name of Mouzah.	Area.	Jumma.	Population.	Remarks.
			Rs. A. P.		
1	Oorowleca,	288	335 0 0	205	These Mouzahs were brought under revision of Settlement with the Mouzahs of Oosaith. Their transfer to the latter Pergunnah was confirmed in 1842.
2	Bilharee,	386	264 0 0	103	
3	Bhumunpoorah,	124	120 0 0	102	
4	Puchtom Jageer,	146	130 0 0	0	
5	Tursora,	591	150 0 0	71	
6	Dundha,	269	257 0 0	76	
7	Syapoor,	386	300 0 0	104	
8	Scha,	797	400 0 0	224	
9	Imadpoor,	229	156 10 0	88	
10	Kutecan,	555	561 0 0	279	
11	Kukrala, &c.	5356	4236 0 0	4425	
12	Goodhanah,	611	450 0 0	300	
Total,		9738	7359 10 0	5977	

239.—Estate Kishnee Mhera, Area 2,375, Jumma 720, Population 826, was transferred to Pergunnah Suleimpoor in 1844 A. D.; at the same time the following Mouzahs were annexed to the Pergunnah:—

Number.	Name of Mouzah.	Area.	Jumma.	Population.	Whence transferred.
			Rs. A. P.		
1	Aorungabad,	695	300 0 0	0	Zillah Bareilly.
2	Sissee,	437	303 0 0	358	Ditto.
3	Kumar Gunwan,	2010	2018 0 0	2176	Ditto.
4	Mahomdee,	640	655 0 0	638	Ditto.
5	Ooprairah,	801	700 0 0	409	Pergh. Oojhane.
6	Doundee Nouratunpoor,	826	991 0 0	374	Ditto.
7	Roopapoor,	365	390 0 0	183	Ditto.
8	Simureea,	310	315 0 0	182	Ditto.
9	Hadeepoor,	331	190 0 0	0	Ditto.
Total,		6415	5862 0 0	4320	

240.—The Pergunnah, as now constituted, comprises 237 Mouzahs, covering an area of 1,54,050 square acres; viz.:—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
24688	13365	82100	33897	154050

241.—It is bounded on the north by Pergunnah Aonlah, Zillah Bareilly, on the south by Oosaith, on the east by Suleimpoor, and on the west by Oojhane and Kote Salbuhan.

242.—The population is as follows:—

HINDOOS.		MUSSULMEN.		TOTAL.
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	
54608	18020	9314	18554	100496

243.—The proprietary classes are as follows:—

Mussulmen possess	100	Estates.
Mussulmen and Hindoos possess	26	Ditto.
Thakoors ditto	40	Ditto.
Kaiuths ditto	11	Ditto.
Brahmins ditto	32	Ditto.
Koormees ditto	6	Ditto.
Mixed classes ditto	22	Ditto.
		237 Estates.

244.—The tenures are classified as follows :—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Bhyachara.</i>	<i>Total.</i>
179	25	20	13	237

245.—The portion of the Pergunnah, termed Zillah Allahpoor, was surveyed by Captain Bedford, during 1828-29 A. D. The cultivated area of the survey formed the basis of Settlement made by Mr. Brown in 1836 A. D.

246.—The soil of this Zillah is uniformly rich and productive, though of two descriptions, *Dhoomut* and *Khadir*. The Mouzahs were accordingly classified as *Dhoomut*, *Dhoomut Khadir*, and *Khadir*.

The deduced revenue rates on these soils were taken as follows :—

	Rs.	As.	P.	
Dhoomut,	1	2	8	Per cultivated acre.
Dhoomut Khadir,	1	3	6	Ditto ditto.
Khadir,	1	3	2	Ditto ditto.

247.—The Jumma of the Zillah, proposed by Mr. Brown, amounting to Rs. 25,855, received the confirmation of Government.

248.—The survey of the remainder of Budaon, viz. Tuppah Huvallee and Zillah Azimabad was made by Captain Bedford during 1832-33 A. D. The revision of Settlement was made in 1836 A. D. by Mr. Brown. The soil of these portions of the Pergunnah is very similar in its nature to that of Allahpoor, and the Mouzahs comprising them were classed as in Allahpoor, the deduced revenue rates being—

	Rs.	As.	P.	
In Dhoomut Villages,	1	2	8	Per cultivated acre.
Dhoomut Khadir,	1	5	5	Ditto ditto.
Khadir,	1	13	2	Ditto ditto.

249.—The Jumma fixed by Mr. Brown, and confirmed by Government, amounted to Rs. 62,959.

250.—Budaon is said to be one of the oldest towns in North Western India. Since completing my General Report on the District, I have learnt from Dr. Kirk, the Civil Assistant Surgeon of Bareilly, another derivation of the word Budaon, namely, *Budh*, and *Awun*, a stone, hence the word Budhawun, which would signify the Altar of Budh. If this is the correct derivation, the foundation of the town cannot be fixed at less than 2,200 years, Buddhism having been destroyed during the third century before the Christian era.

251.—The city contains a population of 31,369 souls, of whom 13,000 are Mussulmen. As a trading town, it is of no importance; its bazar is well supplied with neces-

saries, such as grain, salt, ghee, and other produce, English and native cloths, &c. There are however no European shops or supplies.

252.—The streets of the city are, as in most Indian towns, narrow. They were, until lately, proportionably dirty. They have within the last two years been metalled throughout by Mr. Campbell; this, with proper drainage, has contributed in no small measure to the cleanliness of the town.

253.—There are two large Serais in the town; one of these was built by Mr. C. W. Fagan in 1846, from funds subscribed by the wealthier residents for the purpose; it is much frequented by travellers, &c. The other is more frequented by grain merchants and other tradesmen, who find in the large compound, which the walls enclose, ample room for their goods and cattle.

254.—In the city there is a large and handsome building, called the Juma Musjid. Before the conquest of these Provinces by the Mussulmen, this was a Dhurmsala and Temple. This was destroyed by Kutubooddeen after the taking of the city, and from its materials the Musjid was erected. There are, besides this in the Pergunnah, thirteen Mussulmen places of prayer, fifteen Sheowallahs, nine Thakoor Deowallahs, and three Hindoo Temples.

255.—Daily markets are held in Budaon Khas, and weekly markets in Allahpoor, Bunawur, Kumurganwan, Goolurceah and Meeaw.

256.—Besides the Kotwalee establishment paid by Government, there is a Chowkeedaree establishment paid by a cess levied on the inhabitants; this yearly tax amounts to Rs. 3,528; the expenditure is as follows :—

Pay of seventy-three Chowkeedars,	2,616
Establishment, Bukshee, &c.	648
Total,	3,264

The surplus Funds, amounting to Rs. 264, are expended in improving the town.

257.—The Government Dispensary is situated almost in the centre of the town: this was built in 1846 under the superintendence of Mr. Collector Fagan, from funds raised by subscription from the principal landholders, &c. and residents of the district. A Government School-house is in course of erection on a plot of ground close to the Government Dispensary.

258.—In 1838 A. D., the Sudder Station was removed from Saheswan to Budaon, the Kutcherry then built has been lately enlarged. Opposite the Kutcherry compound stands the Jail, which was built in 1840. The Jail is a very inferior building, capable of holding but 250 prisoners, whereas space is required for 600. Nine thatched hiltens (out-houses) stand outside the Jail for the accommodation of the convicts, for whom room inside the Jail is wanting. All prisoners sentenced to a longer period of imprisonment than three years, are confined in the Bareilly Jail. Notwithstanding this, the number of persons under confinement at Budaon, is rarely less than six hundred.

259.—There are three private bungalows in the station, occupied by the three Residents of Budaon.

260.—The following are the principal roads connecting Budaon with the neighboring District and Thannahs:—

From Budaon to Bareilly,	Viâ	Bunawur.
Ditto ditto,	do.	Aonlah.
Ditto Moradabad,	do.	Bisowlee.
Ditto Shahjehanpore,	do.	Datagunge.
Ditto Futehgarh,	do.	Oosath.
Ditto Aylgarh and Agra,	do.	Oojhance and Kuchla Ghaut.
Ditto Putteealee,	do.	Kadirchoke Ghaut.

All these roads are metalled for a greater or less distance from the city of Budaon.

261.—The river Sote, which floats under Budaon, is bridged in two places; the Khunsumah Bridge, on the road to Oojhance, was built by Futeh Khan, the Puthan Chief. In 1840 A. D. it was repaired, and is now, though frightfully ugly in appearance, in good serviceable condition. The Shekhopoorah Bridge, on the road to Kadirchoke and Kukorah, was built by public subscription in 1818, during Mr. Collector Fagan's incumbency. The bridge consists of five arches, of thirty feet span each arch.

262.—The following Table will show the number and description of the Village Schools in the Pergunnah:—

Number.	Description.	Number of Teachers.	Number of Scholars.	Pay of Teachers per month.	Total Per Annum.
46	Persian,	46	428	Rs. A. P. 175 8 0	Rs. A. P. 2106 0 0
8	Hindee,	8	86	17 0 0	204 0 0
5	Sanscrit,	5	25	2 0 0	24 0 0
59	Total,	59	539	194 8 0	2334 0 0

263.—Of these schools, Budaon Khas contains the following number; Persian thirty-five, Hindee two, and Sanscrit three.

The Teachers of Sanscrit and Hindee, besides the emolument above shown, generally hold a patch of ground rent-free from the Zemindar.

264.—One estate, Mouzah Schorah, has been released from assessment, pending life of present Maafcedar, by order of the Special Commissioner, dated 7th January 1847.

265.—In thirty-nine entire Estates, the rent-free tenure, on which they were held, has been confirmed in perpetuity, viz.:

Oosath,	By order of Commissioner of Revenue, ..	Dated 5th February 1833.
Baree Kherah,	Ditto Ditto ditto,	Ditto 6th October 1830.
Bichhuree,	Ditto Government, ditto,	Ditto 31st January 1831.
Burrara Roopoor,	Ditto Commissioner of Revenue, ..	Ditto 13th November 1834.
Burahimpore,	Ditto Ditto ditto,	Ditto 23rd April 1843.
Behtah Aymun,	Ditto Special Commissioner,	Ditto 23rd April 843.
Bhugoteepoor,	Ditto Ditto ditto,	Ditto 18th February 1851.
Bhirreeah,	Ditto Ditto and Govt. Order,	Ditto 17th June 1843.
Puchtom Budaon,	Ditto Commissioner of Revenue, ..	Ditto 5th February 1833.

Pndhom,	By order of Special Commissioner, ..	Dated 11th December 1843.
Tukeepoor,	Ditto Commissioner of Revenue, ..	Ditto 5th February 1833.
Tulleah Nigla Kambukspoor, ..	Ditto Special Deputy Collector, ..	Ditto 27th October 1843.
Jukailee,	Ditto Commissioner,	Ditto 22nd September 1833.
Jhundpoor,	Ditto Ditto,	Ditto 3rd March 1832.
Huzrutpoor Torha,	Ditto Government,	Ditto 17th June 1842.
Khypoorah,	Ditto Commissioner,	Ditto 26th September 1831.
Dloreejeet,	Ditto Special Commissioner,	Ditto 7th September 1843.
Dulwa Shureeda,	Ditto Commissioner,	Ditto 8th January 1831.
Rampoor oorf Darakujin,	Ditto Ditto,	Ditto 22nd September 1833.
Rukhora Koela,	Ditto Ditto,	Ditto 6th October 1830.
Roopamye,	Ditto Ditto,	Ditto 30th November 1830.
Susather,	Ditto Ditto,	Ditto 6th October 1830.
Sundernugur,	Ditto Ditto,	Ditto 16th March 1832.
Shikrapoor,	Ditto Ditto,	Ditto 13th November 1833.
Furcedpoor Chukola,	Ditto Ditto,	Ditto 27th August 1831.
Kutra Khukae,	Ditto Ditto,	Ditto 29th August 1832.
Kurtowlee,	Ditto Ditto,	Ditto 5th February 1833.
Kussoorah Pattee,	Ditto Ditto,	Ditto 6th October 1830.
Kootceah Lutufollapoor,	Ditto Ditto,	Ditto 22nd September 1833.
Kherreea Relo,	Ditto Ditto,	Ditto 7th September 1843.
Khyra Boozoorg,	Ditto Board of Revenue,	Ditto 5th May 1828.
Sukhumpoor,	Ditto Special Commissioner,	Ditto 12th October 1843.
Muchlaee,	Ditto Special Deputy Collector, ..	Ditto 27th October 1843.
Mahomedpoor Biaw,	Ditto Ditto,	Ditto 12th October 1843.
Mirzapoor,	Ditto Commissioner,	Ditto 5th February 1833.
Mulickpoor,	Ditto Ditto,	Ditto 10th March 1832.
Mulhanpoor,	Ditto Ditto,	Ditto 3rd May 1832.
Nyee Boojun,	Ditto Special Commissioner,	Ditto 12th December 1843.
Nyzampoor Puchtom,	Ditto Commissioner,	Ditto 23rd October 1832.

266.—In eleven instances, the grant on which the Estate had been held rent-free has been declared invalid, and the Estate been brought under assessment; viz. :—

Aorungabad, resumed in	1840.
Barkheera, ditto	1843.
Hussunnugur, ditto	1840.
Dudmace, ditto	1842.
Runjola, ditto	1837.
Futehpoor, ditto	1839.
Sullace, ditto	1849.
Moondaca, ditto	1840.
Mye Rujoo, ditto	1847.
Nurelee M'hora, ditto	1833.
Hadeepoor, ditto	1829.

In three cases of resumed Maafce Estates, realization of the Government demand is withheld, pending decision of Special Commissioner. These are—

Aorungabad Kazee, resumed in	1843.
Dunoura, ditto	1847.
Ghutpooree, ditto	1847.

268.—There are three Talooqahs in the Pergunnah; one of these, Raemah, comprises fourteen different Mehals: the survey of the whole Talooqah was made as one Mouzah.

269.—The other two Talooqahs are Goolurreeah and Meeaw, both of them held on a Bhyacharah, or rather imperfect Putteedaree tenure. In 1844, Mouzah Goolurreeah

fell into balances, principally in consequence of a feud amongst the proprietary brethren. Mr. G. Campbell, then Assistant to the Collector, was deputed by the Lieut.-Governor of the North Western Provinces to ascertain and report on the tenure of Goolurreeah, and the causes of its falling into balance. Mr. Campbell's report was as follows:—

“GOOLURREEAH is an imperfect Putteedarce, comprising ten Puttees. The Putteedars are at present undoubtedly at war ; but beyond the bad blood occasioned thereby, I can find nothing which should have prevented each from paying his share of the Government demand, since the land and Jumma was divided, and the possession by each of his own Puttee unmolested, (except as regards proceedings in the Civil Court,) while the common assets were so small as to afford, however inequitably shared, no reasonable ground for default of Jumma. Indeed, as the discontented sharers received at *least* in *proportion* to their payments, they had no possible pretext for holding back on this account, and beyond the severe indisposition to co-operate amicably, I find in the quarrels of the Puttees no solution to the cause of default, for the Jumma seems to have been most equitably distributed in proportion to the holdings, and every one might have had it in his power to pay * * *.

“The different Puttees again had each their separate constitutions, and in some of these the rights were not very clearly defined. In one of the largest however, and the principal defaulter, although I find disagreements among the sharers, it is here too without any sufficient grounds. In former times the head of the family was alone Malgoozar, but since the *Khewut* has been annually given in, the brethren have had their rights defined, and insisted on a division of the land, which was divided accordingly, and from that time Sahib Rae, (the head of the family,) whose resources have been much curtailed, has been discontented and in debt. He is still the Lumberdar of the Puttee, and says that his brethren do not pay him ; while they say that he had collected and spent it ; probably he wished to collect more than was due, and they therefore held back what was really due. In this way arose the default of the Puttee ; for although the rights were sufficiently defined, yet the sub-division of the property led to a very much increased difficulty of getting together the Jumma, and the disagreements which arose, caused their holding back, till it was too late.

“The other Puttees were held in common by their respective sharers, but in these the shares, as laid down by the Putwaree, are not universally acquiesced in, and in several, more or less grounds of disagreement existed in consequence. Thus certain Puttees defaulted, and the others being, by the constitution of the Village, unable separately to clear themselves, and escape responsibility for the others ; and the parties being, moreover, as I have said before, at war in the Civil Court, and disinclined to arrange their affairs amicably, the balance was held back from day to day, till the Collector would admit of this state of things no longer, and farmed the estate.”

270.—The actual cause of the dispute between the Putteedars was as follows:—The holdings of some of the sharers were much larger than of others, whilst those who had the smaller holdings, considered themselves entitled to as large a share as their more fortunate brethren. This will be understood immediately from the following Table, which I take out of Mr. Campbell's report. The Table shows the amount of and (cultivated and culturable,) and Jumma for each Puttee; the extent of interest

represented by the Jumma ; the extent of ancestral rights derived from a genealogical tree ; and the extent of share claimed or allowed in the Civil Court:—

<i>Name of Puttee.</i>	<i>Holdings.</i>		<i>Jumma.</i>	<i>Interest represented by Jumma.</i>	<i>Extent of Ancestral rights by Genealogical Tree.</i>	<i>Extent as assessed in Civil Court.</i>
	Beggahs.	Biswahs.	Rs. A. P.	In Decimals.	In Decimals.	
Sahib Race,	628	8	595 14 6	.147	.270	$\frac{1}{2}$
Heerah Singh,	138	12	157 0 0	.039	.090	$\frac{1}{2}$
Sooman Singh,	167	10	121 15 0	.030	.180	$\frac{1}{2}$
Simboonath,	1095	11	912 12 0	.226	.167 $\frac{1}{2}$	$\frac{1}{2}$
Buhadur Singh,	752	19	574 2 6	.142	.067 $\frac{1}{2}$	$\frac{1}{2}$
Manjeet Singh,	556	4	429 5 0	.106	.067 $\frac{1}{2}$	$\frac{1}{2}$
Abidder Singh,	157	10	135 2 6	.033	.023	$\frac{1}{2}$
Zoorawur Singh,	245	2	230 8 0	.057	.023	$\frac{1}{2}$
Holass Singh,	122	0	127 6 6	.031	.023	$\frac{1}{2}$
Maharaj Singh,	1056	6	766 7 0	.189	.189	$\frac{1}{2}$
Shamilat,	1615	18	0 0 0	.0	.0	0
Total,	6576	1	4050 0 0	.1000	.1000	1

271.—The Farmer found himself unable to withstand against the Proprietors, who, after losing their estate, combined against him, and he threw up the lease. The Proprietors then came to a settlement of their differences, and their property was again restored to them.

272.—The following Table will show the cost of the Kotwallee establishment of Budaon, with the per-centage of charges on Jumma and Population of the Pergunnah, which forms the jurisdiction of the Kotwal.

Number of Persons.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
		Rs.	Rs.			
1	Kotwal,	60	720			
2	Moharrirs,	18	216			
1	Jemadar,	10	120			
5	Duffadars,	30	360			
1	Mududgar,	5	60			
40	Burkundazes,	160	1920			
	Stationery and Repairs,	17	204			
50	Total,	300	3600	100436	98464	Rs. A. P. 3 10 6

273.—The charges and establishment of the Tehseeldaree offices are shown in the following Table, as also the per-centage on the Revenue of Pergunnahs Budaon and Oojhanee, which form the division:—

Number of Persons.	Office.	Salary per Mensm.	Total per Annum.	Population.	Jumma.	Per-centage of charge on Revenue.
		Rs.	Rs.			
1	Tehseeldar,	225	2700			
1	Peshkar,	40	480			
1	Wasil Baked Nuvces,	20	240			
1	Secah Nuvces,	15	180			
1	Dakhilla Nuvces,	10	120			
1	Arzee Nuvces,	10	120			
1	Itlaq Nuvces,	10	120			
1	Surveyor,	20	240			
2	Qanoongoes,	40	480			
1	Tehseeldar,	20	240			
1	Purkhyah,	10	120			
2	Mirdahas,	12	144			
1	Jemadar,	10	120			
1	Dufteree,	5	60			
40	Peons,	160	1920			
	Stationery,	18	216			
	Rent,	10	120		Rs.	Rs. A. P.
56	Total,	635	7620	0	198659	3 13 4½

SETTLEMENT REPORT OF PERGUNNAH BUDAON.

No. 179.

To H. S. BOULDERSON, Esq.,

Officiating Commissioner of Revenue, Moradabad.

SIR,

206.—Statements Nos. II. and III.
1 Chowkeedaree Statement.
1 General Statement No. IV.
1 Statement No. I.

I have the honor to forward the Settlement Statements of Pergunnah Budaon, noted in the margin; Statement No. III. will be submitted separately.

2nd.—The Budaon Pergunnah comprises three sub-divisions; Huvelee Budaon, Zillah Allahpoor, and Zillah Azimabad. The two latter, and Zillah Allahpoor in particular, were very irregularly assessed in the fourth Settlement, not only with reference to Huvelee Budaon, but to the adjoining Pergunnahs; under the very moderate assessment then formed, both of these sub-divisions have attained in the interim a high degree of prosperity. Cultivation has been extended in most instances to its utmost limits, and all the Zemindars have reaped the advantages of the assessment pretty equally.

3rd.—The standard Jumma of Huvelee Budaon, though disproportioned to that of the other portions of the Pergunnah, was not in itself excessive. It has been collected, with a comparatively trifling balance, during the last twenty-two years, and any difficulties that may have been experienced, have been owing more to the neglect and fraud of the Zemindars, than to over-assessment. The estates in Huvelee belong to people of every class; one of which, the Chowdhree tribe, (who are Proprietors of about a fourth of the Mouzahs) are in every sense the worst Malgozars in the district. The alterations in the Jummas of the individual estates, since the fourth Settlement, are confined to about ten instances, and these have taken place within the last five years.

4th.—The Pergunnah comprises every description of soil, Bhoor excepted. The chief portion of it consists of the same quality of soil, as the corresponding portion of Pergunnah Oojhanee, and I have classed it accordingly as Dhoomut. The class of soil, in Zillah Allahpoor, is more uniform in its quality than in Huvelee, but the difference in the total is trifling. The Mouzahs comprised in this class are situated high, and their crops are dependant on the periodical rains.

5th.—The estates classed as Dhoomut Khadir are situated in Huvelee, either on the banks of the Sote or Yarwafadar, or on the border of the Dhoomut tract in the

opposite direction, and comprise, as the name applies, two qualities of soil: these, in the banks of the Sote, thirteen in number, are confined to Huvelee Budaon, and are superior to the rest in point of soil, means of cultivation, and other advantages.

The Khadir lands in the other Mouzahs of the mixed class of soils, and particularly in Allahpoor, lie mostly in a tract of jungle in process of clearance, and exposed to many of the casualties already frequently adverted to as incidental to the mixed classes of soil in the other Pergunnahs, and the same discrepancy in their relative condition, capabilities, and means of future improvement is observable.

6th.—Zillah Azimabad comprises one description of soil. The Khadir Muttyar lands in the three divisions of the Pergunnah are strictly uniform in point of quality, but a considerable portion of the tract in each is covered with a dense jungle, and many years must elapse before the lands of these Mouzahs can be brought to any extent under the plough.

7th.—The classification of the estates, in the Pergunnah as above, may be relied upon for its correctness, having been formed on personal information,—the Pergunnah and Village Maps, and other sources. The corresponding classes in each division have been kept distinct, with a view to a comparison of the totals.

8th.—Zillah Allahpoor was carefully surveyed in 1829. The survey of the other Divisions was commenced and completed in 1832-33. Nothing having occurred to effect the cultivation in the former, since the year of survey, the results in the three Zillahs has formed the basis of the present Settlement.

9th.—The average Jummabundee rates assumed in the several classes of soil are given below:—

	Rs.	A.	P.	
Dhoomut,	1	13	0	Per Acre.
Dhoomut Khadir,	2	1	9	"
Khadir, 1st Class,	2	6	6	"
Ditto, 2nd ditto,	1	13	0	"

It will not be necessary for me to enter into a detail of the grounds on which these rates were assumed. They vary little, if at all, from the rent-rates assumed in the same classes of soil in the other Pergunnahs: allowance being made for a few local distinctions. The irrigated lands in the Pergunnah bear such a very trifling proportion to the unirrigated, that they were not brought into calculation at all in the assessment, a few instances excepted.

10th.—The deduced revenue-rates for the several classes of soil are as follows:—

	Rs.	A.	P.	
Huvelee Dhoomut,	1	2	8	Per Acre.
Khadir ditto,	1	5	5	"
Khadir Muttyar,	1	13	2	"
Allahpoor Dhoomut,	1	2	8	"
Khadir ditto,	1	3	6	"
Khadir,	1	3	2	"
Azimabad Khadir Muttyar,	1	7	8	"

11th.—The condition of the Pergunnah generally pointed to the propriety of the assessment being formed on the cultivation of the survey, which, as the sole basis of the Settlement, I had found much difficulty in adopting in several of the Pergunnahs previously assessed; and in fixing the assessment on the totals as well as Mouzawar, I was guided principally by the deduced rates. In one or two instances, however, a deviation was necessary. I refer to the Khadir class of Mouzahs in Huvelee, in which a rate is given by the cultivation not only disproportioned to the rates in the same classes in the other divisions, but to the average rent-rates. The estimated Jummas then yielded have been kept in their appropriate columns in the Statement, but in the assessment, it was necessary, with a view to preserve a due relative equality, to strike a mean between the deduced rates in the Khadir Muttyar lands in the three divisions of the Pergunnah; and the rate thus given, viz. Re. 1-8-0, was the one on which the Settlement of this class was formed.

12th.—The remarks in the Statements Nos. II. and III. have been purposely made so few and brief, that it will be necessary for me to add a few words in regard to any apparent discrepancies in the rates of the present assessment on the totals of the several classes, or in those of the Mouzahs comprised in them.

13th.—On the totals, as given below, the discrepancy is very trifling, and the above remarks will be sufficient perhaps to account for them, as well as for the division of the rates of their assessment, as it now stands from the deduced revenue-rates, without my going into any further detail.

Name of Mouzah.	Class of Soil.	RATE OF PRESENT ASSESSMENT ON THE TOTALS OF EACH CLASS.		
		On Total Area.	On Malgoozaree.	On Cultivation.
		Rs. A. P.	Rs. A. P.	Rs. A. P.
Zillah Huvelee, ..	Dhoomut,	0 10 1	0 12 2	1 2 10
	Dhoomut Khadir,	0 14 1	0 15 6	1 8 6
	Khadir Muttyar,	0 11 1	0 12 6	1 9 0
Allahpoor,	Dhoomut,	0 11 11	0 15 1	1 0 5
	Dhoomut Khadir,	0 10 1	1 1 9	1 3 3
	Khadir,	0 5 9	1 7 11	1 13 2
Azimabad,	Khadir Muttyar,	0 12 2	0 15 1	1 9 7

The rate of the present assessment in Zillah Allahpoor is very moderate, and may be thought too low; but where a large increase had to be assumed in a tract, the cultivation of which had previously been carried with only a few exceptions to its utmost practicable limit, which was far from being the case in the other corresponding portion of Huvelee, it was necessary to keep within bounds; the soil, though excellent of its kind, not being heavy enough to admit of constant cultivation, without a certain degree of deterioration in its produce.

14th.—In regard to the discrepancies noticeable in the relative assessment of the Mouzahs, I can only repeat the observations already made in the 6th, 7th and 8th paragraphs of the general remarks in the Settlement of the Oojhanee Pergunnah. The remarks in the Settlement Statement will account for the more glaring deviations,

and I have affixed a mark X in the General Statement No. IV. opposite to those Mouzahs in which I was unavoidably influenced in the assessment, by the extent of their Malgozaree Areas: these, however, are comparatively few, and may be viewed as exceptions; the assessment of the rest of the Pergunnah having been formed strictly on the cultivation of the surveys. I may further observe, that as the cultivation in the corrected Statement No. I. forms the basis of the Settlement, whereas the returns of the cultivation given in by the Putwarees in the present year are inserted in the General Statement, a trifling discrepancy is observable in many cases, which was not found before. In point of fact, it is immaterial which return is inserted.

15th.—The Jumma of the several divisions of the Pergunnahs at the several intermediate periods, with that of the present assessment, stands as follows:—

Name of Mouzah.	Jumma of 1220 Fuslee.	Jumma of 1222 Fuslee.	Average Jumma of the last five years.	Average Collections of the last five years.	Proposed Jumma.
Huvelee,	54761	62383	67431	68810	62959
Allahpoor,	12209	15409	16906	15649	25855
Azimabad,	11595	17634	18320	16605	22300
Total,	78565	95426	102657	100064	111114

The increase in the Jumma, since 1222 Fuslee, has been owing to the resumption and assessment of several Maaffee Villages in the interim.

16th.—In regard to the other miscellaneous work connected with the Settlement, and which is in itself by no means an unimportant part of the duty, I have nothing to observe, in addition to what has already been said on the subject in the general remarks on the Oojhance Settlement.

I have, &c.,

(Signed) S. S. BROWN,

Officiating Collector.

SAHESWAN COLLECTOR'S OFFICE, }
The 9th August 1836.

PERGUNNAH OOHANEE.

274.—PERGUNNAH OOHANEE is bounded on the north by Pergunnahs Budaon and Kote Salbuan, on the east by Pergunnah Oosaith, on the south by the Ganges, and on the west by Pergunnah Saheswan.

275.—It comprises 162 Mouzahs, and an area of 1,42,041 Square Acres, which are distributed as follows:—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
8278	23016	80152	30595	142041

276.—The Population stood at the last census as follows:—

HINDOOS.		MUSSULMEN.		
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	Total.
49361	11549	5327	3717	69954

277.—The soil of the Pergunnah is of three descriptions; Dhoomut, Bhoor and Khadir. The Villages containing the Dhoomut lands are situated to the north of the Pergunnah, on the confines of Budaon and Kote Salbuan: these have been for years flourishing, and in full cultivation. A strip of Bhoor separates the Dhoomut from the Khadir lands, varying in breadth from two to four miles. The Khadir Villages lay along the banks of the Ganges: this land is evidently alluvial, of more or less recent formation.

278.—The survey of the Pergunnah was completed by Captain Bedford in 1828-29. The revision of Settlement, under Regulation VII. of 1822 and IX. of 1833, was made by Mr. S. S. Brown during 1835-36. Villages were classified according to their soils. The deduced Revenue-rates were taken as follows:—

					Re. A. P.
On Bhoor,	..	..	..	..	1 0 2 Per Acre.
„ Dhoomut,	..	..	..	..	1 6 5 „
„ Khadir,	..	..	..	..	1 5 7 „

279.—The Jumma proposed by Mr. Brown, amounting to Rs. 1,04,441, was confirmed by Government.

280.—The Pergunnah has always been in flourishing circumstances. During the time of Mr. Wyatt, its prosperity suffered some interruption through the malpractices of a Tehseeldar. The nature of these is thus described by Mr. Brown, in a letter dated May 1833.

“ My attention, shortly after I had assumed charge of the District, having been directed to the Oojhanee Pergunnah, I proceeded there for the purpose of enquiring more particularly into the causes of the ruin, with which it was threatened. It was not long before a series of instances of shameless corruption and neglect on the part of the Tehseeldar were brought to my notice.

“ It would be unnecessary, at the present time, to enter into a detail of the malpractices which have been in vogue. I have reason to believe that the corrupt gains of the Tehseeldar, during the last three years, amounted to Rs. 60,000.—From the date of his appointment to the Tehseel, the Mehal, which was formerly one of the finest in Rohilcund, began to decline, and its deterioration has since declined so rapidly, that up to the present time, eight annas in the rupee have barely been collected from the Pergunnah. Those who could pay, were suffered to remove their crops from the ground, without an attempt being made by the Tehseeldar to realize the Government dues. Those who could not pay, were overwhelmed by swarms of Dustuck Peons, whose pay swallowed up the share of the proceeds that might otherwise have found its way into the Government Treasury. If to this be added the systematized embezzlement prevalent in the Tehseel from the Tehseeldar himself down to the lowest Chupprasee, it will not be a matter of surprise that the Pergunnah should be reduced to a state bordering on ruin.”

281.—The depression caused by this misconduct ended with the removal of the evil, and before the revision of the Settlement took place, the Pergunnah had, in a great measure, regained its former position.

282.—Since the revision of Settlement seven entire estates, held hitherto on a rent-free tenure, have been resumed. These are—

1. Putpurgung,	resumed in	.. .. .	1839-40.
2. Peerbutoo,	ditto,	.. .. .	1839-40.
3. Chundowra,	ditto,	.. .. .	1845.
4. Chooreca,	ditto,	.. .. .	1845.
5. Suray Salehpor Kotha,	ditto,	.. .. .	1840.
6. Ferozepoor Eklaree,	ditto,	.. .. .	1845.
7. Mulikpoor,	ditto,	.. .. .	1845.

283.—In four instances, entire estates have been released in perpetuity:—

Ramzanpoor,	By order of Sudder Board,	Dated 27th March 1826.
Kulpeeah,	Ditto ditto,	Ditto 10th August 1833.
Gungchora,	Ditto of Lieut.-Governor, N. W. P., ..	Ditto 17th June, 1842.
Nagur,	Ditto of Commissioner,	Ditto 2nd October 1837.

284.—The proprietary classes are as follows:—

Thakoors hold	36	Estates.
Aheers hold	10	”
Kaiuths hold	7	”
Bukals hold	5	”
Brahmins hold	5	”
Mussulmen hold	32	”
Mussulmen and Hindoos hold	36	”
Koormees hold	3	”
Goojurs hold	2	”
Miscellaneous Classes hold	26	”
Total,	162	Estates.

285.—The tenures are shown in the following Table:—

Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyacharah.	Total.
98	23	37	4	162

286.—The mode of payment of rent differs in this Pergunnah according to the soil and situation. In all the Dhoomut Villages the rents are paid according to a fixed rental per beegah. Money rates are also prevalent in many of the Bhoor Villages. In others of this class, *buttace* rates are found. In the Villages bordering on the Ganges, the rent is regulated by the description of crop sown per beegah; that is, sugar-cane will yield to the Zemindar Rs. 12 per Acre: that acre of ground, sown with bajra, will yield but Rs. 2-8-0 the next year, or if sown with wheat, Rs. 5.

287.—The river Ganges flows along the southern boundary of the Pergunnah, affording easy transport for the extra produce. During the dry months of the year, the river is crossed by a bridge of boats at Kuchla and Kadirchoke; at the former Ghaut (Kuchla,) a great part of the export produce of Bareilly and Budaon, consisting of wheat, rice, and other grain, is collected, and transported by water to Futtehghurh and Cawnpoor.

288.—There are no towns in the Pergunnah of any size or importance. During the Puthan rule, Oojhanee was the place of residence of Abdoollah Khan, the second son of Allee Mahomed; it is supplied with a good bazar; the merchants of it carry on a small trade with Futtehghurh, in connection with the merchants of Bilsee. A small indigo factory, the property of Messrs. A. and J. Donald, stands just outside the town: this factory is capable of producing from 100 to 140 maunds of manufactured indigo. Markets are held twice a week in Oojhanee Khas and Shekoopoor.

289.—A large religious fair is held on the banks of the Ganges at the full moon of Kartick (November). This is attended by from two to three lakhs of people, who assemble from Bareilly, Budaon, Shahjehanpoor and Putteealee Districts. A considerable amount of barter is carried on between merchants of Dehlie and Bundelcund during the last two days of the assembly; the Dehlie merchants giving jewellery, scarfs, &c., and receiving in exchange khurrooh and other English and country cloths,

brass utensils, &c. With this exception, little or no trade is carried on. The fair was, until the last few years, held on the lands of Mouzahs Kukora and Kadirchoke. The river changed its course in 1848, and the site was, in consequence, removed two miles down the river. The fair is still denominated the Kukora fair.

290.—The following Table will show the number and description of Schools in the Pergunnah :—

Number of Schools.	Description.	Number of Teachers.	Number of Scholars.	Pay of Teachers per Mensem.	Total per Annum.
				Rs. A. P.	
7	Persian,	7	57	62 0 0	744
3	Hindee,	3	60	6 8 0	78
10	Total,	10	117	68 8 0	822

291.—There are sixteen Sheowallahs, twenty-two Thakoor Deowallahs, and eight Mussulmen places of worship in the Pergunnah.

292.—The following Table will show the cost of the Thannah establishment :—

Number of Persons.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage on Jumma.
		Rs.	Rs.			
1	Thannahdar,	30	360			
1	Mohurrir,	8	96			
1	Jemadar,	8	96			
2	Duffadars,	12	144			
1	Mududgar,	5	60			
25	Burkundazes,	100	1200			
	Repairs and Stationery, ..	9	108		Rs.	Rs. A. P.
31	Total,	172	2064	69954	100195	2 0 11½

SETTLEMENT REPORT OF PERGUNNAH OOHJHANE.

No. 75.

To H. S. BOULDERSON, Esq.,

Commissioner of Revenue, 3rd or Bareilly Division.

SIR,

* 1. Statement No. I.
153. Ditto No. II.
1. Ditto No. III.
1. Ditto No. IV.
1. Ditto Chowkeedaree dues.

I have the honor to submit the Settlement Statements as per margin,* for Pergunnah Oojhane.

2nd.—No further general remarks, beyond those already submitted in my letter of the 19th November, No. 351, in regard to the past circumstances or present condition of the Pergunnah, appear to be called for.

3rd.—A difference in the totals of the several classes will be observed between the estimated demand noted in my former letter, and the assessed Jumma. In entering into the assessment in detail, I do not consider myself bound to adhere strictly in the totals to the estimate previously assumed, particularly as its incorrectness was established in two of the classes on further enquiry. The difference in the others is notwithstanding very trifling.* That observable in the classes of Muttyar and Bhoor Khadir was occasioned by the Villages of that class, from No. 139 to 147, being found to include within their cultivated and Malgozaree areas, a very large proportion of Belah land, or land in the bed of the Ganges, which had not been taken into account before, and the variation in the Bhoor Khadir estates, from the difficulty of forming any estimate approaching to correctness on a class of estates varying so widely in their situation, capabilities, and the relative proportion of their soils. The condition of most of these estates called not merely for a just, but a liberal assessment, which, to the best of my judgment, has been allowed them.

* A variation in the totals is observable, but this was occasioned by a transposition of a few Mouzahs from one class of soil to another, subsequently to the despatch of the Statement No. I.

4th.—The average rates assumed for the several classes, and the deduced Revenue-rates are given below :—

DESCRIPTION OF LAND.	Average per Cultivated Area.	Reduced Revenue.
	Rs. A. P.	Rs. A. P.
On Bhoor,	1 7 9	1 0 2
„ Ditto Khadir,	0 0 0	1 3 9
„ Dhoomut,	2 1 3	1 6 5
„ Ditto Khadir,	0 0 0	1 5 7
„ Belah,	0 0 0	0 0 0

5th.—The distribution of the areas in the Survey is in general correct. In the few instances in which I have found grounds to differ, the reasons have been assigned in the remarks; however, I may observe that in many instances, and in the Dhoomut class of Villages in particular, an outcry was raised by the people of too large an area having been measured off as cultivated. In two instances tested by me, viz. Mouzah Behta No. 20, and Sirsowlee No. 49, the cultivated area given in the Survey certainly exceeded it, in the latter in particular, where it included more than was either then cultivated, or than ever could be brought under cultivation. The Survey details have been retained in the statement, and the difference in the totals, after all, cannot be of much consequence; but as every available beegah of land in the estates of this class has been long under the plough, some allowance was made for the excess, in the assessment.

6th.—It has been my object, in the progress of the Settlement, to adhere as much as possible to the instructions of the Board, communicated in their letter of the 21st April 1835. In the Dhoomut Villages in particular, where there is little or no culturable area, and where the soil is on the whole tolerably uniform, a closer uniformity in the rates might reasonably have been effected. No two Mouzahs however are alike in all things, and so many minor considerations intervene in the progress of the Settlement to occasion trifling deteriorations from the standard laid down, contrary in many instances to the original intention of the Settlement Officer, that the assessment, when arranged by rates, exhibit apparently little method.

7th.—These minor considerations are to be found in the variation of soil; the means and claims of the Malgoozar; the demand for land; the nearness of markets; the capabilities for improvement, &c. &c. In the first class of Estates, Nos. 42 and 56 must be regarded as exceptions, and were settled as such. The Bhoor Mouzahs must speak for themselves, and the correctness of the distribution of the demand in the Mouzahs of the mixed classes of soil can only be proved on personal enquiry, or tested by a standard which, in these instances, is far from a sure one.

8th.—The Mouzahs classed as Dhoomut are cultivated as highly as their capabilities will allow. In the Jumma bundee yielded by the average rate, which taken on the whole is moderate, about a third has been relinquished to the Zemindar. In the other classes, which did not admit of the same accuracy in the calculation, I have endeavoured to fix a demand, varying in the extent of its profits for the future by the degree of industry likely to be applied, but calculated, under all circumstances, to yield a fair return to the Malgoozar.

9th.—The Jumma of the Pergunnah, in 1220 Fuslee, was Rs. 1,10,149; in 1222 Fuslee, Rs. 1,17,726; in 1230 Fuslee, Rs. 1,11,119; in 1235 Fuslee, Rs. 1,13,959, in 1240 Fuslee, Rs. 99,703; and in the last year Rs. 1,05,841. The average Jumma of the last five years is Rs. 1,07,606. The average collections, Rs. 97,742. The proposed Jumma, Rs. 1,04,631.

10th.—A few words may be added with regard to the other miscellaneous work, connected with the Settlement beyond the mere assessment; viz.

1stly.—Lakhiraj claims.

2ndly.—The claims of sharers, &c. &c. brought forward prior to the Settlement.

3rdly.—The ascertainment and record of the rights, dues, and holdings of the Village community subsequent to it.

11th.—The appointment of a Special Deputy having relieved me of the task of investigating the Lakhiraj claims, I have let the petitions presented by the Lakhirajdars, in conformity with the proclamation, lie over until that officer's arrival in the District, taking care just to have recorded on the back the quantity of the land actually in the possession of the petitioner, and consequently included in the Settlement accounts, as *Minhaee*. Of the unregistered grants I have selected a few, which, after enquiry, appeared to me to come within the scope of Section 7, Clause 2, Regulation XXXI. of 1803, and Clause 4, Regulation XIV. of 1825: those which have been exempted from assessment pending order, will be reported separately. The Zemindars having conceived an impression that they were at liberty to oust the Lakhirajdars from the resumed lands, the rents demandable from them had also to be adjusted for the future, subsequently to the Settlement.

12th.—The claims originating with the proclamation were numerous, and occasioned no little trouble as, however frivolous and vexatious they might prove to be grounds for their rejection, had still to be sought. The number of petitions presented, amounted in all to 274, out of which a few only were cognizable by the Collector under the orders of the Sudder Board, communicated in the 47th paragraph of their letter of the 27th September 1833. If the same rule were inserted in the proclamation, the Settlement Officer's would probably be spared the trouble of investigating, which after all leave matters as he found them.

13th.—The record of rights and holdings filed by the Village Proprietors and their under-sharers after Settlement, exhibit the land actually in the cultivation of each member of the body, with a specification of their method of internal management. The detail has been altogether omitted as superfluous in the English statement. In the few Bhyacharah and Putteedaree tenures in the Pergunnah, the prescribed method of record of the existing holdings and responsibilities has been followed. These records are likely to prove useful for the future: all mention of biswahs being omitted in them.

14th.—I have endeavoured to have the record of the rents demandable from the cultivating classes for the future made as correct as possible, and all disputes have been referred to the punchayets chosen with occasion. As this record contains in full the number of beegahs cultivated by each, the kind of soil as known by name to the people themselves, and the situation of the fields, they will, I hope, be found to answer the purpose of a regular Khusreh, and are more likely to be correct from being given in after, instead of before the Settlement, when the Malgoozar has every object in mis-stating the rates, as he has a still stronger one in giving them in correctly afterwards; besides their being attested by all the Assamees who could conveniently attend.

I have, &c.,

(Signed) S. S. BROWN,

Officiating Collector.

SAHESWAN COLLECTOR'S OFFICE,

Camp Allahpoor,

The 28th March 1836.

(True Copy.)

(Signed)

M. H. COURT,

Deputy Collector.

PERGUNNAH SULEIMPOOR JOOKSAH.

293.—At the time of Settlement under Regulations VII. of 1822 and IX. of 1833, this Pergunnah comprised 101 Mehals, and formed in itself the Tehseeldaree Division. In 1844 A. D., the Pergunnah was enlarged by the annexation of Zillah Azimabad, from Pergunnah Budaon, and Zillah Huzrutpoor from Pergunnah Oosaith, and at the same time the following transfer of Villages took place:—

Name of Mouzah.	From what Zillah transferred.	To what District transferred.	Jumma.	Area.
			Rs.	Acres.
Bich Rairah,	Suleimpoor Proper.	Bareilly.	1300	1013
Nourungpoor,	Ditto.	Ditto.	1420	1025
Sikodah,	Ditto.	Ditto.	825	634
Achrutpoor,	Zillah Huzrutpoor.	Shahjehanpoor.	750	527
Bagurpoor,	Ditto.	Ditto.	200	96
Chukdaha,	Ditto.	Ditto.	500	303
Dhooblah,	Ditto.	Ditto.	1650	854
Simurreah Racepoor,	Ditto.	Ditto.	1400	998
Khooboopoor,	Ditto.	Ditto.	700	952
Khireea Rutun,	Ditto.	Ditto.	1690	920
Kishnee Nugla,	Ditto.	Ditto.	300	228
Gurheea Rungee,	Ditto.	Ditto.	3350	2190
Mouzumpoor,	Ditto.	Ditto.	250	160
Mirzapoor,	Ditto.	Ditto.	350	201
Nizampoor Nugeereah,	Ditto.	Ditto.	275	917
Total 15 Mouzahs,			14960	11018

294.—The following Mouzahs were annexed to the Pergunnah; viz.:—

Name of Mouzah.	District from whence received.	Annexed to	Jumma.	Area.
			Rs.	
Mulikpoor,	Bareilly.	Suleimpoor.	150	161
Bowrah Birampoor Ferozapoor,	Ditto.	Ditto.	475	977
Noonhace,	Ditto.	Ditto.	90	296
Birahee Schorah,	Ditto.	Ditto.	600	912
Deonce,	Ditto.	Ditto.	754	969
Gopalpoor,	Ditto.	Ditto.	110	75
Munhureea,	Ditto.	Ditto.	312	295
Kishnee M'herah,	Pergunnah Budaon.	Ditto.	720	2375
Total 8 Mouzahs,			3211	6060

295.—The Pergunnah, as now constituted; that is, embracing Suleimpoor Proper, Zillahs Azimabad and Huzrutpoor; comprises 268 Mouzahs, and an area as follows:—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
6011	12192	73327	55147	146677

296.—The three divisions of the Pergunnah differ from each other in many particulars; Azimabad differs from the other two Pergunnahs in soil, which closely resembles that of Tuppah Huvelee: its Mouzahs were classified, and the deduced Revenue-rates were the same as for Tuppah Huvelee, Pergunnah Budaon. The division is separated from Suleimpoor Proper by the Arril Nuddee.

297.—The soil of Suleimpoor Proper and Huzrutpoor is similar in its nature, though that of the latter is from cultivation more productive than the former. The proprietary classes in both are the same, and yet the two Districts differ widely from each other. Suleimpoor is certainly less advanced than any other portion of this District; whereas Huzrutpoor stands as high in position as any. This is difficult to account for. The deterioration of Suleimpoor was ascribed by Mr. Swetenham to the

following causes*:—"Suleimpoor Pergunnah is a scene of confusion. Successive inundations from the Ramgunga have driven the Malgoozars to outrage and despair: they are chiefly Jungarah Rajpoots: they and the ryots are indigent, and have diminished their exertions in cultivating, under apprehension of loss from inundation, and being consequently unable to pay the Government revenue, have resorted to violent resistance."

298.—The level of Huzrutpoor is quite as low as Suleimpoor, and equally liable to inundation. This cannot, in consequence, be the cause of the difference in condition of the two, which can, in my opinion, be traced to the different habits, tenures and character of the Jungarah tribe, who inhabit both the divisions. The estates held by this tribe in Suleimpoor are almost universally held on an imperfect Putteedaree, or Bhyacharah tenure: in these estates the proprietary community is large; their Malgoozars have little or no influence over the brethren, and consequently a general absence of proper management or self-government will be found in these Mouzahs. The proprietors are poor, at the same time of extravagant habits, and are all of more or less notorious bad character.

299.—In Huzrutpoor, on the other hand, the tenures are either Zemindaree or Putteedaree; the heads of the Thakoors families are from their wealth or habits influential, are looked up to by the under-sharers over whom they exercise control: they are in some instances, from their wealth, able to carry on a trade with the surplus produce of their estates, and in this way relieve the cultivators from the machinations of the Bunneah. The sub-proprietors are, from example and habit, proportionably industrious; and the cultivating community in Huzrutpoor are in better circumstances, and pecuniarily more independant than in most other Pergunnahs.

300.—To this alone can I ascribe the difference of the condition of the two Divisions, which in fertility and description of soil, ready demand for produce, liability to inundation, and indeed in every other point, whether of profit or loss, are closely similar to each other.

301.—According to a census made in 1847, the Population is as follows:—

HINDOOS.		MUSSULMEN.		
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	Total.
65648	11671	3209	3596	83124

302.—The proprietary classes are as follows:—

Thakoors hold	165	Estates.
Kaiuths ditto	14	"
Bukals ditto	5	"
Brahmins ditto	4	"
Mussulmen ditto	26	"
Mussulmen and Hindoos ditto	24	"
British ditto	5	"
Mixed Classes ditto	21	"
Government ditto	4	"
	268	Estates.

303.—The tenures are classified as follows:—

Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyacharah.	Total.
84	37	122	25	268

304.—There is not a town of any size or importance in the Pergunnah:—Arela, or Datagunge, the seat of the Tehseeldaree Thannah and Moonsiffie offices, is a small, insignificant place. Markets are held weekly in the following villages:—Pura, Bhutoulee, Sahdoolagunj, Busunt, Mujhara, Birahee, Pipla, and Huzrutpoor.

305.—The following Table will show the number and description of Village Schools in the Pergunnah:—

Number.	Description.	Number of Teachers.	Number of Scholars.	Pay of Teachers per Month.	Total per Annum.
7	Persian,	7	33	Rs. A. P. 18 14 0	226 8 0
7	Hindee,	7	73	19 0 0	228 0 0
1	Sanscrit,	1	12	0 0 0	0 0 0
15	Total,	15	118	37 14 0	454 8 0

306.—Zillah Azimabad was surveyed by Captain Bedford during 1832-33; the survey of Huzrutpoor and Suleimpoor was made by Lieutenant Fraser during 1833-34; the revision of Settlement, under Regulations VII. of 1822 and IX. of 1833, was made by Mr. S. S. Brown, of Huzrutpoor, in 1834 A. D.; of Azimabad and Suleimpoor during 1835-36. That gentleman's Settlement reports are annexed to this, and it is therefore unnecessary to detail the principles on which the Settlement was revised.

307.—In Zillah Huzrutpoor, in common with Pergunnah Oosaith, of which it then formed a part, the Settlement made by Mr. Brown was subsequently revised by Mr. Timmins, whose report on Zillah Huzrutpoor is as follows:—

"The Jumma of the year before the Settlement was Rs.35,942; the Jumma fixed by Mr. Brown was progressive, the Kamil Jumma being Rs. 45,726; the average collections of the ten years before Settlement were Rs. 33,421; the average collections since have been Rs. 35,724.

"The lands may be divided into two classes:—

"1st.—Those bordering upon the Arril and the Suleimpoor Pergunnah to the north, which are low, rich and capable of irrigation, at a small expense, whenever they require it, which in ordinary seasons they do not.

"2nd.—Those lying to the south of the Zillah, bordering upon Oosaith, which are at present covered with a dense dhâk jungle, excepting in detached spots, where attempts have been made with as yet little success to clear the waste.

"The Kamil Jumma of the Villages, which I have included in the first class, was fixed by Mr. Brown at Rs.35,809, averaging Rs. 3-1-6 on the cultivated, and Re. 1-11-11 on the whole Malgoozaree area. The progressive increase was afterwards relinquished in most of the Villages, at the recommendation of Mr. Brown, and the good effects of this moderation are apparent in their improved condition.

"The only class of Villages, with which these can be compared in the neighbouring Pergunnahs, are the Muttyar Villages, and those bordering on the Ramgunga, in Pergunnah Suleimpoor; the average rates of these are Re. 1-5-9 and Re. 1-15-2; Re. 1-1-5 and Re. 1-15-8 upon those Villages on the Ramgunga. The Huzrutpoor Villages are upon the whole much superior.

"My average assumed rates were deducted from the prevailing rent-rates, with very few exceptions; the latter is 12 annas per beegah; my assumed rate was Rs. 2-6-0 per acre on the cultivated area, which gave an assessment of Rs. 27,486: my Jumma, as distributed, is Rs. 26,037. The cause of this variation will be discovered from my remarks on each Village. One is, that I have in no case raised the Jumma, but have confined myself entirely to granting relief where necessary. For the jungle villages I assumed a standard rate of Re. 1-8-0 per acre on the cultivation, which gives an assessment of Rs. 5,856; my revised Jumma is Rs. 5,996. The Jumma of the late Settlement was Rs. 9,917.

"In all these Villages the culturable area must be thrown out of the calculation. It is almost all uncleared, and the experience of the last six years has proved that an assessment fixed with reference to the chance of improvement from cleaning the jungle will fail.

"The Jumma of the whole Zillah is Rs. 32,032, which falls on the cultivated area at Rs. 2-1-1, and on the total Malgoozaree at 15 annas and 1 pie. In the latter is included the whole of the forest."

308.—The Tehseeldaree includes Pergunnahs Suleimpoor and Oosaith. The cost of the establishment, and the per-centage of costs on the Revenue of the division is shown in the following Table:—

Number of Persons.	Office.	Salary per Mensem.	Total per Annum.	Jumma.	Per-centage of charge on Jumma.
1	Tehseeldar,	175	2100		
2	Peishkars,	55	660		
1	Wasil Bakee Nuvees,	15	180		
1	Seeah Nuvees,	15	180		
1	Dakhila Nuvees,	10	120		
1	Itlaq Nuvees,	10	120		
2	Qanoongoes,	40	480		
1	Tehveeldar,	15	180		
1	Purkheyah,	10	120		
3	Mirdahs,	18	216		
1	Jemadar,	8	96		
1	Duffurce,	5	60		
40	Peons,	160	1920		
	Stationery,	17	204		Rs. A. P.
56	Total,	553	6636	205022 8 0	3 3 9½

309.—The Thannah establishment and its charges are here shown:—

Number of Persons.	Office.	Salary per Mensem.	Total per Annum.	Population.	Jumma.	Per-centage of charge on Jumma.
1	Thannahdar,	30	360			
1	Mohurrir,	8	96			
1	Jemadar,	8	96			
2	Duffadars,	12	144			
1	Mududgar,	5	60			
25	Burkundazes,	100	1200			
	Repairs and Stationery, ..	10	120			Rs. A. P.
31	Total,	173	2067	83124	134570 8 0	1 8 8½

SETTLEMENT REPORT OF PERGUNNAH SULEIMPOOR.

PERGUNNAH SULEIMPOOR comprises 285 Mouzahs and 101 Muhals.

2nd.—The Jumma of 1222 Fuslee stood at Rs. 94,616; in 1230 Fuslee it sunk to Rs. 74,795; in 1235 Fuslee the Jumma rose to Rs. 94,795; and again sunk in 1240 Fuslee to Rs. 91,093: the actual Jumma of 1241 Fuslee amounted to Rs. 88,937.

3rd.—All the estates in the Pergunnah, up to 1220 Fuslee, belonged exclusively to Thakoors of the Jungarah tribe: any changes in the proprietary right since that time have been occasioned by public or private sale.

4th.—The Jungarah Thakoors in this District are limited to the Suleimpoor Pergunnah, which is cut off by its situation from the other Pergunnahs, and is properly an appendage of the Bareilly district. The greater number of the estates in the Pergunnah of Fureedpoor and Julalabad, in the Bareilly and Shahjehanpore zillahs, belong to Thakoore communities of the same tribe.

5th.—The Pergunnah lies low, and is bounded on either side by the Arril Nuddee and the Ramgunga. Its surface is generally even, and it exhibits none of the marked distinctions of soil observable in the Pergunnahs already reported. The soil, which is comparatively uniform, is rich and productive; but the character and habits of the Jungarah Thakoors render them bad cultivators and careless Malgoozars.

6th.—The Pergunnah, with reference to its soil and capabilities, may be considered to have been not over-assessed at its standard Jumma, which has nevertheless been realized for the last twenty years, with occasional difficulty. In 1217 Fuslee, the whole Pergunnah was leased (dur-o-bust) to a farmer for Rs. 60,000, the Zemindars having declined to come forward. During the sixth Settlement many of the estates were sold at public auction for arrears of revenue, and on its expiration, a considerable number of the Zemindars withdrew from further engagements. Their estates were re-settled in many instances at an almost nominal Jumma, which were sanctioned for two years only. At the close of 1231 Fuslee, the Pergunnah was annexed to the Saheswan District, and its condition at that period was deplorable. Immense balances had accrued, and deterioration had been carried to a ruinous extent. The Jumma for the next six years was realized without difficulty, the greater number of the resigned estates of 1230 Fuslee having been re-settled in 1232 at their former Jumma; but at the close of 1239 Fuslee matters were fast verging to a similar crisis.

7th.—The shock, which the Revenue has undergone at different periods during the last twenty years, are chiefly to be traced to the combination of the Zemindars, and to the mismanagement and neglect of the local Native officers. On a review of the general condition of the Pergunnah during that period, there are fewer instances of poverty or distress occasioned by over-assessment, or other adventitious causes, such as failure

of seasons and the like, than are to be met with in the other Pergunnahs of the District, two or three excepted: the sales which took place in the course of the 5th Settlement were principally brought on by wilful default. The Zemindars, in fact, are all more or less possessed of the means of management, and the labouring classes (if a judgment can be formed from the appearance of the Villages) seem to be in comfortable circumstances.

8th.—The balances in the Pergunnah amount in all to Rs. 1,20,282, a heavier sum in proportion to the amount of its former assessment, and its general fairness, than is to be found in any other Pergunnah in the District.

9th.—Previously to the assessment, it was necessary to separate the estates in the Pergunnah into three classes; viz. :—

1stly.—The Mouzahs comprising the body of the Pergunnah.

2ndly.—The Mouzahs situated in the uncleared land.

3rdly.—Those which bordered on the Ramgunga. The two latter classes may be viewed as exceptions.

10th.—The soil of the Mouzahs of the first class, as has been already observed, is pretty generally uniform, but exact uniformity cannot be expected in so extensive a tract of country; on the contrary, the variations in the richness and productiveness of the lands are considerable. The alluvial soil in the vicinity of the Ramgunga, and the lands watered by the Arril, which in dry seasons is dammed up for the purposes of irrigation, are the richest in the Pergunnah, if not in the District. The intermediate tract comprises much "Oosur" land, and inferior soil cultivated at low rates, and yielding in many places a comparatively scanty return.

11th.—In determining the proposed Jumma for the Mouzah of this class, my object was to form an assessment, which might be borne out in its results by the general circumstances of the Pergunnah in regard to its soil and condition, compared with the other Pergunnahs already settled, and which might at the same time fall as nearly as possible equally on the individual Mouzahs comprised in it; but the past history of many of these Mouzahs, aided by personal observations and enquiry, led me to believe that a closer approximation to any assumed standard than that exhibited in Statement No. IV. would not only be inexpedient, but could give rise, if attempted, to much dissatisfaction.

12th.—The variations in the rates of assessment on the Malgoozaree areas of these Mouzahs, from one rupee to two rupees per acre, are certainly considerable, particularly when any classification is attempted; but the Malgoozaree areas are in themselves in many instances incorrect, although they are the only standard of comparison assumable. A great deal too much land has been written off in the Survey as culturable, which on personal inspection, independantly of other sources of information, I found to be quite the contrary; the survey out of a total area of 83,185 acres giving only 2,774 barren. It is very far from my wish to reflect on the Native officers employed in the Survey on this account, for it is next to impossible, in the course of the rapid operation of the Survey, and the transition of the establishment from one Pergunnah to another, that they could either acquire or be taught to discriminate between the

culturable and waste areas with the same correctness as the Pergunnah Officers; the soil of each Pergunnah varying not a little. The area recorded as waste in the estimate of 1220 Fuslee I have generally found to be correct, allowing for the discrepancies in the total areas between them and the survey in the Mouzahs comprised in the 1st class, and those greatly exceed the waste areas recorded in the latter.

13th.—In the Mouzahs, the Jummas of which exhibited a higher rate of assessment, with reference to their soil and capabilities than the rate of the proposed assessment of the other estates of the same class, a proportional reduction was granted; but a rise to this, or any other standard, was found to be impracticable and inexpedient in many of the Mouzahs of the inferior kind, the assessments of which underwent slight modifications, regulated by the circumstances noticed in each case in the remarks.

14th.—The Mouzahs of the second class naturally form themselves into a separate sub-division; they comprise a tract in process of clearance from the jungle, with which their lands have been encumbered; until a late period, a considerable increase has been assumed in the generality of these estates, which will fall lightly on their resources under an ordinary degree of industry for the next few years, and cannot fail to bear but a small proportion to their profits long before the expiration of the present term of Settlement. A considerable improvement has been visible in these Mouzahs of late, and it would have been inexpedient and unjust to have calculated beyond a certain limit on the industry or means of the Proprietors. Progressive terms were fixed on these estates, merely to save the Zemindars from the embarrassment of having to pay a sudden increase, which might not in some instances be in proportion to the existing assets.

15th.—To Mouzahs of this class, it must be obvious that the rates of assessment in other parts of the Pergunnah cannot be applicable; I may however observe that the Malgoozaree areas of the survey include uncleared lands, which occupy a considerable portion of their total areas.

16th.—To the Mouzahs situated on or near the Ramgunga, no general rule whatever could be made applicable as a guide in their assessment. Its bed seldom exceeds two miles in breadth, and narrows in some places to a few hundred yards. The soil in the low grounds becomes culturable for the coarser products in the second or third year, if undisturbed by the course of the river, and it yields at all times an unfailing supply of grass, which is valuable to the highly cultivated Mouzahs in the neighbourhood for pasturage. The stream frequently varies its course, and as it has always constituted the boundary between the estates on each side, the lands on its bed are subject to a frequent change of owners. Any losses however arising from these changes are seldom complained of: the *real* damage sustained by the estates in the vicinity of the stream being occasioned by its encroachment on the rich alluvial lands on its banks, which, if once cut away, as is frequently the case, even if recovered afterwards, are permanently reduced in point of soil and quality to one-sixth of their former value.

17th.—It became therefore necessary to regulate the Assessment Village by Village, by the chances to which their situation exposed them individually by the relative extent of the rich lands on the banks, or of the inferior portion in the bed of the stream; and

by the consideration of the expediency of offering a Jumma, which, under ordinary circumstances, might be expected to secure the Zemindars against loss, and remove all pretext for claims to remission.

18th.—This object has, I hope, been obtained in the present Settlement; a considerable reduction has been granted in the quantity of the Mouzahs of this class; but having visited, at different times, the greater number of the Mouzahs, I do not think it greater than occasion called for.

19th.—The proposed Jumma of the Pergunnah stands at Rs. 83,305, and the Kamil Jumma at Rs. 91,191, being * Rs. 4,485 less than the standard Jumma of the sixth Settlement, (which is still borne on the books,) but is many thousand rupees in excess of the average collections during the last twenty years.

20th.—I have only to add that the estates in the Pergunnah belonging to non-resident proprietors were assessed very moderately. These individuals were invited to purchase at the public sales formerly, it being the object of the Revenue Authorities at the time to break the combinations that existed during the fourth and fifth Settlements amongst the Thakoor communities, by introducing capitalists from other Districts. The measures succeeded for the time, but the purchasers sustained heavy losses during the next three years. They withdrew from engagements in 1230 Fuslee, and only resumed them in part in 1240 Fuslee. These circumstances, added to the expenses to which they are unavoidably exposed, rendered a moderate assessment necessary and just, to make it worth their while to continue them for the next twenty years.

21st.—The average rent-rates assumed on the unirrigated soils are Re. 1-10-0 per pukka beegah on the cultivated lands of the Mouzahs of the first class; Re. 1-2-0 on those of the jungle Mouzahs; and twelve annas on the lands in the bed of the river. Any average rates on the two latter can only be nominal; the quality of the land undergoing clearance improving yearly, and the cultivation in the bed of the stream being scanty and uncertain. The rate on the lands of the first class falls below the assumed rate on the better Muttyar soil of Pergunnah Saheswan and Oosaith, by four annas per beegah; but no small portion of the cultivators in every Village in this Pergunnah, consisting of Thakoors, who, if not entitled to the privilege of the *baach*, usually pay fixed rates, or hold under-leases or putkus of their lands, in terms much lower than the ordinary cultivators, it was necessary to make account for this and other local peculiarities in fixing on a rate intended to be generally applicable.

(Signed) S. S. BROWN,

SAHESWAN COLLECTORSHIP.

Officiating Collector.

ZILLAH HUZRUTPOOR.

ZILLAH HUZRUTPOOR comprises fifty-seven Mehals, or ninety-six Mouzahs. It is situated between the other Zillahs, which comprise the Pergunnah of Oosaith and the Suleimpoor Pergunnah; but though forming a part of the former, it is separated from it by marked distinctions in its locality, soil, and usages. The Zillah lies low, and is intersected by the Ramgunga and the Arril Nuddee, which unites itself with the former in the centre of the Zillah. The people, who class as Jungarah Thakoor, form a distinct community amongst themselves, and have little in common with the other party of the District.

2nd.—The lands are in an uniform level; the inequalities occasioned by the Ramgunga excepted, the bed of which varies in breadth from two to three miles towards the Oosaith side. The Zillah is bounded by a dense line of jungle, the growth of centuries, from two to eight miles in breadth. This tract appears to have been at one time inhabited, and under the plough, but it has long been abandoned. A considerable portion of it on the skirts has been cleared and cultivated within the last twenty years, and a few huts have been planted in favorable spots, in the centre of the jungle, but the extent of the tract, still waste, holds out almost a boundless field for the exertion of the capitalist and agriculturist.

3rd.—The soil of the greater part of the Zillah has the appearance of having been at one time or other alluvion. The description of soil is nearly the same throughout the Zillah, except in the forest tract, and the estates bordering on the Ramgunga; but its capabilities vary more or less according to the degree of care bestowed on its cultivation. There are few, if any, of the estates in Huzrutpoor which do not possess every possible facility of irrigation either from the Arril, the numerous banks and pools which are met with in every direction, or from wells which cost little in digging, though they seldom last beyond a single season. Irrigation however is much less practised in Huzrutpoor than in the adjoining Pergunnahs. The staple crops do not require it in ordinary seasons, and from the situation of the Zillah, which is subject to frequent inundations, there is, if any thing, rather a superabundance than want of water.

4th.—The staple products of Huzrutpoor are jooar and wheat. The former bears a proportion of one-fourth to the latter in almost all the Villages. Wheat is in fact universally grown to the exclusion of almost every other kind of spring produce, chunna and vetches excepted. This is to be accounted for by the nature of the soil, and the state of the market and demand. The soil would admit of the cultivation of sugarcane to any extent, but the produce could not compete in favor with that bought from the neighbouring Districts of Bareilly and Shahjehanpoor, nor could it find a ready market. Sugarcane is in consequence cultivated only for internal consumption. For grain, on the other hand, there is a safe and steady demand occasioned principally by the number of grain merchants from Cawnpore and Futtehghurh, who resort there with their boats in great numbers in the Spring. Their competition secures a good price

to the agriculturist, who is rendered in a great measure independent of the Village Bunneahs as a medium for disposing of his grain by the facilities of its removal and the proximity of the market, which enable him to drive his own bargain with the trader. A good market is also to be found for grain at Qaemgunge,—a mart on the opposite side of the Ganges, about twelve coss distant; but it is only frequented in the early part of the year, previously to the arrival of the traders from the lower parts of the country.

5th.—The other ordinary products, such as peas, pulse, jooar, cotton and barley, of which little is grown, are either raised for internal consumption, or for the markets in the adjoining Villages, none of them being exported; but of these the proportion is comparatively small. The demand is for wheat, and as it seldom fluctuates to any considerable extent, and sells better than any other kind of grain, every available beegah of land is sown with it.

6th.—The tenure of the estates in Huzrutpoor is Zemindaree, in the simple and complicated form. The former is confined to a comparatively few estates, and those principally the newly-inhabited weeran Mouzahs. The latter can be best described as being partly Zemindaree and partly Putteedaree, or, in other words, estates in which a division of the cultivated area has been effected by the leading proprietors amongst themselves, for the sake of mutual convenience, or for the prevention of disputes, sometimes with and sometimes without any regard to the precise extent of the proprietary shares of themselves or their sharers. Mouzah Huzrutpoor, No. I., is an example of the first, and Asufpoor, No. IV., of the second. In the former, the Sudder Malgoozars distributed the cultivated area amongst themselves, several years ago, according to their shares, the culturable waste, &c. being left in common. In Asufpoor, on the other hand, a distribution of three-fourths of the cultivated area took place amongst the Sudder Malgoozars some years ago, the fourth being left to be cultivated and collected from in common. In the former, the interests and management were distinct, as were the profits and loss. In the latter they are only kept distinct until the close of the year, when the Zemindars make up their accounts with each other and divide the profits. Huzrutpoor is designated by the people themselves a Putteedaree estate, but this is obviously not the same in which the term is or ought to be understood, or the tenure classed; as for the latter, it is only Putteedaree in the mode of its internal management. The term Putteedaree, noticed in the case of Asufpoor, according to its common acceptance in this District, implies a complete separation of holdings and interests, and is only to be found in the overgrown communities composed of families of different stock. Such is not Huzrutpoor, where the partition has been recent and is still undefined; that it will resolve itself into the form in process of time, there can be little doubt in the same way that the estates in which the Thakoor families exceed in number, the other classes of the community may be expected to assume the Bhyacharee form; but at present I have preferred classing all the tenures in Huzrutpoor as Zemindaree. It is after all a matter of little importance what designation they receive, particularly as the tenures are variously applied and variously understood in almost every District; provided only that the existing rights of the Village community be preserved, and the Settlement framed accordingly.

7th.—The method of management, noticed in the case of Asufpoor, prevails very generally in the Zillah, and with beneficial effect, by placing the head Proprietor

on an equal footing, and securing the community from the shocks consequent on the dissensions between the stronger and weaker Malgoozars. The Tehseel records testify the absence of these disputes of late years, the interference of the Native Officers having been seldom called for, or exercised in any of the Villages.

8th.—Money rents are universally prevalent throughout the Zillah. The Butaee system, which is only adopted to lands of uncertain produce, is seldom if ever resorted to. The rents for the first few years, after the Zemindars had succeeded to the managements of their estate, were lowered in the kinds of produce for which land-rents were subsequently substituted, to the advantage of all parties. The rates for the former period appears to have been inordinately high, in most estates varying from Re. 1-0-0 to Re. 1-8-0 per kutchah beegah in the ordinary products, such as wheat and jooar. For this two reasons may be assigned:—

1stly.—The superior productiveness of the lands under cultivation, which has been impaired of late years, but not by any means to the same extent as in the other parts of the District, and in inferior soils, by constant ploughing and defective agriculture.

2ndly.—The comparative scantiness of the cultivation at that period, and the necessity that the Malgoozars found themselves under, of making up the Jumma in the best way they could, by an increased rate on the cultivated area. This latter may be assigned as the ordinary cause of the enhanced rates, but it soon ceased to operate on the extension of the cultivation. After land-rents had been introduced, the rates soon found their proper level, and continued, with little variation, up to the present time.

9th.—With such advantages of situation, trade, and soil, which is richer, more uniform of its kind, and more exuberant in its production than any other part of the District, the Suleimpoor Pergunnah excepted, the Zillah could not be otherwise than flourishing. The Jumma of the fourth Settlement was moderate, though badly apportioned, and the capabilities of improvement to be found in the extent of the culturable area, and the number of the ploughs in the estate at that period, have been fairly called into play during the last twenty years. From the harassing and deteriorating effects of the measures to which the other parts of the District have been exposed within the last five years, the Huzrutpoor estates have in general been fortunately exempted. The deterioration so glaringly visible in the estates situated on the banks of the Ramgunga commenced in 1237 Fuslee, owing to the undue degree of attention which the representatives of the Zemindars received, and the want of all proper enquiry into their reality: but these are exceptions. The situation of the Zillah has secured it also, in a great measure, from the effects of the unfavorable seasons of the last three years, which have fallen principally on the Khurreef crops in the other parts of the District; but of Khurreef there is comparatively little in Huzrutpoor. The condition in life of the Zemindars is more or less prosperous, many are rich, and all have means to manage their estates. The same may be said of the joint proprietors, who occupy a much more favorable position in Huzrutpoor than elsewhere, and instead of being reduced to a level with the Assamees, are all more or less independent. Many of the Zemindars carry on a trade in grain, and the dependance of all classes on the Village Bunneahs, the best test that could be afforded of their general prosperity or otherwise, is much less prevalent there than in the other parts of the District.

10th.—The Zillah was held in farm (durabust) by several Moostajirs in succession during the three first Settlements; but the Zemindars were admitted to engage for their estates separately in 1220 Fuslee. The revenue has varied in its amount from Rs. 2,500 to Rs. 4,000 during the last twenty-five years, but the collection of late have considerably fallen short of the above, owing to the wilful deterioration of the nominal Gunga Shikust estates.

11th.—I proceed now to offer a few remarks on points connected with the present Settlement.

12th.—I proceeded to the Pergunnah towards the end of February, and on the receipt of the papers from the Revenue Surveyor, lost no time in commencing on the work. The classification of the soil was in the first instance entrusted to the Tehseeldar, who after dividing them into wet and dry, and specifying the different descriptions of the latter, forwarded the papers to me, accompanying them with any particulars relative to the condition and capabilities of each estate that might call for notice. These were corrected and checked by personal enquiry and inspection, by the scattered information obtainable from the Tehseel or Qanoongoe's records, and by a constant reference to the Putwaree's records, which, though wholly undeserving of credit in the totals, supplied me with much valuable information, when they came to be examined in detail, and superseded in a great measure the necessity of a personal enquiry into rates of rent, &c. conducted by written evidence, which the pressure of other business would not admit of my instituting, and which would in fact have been altogether superfluous. In the examination of the Village records discrimination was necessary, but the idea of altering the papers *in toto* seems not to have occurred to the Putwarees, and there were in consequence few from which some useful information of one kind or other could not be obtained. Errors, besides, were easy of detection; the general uniformity of the rates throughout the Zillah rendering it impossible that any gross deception should pass unnoticed.

13th.—The lands were divided by me into three kinds; viz. Muttyar, Dhoomut, and Khaput, which comprise the different acknowledged descriptions of soil met with in the Zillah. Many other names are applied to the different sorts of the same soil by the people themselves; but of these no notice was taken, it appearing on enquiry that they merely designated the degree of its productive powers, and not any marked inferiority in the soil. The classification of soil, exhibited in Statement No. II. furnished by the Tehseeldar, if taken as evidence of a proportionate variation of the rates, proved on enquiry more or less incorrect. Dhoomut is frequently substituted for Muttyar, and *vice versa*, and sorts confused with descriptions; but errors of this nature were easily corrected. Differences do and must exist between the productive powers of the respective khets in a single Village, but these are so slight and variable, that they are seldom taken into account by the people themselves, and ought in consequence to be excluded from calculations, which are necessarily formed on the aggregate. The soil is in fact in general so uniform, or where it varies, the variations are so strongly marked and easily defined, that little difficulty attended the ascertainment of the correct proportions of each kind in every Village where they actually existed.

14th.—Of the three marked descriptions of soil, the first quality, Muttyar, is common to most of the estates, and the richest and most productive. The second

quality Dhoomut, which is inserted incorrectly in many of the estates in the Tehseeldar's statement, comprises strictly the lands situated near to, or in the bed of, the Ramgunga, and is comprised of loam mixed with sand. The latter only has been admitted by me to a distinction in the rates assumed. In cases where the distinction proved on enquiry to be groundless, the reasons for this conclusion have been given separately. The third, or Khaput, comprises the forest tract. Khaput is rather a designation for an inferior and harder sort of the two first soils, than a distinct description; all lands that are less productive than others, owing to their having been lately brought into cultivation, are termed Khaput; but this kind of soil is rarely found on the old established Villages not bordering on the jungle. The rate assumed on the first of these soils varies in the estates from Rs. 2-5-0 to Rs. 2-13-0 per pukka beegah; on the second from Rs. 1-14-0 to Rs. 2-2-0; and in the third from Re. 1-2-0 to Re. 1-8-0; an average rate on the three distinctions of soil for the whole Zillah could not be fairly trusted to; the Muttyar of the Villages on the one side of the Ramgunga, differing in its power and quality from the Muttyar on the opposite side, as well as amongst the estates which adjoin each other: this was best ascertained by a comparison of the rates prevalent in the several estates, notwithstanding the apparent uniformity of the soil. The variations do not exceed one or two annas per beegah at the utmost, but they require to be taken into account in the formation of the Jum-mabundee.

15th.—The irrigated lands comprise merely the kuchyanah or garden grounds, and the better *dofuslee* lands. They form a very small portion of the cultivated area, and the rates assumed on them do not exceed by more than one or two annas those on the best Muttyar soils. I had occasion before to mention that there was every facility of irrigation, but that it was not required, and seldom practised for the ordinary staple crops. Regular irrigation, which ought alone to be taken into account as a ground for the assumption of an increased rate, is in fact practised by the Muraos alone. Sugar-cane may or may not require it, according to the situation of the field, but the increased rates of eight or twelve annas per beegah levied from the cultivators of it is not owing to any supposed superiority of the soil, but to the nature of the cultivation; the plant occupying the ground for three seasons, instead of two or one, and rendering it useless to the Zemindars for any agricultural purposes for nearly four. The rates of the ordinary *dofuslee* lands, which yield rice in the Khurreef and pulse in the Rubbee, seldom if ever exceed, and not unfrequently fall short of these in the Muttyar soil: these, and many other circumstances, require to be taken into account in the calculation, the assumption of a successive increase in the rate on the irrigated lands being otherwise only likely to mislead.

16th.—The average rates assumed on the qualities of soil was next tested with the rates paid by the different classes of the Village communities, as ascertained from the Putwarees' or Qanoongoes' records, or from personal enquiry, and it may be proper to state here that the Jum-mabundee ultimately determined on was regulated in most cases rather by the aggregate of the latter than the former. An average rate formed by the Collector, on grounds that may almost be termed conjectural, cannot compete in correctness with the result afforded by an examination, village by village, of the rates which the different classes have been actually paying for the last five or ten years applied to the lands under their cultivation. In the Huzrutpoor Zillah in particular, where the joint proprietors and their relatives form not a small part of the Village

community, and are mostly men of comparative importance and property, the formation of the Jumma-bundee, on a graduated scale of rates, although the quality of the soil might be the same, was more particularly necessary. These classes never have paid, and never can be expected to be paid, their quota at the same ratio as the ordinary cultivators; and an average rate, which, if assumed at the rents paid by the Assamees, would far exceed the actual assets; and if at an average of the Village collections would fall far below than could therefore be safely trusted to. It is easy to say that the Government expect every member to the community to pay a certain rent, to be regulated by the estimated proceeds of the soil, but it will be found difficult to put the system in practice, unless an average far below the mark be adopted; and I believe I am not far wrong in hazarding an opinion that this equalization of all classes in the Jumma-bundee formed in the Settlement, completed under the detailed system, without a due regard to the graduated rates and privileges of the community, went further to shake their stability than any other cause that can be assigned.

17th.—Considerations of this nature are generally taken into calculation in the deductions allowed on the estimated total assets, and the average rate of assessment after all will not probably be found to differ materially from the result obtained by the application of average rates to the classification of soil, but I preferred proceeding in the first three instances on safer grounds than any calculation in the aggregate could yield. The varying rates in most estates are confined to four; viz. :—

1stly.—On seer.

2ndly.—On the land cultivated by the joint proprietors and their immediate relatives.

3rdly.—On the Paekasht Assamees.

4thly.—On the resident classes of cultivators. The rates assumed on the two last were regulated by the evidence obtainable from the records of past years, by the qualities of the soil, by the Pergunnah rates, and by the numerous sources of information on these points laid open to every Officer on a personal visit. The rates on the Paekasht land do not vary more than one or two annas from those levied on the resident Assamees, particular cases excepted. The confined Ruqbah, in some instances, and the number of ploughs and cultivations in others, producing a very slight variation in the ordinary rents; the Village rates on the two first, or in other words on the *baach* lands, varied of course in every Village according to the amount of Jumma and profit. Those assumed by me were regulated by the extent of the land then occupied, by the condition of the estate, and by the rates levied on the *baach* lands (exclusive of the seer) in the equally assumed estates: the latter rates vary from Rs. 1-11-0 to Rs. 2-5-8 per Pergunnah beegah.

18th.—It might at first appear, under this method of proceeding, that the deductions under the head of *malikana* would be a source of extra profit to the chief proprietors, and that a proportionate loss would be sustained by Government; but the supposition would on enquiry prove erroneous. If average rates are assumed on the equalities of soil, the *malikana* deductions will be found, under the operation of the Settlement, to be absorbed in the difference of the rates, which would be paid in the same proportion as before, whilst the chief Proprietors would in effect have little left them to form a fund for their own profit and the improvement of the estate, beyond the proceeds of their *seer* lands. These would form an ample provision for the

managing Zemindar of petty estates differently circumstanced, but they would hardly satisfy the Zemindars of Huzrutpoor. Care was necessary in ascertaining the exact extent of the *baach* lands which were to be admitted to the privilege of lower rates, particularly as a fourth, and sometimes a third of the cultivated area was frequently brought by the Putwaree under this head; but this point was easily determined by the Tehseeldar, the Village and Pergunnah office records.

19th.—The Village receipts and demands given in by the Putwarees, and inserted in the Statement No. II. are mere fabrications. Their incorrectness was amply established by the rates and jumma-bundees furnished by them at the time of Settlement; but correct totals can scarcely ever be obtained, and can hardly be looked for when fabrication is so easy a task, and attended with such little trouble. It appeared to me scarcely worth while to press the Putwarees for more correct accounts, particularly as their other papers were in my possession; and I have accordingly suffered them to stand.

20th.—The next point to be determined on, after the total rental had been estimated as accurately as circumstances would admit of, was the amount of the deductions to be allowed to the heads of the community. In finding this I was influenced by several considerations; such as the number and means of the Zemindars; the structure of the Village community; the extent of land in cultivation or culturable; the condition of the estate, whether improving or deteriorated, (if the former, a larger deduction was allowed;) the amount of the increase or decrease in the former Jumma, and the facilities of future improvement. The amount varies in consequence widely in most instances. In some, it does not fall short of 30, 35, or even 40 per cent. In others, in the deteriorated estates, in instances in the forest tract, where the cultivation is merely nominal, it does not exceed 5 or 10 per cent. for the first year. The reasons which influenced these deductions have been stated separately in each case, so as to render any further detail in this place unnecessary.

21st.—One additional point requires explanation. Whatever the item of the Village expenses given in by the Putwaree might amount to, whether in excess of, or below the deduction assumed under this head, I invariably allowed a deduction of 10 per cent. on this score to the large villages, and 5 per cent. to the inferior estates, inclusive of the *weiran* Mouzahs. I found it in fact, and I have always found it vain to attempt to estimate, with any approach to accuracy, the amount of the expenses likely to be incurred by any village community in the course of so long a period as fifteen years. The expenses of the visit, and attendance of the Zemindars at the public Kutcherry, on business connected with the Village; the expenses of the yearly *musahuts*; the sums expended in repairing the chowpals, &c., or those that they may be called upon to defray under the head of "Police;" and, above all, the numerous items which are known to the Zemindars and Putwaree, alone amount to a not inconsiderable sum. Tulubana charges alone, in several of the estates in the Oojhane and Oosaith Pergunnahs, have been known to amount to a fifth, and even to a fourth of the demand within the last five years. It should in fact always be borne in mind that the amount of the Village expenses depends more on the character and management of the public officers, European and Native, than on the Village community themselves; and that unless they can be secured from these extra charges, which no degree of vigilance has yet been able to do away with *in toto* in any part of the country, they can scarcely

with justice be excluded from the consideration to which their situation entitles them.

22nd.—After the necessary enquiries had been completed, and the Jumma determined, the Zemindars were summoned, and the terms proposed to them. It may be necessary for me to state here, that I divested myself purposely of the aids usually furnished by the Native Officers or Tehseeldars, in persuading or working upon the hopes or fears of the Zemindars, to induce them to consent to the terms. I was unwilling to admit, in the outset of the work, of any such interference, which is seldom exercised without being abused. A little additional trouble might be expected to follow the removal of a machine so useful to Collectors in general, but it was confined to a few cases only. The consent of the Zemindars in general was as free as it was uninfluenced.

23rd.—The Settlement of a few estates was concluded with the Zemindars of the neighbouring Villages, owing to the inability, previous bad conduct, or recusance of the former Malgoozars; the latter were however rescinded subsequently, at the request of the *moostajirs*, and the leases made over to the former Malgoozars, two cases excepted.

24th.—The ascertainment and record of the fractional shares, and their responsibilities, and the decision of the numerous claims put forward by the joint Proprietors, followed their acceptance of the terms. To this part of the work particular attention was given; so much injustice has been suffered by the joint Proprietors on several occasions by the transfer of the proprietary rights of their estates *en masse* to strangers, by public or private sale, for balances, or debts due from the Zemindars alone, that the prevention of the possibility of such occurrences for the future became a matter of paramount importance. All claims to the Zemindaree right of a part, or the whole of an estate, by parties out of possession, were referred to the Civil Courts. In the disputes which arose between the Zemindars and joint Proprietors, the parties were allowed two or three days to settle it among themselves; if this was not done, it was made over for the decision of a *punchayet* named by themselves. I avoided, as much as possible, all interference in disputes of this nature, and I had seldom occasion to exercise any, as they were invariably adjusted to the satisfaction of all parties, either by themselves or their arbiters.

25th.—In giving in the Statement No. III., the parties usually appended to it, an apportionment of the Jumma according to the hereditary shares held by each, whether Zemindar or joint Proprietor, it must not however be supposed that the joint Proprietors are in reality responsible either to the Government or Zemindar for the sum in the statement. Except in one or two cases, which called for correction, I strictly refrained from altering the state of things in the several Villages from what they had been for the last twenty years, particularly in a point on which the future prosperity of the estate, and the happiness and peace of the village community, so materially depended. The privileges enjoyed by the joint Proprietors were found to vary considerably in every village. In some they were on a level with the Zemindars; in others, and perhaps in the same village, two or three would be found to be admitted to a share in the profits, or to have managed their shares separately, whilst the privileges of the rest were merely confined to their admission to the *baach*, which was levied,

frequently, at a rate sufficient to yield a handsome profit to the Zemindars, after payment of expenses. The extent of their privileges will in fact be found to have varied in every instance, with the degree of influence possessed by each individual, or by his wealth or station in the village community, and not to have been regulated at all by the question of right.

26th.—Application was subsequently made by many of the joint Proprietors praying to be admitted to the separate possession and management of their shares, but they were invariably referred to the village community, and if the sense of the latter was in favor of separate holdings and interests, no further objection was urged. No encouragement was however given for the introduction of so great a change in the previous system of management, as it appeared to me likely to affect the peace of the community, and the improvement of the estate for the future, by multiplying the number of managers, and giving rise to numerous disputes and conflicting interests. The under-Proprietors have no cause to complain of their exclusion, as they have been placed on a much more favorable footing than before. Their rights have been admitted and recorded, and consequently secured from violation; and misconduct on the part of the headman will afford them an opening to the management, and, in the interim, they will be entitled to a share in the profits, corresponding with their share in the property.

27th.—The disputes on this point, which came before me, were adjusted generally to the satisfaction of the complainant by the Malgoozars, allowing them an addition to their *seer* lands, or by his agreeing to yield them a share in the profits at the close of the year. In performance of their latter agreement little confidence can be felt, but the other parties will have it in their power to refer to the Civil Court in the event of its non-fulfilment.

28th.—The other class of the community, ranked as Assamees, having right of possession, have been passed over by me entirely. The term was not understood by the people themselves, and none came forward to establish his claim to any privilege on this score. That there are many hereditary cultivators in the old villages cannot be doubted for a moment, but as any detailed enquiries on the subject, on the part of the Government officers, would probably have only led to the creation of new rights, or, at all events, have occasioned endless delay and interruption to the progress of the work, without any adequate object, I thought it better to leave the columns blank.

29th.—The payment of the instalments was regulated for the future for each estate by its soil and productions. This was more particularly necessary for the comfort and convenience of the people. The *khurreef* in the Zillah does not exceed the proportion of one-third to the *rubbee*; yet the Malgoozars have been ordinarily saddled by the Tehseeldars with the same *kistbundee* as the Bhoor estates. The yearly *kistbundee* was designed for the relief of the people, but they have only occasioned loss to them by involving them with the Bunneahs, while they have proved an unfailing source of indirect, and not inconsiderable, profit to the Tehseeldars. The instalments were also necessarily regulated, in a great measure, by the nature of the security given by the Malgoozars, and by their character and circumstances in life. The *khurreef* instalments never fall short of five annas in any instance, the security of the revenue requiring that the cultivators should not be left to the chances of the last two or three months of the agricultural year.

30th.—I have now, I believe, touched on the several points that called for notice in a general letter. The total increase, in the over-and-above average Jumma of the villages, the settlements of which are now submitted, amounts to Rs. 5,570 for 1242 Fuslee,—the decrease of Rs. 1,089. The former average Jumma was Rs. 28,813, and their present one Rs. 32,241 for 1242 Fuslee. The assessment fall, on an average, on the cultivated estates which have not been subjected to deterioration, at the rate of Rs. 2-13-0 per acre. The rate of the assessment on the total area varies of course with the *rugbah*, but this, as well as the rate of assessment on the cultivated lands of the deteriorated estates, can form no ground, by themselves, for judging of its fairness. In the deteriorated estates, the land thrown out of cultivation was necessarily included in the Jummabundee for the future, and in the Settlement of the jungle tract, the extent of the *rugbah* was more looked to, than the limit of the cultivation. In the estates, on the other hand, which had escaped deterioration, the culturable area was excluded invariably from the estimate of the total assets, although it influenced occasionally the amount of the deductions allowed.

31st.—Of the operation of the revised system of the Settlement a few words may be added: Despatch, the ascertainment and record of rights, and the adjustment of conflicting claims and interests, form the chief *desiderata* of every Settlement, as far as the people are concerned, and the system which secures these objects, as the present one assuredly does, must be superior in its working to any other. Both the Collector and the people are spared the wearying investigations, and harassing interference with, and subversion of, the village communities, and their long-established usages, which invariably accompanied the operation of the detailed system, whilst the tendency to effect large advances in the Jumma, the uniform result of calculations and investigation, is done away with at once. Cheapness, efficiency, and facility, are on the other hand the object of the Government, and these are undeniably secured. Yet simple as the system is, it admits of further simplification. The *khusrahs*, in the present form, have been I believe generally found useless for any purposes of Settlement. With the fixing of the Jumma they can have no possible concern, and the difficulty of obtaining a correct *khusrah*, from the *musahut* portion attached to the survey, and the impossibility of a check being maintained over their operation for the purposes of correction and alteration, considering the rapidity with which they move, is such as to be almost insurmountable. It is far from my intention to reflect on the superintendence of the *khusrah* parties by these remarks; the situation in which the latter are placed, as strangers and hirelings, render them unable, and perhaps unwilling, to ascertain, far less correct, the mis-statements of the village officers; but if they were dispensed with *in toto*, and the task of preparing a *khusrah*, in cases where needed, were entrusted to the Tehseeldar and Pergunnah officers, assisted by the Putwarees, much expense would be saved, the operations of the Settlement proceed as rapidly, and every object proposed in the *khusrah* as fully answered.

(Signed) S. S. BROWN,
Officiating Collector.

(True Copies.)

M. H. COURT,
Deputy Collector.

PERGUNNAH OOSAITH.

310.—THIS Pergunnah, as now constituted, comprises two sub-divisions, known by the names of Zillah Oosaith and Zillah Mahanugur, as well as the Mouzahs formerly comprised in the Jagheer of Nawab Jungee Khan, which was resumed on his death in 1830 A. D. Twelve of these Mouzahs reverted, on the resumption of the Jagheer, to Budaon Pergunnah, to which they were originally attached, but were included, at the time of Settlement, in Oosaith.

311.—The Pergunnah is situated at the south-east extremity of the District; is bounded on the north by Pergunnahs Suleimpoor and Budaon, on the west by Oojhane, on the east by Pergunnah Myrabad, Zillah Shahjehanpoor, on the south it is separated by the river Ganges, from the confines of Zillahs Furruckabad and Putteealee.

312.—The Pergunnah comprises 165 Mehals, covering an area of 1,06,548 acres, as shown in the following Table :—

Rent-free.	Barren.	Cultivated.	Culturable.	Total.
2166	14155	52847	37380	106548

313.—The population is as follows :—

HINDOOS.		MUSSULMEN.		
Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.	Total.
37210	7475	3674	2240	50599

314.—The proprietary classes are as follows :—

Thakoors hold	51	Estates.
Abeers hold	3	"
Kainths hold	8	"
Bukals hold	21	"
Brahmins hold	9	"
Mussulmen hold	35	"
Mussulmen and Hindoos hold	21	"
Mixed Classes hold	14	"
Government hold	3	"
Total,	165	Estates.

315.—The tenures are classified as follows :—

<i>Zemindaree.</i>	<i>Putteedaree.</i>	<i>Imperfect Putteedaree.</i>	<i>Dhyacharah.</i>	<i>Total.</i>
118	14	7	26	165

316.—The survey of the Pergunnah was made by Lieutenant Fraser during 1833-34. The Settlement, under Regulation VII. of 1822 and IX. of 1853, made by Mr. S. S. Brown, in 1854 was subsequently revised by Mr. Timins. The following extracts from Mr. Brown's Settlement report, will give all particulars regarding the soil, and past history of the Pergunnah :—

" 8th.—The Pergunnah * * * comprises three kinds of soils, which are materially the same in their qualities as the several soils in Pergunnahs Saheswan and Asudpoor, and have consequently been classed under the same names. The Pergunnah however exhibits many minor features, which require notice in serving to distinguish it from the two former.

" 9th.—The Bhoor lands are generally of a superior quality to those in Saheswan. They are less elevated in their situation; the soil is firmer and less sandy, and the products are more varied. The more valuable crops are grown in a few of the Mouzahs, which, with the exception of their situation, have little to assimilate them with the Bhoor Mouzahs in the other Pergunnahs.

" 10th.—The tract of soil noted as *Dhoomut*, but generally known under the term of *Kuthere*, comprises a cluster, or rather line of Mouzahs, which adjoin the Budaon Pergunnah. This soil is also far superior in its quality to the same class of soil in Saheswan, being uniform and productive.

" 11th.—The only broadly marked class of mixed soils in the Pergunnah are the *Bhoor Khadir* Mouzahs, which, in regard to their site and condition, vary but slightly from the Mouzahs of the same class in the Pergunnahs already reported, with the exception of the natural drainage afforded by the proximity of the river Sote, and other smaller streams which flow at the foot of the Bhoor hills.

" 12th.—The Muttyar tract, on the other hand, taken as a whole, is considerably inferior to the corresponding portion of Pergunnahs Saheswan and Asudpoor, owing to a large admixture of *Oosur* and other inferior kinds of the same soil, and to the peculiarities of its situation. It lies low, and is exposed, on one side, to floods from the Bhoor hills, which it directly adjoins to inundation from the river Sote, which intersects it throughout, and to floods from the Ganges. Many of the Mouzahs lie within reach of the latter, or rather of the channels which branch from it, and the consequence is, that in seasons like the past, (*i. e.* of plentiful rain), the greater portion of the lands are laid almost under water during the rainy months. From these casualties, which occasion great distress, and damage the Muttyar soils, the two former Pergunnahs are exempted."

317.—The condition of the Pergunnah was anything but flourishing at the time of revision of Settlement. The cause of its deterioration is explained in the following paragraphs :—

" 4th.—The Jumma (of Mahanugur and Oosaith) of the fourth Settlement amounted to Rs. 70,836. It rose to Rs. 73,598 in 1225 Fuslee, and sank again to

Rs. 56,292. In 1230 Fuslee the demand stood at Rs. 65,561, and rose to Rs. 69,091 in 1237 Fuslee. From that time it sank rapidly, the realizable Jumma of 1240 Fuslee being Rs. 58,775, and of 1241 Fuslee Rs. 58,973.

" 5th.—The balances in both these sub-divisions are immense; but particularly in Zillah Mahanugur, amounting in all to Rs. 1,09,361-11-0, by far the greater part of which has accumulated since 1230 Fuslee.

" 6th.—The decline in the agricultural prosperity and resources of Pergunnah Oosaith, or rather of the two sub-divisions which compose the larger portion of it, may be traced from the close of the fourth Settlement. The revenue from 1225 Fuslee was realized with extreme difficulty, and not without recourse to many harsh measures, under circumstances otherwise particularly favorable to the agricultural interests; nearly half the Mouzahs having been alienated by private and public sale for the liquidation of the revenue within that period, and the leases of a considerable number of the Muhals having been thrown up in 1230 Fuslee, the estates were re-settled at almost a nominal Jumma in the same year. These Settlements were revised by order of the Board of Revenue in 1232 Fuslee; and *durkhasts* at a progressive Jumma were taken, which in some instances fell short of, but in the generality rose gradually to, the former terms. This was followed after an interval by a reduction in 1240 Fuslee, on the occasion of

settlement of lapsed and resigned leases. The cause of this decline, in the first may be found in the pressure of the Jumma in the generality of the estates, of anything like capital in the Pergunnah, and the tendency of the occurrence of the last twelve years, added to the management of the Local Native Officers, character of the people, to produce discontent and deterioration. This portion of the Pergunnah Oosaith has been noted for the last ten years for the low state of its soil, and its condition of late has exhibited but a slight improvement.

" 7th.—* * * The Bhoor Khadir Mouzahs, with some exceptions, have shared deterioration common to all the Mouzahs of this class along the whole line of the Bhoor tract in the several Pergunnahs. The Bhoor Mouzahs, on the other hand, suffered much less in comparison, whilst the deterioration has just commenced, principally observable, at the present time, in the low lands which comprise one-half of the Pergunnah."

—The revised Jumma of Zillahs Oosaith and Mahanugur, as fixed by Mr. Brown, Rs. 52,686 for 1242 Fuslee, and Rs. 57,694 for 1245 Fuslee, "exhibiting a decrease of Rs. 11,425 in the Kamil Jumma below the nominal standard Jumma of 1239." Mr. Brown observes (*vide* para. 19, Settlement Report) :—"The amount of increase is considerable, but not more, I firmly believe, than the condition of the soil, and the principles of relative equality of assessment, called for."

—The Jumma of the Villages, comprised in the Kukralah Jagheer, was fixed by Mr. Brown at Rs. 23,172.

—Mr. Brown's report, from which I have made the above extracts, is dated 5th. On the 27th July 1836 that gentleman writes as follows :—

1.—The Board would probably wish to be informed of the working of the settlements in the Pergunnahs which underwent revision * * *.

2.—The Pergunnahs first re-settled, viz. Saheswan and Oosaith, had been for years before the poorest in the District, and it must be confessed that their

condition has been but little bettered since the Settlement, notwithstanding the decrease granted on each * * *.

"7th.—The portion of Pergunnah Oosaith, re-settled and reported last year * *, had long been in an unsettled condition prior to the revision, and its resources had sunk so low, that a revision of its Jumma alone could hardly be expected to recover it at once.

"8th.—The system formerly pursued in the collections in this Pergunnah was a singular one. The nominal Malgoozars of a vast number of the estates were either mere paupers, or men who had involved themselves so deeply with the Government from past default, that they were reckless of consequences, and provided that they could draw from the property enough to subsist on, they left the estate, and the demand on it, to shift for themselves. In the commencement of the agricultural season they were seldom forthcoming, and the Mouzah being thus left without a manager, the care of it devolved on the Tehseeldar, who had to give pottahs to the Assamees through the Putwarce, and obtain Tuccayee for them by backing their credit with the Mahajun. One or two Chuprassees were frequently stationed in the Village to keep the Assamees to their ploughs, and the Tehseeldar used to visit it from time to time, to see that the cultivation was not neglected. At the commencement of the collection, the rents were received through the Putwaree direct, and watchmen were stationed over the crops. The Zemindar made his appearance in the Village for a few days, cut his *seer*, embezzled what he could of the rents, and absconded again until the ensuing season, when the same scene was enacted. The balances of the year, in the winding-up of the collections, appeared of course against the Malgoozar. This was termed "getting up the cultivation."

"9th.—The evils of this system were obvious; everything, even to the minutest matter of Malgoozaree management, being made to depend on the Tehseeldar, if active and honest, he contrived perhaps to get in the revenue by the close of the year; if at all lazy or corrupt, a balance immediately accrued, and everything was thrown into confusion.

"10th.—This fictitious system was done away with in a great measure previous to the Settlement, and subsequent to it all direct interference on the part of the Tehseel officers in the Village concerns, unsolicited by the Malgoozar, has been prohibited. The practice had no doubt originated from the habitual default of many of the Zemindars, and the incompetency of others; and it was with a view of putting a stop to it effectually for the future, and at the same time to secure the cultivation of the estate, and the realization of the Jumma, that I proceeded at the time of Settlement to make over the leases of many of them to other Landed Proprietors. The measure was however made far too sweeping, and the arrangements having been revised on appeal, the former Malgoozars were re-admitted. The result, amongst other instances, has been that the defaulter of a former Jumma, of Rs. 2,000, is still a defaulter with a Jumma of Rs. 1,200, and a Mouzah, which under other management paid a demand of Rs. 250, the revised Jumma being Rs. 200, has yielded, in the hands of the Zemindar in the present year, a total asset of Rs. 80.

"11th.—It would not however be fair to charge the unimproved state of the Pergunnah entirely to the incompetency or habitual neglect of the Zemindars. The casualties of the present year, which have been felt more particularly in Oosaith than elsewhere, together with the results afforded by two years' collections, have led me to revert constantly to the two Pergunnahs just re-settled (Sahaswan and Oosaith). If

a judgment were to be formed from the rates of assessment alone, these Settlements must be considered just; but the point to be considered is, whether their relative condition for the last ten or twelve years, compared with that of the more fortunate portion of the District, was sufficiently taken into account or not at the time of Settlement: and I certainly find, on review, a greater inequality in the assessment of these Pergunnahs in this point of view with reference to the others than there ought to be.

"12th.—In one point a revision would be certainly desirable: I refer to the progressive Jummas, as fixed on many estates in Pergunnah Saheswan and Oosaith. All these Mouzahs had been deteriorated for many years previously by mismanagement or casualty. The Jumma of the first year was accordingly fixed on the assets of that year, or of the year immediately preceding, and the terms afterwards raised to the level pointed out by the general principles of Settlement, as far as they could be made applicable to them.

"13th.—The progressive increase, I am afraid, was injudicious; it was in fact substituting calculations on future probabilities, in the place of a clear data for a future Settlement obtainable from a review of the condition of the Mouzahs of late years. I was led to entertain some doubt on the subject shortly after the Settlement, and in the Pergunnahs subsequently revised, refrained from fixing progressive Jummas in any instances."

321.—For the above reasons Mr. Brown, in conclusion, requested that he might be allowed to revise his Settlements.

322.—The revision was allowed, and subsequently made by Mr. Timins, whose report is as follows:—

"To account for the impoverished condition of this portion (Oosaith and Mahanugur) of the Pergunnah, I need do no more than refer you to Mr. Brown's letter, of 24th July 1835 and 27th July 1836, merely stating that its position was made worse in the following year, by the severity with which the collections were made.

"The Jumma, the year before the Settlement, was 87,433, falling at an average of Re. 1-0-0 on the Malgoozaree, and Re. 1-12-5 on the cultivated Area*.

"The average collections of the past ten years had been Rs. 78,283. The Kamil Jumma of Mr. Brown's Settlement was Rs. 80,692.

"For convenience of comparison, I have adopted the same classification of villages as Mr. Brown did. My assumed rates have been formed upon a careful comparison of these classes with similar lands in adjoining Pergunnahs, the Settlement of which has answered. My assumed rates are as follows:—

Class.	Revenue Rates per Acre.	Revenue.	Revised Jumma.
	Rs. A. P.	Rs.	Rs.
Bhoor,	1 0 0	5855	5537
Bhoor Khadir,	1 to 2 0 0	27943	24250
Dhoomut,	1 4 0	4349	3867
Muttyar,	1 10 0	31945	32114
Belah,	1 8 0	1599	1493
Total,	0 0 0	71691	67261

* This includes the Jumma of the Mouzahs belonging to the Kukrala Jagheer.

"No great variation is observable in any but the Bhoor Khadir estates, in distributing the Jumma, on which I found that I had overrated the Khadir, the only good land."

323.—The Settlements, as revised by Mr. Timins, were on the recommendation of the Board of Revenue confirmed by Government Order No. 2478, dated 21st December 1842.

324.—The history of the Kukralah Talooquah is as follows:—Junghee Khan was a Rohilla Chief in the service of Jiwunt Rao Holkar. He subsequently quitted his service, and came over with his band of followers to the British Army. After the termination of the war, Junghee Khan was, in consideration of his services, allowed a pension of Rs. 15,000 per annum. He shortly after prayed that in lieu of a money payment, he might receive a land Jagheer yielding an equivalent return. The Governor General in Council acceded to his petition, and in a letter dated 8th November 1805, directed his Agent at Bareilly to provide for him the Jagheer, which was to be selected from Pergunnah Budaon.

325.—The Governor General's Agent, Mr. A. Seton, in conformity to this order, applies to the Collector of Bareilly for the land. In his requisition* he observes:—"It appears to me extremely desirable that the land to be appropriated to this Jagheer should be selected and bestowed with as little delay as possible, in order to enable Junghee Khan to make the necessary arrangements for settling his followers immediately, more especially as it is probable that his *ressalah* will shortly be disbanded.

"I do not apprehend that it will be difficult to find in that Pergunnah land of a proper description, viz. improvable, untenanted, and even unappropriated. By the selection of *improvable* land, Junghee Khan would be enabled to provide for, and settle, many of his turbulent tribe, and thereby wean them from their irregular habits and propensities, and render them useful members of the community, which is one of the principal and most interesting objects of the measure, and if the land be *unappropriated*, (that is, without any owner or Zemindar), the completion of the arrangement will be considerably simplified."

326.—The Collector of Bareilly selected Kukralah and forty-two other villages, which "appeared to him in every way suitable as a Jagheer." A statement was called for, showing the *jaidád hál hásil*, or actual assets of the year (1213 Fuslee). This statement the Collector reported his inability to *furnish*, but submitted, in lieu, an estimate of the probable assets, amounting to Rs. 15,081, drawn out and attested by the Qanoongoes. Junghee Khan was then put in possession of his Jagheer.

327.—Junghee Khan soon after represented that the assets of his Jagheer would only amount to Rs. 6,991, instead of Rs. 15,000. On this subject a lengthy correspondence took place between the Governor General's Agent and the Collector of Bareilly, which extends from March 1806 until the end of 1808. Mr. Seton remarked, the statement and representation of Junghee Khan may be erroneous, whether it be so or not, is a matter which both in justice to Government and to Junghee Khan, ought

I think to be ascertained with the least possible delay. It is of the utmost and most desirable importance that the produce of the land should not be less than would yield Rs. 15,000 per annum." An Ameen was deputed by the Collector, with a Deputee from Junghee Khan, to make a fresh valuation of the assets of the Khurreef. Their estimate amounted to Rs. 4,041, being Rs. 6,386 less than that furnished by the Qanoongoes. Mr. Collector Rutledge considered the estimate furnished by the Ameen to be fraudulent; that by the Qanoongoes more correct. Mr. Seton entertained different views, and proposed, submitting to Government, "the expediency of the lands being continued under the Collector during the ensuing Fuslee year (1214), to enable him to ascertain their real values." To this Mr. Rutledge objected strongly, urging that the cultivation having been wilfully reduced, the measure would be attended with considerable loss to Government in many ways.

328.—This point was at one time settled, by giving to Junghee Khan lands yielding Rs. 1,100 per annum, in addition to the Jagheer first bestowed. This was in May 1806.

329.—In October, Mr. Crisp, who had succeeded Mr. Seton as Governor General's Agent, wrote to the Collector of Bareilly that "the arrangement that took place in May was very soon followed by repeated verbal expressions of dissatisfaction on the part of Junghee Khan, at the insufficiency of the assets of the lands which had been delivered over to him; that he had directed Junghee Khan to detail the whole of his objections in writing." This document, attended with a request that an Ameen might be immediately deputed on the part of Government to ascertain the actual value of the Khurreef harvest, then standing on the ground, was forwarded to the Collector by the Governor General's Agent, who recommended that this measure should be adopted, as it would form an unobjectionable data, for determining the actual value of the lands delivered to this measure. Mr. Rutledge again objected, as he considered it opposed to fair dealing, and unjust to Government, because the cultivation had been considerably reduced, and the standing harvest would not show the *value* of the lands given over.

330.—The point in dispute was eventually referred to the Governor General, who in a proceeding dated 8th January 1807, wrote to the Agent as follows:—"The faith of Government is absolutely pledged to assign to Junghee Khan lands in jagheer yielding an annual profit of Rs. 15,000, or an equivalent. The decision of the actual value of the lands assigned should rest exclusively upon the point of fact, whether the lands in his possession are actually of that value or not. It is necessary to *determine* that point * *.

"In the opinion of the Governor General in Council, it would be preferable to leave Junghee Khan in possession of the lands which he now holds, and additional lands should be granted to him, sufficient to make up the deficiency in the stipulated amount of Rs. 15,000 per annum. If any doubt should actually remain with regard to the actual value of the lands proposed to be assigned, Government would be disposed to yield the point in his favor, so far as to admit of his obtaining lands exceeding the stipulated provision in the amount of one or two thousand rupees, rather than leave any room for the imputation of breach of faith on the part of Government."

* Dated 24th January 1806.

331.—Ameens were then deputed, who estimated the produce of the lands to be equivalent to Rs. 8,555; twenty-eight and half Villages were then added by order of Government, making the Jagheer to consist of seventy-six and half Mouzahs. The Jagheer being declared a tenure rent-free during the life of Junghee Khan.

In 1810 A. D. Junghee Khan again asserted that his Jagheer did not give him a net produce of Rs. 15,000. The extent and produce of the lands assigned were again revised, and two more villages added, making the Jagheer to comprise seventy-eight and half Asilee and Dakhilee Villages, and two Puttees.

332.—Such is the history of the formation of the Kukralah Jagheer, so called from Kukralah being the principal Mouzah of it. It seems extraordinary that the bestowal of a Jagheer of this extent, and comprising so many distinct Mouzahs or holdings, could have been so easily effected. One would suppose that proprietary claimants would have opposed it, but it is curious that there is no mention of a single demur having been made. Whether this is attributable to the worthlessness of land in those days, or to what other cause, is difficult to determine.

333.—On the 21st April 1829 Nawab Junghee Khan died. On 29th May of that year, Mr. Commissioner Boldero directed Mr. Wyatt, then Collector of Saheswan, to take charge of the Jagheer, pending the pleasure of Government. On 5th June Mr. Wyatt reported having done so, and at the same time forwarded a memorial from Jelal Khan, the only son of the deceased Jagheerdar, praying, “that the Right Honorable the Governor General in Council would take his case into consideration, and renew the grant for the period of his life, his father having died insolvent to the amount of 55,000 Rupees, and had left his family involved in the greatest difficulty and distress.” Mr. Wyatt added that the late Jagheerdar had, by means of his industry and borrowed capital, brought all the waste lands into cultivation, and greatly improved the Jagheer; and he would therefore suggest, upon grounds of justice, expediency, policy and charity, that the grant of the Jagheer be continued to his son, for the period of his life; or, in the event of Government not deeming it expedient to renew or continue the part to him gratuitously, that he might be permitted to succeed as heir to the estates, and to hold possession thereof on the payment of a *nuzzurana* of Rs. 5,000 per annum. The Jagheer was resumed by Government, and a pension of Rs. 8,100 per annum given to the son and brothers of the late Jagheerdar.

334.—The Commissioner then called for a statement, showing the assets of each Village and Mouzah. This was forwarded; the statement exhibited the total assets of the Jagheer to be Rs. 20,933-8-6. Mr. Wyatt was then directed to bring the several Mouzahs under Settlement.

335.—The Collector soon after reported having concluded a Settlement of 61 Estates, partly with the Zemindars, and partly with *Moostajurs*, extending for three years, on a progressive Jumma as follows:—

Year.	1237 Fuslee.	1238 Fuslee.	1239 Fuslee.
Jumma,	21719	22173	22389

And reported having retained the remaining Mouzahs under Kham management.

336.—It will be observed that the Jumma of 61 Estates was more than the actual produce of the whole Talooquah. This was caused by competition. Numerous claimants to the proprietary right appeared for the first time on the resumption of the Jagheer. In order to get possession of the property claimed, they filed *durkhasts*, without any regard whether the estate could pay the assessment, but only anxious that the high terms of their *durkhasts* would ensure their acceptance.

337.—These Summary Settlements were confirmed by the Commissioner, who, on the 26th October of the following year, proposed leasing the villages of the Jagheer to Jelal Khan. His report is worded as follows:—“The Jagheer of Kukralah, granted by Government to Junghee Khan, was resumed at the close of 1236 Fuslee, and a Settlement made of the Estates comprised within it at the following rates:—

Year.	1237 Fuslee.	1238 Fuslee.	1239 Fuslee.
Jumma,	24611	27205	28311

“Of the Jumma of 1237 Fuslee only Rs. 18,650 have been collected, leaving a balance of Rs. 5,962. The whole of this Jumma will not, I fear, be collected within the year, as the cultivators possess little or no property.

“The Zemindaree rights to the different villages are disputed by numerous claimants; none of them appear to have had their rights admitted, or to have derived any emolument from such rights during the time the Jagheer was held by Junghee Khan.

“Under these circumstances, I beg leave to submit whether the resumed Jagheer should not be considered as coming under the provisions of Regulation XIII. of 1825, and the Settlement be made with Jelal Khan, who wishes to engage for it at the rate of Rs. 27,000 per annum, which, after paying the pensions granted to Government, leaves a net produce to Government of Rs. 18,900.”

338.—In reply to this, the Commissioner was directed to submit his proposals through the Sudder Board of Revenue. Previous to doing so, he called on the Collector to report on its expediency or otherwise. In reply, Mr. Wyatt concurs in the measure, forwards a *durkhast* of Jelal Khan's, on a Jumma of Rs. 27,000, and adds: “The Zemindaree rights of all the different persons who have entered into engagements for the public revenue, have not been fully and satisfactorily established. On the occasion of the First Triennial Settlement no regular enquiry or investigation into their claims or rights had been instituted, and no *roobakarees* or Settlement proceedings had been written, from which the fact of their inheritance and succession might be ascertained. A mere Settlement account or Register is all that has been discovered. Under the column of proprietor the names of certain persons have been inserted, apparently through the collusion of the Qanoongoes and other Native Officers. Some of these cannot be found, and others are dead. Those who style themselves Zemindars, or heirs of the deceased Zemindars, have not produced any deed of inheritance, malikana, or other satisfactory documentary evidence.

"The individuals who are under engagements for the revenue are incapable of managing their estates, are extremely indigent, and of bad faith and character. The Jumma of 1237 Fuslee amounts to Rs. 24,611; of this Rs. 21,009 have been collected with difficulty, and the balance, I fear, will not be realized."

339.—This is, what I call, a cruel report. Why the insertion of certain persons, under the heading "Proprietor" in the Dehsunee records, should be ascribed to collusion of Qanoongoes, I cannot understand. The existence of their names in that record was a strong proof of the existence of their right, and should not have been so summarily rejected. However on this report the Commissioner, on 16th November 1830, accepted Jelal Khan's *durkhast*, and the persons styling themselves "Zemindars," and who were under engagements for the public Revenue, were summarily ejected. They however appealed to the Sudder Board of Revenue, who, after receiving the report of the Commissioner, referred the subject for the decision of the Governor General in Council, with the following observations:—

"The reasons assigned by Mr. Boldero, the Commissioner, for setting aside the lease with the Zemindars, are, in the opinion of the Board, insufficient.

"The Jagheer comprised forty-eight Mehals, partly in Pergunnah Budaon, partly in Oosaith. Each Mehal was separately engaged for. The aggregate demand for 1237 Fuslee was Rs. 24,611; of this Rs. 21,009 was collected; viz.

Pergunnah.	Number of Mehals.	Jumma.	Collections.	Balance.
Budaon,	12	7110	4093	3017
Oosaith,	36	17501	16916	585

"The occurrence of this balance would not, the Board consider, have justified the course of proceeding adopted by the Commissioner, even had the Settlement been formed on a joint engagement for the whole of the Mehals; but, as already noticed, each mehal was held under a separate engagement, and it appears from the *Jumma Wasilbakee* that only seventeen of the whole number of Mehals were in balance, the revenue of the remainder having been duly paid.

"The Mehals in balance were nine in Budaon, and eight in Oosaith; but in the latter the arrear was so very trifling, that no difficulty could have occurred in its realization: indeed it appears from remarks in the *Jumma Wasilbakee* that arrangements had been made for the purpose before the accounts closed. The balances from Budaon were certainly considerable, but a large proportion of it was due from one Mehal (Kukralah, Jumma Rs. 2,500, balance 1,339,) and there is no appearance of any enquiry having been made either in regard to the cause of the arrears, or the practicability of their realization. There does not appear to be the slightest ground for disturbing the Settlement of the thirty-six Mehals in Oosaith, or of those in Budaon, which were not in balance, and we propose, with the Governor-General's sanction, to instruct the Commissioner to cause the parties who were under engagements, to be restored to the possession and management of them from the commencement of the ensuing Fuslee year, and as they have been out of possession one of the three years, to extend their lease

one year, to compensate for the injury the parties have suffered by being excluded the current year."

340.—The Governor General in Council concurring in these views, the Zemindars were re-instated from 1239 Fuslee; but their exclusion during 1238 Fuslee led indirectly to the loss of their property. Jelal Khan's *durkhast* was not accepted until the end of November, and the Zemindars were not ousted for some days after. They had, before being dispossessed, collected a large part of the *khurreef* rents. On their being re-instated, Jelal Khan filed suits against them in the Civil Court for the recovery of these collections, and also for rents of lands cultivated by them during his year of management. Decrees having been obtained were put in execution, and their estates brought to public sale in satisfaction. Some few were purchased by Jelal Khan, who subsequently transferred them in mortgage to a man named Rutun Sing. In a few instances the Zemindars saved their property by paying up the amount of the decree.

RUJOWLA TALOOQUAH.

341.—RUJOWLA TALOOQUAH, comprising forty-four Mouzahs, and an area of 9,262 square acres, was originally the property of a large community of Bais Thakoors. On the 20th October 1817, the Talooquah was exposed to sale for the recovery of arrears of revenue, when it was purchased by one Chiddumee Lall for Rs. 1,500. This person's right was re-exposed to sale on the same account in 1822, and, in the absence of creditable bidders, was purchased on the part of Government.

342.—The Talooquah having become the property of Government, farming engagements were taken from Purbeen Singh and three others, from 1230 to 1234 Fuslee, on a Jumma of Rs. 10,001. Thirteen others were subsequently admitted as joint Malgoozars by their consent: these persons were the former proprietors. Subsequently a petition was filed by one of these persons requesting that he might be allowed to transfer his engagements for two-thirds of the Talooquah to one Beharee Lall, who filed his *ikrarnamah* and required security, furnished by one Wasil Khan. On this petition is passed by Mr. Lowther the order, *munzoor shud*, and a *perwanah* was issued to the Tehseeldar the same day, informing him that the whole Talooquah was transferred to Beharee Lall two-thirds in *kutkinah*, the remainder in *Zemindaree* (responsibility). No report of the case was however made until 29th June 1824, when Mr. Swetenham wrote as follows:—"In the documents attached to the proceedings in the case, there is no notice taken of the thirteen men admitted on the 14th July 1823; neither assent nor dissent signified, when the Talooquah was transferred to Beharee Lall on 16th February 1824. Moreover both Beharee Lall, and Wasil Khan the security, are both no doubt *ismfurzee* of Jungee Khan, whose Jagheer adjoins this Talooquah. A former farming offer was made by an *ismfurzee* of this man, and rejected on account of the confusion of boundary that would probably ensue. This objection consequently is valid under the present arrangements." In the event of the existing lease being cancelled, orders were solicited respecting the future Settlement of the Talooquah. Mr. Swetenham considered "that to disunite the Talooquah, by making a *Mouzawar* Settlement, would affect the Govern-

ment revenue; and that, moreover, Settlements should not be concluded with the former proprietors, who are of a refractory contumacious character."

343.—The Board of Revenue, in reply, dated 12th July, directed the Collector to "invite the Moquddums and *Khoddkasht* Ryots to enter into engagements for the Government revenue for a period of three years." On the 3rd November, Mr. Swetenham reports having taking engagements as directed. On the 17th November is informed by the Board "that, from the purport of his Persian proceedings, they are led to apprehend that he either misconceived the tenor of their orders of 12th July, by which he was directed to invite the Moquddums and *Khoddkasht* ryots to enter into engagements for the payment of the Government revenue of their respective villages, or that he has confounded that mass of agricultural community, denominated *Moquddums*, with the Putteedars of the estate; as from what the Board are able to collect from the Persian proceedings, it would appear that he has offered the whole estate (which they find to comprise thirty-three villages) in two or three lots to Khashalee and Sobrun Singh, and a few others of the old proprietors, who, on the proceedings, are called Moquddums, whereas the abovementioned persons appear among those of the old recorded proprietors, whose want of principle, and punctuality in the fulfilment of their engagements during former Settlements, has rendered their exclusion a measure of particular expediency at the present period. The Secretary to the Board continues—"For your information and future guidance in the management of Rujowla, I am directed to explain the object the Board have in view in directing the admission of the Moquddums to engagements which are as follows:—

1stly.—To defeat the plans and intrigues of the old Proprietors.

2ndly.—To check the designs of a neighbouring Jagheerdar, Jungee Khan, on the lands of the estate; and, lastly, to secure a more punctual discharge of the Government revenues in future * *. In carrying the projected arrangements into effect, the Board direct me to point out to you the necessity that exists of your proceeding with the greatest circumspection, as by that alone you will be enabled to counteract and defeat the intrigues of the old Proprietors, and the designs of the Jagheerdar, it being an object with both parties to put forward their own dependents as the Moquddums to engage. Should the Moquddums, influenced by designing persons, pertinaciously decline to engage for their respective villages, the Board direct that you will form a Ryotwar Settlement, at easy rates."

344.—On the 15th February 1825, Mr. Swetenham reported that he had been unable to conform to the directions of the Board. He says,—“To show the impracticability of forming a Settlement in the Talooquah according to directions, I beg to state that there are no Moquddums. With the view therefore of forming a Ryotwar Settlement, I proceeded to measure the entire Talooquah, Mouzah by Mouzah, and to ascertain the names of the Assamees. The cultivators stated that they had always been accustomed to an *amulee* distribution of grain, and alluding to the precarious produce of the soil, they declare their inability to meet bad seasons under a Settlement with Government.” Another difficulty appeared. The Board had ordered the entire exclusion of the old proprietor. These men and their relatives were the principal cultivators. In order to secure the Government revenue, Mr. Swetenham made a Mouzahwar Settlement with the old proprietors, whose engagements were backed by good security; he calls it

“a beautiful Settlement for all classes of people in the Talooquah, who are highly pleased with, as well as the neighbouring Zemindars, in proof of which I adduce their alacrity and willingness to become security, and I anticipate the utmost punctuality in the realization of the revenue.” He says, “their having been admitted to engage may appear to militate against their orders; but I have, in my letter of 14th ultimo, endeavoured to vindicate their character from incorrigible contumacy, and, in the spirit of Regulation VII. of 1822, the Board will, I am persuaded, be inclined to treat with leniency the 251 persons, whose proprietary rights have been usurped in consequence of the mismanagement of thirteen of their number.”

345.—The Collector's hopes of a future punctual realization of the revenue were not attained at the close of 1826, and the estate was brought under *Kham* management. In 1832 A. D. it was purchased from Government at public sale for Co.'s Rs. 15,000, and is now the property of Chota Lall and Rukbur Dyal, representatives of Shah Beharee Lall.

346.—The Talooquah was surveyed and settled as one Mouzah, and is entered as such in the Pergunnah Register.

347.—There are no towns of any importance in the Pergunnah. Oosait is noted as having been the residence of the Puthan Chief, Futteh Khan (Khansumah). Markets are held in the following villages:—Oosait Khas, Kukralah, and Kuttra Sahadut-gunge.

348.—The following Table will show the number of Schools in the Pergunnah:—

Number of Schools.	Description.	Teachers.	Scholars.	Pay of Teachers per month.	Total.
				Rs. A. P.	Rs.
Persian,	2	2	25	8 0 0	96
Hindee,	4	4	42	7 8 0	90
Sanscrit,	2	2	54	0 0 0	0
Total,	8	8	121	15 8 0	186

349.—Surais are built on the main road to Futtehghurh, at Kukralah and Kuttra; the former is much frequented; the latter less so, in consequence of the building standing some little distance off the road.

340.—The following Table will show the charges on account of the Thannah establishment. The revenue charges have been shown in the Suleimpoor report:—

Number.	Office.	Salary per mensem.		Total per Annum.		Population.	Jumma.	Per-centage of charge on Jumma.
		Rs.	A. P.	Rs.	A. P.			
1	Thannahdar,	25	0 0	300	0 0			
1	Mohurrir,	8	0 0	96	0 0			
1	Jemadar,	8	0 0	96	0 0			
1	Duffadar,	6	0 0	72	0 0			
1	Mududgar,	5	0 0	60	0 0			
20	Birkundazes,	80	0 0	960	0 0			
	Stationery and repairs, ..	9	0 0	108	0 0			
	Total,	141	0 0	1692	0 0	50599	Rs. 70452	Rs. A. P. 2 10 5

M. H. COURT,
Deputy Collector.

BUDAON COLLECTOR'S OFFICE, 1852.

APPENDIX No. I.

SHURAH SOOLTANEE;

OR,

STATEMENT OF REVENUE RATES ON DIFFERENT LANDS,

AS FIXED FOR

PERGUNNAH SAHESWAN,

DURING REIGN OF AKBAR.

(*Vide Paragraph 22.*)

Rates of Khadir Land, from the Villages of Zillah Saheswan, agreeably to the Ahuds of the Emperors.

NIJKAREE.	RATES OF SHOORFA, OR PEOPLE OF THE 1ST CLASS.			RATES OF CHOWDHREES.			RATES OF CANOONGOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
Names of Grain.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.
	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Sugarcane,	0 10	0 9	0 8	0 8	0 6	0 4	0 8	0 6	0 4	1 0	0 14	0 12	1 0	0 14	0 12	1 2	1 0	0 14	1 8	1 2	1 0
Sugarcane, Nowluk, ..	0 9	0 8	0 7	0 7	0 6	0 4	0 7	0 6	0 4	0 14	0 12	0 10	0 14	0 12	0 10	1 0	0 14	0 12	1 4	1 2	1 0
Sugarcane, Faree,	0 8	0 6	0 0	0 6	0 4	0 0	0 6	0 4	0 0	0 12	0 10	0 8	0 12	0 10	0 8	0 14	0 12	0 10	1 0	0 14	0 12
Cotton,	0 6	0 5	0 4	0 4	0 0	0 0	0 4	0 0	0 0	0 10	0 8	0 6	0 10	0 8	0 6	0 14	0 12	0 10	1 2	1 0	0 12
Muskmelon,	0 4	0 3	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 6	0 4	0 0	0 6	0 4	0 4	0 7	0 6	0 5	0 8	0 7	0 6
Poppy,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 7	0 6	0 0
Lahee,	0 4	0 3	0 2	0 3	0 2	0 0	0 3	0 2	0 0	0 6	0 5	0 4	0 6	0 5	0 4	0 7	0 6	0 5	0 8	0 7	0 6
Tobacco, (Khurreef,) ..	0 6	0 5	0 4	0 5	0 0	0 0	0 5	0 0	0 0	0 14	0 12	0 10	0 14	0 12	0 10	1 0	0 14	0 12	0 8	1 2	1 0
Ditto, (Rubbee,)	0 6	0 5	0 2	0 5	0 0	0 0	0 5	0 0	0 0	0 12	0 10	0 8	0 12	0 10	0 8	0 14	0 12	0 10	1 0	0 14	0 12
Oordee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 0	0 12	0 8
Shursu for Surso,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 5	0 4	0 6	0 5	0 4	0 7	0 5	0 5	0 7	0 6	0 4
Kusoomb,	0 4	0 0	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 6	0 5	0 4	0 5	0 5	0 0	0 7	0 0	0 0	0 10	0 9	0 8
Vegetables,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 6	0 4
Carrots,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 6	0 5	0 0	0 8	0 6	0 4
Shuknrkund,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 6	0 0
Turmeric,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Onion,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 10	0 8	0 6
Singharah,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 14	0 10	0 8
Sunn, (Hemp,)	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 6	0 0
Indigo,	0 8	0 6	0 4	0 4	0 0	0 0	0 4	0 0	0 0	0 10	0 9	0 8	0 10	0 9	0 8	0 12	0 10	0 8	1 0	0 14	0 12
Indigobundee,	0 6	0 5	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 8	0 6	0 0	0 8	0 6	0 0	0 10	0 8	0 0	0 12	0 10	0 7
Souf, Casnee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 6	0 0
Mathee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Ujwain,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 6	0 0

Rates of Khadir Land (Khurreef Crops) in the Villages of Pergunnah Saheswan.

NILKAREE.	RATES OF SHOORFA, OR PEOPLE OF THE 1ST CLASS.			RATES OF CHOWDHREES.			RATES OF CANOONGOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
Names of Grain.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.
	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Samokh,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 4	0 0	0 0	0 5	0 0	0 0
Kodoh,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 4	0 0	0 0	0 6	0 5	0 0
Satee Rice,	0 3	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 6	0 5	0 0	0 8	0 6	0 0
Moonjee Rice,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Bajherah,	0 5	0 2	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 6	0 5	0 4	0 6	0 5	0 4	0 8	0 7	0 6	0 12	0 10	0 8
Jooar, small,	0 5	0 4	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 6	0 5	0 4	0 6	0 5	0 4	0 8	0 7	0 6	0 12	0 10	0 8
Mash,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 0	0 5	0 4	0 0	0 6	0 5	0 4	0 8	0 6	0 5
Til,	0 3	0 0	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 5	0 4	0 3	0 5	0 4	0 3	0 6	0 5	0 4	0 8	0 7	0 6
Mundooah,	0 1	0 0	0 0	0 1	0 0	0 0	0 1	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 4	0 0	0 0
Mote,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 4	0 0	0 0	0 6	0 5	0 4
Lobeeah,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 4	0 0	0 0	0 5	0 4	0 0
Mukah Jooar,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 6	0 3	0 4	0 8	0 7	0 6
Bas Muthee Rice,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Kungnee,	0 1	0 0	0 0	0 1	0 0	0 0	0 1	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 4	0 3	0 0
Korcer,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 2	0 0	0 8	0 7	0 6

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Rates of Khadir Land (Rubbee Crops) in the Village of Pergunnah Saheswan.

NILKAREE.	RATES OF SHOORFA, OR PEOPLE OF THE 1ST CLASS.			RATES OF CHOWDHREES.			RATES OF CANOONGOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
Names of Grain.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.
	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Wheat,	0 5	0 4	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 10	0 8	0 6	0 10	0 8	0 6	0 12	0 10	0 8	0 15	0 13	0 12
Barley,	0 5	0 4	0 3	0 4	0 3	0 2	0 4	0 3	0 2	0 6	0 5	0 4	0 6	0 5	0 4	0 8	0 7	0 6	0 10	0 9	0 8
Gram,	0 5	0 4	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 6	0 5	0 4	0 6	0 5	0 4	0 7	0 6	0 5	0 8	0 7	0 6
Ulsee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 5	0 4
Mutter and Gram,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3	0 6	0 5	0 4	0 7	0 6	0 5
Urhur,	0 0	0 0	0 0	0 0	0 3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 5	0 4
Uds, Masoor,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3	0 6	0 5	0 4	0 7	0 6	0 5
Ulsee and Mutra,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 5	0 4
Kusah and Gram,	0 4	0 3	0 3	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3	0 6	0 5	0 4	0 7	0 6	0 5
Wheat and Barley,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 6	0 5	0 4	0 6	0 5	0 4	0 8	0 7	0 6	0 9	0 8	0 7
Ditto and Gram,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 6	0 5	0 4	0 6	0 5	0 4	0 8	0 7	0 6	0 9	0 8	0 7
Barley and Gram,	0 4	0 3	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3	0 6	0 4	0 4	0 8	0 7	0 6

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Rates of Bhoor Land in the Villages of Pergunnah Saheswan, agreeably to the Ahuds of the Emperors.

NJKAREE.	RATES OF SHOORFA, OR PEOPLE OF 1ST CLASS.			RATES OF CHOW- DHREES.			RATES OF CANOONGOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.
NAMES OF GRAIN.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Sugarcane,	0 8	0 7	0 6	0 6	0 5	0 4	0 6	0 5	0 4	0 12	0 10	0 8	0 12	0 10	0 8	0 14	0 12	0 10	1 0	0 14	0 12
Sugarcane, Nowluk, ..	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Sugarcane, Paree, ..	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 12	0 10	0 8
Cotton,	0 5	0 4	0 3	0 4	0 3	0 0	0 4	0 3	0 0	0 8	0 6	0 5	0 8	0 6	0 5	0 12	0 10	0 8	0 14	0 12	0 10
Muskmelon,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Poppy,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Lahie,	0 3	0 2	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 5	0 4	0 0	0 5	0 4	0 0	0 6	0 5	0 0	0 7	0 6	0 0
Tobacco, (Khurreef,) ..	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 14	0 12	0 10
Ditto, (Rubbee,) ..	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 12	0 10	0 8
Oordee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 12	0 10	0 8
Shursu for Surso, ..	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Kusomb,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 8	0 7	0 6
Vegetable,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Carrots,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 5	0 4	0 0
Shukurkund,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Turmeric,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Onion,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Singharah,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 12	0 10	0 0
Sunn,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Indigo,	0 5	0 4	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 8	0 7	0 6	0 8	0 7	0 6	0 9	0 8	0 7	0 10	0 9	0 8
Indigo-bundee,	0 4	0 3	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 4	0 0	0 5	0 4	0 0	0 8	0 6	0 0	0 9	0 8	0 7
Souf, Casnee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 4	0 0
Mathee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 5	0 4	0 0
Ujwain,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 6	0 5	0 4

Rates of Bhoor Land (Khurreef Crops) in the Villages of Pergunnah Saheswan.

NJKAREE.	RATES OF SHOORFA, OR PEOPLE OF 1ST CLASS.			RATES OF CHOW- DHREES.			RATES OF QANOON- GOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.	sort of Land.
Names of Grain.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Samokh,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 6	0 4	0 3
Kodoh,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 6	0 5	0 4
Satee Rice,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 0	0 0	0 4	0 0	0 0	0 5	0 0	0 0	0 6	0 5	0 0
Moonjee Rice,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Bajra,	0 5	0 4	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 4	0 0	0 5	0 4	0 0	0 6	0 5	0 0	0 10	0 8	0 6
Joar, small,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Mash,	0 3	0 2	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 0	0 0	0 6	0 5	0 0
Til,	0 3	0 2	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 4	0 3	0 7	0 6	0 5
Mundooah,	0 2	0 1	0 0	0 2	0 1	0 0	0 2	0 1	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 3	0 0	0 0	0 5	0 4	0 3
Mote,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3
Moong,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 0	0 5	0 4
Loobea,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 3	0 0	0 0	0 5	0 0	0 0
Mukah Joar,	0 2	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 6	0 4	0 3
Basmuthee Rice,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Kungnee,	0 1	0 0	0 0	0 1	0 0	0 0	0 1	0 0	0 0	0 2	0 0	0 0	0 2	0 0	0 0	0 3	0 2	0 0	0 4	0 3	0 0
Koorer,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 6	0 5	0 4

Rates of Bhoor Land (Khurreef Crops) in the Villages of Pergunnah Saheswan.

NJIKAREE.	RATES OF SHOORFA, OR PEOPLE OF 1ST CLASS.			RATES OF CHOW- DHREES.			RATES OF QANOON- GOES.			RATES OF ZEMIN- DARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
Names of Grain.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.	1st Class Land.	2nd Class Land.	3rd Class Land.
	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
Wheat,	0 5	0 4	0 0	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 0	0 5	0 4	0 0	0 8	0 6	0 4	0 10	0 8	0 6
Barley,	0 5	0 4	0 3	0 4	0 3	0 2	0 4	0 3	0 2	0 5	0 4	0 3	0 5	0 4	0 3	0 7	0 6	0 5	0 8	0 7	0 6
Gram,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Ulsee,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Mutter and Gram,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Urhur,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Musoor,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Ulsee and Mutter,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 4	0 3	0 0
Kusah and Gram,	0 9	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 4	0 3	0 0
Wheat and Barley,	0 5	0 4	0 0	0 4	0 3	0 0	0 4	0 3	0 0	0 5	0 4	0 3	0 5	0 4	0 3	0 8	0 6	0 5	0 9	0 7	0 6
Ditto and Gram,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Gram and Barley,	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0

Rates of Bunjur, Khadir, Bhoor, and Balah Lands.

RATES OF SHOORFA, OR PEOP- PLE OF 1ST CLASS.			RATES OF CHOWDHREES.			RATES OF QANOONGOES.			RATES OF ZEMINDARS.			RATES OF PAEEKASHTS.			RATES OF MOQUDUMS.			RATES OF RYOTS.		
1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.	1st sort of Land.	2nd sort of Land.	3rd sort of Land.
R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.	R. A.
0 2	0 1	0 0	0 2	0 1	0 0	0 2	0 1	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 3	0 2	0 0	0 4	0 2	0 2

APPENDIX NO. II.
REPORT ON GOVERNMENT DISPENSARY

AND

MEDICAL STATISTICS.

BY

RAM NARAIN DASS,
SUB-ASSISTANT SURGEON OF BUDAON.

To M. H. COURT, Esq.,

Joint Magistrate, Budaon.

SIR,

As requested by you, I have the honor to submit a report, with its accompanying Medical Statistics, to be embodied in your STATISTICAL REPORT OF THE BUDAON DISTRICT. My report embraces only what has occurred during the time of my incumbency as Sub-Assistant Surgeon, dating from 1st July 1847.

DISPENSARY.

Before I joined the Station on the 1st May 1847, the expenses of the Dispensary were defrayed by private subscriptions given by the Officers in the station, amounting to Rs. 25 or 30 monthly.

The establishment then consisted of one Compounder, one Dresser, and one Kuhar.

Medicines were at that time dispensed from a small house rented in the town of Budaon. It was little known, had no reputation, and there was no accommodation for In-patients. The persons who received relief were few, and what are now denominated Out-patients.

In the year 1846, Mr. C. W. Fagan built a Dispensary House, from funds subscribed for the purpose by the Residents of the District. The site of this is well adapted for such an institution, being in the centre of the town, on the side of a public road, on an elevated and well-aired spot of ground. This was completed shortly before I joined my appointment. The accommodation afforded by this building was sufficient, but the monthly subscriptions were insufficient to defray the expense of In-patients, and others requiring Surgical operations; these I kept at my expense.

Towards the end of 1847, His Honor the Lieutenant-Governor visited Budaon on his tour of inspection through Rohilcund. The Dispensary was then visited by him, and, in consequence of the efficient state to which it was brought, His Honor, in a communication to the Supreme Government, No. 1045, dated 15th December 1847, strongly recommended that the establishment should be made a Government Dispensary, and receive public support. The recommendation of His Honor was accepted, and the sum of Rs. 70 a month was sanctioned by Government for the expenses:—

Establishment,	40 Rs.
Native Medicines,	20 "
Dieting In-patients,	10 "
Total,	70 Rs.

From this time the influx of In-patients, most requiring Surgical operations, as also of Out-patients, greatly increased: private subscriptions however ceased. Those of the In-patients who were able, were made to defray the expenses of their diet; those who could not, were provided from the Government allowance. Notwithstanding that half of the number of In-patients were able, and consequently made to defray their own cost of diet, still the number of In-patients were so great, that the Rs. 10 per month allowed by Government was found insufficient to provide for those In-patients who were unable to provide themselves. Private subscriptions were again called for; this was given, as usual, by the Officers of the station. The residents of the interior were likewise solicited to aid towards the benefit of the Charitable Institution. The small sums contributed by these are collected through the Tehseel Officers; the total amount of private subscriptions amounted to Rs. 40 per mensem: this sum is daily decreasing, and it is a subject of regret that the Pergunnah Officers, who are in good circumstances, and able to pay with ease the trifling sums they have hitherto given, should withhold this sum.

The principal Surgical disease, treated at the Dispensary, has been stone in the bladder, and a great number of those sick of this disease have been cured by Surgical operations performed by me during the past four years; and, I believe, the success that has hitherto attended my operations, has tended in a great way to imbue the people with confidence. With the exception of the residents of villages proximate to Budaon, very few come to the Dispensary for medical treatment. That many require it is certain, but distance, and absence from home, prevent their coming for it into Budaon.

The population of the Budaon District is, as I ascertained from you, about 7,00,000. In the larger Districts of the Dooab, such as Cawnpoor, Futtehghurh, &c. professional hukeems, jurras, &c. are more numerous. In this District they are very scarce, and on this account three Branch Dispensaries, situated at Goonour, Bisowlee, and Suleimpoor, would I think prove an inestimable benefit to the people. In the Lower Provinces the native residents, who are more advanced, supply funds for this purpose. In this District the native residents, although conscious of the benefits attendant on such Institutions, are very averse to paying any sum of money towards their erection or establishment.

Cholera pills, and medicines for snake-bites, are sent to each Thannah for dispensing, when required. Beyond this but little relief is afforded from the Dispensary to the people who live at a distance from the town of Budaon, unless in cases of stone in the bladder, &c.

The working of the Dispensary, from 1st May 1847 to 30th September 1851, will be shown in the Returns below:—The Return No. 1 will show the expenses of the Institution defrayed by Government, as well as by subscription.

The Return No. 2 shows the number of In and Out-patients treated, cured, &c.

As the lithotomy, or operations for stones, form the greatest number of the Surgical operations performed at the Dispensary, the Return No. 3 is separated from the

list No. 4 (which shows the other operations performed at the Dispensary,) and is made to show the ages of the patients and the weight of their stones extracted.

The Return No. 4 is the list of other capital surgical operations which have hitherto been performed at the Dispensary.

I have the honor to be,

Sir,

Your most obedient Servant,

RAM NARAIN DASS,

Sub Assistant Surgeon.

RETURN No. 1.—*Expence of the Budaon Government Dispensary, paid by Government, as well as by Subscriptions from 1st May 1847 to 30th April 1851.*

Year.	PAID BY GOVERNMENT.				PAID BY SUBSCRIPTION.			
	Establishment.	Country Medicines.	Dieting the Sick.	Total.	Establishment.	Country Medicines.	Dieting the Sick.	Total.
	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.
From 1st May to 30th December 1847,	0 0 0	0 0 0	0 0 0	0 0 0	129 0 0	68 14 9	0 0 0	197 14 9
From 1st January to 31st May 1848, ..	0 0 0	0 0 0	0 0 0	0 0 0	80 0 0	51 10 0	0 0 0	131 10 0
From 1st June to 31st December 1848,	280 0 0	118 3 3½	65 8 1	463 11 4½	0 0 0	0 0 0	0 0 0	0 0 0
Year 1849, ..	480 0 0	216 8 5	124 13 5	821 5 10	8 0 0	18 8 6	45 6 5	71 14 11
Year 1850, ..	476 0 0	214 14 0½	119 7 1½	810 5 2	98 0 0	34 9 9	56 9 6½	189 3 3½
From 1st January to 30th Sept. 1851, ..	360 0 0	149 10 11	90 0 0	599 10 11	81 0 0	31 0 6	62 12 5½	174 12 11½
Grand Total, Co.'s Rs. ..	1596 0 0	699 4 8	399 12 7½	2695 1 3½	396 0 0	204 11 6	164 12 4½	765 7 10½

The expences of the Institution were paid by Government from 1st June 1848.

RETURN No. 2.—Showing the number of Out and In-patients treated at the Budaon Government Dispensary, from 1st May 1847 to 30th September 1851.

Years and Patients.	Total number of Patients treated.	Dis charged cured.	Returned.	Absconded or ceased to attend.	Died.	Remain- ing.	Total.	Daily average number of Sick.
Out-Patients, from 1st May to 30th December 1847,	3265	2507	58	645	0	55	3265	37.4
Year 1848, ..	3929	3385	59	430	0	55	3929	51.9
Year 1849, ..	3649	3298	43	278	2	28	3649	86.3
Year 1850, ..	2927	2503	100	307	1	16	2927	94.6
Out-Patients, from 1st January to 30th Sept. 1851, ..	2764	2351	112	253	0	48	2764	116.5
Total, ..	16534	14044	372	1913	3	202	16534	77.3
In-Patients, from 1st May to 30th December 1847,	31	19	3	3	0	6	31	6.5
Year 1848, ..	113	72	5	17	8	11	113	7.4
Year 1849, ..	205	143	17	16	16	13	205	14.2
Year 1850, ..	195	148	12	8	17	10	195	13.1
In-Patients, from 1st January to 30th September 1851, ..	173	112	11	19	15	16	173	13.4
Total, ..	717	494	48	63	56	46	717	10.0

RETURN No. 3.—Lithotomy Operations performed at the Budaon Government Dispensary, from 1st May 1847 to 30th September 1851.

YEARS.	AGE FROM THREE TO TEN YEARS OLD.							AGE FROM TEN TO FORTY YEARS OLD.							AGE FROM FORTY TO SEVENTY YEARS OLD.							Total Number of Operations.	Ditto ditto of deaths.
	Number of Operations performed.	WEIGHT OF THE STONES.						Number of Operations performed.	WEIGHT OF THE STONES.						Number of Operations performed.	WEIGHT OF THE STONES.							
		From one to two Drachms.	Two to four Drachms.	Four to one Ounce.	One to two Ounces.	Two to four Ounces.	Deaths.		From one to two Drachms.	Two to four Drachms.	Four to ten Ounces.	One to two Ounces.	Two to four Ounces.	Deaths.		From one to two Drachms.	Two to four Drachms.	Four to one Ounce.	Two to four Ounces.	Four to six Ounces.	Deaths.		
From 1st May to 30th Dec. 1847,	7	3	1	2	1	0	0	7	2	3	0	2	0	0	6	1	3	1	1	0	0	20	0
Year 1848,	5	2	1	1	1	0	0	11	2	3	2	4	0	1	8	0	1	2	4	1	1	24	2
Year 1849,	13	4	7	1	1	0	0	19	0	4	2	11	2	0	15	3	2	1	6	3	2	47	2
Year 1850,	28	9	9	9	1	0	0	17	0	3	6	6	2	1	18	4	2	5	6	1	3	63	4
From 1st January to 30th September 1851, .. .	22	7	8	7	0	0	2	20	4	5	4	3	4	2	15	3	1	4	3	4	2	57	6
Total,	75	25	26	20	4	0	2	74	8	18	14	26	8	4	62	11	9	13	20	9	8	211	14

All these Operations were performed by me, except thirty-four cases, which were operated by Mr. Roddock, Sub-Assistant Surgeon, who officiated six months for me. Out of thirty-four cases, three died.

RETURN No. 4.

Other Capital Operations, performed at the Budaon Government Dispensary, from 1st May 1847, to 30th September 1851.

YEARS AND PATIENTS.	Ampu- tations.	Can- cerous Tu- mors.	Filthy Tu- mors.	Hy- drocele.	Laxa- tia.	Cata- ract.	Fistula La- chry- malia.	Asci- tis.	Total.	Re- marks.
In-patients, from 1st May 1847 to 30th September 1851, ..	5	11	2	1	1	3	1	8	32	
Out-patients, ditto ditto, ..	0	1	1	5	2	0	8	1	18	
Total, ..	5	12	3	6	3	3	9	9	50	

RAM NARAIN DASS,

Sub-Assistant Surgeon, Budaon.

JAIL HOSPITAL.

WHEN I took charge of the Jail Hospital, 1st May 1847, most of the prisoners were found to have lost, in a great degree, the balance of their health, owing to the mortality which prevailed in the Jail before my time; and, on enquiry, I have been informed that the mortality was owing,—

1st.—To the crowded state of the Barracks, which were not so well ventilated as they are now:

2nd.—To the labor the of prisoners, which was not in proportion to their physical strength; because, on my taking charge of the Jail, I found, among the laboring prisoners, many who were physically too weak to perform the equal work with the other prisoners: they were therefore separated, and put in the inferior gang, which was before more regulated by favor, than on the grounds for which such a gang has been instituted; and, besides allotting to them the easy labor according to their physical strength, they were medically treated, as they so much required it. And

3rd.—The medical treatment of acute dysentery, and inflammation of the lungs, of which diseases most of the prisoners then died, being generally adopted from fevers.

The Jail and the prisoners having been thus circumstanced, the mortality which not long ago thinned the Jail, was found to wait for an exciting cause, to make another inroad among the prisoners, and therefore, in the year 1847, when I joined the Station, the unhealthy prisoners, and particularly those who were of the scorbutic habit, were removed from the Jail to a high and dry piece of ground in an adjoining village, and they, who were thus removed, were found to have been much benefited by a little medical treatment, and by allowing them nourishing food.

The prisoners in the Hospital, and in the inferior gang, were found to have been more benefited by giving *aonlah*, in various shapes, with preparations of iron: thus they who were of the scorbutic habit, and who lost their health from the effect of mortality, as above stated, and it is well testified by the less number of mortality since then, as shown in the Return below.

As the prisoners who desire so much to have the irons taken off their legs or to have admittance into the Hospital to save themselves from the Jail labor, are found to take the opportunity to produce sores on their legs, by applying lime, or bruised leaves of a plant called "*Lotookur*," found in abundance on the banks of the Sote, and they who are suspected of this crime, and who have sores very slight on their legs, are now punished by being treated for such sores as Out-patients among the prisoners, not by taking the irons off their legs: this course being adopted, it greatly decreased the number of the ulcer cases in the Jail.

The prisoners, who were found to have lost their health for want of nourishment, are allowed two chittacks more of attah than the usual ratio of the Jail diet; but they do the same work with the other prisoners, and the Return No. 1, Column 10, will show the average of those extra diet; and under this increase of the diet allowance, the scorbutic habit of most of the prisoners has been corrected, and it saved many who were dying for want of sufficient food and nourishment.

The diet allowed to the prisoners with labor, consists of attah ten chittacks, dall two chittacks, fuel twelve chittacks, salt $\frac{1}{10}$ chittacks, chilly thirty-six grains, vegetables six chittacks; once a week oil $\frac{1}{10}$ chittacks, to cook vegetables with, and at noon gram one chittack; and to those without labor, it consists of attah eight chittacks, dall two chittacks, fuel twelve chittacks, salt $\frac{1}{10}$ chittacks, chilly thirty-six grains, vegetables six chittacks; once a week oil $\frac{1}{10}$ chittacks to cook vegetables with.

The attah given to the prisoners was made of wheat and barley, in proportion of forty seers of the former to five seers of the latter. The barley was lately discontinued, as it diminishes the quality of the wheat, and it makes the attah coarse.

Vegetables are much required for the health of the prisoners. The seasonable fruits, such as mangoes, melons, &c. which are often sold here almost as cheap as the vegetables of the season, are this year allowed to the prisoners, but they are found not to like the change, as dall is not allowed with the vegetables. This little allowance, as the seasonable vegetables and fruits are sold here very cheap, will not be unattended with great benefit to their health, and it appears that it will not be very expensive.

The crowding within the barracks of the Jail is prevented by the Jail rule, of allowing each prisoner 400 cubic feet, calculated by multiplying together the length, breadth, and height of every ward in feet for the cubic contents.

There are eight barracks in the Jail, on a piece of ground near the Kutcherry about 360 feet long and 243 feet broad, enclosed by a pukka wall all around, about eleven feet high and two feet broad, having within it three partitions by walls nearly of the same

height and breadth. The hospital is in one, four barracks in the second, and three barracks in the third; each of the barracks is about ninety-two feet long, fourteen feet broad, and twelve feet high, capable of containing forty prisoners at most, according to the measurement above stated; and the top of the barracks is elevated and thatched from the chupper, having the space between them opened from one end to the other, allowing free ventilation of the barracks, being prevented with doorways from seven to nine on each side; and under the Jail wall, and on the outside of the Jail, are nine biltuns, or thatched houses, open at two ends, not having the side doorways as in the barracks within the Jail, and each of them is about sixty-one feet long, fifteen feet broad, and ten and a half feet high, capable of containing twenty prisoners according to the above measurement. They are made, as the barracks within the Jail are not sufficient to contain all the prisoners.

I have the honor to be,

Sir,

Your most obedient Servant,

RAM NARAIN DASS,

Sub-Assistant Surgeon.

RETURN No. 1.

*Showing the number of Sick Prisoners in the Jail Hospital at Budaon,
from 1st May 1847 to 30th September 1851.*

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
YEARS.	Total number of Sick Prisoners treated.	Cured.	Transferred.	Liberated.	Died.	Remaining.	Daily average number of Sick Prisoners.	Daily average number of strength of Prisoners.	Daily average number on extra Diet, twelve chittacks Attah.	Daily average number of sick Prisoners.	REMARKS.
From 1st May to 30th December 1847,	723	634	8	24	27	30	35.3	527.4	.0	22.1	
Year 1848,	976	906	5	17	12	36	32.4	487.	50.3	21.2	
Ditto 1849,	440	417	4	6	9	4	13.2	476.	30.5	14.1	
Ditto 1850,	180	160	1	4	10	5	7.1	494.8	7.6	8.7	
From 1st January to 30th September 1851,	182	155	2	0	9	16	11.6	504.4	3.7	10.3	
Total,	2,501	2,272	20	51	67	61	.0	.0	.0	.0	

RETURN No. 2.

Expenses of the Budaon Jail Hospital, from 1st May 1847 to 30th September 1851.

YEARS.	Cost of usual Diet.	Cost of extra Diet in Hospital.	Country Medicines.	Total.	REMARKS.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
From 1st May to 30th December 1847,	197 3 2	88 0 4	69 14 3	355 1 9	
Year 1848,	315 11 1	83 3 8	58 11 8	457 10 5	
Ditto 1849,	116 3 11½	72 0 3½	46 6 9	234 11 0	
Ditto 1850,	53 5 9½	27 12 2½	19 5 7½	100 7 7	
From 1st January to 30th September 1851,	58 11 6½	40 15 6½	7 12 1½	107 7 2½	
Grand Total, Co.'s Rs.	741 3 6½	312 0 0	202 2 5	1255 5 11½	

RAM NARAIN DASS,

Sub-Assistant Surgeon, Budaon.

Budaon, 28th November 1851.

APPENDIX No. III.

PERGUNNAWAR ACCOUNT OF DEMANDS,
COLLECTIONS AND BALANCES

OF

LAND REVENUE,

OR

FROM 1210 TO 1230 FUSLEE, FROM 1802-03 TO 1824-25 A. D.

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE.

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Balances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1210	Fuslee, Rajpoorah,	31236	31236	0	0	These balances accrued at the time when the Tehseeldars were responsible for the collections, receiving as salary a percentage on the Revenue realised. The Balances are not borne on the books, but no order for their remission can be found; they are therefore entered under the head of Balances.
1211	ditto,	38970	38970	0	0	
1212	ditto,	47138	47138	0	0	
1213	ditto,	47138	46951	0	187	
1214	ditto,	47138	45174	0	1964	
1215	ditto,	47138	39184	0	7954	Remitted by order of Government, No. 1838, dated 28th October 1842.
1216	ditto,	52069	52069	0	0	
1217	ditto,	56625	54063	2562	0	
1218	ditto,	57122	56468	654	0	
1219	ditto,	59352	58860	492	0	
1220	ditto,	70871	70192	673	0	
1221	ditto,	72856	72191	665	0	
1222	ditto,	74906	74164	742	0	
1223	ditto,	75091	74066	1025	0	
1224	ditto,	75092	74025	1067	0	
1225	ditto,	73824	73824	0	0	
1226	ditto,	74263	74263	0	0	
1227	ditto,	74263	74263	0	0	
1228	ditto,	74413	74413	0	0	
1229	ditto,	74538	74538	0	0	
1230	ditto,	77097	77097	0	0	
1210	Fuslee, Asudpoor,	40704	32834	7870	0	Remitted by virtue of Purnanah of Board of Commissioners, dated 12th May 1808.
1211	ditto,	51212	37927	13215	0	
1212	ditto,	62031	60211	0	1820	
1213	ditto,	60057	55439	0	4568	
1214	ditto,	63070	55250	0	7820	
1215	ditto,	63108	56106	0	7002	These balances are not borne on the books. They occurred during the time of the Tehseeldar's responsibility, and have either been remitted or released, no order of remission can be found.
1216	ditto,	61819	61819	0	0	
1217	ditto,	63326	63326	0	0	
1218	ditto,	64364	64364	0	0	
1219	ditto,	69053	68588	465	0	
1220	ditto,	74622	74159	463	0	
1221	ditto,	78528	78072	456	0	
1222	ditto,	83587	80562	3025	0	
1223	ditto,	84449	78773	5676	0	
1224	ditto,	84806	81656	3032	0	
1225	ditto,	82662	81912	750	0	
1226	ditto,	82422	82422	0	0	
1227	ditto,	81392	81392	0	0	
1228	ditto,	81515	81515	0	0	
1229	ditto,	81585	81585	0	0	
1230	ditto,	82563	78403	4160	0	
						Remitted by order of Government, dated 14th June 1826.

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE,
(Continued.)

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Bal- ances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1210	Fuslee, Islamnugur, ..	38345	0	0	0	
1211	ditto, ..	46276	0	0	0	
1212	ditto, ..	56235	0	0	0	
1213	ditto, ..	50481	0	0	0	
1214	ditto, ..	57190	0	0	0	
1215	ditto, ..	57759	0	0	0	
1216	ditto, ..	40911	40771	140	0	
1217	ditto, ..	46812	46667	145	0	
1218	ditto, ..	49518	48276	1242	0	
1219	ditto, ..	52994	50531	2463	0	
1220	ditto, ..	53569	53569	0	0	
1221	ditto, ..	53569	53569	0	0	
1222	ditto, ..	68591	67747	844	0	
1223	ditto, ..	68592	67623	929	0	
1224	ditto, ..	74358	72210	2148	0	
1225	ditto, ..	74358	74358	0	0	
1226	ditto, ..	74358	74358	0	0	
1227	ditto, ..	74358	74358	0	0	
1228	ditto, ..	74358	74358	0	0	
1229	ditto, ..	73025	73025	0	0	
1230	ditto, ..	73025	73025	0	0	
1210	Fuslee, Bisowlee, ..	32172	32172	0	0	
1211	ditto, ..	37219	37219	0	0	
1212	ditto, ..	44231	44231	0	0	
1213	ditto, ..	35957	35957	0	0	
1214	ditto, ..	42439	42438	0	0	
1215	ditto, ..	44328	44328	0	0	
1216	ditto, ..	35656	34946	710	0	
1217	ditto, ..	41096	37902	3194	0	
1218	ditto, ..	42948	38874	4110	0	
1219	ditto, ..	44761	42252	2509	0	
1220	ditto, ..	50984	50956	28	0	
1221	ditto, ..	55604	55180	424	0	
1222	ditto, ..	36048	35615	433	0	
1223	ditto, ..	42092	41659	433	0	
1224	ditto, ..	44848	44415	433	0	
1225	ditto, ..	51784	51784	0	0	
1226	ditto, ..	53574	53574	0	0	
1227	ditto, ..	54398	54398	0	0	
1228	ditto, ..	54740	54740	0	0	
1229	ditto, ..	54974	54974	0	0	
1230	ditto, ..	54974	54974	0	0	
1210	Fuslee, Sutassee, ..	18321	18321	0	0	
1211	ditto, ..	21069	21069	0	0	
1212	ditto, ..	25328	25328	0	0	
1213	ditto, ..	20030	20030	0	0	

Remitted under orders of
Government, No. 1838, dated
28th October 1842.

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE,
(Continued.)

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Ba- lances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1214	Fuslee, Sutassee—(contd.)..	23636	23636	0	0	
1215	ditto, ..	24745	24745	0	0	
1216	ditto, ..	21263	20814	449	0	
1217	ditto, ..	24747	23878	869	0	
1218	ditto, ..	25935	24414	1521	0	
1219	ditto, ..	28151	27341	810	0	
1220	ditto, ..	29658	29611	47	0	
1221	ditto, ..	31951	31832	119	0	
1222	ditto, ..	25670	25582	88	0	
1223	ditto, ..	26033	25886	147	0	
1224	ditto, ..	30809	30675	134	0	
1225	ditto, ..	33263	33263	0	0	
1226	ditto, ..	34470	34470	0	0	
1227	ditto, ..	34608	34608	0	0	
1228	ditto, ..	34704	34704	0	0	
1229	ditto, ..	34709	34709	0	0	
1230	ditto, ..	34733	34733	0	0	
1210	Fuslee, Kote Salbuan, ..	61685	61685	0	0	
1211	ditto, ..	70423	49156	0	21277	
1212	ditto, ..	78577	48207	0	30370	
1213	ditto, ..	52703	52137	0	566	
1214	ditto, ..	61551	60704	0	847	
1215	ditto, ..	68621	68621	0	0	
1216	ditto, ..	63850	45391	18459	0	
1217	ditto, ..	62410	59380	3030	0	
1218	ditto, ..	69416	66201	3215	0	
1219	ditto, ..	72274	64003	8271	0	
1220	ditto, ..	61900	61900	0	0	
1221	ditto, ..	66096	66096	0	0	
1222	ditto, ..	74186	74186	0	0	
1223	ditto, ..	77497	77497	0	0	
1224	ditto, ..	73027	73027	0	0	
1225	ditto, ..	73027	73027	0	0	
1226	ditto, ..	74457	74457	0	0	
1227	ditto, ..	74477	74477	0	0	
1228	ditto, ..	74477	74477	0	0	
1229	ditto, ..	74477	74477	0	0	
1230	ditto, ..	74477	74477	0	0	
1210	Fuslee, Saheswan, ..	55822	55822	0	0	
1211	ditto, ..	68057	68057	0	0	
1212	ditto, ..	80632	80632	0	0	
1213	ditto, ..	79998	79998	0	0	
1214	ditto, ..	80042	80042	0	0	
1215	ditto, ..	80649	80649	0	0	
1216	ditto, ..	80879	80879	0	0	

Remitted under Orders of
Government, No. 1838, dated
28th October 1842.

These balances occurred dur-
ing the time that Tehseeldars
received commission on their
Collections. They are not borne
on the Accounts, but expunged
previous to formation of this
District.

Remitted under Orders of
Government, No. 1838, dated
28th October 1842.

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE,
(Continued.)

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Ba- lances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1217	Fuslee, Saheswan—(contd.)	84595	84595	0	0	Remitted under Orders of Government, No. 1306, dated 28th May 1836, and No. 301, dated 27th January 1846.
1218	ditto, .. ditto, ..	86822	86822	0	0	
1219	ditto, .. ditto, ..	95434	94765	669	0	
1220	ditto, .. ditto, ..	99445	99441	4	0	
1221	ditto, .. ditto, ..	107850	107823	27	0	
1222	ditto, .. ditto, ..	112228	111226	1002	0	
1223	ditto, .. ditto, ..	112684	111877	807	0	
1224	ditto, .. ditto, ..	113196	112586	610	0	
1225	ditto, .. ditto, ..	109888	109898	0	0	
1226	ditto, .. ditto, ..	111730	111730	0	0	
1227	ditto, .. ditto, ..	112071	111971	100	0	Ditto ditto.
1228	ditto, .. ditto, ..	112287	112287	0	0	
1229	ditto, .. ditto, ..	112402	112402	0	0	
1230	ditto, .. ditto, ..	109161	109111	50	0	Ditto ditto.
1210	Fuslee, Oojhance, ..	93553	93553	0	0	These accounts are obtained from the Tehseel records, no Accounts being forthcoming from offices. The balances are not borne on the books.
1211	ditto, .. ditto, ..	100007	77118	0	22889	
1212	ditto, .. ditto, ..	106966	77657	0	29329	
1213	ditto, .. ditto, ..	91775	91498	0	277	
1214	ditto, .. ditto, ..	103970	103578	0	392	
1215	ditto, .. ditto, ..	106954	106759	0	195	
1216	ditto, .. ditto, ..	70702	56238	0	0	
1217	ditto, .. ditto, ..	93934	91290	0	0	
1218	ditto, .. ditto, ..	111331	104141	0	0	
1219	ditto, .. ditto, ..	114756	104752	0	0	
1220	ditto, .. ditto, ..	104960	104950	10	0	Remitted by Order of Government, No. 661, dated 24th November 1837.
1221	ditto, .. ditto, ..	108053	108053	0	0	
1222	ditto, .. ditto, ..	111730	110493	1237	0	
1223	ditto, .. ditto, ..	112248	110653	1595	0	
1224	ditto, .. ditto, ..	112248	112089	159	0	
1225	ditto, .. ditto, ..	112198	112025	173	0	These balances remitted by Order of Government, No. 661, of 24th November 1837, and No. 301, dated 27th January 1846.
1226	ditto, .. ditto, ..	113692	113692	0	0	
1227	ditto, .. ditto, ..	113692	113692	0	0	
1228	ditto, .. ditto, ..	113692	113692	20	0	
1229	ditto, .. ditto, ..	113692	113692	0	0	
1230	ditto, .. ditto, ..	113692	113692	0	0	
1210	Fuslee, Budaon, ..	98402	98402	0	0	Year of drought balance expunged from books.
1211	ditto, .. ditto, ..	128788	55843	0	72947	
1212	ditto, .. ditto, ..					
1213	ditto, .. ditto, ..					
1214	ditto, .. ditto, ..					
1215	ditto, .. ditto, ..					
1216	ditto, .. ditto, ..					

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE,
(Continued.)

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Ba- lances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1217	Fuslee, Budaon—(contd.)					No account procurable from either the Tehseel or Record offices for these years.
1218	ditto, .. ditto, ..					
1219	ditto, .. ditto, ..	60820	60773	47	0	Accounts for Budaon Proper. No accounts for Zillah Allahpoor or Azimabad.
1220	ditto, .. ditto, ..	85966	85966	0	0	
1221	ditto, .. ditto, ..	97607	97457	150	0	
1222	ditto, .. ditto, ..	103628	102216	1412	0	
1223	ditto, .. ditto, ..	103851	103296	555	0	
1224	ditto, .. ditto, ..	102726	102519	207	0	Remitted by Orders of Government, No. 1092, dated 31st March, and No. 2997, dated 21st July 1847.
1225	ditto, .. ditto, ..	103947	103197	750	0	
1226	ditto, .. ditto, ..	103227	102949	278	0	
1227	ditto, .. ditto, ..	103647	103415	232	0	
1228	ditto, .. ditto, ..	103691	103381	310	0	
1229	ditto, .. ditto, ..	100646	100415	231	0	
1230	ditto, .. ditto, ..	107284	104904	2380	0	
1210	Fuslee, Suleimpoor, ..	42255	42255	0	0	These balances are not borne on the books.
1211	ditto, .. ditto, ..	46360	41897	0	4463	
1212	ditto, .. ditto, ..	51534	48011	0	3513	
1213	ditto, .. ditto, ..	47701	47701	0	0	
1214	ditto, .. ditto, ..	51495	51495	0	0	
1215	ditto, .. ditto, ..	51828	51828	0	0	
1216	ditto, .. ditto, ..	51828	51810	18	0	
1217	ditto, .. ditto, ..					No accounts forthcoming.
1218	ditto, .. ditto, ..	80734	80231	503	0	
1219	ditto, .. ditto, ..	82739	78941	3848	0	
1220	ditto, .. ditto, ..	78062	77827	135	100	Expunged by transfer to Zillah Bareilly of Mouzah on which it fell.
1221	ditto, .. ditto, ..	88536	87946	590	0	
1222	ditto, .. ditto, ..	94616	92546	1312	758	Ditto ditto.
1223	ditto, .. ditto, ..	111943	88971	22972	0	
1224	ditto, .. ditto, ..	111943	108558	2951	434	Ditto ditto.
1225	ditto, .. ditto, ..	107265	103739	3526	0	
1226	ditto, .. ditto, ..	112282	109264	2236	782	Ditto ditto.
1227	ditto, .. ditto, ..	112082	110923	1159	0	
1228	ditto, .. ditto, ..	112082	111010	1072	0	
1229	ditto, .. ditto, ..	118912	116423	2489	0	
1230	ditto, .. ditto, ..	118995	92651	26344	0	
1210	Fuslee, Oosaith, ..					No accounts forthcoming.
1211	ditto, .. ditto, ..					
1212	ditto, .. ditto, ..					
1213	ditto, .. ditto, ..					
1214	ditto, .. ditto, ..					
1215	ditto, .. ditto, ..					
1216	ditto, .. ditto, ..					
1217	ditto, .. ditto, ..					
1218	ditto, .. ditto, ..					

PERGUNNAWAR ACCOUNT OF DEMANDS, COLLECTIONS AND BALANCES OF LAND REVENUE,
(Continued.)

YEAR.	Pergunnah.	Demand.	Collec- tions.	Remis- sions.	Ba- lances.	REMARKS.
		Rs.	Rs.	Rs.	Rs.	
1219 Fuslee,	Oosaith—(contd.)..	}	}	}	}	No accounts forthcoming.
1220 ditto, ..	ditto, ..					
1221 ditto, ..	ditto, ..					
1222 ditto, ..	ditto, ..					
1223 ditto, ..	ditto, ..	118079	116675	1404	0	
1224 ditto, ..	ditto, ..	120235	120225	10	0	
1225 ditto, ..	ditto, ..	111971	111962	9	0	
1226 ditto, ..	ditto, ..	113325	113283	42	0	
1227 ditto, ..	ditto, ..	113979	113974	5	0	
1228 ditto, ..	ditto, ..	114180	114180	0	0	
1229 ditto, ..	ditto, ..	115059	115059	0	0	
1230 ditto, ..	ditto, ..	115059	115059	0	0	

M. H. COURT,
Deputy Collector.

BUDAON.

APPENDIX No. IV.

STATEMENT SHOWING

THE

DEMANDS, COLLECTIONS, BALANCES, AND REMISSIONS, ACCOUNT OF LAND REVENUE,

FROM 1231 FUSLEE,*OR 1824 TO 1850-51 A. D.

JUMMA WASILBAKEE, OR STATEMENT SHOWING THE DEMANDS, COLLECTIONS, BALANCES
AND REMISSIONS, ON ACCOUNT OF LAND REVENUE, FOR THE DISTRICT OF
BUDAON, FROM 1231 FUSLEE, OR 1824 A. D., UNTIL 1850-51.

YEAR.	Collector.	Demand.	Collections.	Remissions.	Balances.
		Rs.	Rs.	Rs.	Rs.
1231 Fuslee,	H. Swetenham,	887765	876204	11561	0
1232 ditto, ..	Ditto,	819113	807592	11521	0
1233 ditto, ..	Ditto,	903629	886308	17321	0
1234 ditto, ..	J. Wyatt,	927141	919185	7956	0
1235 ditto, ..	Ditto,	923164	903309	19855	0
1236 ditto, ..	Ditto,	926790	893270	33520	0
1237 ditto, ..	Ditto,	958979	884013	74540	426*
1238 ditto, ..	Ditto,	968135	912778	54943	414*
1239 ditto, ..	Ditto,	957986	884453	72875	658*
1240 ditto, ..	S. S. Brown,	961377	833689	126633	1055*
1241 ditto, ..	Ditto,	969949	885465	83508 (a)	976*
1242 ditto, ..	Ditto,	979431	896412	82850 (a)	169*
1243 ditto, ..	{ S. S. Brown, R. H. Clarke, and G. H. M. Alexander, }	1014135	924052	89014 (a)	1069*
1244 ditto, ..	{ R. H. Clarke, J. Craigie, and G. Wilmot, }	1044824	922706	121243 (b)	875*
1245 ditto, ..	W. H. Timins,	989290	799283	184512 (b)	5495*
1246 ditto, ..	Ditto,	969911	891713	75286	2912*
1247 ditto, ..	Ditto,	970264	897860	69870	2534*
1248 ditto, ..	Ditto,	454880	454201	679	0†
1841-42 A.D.,	A. Cocks and H. Ravenshaw,	970552	892462	75336 (c)	2754‡
1842-43 ditto,	R. B. Morgan,	962485	886903	75582 (c)	0
1843-44 ditto,	F. Williams,	898753	886451	12302	0
1844-45 ditto,	F. Williams and E. Tyler, ..	904416	891400	13016	0
1845-46 ditto,	E. Tyler and C. W. Fagan, ..	900701	892479	7870	352§
1846-47 ditto,	C. W. Fagan,	898973	892267	6303	403§
1847-48 ditto,	Ditto,	897896	893159	4306	431§
1848-49 ditto,	{ C. W. Fagan and E. H. Morland, }	899836	895193	4126	517§
1849-50 ditto,	{ E. H. Morland and R. B. Morgan, }	899677	895304	2705	1668§
1850-51 ditto,	{ R. B. Morgan and R. H. S. Campbell, }	899694	897885	0	1809§

M. H. COURT,

Deputy Collector.

(a) The greater part of these Balances and Remissions were nominal, caused by reduction of Settlement under Regulation IX. of 1833.

(b) On account of drought.

(c) Great part of these Balances are nominal, caused by decrease given on revision of Settlement made in three Pergunnahs by Mr. W. R. Timins.

* These Balances have been expunged from the Accounts of this Office; the Villages on which they accrued, having been transferred to other Districts.

† These are accounts for the Khureef *kists*, or half-year only.

‡ The Fuslee changed to the official year.

§ These Balances are nominal, since expunged.

APPENDIX No. V.

ABSTRACT OF TREASURY ACCOUNT SHOWING THE

TOTAL RECEIPTS AND DISBURSEMENTS,

FROM OCTOBER 1823, TO END OF 1849-50.

ABSTRACT OF THE TREASURY ACCOUNT OF ZILLAH BUDAON,

RECEIPTS.								
YEAR.	Land Revenue.	Abkaree.	Bills and Receipts, including transfers.	Remittance from other Zillahs.	Stamps.	Post Office.	Miscellaneous.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Octr. 1823 to April 1824, ..	584365 15 4	9623 5 6	57 0 0	0 0 0	3197 4 0	18 5 3	12264 5 6	609526 3 7
1824-25,	1026072 12 3	21788 11 9	5284 7 1	0 0 0	5954 0 0	26 7 9	18279 4 6	1077405 11 4
1825-26,	1079059 5 6	19846 12 3	14973 13 5	0 0 0	7181 2 0	31 15 0	45751 12 2	1166844 12 4
1826-27,	1086684 7 8	16484 10 3	35332 11 0	0 0 0	9535 15 0	30 5 9	77092 7 2½	1225160 8 10½
1827-28,	1098705 13 1	22195 15 7	51816 7 0	128814 14 0	8726 1 0	9 10 3	69247 11 10	1379516 9 6
1828-29,	1042698 7 9	21215 1 9	120494 10 3	0 0 0	7717 11 0	60 11 6	35585 12 0	1227772 5 6
1829-30,	899658 10 3	21331 1 0	20256 6 11	0 0 0	7922 8 0	0 0 0	27786 12 5	976955 6 7
1830-31,	902773 2 3	19415 3 0	25041 12 1	0 0 0	6592 2 0	0 0 0	50127 12 5	1003949 15 9
1831-32,	841802 8 0	14010 3 3	22003 4 7	0 0 0	6079 0 0	0 0 0	22894 14 8	906319 14 6
1832-33,	784321 4 3	17818 10 9	20131 10 7	5000 0 0	8173 12 0	0 2 0	60953 0 1½	896398 7 8½
1833-34,	940150 1 9	15030 13 1	21558 13 4	0 0 0	11501 0 0	0 0 0	138135 4 10	1129376 3 0
1834-35,	932445 0 2	19014 3 3	35800 12 9	4700 0 0	13193 6 0	0 2 0	68951 11 3	1074105 3 5
1835-36,	933965 9 6	21097 14 8	42964 4 8	4000 0 0	14718 4 0	0 0 0	63679 4 10	108425 5 8
1836-37,	1042861 11 6	17479 11 9	36780 7 11	2000 0 0	17584 14 0	0 0 0	33768 3 2½	1150445 0 4½
1837-38,	950333 11 9	12435 0 11	54399 5 10	9500 0 0	22428 0 0	440 1 0	44529 10 10½	1094065 14 4½
1838-39,	1149932 5 2	10496 7 4½	26020 3 7½	0 0 0	21717 11 0	1097 3 1	44215 1 0½	1256478 15 3½
1839-40,	970853 14 10	12443 4 6½	25888 2 8½	0 0 0	26915 5 0	0 0 0	35309 8 2	1071410 3 3
1840-41,	936138 9 11½	14952 11 11½	47003 7 5½	0 0 0	25202 0 0	0 0 0	81230 6 9½	1104527 4 1½
1841-42,	1045903 0 3½	15873 9 11½	46580 15 6½	0 0 0	28146 13 0	0 0 0	62479 13 8½	1198984 4 6½
1842-43,	1094993 9 0	18896 10 0½	49913 15 0½	0 0 0	26784 12 0	0 0 0	100159 9 2	1290748 7 2½
1843-44,	1105528 15 6	19824 0 3½	49820 2 8	0 0 0	28661 4 0	0 0 0	160135 4 9½	1363829 11 2½
1844-45,	1111315 10 9½	25341 7 4	49287 5 2½	2999 13 8	30751 12 0	1147 3 3	142228 10 3½	1363071 14 1½
1845-46,	1112452 3 2	35003 9 6	40974 3 11	4299 14 9	30541 10 0	1649 3 3	145768 15 4½	1369387 11 11½
1846-47,	1118766 9 1	35691 3 9	75015 11 11½	5000 0 0	41088 15 0	1457 15 6	144516 4 3½	1419536 11 7½
1847-48,	1121625 3 5	36772 2 9	75813 14 10	0 0 0	36738 8 9	1559 13 0	180371 13 1½	1452911 7 10½
1848-49,	1123592 10 7	39648 5 1	96272 5 3½	135335 2 7½	38075 15 0	1685 10 0	152422 15 3½	1587042 15 10½
1849-50,	1124195 9 3	40351 13 0	35635 2 5½	131806 0 3	40084 2 0	1712 11 6	147039 8 5½	1520824 14 11½
	27161166 14 0½	574112 11 6	1125951 12 10½	434155 12 10½	528213 10 9	10927 8 1	2162993 14 5½	31997522 4 6½
							Total, ..	31997522 4 6½

BUDAON COLLECTORATE,
22nd July 1851.

FROM THE ESTABLISHMENT OF THE ZILLAH IN OCTOBER 1823, TO THE OFFICIAL YEAR 1849-50.

DISBURSEMENTS.							
Bills and Receipts, including transfers.	Remittance to other Zillahs.	Post Office Remittance.	Revenue Charges General.	Judicial Charges General.	Pensions.	Miscellaneous.	Total.
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1511 8 5	381092 10 2	0 0 0	5246 3 4	0 0 0	0 0 0	0 0 0	887850 5 11
17419 13 1	1056000 0 0	0 0 0	91739 9 2	1048 0 0	5279 2 11½	20717 10 7	1192204 3 9½
3586 14 0	984000 0 0	23 7 0	99526 13 9	0 0 0	5532 5 1½	41963 12 4	1106533 4 2½
49006 6 0	820000 0 0	0 0 0	112388 1 3	0 0 0	5425 14 7½	55378 14 2	1042199 4 0½
24128 9 6	1225814 10 0	4 3 9	126934 3 2	0 0 0	4756 0 4	50828 4 9	1432465 15 6
112390 14 2	925000 0 0	0 0 0	106918 8 9	0 0 0	6090 11 4	50306 11 6	1199706 13 9
28647 5 11	875000 0 0	0 0 0	110674 13 8	0 0 0	2200 0 0	4768 14 8	1021291 2 3
20570 11 6	768000 0 0	0 0 0	126484 11 7	0 0 0	14450 13 1	43677 2 0	973183 6 2
21042 3 5	623000 0 0	0 0 0	117551 2 8½	0 0 0	2100 0 0	16938 4 4	780631 10 5½
44912 6 4	484936 7 8	287 1 0	121529 4 7½	26218 11 2	11407 11 3	110609 1 7	799900 11 7½
12444 2 2	917125 6 7	0 0 0	123847 4 2	38218 0 0½	3750 0 0	93460 1 4	1300874 14 8½
120599 10 4	653809 2 5	0 0 0	121841 14 8	41185 7 10½	0 0 0	82896 5 3	970332 8 6½
158267 12 7	729976 0 6	0 0 0	118780 10 8½	33861 11 11	23296 5 7½	56879 4 1	1116061 3 5
311932 14 11	735540 5 7	0 0 0	120934 10 9	83486 10 3½	5483 9 7½	17563 8 9	1224041 11 11
155766 15 4	733000 0 0	450 0 1	119865 11 7½	53231 5 6½	4659 7 6	43698 8 7	1110972 0 8
88937 7 6½	917631 4 7	1377 8 6	95872 5 1½	65319 10 1	2823 8 0½	16756 6 10	1183718 2 8
77703 12 4½	993889 9 1	123 15 0	104676 12 1	57931 0 11½	4669 5 5	25302 7 1½	1264196 14 0½
100628 4 4	513759 7 10	0 0 0	97551 7 0	58803 5 2½	12012 1 6	48590 15 11	831345 9 9½
89569 15 10	1181994 0 2½	0 0 0	105726 7 3½	64194 11 0½	7513 12 2	88663 12 8½	1487662 11 3
98156 4 11½	910987 1 1	0 0 0	123241 14 3½	65913 6 8	5448 15 5½	128465 14 6	1332213 8 6½
66159 10 8	1001557 6 4	0 0 0	106858 7 8½	80942 0 2½	13097 6 10½	124594 8 1½	1392309 9 11½
85871 11 7	959972 8 6	983 14 0	103734 10 7	94921 12 4½	6552 14 8	95805 8 5½	1349842 11 1½
106707 2 11½	990456 13 0	317 15 9	108117 14 8½	82550 5 11½	10991 4 1	82784 14 2	1381926 6 7½
105065 14 11½	984787 9 0	0 0 0	86004 4 4½	77787 6 6½	9826 13 9	136565 15 10½	1400098 0 6½
88161 12 5½	1068437 12 2	0 0 0	84699 8 11	78683 14 8	5750 15 8	141005 8 7½	146639 8 6
66497 4 1	1202841 4 4	0 0 0	87892 0 0	79428 4 4	10998 10 10	126078 5 8	1573735 13 8
53115 2 10	1181266 3 5	0 0 0	88196 7 5	80072 14 6	4840 8 0	114888 11 3½	1522379 15 5½
2252702 12 3	3819875 5 5½	1568 1 1	2811835 10 5	1112828 1 0	190258 7 11	1719189 9 2½	31910317 15 8½
						Balance on the 30th April 1850, ..	87204 5 8
						Total, ..	31997522 4 6½

M. H. COURT,

Joint Magistrate and Deputy Collector.

APPENDIX No. VI.

A LIST OF REVENUE OFFICERS APPOINTED

TO THE

B U D A O N D I S T R I C T,

FROM 1824-25, TO 1850 A. D.

LIST OF REVENUE OFFICERS, WHO HAVE HELD OFFICES IN THE DISTRICT OF BUDAON.

NAMES OF COLLECTORS.	PERIOD.	
	<i>From</i>	<i>To</i>
Mr. H. Swetenham,	4th February 1824, ..	26th January 1827.
Mr. J. Wyatt,	27th January 1827, ..	10th May 1833.
Mr. S. Brown, <i>Officiating</i> ,	11th May 1833,	27th November 1836.
Mr. R. Alexander, <i>Officiating</i> ,	28th November 1836, ..	27th December 1836.
Mr. H. Clarke,	28th December 1836, ..	7th September 1837.
Mr. J. Craigie, <i>Officiating</i> ,	8th September 1837, ..	12th November 1837.
Mr. Wilmot, <i>Officiating</i> ,	13th November 1837, ..	13th December 1837.
Mr. Craigie, <i>Officiating</i> ,	14th December 1837, ..	3rd January 1838.
Mr. W. Timins,	4th January 1838, ..	6th January 1841.
Mr. A. Cocks, <i>Officiating</i> ,	7th January 1841, ..	26th February 1841.
Mr. Ravenshaw,	27th February 1841, ..	12th December 1841.
Mr. R. B. Morgan,	13th December 1841, ..	5th May 1843.
Mr. F. Williams,	6th May 1843,	6th October 1844.
Mr. E. Tyler,	7th October 1844, ..	13th February 1845.
Mr. C. W. Fagan,	14th February 1845, ..	4th July 1848.
Mr. M. H. Court, <i>Officiating</i> ,	5th July 1848,	10th July 1848.
Mr. E. H. Morland,	11th July 1848,	3rd April 1849.
Mr. R. B. Morgan,	4th April 1849,	18th April 1850.
Mr. R. H. S. Campbell, <i>Officiating</i> ,	19th April 1850.	

M. H. COURT,

Deputy Collector.

BUDAON.

APPENDIX No. VII.

STATEMENT SHOWING

THE

DEMAND, RECEIPT AND BALANCE,

ON

ACCOUNT OF ABKAREE,

FROM 1824-25, TO 1849-50.

ABKAREE DEMANDS, RECEIPTS AND BALANCES, FROM 1824-25 TO 1849-50.

YEARS.	Demand.	Collected within the year.	Balances.	Remissions.	Collected after the year of Demand.	Net Balance.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	R.A.P.
1824-25,	21432 13 9	20904 13 9	527 15 0			
1825-26,	21628 11 6	19071 3 3	2537 7 3			
1826-27,	21088 2 9	12577 9 3	8510 9 6			
1827-28,	20748 2 0	19515 0 3	1233 1 9			
1828-29,	20983 7 3	19454 6 6	1529 0 9			
1829-30,	22204 14 8	20775 13 8	1429 1 0			
1830-31,	19146 5 9	16957 12 6	2688 9 3			
1831-32,	19438 4 0	11274 11 0	8163 9 0			
1832-33,	18518 9 9	14817 9 9	3701 0 0			
1833-34,	16403 0 6	12373 10 2	4029 6 4			
1834-35,	16794 10 9	13700 0 0	3094 1 6			
1835-36,	18012 7 9	16774 15 6	1237 8 3			
1836-37,	19329 6 9	16235 8 6	3093 14 3			
1837-38,	11738 11 2	7771 9 7	3967 1 7			
1838-39,	9762 0 11	8385 2 11½	1376 13 11½			
1839-40,	12009 0 6	11426 7 4	582 9 2			
Total, ..	289738 13 9	242037 1 2½	47701 12 6½	(a) 20224 13 11½	(b) 27476 14 7	
1840-41,	13931 14 8½	13617 6 7½	314 8 1½	0 0 0	314 8 1½	
1841-42,	14891 0 10	14619 4 1	271 12 9	0 0 0	271 12 9	
1842-43,	18187 14 8	17509 8 5	678 6 3	0 0 0	678 6 3	
1843-44,	18778 2 3	18349 6 3	428 12 0	0 0 0	428 12 0	
1844-45,	23191 5 3	21157 13 3	2038 8 0	446 5 9	1587 2 3	
1845-46,	29841 0 0	28743 10 0	1097 6 0	0 0 0	1097 6 0	
1846-47,	31602 0 0	30459 10 3	1142 5 9	0 0 0	1142 5 9	
1847-48,	32095 12 0	31442 6 6	653 5 6	0 0 0	653 5 6	
1848-49,	38041 5 6	36348 7 6	1692 14 0	0 0 0	1692 14 0	
1849-50,	38170 0 0	36446 10 6	1723 5 6	0 0 0	1723 5 6	
Total, ..	548469 4 11½	490731 3 7	57738 0 3½	20671 3 8½	37066 12 8½	

M. H. COURT,

Deputy Collector.

(a.) Remission under orders as follows:—

16103 9 11½, dated 30th January 1846, No. 364.

1130 11 6 dated 2d December 1846, „ 5125.

256 3 6 dated 28th August 1847, „ 2577.

17533 8 11½

2691 5 0 Puteealoo.

20224 13 11½

(b.) The whole of these Balances were collected, but in what years, I cannot ascertain correctly.

APPENDIX No. VIII.

STATEMENT SHOWING

THE

RECEIPTS AND DISBURSEMENTS,

ON

ACCOUNT OF STAMPS SOLD,

FROM 1825-26, TO 1849-50.

STAMP RECEIPTS AND DISBURSEMENTS, FROM 1825-26 TO 1849-50.

YEAR.	Receipts including Penalties on Deeds executed on plain paper, &c.	DISBURSEMENTS.				Average Cost on Collections.
		Establishment.	Commission.	Miscellaneous Cost of Stamps refunded by Order of Civil Court.	Total.	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1825-26, .	7111 2 0	324 0 0	1049 4 2	0 0 0	1373 4 2	
1826-27, .	9535 15 0	324 0 0	1110 12 0	0 0 0	1434 12 0	
1827-28, .	8726 1 0	324 0 0	1046 2 7	0 0 0	1370 2 7	
1828-29, .	7717 11 0	297 0 0	842 7 10	0 0 0	1139 7 10	
1829-30, .	7922 8 0	324 0 0	540 12 8	13 10 0	878 6 8	
1830-31, .	6592 2 0	351 0 0	474 11 8	7 7 0	833 2 8	
1831-32, .	6089 0 0	351 0 0	460 4 0½	18 6 0	829 10 0½	
1832-33, .	8173 12 0	324 0 0	491 2 2½	0 0 0	815 2 2½	
1833-34, .	11501 0 0	324 0 0	649 5 7	0 0 0	973 5 7	
1834-35, .	13193 6 0	324 0 0	1031 3 8	0 0 0	1355 3 8	
1835-36, .	14718 4 0	324 0 0	881 3 8	461 0 0	1666 3 8	
1836-37, .	17584 14 0	351 0 0	1113 3 1	348 0 0	1812 3 1	
1837-38, .	22428 0 0	324 0 0	1703 4 1	394 0 6	2421 4 7	
1838-39, .	24717 11 0	324 0 0	1912 12 4	442 2 0	2678 14 4	
1839-40, .	26915 5 0	324 0 0	1326 1 7	991 5 9	2641 7 4	
1840-41, .	25202 0 0	324 0 0	1841 13 2	241 11 0	2407 8 2	
1841-42, .	28146 13 0	324 0 0	2925 9 11	895 14 0	4140 7 11	
1842-43, .	26784 12 0	324 0 0	2029 5 10	1606 14 0	3960 3 10	
1843-44, .	28661 4 0	324 0 0	2017 3 5	1245 14 0	3587 1 5	
1844-45, .	30751 12 0	357 0 0	1615 10 3	1721 6 0	3694 0 3	
1845-46, .	30541 10 0	360 0 0	2299 1 7	1080 8 0	3739 9 7	
1846-47, .	41088 15 0	180 0 0	647 1 3	1118 12 0	1945 13 3	
1847-48, .	36738 9 0	0 0 0	897 2 3	1236 5 9	2133 8 0	
1848-49, .	33075 15 0	0 0 0	724 8 2	1777 15 3	2502 7 5	
1849-50, .	40084 2 0	0 0 0	779 1 5	1808 12 0	2587 13 5	
Total, ..	519002 7 0	0 0 0	0 0 0	0 0 0	52936 6 8	10 3 2

APPENDIX No. IX.

STATEMENT SHOWING

THE

POPULATION OF ZILLAH BUDAON,

FROM

A CENSUS TAKEN IN 1847-48,

WITH

STATISTICAL TABLE OF AREA, JUMNA, ETC.

M. H. COURT,

Deputy Collector.

POPULATION RETURNS OF ZILLAH BUDAON, ACCORDING TO CENSUS MADE IN 1847-48,
BY MR. C. W. FAGAN, COLLECTOR.

PERGUNNAH.	Number of Mouzahs.	Area in Square Statute Miles.	Area in Acres.	Cultivated Area in Acres.	Culturable.	Rent-free.	Unculturable.	Rate on total Area per Acre.	Jumma.	HINDOOS.		MUSSUL-MEN.		Total Population.	Average of Population per Square Mile.
										Cultivators.	Other Classes.	Cultivators.	Other Classes.		
								R. A. P.	R. A.						
Rajpooorah, ...	139	150.2	96337	47772	32146	1010	15400	0 12 3	74431 0	36035	6129	2672	1292	46128	314
Asudpoor, ...	151	142.3	91112	48170	28905	1032	12015	0 13 4	75806 0	34277	9098	3468	2943	49796	362
Islamnuggur,	182	158.1	101242	63022	19901	2483	15836	0 12 4	77985 0	41205	9683	4701	2043	57632	364
Bisowlee, ...	112	96.1	61588	47726	5559	1131	7172	0 14 9	56921 0	27451	8817	2083	2002	40353	420
Sutasee, ...	13	86.2	55335	36352	10178	1731	7079	0 12 6	43295 0	22587	6449	2855	2152	34043	395
Koto Salbu- han, ...	141	175.3	112457	76514	16055	3089	16799	0 13 9	96517 0	56759	13729	3966	2800	77254	439
Salceswan, ...	366	282	180500	73158	58443	11432	37467	0 8 7	96705 0	53559	12895	10279	7525	84258	299
Budaon, ...	237	240.3	154050	82100	33897	24688	13365	0 10 2	96464 0	54608	18020	9314	18551	100406	407
Oojhane, ...	162	222	142041	60152	30595	8278	23016	0 11 3	100105 0	43361	11549	5327	3717	69954	311
Suleimpoor, ...	268	229	140677	73327	55147	6011	12192	0 14 8	134570 8	64648	11671	3209	3596	83124	363
Oosaith, ...	165	166.2	106548	52847	37380	2106	14155	0 10 7	70452 0	37210	7475	3674	2240	50599	304
Total, ...	2016	1950.1	1247887	681140	328291	63051	175405	0 12 3	925431 8	477700	115515	51548	48804	693627	350

In the Statistical Tables sent up in 1847, the Area Returns were in some instances made up from the Professional Survey Returns; in others, from Field Measurement Returns. For the sake of uniformity, I have filled up these headings from the Professional Area on which the Settlement was made; the Returns under these headings will, in consequence, correspond with the Pergunnah Register.

M. H. COURT,

Deputy Collector.

BUDAON.

APPENDIX No. X.

STATEMENT SHOWING PROPRIETARY CLASSES, AND NUMBER OF ESTATES HELD BY EACH CLASS.

STATEMENT SHOWING PROPRIETARY CLASSES, AND NUMBER OF ESTATES HELD
BY EACH CLASS.

PERGUNNAH.	Thakors.	Aheers.	Khutrees.	Kaiths.	Bakals.	Brahmins.	Koormies.	Gojurs.	Kahars.	Koomars.	Carpenters.	Goslaas.	Miscellaneous.	Mussulmen.	Mussulmen and Hindoos.	British Government.	Total number of Villages.
Rajpoorah, ..	55	50	0	0	1	6	0	0	0	0	0	0	6	10	5	0	139
Asudpoor, ..	2	67	0	4	0	5	0	0	0	0	0	0	9	46	18	0	151
Islamnuggur,	85	5	22	3	11	9	0	0	1	0	0	0	10	26	10	0	182
Bisowlee, ..	71	6	0	2	2	7	0	0	0	0	0	1	2	19	1	1	112
Sutasee, ..	55	1	0	17	0	0	0	0	0	0	0	0	4	9	7	0	93
KoteSalubhan	101	0	0	4	2	2	0	0	0	0	0	0	19	9	3	1	141
Saheswan, ..	71	30	1	31	2	8	0	2	0	2	1	0	20	169	22	6	366
Budaon, ..	40	1	0	11	1	32	6	0	0	0	0	0	20	100	26	0	237
Oojhance, ..	36	10	0	7	5	5	3	2	0	0	0	1	25	32	36	0	162
Suleimpoor,	165	0	1	14	5	4	0	0	0	0	0	1	19	26	24	5	268
Oosaith, ..	51	3	0	8	21	9	0	0	0	0	0	0	14	35	21	0	165
Total of Budaon, }	732	173	24	101	50	87	9	4	1	2	1	3	148	487	173	13	2016

APPENDIX No. XI.

STATEMENT SHOWING
THE
NUMBER OF ESTATES,
HELD BY MAHAJUNS.

M. H. COURT,

Joint Magistrate and Depy. Collector.

BUDAON COLLECTOR'S OFFICE, 1851.

STATEMENT SHOWING THE NUMBER OF ESTATES HELD BY MAHAJUNS.

NAME OF PERGUN- NAH OR TEHSEEL- DAREE DIVISION.	NUMBER OF PROPRIETORS.			NUMBER OF ESTATES.			AMOUNT OF ASSESSMENT.			REMARKS.
	<i>Residents of the Interior.</i>	<i>Residents of the City.</i>	<i>Total.</i>	<i>Residents of the Interior.</i>	<i>Residents of the City.</i>	<i>Total.</i>	<i>Residents of the Interior.</i>	<i>Residents of the City.</i>	<i>Total.</i>	
							Rs.	Rs.	Rs.	
Rajpoorah, ..	0	0	0	0	0	0	0	0	0	
Asudpoor, ..	0	0	0	0	0	0	0	0	0	
Islamnuggur, ..	0	16	16	0	30	30	0	11223	11223	
Bisowlee, ..	6	0	6	2	0	2	1713	0	1713	
Sutasee, ..	0	0	0	0	0	0	0	0	0	
Kote Salbuan, ..	0	10	10	0	4	4	0	2202	2202	
Saheswan, ..	18	44	62	1	4	5	190	505	695	
Budaon, ..	6	18	24	1	2	3	212	1713	1925	
Oojhance, ..	27	56	83	5	8	13	2052	2860	4912	
Suleimpoor, ..	5	4	9	4	2	6	1051	1367	2418	
Oosaith, ..	0	4	4	0	24	24	0	17323	17323	
Total, ..	62	152	214	13	74	87	5218	37193	42411	

APPENDIX No. XII.

STATEMENT SHOWING
THE
AVERAGE AMOUNT OF LAND,
HELD BY EACH
PROPRIETOR AND CULTIVATOR,
AND
THE AVERAGE AMOUNT OF REVENUE, PAID BY EACH PROPRIETOR.

M. H. COURT,

Deputy Collector.

STATEMENT SHOWING THE AVERAGE AMOUNT OF LAND, HELD BY EACH PROPRIETOR
AND CULTIVATOR, AND THE AVERAGE AMOUNT OF REVENUE PAID BY
EACH PROPRIETOR.

Number of Pergunnah.	NAME OF PERGUN- NAH.	NUMBER OF PROPRI- TORS.		NUMBER OF CULTIVATORS NOT PROPRIETORS.	Total number of Cultivators.	Quantity of Land cultivated by Lumberdars.	Quantity of Land cultivated by Puttedars.	QUANTITY OF LAND CULTIVATED BY ASSAMEES.		Total area of Lands under Cultivation.	Total area of Pergunnah.	Highest Summa of Settlement.	Average quantity of Land cultivated by each Proprietor.	Average quantity of Land cultivated by each Assamee.	Average quantity of Land owned by each Proprietor.	Average Amount of Revenue paid by each Proprietor.
		Number of Villages.						Hereditary.	Non-hereditary.							
			Lumberdars.	Puttedars.												
												R. A.				
1	Rajpoorah,	139	306	498	8825	9629	3591	1656	38213	7135	50595	96337	74431 0	6-2	5-	119 92
2	Asudpoor, ..	151	535	1410	10347	4292	6556	6026	29167	13341	55090	91112	75896 0	6-2	4-	47 34
3	{ Islam- nuggur, }	182	200	658	10779	11637	4648	2426	28488	34408	69970	101242	77985 0	8-1	6-	130 91
4	Bisowlee, ..	112	135	180	6043	6358	3405	953	12528	30704	47590	61588	56921 0	13-3	7-	195 180
5	Sutasee, ..	93	176	277	5912	6365	4735	1402	12150	20683	38970	55335	43295 0	13-2	5-2	122 96
6	{ Kote Salbu- han, .. }	141	525	1244	14012	15781	9351	8331	58293	13146	89121	112457	96517 0	10-	5-	63 54
7	Saheswan,	366	745	2168	12564	15477	6725	5653	55839	32972	101189	180500	96795 0	4-	7-	53 34
8	Budaon, ..	237	748	1587	13867	16202	9869	7543	46359	26821	90592	154050	98464 0	7-2	5-1	66 42
9	Oojhance, ..	162	442	1478	12204	14124	6888	7115	54961	8458	77417	142041	100195 0	7-1	5-	64 52
10	Suleimpoor,	263	670	2033	17858	20561	9634	8996	49631	16939	85250	146677	134570 8	6-3	3-3	54 49
11	Oosaith, ..	1 5	426	1240	10608	12274	6062	6642	33034	17130	62868	106548	70452 0	7-2	4-3	64 42
	Total, ..	2016	4908	12773	115019	132700	71514	56743	418663	281732	768652	1247887	925431 8	8-1	5-1	88 69

These Cultivated Area will not agree with that exhibited in the Pergunnah Register. The area shown here, is the Area cultivated in 1849. That in the Register is the Cultivated Area at the time of Settlement.

M. H. COURT,

Deputy Collector.

BUDAON COLLECTOR'S OFFICE, 1851.

APPENDIX No. XIII.

STATEMENT SHOWING THE TENURES OF ESTATES IN ZILLAH BUDAON.

STATEMENT SHOWING TENURES OF ESTATES IN ZILLAH BUDAON.

NAMES OF PERGUNNAH.	Zemindaree.	Putteedaree.	Imperfect Putteedaree.	Bhyachara.	Total Estates.
Rajpooorah,	102	27	7	3	139
Asudpoor,	88	24	18	21	151
Islamnuggur,	156	14	2	10	182
Bisowlee,	105	7	0	0	112
Sutasce,	74	13	1	5	93
Kote Salbuan,	83	33	24	1	141
Saheswan,	269	75	21	1	366
Budaon,	179	25	20	13	237
Oojhance,	98	23	37	4	162
Suleimpoor,	84	37	122	25	268
Oosaith,	118	14	7	26	165
Total,	1356	292	259	109	2016

APPENDIX No. XIV.

STATEMENT SHOWING

THE AVERAGE

PRICE CURRENT OF GRAIN,

SOLD IN THE BILSEE MART;

FROM 1843 TO 1850.

M. H. COURT,

Deputy Collector.

AVERAGE PRICE CURRENT OF GRAIN, &c. IN BILSEE, FROM 1843 TO 1850.

DESCRIPTION OF PRODUCE.	Year 1843.	Year 1844.	Year 1845.	Year 1846.	Year 1847.	Year 1848.	Year 1849.	Year 1850.
	M. S. C.	M. S. C.	M. S. C.	M. S. C.	M. S. C.	M. S. C.	M. S. C.	M. S. C.
Wheat,	0 30 0	0 31 0	0 30 0	0 29 0	0 31 0	0 32 0	0 38 0	1 1 0
Gram,	0 32 0	0 35 0	0 35 0	0 36 0	0 36 0	0 37 0	1 1 0	1 3 0
Barley,	1 1 0	1 10 0	1 8 0	1 2 0	1 10 0	1 7 0	1 23 0	1 17 0
Oord,	0 27 0	0 28 0	0 29 0	0 27 0	0 30 0	0 38 0	0 32 0	0 33 0
Peas,	0 25 0	0 35 0	0 35 0	0 32 0	0 35 0	0 33 0	0 14 0	0 35 0
Rice, 1st sort,	0 12 0	0 14 0	0 16 0	0 12 0	0 16 0	0 16 0	0 14 0	0 15 0
Rice, 2nd sort,	0 16 0	0 16 0	0 19 0	0 16 0	0 18 0	0 18 0	0 17 0	0 17 0
Rice, 3rd sort,	0 20 0	0 20 0	0 21 0	0 18 0	0 20 0	0 22 0	0 20 0	0 19 0
Moot,	0 34 0	0 39 0	1 1 0	0 38 0	1 0 0	1 3 0	1 1 0	1 5 0
Goor,	0 14 0	0 15 0	0 15 0	0 15 0	0 15 0	0 19 0	0 16 0	0 18 0
Cotton,	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0
Satee, black Rice, ..	1 1 0	1 3 0	1 2 0	1 1 0	1 0 0	1 0 0	1 0 0	1 0 0
Bajrah,	1 3 0	1 3 0	1 0 0	1 0 0	1 0 0	1 2 0	1 7 0	1 4 0
Jooar,	1 3 0	1 4 0	1 2 0	1 0 0	1 2 0	1 2 0	1 8 0	1 37 0
Sursoo,	0 27 0	0 32 0	0 30 0	0 26 0	0 29 0	0 30 0	0 30 0	0 33 0
Dooan,	1 0 0	1 0 0	1 0 0	1 1 0	1 0 0	1 0 0	1 1 0	1 6 0
Lace,	0 25 0	0 34 0	0 30 0	0 31 0	0 32 0	0 32 0	0 35 0	0 35 0
Safflower,	0 30 0	0 28 0	0 27 0	0 28 0	0 29 0	0 29 0	0 30 0	0 30 0
Attah,	0 25 0	0 26 0	0 24 0	0 24 0	0 25 0	0 27 0	0 32 0	0 33 0
Dall, Oordh,	0 23 0	0 25 0	0 25 0	0 24 0	0 27 0	0 35 0	0 27 0	0 30 0
Dall, Moong,	0 21 0	0 30 0	0 30 0	0 29 0	0 30 0	0 32 0	0 30 0	0 32 0
Dall, Arhur,	0 28 0	0 30 0	0 30 0	0 31 0	0 30 0	0 33 0	0 33 0	0 35 0
Black Salt, 2 sorts, ..	0 18 0	0 10 8	0 10 8	0 10 0	0 11 0	0 11 0	0 10 0	0 11 0
Ditto, 1st sort,	0 10 0	0 7 12	0 7 8	0 7 8	0 7 0	0 8 0	0 7 8	0 8 0
Ghee,	0 2 4	0 2 4	0 2 4	0 2 4	0 2 4	0 2 4	0 2 0	0 2 8
Oil,	0 7 0	0 6 8	0 6 12	0 6 12	0 7 0	0 6 12	0 8 8	0 10 0
Chewing Tobacco, ..	0 5 8	0 6 8	0 6 0	0 6 4	0 6 4	0 5 8	0 6 4	0 6 0
Smoking ditto,	0 11 0	0 13 0	0 12 0	0 12 0	0 12 0	0 12 0	0 12 0	0 16 0
Sugar, 1st sort,	0 4 0	0 4 0	0 4 0	0 3 12	0 4 0	0 4 0	0 4 0	0 4 0
Ditto, 2nd sort,	0 4 0	0 4 4	0 4 4	0 4 0	0 4 4	0 4 4	0 4 4	0 4 0
Ditto, 3rd sort,	0 5 0	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8
Milk,	0 17 0	0 17 0	0 20 0	0 20 0	0 20 0	0 20 0	0 20 0	0 20 0
Dahee,	0 12 0	0 12 0	0 14 0	0 14 0	0 14 0	0 14 0	0 16 0	0 14 0
Huldee,	0 6 0	0 5 0	0 4 12	0 4 12	0 4 8	0 4 8	0 4 4	0 4 0
Dhunnia,	0 4 8	0 4 12	0 4 8	0 4 12	0 5 0	0 4 8	0 5 0	0 5 0
Red Pepper,	0 5 0	0 4 12	0 4 12	0 4 12	0 4 8	0 4 8	0 4 8	0 4 8
Black Pepper,	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0
Betelnut,	0 3 12	0 3 12	0 3 8	0 4 0	0 4 0	0 3 8	0 4 0	0 3 8
Munsooree Pice 40 to the Rupee.								
Company's Pice 32 to the Rupee.								

This average Price Current is that of articles sold at Bilsee, which town I have selected in preference to Budlaon, being the largest Mart of the two, particularly for grain, and other district produce. Bilsee is moreover a large exporting town.

M. H. COURT,

Deputy Collector.

APPENDIX No. XV.

STATEMENT SHOWING

THE

NUMBER OF INDIGENOUS SCHOOLS,

THEIR MASTERS, AND SCHOLARS,

AND THE

AMOUNT PAID AS SALARY.

STATEMENT OF INDIGENOUS SCHOOLS IN THE DISTRICT OF BUDAON.

PERGUNNAH.	NUMBER OF SCHOOLS.			AGGREGATE NUMBER OF TEACHER IN EACH.			NUMBER OF SCHOLARS.			PAY OF TEACHERS PER MONTH.		
	Persian.	Hindi.	Sanscrit.	Persian.	Hindi.	Sanscrit.	Persian.	Hindi.	Sanscrit.	Persian.	Hindi.	Sanscrit.
										Rs. As. P.	Rs. As. P.	Rs. As. P.
Rajpoorah,	8	1	0	8	1	0	51	2	0	36 0 0	2 0 0	0 0 0
Asudpoor,	10	1	1	10	1	1	76	2	2	30 8 0	0 8 0	1 0 0
Islamnuggur, ..	11	5	0	11	5	0	58	26	0	33 8 0	10 0 0	0 0 0
Bisowlee,	8	2	0	8	2	0	40	25	0	34 8 0	4 0 0	0 0 0
Sutasce,	9	5	0	9	5	0	51	34	0	25 8 0	11 0 0	0 0 0
Kote Salbuan, ..	8	3	3	8	3	3	53	72	14	32 0 0	9 0 0	0 0 0
Saheswan,	13	4	3	13	4	3	104	30	15	52 0 0	12 0 0	12 0 0
Budaon,	46	8	5	46	8	5	428	86	25	175 8	17 0 0	2 0 0
Oojhance,	7	3	0	7	3	0	57	60	0	62 0 0	6 8 0	0 0 0
Suleimpoor, ..	7	7	1	7	7	1	33	73	12	18 14 0	19 0 0	0 0 0
Oosaith,	2	4	2	2	4	2	25	42	54	8 0 0	7 8 0	0 0 0
Total,	129	43	15	129	43	15	976	452	122	508 6 0	98 8 0	15 0 0

APPENDIX No. XVI.

LIST OF OFFICERS
EMPLOYED AS SESSIONS JUDGE,

FROM 1838 A.D.

M. H. COURT,

LIST OF OFFICERS EMPLOYED AS SESSION JUDGE IN ROHILCUND, WITH DATES ON
WHICH THEY RESPECTIVELY ASSUMED CHARGE, FROM 10TH FEBRUARY 1838.

NAMES OF OFFICERS.	PERIOD.	
	From	To
R. Cathcart, Esq.,	10th February 1838, ..	3rd November 1839.
W. H. Benson, Esq.,	4th November 1839, ..	18th December 1840.
H. Pidcock, Esq.,	19th December 1840, ..	4th October 1843.
C. Mackenzie, Esq.,	5th October 1843, ..	4th February 1844.
J. Lean, Esq.,	12th February 1844, ..	29th February 1844.
C. W. Fagan, Esq.,	1st March 1844,	31st December 1844.
J. Lean, Esq.,	1st January,	31st December 1845.
H. W. Deane, Esq.,	1st January,	31st January 1846.
J. Lean, Esq.,	1st February,	To end of December 1846.
H. H. Thomas, Esq.,	1st August 1846,	17th November 1846.
C. Lindsay, Esq.,	6th November 1846, ..	30th April 1847.
J. Lean, Esq.,	1st May 1847,	16th June 1847.
N. H. E. Prowett, Esq.,	17th June 1847,	26th December 1847.
J. Lean, Esq.,	27th December 1847, ..	30th December 1847.
W. DeH. Routh, Esq.,	31st December 1847, ..	12th January 1848.
J. Lean, Esq.,	13th January 1848, ..	19th April 1849.
D. Robertson, Esq.,	20th April 1849.	

APPENDIX No. XVII.

LIST OF OFFICERS EMPLOYED AS MAGISTRATES IN ZILLAH BUDAON.

M. H. COURT,

Joint Magistrate.

LIST OF MAGISTERIAL AUTHORITIES EMPLOYED IN ZILLAH BUDAÓN.

MAGISTRATES.		
NAMES.	APPOINTMENTS DATE	
	From	To
Mr. J. Wyatt, <i>Magistrate</i> ,	23rd November 1832, ..	10th May 1833.
Mr. S. S. Brown, <i>Offg. Magistrate</i> ,	4th May 1833,	31st September 1833.
Mr. R. Alexander, <i>ditto</i> ,	28th November 1836, ..	27th December 1836.
Mr. H. Clarke, <i>ditto</i> ,	28th December 1836, ..	7th September 1837.
Mr. J. A. Craigie, <i>ditto</i> ,	8th September 1837, ..	12th November 1837.
Mr. E. Wilmot, <i>ditto</i> ,	13th November 1837, ..	13th December 1837.
Mr. J. A. Craigie, <i>ditto</i> ,	14th December 1837, ..	3rd January 1838.
Mr. W. Timins, <i>Magistrate</i> ,	4th January 1838, ..	6th January 1841.
Mr. A. Cocks, <i>Offg. Magistrate</i> ,	7th January 1841, ..	26th February 1841.
Mr. R. S. Ravenshaw, <i>ditto</i> ,	27th February 1841, ..	12th December 1841.
Mr. R. B. Morgan, <i>Magistrate</i> ,	13th December 1841, ..	5th May 1843.
Mr. F. Williams, <i>Offg. Magistrate</i> ,	6th May 1843,	6th October 1844.
Mr. E. F. Tyler, <i>ditto</i> ,	7th October 1844, ..	13th February 1845.
Mr. C. W. Fagan, <i>Magistrate</i> ,	14th February 1845, ..	4th July 1848.
Mr. M. H. Court, <i>Offg. Magistrate</i> ,	5th July 1848,	10th July 1848.
Mr. R. B. Morgan, <i>Magistrate</i> ,	4th April 1849,	18th April 1850.
Mr. R. H. S. Campbell, <i>Magistrate</i> ,	19th April 1850.	

APPENDIX No. XVIII.

STATEMENT SHOWING
 THE
 NUMBER AND DESCRIPTION OF CRIMES COMMITTED
 FROM 1844 TO 1850 A. D.
 AND THE
 NUMBER OF PERSONS BROUGHT TO TRIAL,
 CONVICTED AND ACQUITTED.

STATEMENT OF CRIMES IN ZILLAH BUDAON, FROM 1844 TO 1850, SHOWING ALSO THE NUMBER OF PERSONS BROUGHT TO TRIAL, CONVICTED AND ACQUITTED.

NATURE OF CRIME.	1844.				1845.				1846.				1847.				1848.				1849.				1850.			
	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.	Number of Crimes.	Persons apprehended and brought to trial.	Persons convicted, or committed to the Sessions Judge.	Acquitted or released.				
Wilful murders,	19	40	31	9	14	46	36	10	12	37	29	8	13	33	30	3	11	17	10	7	4	24	8	18	11	7		
Homicides,	8	10	9	1	2	3	3	0	5	12	9	3	4	5	4	1	9	31	30	1	4	8	5	14	12	2		
Dacoities of every description,	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Highway robberies ditto,	4	12	2	10	3	5	1	4	5	16	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Burglaries,	180	37	21	16	230	108	64	44	141	83	69	14	65	53	34	19	98	21	15	6	118	53	29	65	20	9		
Thefts,	931	526	235	291	877	552	272	280	639	635	397	238	905	349	190	1016	456	266	190	559	1147	499	559	299	260	260		
Affrays,	6	53	41	17	4	35	30	5	2	13	9	4	1	19	18	1	0	0	0	0	0	0	4	61	33	20		
Crimes and offences not specified above, including attempts to commit any of the above crimes,	1061	953	665	288	1245	1367	1126	241	1260	1560	1273	287	1469	2095	2106	589	1811	3337	2274	1063	1998	8520	2280	2796	1650	1090		
Total,	2210	1638	1005	633	2375	2116	1532	584	2124	2556	1801	555	2457	3344	2541	803	2945	3882	2595	1267	3271	4109	2604	3477	2016	1388		

M. H. COURT,

Joint Magistrate.

APPENDIX No. XIX.

STATEMENT SHOWING

THE

AVERAGE PERIOD OF TRIAL,

FROM THE

DATE OF APPREHENSION OF THE ACCUSED, TO DATE OF FINAL DISPOSAL OF CASE,

FROM 1845 TO 1850 A. D.

AVERAGE PERIOD WHICH INTERVENED BETWEEN THE DATE OF APPREHENSION, OR ATTENDANCE ON SUMMONS, AND THE DISPOSAL OF THE CASES
IN THE MAGISTRATE'S COURT OF ZILLAH BUDAON, DURING THE YEARS 1845, 1846, 1847, 1848, 1849, AND 1850.

YEARS.	CASES IN WHICH THE AGENCY OF THE POLICE WAS EMPLOYED.									CASES IN WHICH THE AGENCY OF THE POLICE WAS NOT EMPLOYED.				
	Number of cases brought to trial.	Number of days pending in the District.	Number of days pending before the Magistrate.	Total.	Average time occupied in the District.	Average time before the Magistrate.	General Average.	Longest time a case was pending.	Shortest time a case was pending.	Number of cases.	Number of days pending.	Average time.	Longest time.	Shortest time.
1845,	694	1398	3443	4841	2	4	6	10	4	494	932	2	4	1
1846,	909	1891	4109	6000	2	4	6	8	3	306	545	2	4	1
1847,	1405	2196	3546	5742	1	2	3	21	3	168	611	3	6	2
1848,	919	1638	5233	6871	2	5	7	136	1	883	3646	4	65	1
1849,	1123	1577	4803	6380	2	7	9	166	1	826	4050	5	13	1
1850,	1287	2219	5903	8122	2	4	6	125	1	197	324	2	42	1

Joint Magistrate.

APPENDIX No. XX.

STATEMENT SHOWING

THE

NUMBER OF CASES COMMITTED TO THE SESSIONS COURT,

AND THE

NUMBER OF APPEALS AGAINST THE ORDER OF THE MAGISTRATE'S COURT,

FROM 1845 TO 1850 A. D.

STATEMENT SHOWING THE NUMBER OF CASES COMMITTED TO THE SESSIONS COURT, AND THE NUMBER OF APPEALS AGAINST
THE ORDER OF THE MAGISTRATE'S COURT, FROM 1845 TO 1850 A.D.

YEARS.	CASES COMMITTED BY MAGISTRATE.					APPEALS PREFERRED FROM ORDER OF MAGISTRATE.							
	Number of cases committed.	Number of persons.	Number of persons convicted.	Number of persons released.	Remaining for trial.	Number of cases remaining on trial last year.	Number of appeals during the year.	Total Appeals.	Number dismissed.	Number upheld.	Number cancelled.	Number modified.	Remaining at the close of the year.
1845,	54	106	71	35	0	4	152	156	24	59	41	5	27
1846,	74	130	81	49	0	27	134	161	22	90	33	3	13
1847,	56	122	61	61	0	13	193	206	19	92	70	11	14
1848,	40	83	54	29	0	14	137	121	6	71	32	0	12
1849,	39	83	54	29	0	12	103	115	16	58	17	2	22
1850,	43	83	59	10	14	22	140	162	16	85	35	4	22
	306	607	380	213	14	92	829	921	103	455	228	25	110

BUDAON MAGISTRATE'S OFFICE,
1851.

M. H. COURT,
Joint Magistrate.

APPENDIX NO. XXI.
STATEMENT SHOWING
THE
VALUE OF PROPERTY STOLEN AND RECOVERED,
FROM 1844 TO 1850 A.D.

THE AMOUNT OF PROPERTY STOLEN AND RECOVERED FOR THE PAST SEVEN YEARS
IS HERE GIVEN.

YEARS.	Amount Stolen.		Amount Recovered.		Per-centage.
	Rs.	As. P.	Rs.	As. P.	
1844,	8813	8 0	2496	0 0	28½
1845,	11632	7 9	2349	6 9	20½
1846,	5449	0 6	2326	9 9	42½
1847,	5529	5 3	1593	3 3	28½
1848,	7471	8 3	1417	7 3	12½
1849,	10676	12 3	2326	11 9	24
1850,	9043	0 0	2120	11 9	23½

M. H. COURT,
Joint Magistrate.

BUDAON.

APPENDIX No. XXII.

REPORT ON THE OPERATIONS

OF THE

ROAD AND FERRY FUND,

UNDER BUDAON LOCAL COMMITTEE.

REPORT
ON
OPERATIONS OF ROAD AND FERRY FUND,
UNDER BUDAON LOCAL COMMITTEE.

PREVIOUS to the last General Settlement under Regulation VII. of 1822 and IX. of 1833, Zemindars were bound to keep in repair the public roads passing through their estates. Under this system, the expense or labour of repair fell only on those through whose estates a road passed; the others being exempt from any contribution of either capital or labour; and moreover, such roads as were kept in repair were mere circuitous narrow tracts. Mr. Brown, in 1835, and Mr. Clarke, in 1837, reported thus on the state of the roads:—

Roads there are not. The tracks, called roads, wind about through jungle and marshes, to avoid intruding on cultivated or culturable land; are impassable for six months of the year, and difficult of transit at any time.

“At the time of the last Settlement the Zemindars agreed to contribute one per cent. on the Government jumma in lieu of repairing the roads. The sum thus contributed is incorporated with the Government revenue, and is leviable at the same time, and by the same process, as the public revenue. It is realized by the Tehseeldars, and is remitted by them to the public Treasury; where it is entered under the head of ‘Deposits,’ and is paid out thence on bills in English, signed by any three Members of the Local Committee. This Committee is constituted under a resolution of Government, dated February 10th 1841, and is vested with the charge of all the roads in the District, except those which may be maintained by the Government.”—(*Paragraph 336 of Directions for Collectors of Land Revenue.*)

“The Commissioner of the Division is *ex-officio* President of this Committee; the Collector, Vice-President and Treasurer of the Fund; “and the latter” is bound, from his position, to take a prominent part in the proceedings of the Committee. He is responsible that the faith pledged to the proprietors of land, at the time of Settlement, is fairly kept; that they are exempted from all requisitions to repair the roads themselves; and that the roads are kept by hired labourers in proper repair for them. It is only after this primary object of the fund has been amply provided for, that any surplus money which may remain, can be appropriated to the improvement of the main lines of communication—to the erection of bridges, or by raising and metalling the road.”—(*Paragraph 337, idem.*)

In this District there is no road maintained by Government. All the roads that exist have been made and repaired by the Local Committee, and I shall now endeavour to show how far, and in what way, the duty entrusted to that Committee has been performed. The greater part of the export produce of Bareilly, Peclibheet, and a large part of the export produce of Mooradabad, is conveyed through the Budaon District to the Ganges. Here it is either put on boats, or else conveyed by land carriage to Hatrass, Dehlie, and other commercial towns in the Dooab. The largest trading towns in this part of Rohilcund are Chundowsee in the Mooradabad, and on the confines of this District, and Bilsee in Pergunnah Koti Salbuhan.

The main lines of traffic are—

- 1st.—From Bareilly through Budaon and Oojhanee to Kuchla Ghaut.
- 2nd.—From Bareilly through Aonlah to Bilsee.
- 3rd.—From Chundowsee, via Islamnuggur to Bilsee, and thence to Kuchla or Piproul Ghaut.
- 4th.—From Chundowsee through Patureea to Asudpoor and Ram Ghaut.
- 5th.—From Chundowsee through Rajpoorah to Anoopshuhur. And
- 6th.—From Chundowsee through Bisowlee, Budaon to Soorujpoor Ghaut, Futteh-gurh.

These are the principal lines of traffic. Hundreds of garies, camels, and bunjarah bullocks traverse these roads, carrying from Rohilcund rice, grain, sugar, and timbers; and bringing back ghee, cotton, English clothes, brass utensils, &c. From Bareilly through Budaon to Kuchla Ghaut, a straight line of road, forty-eight feet in breadth, has been made, raised where necessary, drained, and nearly bridged throughout. The portion belonging to this district is in length twenty-nine and a half miles, of which about eight miles have been metalled. The road is kept in yearly repair.

The old road from Budaon to Bareilly is kept up, and has been drained, but being eight miles longer than the former, is not so much frequented.

Aonlah is connected with Bilsee by a road running through Wazeergunge.

From the limits of the District near Chundowsee a road forty feet in width passes near Islamnuggur, thence to Bilsee and Kuchla Ghaut; about Bilsee five miles of road have been metalled. Drains, where most required, have been made. The road is in length forty-four miles.

Two roads, thirty-six feet in breadth, connect Chundowsee with the Ghauts at Ram Ghaut and Anoopshuhur. The one fourteen, the other sixteen miles in length.

A road forty feet wide runs from the limits of the District near Chundowsee through Bisowlee, Wazeergunge, Budaon, Kukrala, and Oosaith to Soorujpoor Ghaut. This road is raised where necessary, drained, and nearly bridged throughout, and extends in length sixty-five and a half miles.

Besides these main lines, the following roads have been made for internal communication :—

	Miles.
Budaon to Belah Danda Ghaut to Soorujpoor, - - - - -	24½
„ to Belhut and Sadoollagunge, - - - - -	18
„ to Allahpoor and Oosauwun, - - - - -	23
„ to Kukora and Kaderchoke Ghaut, - - - - -	14
„ to Bilsee, - - - - -	16
„ to Anoopshuhur Ghaut, Goonore through Saheswan, joining main road at Oojhanee, - - - - -	50
Bisowlee through Bilsee and Saheswan to Palpoor Ghaut, - - - - -	31
„ towards Mooradabad, - - - - -	9
„ to Islamnuggur, - - - - -	14
„ to Saheswan, - - - - -	21
Bilsee to Oojhanee, - - - - -	10
Datagunge to Oosaith, - - - - -	20½
Miscellaneous roads connecting principal villages with main roads, - - -	20

All the roads leading into, and through the town of Budaon, have been metalled, and mile stones erected on the principal roads.

Altogether about 470 miles of road have been made, of which about 21 miles have been metalled.

A road map accompanies this report, which will show the lines of road above-mentioned. An abstract of the account of the Road Fund, will show the proportion of capital expended on each.

EXPENDITURE.

ROAD FUND.		EXPENDITURE.	
Rs.	P.	Rs.	P.
To Income from January 1840 to 30th April 1851,	133386 7 3½	New road from Bareilly through Budaon to Kuchla Ghaat, ..	2669 1 0
		20 drains on ditto,	6042 10 2½
		Old road from Aonlah to Budaon,	6669 1 9
		5 drains on ditto,	1416 11 11½
		Road from Budaon towards Shahjahanpore to Belah Danda, ..	4859 3 3
		drains on ditto,	407 12 3
		" " Futtehghurh to Soorajpore Ghaat, ..	10656 12 4
		drains for ditto,	2147 12 9½
		" " through Bisowlee to Moradabad, ..	4450 14 11½
		and branch road to Chundowsee, ..	1402 1 11½
		drains on ditto,	2486 0 11
		" " to Bilsee,	205 6 6
		drains on ditto,	1158 3 9
		" " to Sadoollagunge,	865 11 4
		" " to Oosauwan,	1269 2 0
		" " to Kukorah,	4248 2 6
		Road from Budaon, Sudder and City roads,	4004 15 8½
		" " " drains,	17259 12 3½
		Road from Bisowlee to Bilsee and Kuchla Ghaat,	1297 2 3
		" " drains on ditto,	2506 15 1
		" " to Saheswan,	920 9 9
		" " Bridge over Sote,	479 11 7
		" " to Islamnuggur,	2244 7 0
		Road from Bilsee to Islamnuggur and Chundowsee, ..	498 0 6
		" " to Saheswan,	1109 12 4
		" " to Oojhancee,	1282 7 9
		" " to Wazeergunge and Aonlah,	1658 13 0
		Road from Oojhancee to Goonore and Aanoopshur Ghaat, ..	2201 6 9
		" " Datagunge to Oosath, &c.	7675 13 11
		Repairs of roads,	6088 1 0½
		Miscellaneous, Implements, &c.	11213 12 0
		Establishment, .. ..	.. ..
		Total Expenditure, .. ..	.. ..
		Balance 1st May 1851, .. ..	.. ..
Total,	133386 7 3½		

M. H. COURT, Joint Magte. and Deputy Collector,

The surplus collections of all public Ferries form one general fund. Each year this fund is divided amongst the several Committees by the Accountant. These allotments are placed in the public Treasury, and paid out from thence in the same way as Road Fund Deposits.

Bunawur, on the road to Bareilly.
Kuchla Ghaut, ditto ditto.
Kukrala, - } On the Futtehgurh road.
Kutra, - - }
Budaon, - } On the Shahjehanpore road.
Datagunge, - }

Avenues of trees have been planted round about Budaon, and on roads proximate to nurseries made at the Tehseel Stations over sandy parts of roads, where shelter is scarce: wells have been made, and old wells cleaned out and repaired. An abstract of the Ferry Fund accounts will show in what manner the capital of this fund has been expended.

FERRY FUND.

EXPENDITURE.

To share of surplus collections, up to April 1851,	Rs. A. P. 41194 10 8½				
BRIDGES, &c.					
Pulakhar Bridge, Bareilly road, .. ..	.. ..	.. ..	Rs. A. P. 717 0 5		Rs. A. P.
Kudwara ditto, Shahjehanpore road, .. ..	.. ..	.. ..	2732 13 11		
Repairs of Khansumrah Bridge, at Budaon, .. ..	.. ..	.. ..	1573 2 4		
Chaveya, a Bridge, Kuchla Ghaut road, .. ..	.. ..	.. ..	1878 7 2		
Bynsore, " .. ..	.. ..	.. ..	802 5 1½		
Kudwara, " .. ..	.. ..	.. ..	525 0 0		
Bridge over Kudwara, at Belhut, .. ..	.. ..	.. ..	979 2 2		
Contribution to Bridge over Arril, Bareilly road, built by subscription, .. ..	.. ..	.. ..	526 8 0		
Contribution to Shekhopore Bridge, .. ..	.. ..	.. ..	690 0 0		
Bridge of Boats at Sutra, Futehgurh road, .. ..	.. ..	.. ..	593 13 0		
Thirty-eight Drains on different roads, of from 3 to 20 feet span, .. ..	.. ..	.. ..	4229 6 2½		
Repairs of Bridges and Drains, .. ..	.. ..	.. ..	339 6 3		
Metalling roadway over Bridges, .. ..	.. ..	.. ..	822 8 3		16403 8 10
SERAIS.					
1 Budaon Serai, .. ..	.. ..	.. ..	1101 7 2		
1 Budaon ditto, Bareilly road, .. ..	.. ..	.. ..	638 4 6		
1 Datagunge ditto, Shahjehanpore road, .. ..	.. ..	.. ..	519 2 9		
2 Kukrala and Kutra, .. ..	.. ..	.. ..	1660 1 6		
1 Kuchla Ghaut, .. ..	.. ..	.. ..	683 9 0		4607 8 11
WELLS, &c.					
Making, cleaning, and repairing wells, on several roads, .. ..	.. ..	.. ..	1461 4 6		
Cost of planting trees, nurseries, &c., .. ..	.. ..	.. ..	2212 12 10		
Ditto erecting milestones, .. ..	.. ..	.. ..	246 6 8		
Implements and Miscellaneous, .. ..	.. ..	.. ..	547 15 4		
Transferred to Putealee, by orders of Government, .. ..	.. ..	.. ..	1170 0 0		
" Moradabad, for Drains, .. ..	.. ..	.. ..	500 0 0		
Cost of Establishment, .. ..	.. ..	.. ..	1627 6 8		7755 14 0
Total Expenditure,				28782 15 9	
Balance 1st May 1851,				12411 10 11½	
Total,				41194 10 8½	41194 10 8½

M. H. COURT,

Joint Magistrate and Deputy Collector.

The difficulties of road-making in this country are many; kunkur is the only substance from which good firm roads can be made. In Rohilcund, this mineral is very scarce and very expensive. The natural soil of the country is not adapted for good roads; from continual drought, it soon turns into dust, and during the dry months of the year, any attempt at repairing dust is useless.

The only season of the year, when effectual repairs can be made, is at the beginning of the rains. Traffic ceases entirely during the rainy season, and the road is then allowed to bind and form. The nature of the conveyance is against a road remaining good for any length of time; the hackery driver has no idea of a straight line; his animals follow in the track of the garee that has gone before, and instead of making even a straight track, grinds into the road along a series of curves.

Bridge-making in this country is not always attended with permanent success. The Collector, and other Members of the Local Committee, are frequently untaught in this line of duty. Rivers are liable to great floods. If the bridge is built for an ordinary flood only, the chances are that, on an extraordinary occasion, they fall; or, if the bridge withstands the force of the water, the river leaves the bridge.

These are some of the difficulties Local Committees have to contend against, and considering that but a few years have elapsed since the time when roads could hardly be said to exist, and when a bridge of the commonest description was not to be found, it is to be hoped that the Local Committee of the Budaon District will be thought to have done their duty.

M. H. COURT.

APPENDIX No. XXIII.

REGISTER OF MOUZAHS

IN

PERGUNNAH RAJPOORAH.

REGISTER OF MOUZAHS IN PERGUNNAH RAJPOORAH.

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable site of Village, &c.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSUL- MEN AND OTHERS NOT HINDOOS.	
										Cultivators.	Non-cultiva- tors.	Cultivators.	Non-cultiva- tors.
1	آرتھل	Arthul,	750	781	6	94	4	871	6	497	28	15	8
2	{ اسحاق پور پٹی جیسو کھہ }	Ishakpoor, Puttee Jeesookh, ..	31	39	1	3	0	27	8	0	0	0	0
3	{ اسحاق پور پٹی موتی سنگھہ }	Ishakpoor, Puttee Motee Singh, ..	31	39	1	3	0	27	8	0	0	0	0
4	{ اسحاق پور پٹی گردھاری سنگھہ }	Ishakpoor, Puttee Girdharee Singh, ..	63	79	4	6	0	53	16	0	0	0	0
5	امر پور	Umrpoor,	300	203	6	1	1	194	1	124	7	0	0
6	{ اودھرنپور مظمت نگر .. }	Oodhurunpoor Uz- mutnuggur, ..	600	1147	11	230	1	336	569	145	0	0	0
7	{ اودھرنپور کھائی سنگھہ }	Oodhurunpoor Khagee, Puttee Bahadoor Singh, ..	180	195	6	21	0	168	0	0	0	0	0
8	{ اودھرنپور کھائی سنگھہ }	Oodhurunpoor Khagee, Puttee Jodh Singh, ..	180	161	6	21	0	122	12	187	1	0	0
9	ایکونہ	Ekonah,	700	844	6	104	1	346	387	243	52	20	0
10	بای بھوہ	Baeebhoor,	500	754	6	87	3	658	0	233	3	0	0
11	بورورہ	Burorah,	507	528	6	61	0	252	209	174	33	0	10
12	بوسنت پور	Busuntpoor,	720	921	26	204	0	421	270	446	38	0	7
13	بگدھر	Bugdhar,	755	1020	4	117	4	605	290	389	0	49	10
14	{ بھبی پور پرمانندپور }	Bhubee poor, Per- manundpoor, ..	800	805	9	93	5	597	101	526	135	19	13
15	بیہت کون	Bihut Kurun,	1047	1057	27	128	3	635	264	468	53	53	21
16	بھراوتی گوہرتھہ	Bhiraottee Gooretah,*	2465	5316	31	1054	11	1240	2980	1655	127	662	128
17	بھسرولی	Bhusrowlee,	450	668	6	97	0	230	335	186	15	0	0
18	بھکرولی	Bhukrowlee,	1080	1129	29	24	3	709	364	650	66	69	11
19	بھگتا نکلہ	Bhugtah Nugla, ..	300	201	6	1	0	192	2	167	32	0	8
20	بھواولا	Bhowaolah,†	208	575	6	259	0	210	100	118	8	19	0
21	بھوپت پور	Bhoputpoor,	250	336	21	47	0	93	175	0	0	0	0
22	بھوجراج پور	Bhojrajpoor,	300	251	6	30	0	215	0	127	0	0	0
23	بھیانپور	Bhyanpoor,	500	749	6	84	0	383	276	354	12	41	0
24	بھیکم پور جاگیر	Bheekumpoor Jageer,	561	659	8	135	0	325	191	207	21	9	0
25	بھیکم پور جینی	Bheekumpoor Jynce,	775	765	6	85	4	513	157	479	5	0	21
26	بیورا	Beeorah,	600	680	6	82	0	586	6	418	247	0	39
27	پاتھکپور	Pathukpoor,	350	433	6	48	1	275	103	362	53	0	3
28	پنچوارا	Pancewara,	550	509	6	64	1	314	124	231	16	0	0
29	پپسرا	Pupsurah,	680	808	9	67	2	593	137	323	37	2	4
30	پٹائی ناصر	Puttay Nasur,	500	428	6	53	0	367	2	214	0	0	0
Carried over, ..			16733	22080	283	3303	44	11357	7093	8923	989	958	283

* There is a market held on Friday in this town.

† This Mouzah was, in 1844-5, transferred to this Pergunnah from Pergunnah Hussunpoor, Zillah Moradabad.

REGISTER OF MOUZAHS IN PERGUNNAH RAJPOORAH—(continued.)

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of the Settlement.	Total Area.	Rent-free.	Unculturable site of Village, &c.	ASSESSED AREA.			POPULATION IN 1847.				
							CULTIVATED.			HINDOOS.	MUSSULMEN AND OTHERS NOT HINDOOS.			
							Irrigated.	Unirrigated.	Culturable.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	16733	22080	283	3303	44	11357	7033	8923	989	958	283	
31 ..	پواری	Puwaree,	650	965	6	100	1	307	551	289	13	0	0	
32 ..	پھلوارہ	Phulwarah,	700	698	6	74	1	571	46	338	5	1	5	
33 ..	پیتمبر پور	Pectumburpoor, ..	200	354	0	35	0	101	218	0	0	0	0	
34 ..	تمریا کھادر	Timurcea Khadir, ..	350	412	6	48	0	270	88	156	11	2	0	
35 ..	تمریا گھات	Timurcea Ghaut, ..	450	338	0	9	0	308	21	126	0	0	0	
36 ..	جتورہ ساگرپور	Jutorah Sagurpoor, ..	604	687	6	102	0	543	36	442	52	7	0	
37 ..	جیوندا	Junjonda,	1256	1009	38	102	1	556	312	594	206	57	9	
38 ..	جمال پور	Jamalpoor,*	610	295	3	24	0	267	1	230	94	0	9	
39 ..	جہان پور	Juhanpoor,	700	670	6	80	0	289	295	322	0	0	0	
40 ..	جیداس پور	Jaidaspoor,	303	352	5	30	0	220	97	236	0	0	0	
41 ..	جینا نگلہ	Jeena Nuglah,	600	820	6	111	0	538	165	61	4	0	0	
42 ..	چھاڑ پور	Chaopoor,	1800	2279	9	325	2	728	1215	1046	87	79	38	
43 ..	چتربھان پور	Chutturbhanpoor, ..	700	611	6	83	1	398	123	440	43	34	4	
44 ..	چمر پورہ	Chumurpoorah, ..	300	264	6	29	0	124	105	99	16	0	0	
45 ..	چندر نگلہ	Chundoo Nuglah, ..	1025	1320	16	162	11	563	568	532	37	26	11	
46 ..	حیمد پور	Hymudpoor,	300	300	6	33	0	226	35	136	3	0	0	
47 ..	داؤد پور	Daoodpoor,	300	399	6	49	0	231	113	95	18	0	0	
48 ..	درونی	Duroownee,	525	521	6	57	1	372	85	197	0	9	0	
49 ..	دوبتھا خورد	Doobtah Khoord, ..	770	630	6	70	0	310	244	266	22	3	0	
50 ..	دوبتھا کلان	Doobtah Kullan, ..	1112	938	7	87	0	705	139	633	35	31	11	
51 ..	دونداباغ	Doondabagh,	600	728	6	119	0	538	65	241	76	36	21	
52 ..	دوہری	Dohuree,	258	260	6	30	0	152	72	103	0	0	0	
53 {	{ دھناری پٹی دیپ سنگھہ }	{ Dhunaree, Puttee Deep Singh,† .. }	550	1431	3	220	3	477	728	738	202	16	39	
54 {	{ دھناری پٹی بھوپت سنگھہ }	{ Dhunaree, Puttee Bhoput Singh,‡ }	550	1432	4	220	3	478	727	0	0	0	0	
55 ..	دیپ پور	Deeppoor,	300	1322	10	657	0	40	615	52	25	0	0	
56 ..	دیو پورہ	Deopoorah,	450	458	6	51	0	267	134	186	4	0	0	
57 ..	دیورہ چھرہ	Deowrah Choorah, ..	400	370	12	47	1	247	63	202	0	0	0	
58 ..	رام پور کھادر	Rampoor Kadir,§ ..	18	6	0	0	0	5	1	0	0	0	0	
59 ..	رام پور محکم	RampoorMohkum, ..	800	771	6	85	2	509	169	308	2	0	0	
60 ..	رام نگر	Ramnuggur,	150	502	6	62	0	85	349	62	0	0	0	
61 ..	راجا ولی	Rajawulee,	538	418	9	38	3	332	36	374	46	9	0	
62 ..	راجپورہ	Rajpoorah,|| .. ..	1019	1010	58	69	17	682	204	628	411	300	168	
63 ..	رستم پور	Rustoompoor,	475	562	6	87	3	258	208	450	0	16	0	
Carried over, ..			36096	45212	565	6598	94	23034	14921	18505	2401	1584	598	

* Original Jumma of Settlement Rs. 700, reduction made on account of diluvion, vide Roobkaree, 7th July 1845.

† Dhunaree, divided into two Puttees, vide Roobkaree, dated 30th July 1845.

‡ Population included in Puttee Deep Singh.

§ Rampoor Khadir—formerly comprised 265 Acres on a Jumma of Rs. 200. The greater part cut away by the Ganges in 1844-5, when a fresh Settlement was made, vide Roobkaree, dated 7th July 1845.

|| There is a large bazar in this town. A market held in it every Monday.

REGISTER OF MOUZAHS IN PERGUNNAH RAJPOORAH—(continued.)

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable site of Village, &c.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.			
							Irrigated.	Unirrigated.	Culturable.	MUSULMEN AND OTHERS NOT HINDOOS.			
										Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	36096	45212	565	6598	94	23034	14921	18505	2401	1584	598
64	رسول پور	Russolpoor, ..	560	499	3	48	3	402	43	325	64	15	20
65	رضا پور	Ruzahpoor, ..	200	284	6	37	0	118	123	36	4	0	0
66	رورادیپ	Roradeep, ..	1256	1675	15	525	2	751	382	450	32	35	2
67	سرسا	Sirsa, ..	800	746	6	92	2	646	0	425	171	5	47
68	سکندر پور کھاگی	Sikundurpoor Kha-gee, ..	850	676	6	79	6	408	182	573	4	21	2
69	سکندر پور لچھا	Sikundurpoor Lutchah, ..	94	166	6	55	0	41	64	6	3	0	0
70	سلیم پور	Suleimpoor, ..	200	219	6	27	0	144	42	42	0	0	0
71	سندھ پور	Sundurpoor, ..	250	294	6	30	0	226	32	98	0	0	0
72	سنگھ پور	Singhpoor, ..	335	344	6	7	2	329	0	137	0	0	0
73	سنگھ داس پور	Singhdulunpoor, ..	300	405	6	43	0	92	264	134	0	0	0
74	سنگھولہ پٹی بھاد سنگھ	Singholah, Puttee Bahadoor Singh, ..	1000	855	6	96	2	611	140	231	108	0	8
75	سنگھولہ پٹی جودھ سنگھ	Singholah, Puttee Jodh Singh, ..	750	1030	6	140	0	391	493	503	63	20	8
76	سنگھولہ پوربھا	Singholee Poorubha, ..	670	618	9	72	3	384	150	438	127	75	16
77	سنگھولہ کلو	Singholee Kuloo, ..	850	989	12	99	1	653	224	611	51	49	35
78	سورپور	Soorpoor, ..	250	242	6	31	0	203	2	239	0	0	0
79	سہارلی	Suhawalee, ..	301	583	6	87	0	214	276	298	124	28	11
80	سیجنہ	Saijnah, ..	852	974	6	144	0	687	137	396	148	0	9
81	سیدورا	Saidorah, ..	1200	1049	10	131	8	817	93	561	54	30	0
82	سیسونہ	Seesonah, ..	400	4047	6	2900	0	0	1141	215	70	0	0
83	سیمری پٹی لیکھراج	Semree, Puttee Lek Raj, ..	586	678	9	80	3	351	235	266	83	198	35
84	سیمری پٹی آرام سنگھ	Semree, Puttee Aram Singh, ..	345	406	5	48	2	210	141	0	0	0	0
85	سیمری پٹی بگھونت سنگھ	Semree, Puttee Bugwunt Singh, ..	230	271	4	32	1	140	94	0	0	0	0
86	شاہ پور	Shahpoor, ..	208	789	6	85	1	208	439	198	0	0	0
87	شاہجہان آباد	Shahjahanabad, ..	1636	1931	37	178	9	943	764	629	238	139	71
88	شیتوا	Shaitooah, ..	800	1449	6	93	1	375	974	379	4	0	0
89	شیر پور	Sherepoor, ..	250	472	6	55	0	207	204	99	0	0	0
90	صادق پور	Sadiqpoor, ..	100	246	0	24	0	22	200	0	0	0	0
91	صلاہ پور	Sulabutpoor, ..	150	181	0	18	0	39	124	0	0	0	0
92	سائے پور	Esaypoor, ..	420	470	6	26	0	385	53	194	3	0	0
93	عیوض پور	Ewuzpoor, ..	125	305	0	50	0	84	171	0	0	0	0
		Carried over, ..	52064	68056	777	11930	140	33110	22098	26018	3752	2199	862

* This estate was divided into three Mouzahs, under Regulation XIX. of 1814, vide Roobkaree, dated 30th June 1846.
† Population included in Puttee Lek Raj. ‡ Population included in Puttee Lek Raj.
§ A market is held in this village every week.

REGISTER OF MOUZAHS IN PERGUNNAH RAJPOORAH—(continued.)

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable site of Village, &c.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.			
							Irrigated.	Unirrigated.	Culturable.	MUSULMEN AND OTHERS NOT HINDOOS.			
										Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	52064	68056	777	11930	140	33110	22098	26018	3752	2199	862
94	فیض پور	Fyzpoor, ..	470	290	5	25	0	257	3	286	5	0	0
95	کرتیا	Kirteeah, ..	916	1040	6	158	0	587	289	295	99	3	17
96	کرکورا	Kurkorah, ..	739	930	6	98	0	493	333	489	17	15	0
97	کرن پور	Kurunpoor, ..	300	364	6	41	0	302	15	0	0	0	0
98	کمال پور	Kamalpoor, ..	225	275	6	30	0	162	77	44	0	0	0
99	کودارسی	Koodarsee, ..	500	1105	6	120	2	234	743	82	0	0	3
100	کھجورا	Kuhjoura, ..	420	750	6	125	1	344	274	243	82	17	13
101	کھگوپورہ	Khugooipoorah, ..	600	658	6	62	5	504	81	289	0	26	0
102	کھنوا	Khanooah, ..	500	377	6	50	3	318	0	261	30	17	12
103	کیرولہ	Kairolah, ..	800	597	6	71	0	387	133	238	9	0	0
104	کیسر پور پٹی دولت سنگھ	Kesurpoor, Puttee Doulut Singh, ..	118	122	1	17	0	104	0	321	28	4	11
105	کیسر پور پٹی موتی سنگھ	Kesurpoor, Puttee Motee Singh, ..	118	122	1	17	0	104	0	0	0	0	0
106	کیسر پور پٹی گرنہاری سنگھ	Kesurpoor, Puttee Girdharee Singh, ..	239	247	4	33	1	209	0	0	0	0	0
107	کیل	Kail, ..	1178	1164	6	114	1	704	339	635	161	30	12
108	کیول پور	Kewulpore, ..	600	444	6	35	1	398	4	284	50	0	22
109	گرہا پٹی رام بخش	Gurha, Puttee Rambux, ..	283	361	2	48	0	200	111	460	53	23	4
110	گرہا پٹی روپ کور	Gurha, Puttee Roop Kour, ..	283	361	3	47	0	200	111	0	0	0	0
111	گرہا پٹی گنگا بخش	Gurha, Puttee Gunga Bux, ..	284	363	3	47	0	201	112	0	0	0	0
112	گنوان	Gunwan, ..	1544	1805	14	202	11	1196	382	798	879	10	206
113	لہرارٹو	Lehrarutoo, ..	550	856	6	89	1	333	427	291	104	13	17
114	مبارک پور	Mubarickpoor, ..	408	510	4	85	3	293	125	340	37	44	0
115	مجلورہ فتحپور	Mujolrah Futtypoor, ..	750	1114	6	116	3	592	397	331	56	7	24
116	محمود پور	Mahmoodpoor, ..	600	779	6	97	1	447	228	246	52	20	4
117	مداولی	Mudawlee, ..	325	811	6	119	0	125	561	165	37	0	4
118	مقصود پور	Muksoodunpoor, ..	250	211	6	19	1	185	0	84	0	0	0
119	مکت پور	Mookutpoor, ..	550	1436	6	425	0	226	779	269	5	0	0
120	ملک پور	Mulikpoor, ..	850	1381	9	165	4	648	555	312	64	47	5
121	منہرنگلہ	Munhur Nuglah, ..	120	442	0	56	0	48	338	0	0	0	0
122	موتیان پٹی دولت سنگھ	Mootainan, Puttee Doulut Singh, ..	312	382	3	40	3	277	59	334	17	40	14
		Carried over, ..	66896	87353	928	14481	181	43188	28574	33115	5537	2515	1230

* Population included in Puttee Doulut Singh. † Population included in Puttee Doulut Singh. ‡ Population included in Puttee Rambux.
§ Ditto included in Puttee Rambux.
|| This is one of the chief towns in the Pergunnah. A Government Dawk Bungalow stands close to the town. There is a market held every Thursday. The bazar is pretty well supplied.
¶ A market is held in this village every Wednesday.

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REGISTER OF MOUZAHS IN PERGUNNAH RAJPOORAH—(continued.)

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable site of Village, &c.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN AND OTHERS NOT HINDOOS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	66836	87353	928	14481	181	43188	28574	33115	5537	2515	1230
123	{ مورتیمان پٹی گردھاری سنگھہ }	Mootainan, Puttee GirdhareeSingh,	313	382	3	40	3	278	58	0	0	0	0
124	{ مولہن پور .. }	Molhanpoor, ..	1000	1124	19	224	3	484	397	229	79	0	18
125	{ میدپور پٹی دولت سنگھہ }	Maidpoor, Puttee Doulut Singh, ..	75	76	1	1	0	47	27	166	0	31	0
126	{ میدپور پٹی موتی سنگھہ }	Maidpoor, Puttee Motee Singh,*	75	77	2	1	0	47	27	0	0	0	0
127	{ میدپور پٹی کشن سنگھہ }	Maidpoor, Puttee Kishun Sing.†	150	153	3	3	0	94	53	0	0	0	0
128	{ میوا حسن کنگ .. }	Meowa, Hussun Gunge, ..	517	1457	6	132	0	164	1155	253	30	0	6
129	{ نریاولی پٹی دولت سنگھہ }	Nureaolee, Puttee Doulut Singh, ..	125	157	1	18	0	109	29	112	75	0	0
130	{ نریاولی پٹی موتی سنگھہ }	Nureaolee, Puttee Motee Singh,†	125	157	2	18	0	109	28	0	0	0	0
131	{ نریاولی پٹی سورج سنگھہ }	Nureaolee, Puttee Sooruj Singh,§	250	315	3	37	0	217	58	0	0	0	0
132	{ نظام پور .. }	Nizampoor, ..	300	448	6	51	0	193	198	200	24	15	9
133	{ نگلہ قاضی .. }	Nugla Kazee, ..	187	240	4	8	0	164	64	52	0	0	0
134	{ نیورا .. }	Neorah, ..	1564	1579	7	123	1	878	570	901	235	61	7
135	{ ہرپوری .. }	Harpuree, ..	225	217	6	29	1	131	50	185	5	0	0
136	{ ہرداس پور .. }	Hurdaspoor, ..	450	435	6	20	0	409	0	173	4	0	5
137	{ ہرروپورہ پٹی بہادر سنگھہ }	Hurroopoorah, Puttee Bahadoor Singh, ..	150	118	3	7	0	108	0	90	16	13	0
138	{ ہرروپورہ پٹی چودھ سنگھہ }	Hurroopoorah, Puttee Jodh Singh, ..	113	89	3	5	0	81	0	0	0	0	0
139	{ ہرونی گوبند پور .. }	Hurownec, Go- bindpoor, ..	1916	1961	7	211	3	902	838	588	124	37	17
		Total, ..	74431	96338	1010	15409	192	47603	32126	36064	6129	2672	1292

M. H. COURT,

Deputy Collector.

Budaon Collector's Office.

* Population included in Puttee Doulut Singh.
† Population included in Puttee Doulut Singh.

‡ Population included in Puttee Doulut Singh.
§ Population included in Puttee Doulut Singh.

APPENDIX No. XXIV.

REGISTER OF MOUZAHS

IN

PERGUNNAH ASUDPOOR.

REGISTER OF MOUZAHS IN PERGUNNAH ASUDPOOR.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area of Village.	Rent-free.	Barren and Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	اراضي بي بي پور	Arazees Beebeepoor,*	71	436	0	24	0	0	412	0	0	0	0
2	اسد پور	Asudpoor, ..	409	573	9	73	52	90	344	645	681	8	174
3	اسمعل پور	Ismaeelpoor, ..	55	400	0	40	0	0	360	8	0	0	0
4	مغل پور	Mogulpoor, ..	55	400	0	40	0	0	360	8	0	0	0
5	اکبر آباد	Akburabad, ..	245	412	30	35	2	217	128	129	17	0	0
6	اکبر پور	Akburpoor, ..	585	359	0	40	0	319	0	626	72	16	36
7	ود بھان پور	Oodheebhanpoor, ..	403	406	5	41	0	246	114	185	19	0	10
8	اھرولہ نواباد	Ahorolah Nowabad, ..	200	1237	6	192	0	125	914	298	4	0	0
9	اھرولہ نوازہ	Ahorolah Newazee, ..	400	300	0	33	55	82	130	306	93	0	5
10	باگھو	Bagho, ..	844	1350	173	221	0	369	587	252	43	14	12
11	ببرالہ	Bubralah, ..	1700	959	32	2	10	915	0	898	47	433	89
12	ببک پور	Bubkurpoor, ..	350	394	0	42	0	155	197	80	0	0	0
13	بیجانگی	Bijangee, ..	216	562	4	57	0	143	358	75	22	0	0
14	بیجوانگلہ	Bijooah Nuglah, ..	923	692	3	81	5	602	1	216	62	13	17
15	بیچولہ بھور	Bicholah Bhoor, ..	410	396	0	42	0	240	114	209	4	46	0
16	بیچولہ کھادر	Bicholah Khadir, ..	75	52	0	2	0	50	0	0	0	0	0
17	بیچپوری حسین پور	Bichpoorie, ..	250	1037	7	119	0	156	755	112	22	0	0
18	بکھورہ کیرہ	Bukhorah Kireeah Kerah, ..	603	927	0	113	5	509	300	254	30	34	0
19	بگول	Bugoll, ..	915	545	6	45	5	489	0	235	92	0	22
20	بلاس پور	Bilaspoor, ..	398	376	6	68	0	237	65	125	13	0	6
21	بندری	Bundree, ..	465	637	33	98	0	260	246	220	40	52	66
22	بودیتی فاضل پور	Boodhetee Fazilpoor, ..	840	890	8	105	0	511	266	217	53	15	15
23	بھول پور	Bhilolepoor, ..	400	560	6	54	0	319	181	281	67	0	28
24	بھوجی پور	Bhojpoor, ..	551	411	6	45	0	269	91	180	23	24	10
25	بھونہ نگلہ	Bhonah Nuglah, ..	564	505	21	49	7	378	50	287	141	0	30
26	بی بی پور	Beebeepoor, ..	150	2023	0	339	0	172	1512	213	65	0	0
27	بیر پور شیوا	Bairpoor Sewah, ..	250	170	0	22	0	140	8	262	2	0	8
28	بیر پور مہاراجی	Bairpoor Muharagee, ..	310	265	4	31	0	187	43	251	9	0	8
29	پتھریا	Putureea, ..	790	807	0	125	5	508	169	454	129	58	27
30	پاتی کایتھہ	Patace Kaith, ..	413	532	8	68	0	347	109	488	83	0	9
31	پورن پتی	Poorun Puttee, ..	274	163	7	0	0	149	7	184	14	0	0
32	پوساوالی	Poosawalee, ..	1611	2428	0	324	5	1048	1051	779	77	105	57
33	پوتھری	Pothree, ..	559	388	8	31	5	332	12	294	72	8	13
34	پھار پور	Puharpoor, ..	100	364	0	40	0	94	230	0	0	0	0
35	پیغمبر پور	Pygumburpoor, ..	30	194	0	19	0	19	156	0	0	0	0
36	ٹاھی	Tahee, ..	50	360	0	55	0	15	290	0	0	0	0
37	ٹھانہ	Thanah, ..	275	233	0	27	2	152	52	291	27	17	0
38	جعفر پور	Jaafirpoor, ..	600	490	5	47	0	314	124	125	10	14	0
Carried over, ..			17284	22833	387	2754	158	10158	9376	9159	2033	857	642

* This Estate, thrown up by the Ganges, brought to Settlement from May 1860.

REGISTER OF MOUZAHS IN PERGUNNAH ASUDPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area of Village.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
38	جگناتھ پور	Jugnathpoor,* ..	656	465	5	52	0	404	4	89	208	0	52
39	جمال پور	Jumalpoor, ..	200	306	0	37	0	125	144	31	0	0	3
40	جناوین	Junawyn,† ..	1042	855	7	89	11	515	233	323	105	58	15
41	جوکھیرہ	Jookhairah, ..	500	602	9	64	0	229	300	257	22	17	0
42	جیرام نگر	Jyramnuggur, ..	400	606	9	67	0	356	174	409	20	24	8
43	چبوترہ	Chabootrah,† ..	1159	1009	0	121	0	725	163	355	36	24	18
44	چوہلی	Choohelee, ..	320	814	0	225	0	362	227	0	0	0	0
45	چہار کھیرہ	Ch'har Kherah, ..	125	139	0	14	0	73	43	0	0	0	0
46	چھبیل پور	Ch'hubeelpoor, ..	254	262	4	27	0	184	47	76	0	0	0
47	حدودا	Haduoda, ..	110	92	0	11	0	72	9	25	0	0	0
48	حسین پور بھگوان	Hoseinpoor Bhoor, Puttee Bhugwan Doss,§ ..	32	89	1	8	0	38	42	74	0	0	0
49	حسین پور نوازہ	Hoseinpoor Bhoor, Puttee Nuwajee Singh,|| ..	93	269	5	24	0	112	128	0	0	0	0
50	حیدر آباد	Hydurabad, ..	250	247	0	20	0	227	0	107	0	19	0
51	خلیل پور	Khuleelpoor,¶ ..	610	798	0	86	0	539	173	496	374	0	102
52	دب تھو مرزا پور	Dabtharah Mirza-poor,** ..	3059	1787	15	69	0	1703	0	701	246	37	15
53	دیر پور	Dureeahpoor, ..	260	366	4	45	0	171	146	35	2	0	4
54	دلی پور	Dilleepoor, ..	85	1001	0	908	7	5	81	0	0	0	0
55	دنورہ	Dunowrah, ..	1005	1035	0	121	0	911	3	307	76	134	40
56	دوباری خورہ	Doobaree Khoord, ..	440	319	11	11	0	297	0	97	7	0	0
57	دوباری کلان	Doobaree Kulan,†† ..	1425	1085	17	110	0	843	115	323	105	15	58
58	دھومراہ	Dhadoomrah, ..	350	296	6	32	0	147	111	257	23	0	5
59	دھندوارہ	Dhundwarah,†† ..	605	451	9	53	0	317	72	434	42	34	18
60	دھنی پور	Dhaneepoor, ..	520	521	4	62	0	224	231	294	160	0	0
61	دھومنان دیپ پور	Dhoomnan Deep-poor, ..	360	460	8	45	0	257	150	143	1	6	0
62	دیپا نگلہ	Deepa Nuglah, ..	125	225	3	32	0	65	125	91	0	0	0
63	دیور کچن	Dewur Kunchun,§§ ..	455	1056	13	143	0	322	578	213	48	16	3
64	رای پور	Raiepoor, ..	325	201	4	7	0	190	0	75	32	0	0
65	رورانہ	Rujwanah, ..	254	478	3	78	0	167	230	164	22	0	0
66	رستم پور	Rustumpoor, ..	50	154	5	18	0	69	62	284	46	0	0
67	رسول پور	Rusoolpoor, ..	733	655	7	71	0	389	188	322	35	6	6
Carried over, ..			33086	39467	536	5404	176	20196	13155	15141	3643	1247	989

* A cattle market is held in this village every Saturday.

† One Persian and one Sanserit School in this village.

‡ At Settlement 10 Biswahs settled with Hurdeo on a Jumma of Rs. 575. The remainder with Hissah and Omaid ee.

§ Partition of this estate made under Regulation XIX. of 1814, vide Roobakaree dated 30th June 1846. ¶ Population included in the above.

¶ A market is held in this village every Saturday. The estate was held on a rent-free tenure until 1843, when it was resumed.

** A market is held in this town every Sunday. There is also a Persian School in the village.

†† Jumma includes Rs. 25 assessed on 33 acres of resumed maafee.

‡‡ A market is held in this town every Tuesday.

REGISTER OF MOUZAHS IN PERGUNNAH ASUDPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area of Village.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	33086	39467	536	5404	176	20196	13155	15141	3643	1247	989
68	کھن آباد	Rukhunabad, ..	50	151	0	15	0	29	107	13	4	0	0
69	رام پورہ	Rumpoorah, Ram	600	592	13	91	0	320	168	293	35	10	8
70	رام پورہ	Raepoorah, ..	100	83	0	0	0	83	0	0	0	0	0
71	رینڈھا	Ryndha, ..	326	250	1	32	0	182	35	135	6	0	4
72	رایوارہ	Raiwarah, ..	600	991	9	111	0	492	379	315	63	65	30
73	سرایے برہمن	Suray Brahmin, ..	350	209	2	40	0	157	10	185	61	0	18
74	سورورہ	Surorah Kuzee,	468	675	15	105	0	312	243	502	27	6	4
	پٹتے علیخان	Puttee Mahmomed Ali Khan, *											
75	سورورہ	Surorah Kazee,	472	679	16	106	0	314	243	0	0	0	0
	پٹتے احمد حسین	Puttee Ahmud Hosein,† ..											
76	سیکرورہ	Sikrorah, ..	500	589	3	68	4	371	143	332	28	42	0
77	سلیم پور بھور	Suleimpoor Bhoor, ..	125	426	0	55	0	220	151	168	0	0	0
78	سلیم پور قاسم پور	Suleimpoor Ka-simpoor, ..	156	231	0	13	0	154	64	0	0	0	0
79	سنور سرایے	Sunnour Suray, ..	2000	2676	18	348	0	1370	940	565	113	8	31
80	سوکھایلا	Sookhaila,† ..	15	1415	0	1340	0	12	63	90	142	0	0
81	سیہورہ	Sihorah, ..	600	590	10	60	0	345	175	195	5	14	2
82	سیجنا	Schjunah, ..	1334	1047	0	229	1	817	0	73	291	169	142
83	سیمری	Semree, ..	350	770	9	108	0	252	401	272	97	10	5
84	سیملہ بھور	Semla Bhoor, ..	328	996	13	95	0	449	439	153	11	0	0
85	سیملہ کرم پور	Semla Kurrumpoor, ..	550	291	3	2	2	284	0	169	0	0	0
86	سیملہ گنور	Semla Gunour, ..	380	390	10	36	0	330	14	382	63	17	12
87	شاہ پور	Shahpoor, ..	547	361	14	29	0	299	19	164	17	33	0
88	صدر پور	Sudurpoor, ..	25	245	0	24	9	1	211	0	0	0	0
89	ٹاھر پور	Tahurpoor, ..	300	416	7	38	3	188	180	250	84	0	0
90	عزیز آباد	Uzceezabad, ..	20	20	0	0	0	20	0	0	0	0	0
91	عزیز پور	Uzceezpoor, ..	501	338	1	47	0	288	2	314	223	0	99
92	علی پور	Alceepoor, ..	150	123	1	14	0	87	21	38	0	0	0
93	عیسم پور	Esumpoor, ..	1064	1215	9	310	3	406	487	502	149	16	2
94	فٹھ پور گنور	Futthepoor Gunour, ..	123	350	0	75	0	119	156	214	24	8	4
95	فرید پور	Fureedpoor, ..	278	942	10	102	0	160	670	233	13	0	15
96	فیروز پور	Ferozepoor, ..	532	507	6	63	5	360	68	144	22	0	6
97	فیض آباد	Fyzabad, ..	25	20	0	0	0	20	0	0	0	0	0
98	قادر آباد	Qadirabad,§ ..	1206	1565	0	277	0	916	372	759	276	170	240
99	کاشی پور	Kasheepoor, ..	1050	702	0	93	0	603	6	818	304	39	36
		Carried over, ..	48211	59322	706	9335	203	30156	18922	22419	5701	1854	1647

* Partition of this estate made under Regulation XIX. of 1814, vide Roobakaree 1st July 1846. † Population included in the above.

‡ Recovered from the Ganges in 1242 Fuzlee.

§ Held on a Rent-free Tenure until 1847, when resumed. A market held in the town every Thursday. A Persian School in the town.

REGISTER OF MOUZAHS IN PERGUNNAH ASUDPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	48211	59322	706	9335	203	30156	18922	22419	5701	1854	1647
100	کریاویں	Kureeawyn, ..	1116	817	0	73	0	742	2	315	120	0	26
101	کلیہ	Kulha, ..	800	1018	11	99	2	568	338	353	58	18	2
102	کنہرا	Kunhooa, ..	350	525	10	49	0	378	88	208	20	32	8
103	کوہیرا	Koohera, ..	600	996	9	96	0	487	404	253	0	18	0
104	کھرموورہ	Khurmooreeah, ..	15	136	0	14	0	14	108	0	0	0	0
105	کھیرہ	Kherah, * ..	1184	1198	0	122	0	828	248	397	142	28	17
106	کھیرہ	Khireeah, ..	1070	699	0	0	0	699	0	216	0	0	0
107	گجادر پور	Gajadurpoor, ..	300	190	6	16	2	165	1	128	27	0	0
108	گڈھیا	Gadheea, ..	870	732	0	57	0	403	272	457	113	4	11
109	گنگاباس	Gungabas, ..	171	1814	0	176	0	78	1560	41	0	0	0
110	گنور	Gunour,† ..	4156	3188	49	224	16	2792	107	1497	888	1112	851
111	گنور پورہ	Gunoonpoorah, ..	400	337	7	35	0	261	34	341	114	30	19
112	گنیش پور	Guneshpoor, ..	165	143	0	15	0	126	2	20	0	26	0
113	گوٹناہ	Gothnah, ..	650	938	17	99	0	471	351	322	114	0	22
114	گھگسمر	Ghug'semur, ..	265	219	7	18	2	121	71	122	35	0	0
115	گھوسلی باہن	Ghoslee Bahun, ..	500	348	6	39	4	204	95	327	113	0	35
116	گھوسلی کور	Ghoslee Kurroo, ..	966	560	6	3	0	551	0	473	144	0	18
117	گھوسلی راجہ	Ghoslee Rajeh, ..	510	343	5	39	0	280	19	152	27	0	0
118	گھوسلی مسک	Ghoslee Mohkum, ..	550	366	5	48	0	281	32	390	171	7	52
119	گھوگیا	Ghoogaya, ..	200	505	6	46	0	122	331	106	0	0	0
120	گیان پور	Geeanpoor Mooku-	110	130	0	14	0	73	43	0	0	0	0
	مقرب پور	rutpoor, ..											
121	گھٹ	Gihut, ..	360	424	0	58	0	250	116	200	9	0	3
122	لاور	Lawur, ..	600	632	0	89	5	303	235	207	39	0	5
123	لطیف پور توری	Lateefpoor Toree, ..	525	395	11	42	0	330	12	231	53	0	6
124	لطیف پور دھیر	Lateefpoor Dheer, ..	550	661	0	77	0	322	262	222	5	0	0
125	لہاویں	Lahawyn, ..	550	670	10	85	0	357	218	219	126	124	9
126	لہرا نگلہ شام	L'hra Nugla Sham, ..	1111	1997	21	325	0	841	810	563	104	8	34
127	لہر پورہ	Lhurpoorah, ..	200	347	0	39	0	168	140	93	11	11	0
128	مال پور طالب پور	Malpoor Talibpoor, ..	115	212	0	22	0	90	100	0	0	0	0
129	مانڈگیر	Mandgir, ..	378	560	6	63	0	320	171	0	0	0	0
130	محمود پور	Muhmoodpoor, ..	75	136	0	14	0	8	114	0	0	0	0
131	مخدوم پور	Mukhdqompoor, ..	325	520	5	59	1	218	237	147	22	0	0
		Carried over, ..	67948	81078	903	11490	235	43007	25443	30419	8156	3272	2765

* The Jumma includes Rs. 43 assessed on 45 acres of resumed maafee.

† At the Settlement, the assessment was made Putteeewar, but no specification of area was made. The Jumma is Puttee Buneo Kazee 558; Puttee Wahud 213; Puttee Abdoolhaee 955; Puttee Cheetah 230; Puttee Seetaburra 137; Puttee Mahmood 156; Puttee Doulat Khan 287; Puttee Nasur 210; Puttee Fazul 288; Puttee Aurul 449; Puttee Gunour Hoerapoor 344; Puttee Munsoor 330. Total 4156. The entries made are in conformity to Settlement Paper No. 3. Gunour is the seat of the Tehseldar and Thannah. There is a market held in the town every Friday. There are three Persian schools in the town.

REGISTER OF MOUZAHS IN PERGUNNAH ASUDPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area in Village.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Unculturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
	*	Brought forward,	67948	81078	903	11490	235	43007	25443	30419	8156	3272	2765
132	{ مرزا پور پٹی } { دیو سکھہ } ..	Mirzapoor, Puttee } Deo Sookh,* .. }	55	136	1	16	0	28	91	97	33	0	0
133	{ مرزا پور پٹی } { ات رام } ..	Mirzapoor, Puttee } Aut Ram,† .. }	165	408	5	48	0	83	272	0	0	0	0
134	.. منصور پور	Munsoorpoor, ..	175	156	0	3	0	153	0	0	0	0	0
135	.. مورینہ	Moorainah, ..	450	611	20	70	8	424	89	139	30	71	16
136	.. مہاؤلی	M'hawulee, ..	340	284	0	36	0	136	112	139	24	21	4
137	.. میدولی	Maidolee, ..	730	467	5	41	0	421	0	378	23	17	0
138	.. میرم پور	Meerumpoor, ..	280	834	11	89	0	128	606	229	44	0	16
139	.. ندھرولی	Nudhrolee, ..	706	1015	12	142	2	428	431	466	198	13	45
140	.. نصر اللہ پور	Nusuroollapoor, ..	80	83	0	8	0	40	35	0	0	0	0
141	.. نصیر پور	Nuseerpoor, ..	722	602	3	58	0	478	63	144	5	0	0
142	.. نگلہ اجمیری	Nugla Ajmeeree, ..	1587	1663	37	242	0	855	529	849	339	41	34
143	.. نگلہا دیبی	Nuguleea D'abee, ..	425	279	4	17	0	258	0	182	40	0	13
144	.. نند پور	Nundpoor, ..	320	274	0	30	3	133	108	161	8	0	3
145	.. نور پور	Noorpoor, ..	295	557	4	42	0	154	357	251	12	0	11
146	.. ہتیاؤلی	Huteeawulee, ..	500	618	12	64	0	291	251	259	1	15	0
147	.. ہرگوبند پور	Hargobindpoor, ..	400	725	2	121	0	249	353	261	138	3	19
148	.. ہمایوں پور	Humayoonpoor, ..	259	164	0	0	0	164	0	74	3	0	0
149	.. ہمت پور	Himutpoor, ..	188	665	13	62	0	368	222	197	44	15	17
150	.. هوتم گڈھی	Hotam Gurhee, ..	1	319	0	313	0	0	6	0	0	0	0
151	.. هولکا باد	Holkabad, ..	180	174	0	21	0	124	29	150	0	0	0
		Total, ..	75806	91112	1032	12913	248	47922	28997	34394	9098	3468	2943

* Partition of this estate made in 1847, vide Roobakaree 19th April 1847. † Population included in the above.

APPENDIX No. XXV.

REGISTER OF MOUZAHS

IN

PERGUNNAH ISLAMNUGGUR.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	آجیت پور	Ajeetpoor, ..	450	522	10	62	0	416	34	253	0	48	0
2	آچل	Achulpoor, ..	435	421	6	29	0	343	43	229	67	4	15
3	آزاد نگر	Azadnuggur, ..	200	215	11	22	0	182	0	138	13	0	3
4	اسلام نگر	Islamnuggur,* ..	1476	1627	254	269	0	1073	31	1061	1633	1192	728
5	اسوگ پور	Asogpoor, ..	201	310	4	33	0	194	79	137	16	11	0
6	اعتماد پور	Itmadpoor, ..	565	729	6	129	3	548	43	404	39	0	0
7	افضل پور	Afzulpoor, ..	235	631	45	143	0	139	304	84	0	0	0
8	اگر اس بشارت نگر	Agras, ..	901	1094	12	142	0	722	218	405	102	60	5
9	الہ پور خورد	Allahpoor Khoord, ..	474	324	10	39	0	181	94	210	9	0	0
10	الہ پور شمس پور	Allahpoor, ..	1799	1849	22	300	0	1040	487	625	169	36	16
11	اوداری	Aodaree, ..	125	208	0	22	0	144	42	0	0	0	0
12	اورچی	Aoorchee, ..	747	727	19	95	10	603	0	500	53	21	14
13	اورنگ آباد رفعت پور	Aorungabad, ..	488	971	6	97	0	573	295	173	9	0	0
14	اولہ	Aolah, ..	351	435	8	61	0	295	71	80	1	0	0
15	ایکھیرہ	Ekkherah, ..	822	930	12	96	0	586	236	613	120	0	12
16	بیجانگی	Bijangee, ..	213	462	12	54	0	363	33	267	4	8	0
17	بیجھیرہ	Bijherah, ..	330	553	12	60	0	232	199	153	35	0	0
18	بیجی پور	Bijeepoor, ..	275	610	0	66	0	234	263	170	22	0	0
19	بیجھہ پوری خورد	Bichhporee Khoord, ..	102	214	1	25	0	48	140	0	0	0	0
20	بکت پور جعفر پور	Bukhtpoor, ..	510	511	11	60	0	369	71	228	16	0	0
21	بکرم پور جسودہ	Bikrumpoor, ..	670	787	11	256	0	469	51	415	76	4	18
22	بندرائی کمال گڈ	Bundraee, ..	250	437	3	62	0	179	193	105	0	0	0
23	بھبی پور	Bhubeeppoor, ..	531	441	6	9	3	392	31	373	6	16	3
24	بھتہ پاتھک	Betah Pathuk, ..	1039	993	6	91	0	896	0	523	0	76	0
25	بھرتپوری	Bhurtpoor, ..	175	151	6	2	0	143	0	60	28	0	0
26	بھگت پور	Bhagutpoor, ..	182	270	12	31	0	166	61	115	0	0	0
27	بھگونت نگر	Bhugwantnuggur, ..	175	299	11	36	0	151	101	97	65	0	22
28	بھمن پوری خورد	Bhumunpooree Khoord, ..	209	261	6	2	0	183	65	164	4	0	0
29	بھوانی پور سرکہ	Bhowancepoor, ..	301	569	16	67	0	303	183	147	0	0	0
30	بھوانی پور نگلہ	Bhowancepoor Nugla, ..	439	452	6	61	0	313	72	140	88	13	22
31	بھور بسولی	Bhoor Bisowlee, ..	1155	833	5	240	0	450	188	301	122	161	20
32	پاتھک پور	Pathukpoor, ..	101	187	8	21	0	77	81	0	0	0	0
Carried over, ..			15926	20075	557	2682	16	12812	3709	8072	2697	650	878

* A market is held in this town every Monday and Friday.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-Cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	15926	20075	557	2682	16	12812	3709	8072	2697	650	878
33	پال پور	Pallpoor,	360	484	11	59	0	287	77	202	24	9	5
34	پیپریا پٹی احمد خان	{ Pipureea, Puttee Ahmud Khan,* .. }	128	140	3	17	0	108	12	130	11	206	24
35	پیپریا پٹی ستار خان	{ Pipureea, Puttee Sitar Khan,* .. }	85	93	1	12	0	73	7	(a)0	0	0	0
36	پیپریا پٹی کلو خان	{ Pipureea, Puttee Kuloo Khan,* .. }	106	117	2	15	0	90	10	(a)0	0	0	0
37	پیپریا پٹی اجو خان	{ Pipureea, Puttee Ajoo Khan,* .. }	53	58	1	7	0	45	5	(a)0	0	0	0
38	پیپریا پٹی نجابت خان	{ Pipureea, Puttee Nijawut Khan,* }	53	58	1	7	0	45	5	0	0	0	0
39	پورل پور	Pardulpoor,	467	506	12	71	0	400	23	220	51	3	7
40	پرممانند پور	Purmanundpoor, ..	251	310	8	45	1	236	20	237	10	0	0
41	{ پزاری میان پور گنیش پور }	{ Pewaree Meean- poor, Guneshpoor, .. }	1562	2682	43	368	1	1830	440	1012	310	81	37
42	ترک پورلی	Turkpurowlee,	391	480	12	32	0	436	0	139	32	0	0
43	تکھورا	Tikhorah,	833	770	4	198	0	341	227	276	75	0	9
44	تکھوری	Tikhoree,	275	135	0	27	0	83	25	0	0	0	0
45	تھان پور	Thanpoor,	260	264	0	16	0	248	0	11	0	0	0
46	جدرار	Judwar,	455	814	7	260	0	328	221	155	0	43	0
47	جریندا	Jurendah,	751	857	14	111	4	558	170	368	45	6	0
48	جسو پور	Jusoopoore,	60	194	0	20	0	71	103	45	0	0	0
49	جعفر پور	Jafripoor,	109	94	0	0	0	94	0	0	0	0	0
50	{ جکھور اچھر پور }	{ Jukhaura, Choochurpoor, .. }	459	799	17	93	0	306	383	228	0	5	0
51	جگتوا	Jugtooah,	270	378	0	45	0	233	95	122	0	0	0
52	جگدیس پور	Jugdespoor,	100	193	12	23	0	152	6	86	0	0	0
53	جوگ پور	Jogpoor,	15	18	0	2	0	15	1	0	0	0	0
54	جیت پور	Jeetpoor,	394	675	6	207	0	381	81	266	19	0	6
55	چاند پور	Chaundpoor,	225	241	9	31	0	150	51	172	21	10	0
56	{ چندوہی چمپورہ }	{ Chundoe, Chumurpoorah,† }	1535	2337	25	424	7	948	933	856	343	120	89
57	چنی	Chunee,	782	868	12	152	0	704	0	567	0	38	0
58	چھوہر خورد	Ch'huboo Khoord, ..	300	238	12	7	0	219	0	84	21	0	0
59	چھوہر کلاں	Ch'huboo Kulan, ..	501	460	12	17	0	431	0	382	36	10	28
		Carried over, ..	26756	34188	781	4948	29	21607	6604	13630	3295	1191	1082

* Figureea was divided into 5 Puttees, under Regulation XIX. of 1814, vide Roobakaree, dated 23rd October 1846.

(a) Population included in Puttee Ahmud Khan.

† A market is held in this village every Sunday and Wednesday.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(continued.)

Number of Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area of Village.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSULMEN AND OTHERS.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	26756	34188	781	4948	29	21607	6604	13630	3295	1191	1082
60	{ چھترا پٹی سرچیت سنگھ }	Ch'hutra, Puttee Surjeet Singh,*.. }	67	165	2	45	0	63	55	(a)0	0	0	0
61	{ چھترا پٹی کرن سنگھ }	Ch'hutra, Puttee Kurun Singh,*.. }	334	828	9	222	0	313	284	201	17	17	0
62	چھترپور	Cheeturpoor, ..	375	467	33	143	0	207	84	151	15	10	0
63	حبيب پور	Hubeebpoor, ..	450	581	13	65	1	487	15	264	24	4	5
64	خانپور	Khanpoor, ..	446	552	13	86	0	371	82	276	55	12	10
65	خدا کنج	Khodagunge, ..	100	153	7	18	0	101	27	97	0	0	0
66	خوشحال پور	Khoshalpoor, ..	254	313	8	41	1	194	69	235	8	0	10
67	خضر پور	Khizurpoor, ..	168	344	0	127	0	99	113	36	0	0	0
68	دارا نگر	Daranuggur, ..	100	232	1	24	0	102	106	124	5	0	0
69	داس پور	Daspoor, ..	275	390	8	42	0	294	46	62	0	0	0
70	داونری	Daonree,† ..	701	737	23	101	4	482	127	338	87	0	2
71	دجرام پور	Dujrampoor, ..	169	583	12	19	0	215	337	156	7	0	0
72	ڈگری	Degree, ..	240	296	6	95	0	155	40	68	1	0	0
73	دھرم پور	Dhurumpoor,‡ ..	165	358	15	33	0	250	60	219	9	11	8
74	دھربلا	Dhurcelah, ..	500	652	9	76	1	437	129	390	20	12	4
75	دھرم پورا	Dhimurpoorah, ..	200	422	0	50	0	193	179	84	0	0	0
76	دھنارلی	Dhunaolce, ..	430	460	11	51	0	299	99	114	0	0	21
77	دھرم پور	Dhoorumpoor, ..	580	509	12	64	0	433	0	210	12	15	3
78	{ راج پور روشن نگر }	Rajpoor, .. Roshannuggur, .. }	323	311	6	23	0	282	0	215	0	10	0
79	راج نکولی	Rajtikolee, ..	775	713	32	177	0	344	160	266	16	17	3
80	راج تھل	Rajthul, ..	411	641	14	129	0	387	111	331	1	17	11
81	{ رام نگر سید پور }	Ramnugur, .. Saidpoor, .. }	315	437	16	66	0	271	84	140	0	18	0
82	راے پور	Raeepoor, ..	300	379	11	42	0	323	3	198	0	7	0
83	رسول پور	Rusoolpoor, ..	283	420	83	116	1	211	9	123	18	10	0
84	رفعت پور	Rufautpoor, ..	513	619	6	89	0	402	122	201	85	6	6
85	{ رودائیں پٹی عجب سنگھ }	Roodaen, Puttee Ajub Singh,§ .. }	420	600	0	43	0	557	0	0	0	0	0
86	{ پٹی پرتوی سنگھ }	Puttee Pirthee Singh,§ .. }	600	689	0	82	0	485	122	0	0	0	0
87	{ پٹی گمان سنگھ }	Puttee Gomaun Singh,§ .. }	600	661	0	144	0	517	0	0	0	0	0
88	{ پٹی مادھو سنگھ }	Puttee Madho Singh,§ .. }	600	643	0	71	0	543	29	0	0	0	0
89	سبھا نگر	Subhanuggur, ..	148	170	30	1	0	139	0	25	5	0	0
		Carried over, ..	37578	48513	1161	7233	37	30763	9001	18154	3680	1357	1165

* Partition of Ch'hutra made under Regulation XIX. of 1814, vide Roobakaree, dated 16th September 1844.
 (a) Population included in Puttee Kurun Singh. † A market is held in this village every Saturday.
 ‡ Originally rent-free, resumed in 1842. § Population included in Puttee Ajub Singh.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(continued.)

Number in Pergumala.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.		POPULATION IN 1847..				
							CULTIVATED.		HINDOOS.		MUSSULMEN AND OTHERS.		
									Irrigated.	Unirrigated.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	37578	48513	1161	7233	37	30763	9001	18154	3680	1357	1165
90	ستھولی	Suthowlee, ..	1203	1378	123	395	5	771	84	621	433	0	57
91	سورلیا	Suroleea, ..	189	425	0	119	0	113	193	9	0	0	0
92	سورہرا	Surerah, ..	668	929	6	121	0	581	221	525	89	9	27
93	سورکا	Sisurka,*..	1611	1808	27	258	8	1307	208	953	166	118	6
94	سعادت نگر	Sahadutnuggur, ..	205	218	8	24	0	173	13	170	8	0	4
95	سکارین	Sukhawyn, ..	425	564	17	70	0	359	118	293	62	41	3
96	سگرورا	Sugrorah, ..	450	428	6	36	0	254	132	160	28	64	0
97	سلطان گڈھ	Sultangurh, ..	650	1752	1	352	0	406	993	110	69	579	36
98	ستھولی	Suntholee, ..	290	649	3	120	0	209	317	167	2	9	0
99	سندر نگر	Soondernuggur, ..	413	618	6	117	0	423	72	369	47	4	4
100	سودیپور	Soodespore, ..	275	297	12	34	1	204	46	237	35	0	5
101	سورہ	Sorha, ..	760	793	90	156	2	418	127	540	116	5	34
102	سورہائی	Sorhaee, ..	720	735	12	90	1	615	17	381	55	17	6
103	سورہائی پپورے	Sorhaee Papooree, ..	551	662	12	79	0	395	176	294	125	0	0
104	سیادات پور	Saiadutpoor, ..	181	459	10	48	0	155	246	183	18	0	0
105	سید سراے	Sydsuraee, ..	129	332	6	37	0	153	136	0	0	0	0
106	{ سیف اللہ کنج ساگر سراے }	Syfoollahgunge, Sagur Suray, ..	639	1796	11	230	4	1314	237	446	0	3	0
107	سیف پور	Saifpoor, ..	223	247	6	33	0	183	25	169	0	0	0
108	شاہ پور	Shahpoor, ..	142	337	3	4	0	118	212	64	0	0	0
109	شب نگر	Shibnuggur, ..	201	338	6	41	0	215	76	131	0	0	0
110	{ صدر الدین نگر پٹی تھاکر داس }	Saduroodeennuggur, Puttee Thakoor Dass,† ..	175	252	3	30	0	195	24	139	0	0	0
111	{ صدر الدین نگر پٹی شادی لعل }	Saduroodeennuggur, Puttee Shaddee Lall,† ..	176	253	3	31	0	196	23	(a)0	0	0	0
112	صمد نگر	Sumudnuggur, ..	501	434	35	83	0	316	0	239	126	46	3
113	عبدالواحد پور	Abdoolwahidpoor, ..	241	330	45	54	0	182	49	44	29	0	0
114	علی پور	Alleeipoor, ..	451	399	9	53	0	329	8	260	48	29	0
115	علی نگر	Alleenuggur, ..	206	383	6	29	0	230	113	255	37	15	11
116	فیروز پور	Ferozepoor, ..	501	410	11	69	2	320	8	160	89	9	3
117	فیض کنج	Fyzgunge, ..	557	674	21	120	7	526	0	333	188	279	121
118	{ قاسم آباد سکندر پور }	Kasimabad Secunderpoor, ..	975	1027	84	106	4	796	37	314	89	52	0
119	کریال پور	Kirpalpoor, ..	191	269	12	44	0	144	69	57	0	6	0
120	کرم پور	Kurumpoor,† ..	1304	1656	18	285	0	1068	285	568	199	0	35
		Carried over,	52781	69255	1773	10341	71	49334	3671	26345	5726	2642	1520

* A market is held in this village every Friday.
 † Suduroodeennuggur was divided into two equal Mouzahs by Roobakaree, dated 10th April 1845.
 (a) Population of Puttee Shaddee Lall included in Puttee Thakoor Dass.
 ‡ A market is held in this village every Tuesday.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	52781	69255	1773	10341	71	43334	3671	26345	5726	2642	1520
121	کریا دین	Kurecawyn,*	1621	1471	16	297	8	1098	52	701	397	20	65
122	کسیرا عبد اللہ نگر	Kiserah, Ibdoolah-nuggur, ..	545	663	12	96	1	514	40	482	72	20	14
123	کشن پور	Kishunpoor, ..	275	319	4	95	0	146	74	115	6	0	0
124	کشن پور شام پور پٹی راجا رام	Kishunpoor, Sheampoore, Puttee Raja Ram,†	178	300	2	58	0	82	158	115	6	0	0
125	کشن پور شام پور پٹی چھیدا لعل	Kishunpoor, Sheampoore, Puttee Cheda Loll,†	178	300	2	58	0	83	157	(a)0	0	0	0
126	کندا ولی موسیا نگر	Kundaolee, Moosiahnuggur, ..	824	693	12	130	1	550	0	510	56	0	18
127	کونوا کھیرا	Kunwah Khe rah, ..	301	400	11	46	1	237	55	185	16	8	5
128	کونور پور	Kunoorpoor, ..	420	586	14	81	0	366	125	241	61	32	11
129	کونوری پور	Kunoree Bhoor, ..	201	378	3	37	0	140	193	136	0	0	0
130	کور کھیرا پٹی راجا رام	Koor Kherah, Puttee Raja Ram,†	75	160	1	16	0	58	85	5	0	0	0
131	کور کھیرا پٹی پٹی رام	Koor Kherah, Puttee Patce Ram,†	75	160	1	16	0	58	85	5 (b)0	0	0	0
132	کورھا	Korha, ..	251	416	12	48	3	160	193	193	140	51	0
133	کھجرا	Khujurah,§	500	940	4	78	0	434	424	525	0	23	15
134	کھجورہ	Khujoreeah, ..	320	404	6	51	0	182	165	197	5	9	0
135	کھور پورہ	Khurpoorah, ..	117	410	0	44	0	61	305	0	0	0	0
136	کھنجن پور پٹی تھانا لعل	Khunjunpoor, Puttee Thunah Loll,||	38	83	2	12	0	54	15	108	28	0	0
137	کھنجن پور پٹی دولت سنگھ	Khunjunpoor, Puttee Doulut Singh,||	25	55	1	7	0	36	11	(c)0	0	0	0
138	کھنجن پور پٹی رادھ کور	Khunjunpoor, Puttee Radeh Kour,||	87	195	5	25	0	127	38	(c)0	0	0	0
139	کھنور پور	Khunurpoor, ..	450	449	11	66	0	358	14	141	256	7	20
140	کھیرا داس	Kherah Dass,¶	1601	1539	18	255	4	1067	195	896	298	11	19
141	کیوت پور	Keerutpoor, ..	125	243	4	57	0	115	67	93	0	0	0
		Carried over,	60988	79414	1914	11914	89	49310	16122	30993	7067	2823	1787

* A market is held in this village every Wednesday.

† Divided into two equal Mouzabs by Roobakaree, dated 20th November 1844.

(a) Population included in Puttee Raja Ram.

‡ Partition made by Roobakaree, dated 10th August 1844.

(b) Population included in Puttee Raja Ram.

§ Originally rent-free, resumed in 1818, Roobakaree of Settlement dated ———.

|| Khunjunpoor was divided into three Mouzabs, under Regulation XIX. of 1814, vide Roobakaree, dated 24th August 1840.

(c) Population of Nos. 137 and 138 included in Puttee Thunnah Loll.

¶ A market is held in this village every Saturday.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	60988	79414	1914	11914	89	49310	16122	30993	7067	2823	1787
142	گجرولا	Gujrolah, ..	75	235	0	25	0	126	84	55	0	0	0
143	گھری بھولا	Gurhee Bichola, ..	410	1140	11	122	0	371	636	21	33	167	0
144	گنگا پور	Gungapoor, ..	396	764	47	93	0	505	119	0	0	0	0
145	گنگولی	Gungolee, ..	300	369	12	39	0	281	37	260	13	0	0
146	گوآر پورہ	Gooarpoorah, ..	666	553	3	43	0	411	96	321	40	4	0
147	گوہند پور	Gobindpoor, ..	581	738	13	89	1	414	221	277	67	6	6
148	گوریتا	Goreeta, ..	200	444	7	59	1	277	101	183	21	0	0
149	گھدرولی	Ghudrowlee, ..	1145	1013	12	121	2	681	197	468	105	27	18
150	بھاری	Bubharee, ..	338	430	9	124	4	282	11	116	70	0	0
151	لڈھولی	Ludholee, ..	281	469	12	62	0	235	160	92	2	0	0
152	لشکر پور	Lushkurpoor, ..	649	829	177	105	5	520	22	233	102	138	31
153	لونان	Lownan, ..	300	521	11	66	0	256	188	211	76	23	0
154	لہرا بھور	Lehra Bhoor, ..	231	323	3	58	0	101	161	87	0	0	0
155	مانک پور چاند پور	Manikpoor, .. Chandpoor, ..	1126	1627	11	499	0	567	550	554	91	34	24
156	مٹھرولی	Muthrolee, ..	622	879	18	203	2	474	182	444	113	42	18
157	محب علی پور	Mohballeepoor, ..	613	612	6	94	3	425	84	374	153	0	19
158	محسن پور	Mohussunpoor, ..	151	420	11	67	1	135	206	190	20	0	0
159	مدہ پوری	Mudhpooree, ..	111	186	9	28	0	109	40	10	0	8	0
160	مرزا پور بیٹا	Mirzapoor Bettah, ..	1074	1156	8	205	1	843	99	469	78	22	34
161	معاز الدین	Moazodeennuggur, ..	205	251	8	28	0	131	84	96	11	0	0
162	منور نگر	Munvernuggur, ..	200	238	0	27	0	194	17	0	0	0	0
163	موگڑا	Moogurrah, ..	501	618	11	84	1	503	19	341	3	9	21
164	مہوری	M'horee, ..	475	571	11	71	0	419	70	236	31	6	2
165	مٹی خور	Mye Khoord, ..	229	233	6	39	1	182	5	194	15	0	0
166	مٹی کلاں	Mye Kulan, ..	599	598	6	152	0	440	0	353	32	7	20
167	ناگر پکھرا پور	Nagur Pukhra Bodhpoor, ..	875	1280	24	154	*1	863	238	826	73	30	12
168	نڈری	Nudree, ..	270	363	55	75	0	191	42	66	22	15	0
169	نسرولی	Nusrowle, ..	873	1326	16	195	4	970	151	669	43	145	12
170	نصیر پور پٹی احمد خان	Nuseerpoor, Puttee Ahmud Khan,*	17	37	0	5	0	16	16	0	0	0	0
171	نصیر پٹی ادھی پور	Nuseerpoor, Puttee Adjee,*	17	37	0	4	0	16	17	0	0	0	0
172	نصیر پور پٹی مصیب اللہ	Nuseerpoor, Puttee Museeboolla,*	17	36	0	4	0	16	16	0	0	0	0
173	نعم پور	Naampoore, ..	30	66	0	7	0	57	2	0	0	0	0
		Carried over,	74565	97776	2431	14850	116	60331	20003	38189	8321	3506	2004

* Nuseerpoor divided into three Mouzabs, by Roobakaree, dated 7th March 1848.

REGISTER OF MOUZAHS IN PERGUNNAH ISLAMNUGGUR—(concluded.)

Number of Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	74565	97776	2131	14850	116	60331	20003	38189	8321	3506	2004
174 ..	نگلہ بارہ	Nuglabarah, ..	1000	967	6	232	4	719	6	418	269	0	16
175 ..	نگلہ مزرعہ جیت	Nugla Muzrajcet, ..	200	315	6	35	0	188	86	169	5	6	0
176 ..	نواب پورہ	Nuwabpoorah, ..	240	275	12	31	2	164	66	216	22	0	3
177 {	نور پور پنونی پٹی تھانہ لعل	Noorpoor Penonee, Puttee Thunnah Lall,* ..	413	434	10	67	0	315	42	408	173	12	43
178 {	نور پور پنونی پٹی دولت سنگھ	Noorpoor Penonee, Puttee Dou- lut Singh,* ..	186	203	4	30	0	140	29	(a)0	0	0	0
179 {	نور پور پنونی پٹی رام سنگھ	Noorpoor Penonee, Puttee Ram Singh,* ..	508	520	14	79	0	392	35	(a)0	0	0	0
180 ..	نور نگر کوریا	Noornuggur Koreca,	451	583	11	65	1	500	6	227	36	51	0
181 ..	نور گنواں	Nowgunwan, ..	276	318	6	59	0	214	39	152	9	0	0
182 ..	ہیم پور	Hempoor, ..	225	232	9	30	0	193	0	92	17	0	0
		Total, ..	78164	101623	2509	15478	123	63156	20312	39871	8852	3575	2066

* Vide remarks on Nos. 136, 137, and 138. A market is held in this village every Thursday.

(a) Population of Nos. 178 and 179 included in puttee Thunnah Lall.

APPENDIX No. XXVI.

REGISTER OF MOUZAHS

IN

PERGUNNAH BISOWLEE.

REGISTER OF MOUZAHS IN PERGUNNAH BISOWLEE.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Assessment.			Assessed Area.			POPULATION IN 1847.			
			Total Area.	Rent-free.	Unculturable.	CULTIVATED.		Cultivable.	HINDOOS.		MUSSULMEN.	
						Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	اجنارور	Ajnowur, ..	476	613	6	85	3	486	33	257	38	24
2	آدپور	Adpoor,* ..	911	858	6	102	1	731	18	380	36	2
3	آصفپور	Asifpoor,† ..	2112	1782	15	22	1	1744	0	787	366	69
4	انبياپور	Anbecapoor, ..	320	523	6	66	0	348	103	164	39	0
5	اھرولي	Ahirolee, ..	260	291	6	40	0	244	1	180	134	0
6	بابيپور	Babcepoor, ..	625	605	6	72	0	527	0	225	62	0
7	بيجوري	Bijoree, ..	668	520	6	90	0	424	0	248	18	0
8	برکھرا	Burkherah, ..	250	238	6	16	6	200	10	140	12	0
9	برگنوان	Burgunwan, ..	313	289	6	48	1	234	0	155	4	0
10	بسولي	Bisowlee,‡ ..	1145	1383	167	231	32	953	0	580	1161	306
11	بسومين	Bisowmaeen,§ ..	550	413	6	72	2	320	13	206	19	18
12	بسبي پتي پيران فانه	Buséhee, Puttee Peran Nath, || ..	190	217	2	35	1	179	0	376	37	0
13	بسبي پتي جهيدالال	Buséhee, Puttee Cheda Lall, ..	191	217	2	35	1	179	0	0	0	0
14	بسبي پتي گھروني	Buséhee, Puttee Gharubee, ¶ ..	190	216	2	34	1	179	0	0	0	0
15	بشمان کھيرا	Bishman Kherah, ..	105	148	0	15	0	107	26	0	0	0
16	بنجريا کھانپور	Bunjurceah Khanpoor,** ..	200	370	17	31	0	295	27	201	58	18
17	بھاريپور	Bhareepoor, ..	2	47	0	18	0	13	16	0	0	0
18	بھتپور	Bhutpoorah, ..	579	616	0	82	0	528	0	268	31	0
19	بھتکوره	Behtah Korah, ..	275	398	6	23	0	331	38	74	10	0
20	بھرتپور	Bhurtpoor,†† ..	1801	1679	19	218	0	1239	203	589	120	17
21	بھوموري	Bhumoree, ..	501	570	6	43	4	517	0	215	42	0
22	بھوجپور	Bhojpoor, ..	450	429	6	70	1	266	86	197	34	34
23	بھيدھا نکلہ	Bheedha Nuga,‡‡ ..	1001	1032	6	130	3	868	25	309	80	11
24	بھيرکھيرا	Bur Kherah, ..	100	135	0	18	0	68	49	0	0	0
25	بھگم نگر	Begumnuggur, ..	450	309	6	75	0	228	0	167	13	0
26	پپ گانون	Pupgaon, ..	800	773	6	103	1	652	11	352	150	11
27	پرتھپور	Pirtheepoor, ..	600	753	6	96	2	589	60	327	59	0
28	پرسيا	Purseeah, ..	1000	1252	6	141	3	1101	1	611	140	41
29	پورن نگر	Purveznuggur, ..	1550	1366	12	206	3	1055	90	762	182	4
Carried over,			17615	18042	344	2217	66	14605	810	7770	2845	555

* Jumma of Settlement 1050; reduced to Rs. 911, by Mr. Commissioner F. H. Robinson, 18th December 1840.

† A market is held in this village every Monday.

‡ The Jumma includes a quit-rent of Rs. 50 for ground within a Fort, sold in 1823 to Messrs. A. and J. Donald; also Rs. 45 on account of 45 acres of resumed maafee. Market held on Wednesday.

§ Market held in this village every Saturday.

|| Partition of Buséhee effected under provisions of Regulation XIX. of 1814, vide Roobakaree, dated 4th January 1844.

¶ Population of Nos. 13 and 14 included in No. 12.

** Bunjurceah Khanpoor was held on a rent-free tenure until 1841, when resumed and settled with Ex-Maafeedars, vide Roobakaree, 4th December 1842.

†† Jumma reduced from Rs. 2,300 to Rs. 1,801, by Mr. Commissioner F. H. Robinson, 12th December 1840. A market held in this village twice a week; viz. Mondays and Saturdays.

‡‡ Jumma reduced from Rs. 1,171 to 1,001, by Mr. Commissioner F. H. Robinson, 12th December 1840. A market held in this village every Sunday and Thursday.

REGISTER OF MOUZAHS IN PERGUNNAH BISOWLEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Assessment.		Total Area.		Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
									CULTIVATED.		Cultivable.	HINDOOS.		MUSSULMEN.	
									Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	17615	18042	344	2217	66	14605	810	7770	2845	555	1028		
30	پسنھاريہ	Pissunharee,	425	811	6	116	1	433	255	219	38	8	6		
31	پندارہ	Pindara,*	1343	1436	12	176	2	1217	29	627	108	6	27		
32	پنوندی	Pinoundee,	300	363	6	31	0	295	31	173	0	3	0		
33	پوروا کھیرا	Poorwah Kherah, ..	335	305	6	18	0	281	0	149	22	0	0		
34	پورھوت کھیرا	Poorhewut Kherah, ..	425	456	9	26	1	408	12	44	0	0	0		
35	پہارپور	Puharpoor,	735	624	6	85	0	484	49	166	110	0	16		
36	{ پیگہ بھیکھم پور }	{ Paigah Bheekum-poor, }	500	481	6	68	0	378	29	295	24	0	11		
37	تتارپور	Tatarpoor,	251	345	6	61	0	175	103	66	0	0	0		
38	تودرپور	Todurpoor,	200	266	6	35	0	136	89	71	0	0	0		
39	تھریا	Thirreea,	385	517	6	68	0	338	105	180	26	0	3		
40	جرارہ	Jurarah,	275	275	6	35	2	232	0	215	12	0	5		
41	جگت پیپری	Jugutpeepree,	695	1220	6	178	0	756	280	319	55	102	20		
42	جلالپور	Julalpoor,	615	715	6	97	1	577	34	347	16	11	2		
43	جولہ پورہ	Joolahpoorah,	100	149	0	32	0	89	28	0	0	0	0		
44	جیت پور	Jaitpoor,	45	91	0	12	0	41	38	0	0	0	0		
45	چندپورہ	Chundpoorah,	510	677	6	87	1	443	140	434	11	30	0		
46	دبتورا	Dubtoura,	417	428	8	5	2	405	8	150	2	75	3		
47	دبتوری	Dubtowree,	900	852	6	20	3	823	0	400	98	6	24		
48	دبھورا	Dubthurah,	275	248	6	35	0	207	0	98	16	0	0		
49	دوسولی	Doosowlee,	600	556	6	6	4	540	0	294	94	7	18		
50	دولت پور	Dowlutpoor,†	485	552	6	55	1	474	16	163	67	38	14		
51	دونڈپور	Doondpoor,	500	568	6	34	1	527	0	204	100	10	19		
52	دھرم پور	Dhurumpoor,	555	683	6	78	1	530	68	402	34	0	0		
53	دھلواڑی	Dhilwaree,	675	706	6	100	0	561	39	293	117	0	7		
54	دھنون پورہ	Dhunoopoorah,	330	345	6	48	0	289	2	89	0	91	0		
55	رتن پور	Rutunpoor,	225	341	6	40	0	269	26	114	43	0	0		
56	ساھن پور	Sahunpoor,	510	545	6	65	1	370	103	388	72	19	37		
57	سجولی	Sijowlee,	558	586	6	40	1	539	0	305	35	14	14		
58	سرساوان	Sirsanwan,	1201	954	7	103	0	844	0	376	81	10	11		
59	سروا	Surwa,	459	801	10	16	0	493	282	358	21	0	0		
60	سعد اللہ نگر	Sadoollahnuggur, ..	400	411	6	57	1	277	70	128	41	5	5		
61	{ سگرام پور پٹی } { شہاب الدین }	{ Sugrampoor, Puttee Shahabodeen, }	213	186	2	11	0	173	0	22	37	271	86		
62	{ سگرام پور پٹی } { کرامت اللہ }	{ Sugrampoor, Puttee Kuramutoolah, }	267	234	2	16	1	215	0	0	0	0	0		
Carried over, ..			33324	35769	538	4071	90	28424	2646	14864	4135	1261	1356		

* The Jumma includes Rs. 43, assessed on 96 acres of maafee resumed subsequent to Settlement.

† Rs. 35 of Jumma on account of 65 acres of maafee resumed since Settlement.

REGISTER OF MOUZAHS IN PERGUNNAH BISOWLEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Assessment.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	33324	35769	538	4071	90	23424	2646	14864	4135	1261	1356
63	سگرام پور پٹی سالار بخش	Sugrampoor, Puttee Salar Buksh, ..	53	47	0	3	0	44	0	0	0	0	0
64	سگرام پور پٹی خیر الدین	Sugrampoor, Puttee Khair-ood-deen, ..	267	234	2	16	0	216	0	0	0	0	0
65	سلیم پور	Suleimpoor, ..	327	433	6	53	0	318	56	169	2	0	0
66	سہار سہا	Suhawursah, ..	1250	1149	12	90	1	1046	0	771	321	0	66
67	سیدولہ	Saidolah, ..	412	532	6	156	1	333	36	229	45	11	4
68	سیکرے	Seekree, ..	2721	2967	19	411	3	2087	447	1236	476	25	129
69	شیام پور	Sheampoor, ..	305	281	6	16	0	259	0	176	45	0	0
70	صنوبرہ	Utturpoorah, ..	508	621	6	47	3	484	81	392	22	4	0
71	فتح اللہ پور	Futehoolahpoor, ..	150	164	0	16	0	143	5	0	0	0	0
72	کالوپور	Kalooipoor, ..	241	274	6	18	0	250	0	224	3	11	0
73	کدھولے	Kadhowlee, ..	275	430	6	62	0	212	150	71	13	0	0
74	کیرکھری	Kurkheree, ..	700	747	6	47	5	689	0	550	95	26	14
75	کلراوالہ	Kulrawala, ..	550	623	6	81	0	344	192	315	13	31	2
76	کمال پور	Kumalpoor, ..	150	180	6	16	0	137	21	48	6	0	0
77	کھوانداندہ	Kooahdanda,† ..	334	369	37	46	0	261	25	155	26	0	0
78	کونری	Koonree, ..	150	167	0	15	0	152	0	0	0	0	0
79	کھجورہا	Khujjoreeah, ..	575	599	6	46	10	495	42	436	34	43	10
80	کیچک پور	Keechukpoor, ..	150	174	6	14	0	154	3	32	0	0	0
81	گویریاری	Goorearee, ..	353	493	6	52	1	426	13	207	39	0	4
82	گوکریا یعقوب پور	Goolreeah Yukoob-poor,† ..	800	947	37	158	0	620	132	542	123	36	10
83	گہورہ	Gahorah, ..	325	347	6	41	0	272	28	163	23	0	0
84	چھمین پور	Luchmeenpoor,§ ..	2002	2136	58	273	25	1480	300	567	479	328	114
85	لڈھیرا	Ludhaira, ..	275	192	6	44	6	136	0	215	27	0	0
86	للو نگلہ پٹی ہری سنگھ	Lulooah Nugla, Puttee Hurree Singh,|| ..	431	658	4	103	2	335	214	313	141	7	8
87	للو نگلہ پٹی ہیرا سنگھ	Lulooah Nugla, Puttee Heera Singh,¶ ..	144	220	2	35	0	112	71	0	0	0	0
88	لودہ پورہ پٹی (بشری سنگھ)	Lodpoorah, Puttee Earee Singh,**	90	97	0	0	0	97	0	0	0	0	0
89	لودہ پورہ پٹی مانکواہ	Lodpoorah, Puttee Mankooah, ..	90	96	0	0	0	96	0	0	0	0	0
		Carried over, ..	46952	50961	793	5940	147	39622	4462	21675	6068	1783	1717

* A market is held in this village every Tuesday.

† Jumma reduced to Rs. 334 from Rs. 370, by Mr. Commissioner F. H. Robinson, on 24th June 1844, on account of 31 acres of maafee having been at Settlement assessed as khalisah.

‡ Remarks same as for Kooahdanda, No. 77.

§ A market held in this village every Thursday.

|| Roobakree of partition, dated 10th August 1843.

¶ Population included in the above.

** Roobakree of partition, dated 19th April 1847.

REGISTER OF MOUZAHS IN PERGUNNAH BISOWLEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Assessment.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	46952	50961	793	5940	147	39622	4462	21675	6068	1783	1717
90	مان پور	Manpoor, ..	190	242	6	35	0	153	48	139	23	0	0
91	مبارک پور	Mubarikpoor, ..	240	234	6	26	0	201	1	96	3	0	0
92	محمک پور	Mohkumpoor, ..	427	446	6	52	0	388	0	245	102	4	8
93	محمد پور مہی	Mohumudpoor Maie,* ..	1200	1307	12	228	8	926	133	993	338	25	6
94	مدن جھوری	Mudunzhooree, ..	338	264	22	23	2	208	9	256	50	0	0
95	مطلب پور	Mutlabpoor, ..	70	92	0	18	0	54	20	0	0	0	0
96	معظم پور	Muazumpoor,† ..	547	645	28	27	1	575	14	258	163	76	10
97	منجد پور	Munjudpoor, ..	42	42	0	1	0	41	0	0	0	0	0
98	موسیٰ نگلہ	Moosaea Nugla, ..	900	702	105	15	1	581	0	511	274	59	55
99	مونڈیا	Moondeea, ..	1400	1368	26	226	0	985	131	768	1193	84	87
100	میٹھرا	Mythurra, ..	450	515	6	108	2	376	23	245	144	0	4
101	نجر	Nujra, ..	275	447	6	70	0	224	147	146	0	0	3
102	نور نوروے	Nurora Nuroree, ..	200	273	0	31	0	155	87	208	0	0	0
103	نصیر پور	Nuseerpoor, ..	220	245	0	15	0	230	0	0	0	0	0
104	نظام الدین پور سہا	Nizamooddeen Poor-sah, ..	840	895	19	106	4	766	0	594	326	8	51
105	نواب پور پچتور	Nuwappoor Puch-tour, ..	125	133	6	1	0	126	0	28	0	0	0
106	نوادہ	Nawuda, ..	190	267	12	38	0	132	85	102	0	0	0
107	نہدولی	Nahdolee, ..	301	420	6	57	0	195	162	190	0	8	0
108	ہاشم پور	Hashumpoor, ..	61	69	0	8	0	53	8	0	0	0	0
109	ہٹسہ	Hutsah, ..	716	725	60	46	0	617	2	620	67	8	0
110	ہٹورہ	Hutorah, ..	194	264	0	23	0	233	8	0	0	0	0
111	ہرداس پور	Hurdaspoor, ..	800	557	6	25	1	525	0	270	52	28	6
112	ہر راع پور	Hur Racepoor, ..	225	485	6	63	0	194	222	107	6	0	0
		Total, ..	56903	61598	1131	7182	166	47560	5565	27451	8809	2083	1947

BUDAON COLLECTOR'S OFFICE, 1851.

M. H. COURT,

Deputy Collector.

* A market held in this village every Tuesday.

† A market held in this village every Friday.

APPENDIX No. XXVII.

REGISTER OF MOUZAHS

IN

PERGUNNAH SUTASEE.

REGISTER OF MOUZAHS IN PERGUNNAH SUTASEE.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN AND OTHERS.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	آتور	Atwur,*	601	421	8	21	0	281	111	354	69	0	11
2	اگتھرا	Ugthurrah,	400	373	6	58	0	309	0	0	27	256	89
3	اگے	Agye,	760	902	6	193	1	671	31	397	35	25	12
4	الھوا	Alhooah,†	259	372	5	11	0	182	174	205	0	0	0
5	امرولی پٹی گنگارام	Umroulee, Puttee Gungaram,‡	185	191	3	13	0	175	0	146	2	0	0
6	امرولی پٹی فتنہ سنگھ	Umroulee, Puttee Futeh Singh,§	185	191	3	13	0	174	0	0	0	0	0
7	او دی پور	Oodeepoor,||	258	414	8	55	0	242	109	25	0	86	3
8	اورینہ	Oorainah,¶	1000	1499	8	187	4	1011	289	254	184	225	27
9	باکورپور	Bakurpoor,	500	488	6	2	6	474	0	319	32	0	7
10	باگورپور	Bagurpoor,	526	490	48	18	0	349	75	216	77	22	15
11	بورری امان اللہ پور	Burree Amanool-lahpoor, ..	1305	1636	19	35	0	1094	488	422	40	11	30
12	بوری پورہ	Burehpoorah, ..	625	671	6	86	1	442	136	434	101	11	9
13	بگریہ	Bugreir,**	1172	1514	13	101	0	879	521	766	239	102	97
14	بنکوتہ	Bankotah,††	2050	2187	13	396	20	1559	200	911	621	26	128
15	بھٹانی	Bhutane,	190	168	6	23	0	139	0	317	0	0	0
16	بھگوان پور	Bhugwanpoor,	125	206	0	27	0	91	88	0	0	0	0
17	بھوانی پور	Bhowaneepoor,	156	488	7	47	0	147	287	339	29	4	5
18	بھوانی گنج	Bhowaneegunge,	127	141	5	17	0	106	13	0	0	0	0
19	بھیکم پور	Bheekumpoor,	116	139	6	9	0	108	16	110	0	0	0
20	بیرم پور	Beerumpoor,	600	880	6	118	1	528	227	424	33	19	16
21	بیرولی	Beolee,	884	1190	6	184	4	691	305	572	55	15	10
22	پچتور	Puchtour,	253	274	6	40	2	218	8	151	17	13	6
23	پلھی پٹی فتنہ سنگھ	Pulhye, Puttee Futeh Singh,††	117	170	3	6	0	147	14	236	0	0	0
24	پلھی پٹی گنگارام	Pulhye, Puttee Gungaram,§§	116	121	5	1	0	111	4	0	0	0	0
25	پوس گنوان پٹی	Poosgunwan, Puttee Sectaram,|||	416	521	4	73	4	328	112	521	25	44	67
26	پوس گنوان پٹی	Poosgunwan, Puttee Narain Singh, ¶¶	416	521	2	74	4	329	112	0	0	0	0
27	پیپل	Peepul,	1818	2228	12	332	10	1302	572	745	254	48	6
28	تیکوری	Tikoree,	462	673	6	97	0	433	137	311	63	10	3
Carried over,			15622	19069	225	2237	57	12520	4029	8175	1903	917	541

* This estate was transferred from Pergunnah Aounlah, Zillah Bareilly, in 1844-5.

† Same remarks as for Atwur, No. 1.

‡ Divided under Regulation XIX. of 1814, 19th May 1838.

§ Population included in the above.

|| Vide remarks Atwur, No. 1.

¶ 675 acres of rent-free land resumed since Settlement, and assessed at Rs. 175, Jumma of Settlement 825.

** A market held in this village every Monday and Friday.

†† Jumma of Settlement Rs. 2,000; Rs. 50 since added on account of 94 acres of maafee subsequently resumed.

‡‡ This estate was divided into two, vide Roobakaree 14th May 1838.

§§ Population included in Puttee Futeh Singh.

||| This estate was divided into 2 equal shares, under Regulation XIX. of 1814, vide Roobakaree, dated 2nd September 1845.

¶¶ Population included in Puttee Secta Ram.

REGISTER OF MOUZAHS IN PERGUNNAH SUTASEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
Brought forward,			15622	19096	225	2237	57	12520	4029	8175	1903	917	54
29	جکولیا	Jukoleeah,	387	450	12	83	3	352	0	245	61	0	1
30	جمال پور	Jumalpoor,	125	153	6	20	0	126	1	58	0	0	0
31	چنچری	Chanjuree,	250	311	6	37	0	159	109	309	3	0	0
32	{ چھر جو پٹی نریت سنگھ .. }	{ Ch'hurjoo, Puttee Nirput Singh,* }	R. A. 31	4	40	1	4	0	30	5	45	0	7
33	{ چھر جو پٹی ناراین سنگھ .. }	{ Ch'hurjoo, Puttee Narain Singh,† }	31	4	40	2	4	0	29	5	0	0	0
34	{ چھر جو پٹی امید سنگھ .. }	{ Ch'hurjoo, Puttee Oomeid Singh,† }	31	4	41	2	4	0	29	6	0	0	0
35	{ چھر جو پٹی ہیرا سنگھ .. }	{ Ch'hurjoo, Puttee Heera Singh,† .. }	31	4	40	1	5	0	30	4	0	0	0
36	حسین پور نکلہ	Hoseinpoor Nagla, ..	350	380	6	7	0	355	12	88	0	0	0
37	خورم پور بھموری	{ Khoorumpoor Bhāmouree, ‡ .. }	2059	2347	25	287	6	1662	367	1160	431	41	22
38	دوگون	Dogaun,	223	304	6	20	1	252	25	119	0	72	28
39	دولت پور	Doulutpoor,	450	554	6	37	0	451	10	200	17	0	0
40	دھم پور	Dhimurpoor,	255	251	6	24	0	201	20	117	53	0	0
41	دھوریرہ	Dhourairah,	300	272	6	55	0	202	9	155	94	18	10
42	رام دندادی	Ramdandee,	150	287	0	33	0	145	109	59	21	17	5
43	روپ پور	Rooppoor,	375	428	6	57	3	269	93	192	90	0	0
44	روتھ چھپیتہ	Rotah Chuchetah, ..	1400	1717	163	228	3	988	330	712	290	9	35
45	{ دھریا پٹی فتح سنگھ	{ Rahrecah, Puttee Futeh Singh, § }	729	1384	6	108	0	1032	238	776	12	13	7
46	{ دھریا پٹی گنگارام	{ Rahrecah, Puttee Gunga Ram, || .. }	728	1055	8	115	0	828	104	0	0	0	0
47	سورری	Surree, ¶	100	366	182	18	0	130	36	124	23	0	0
48	سورریہ	Surroeah,	156	177	6	20	1	115	35	155	0	0	0
49	سنگتہ	Sungturah,	931	1177	6	211	3	775	182	604	69	43	20
50	سورسینان	Soorsainan,	514	686	6	57	1	535	87	250	85	23	13
51	سوهی	Sohee,	390	422	3	58	1	353	7	271	16	109	0
52	سہار کھیرہ	Sahawurkherah, ..	612	640	6	12	5	617	0	243	101	0	9
53	سہسیان	Sah'secan, **	300	913	483	46	0	289	95	381	50	92	9
54	سید پور	Sydpoor, ††	770	1082	31	295	6	720	30	354	220	721	839
55	سیدولی	Saidolee, ‡‡	130	512	256	36	0	187	33	112	70	44	5
Carried over, ..			27431	25125	1473	4168	90	23381	5981	14904	3609	2126	755

* This estate was divided into four equal shares, under Regulation XIX. of 1814, Roobakaree 18th April 1845.

† Population included in Puttee Nirput Singh.

‡ Jumma at Settlement Rs. 2,000; Rs. 50 since added, on account of 126 acres of rent-free land resumed.

§ This estate was divided into two Mouzahs, by orders dated 14th May 1838.

|| Population included in the above.

¶ Surree, until 1839, was held on a rent-free tenure when it was resumed; on appeal, tenure confirmed rent-free during life of Maafedars in 1843; half was finally resumed, the other half is in possession of surviving Maafedar.

** Same remarks as for Surree, No. 47.

†† Jumma of Settlement Rs. 600. Since Settlement, 341 acres of Maafee have been resumed, and assessed at Rs. 170.

‡‡ For remarks, vide Surree, No. 47.

REGISTER OF MOUZAHS IN PERGUNNAH SUTASEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	27431	25125	1473	4168	90	23381	5981	14904	3609	2126	755
56	شہ پورہ پٹی بخت سنگھ	Shupoorah, Puttee Bukht Singh,*..	R. A. 38 12	43	1	3	0	39	0	26	0	0	0
57	شہ پورہ پٹی پربت سنگھ	Shupoorah, Puttee Purbut Singh,†	38 12	43	4	1	0	38	0	0	0	0	0
58	شہ پورہ پٹی اردی سنگھ	Shupoorah, Puttee Oodeh Singh,†	38 12	43	0	2	0	41	0	0	0	0	0
59	شہ پورہ پٹی ہریرام	Shupoorah, Puttee Hurree Ram,†..	38 12	43	1	2	0	40	0	0	0	0	0
60	شیراندازپور	Sheerundazpoor, ..	259	493	6	138	0	171	178	0	0	59	0
61	طالبنگر	Talubnuggur, ..	225	343	6	30	0	153	154	130	0	0	19
62	کھادنگر	Kadirnuggur, ..	201	269	0	52	0	114	103	63	10	0	0
63	کتگانو	Kutgaon, ..	650	698	16	140	5	410	127	243	277	22	17
64	کرکت پور	Kurkutpoor, ..	675	927	6	149	2	679	91	277	108	12	31
65	کرگانو	Kurgaon, ..	275	435	6	85	0	256	88	137	6	0	0
66	کرینگی	Kur'engee,‡	440	578	16	40	0	304	218	143	0	16	0
67	کسیر	Kusair,§	1145	1398	18	75	0	812	493	528	4	0	0
68	کلیا قاسم پور	Kulleeah Kasimpoor,	550	663	6	130	0	525	2	353	207	7	21
69	کنجوا	Kunjooah, ..	150	232	17	16	0	168	31	101	0	0	3
70	کوٹراسولا	Kotrarusolah, ..	300	349	6	66	0	196	81	141	14	0	6
71	کوربی	Koorbee, ..	250	301	6	34	1	214	46	70	0	0	0
72	گرجیا	Gurgeeah, ..	400	589	6	121	2	310	150	272	77	22	0
73	گوٹہ مان مئی	Gotah Manmye, ..	1056	1253	12	235	5	895	106	676	438	73	54
74	گوٹھلا	Gothailah, ..	250	464	0	49	0	169	246	22	0	0	0
75	لکھن پورہ	Lukhunpoorah, ..	125	261	6	27	0	99	129	75	0	0	0
76	لہرا لادپور	Lehra Ladpoor, ..	700	1148	25	120	2	701	300	580	68	0	0
77	مانک پور	Manikpoor, ..	250	376	6	45	0	281	44	155	6	0	0
78	مکروند پور	Mukroondpoor, ..	300	331	6	31	1	293	0	102	43	0	5
79	منوہ	Munwah, ..	447	585	6	131	1	340	107	264	65	5	0
80	مونڈی	Moondeeah,||	725	906	6	18	0	423	459	264	65	5	0
81	مہیرا	M'herah, ..	190	218	6	25	0	187	0	113	32	0	0
82	میران پور	Meeranpoor, ..	260	370	6	59	0	250	55	219	13	0	0
83	میرپور	Meerpoor, ..	85	97	0	13	0	47	37	0	0	0	0
84	نڈواری	Nudwaree, ..	703	742	6	151	3	504	78	366	38	7	0
85	نظام پور	Nizampoor, ..	350	340	6	65	3	259	7	313	130	48	15
86	نگریا	Nugreeah, ..	250	221	3	28	0	135	55	141	41	0	6
		Carried over,	38797	39884	1682	6249	115	32334	9366	20678	5251	2402	932

* This estate was divided into four Mouzahs, by orders dated 29th July 1844.

† Population included in the above.

‡ Transferred in 1844-45, Pergunnah Aonlah, Zillah Bareilly.

§ Same remarks as for Kureengee, No. 66.

|| Vide Kureengee, No. 66.

REGISTER OF MOUZAHS IN PERGUNNAH SUTASEE—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	38797	39884	1682	6249	115	32334	9366	20678	5251	2402	932
87	نمٹھولی	Nimtholee, ..	150	215	6	28	0	147	34	87	12	0	0
88	نوادہ	Nuwadah,* ..	201	310	6	26	2	276	0	136	30	0	0
89	وڑنیر گنج وغیرہ	Wazeergunge, &c.,†..	1756	2502	6	412	8	1457	619	915	862	118	130
90	ہٹرا	Hutrah, ..	550	880	6	211	0	534	129	336	132	281	289
91	ہرناتھ پور پٹی بہاری لال	Hurnathpoor, Put- tee Beharee Lall,	300	208	4	22	0	178	4	180	33	7	0
92	ہرناتھ پور پٹی پرہیز سنگھ	Hurnathpoor, Put- tee Purbeen Singh,‡ ..	300	208	5	19	0	179	5	0	0	0	0
93	ہرناتھ پور نولی	Hurnathpoor Nowlee, ..	1241	1156	6	92	1	1041	16	373	174	49	11
		Total, ..	43295	55363	1721	7059	126	36146	10173	22705	6449	2857	1362

BUDAON COLLECTOR'S OFFICE,

19th July 1851.

M. H. COURT,

Deputy Collector.

* Jumma of Settlement Rs. 255, reduced to Rs. 201, by Mr. Officiating Commissioner F. H. Robinson, 1st February 1841.

† A market held in this village every Tuesday and Saturday.

‡ Population included in the above.

APPENDIX No. XXVIII.

REGISTER OF MOUZAHS

IN

PERGUNNAH KOTE SALBUHAN.

REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	آدھوپورہ	Adhoopoorah, ..	150	313	0	79	0	122	112	13	53	5	0
2	اکولی	Akoulee, ..	1130	1136	24	114	13	891	94	432	20	10	30
3	اگول	Agoul, ..	750	1369	50	146	5	593	575	204	40	7	0
4	انبیاپور	Anbecapoor,* ..	1050	801	9	58	0	665	69	258	531	11	16
5	انتا پور	Antaeppoor, ..	325	313	15	39	0	249	10	220	7	21	3
6	اوگھائی خوشحال پور پٹی	Ooghaitee Koshal-poor, Puttee Chundun Singh,	642	1096	19	137	6	824	110	1142	110	110	17
7	اوگھائی خوشحال پور پٹی	Ooghaitee Koshal-poor, Puttee Hurkarun Singh,†	573	1014	3	73	3	858	77	0	0	0	0
8	اولیا	Oolya, ..	773	764	5	92	3	631	33	353	112	23	0
9	اولیا	Ooya, ..	400	394	9	117	3	265	0	172	3	0	5
10	آئی پورا	Aeepura, ..	760	1034	13	236	4	616	165	481	148	71	31
11	ایمان سراے	Acema Saray,‡	65	119	0	5	0	86	28	55	5	0	0
12	بادشاہ پور	Badshahpoor, ..	270	255	47	4	0	204	0	90	0	0	0
13	بانس برولیا	Bans Burowleea, ..	1834	1499	34	67	7	1305	86	993	50	44	13
14	بٹھامی	Bithamaee, ..	701	890	15	107	21	706	41	686	111	16	29
15	بچھولا	Bichola, ..	397	334	12	27	4	273	18	98	1	4	0
16	بدرمی	Budromee, ..	585	803	12	84	0	569	138	373	74	5	12
17	برمی دھک پورہ	Burmeedhukpoorah, ..	700	1220	30	180	1	597	412	441	33	18	10
18	بروارہ	Barwarrah, ..	240	298	10	63	0	225	0	110	0	0	0
19	بلسی	Bilsee,§	900	594	13	102	48	400	31	1045	3436	137	538
20	بمہد	Bumhud, ..	975	854	13	90	1	691	59	384	15	21	5
21	بن بیتا	Bunbetah, ..	520	528	10	70	4	387	57	205	16	28	10
22	بھان پور فیروز پور	Bhannpoor Feroze poor, ..	1600	1863	18	194	8	1439	204	929	313	109	71
23	بھتری گوبند پور	Bhitree Gobur dhunpoor, ..	400	450	9	144	1	296	0	217	29	0	5
24	بھتہ جوی	Behtah Joee, ..	885	815	15	71	7	722	0	495	43	0	29
25	بھتہ گوشان	Behtah Goshacen,||	2308	1803	35	143	43	1569	13	1296	336	641	92
Carried over, ..			18923	17559	420	2438	182	15173	2332	10692	2386	1281	966

* A market is held in this village every Friday and Monday. † Population included in the above.

‡ This estate was held rent-free until 1841, when it was resumed by especial Deputy Collector.

§ Bilsee is the most important town, not only in the Pergunnah but in the District. It has a large bazaar; considerable trade is carried on with Chundowsee, Bareilly, Hattas, Cawnpore, and Futteghurh.

|| DISTINCT.

At the time of Settlement, engagements were taken from three persons, and the cultivated Area allotted as follows:—

NAME OF PUTTEE.	Jumma.	Cultivated Area.
Puttee Goshacen, ..	Rs. 1000	695
Puttee Jalleet, ..	640	500
Puttee Musoodae, ..	690	481
Musoodae resumed since Settlement, ..	8	6
Total, ..	2308	1619

A market is held in the village every Tuesday.

REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
										Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-Cultivators.	Cultivators.	Non-Cultivators.
		Brought forward,	18922	17559	420	2438	182	15173	2332	10692	2386	1281	966
26	بھرمائی بزرگ	Buhurmace Bu-zoorg, ..	1050	966	13	69	5	837	42	580	78	51	0
27	بھرمائی خورہ	Buhurmace Khoord, ..	520	500	43	29	2	388	38	343	128	0	12
28	بھولیا سدپور	Bhileela Sidpoor, ..	350	320	11	36	1	240	32	184	19	0	3
29	بین پٹی کھیم کون	Ben, Puttee Khaim Kurun, ..	420	373	4	48	0	321	0	553	32	21	0
30	پٹی مسرے اے اور جے ڈانڈ کی	Puttee of Messrs. A. & J. Donald,*	400	375	4	52	0	319	0	0	0	0	0
31	پٹھک پور	Pathukpoor, ..	120	325	0	83	0	78	164	49	0	11	0
32	پال پور	Pallpoor, ..	150	228	7	13	2	195	11	161	12	0	0
33	پورولی	Purwlee,†	3000	3302	95	343	8	2324	532	1433	634	219	128
34	پسگران	Pusgawan, ..	1962	2463	210	456	0	1790	7	617	107	76	66
35	پلیا	Pullea, ..	260	272	10	17	3	220	22	120	8	8	0
36	پندول فیروز آباد	Pindoul Ferozabad, ..	1100	1304	11	117	13	959	204	542	177	80	21
37	پہار پور	Puharpoor, ..	800	975	8	196	4	710	57	326	20	8	0
38	تاراپور	Tarapoor, ..	538	764	19	261	0	441	43	289	16	27	13
39	تکولی	Tutoulee,‡	250	244	8	59	0	177	0	159	35	0	0
40	جراوان	Jurawan, ..	380	397	14	40	0	242	101	218	10	0	0
41	جرسینی	Jursenee, ..	640	583	13	62	8	475	25	358	120	0	28
42	جسرتھ پور	Jusruthpoor, ..	170	151	6	16	0	124	5	146	7	0	4
43	جنورہ سدورہ	Jinourah Sidourah, ..	1185	1269	20	157	0	786	306	709	3	56	3
44	جہان آباد	Jehanabad, ..	220	210	9	25	1	175	0	31	0	0	0
45	چھولین	Choulain, ..	260	267	8	20	0	239	0	33	0	0	0
46	حسین پور	Hoseirpoor, ..	290	382	12	41	0	256	73	162	62	0	1
47	حیدر پور	Hydurpoor, ..	380	419	8	46	2	318	45	123	12	0	5
48	خیراتی نگر	Khvrateenuggur, ..	220	266	0	10	0	243	13	1	0	0	0
49	دبھاری	Dubharee, ..	1180	1149	13	98	0	952	86	684	185	0	0
50	دودھوئی	Doodhownee, ..	1950	1681	58	206	9	1299	109	671	312	13	58
51	دھدومر	Dhudoomur, ..	500	516	12	47	0	369	88	387	0	23	3
52	دھیرا	Dhurairah, ..	470	486	16	136	1	333	0	207	10	0	0
53	دھمولی	Dhumowlee, ..	600	568	12	70	2	421	63	274	58	0	9
54	دین نگر	Deennuggur Sheikpoor, ..	1250	1150	17	108	2	953	70	564	97	4	5
55	راج برولیا	Raj Burowleea, ..	335	416	13	57	0	275	71	332	59	0	8
56	راجپور	Rajpoor, ..	440	427	13	63	0	339	10	216	0	0	0
57	رام پور تاندہ	Rampoor Tandah, ..	500	578	15	72	0	460	31	314	10	0	5
58	رانہت گوبند پور	Ranhut Gobind-poor, ..	400	556	11	73	0	328	144	200	48	0	0
59	راے پور بزرگ	Racepoor Buzoorg, ..	800	697	10	84	6	502	95	400	14	0	0
Carried over, ..			41952	42037	1143	4628	251	33460	4709	22078	4659	1678	1238

* Population included in the above.

† A market is held in this village every Saturday.

‡ Vide Appendix No. 1.

REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN—(continued.)

Number in Pergunnah.	Name of Mouzah in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	41952	42037	1143	4628	251	33460	4709	22078	4659	1678	1238
60	راے پور مزرعہ	Raeepoor Muzrah, ..	255	238	5	3	0	230	0	53	0	0	0
61	{ رتن پور راے پور } { خور د برنی گھاٹ }	Ratunpoor Raeepoor, Khoord Burnee Ghat, ..	750	1040	34	237	2	623	144	626	116	5	22
62	{ .. رسولی } { .. بھیلو لگانگر } { .. سمو پورا } { .. فریدی }	Rusowlee, * Bhyleeuanuggur, .. Sumoopra, Furedee,	3370	3866	87	446	18	2759	556	2906	195	48	64
63	رفت پور بنجرا	Rufaatpoor Bunjra, ..	290	790	6	132	0	204	448	343	8	0	7
64	روان	Rowan,	425	804	10	98	1	362	333	128	0	6	0
65	{ روناہیں پٹی دلائی }	Reonaeen, Puttee Delace,	1710	2197	53	289	0	1391	464	1051	224	7	38
66	{ روناہیں پٹی کندن }	Reonaeen, Puttee Kundun,	442	701	38	57	0	269	337	274	17	27	0
67	{ ستیتی پٹی انچھا }	Sutetee, Puttee Incha,	640	569	8	23	0	532	6	195	125	0	0
68	{ ستیتی پٹی چورا }	Sutetee, Puttee Choorah,	680	827	12	237	0	543	35	445	150	25	0
69	{ ستیتی پٹی سکل }	Sutetee, Puttee Sookal,	580	667	13	89	0	495	70	158	50	0	0
70	{ ستیتی پٹی گجا }	Sutetee, Puttee Guja Gungapoor, ..	1380	1569	15	241	2	1254	57	661	320	0	42
71	{ سدہ پور چترسین }	Saidhpoor Chittur Sein,	965	989	12	128	10	769	70	486	121	60	16
72	{ سدہ پور گھٹولی }	Sidhpoor Ghutolee, ..	500	649	14	55	3	543	34	291	100	5	17
73	{ سراسول پٹی انسا }	Sirasowl, Puttee Insa,	1060	1154	40	152	2	812	148	614	497	8	84
74	{ سراسول پٹی سیتارام }	Sirasowl, Puttee Seetaram, ..	850	964	42	87	1	644	190	555	120	94	82
		Carried over, ..	55849	59061	1532	6902	290	44890	7601	30864	6702	1963	1610

* At time of Settlement engagements were taken Putteeswar. The Cultivated Area of each Puttee was also specified, being as follows :-

NAME OF PUTTEE.	Jumma.	Cultivated Area.
Puttee Mohun, ..	Rs. 770	702
Puttee Niloo, ..	850	630
Puttee Sibha, ..	200	191
Puttee Bujha, ..	280	222
Puttee Runna, ..	450	306
Puttee Bhilolee, ..	280	224
Puttee Furedee, ..	340	284
Puttee Sumoopra, ..	200	158
Total, ..	3370	2777

REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable and barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	55849	59061	1532	6902	290	44890	7601	30864	6702	1963	1610
75	{ سراسول پٹی } { کوہر سہاے }	Sirasowl, Puttee Kohur Sahaie, ..	560	582	77	100	0	375	30	209	178	22	67
76	سراے جسو	Suray Jussow,	160	149	6	10	0	133	0	60	0	0	0
77	سراے سانول	Suray Sanwal,	900	890	9	118	0	545	218	455	72	12	22
78	سرتول سرتوپ پور	Sartoul Suroopoor, ..	1580	2297	37	290	11	1162	797	1302	224	29	68
79	{ پٹی شیخ ایمون }	Puttee Sheik Aemun, ..	149	142	3	26	0	103	10	508	18	82	9
80	{ پٹی عنایت حسین }	Puttee Inayet Hoossain, ..	227	211	5	18	0	183	5	(a)0	0	0	0
81	{ پٹی محمد افضل }	Puttee Mohamed Afzul,	175	169	4	11	0	147	7	(a)0	0	0	0
82	{ پٹی کریم الدین }	Puttee Kurreemood-deen,	149	136	3	3	0	120	10	(a)0	0	0	0
83	سراہا برگوتی	Surha Burgoutee, ..	1100	1782	33	328	2	877	542	755	313	96	20
84	سمرا بھوپور	Sumra Bhojpoor, ..	715	704	14	24	0	569	97	367	50	10	4
85	سندرنگر	Soondarnuggur, ..	300	682	9	84	3	586	0	197	10	0	0
86	سورج پور	Soorujpoor,	275	290	6	46	1	237	0	157	46	0	13
87	سہسپور	Suhuspoor,	700	650	9	115	4	522	0	293	10	24	0
88	سیتاپور	Sectapoor,	80	121	0	15	0	82	24	0	0	0	0
89	شراہا بھولیکا	Shurah Burowleca, *	1400	1772	24	610	3	1002	133	996	362	32	60
90	شہباز پور	Shahbazpoor,	250	370	7	72	0	206	89	327	8	4	0
91	شہزاد نگر	Shahzadnuggur, ..	901	675	23	254	81	317	0	752	263	99	0
92	شیخوپورہ	Sheikhpoora,	1446	1874	40	266	2	1251	315	976	22	20	10
93	صدر پور	Sudurpoor,	185	230	6	48	0	150	26	91	6	0	0
94	عالم پور	Aalumpoor,	350	419	18	31	5	325	40	176	15	6	0
95	علی پورہ	Alleepoor,	70	107	9	0	0	87	11	0	0	0	0
96	{ فتح پور بیرم پور }	Futehpoor Bce-rumpoor, † ..	450	708	10	96	3	385	214	221	52	43	215
97	{ فتح نگلہ }	Futeh Nigla,	150	256	7	22	0	188	39	259	5	0	0
98	{ فقیر آباد }	Faqueerabad,	0	482	482	0	0	0	0	87	8	0	2
99	{ کٹکھر }	Kuthghur,	130	155	0	10	0	128	17	0	0	0	0
100	{ کرن پور پیپری }	Kurunpoor Peepree, ..	1100	1535	46	532	0	811	146	685	64	0	0
101	{ کلیان پور }	Kulecanpoor,	396	608	10	107	0	288	203	151	7	9	0
102	{ کنگاون }	Kungawan,	650	917	24	403	0	460	30	477	89	0	16
103	{ کڈوری مزرعہ سراے }	Koonwaree, Muzrah Suray, † ..	206	474	8	69	0	87	310	200	60	0	29
104	{ کوتہ سالباہن پٹی }	Kote Salbhan,	410	497	13	99	0	375	10	346	77	25	35
		Carried over, ..	71515	78945	2474	10709	405	56591	10920	40911	8661	2476	2180

(a) Population included in the above.

* A market is held in this village every Thursday.

† Vide Appendix No. 2.

‡ A market is held in this village every Saturday.

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REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable and barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	71515	78945	2474	10709	405	56591	10920	40911	8661	2476	2180
105	کوت سالباھن پٹی کنچل سنگھ	Kote Salbahan, Puttee Koongul Singh, ..	409	498	0	90	0	388	20	(a)0	0	0	0
106	کودرنی پٹی دیلی سنگھ	Kodurnee, Puttee Debee Singh, ..	140	225	5	23	0	144	53	92	13	0	0
107	کودرنی پٹی سیوا سنگھ	Kodurnee, Puttee Sewa Singh, ..	70	111	2	2	0	72	35	(a)0	0	0	0
108	کودرنی پٹی گنپت سنگھ	Kodurnee, Puttee Gunput Singh, ..	70	114	1	15	0	73	25	(a)0	0	0	0
	کھتورا	Khitoura, ..											
	بالا کیشنپور	Bala Kishunpoor, ..											
	بوریا	Booreea, ..											
109	طالبنگر	Talibnuggur, ..	2250	3292	69	537	14	1700	972	2092	331	82	89
	ملولی	Mailolee, ..											
	نگلا بودہ	Nugla Bodeh, ..											
	ہیمنگر	Hemnuggur, ..											
110	کھندھوا	Khundhooah, ..	2428	3844	55	1467	29	1821	472	1450	576	114	55
111	کھولھٹ	Khoolhut, ..	492	475	6	40	0	325	104	113	0	90	4
112	کھونسارہ	Khonsarah, ..	445	452	12	40	1	359	40	348	20	14	0
113	کھیرہ	Khairah, ..	1150	1145	13	527	0	605	0	562	82	0	32
114	کھیری سموتی	Khairree Symoece, ..	1100	1643	13	166	0	793	671	571	82	519	105
115	گدرپورا	Gadurpoora, ..	225	230	7	28	0	185	10	80	0	0	0
116	گدگانوں	Gudgaon, ..	525	567	14	50	0	470	33	230	10	0	2
117	گڈھی	Gurhee, ..	1070	1524	19	199	0	923	383	582	0	58	0
118	گندولی	Gundoulee, ..	800	686	12	77	5	577	15	291	22	0	40
119	گودھنی کوسانا رسولپور	Goodhnee, .. Koosana, .. Russoolpoor, ..	1850	2229	45	153	0	1970	61	878	19	121	5
120	گھگوسی ردینا	Ghugosee Rodainah, ..	915	1034	20	97	2	709	206	763	13	19	1
121	گھنسوئی	Ghunsolee, ..	640	594	16	111	0	467	0	432	239	26	12
122	لوٹھر	Lothur, ..	300	339	13	48	1	277	0	211	19	0	0
123	محدودہ	Mahadoodah, ..	80	370	6	44	0	77	243	40	70	0	0
124	محمد گنج پٹی شب سہا	Mohamed Gunge, Puttee Shibsahae, ..	420	406	16	26	0	350	14	148	46	0	0
125	محمد گنج پٹی لچھمن پشاد	Puttee Luchmun- persaud, ..	140	134	9	5	0	120	(a)0	0	0	0	0
126	موسی پور	Mooseepoor, ..	550	573	11	108	0	328	126	299	10	0	0
127	مہانگر	Mahanuggur,†	185	200	10	20	1	149	20	302	9	0	0
		Carried over,	87769	99630	2848	14582	458	69473	14423	50395	10222	3519	2525

(a) Population included in the above.

* At time of Settlement 10 biswahs, bearing a demand of Rs. 440, were settled with Goolab Singh; the remainder on a demand of Rs. 630, with Moolakee Singh and others.

† Mahanuggur was, until 18—, included in Oojhaitee Koshalpoor, Nos. 6 and 7, when it was separated under provisions of Regulation XIX. of 1814.

REGISTER OF MOUZAHS IN PERGUNNAH KOTE SALBUHAN—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable and barren.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	87769	99630	2848	14582	458	69473	14423	50395	10222	3519	2525
128	میوولی	Meeawulee, ..	565	713	13	36	0	608	56	900	89	21	24
129	ناگ پور نورپور	Nagpoor Noorpoor, ..	1170	1212	32	107	4	988	81	975	31	87	6
130	ناگر جھونہ	Nagur Jhonah, ..	650	775	11	117	2	439	206	481	20	1	39
131	نائی بدڑی	Nae Budree, ..	785	612	16	35	3	494	64	265	81	16	0
132	نیہرا سرور پور پتی درجن سنگھ	Nibherah Survar- poor, Puttee Doorjun Sing, ..	225	254	7	31	0	210	6	273	39	0	4
133	نیہرا سرور پور پتی مہیم سنگھ	Nibherah Survar- poor, Puttee Mu- heem Sing, ..	225	257	3	24	0	214	16	(a)0	0	0	0
134	نرینی سنگ رام پور	Nurenee Sangram- poor, ..	200	313	6	39	0	185	83	52	10	0	0
135	نظام پور	Nizampoor, ..	500	530	72	35	3	348	72	218	16	0	7
136	نگلا تراؤ	Nugla Turao, ..	801	761	14	115	4	477	151	295	79	16	13
137	نگلا دلڑ	Nugla Daloo, ..	650	687	11	93	10	403	170	462	0	34	0
138	نوندپور	Nowindpoor, ..	110	115	3	5	0	107	0	0	0	0	0
139	ہرداس پور	Hurdaspoor, ..	150	177	8	22	0	103	44	50	3	0	0
140	ہرگن پور	Hurgunpoor, ..	1041	1494	15	243	5	823	408	515	6	5	2
141	ہیبت پور کٹینان	Hybutpoor Katinan, ..	1606	1826	30	289	14	1328	165	1414	43	40	75
		Total, ..	96447	109356	3089	15773	503	76200	15945	56295	10639	3739	2695

(a) Population included in the above.

APPENDIX.

No. 1.—The Settlement of Tutowlee was made on the area, as shown in the Register. The Khusreh as well as the Professional Survey Returns, show an area as follows:—

Total.	Rent-free.	Barren.	Cultivated.	Culturable.
339	8	10	290	31

No. 3.—FUTTEHPOOR BEERUMPOOR.—The total area of this Mouzah amounts to 989 acres. The Settlement appears to have been made on the cultivated area of both holdings; but in the total and barren headings the area of the dakhila Mouzah Beerumpoor was omitted. The area of the village, by the Putwaree's papers of 1258 Fuslee, is as follows:—

Total.	Rent-free.	Barren.	Cultivated.	Culturable.
989	10	205	606	168

M. H. COURT,
Deputy Collector.

APPENDIX No. XXIX.

REGISTER OF MOUZAHS

IN

PERGUNNAH SAHESWAN.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	ابراهيم پور فيض كنڊ	Ibrahimpoor Fyzgunj, ..	70	606	0	79	0	69	458	0	0	0	0
2	ابراهيم پور گدھي	Ibrahimpoor Gurhee, ..	311	768	8	167	0	301	292	167	0	0	10
3	ابونگر	Aboonuggur, ..	388	404	43	122	2	208	29	152	34	20	0
4	ابھن پور	Abhunpoor, ..	600	675	192	110	5	291	77	102	1	286	21
5	اکتروہ	Atkonah, ..	275	536	19	57	3	324	133	312	66	10	0
6	احمد پور بیلہ	Ahmudpoor Belah, ..	130	299	0	138	0	86	75	0	0	0	0
7	احمد نگر رسولی	Ahmudnuggur Russowlee, ..	1205	1750	30	150	37	1135	398	483	47	250	30
8	ادم پور	Adumpoor, ..	225	392	12	228	0	152	0	94	0	0	0
9	اسلور	Aslor, ..	225	386	6	219	0	163	0	329	9	0	14
10	اسمعیل پور الہ پور	Ismaeelpoor Alleepoor, ..	175	435	66	156	0	112	101	0	0	99	0
11	اسمعیل پور غوث پور	Ismaeelpoor Ghouspoor, ..	67	155	6	24	0	74	51	63	0	0	4
21	اسمعیل پور کوترا	Ismaeelpoor Kotra, ..	205	251	7	43	31	133	37	32	5	0	0
13	اسمعیل پور ممری	Ismaeelpoor Memree, ..	420	575	12	25	8	377	153	241	6	55	18
14	افضل پور چکن پور	Afzulpoor Chugunpoor, ..	215	344	23	13	0	236	72	177	11	139	0
15	افضل پور کوکنا	Afzulpoor Kookunee, ..	61	241	1	25	0	114	101	0	0	0	0
16	افضل پور گوڈائی	Afzulpoor Goudaitee, ..	145	515	19	142	0	123	231	102	0	0	6
17	اکبر آباد	Akburabad,†	146	340	110	49	0	101	80	386	1205	6	45
18	الہ داد پور بھور	Allahdadpoor Bhoor, ..	32	226	0	58	0	63	105	5	0	0	0
19	الہ داد پور دوپے	Allahdadpoor Doobay, ..	1062	607	23	27	0	520	37	480	30	18	21
20	انبیا پور	Anbeahpoor, ..	150	478	7	75	0	116	280	122	0	0	0
21	انتور	Antur, ..	735	644	8	126	0	377	133	456	191	71	25
22	انندی پور	Anundepoor,†	150	250	16	33	0	161	50	172	49	65	40
23	اور	Aor,§	120	770	0	676	0	94	0	0	0	0	0
24	اورنگ آباد بھور	Aurangabad Bhoor, ..	95	325	6	64	0	138	117	93	0	0	0
25	اورنگ آباد جامنی	Aurangabad Jamine,||	125	543	0	26	0	94	403	130	16	10	1
26	بادالہ کنڊ	Badoollagunj, ..	290	281	0	18	0	185	78	0	0	0	0
	Carried over, ..		7622	12798	614	2850	86	5747	3491	4098	1670	1023	235

* Vide Appendix No. 1.

† Akburabad forms a portion of the town of Saheswan; is chiefly inhabited by Kayeths, who have established 3 Persian Schools in their mohallah.

‡ Anundepoor was held rent-free until 1840, when it was resumed by the Special Deputy Collector. Roobakaree of Settlement, dated 27th October 1843.

§ Returns of a revision of Settlement made subsequent to general revision, on account of diluvion.

|| Settlement revised in 1845 in consequence of diluvion.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	7622	12798	614	2850	86	5747	3491	4098	1670	1023	235
27	بازپور	Bazpoor, ..	623	704	40	88	0	292	284	167	8	370	17
28	بازیدپور	Bazeedpoor,*	1060	589	14	52	0	430	93	260	32	64	51
29	باگ پور ساگر پور	Bagurpoor Sagarpoor, ..	225	402	4	28	7	139	224	166	68	0	0
30	بٹوروکا	Buturooca, ..	278	376	54	5	0	193	124	93	66	5	0
31	بچولا	Bicholah, ..	100	407	0	50	0	76	281	0	0	0	0
32	بدھولی شاکر پور	Budhowlee Shakerpoor, ..	200	766	207	276	0	42	241	206	0	0	0
33	بدیرہ	Budereea, ..	453	682	6	335	0	249	92	227	58	0	10
34	بیرتھلا نیمری	Birtulah Nemree, ..	490	755	34	89	0	320	322	130	9	8	0
35	بساونت پور	Busawuntpoor, ..	200	300	7	3	0	94	196	86	8	0	0
36	بستوکیا	Bustoocea, ..	356	455	5	36	0	309	105	39	0	0	0
37	بستوئی سیکری	Bustoe Seekree, ..	580	884	6	100	0	428	350	407	81	0	39
38	بکسر	Buksur, ..	400	1040	500	30	0	155	353	173	0	38	0
39	بونسور پور	Bunsoorpoor, ..	54	186	6	12	0	98	70	69	0	0	0
40	بھابرو بھوکھرا لکھن پور	Bhabroo, Bhukera Luchmepoor, ..	205	630	0	111	0	223	296	28	0	0	0
41	بھابھل پور	Bhaebulpoor, ..	110	590	6	95	0	164	325	0	0	0	0
42	بھگتا نگلہ سورجی	Bhugta, Nigla Soorjee, ..	100	308	6	52	0	98	152	108	5	15	0
43	بھگت پور	Bhugtpoor, ..	168	732	107	179	0	257	189	132	8	0	0
44	بھمورا	Bhumoura, ..	250	244	7	17	7	167	46	108	7	0	0
45	بھمورہ	Bhumoree, ..	527	963	16	283	3	524	137	392	0	0	22
46	بھوانی پور خرد	Bhowanepoor Khairoo, ..	477	280	9	2	1	262	6	109	0	425	0
47	بھوانی پور سراے	Bhowanepoor Seray, ..	100	266	4	35	0	39	188	58	0	0	0
48	بھوانی پور کلی	Bhowanepoor Kullee,†	526	293	15	10	0	257	11	106	4	526	10
49	بھوج پور جامنی	Bhojepoor Jamunee, ..	150	268	6	28	4	106	124	151	0	0	0
50	بھوج پورہ پواری	Bhojopoorah Puwaree, ..	105	305	6	31	0	163	103	79	0	0	0
51	بھور کٹورا	Bhoor Kitorah, ..	290	710	6	118	0	215	371	284	1	0	0
52	بھوگا جیت نگر یا	Bhogah Jitnugureea, ..	495	601	5	84	5	345	162	203	0	164	0
53	بھوکس	Bhooes, ..	1002	742	11	61	53	586	31	526	13	0	66
54	بھید پور	Bheidpoor, ..	80	208	6	28	0	46	128	71	0	0	0
55	بھیکم پور جامنی	Bheekm poor Jamunee, ..	225	622	5	486	0	131	0	17	0	47	0
	Carried over, ..		17451	28106	1712	5574	166	12155	8499	8493	2038	2685	450

* A market is held in this village every Sunday.

† A market is held in this village every Friday.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	17451	28106	1712	5574	166	12155	8499	8493	2038	2685	450
56	بهیم پور ہردو پٹی	Bheekumpoor, Hurdo Puttee,	326	731	50	20	3	263	385	212	25	41	0
57	بهیم پور دوس پور پٹی دیارام	Bheempoor, Dostpoor, Puttee Dayah Ram,*	Rs.A. 237 8	238	10	13	8	160	47	183	27	5	9
58	بهیم پور دوس پور پٹی کلیان سنگھ	Bheempoor, Dostpoor, Puttee Kullec-an Singh,*	237 8	238	9	13	8	161	47	(a)0	0	0	0
59	بی بی پور	Beebeepoor,	90	165	23	0	0	86	56	0	0	0	0
60	بیر پور مانپور سوہن گولی ملک پور	Bairpoor, Manpoor, Sohngolee, Mulikpoor, ..	1125	1032	15	494	6	517	0	478	50	13	8
61	بے سوئیا	Baisoea, ..	160	263	0	55	0	155	53	0	0	0	0
62	پابید	Pabed, ..	140	918	0	815	0	103	0	105	3	0	0
63	پاتھر چوہ	Pathur Choea,†	287	660	18	172	0	208	277	143	6	52	0
64	پال پور	Pallpoor, ..	258	560	296	24	4	141	95	184	84	0	1
65	پدھریہ	Pedhairee,†	500	231	11	4	0	211	5	434	0	21	0
66	پربت پور	Purbutpoor, ..	425	517	7	77	0	239	194	129	3	0	0
67	پرسونہ	Pursonah, ..	312	890	8	267	9	230	376	134	9	0	0
68	پرمون	Purmoon, ..	510	580	3	86	5	283	198	353	135	4	6
69	پیاری پور نعمت پور پٹی امام خان	Peeareepoor, Nuhamutpoor, Puttee Imam Khan,§	Rs.A. 27 8	93	0	1	0	54	38	0	0	0	0
70	پیاری پور نعمت پور پٹی سعادت خان	Peeareepoor, Nuhamutpoor, Puttee Saha-dut Khan, ..	55 0	187	0	1	0	104	82	0	0	0	0
71	پیاری پور نعمت پور پٹی عزت خان	Peeareepoor, Nuhamutpoor, Puttee Izzut Khan, ..	27 8	94	0	1	0	51	42	0	0	0	0
72	پیر بہادر	Peer Bahadoor, ..	400	407	10	68	9	223	97	233	128	24	6
73	تربچہ	Turechah, ..	150	358	15	33	0	115	195	162	0	0	20
74	تجورہ یسٹ پور	Tijorah Eesa-poor, ..	90	271	0	19	0	45	207	18	0	0	0
75	تھرا	Tighra, ..	140	402	58	59	0	166	119	177	20	10	4
76	تھانپور	Thanpoor, ..	101	337	6	102	0	126	103	88	0	0	0
77	تھیرا	Therah, ..	204	974	8	169	0	217	580	177	0	0	0
		Carried over, ..	23254	38252	2264	8067	218	16008	11695	11703	2533	2855	504

* Butwara effected 1843, vide Roobakaree 19th August 1843.

(a) Population included in the above.

† Vide Appendix No. 1.

‡ Vide Appendix No. 1.

§ Partition of this estate effected under provisions of Regulation XIX. of 1814, vide Roobakaree, 9th October 1847.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	23254	38252	2264	8067	218	16008	11695	11703	2533	2855	504
78	جامنی	Jaminee,*	166	293	8	46	0	110	129	11	0	0	0
79	جٹکی	Jitkee, ..	593	835	40	138	8	457	192	100	30	66	0
80	ججاعت	Jijahut, ..	220	684	9	5	1	292	377	221	0	8	0
81	جرارہ	Jurara, ..	205	898	8	182	0	220	488	69	0	0	0
82	جریٹھہ	Juraitah, ..	216	465	75	37	3	143	207	51	0	80	0
83	جلال پور بھریس	Julalpoor, Bhoes,	450	403	8	41	13	228	113	294	39	68	25
84	جمال پور پیری پٹی ظہور علی	Jumalpoor Pee-ree, Puttee Zahoor Alea, ..	192	147	7	4	0	112	24	0	0	0	0
85	جمال پور پیری پٹی کریم بخش	Jumalpoor Pee-ree, Puttee Kureembux, ..	192	147	7	5	0	106	29	0	0	0	0
86	جنید پور	Junaidpoor, ..	26	243	154	11	0	30	48	0	0	0	0
87	جونیرا	Junaira, ..	200	661	6	359	0	145	151	4	0	130	0
88	جہانگیر آباد	Jahangeerabad,†	0	92	92	0	0	0	442	543	8	73	0
89	چروارہ	Chirwarah, ..	550	728	9	231	0	270	218	266	72	18	0
90	چرواری	Chirwaree, ..	310	361	4	50	7	175	125	190	60	0	0
91	چند پورہ	Chundpoora, ..	65	300	0	151	0	48	101	41	0	0	0
92	چندن پور	Chundunpoor, ..	340	244	19	27	0	153	46	166	10	0	13
93	چندیسہ	Chundesee, ..	100	315	11	37	0	129	138	123	3	0	0
94	چوگان پور پٹی راجا رام	Chouganpoor, Puttee Rajah Ram, ..	25	48	0	1	0	31	16	0	0	0	0
95	چوگان پور پٹی کھمان سنگھ	Chouganpoor, Puttee Khoo-man Singh, ..	25	48	0	10	0	23	15	0	0	0	0
96	چوگان پور پٹی کیرج سنگھ	Chouganpoor, Puttee Keernj Singh, ..	25	48	0	0	0	23	25	0	0	0	0
97	چوگان پور پٹی کربن دھن سنگھ	Chouganpoor, Puttee Gobur-dhun Singh, ..	25	48	0	1	0	25	22	0	0	0	0
98	چوگان پور پٹی میگھ سنگھ	Chouganpoor, Puttee Megh Singh, ..	25	48	0	0	0	26	22	0	0	0	0
99	چوگان پور پٹی ہمت سنگھ	Chouganpoor, Puttee Himut-Singh, ..	25	48	0	11	0	24	13	0	0	0	0
100	چوہانپور	Chouhanpoor,‡	115	512	218	84	0	68	142	66	0	0	0
101	چھونکر پور	Ch'hounkurpoor,	125	355	8	124	0	113	110	100	0	0	0
		Carried over, ..	27469	46223	2946	9622	250	18959	14446	13847	3290	3233	615

* Jumma reduced from 285 to 166 Rs., on account of deterioration by river, vide Roobakaree.

† Released in perpetuity by Special Commissioner. Rent-free tenure confirmed by Government order No. 4154, dated 4th August 1848.

‡ Vide Appendix No. 1.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	27469	46223	2946	9622	250	18959	14446	13847	3290	3233	615
102	حسن پور	Husunpoor, ..	150	423	17	42	0	138	176	134	0	0	9
103	حسن پور بھوئیس پتی انت رام	Husunpoor Bhoes, Puttee Ant Ram, ..	Rs. A. 374 8	225	5	14	0	192	14	298	47	11	10
104	حسن پور بھوئیس پتی اندر سنگھ	Husunpoor Bhoes, Puttee Indur Singh, ..	374 8	220	5	7	0	182	26	(a)0	0	0	0
105	حسوا نگہ	Husooah Nugla, ..	143	423	5	4	0	184	230	78	0	0	0
106	حسوپور بھوپیا	Husooipoor, Baheirca, ..	205	632	16	51	0	279	286	115	0	0	0
107	حسین پور جریٹھ	Huseinpoor, Jaraitah, ..	200	387	0	207	0	138	42	0	0	0	0
108	خندق	Khunduk, ..	Rs. A. 791	1435	198	299	0	537	401	240	2	13	0
109	خنوا نگہ پتی پرنھی	Khunooah Nugla, Puttee Pirthee, ..	250 8	333	5	23	0	200	105	307	2	11	1
110	خنوا نگہ پتی رام کشن	Khunooah Nugla, Puttee Ramkishun, ..	250 8	339	6	25	0	226	82	(a)0	0	0	0
111	خیرپور پتی خیراتی	Khayrpoor, Puttee Khairatee, ..	309	855	107	260	0	218	270	17	0	41	12
112	خیرپور پتی ولی	Khayrpoor, Puttee Wulee, ..	250	188	0	38	0	92	58	0	8	184	51
113	دان پور	Danpoor, ..	527	1332	9	216	0	566	541	397	60	56	10
114	داندرا گنگو تھر	Dandrah Gungothur, ..	582	955	15	253	0	449	238	389	0	4	0
115	درکپور ظریف نگر	Dirikpoor, Zareefnuggur, ..	1138	1337	50	76	8	683	520	698	88	7	12
116	دریا پور	Dureahpoor, ..	145	420	0	5	1	207	207	101	0	0	0
117	دکارہ	Dakarah, ..	Rs. A. 190	920	4	617	0	111	188	66	0	0	0
118	دودمان پتی کندن	Doodman, Puttee Koondun, ..	67 8	228	5	3	0	183	37	127	0	0	0
119	دودمان پتی هنسی	Doodman, Puttee Hunsee, ..	67 8	270	5	6	0	187	72	(a)0	0	0	0
120	دولت پور	Doulutpoor, ..	189	597	3	118	0	209	267	131	5	0	0
121	دومیل نگہ کیسی	Domail, Nugla Kesee, ..	800	542	16	27	0	483	16	506	124	6	2
122	دھرم پور	Dhurampoor, ..	594	708	9	47	8	383	261	467	66	30	2
123	دھکپورہ حویلی	Dhukpoorah, Hawelee, ..	30	283	0	78	0	205	0	0	0	0	0
124	دھکپورہ میراپور	Dhukpoorah, Meerapoor, ..	250	375	39	62	0	144	130	246	77	7	10
		Carried over, ..	35347	59650	3465	12100	267	25205	18613	18164	3769	3603	734

(a) Population included in the above.

* Vide Appendix No. 3.

† A market is held in this village every Wednesday.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	35347	59650	3465	12100	267	25205	18613	18164	3769	3603	734
125	دھگوان	Dehgwan, ..	1841	2164	52	359	0	1291	462	874	142	144	88
126	دھوب کھیرا	Dhobur Khera, ..	528	738	14	95	0	331	348	206	24	8	0
127	دھیل	Dhail, ..	380	202	6	5	0	189	2	225	0	4	0
128	دیناپور	Deenapoor, ..	108	477	5	91	0	102	278	0	0	0	0
129	دیوراشیخپور	Deora Sheikhpoor, ..	1080	698	12	16	5	555	110	458	181	4	31
130	دیوری امرت	Deoree Umrith, ..	145	722	11	187	0	140	384	113	0	0	0
131	ذکوپور پتی دنگر	Zukoopoor, Puttee Doongur, ..	80	115	1	1	0	51	62	44	17	0	0
132	ذکوپور پتی سورج سنگھ	Zukoopoor, Puttee Sooruj Singh, ..	80	115	1	3	0	52	59	41	5	0	0
133	ذکوپور پتی صبطی احمد بخش	Zukoopoor, Puttee Zubtee Ahmad Buksh, ..	61	168	0	0	0	35	133	0	0	0	0
134	ذکوپور پتی تھر	Zukoopoor, Puttee Nutthoo, ..	80	115	1	1	0	54	59	33	15	0	0
135	ذکوپور پتی معافی ال حسن	Zukoopoor, Puttee Maafee Al Husun, ..	0	172	172	0	0	0	0	0	0	0	0
136	رام پور بھوئیس	Rampoor Bhoes, ..	725	518	17	3	4	475	19	271	0	49	0
137	رام پور مہرا پتی جواہر	Rampoor M'herah, Puttee Jowahir, ..	95	70	2	7	0	45	16	25	0	0	0
138	رام پور مہرا پتی دیا ناتھ	Rampoor M'herah, Puttee Daiah Nath, ..	95	72	3	3	0	57	9	7	0	0	0
139	رام پور مہرا پتی منولعل	Rampoor M'herah, Puttee Munoo Lall, ..	95	74	1	3	0	47	23	14	0	0	0
140	رام نگر بھوئیس	Ramnuggur Bhoes, ..	420	307	7	34	30	198	38	315	50	0	10
141	رام نگر مززعہ نادر	Ramnuggur, Muzrah Nadur, ..	120	322	6	32	0	128	156	84	0	0	0
142	راہنت منکلی	Rahnut Mutkulee, ..	105	1161	0	120	0	196	845	20	4	0	0
143	ردنول عزیزپور سمروہ امیر گنج	Rudnoul Azeezpoor, Simrooah Ameergunj, ..	925	1255	10	232	13	546	454	517	136	56	18
144	رستم پور منسی	Rustoompoor Munsae, ..	210	331	0	259	0	72	0	9	5	0	0
145	رسولا	Rusoolah, ..	503	1344	14	325	9	305	691	446	53	9	3
146	رسول پور بیلا	Rusoolpoor Belah, ..	375	552	11	90	7	305	139	501	110	8	11
147	رسول پور منسی	Rusoolpoor Munsay, ..	575	384	15	17	1	259	92	184	0	25	0
		Carried over, ..	43925	71776	3826	13983	336	30639	22992	22641	4459	3910	895

* A market is held in this village every Friday.

† Vide Appendix No. 1.

‡ Vide Appendix No. 1.

§ Originally held rent-free. Resumed in 1842, and brought to Settlement, vide Roobakaree, dated 7th April 1843.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	43925	71776	3826	13983	336	30639	22992	22641	4459	3910	895
148	رسول پور فقیر	Rusoolpoor Fukeeree, ..	300	270	0	33	0	148	89	0	0	0	0
149	رسول پور کلان	Rusoolpoor Kul-an, ..	677	593	28	95	32	375	63	1152	431	256	131
150	رفعت پور مورور پٹی عباس علی	Rafaatpoor Morroo, Puttee Abas Alee, ..	129	790	10	10	0	360	410	294	9	18	2
151	رفعت پور مورور پٹی شہاب الدین	Rafaatpoor Morroo, Puttee Shahabodeen, ..	125	732	9	27	0	415	281	(a)0	0	0	0
152	رفیع نگر	Rufeenugur, ..	300	654	8	6	14	287	339	139	11	6	0
153	رکن الدین نگر	Ruknoodeennugur, ..	80	225	0	53	0	80	92	38	0	0	0
154	رگوپورہ	Rugoopoorah, ..	45	232	0	59	0	52	121	0	0	0	0
155	رم پورہ ریوٹا	Rumpoorah Reonaen, ..	65	256	0	53	0	5	198	38	4	0	0
156	رم پورہ عین الدین	Rumpoorah Aeenodeen, ..	158	372	8	5	6	185	168	75	0	0	0
157	رنجیت پور	Runjeetpoor, ..	225	652	8	118	0	109	417	103	0	0	0
158	ریلی مادی پور	Relae Madoo-poor, ..	150	400	13	27	0	234	126	157	26	7	4
159	زہر پور آدم پور	Zahirpoor, Adumpoor, ..	82	250	58	33	0	130	29	26	108	60	0
160	زہر پور گیسولیا	Zahirpoor, Gaisulea, ..	230	650	11	67	0	281	291	239	13	5	12
161	سادہ پور	Sadhpoor, ..	136	731	6	224	0	163	338	182	0	0	0
162	ستولیا	Sitolea, ..	150	814	0	551	0	59	204	0	0	0	0
163	سجاولی	Sujawulee, ..	908	738	12	312	6	376	32	592	101	26	23
164	سجوندہ لہو	Sujhondah Ludoa, ..	125	523	4	441	0	78	0	34	11	0	0
165	سراے بابت	Surace Babut, ..	50	1399	0	425	0	0	974	72	0	0	0
166	سراے رام داس	Surace Ram Dass, ..	45	140	0	18	0	58	64	0	0	21	0
167	سراے منسکھ	Surace Munsookh, ..	107	258	3	35	0	132	88	0	0	10	0
168	سراے مونڈیا کھائی	Surace Moon-dea Khagee, ..	140	250	12	3	0	112	123	111	0	0	0
169	سرسا	Sirsa, ..	1270	734	18	40	42	624	0	313	122	11	15
170	سرسول	Sirsowl, ..	604	464	6	162	3	402	31	171	0	29	0
171	سرکی دمو	Sirkee Damoo, ..	71	659	659	0	0	0	0	221	101	11	16
172	سرکی کھڑا	Sirkee Kherah, ..	200	397	70	21	0	151	155	54	0	0	0
		Carried over, ..	50377	84959	4769	16801	439	35465	27625	26652	5396	4370	1098

* There is a bazaar in this village. A market is also held in it every Saturday. The proprietors (Sheikhs) have also a School in the village.
(a) Population included in the above.

† Details are those of a revised Settlement made in 1843.

‡ A market is held in this village every Monday.

§ This village is held on a rent-free tenure, which has been confirmed in perpetuity. The Rs. 71 entered as Jumma is paid by the maddars as nussurana.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	50377	84959	4769	16801	439	35465	27625	26652	5396	4370	1098
173	سکت پور	Suktupoor, ..	350	690	8	152	5	293	232	214	0	8	0
174	سکندر پٹی	Sikundurputtee, ..	26	219	85	55	0	60	19	0	0	0	0
175	سگرار	Sugrar, ..	500	464	8	51	0	360	45	319	116	16	4
176	سگولہ	Sugholah, ..	125	421	1	66	0	185	169	133	14	0	0
177	سلاہری	Sylha'huree, ..	105	1174	1003	6	0	132	33	519	50	5	9
178	سلطانپور احمدنگر	Sultanpoor, Ah-mudnuggur, ..	319	441	8	57	0	188	188	292	28	11	4
179	سلطانپور فریدنگر	Sultanpoor, Fureednuggur, ..	136	412	15	94	0	170	132	98	0	19	0
180	سلیم پور	Suleimpoor, ..	190	141	0	40	0	98	3	0	0	0	0
181	سمراہ بنڈی پور	Simurrah, Bumbeerpoor, ..	230	656	12	70	0	220	354	23	0	181	0
182	سوارک	Siwaruk, ..	85	348	7	120	0	89	132	90	0	0	0
183	سولہ پور	Sobhunpoor, ..	548	411	14	33	0	317	47	410	39	19	3
184	سورج پور بھور	Soorujpoor, Bhoor, ..	180	392	13	57	0	151	171	153	0	0	0
185	سورج پور بھوہس	Soorujpoor Bhooes, ..	250	197	4	5	0	153	35	83	5	5	3
186	سوکٹیا	Sookutea, ..	190	434	11	15	0	192	216	11	0	0	0
187	سولہ کلان	Sohunkulan, ..	105	271	0	94	2	61	114	0	0	0	0
188	سیراے عرف (جے) گڈھی	Seerae oorf Rujee Gurhee, ..	515	472	8	113	0	251	100	230	102	26	15
189	سیف اللہ گنج	Syfoolahgunj, ..	101	41	0	18	0	23	0	556	1420	82	607
190	شادی پور	Shadeepoor, ..	265	638	17	211	0	170	240	191	6	2	0
191	شاہ پور ترکھڑا	Shahpoor Terkherah, ..	240	394	7	188	0	116	83	98	31	48	0
192	شاہنگر پتھر گنج	Shahungur Putpur Gunj, ..	253	791	15	132	0	450	194	219	0	0	0
193	شجاعت گنج بیلہ	Shujahut Gunj Belah, ..	180	148	4	34	0	91	19	15	0	25	3
194	شجاعت گنج پچول	Shujahut Gunj, Pachtoul, ..	120	280	4	139	0	120	17	103	13	0	0
195	شکار پور	Shikarpoor, ..	301	661	49	152	0	360	100	292	20	0	6
196	شکرا لہ پور	Shukroollahpoor, ..	787	1021	10	172	0	527	312	271	24	0	0
197	شمس پور بلو	Shamushpoor, Buloo, ..	130	248	9	42	0	96	101	141	0	0	0
198	شمس پور رجو	Shamushpoor, Rujoo, ..	2	529	526	0	0	2	1	0	0	0	0
199	شمس پور کنوری	Shamushpoor, Kunoree, ..	272	581	20	61	0	248	252	275	0	0	0
		Carried over, ..	56882	97434	6627	18978	446	40588	30934	31388	7269	4817	1752

* Vide Appendix No. 1.

† Vide Appendix No. 1.

‡ This village forms part of the town of Saheswan; has a considerable bazaar; has one Persian, and one Hindi School. There is a Thakoor Dewala in the town, visited in Bhadoon by the neighbouring Thakoor.

§ Three acres out of the whole area, were resumed by Deputy Collector. The remainder of the estate is rent-free.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	56882	97434	6627	18978	446	40588	30934	31388	7269	4817	1752
200	شمس پور مولانا	Shumushpoor, Moolah Futah,	195	529	6	170	0	238	115	321	0	0	3
201	شہباز پور	Sh'hubazpoor,* ..	0	170	170	0	0	0	0	624	670	873	425
202	شیخا نگلہ	Sheikha Nugla, ..	150	476	11	28	0	263	174	92	0	0	0
203	شیخپور سیدپور	Sheikhpoor Sydpoor, ..	80	612	6	190	0	126	290	65	0	0	0
204	شیخوپورہ	Sheikhoopoorah, ..	400	362	9	18	0	255	80	279	0	0	0
205	سبدل پور	Subdulpoor, ..	305	781	9	12	3	301	456	250	110	0	0
206	سدرپور مکن پور	Sudurpoor Mukunpoor,† ..	317	1169	0	118	0	198	853	35	0	0	0
207	صلابت پور بھور	Sulabutpoor Bhoor,‡ ..	140	458	8	14	0	116	320	107	0	0	0
208	صلابت پور بھوہس	Sulabutpoor Bhooes, ..	400	460	29	23	0	217	191	125	0	0	0
209	صمدہ	Sumdah, ..	320	939	153	304	0	269	213	144	22	0	0
210	طاہر پور ظاہر پور	Tahirpoor Zahirpoor, ..	293	888	8	310	0	231	339	219	0	38	0
211	ظریف نگر گدھیا	Zareefnuggur Gurheca, ..	525	878	8	28	4	338	0	341	112	24	0
212	عارفپور بھکتا نگلہ	Aarufpoor, Bhugta Nugla,	50	375	0	63	0	21	291	122	0	0	0
213	عثمان پور	Oosmanpoor, ..	180	413	133	15	0	170	95	300	196	25	2
214	علی پور	Alleepoor, ..	195	776	22	136	0	255	363	76	0	0	0
215	علی پور شہزاد پور	Alleepoor Sherpoor, ..	450	456	0	160	0	226	70	0	0	0	0
216	علی گنج	Alleegunj, ..	117	471	4	41	0	144	282	66	15	0	0
217	عماد پور	Imadpoor, ..	55	247	0	56	0	95	96	0	0	0	0
218	عیسی پور نوادہ	Eesapoor Nuwah, ..	185	269	96	12	0	148	13	148	321	34	389
219	فاضل پور پوپریا	Fazilpoor Poo- pareea,§ ..	22	200	150	1	0	20	29	24	0	0	0
220	فتح اللہ گنج	Futehoolahgunj, ..	45	241	0	3	0	41	197	29	9	51	1
221	فتح پور کوہری	Futehpoor Kooree, ..	101	292	6	5	0	157	124	71	0	0	0
222	فتن پور حویلی	Futanpoor Havellee, ..	237	408	145	23	2	238	0	0	0	0	0
223	فتن پور کالانہر	Fatanpoor Kalatehur,|| ..	309	474	0	134	0	262	78	0	0	0	0
		Carried over, ..	61953	109778	7600	20842	455	44917	35603	34826	8724	5862	2572

* Sh'hubazpoor, a rent-free market, forms part of the town of Saheswan; has a large bazaar. A market is also held in it every week. There is also a Persian School in the village.

† The details are those of a revised settlement made in 1848, confirmed by orders of Government, No. 1833, dated 14th April 1849.

‡ Vide Appendix No. 1.

§ This entire estate was held, until 1844, on a rent-free tenure, when one-fourth was resumed. The remaining three-fourths are released during life of the holders. The village forms part of the town of Saheswan, and though having few resident inhabitants, is a mart for considerable traffic. A Persian School in village.

|| Vide Appendix No. 1.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	61953	109778	7600	20842	455	44917	35603	34826	8724	5862	2572
224	فرید نگر	Fureednuggur,* ..	235	755	8	123	0	220	404	32	0	0	0
225	فیروز آباد نور تہ	Ferozabad Nurota, ..	150	623	0	381	0	114	128	0	0	0	0
226	قادر نگر	Kadirnuggur, ..	65	527	6	71	0	86	364	84	0	0	0
227	قاسم پور سلروٹی	Kasimpoor Sulroee, ..	240	243	5	26	8	117	87	53	12	0	0
228	قربانپور جامنی	Kurbanpoor Jaminee, ..	238	378	4	246	1	127	0	31	2	0	6
229	کوریش پور	Kooraispoor, ..	175	378	6	69	0	181	122	127	0	5	0
230	کصبہ بھکتا نگلہ	Kusbah Bhugta Nugla,† ..	794	2245	389	499	0	810	547	529	734	385	1724
231	کصبہ پٹی کانگوے	Kusbah, Puttee Canongo,† ..	19	78	50	0	0	28	0	0	0	0	0
232	کصبہ پٹی یقین محمد	Kusbah, Puttee Yakeen Mahomud,† ..	511	1090	193	281	0	379	237	42	137	247	568
233	کصبہ چمر پورہ	Kusbah Chmurpoorah Himurpoorah,† ..	840	1090	141	188	78	546	137	244	188	555	1443
234	کانکسی	Kanksee, ..	160	574	259	102	2	145	66	236	0	6	11
235	کتیا بھاڑی	Kutayah Bha- wutee, ..	240	589	11	171	5	233	169	208	23	0	2
236	کتیا کيسر	Kutayah Kesur,§ ..	275	596	14	126	0	219	237	88	4	0	3
237	کریامٹی	Kureeamye,|| ..	710	856	19	80	9	516	232	758	25	0	27
238	ککرا لہ	Kukrala, ..	65	138	0	19	0	0	169	59	0	0	0
239	کلایتہ	Kulaitah, ..	475	485	6	66	21	239	103	292	42	0	4
240	کمال پور جلونگر	Kumalpoor Ju- loonugur, ..	500	608	30	180	0	176	222	360	0	7	1
241	کمان پور بھور	Kumunpoor Bhoor, ..	90	311	0	45	0	15	251	72	0	0	0
242	کمان پور بیلہ	Kumunpoor Belah, ..	110	396	0	309	0	87	0	0	0	0	0
243	کیور پور چاندن	Koorpoor Chundun, ..	460	469	12	69	0	270	118	268	80	7	20
244	کھوسہ	Koohuree, Khamisah, Meerapoor, Roshunnugur, ..	210	832	6	218	0	128	480	146	0	0	5
245	کھواڈاندا	Khooa Danda, ..	90	295	11	4	0	148	132	73	0	0	0
246	کوٹاہ	Kotah, ..	90	292	0	67	0	61	164	0	0	0	0
247	کوٹہہ	Kotha, ..	490	995	16	138	3	443	395	380	22	5	10
		Carried over, ..	69185	124671	8786	24320	582	50255	40367	38908	9993	7079	6396

* Vide Appendix No. 1. † Kusbah Bhugta Nugla is part of the town of Saheswan; has a small bazar and a Persian School in its precincts. ‡ These three villages all form part of the town of Saheswan; the two latter have large bazaars, in which considerable trade is carried on. Kusbah, Puttee Yakeen Mahomud, forms the most antiquated portion of Saheswan. The houses are nearly all built of masonry. There is a Zecarat in its precincts, where the children of the proprietors are taught Persian by the presiding fakir. Kusbah Chmurpoorah Himurpoorah has three Schools.

§ Vide Appendix No. 1.

|| A market is held in this village on Fridays and Sundays.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	69185	124671	8786	24320	582	50255	40367	38908	9993	7079	6396
248	کولہا	Kolha, ..	427	672	179	246	8	231	8	260	34	121	6
249	کولہا	Kolhae, ..	1059	2123	7	418	0	1063	635	833	0	51	0
250	کھجری	Khajuree, ..	80	422	0	297	0	41	84	1	0	0	0
251	کھرتی سرور پٹی دمرسنگھ	Khirttee Surwur, Puttee Dumur Singh, ..	Ra.A.P. 18 12 0	37	0	14	0	15	8	0	0	0	0
252	کھرتی سرور پٹی محمد شہر خان	Khirttee Surwur, Puttee Maho- mud Shere Khan, ..	58 4 0	112	0	41	0	24	47	0	0	0	0
253	کھرتی سرور پٹی نٹھو خان	Khirttee Surwur, Puttee Nut- thoo Khan, ..	75 0 0	159	5	49	0	55	50	7	0	0	0
254	کھروکار پٹی تلسی رام	Khurukwaree Bhoor, Puttee Toolsee Ram,	126 10 8	395	6	6	0	235	148	171	0	0	0
255	کھروکار پٹی محمد افضل	Khurukwaree Bhoor, Puttee M a h o m u d Afzil, ..	63 5 4	195	4	1	0	117	73	(a)0	0	0	0
256	کھروکار پٹی بھوہیس	Khurukwaree Bhoos, ..	950	1105	13	271	70	296	455	528	95	20	14
257	کھروکار پٹی مانپور	Khurukwaree Manpoor, ..	250	2084	6	251	0	180	1647	27	0	0	0
258	کھروکار پٹی کھروکار	Khurukwaree Manpoor, ..	231	316	5	84	0	152	75	157	0	0	0
259	کھروکار پٹی کھروکار	Khurukwaree Manpoor, ..	522	835	19	40	10	412	354	299	50	9	13
260	کھوکینان پٹی رودر سنگھ	Khokineean, Puttee Roodur Singh, ..	Ra.A.P. 208 10 0	528	58	20	0	259	191	130	19	0	0
261	کھوکینان پٹی کنج سنگھ	Khokineean, Puttee Kun- jun Singh, ..	81 6 0	161	19	5	0	93	44	(a)0	0	0	0
262	کھوکینان پٹی رام راج	Khokineean, Puttee Ram Raj, ..	180	694	1	58	0	92	543	106	26	0	0
263	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	85	264	0	19	0	225	20	126	6	0	0
264	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	640	423	9	13	25	363	13	190	38	0	0
265	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	60	225	4	10	0	69	142	60	20	0	0
266	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	50	286	6	52	0	68	160	49	0	0	0
267	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	50	270	0	232	0	0	38	0	0	0	0
268	کھوکینان پٹی کھوکینان	Khokineean, Puttee Ram Raj, ..	402	629	14	277	5	266	67	157	11	132	0
		Carried over, ..	74861	136606	9141	26724	700	9311	45169	42009	10292	7412	6429

(a) Population included in the above.

* A market is held in this village on Fridays.

† A market is held in this village on Saturdays.

‡ Recovered from the Ganges in 1847, and assessed in 1849. The demand is a progressive one, reaching Rs. 50 in 1852, vide Roobakaree, dated 25th February 1850.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	74861	136606	9141	26724	700	9311	45169	42009	10292	7412	6429
269	گنگاپور	Gungapoor, ..	107	355	122	41	0	154	38	270	85	14	8
270	گنگورا	Gungora, ..	540	492	8	140	4	275	65	351	16	0	0
271	گوپال گنج	Gopalgunj, *	28	11	0	2	7	0	2	95	56	0	20
272	گوچر پور	Goojurpoor, ..	34	393	0	56	0	337	0	57	0	0	0
273	گولریا	Goolureea, ..	95	339	0	54	0	140	145	53	3	0	0
274	گھلول	Ghiloul, ..	130	311	5	82	0	110	114	95	16	0	0
275	گھورن پور	Ghooranpoor, ..	289	845	5	451	0	234	155	29	0	225	20
276	لبد پور	Labadpoor, ..	105	394	6	78	0	96	214	63	7	0	0
277	لعل پور	Lallpoor, ..	35	288	0	121	0	167	0	0	0	0	0
278	لودھ پور	Lodhpoorah, ..	65	250	182	1	0	57	10	186	2	0	0
279	لہرا عطاء اللہ پور	Lehra Ataool- lahpoor, ..	206	537	28	64	13	230	202	91	0	111	0
280	لہر پور	Luharpoorah, ..	150	741	250	223	0	134	134	124	0	0	0
281	مال پور تھری	Mallpoor Tuterah, †	1130	1723	26	1159	12	518	8	514	133	27	41
282	مانک پور پور اودا	Manukpoor Mchumudpoor Oodah, ..	361	1106	134	350	0	536	86	284	0	0	0
283	مٹسان	Mutsan, ..	236	1022	16	126	2	259	619	117	2	40	2
284	مٹن پور پٹی راجا رام	Mitunpoor, Put- tee Raja Ram,	126	133	5	3	0	100	25	412	50	28	10
285	مٹن پور پٹی کھمانی	Mitunpoor, Put- tee Koomanee,	126	134	5	11	0	100	18	(a)0	0	0	0
286	مٹن پور پٹی کیوت	Mitunpoor, Put- tee Keeruj, ..	126	133	3	8	0	96	26	(a)0	0	0	0
287	مٹن پور پٹی گوپدرھن	Mitunpoor, Put- tee Gobur- dhun, ..	126	133	3	2	0	102	26	(a)0	0	0	0
288	مٹن پور پٹی مان سنگھ	Mitunpoor, Put- tee Man Singh,	126	136	7	4	0	100	25	(a)0	0	0	0
289	مٹن پور پٹی ہمت	Mitunpoor, Put- tee Himut, ..	126	133	5	2	0	109	17	(a)0	0	0	0
290	موجریا	Mujureea, ..	120	479	9	34	0	91	345	74	3	0	0
291	موجر دھرم	Mujolra Dumera,	300	686	13	107	0	234	332	269	50	6	8
292	محدودہ گوجر	Mahdooda Goojur,	210	433	9	46	2	291	85	144	54	0	5
293	محمد پور حجام	Muhumudpoor Hujam, ..	70	286	8	60	8	115	95	22	0	0	0
294	محمد پور کوٹدی	Muhumudpoor Koonday, ..	1010	990	17	148	22	602	201	390	115	41	12
295	محمد پور مصر عرف نکلہ منصور	Muhumudpoor, Misur Oorf, Nugla Mun- soor, ..	33	235	0	73	0	70	92	0	0	0	0
		Carried over, ..	80871	149324	10007	30170	770	14568	48248	45649	10884	7904	6555

* The village forms part of the town of Saheswan.

† Vide Appendix No. 2.

(a) Population included in the above.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	80871	149324	10007	30170	770	14568	48248	45649	10884	7904	6555
296	{ محمد علي پور } { درنديا }	Muhamud Allee- poor Doon- deea, ..	125	163	0	18	0	93	52	0	0	0	0
297	{ محمد گنج گوبرا }	Muhumudgunj Gobra, ..	80	821	6	107	0	78	630	25	0	0	0
298	{ محمود پور سوگيا } { پتي احمد بخش }	Mahmoodpoor Sogia, Puttee Ahmud Buksh	120	319	6	9	0	209	95	102	3	0	0
299	{ محمود پور سوگيا } { پتي خدا بخش }	Mahmoodpoor Sogia, Puttee Khoda Buksh,	120	318	1	9	0	232	76	(a)0	0	0	0
300	{ محي الدين پور }	Moyeeodeen- poor, *	100	182	2	35	0	99	46	70	330	388	347
301	{ مخدوم پور }	Mukdoompoor, ..	100	210	6	36	0	64	104	28	14	0	0
302	{ مدار پور }	Mudarpoor, ..	420	685	13	211	0	411	50	308	0	0	0
303	{ مدارلي }	Mudkonlee,†	501	403	9	40	0	281	73	240	238	10	18
304	{ مرزا پور بيله }	Mirzapoor Belah,	110	212	11	118	0	80	3	0	0	0	0
305	{ مرزا پور سهورا }	Mirzapoor Shoura,	816	1378	87	17	0	985	289	321	35	254	34
306	{ مرزا پور محسن پور }	Mirzapoor Mo- shumpoor, ..	210	662	6	128	0	224	304	244	0	9	0
307	{ مصري پور مكويا }	Misreepoor Mookaya, ..	401	639	10	33	9	323	264	238	44	5	4
308	{ مصطفى آباد احمد } { نگر }	Mustufabad Ah- mudnugur, ..	200	305	0	2	0	228	75	153	26	0	0
309	{ مصطفى آباد جربتہ }	Mustufabad Ju- raitah, ..	604	1156	13	483	9	386	260	365	0	83	0
310	{ ملسي يوسف پور }	Mulsace Ensuf- poor,†	350	2377	0	1104	0	132	1141	41	0	0	0
311	{ ملک پور بچولا } { پتي عباس علي }	Mulikpoor Bi- chola, Puttee Abas Alea, ..	180	394	5	40	0	193	156	356	40	0	20
312	{ ملک پور بچولا } { گلابي }	Mulikpoor Bi- chola, Puttee Goolabee, ..	180	378	8	33	0	169	168	(a)0	0	0	0
313	{ ملک پور بچولا } { پتي مہارام }	Mulikpoor Bi- chola, Puttee Muha Ram, ..	180	394	5	25	0	166	198	(a)0	0	0	0
314	{ منيرا }	Munera, ..	100	150	0	15	0	80	55	0	0	0	0
315	{ موسی پور }	Mooschpoor, ..	305	540	6	76	0	131	327	111	19	0	0
316	{ مونداري سدھار پور }	Moondara Su- darpoor, ..	437	695	91	271	1	312	20	227	42	14	3
		Carried over, ..	86510	161705	10292	32985	789	19444	52634	48478	11675	8667	6981

(a) Population included in the above.

* Originally a rent-free Mouzah; resumed in 1839, and first brought to Settlement in 1844, vide Roobakaree, dated 5th April 1844.

† A market is held in this village every Tuesday.

‡ The details are those of a Summary Settlement made in 1847, confirmed by Government Order, dated 14th April 1848.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	86510	161705	10292	32985	789	19444	52634	48478	11675	8667	6981
317	{ موندي }	Moondae, ..	200	293	0	67	0	108	118	0	0	0	0
318	{ مونديا نندا }	Moondaea Nunda,	218	331	10	11	0	238	72	127	0	0	0
319	{ مهداولي }	Mehdawulee, ..	350	381	6	70	29	132	144	75	6	0	0
320	{ ميرانپور نگلہ عمر }	Meeranpoor, Nugla Oomur,	60	134	7	2	0	71	54	0	0	0	0
321	{ مي حسين پور }	Mye Hoseinpoor,	925	1078	26	151	76	465	360	399	141	95	3
322	{ مہگرا }	Meghra, ..	125	332	4	71	0	76	181	107	9	0	0
323	{ نادر }	Nadur, *	596	2073	21	298	4	651	1099	544	217	87	57
324	{ ناھر پور }	Nahurpoor, ..	65	250	0	56	0	34	160	0	0	0	0
325	{ ندايل }	Nadail,†	1264	920	188	35	12	597	88	161	131	423	106
326	{ نرسينه پتي اوديت } { پوري }	Nursena, Put- tee Oodaith- pooree,‡	50	163	3	76	0	59	25	459	136	0	12
327	{ نرسينه پتي بلديو } { پوري }	Nursena, Puttee Buldeo Poo- ree, ..	50	155	1	89	0	57	8	(a)0	0	0	0
328	{ نرسينه پتي بهولا } { پوري }	Nursena, Puttee Bhola Pooree,	50	155	1	66	0	70	18	(a)0	0	0	0
329	{ نرسينه پتي بهيم } { پوري }	Nursena, Puttee Bheem Poo- ree, ..	50	152	1	94	0	54	3	(a)0	0	0	0
330	{ نرسينه پتي نراين } { پوري }	Nursena, Puttee Narayan Poo- ree, ..	100	155	0	74	0	64	17	(a)0	0	0	0
331	{ نور پورہ }	Nuroopoor, ..	75	228	2	63	0	58	105	47	6	0	3
332	{ نورٹہ }	Nurota, ..	92	126	4	1	0	96	25	0	0	0	0
333	{ نصو پور }	Nusoopoor, ..	38	167	0	36	0	80	51	0	0	0	0
334	{ نصير پور }	Nuseerpoor,§	250	141	6	5	0	130	0	210	135	60	35
335	{ نصير پور گھوسو }	Nuseerpoor Gho- soo, ..	120	341	69	194	0	78	0	48	0	28	0
336	{ نصير پور ناتھو }	Nuseerpoor Natho,	115	388	11	59	0	76	242	73	0	0	0
337	{ نگريا قتن پور پتي } { مظمت بي بي }	Nugurreea Fu- tunpoor, Put- tee Azmut Beebee, ..	Rs.A.P. 85 0 0	119	1	3	0	86	29	90	0	3	0
338	{ نگريا قتن پور پتي } { شہاب الدين }	Nugurreea Fu- tunpoor, Put- tee Shahawood- deen, ..	90 2 9	145	1	28	0	110	6	(a)0	0	0	0
		Carried over, ..	91487 2 9	169932	10654	34534	910	22834	65439	50818	12456	9368	7197

* A market is held in this village every week.

† A market is held in this village every Wednesday.

‡ Nursena was held on a rent-free tenure until 1840, when it was resumed by the Special Deputy Collector. In 18—, the estate was divided into 5 Mouzahs.

(a) Population included in the above.

§ Vide Appendix No. 1.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jamma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	9143729	169932	10654	34534	910	22834	55439	50818	12456	9363	7197
339	نگریا قن پور پتی بہار الدین	Nugureea Futunpoor, Puttee Bahawooden, ..	Es.A.P. 63 12 0	94	0	2	0	85	7	(a)0	0	0	0
340	نگریا قن پور پتی مجید النساء	Nugureea Futunpoor, Puttee Mujeedoonissa, ..	7 1 3	17	1	1	0	8	7	(a)0	0	0	0
341	نگلہ برن	Nugla Burum, ..	213	965	0	858	0	107	0	0	0	0	0
342	نگلہ برن اراضی گنگ برآمد	Nugla Burum Arazeegunj Burumud,* ..	80	865	0	692	0	39	134	0	0	0	0
343	نگلہ چوئی	Nugla Choece, ..	80	371	339	0	0	29	3	299	3	85	35
344	نگلہ روکرا	Nugla Rokra, ..	130	371	0	56	0	202	113	79	27	0	0
345	نگلہ سالار	Nugla Salar, ..	140	345	8	19	0	204	114	107	4	0	0
346	نگلہ کونٹا	Nugla Koutah, ..	432	415	7	34	2	233	139	281	92	0	3
347	نگلہ مددی	Nugla Maddee, ..	153	240	7	36	0	104	93	38	24	0	0
348	نگلہ مصر	Nugla Misir, ..	154	233	72	10	0	141	10	35	2	0	0
349	نوابگنج بہتھی	Nuwabgunj Be-tunee, ..	100	308	0	54	0	126	128	87	9	0	0
350	نوابگنج بیلا	Nuwabgunj Belah, ..	327	266	5	137	0	124	0	38	1	35	1
351	نیٹوہا پتی عبدالرحیم خان	Nytooh, Puttee Abdool Ruheem Khan, ..	Es.A.P. 115 0 0	116	7	9	0	98	2	522	79	206	175
352	نیٹوہا پتی رام پرشاد	Nytooh, Puttee Rampershad, ..	38 5 4	45	5	8	0	26	6	(a)0	0	0	0
353	نیٹوہا پتی محمد خان	Nytooh, Puttee Yar Mahomud Khan, ..	115 0 0	116	4	8	0	98	6	(a)0	0	0	0
354	نیٹوہا پتی کشن لال	Nytooh, Puttee Kishun Lall, ..	67 1 4	68	6	5	0	54	3	(a)0	0	0	0
355	نیٹوہا پتی میوارام	Nytooh, Puttee Mewa Ram, ..	124 9 4	130	6	11	0	109	4	(a)0	0	0	0
356	نیل باغوارہ	Nynoul Baghwarah, ..	628	875	18	161	0	423	273	39	24	226	36
357	وزیرپور	Wazeerpoor, ..	150	356	6	73	0	178	99	235	0	0	0
358	ہینا نگلہ	Hupna Nugla, ..	300	508	0	98	0	181	229	0	0	0	0
359	ہردت پور	Hurdutpoor, ..	710	1067	32	167	2	499	367	448	25	0	0
360	ہری پور	Hurreepoor,† ..	60	491	10	25	0	104	352	64	0	0	0
361	ہسریا	Husreea, ..	90	465	8	91	0	86	280	0	0	0	0
		Carried over, ..	95765	178659	11195	37089	914	26092	57808	53090	12746	9915	7447

(a) Population included in the above.

* Recovered from the Ganges in 1848, and made a separate Mouzah, vide Roobakaree, dated 26th September 1848.

† Rent-free until 1830, when resumed. Settlement Roobakaree, dated May 1842.

REGISTER OF MOUZAHS IN PERGUNNAH SAHESWAN—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jamma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	95765	178659	11195	37089	914	26092	57808	53090	12746	9915	7447
362	ہمت گنج	Himutgunj, ..	51	368	0	17	0	108	243	0	0	0	0
363	ہموپور	Humoopoor, ..	115	289	6	38	0	83	162	72	0	0	0
364	ہندور	Hundour, ..	740	755	9	250	0	496	0	100	206	290	95
365	ہوتی پور	Hoteepoor, ..	110	326	86	35	0	102	103	91	0	0	0
366	یہا پور	Yihaepoor, ..	154	463	136	38	0	162	127	0	0	0	0
		Total, ..	96935	180860	11432	37467	914	27043	58443	53353	12952	10205	7542

APPENDIX.

No. 1.—The Survey Maps of this Pergunnah have been for many years lost. In the villages noted below, a large difference was found to exist in the Return of the Professional Survey, and the actual Area of the Mouzah. In every case the Settlement was made on the Returns, as shewn in the Register. The Area of these villages, which were re-measured carefully by Waleed Khan, Deputy Collector under Regulation IX. of 1833, is as follows:—

Number in Register.	Name of Mouzah.	Total Area.	Rent-free.	Barren.	Cultivated.	Culturable.
13	Ismaelpoor Memree, ..	747	15	19	562	151
63	Pathur Choece, ..	515	18	8	385	104
65	Pudhairree, ..	842	11	15	279	33
100	Chouhanpoor, ..	322	181	8	150	83
130	Deoree Amrit, ..	458	11	6	211	230
142	Bahnut Mutkulee, ..	886	11	16	584	287
175	Sugar, ..	660	16	118	385	68
178	Sultanpoor Ahmudnuggur, ..	583	12	16	332	233
207	Salabutpoor Ehoor, ..	700	10	18	177	485
223	Futunpoor Kalafher, ..	629	8	14	389	55
224	Furreednuggur, ..	623	8	14	433	188
236	Kutayah Kesur, ..	633	15	21	450	177
334	Nuseerpoor, ..	244	8	42	190	4

No. 2.—MALPOOR TUTERAH.—Subsequent to the Settlement under Regulation IX. of 1833, 293 Acres of this Mouzah were, by consent of the parties, measured in Mouzah Aor. The Returns of Aor, as shewn in this Register, are correct, being the Returns of the Area on which a subsequent revision of Settlement was made. The Area of Malpoor Tuterah, according to Khushreh measurement, is as follows:—

Total.	Rent-free.	Barren.	Cultivated.	Culturable.
1480	29	477	745	179

No. 3.—DOMAIL, NUGLA KESER.—The Settlement of this Mehal was made on the cultivated Area of both the Asilee and Dakhilee Mouzah. The Area of the latter appears to have been, with the exception of the cultivated portion, erroneously omitted. The actual Area is as follows:—

Total.	Rent-free.	Barren.	Cultivated.	Culturable.
809	16	81	571	191

M. H. COURT,
Deputy Collector.

APPENDIX No. XXX.

REGISTER OF MOUZAHS

IN

PERGUNNAH BUDAON,

INCLUDING

ZILLAH ALLAHPOOR.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	ابگونوان	Abgunwan, ..	225	311	7	23	0	236	45	123	9	3	0
2	اتھرا کونیاں	Athurah Kuncan,	293	340	5	23	0	292	20	57	0	0	0
3	احمدپور	Ahmudpoor, ..	75	86	0	13	0	69	4	0	0	0	0
4	اراضی عظیم گنج	Arazee Azem- gunj, ..	61	109	0	0	0	71	38	0	0	0	0
5	اس پور	Aspoor, ..	125	148	8	19	0	110	11	36	0	0	4
6	اسرس برکھن	Asirs Burkun,,	1000	1197	19	8	2	608	560	657	12	23	5
7	اسلام گنج	Islamgunj, ..	435	468	0	19	1	348	100	104	88	16	33
8	اعلیٰ پور پٹی بھجو	Allahpoor, Put- tee Bhajoo,*	560	713	63	21	0	604	25	329	109	82	27
9	اعلیٰ پور پٹی چندی خور د.	Allahpoor, Put- tee Chundee Khoord, ..	90	122	19	4	0	79	20	34	0	0	0
10	اعلیٰ پور پٹی چندی فاضل	Allahpoor, Put- tee Chundee Fazil, ..	254	336	24	9	0	275	28	92	0	0	0
11	اعلیٰ پور پٹی صاحب رائے	Allahpoor, Put- tee Sahib Roy,	270	282	11	6	10	255	0	192	67	8	107
12	اعلیٰ پور پٹی قاضی	Allahpoor, Put- tee Kazee, ..	298	426	47	16	0	335	28	120	63	594	295
13	اعلیٰ پور پٹی کھمانی	Allahpoor, Put- tee Koomanee,	90	127	0	12	0	93	22	38	0	0	0
14	اعلیٰ پور پٹی گور بخش	Allahpoor, Put- tee Goorbux,†	385	415	12	36	4	350	13	473	422	0	83
15	اعلیٰ پور پٹی موتی	Allahpoor, Put- tee Motee,‡	Rs.A. 452 8	531	6	35	1	467	22	721	477	0	16
16	اعلیٰ پور پٹی ہردیال	Allahpoor, Put- tee Hurdeal,	452 8	531	6	35	0	467	23				
17	اعلیٰ پور پٹی نندو	Allahpoor, Put- tee Nundoo, ..	479	574	21	22	0	506	25	58	16	0	94
18	اکرم نگر گڑھی	Akrum Nugur Gurhee, ..	158	380	0	12	0	204	164	0	0	0	0
19	امگاں	Amgaon, ..	1191	1343	326	38	0	800	179	1564	68	26	40
20	انگوئا	Angoea, ..	210	533	0	2	0	21	510	9	0	0	0
21	اوپرا	Oopraira, ..	700	801	12	57	2	730	0	321	64	24	0
22	اوٹرنہ سردا	Ooturna Surwa, ..	1325	1677	19	38	3	1288	329	669	37	42	15
23	اودمائی	Oodmaee, ..	205	228	0	7	0	211	10	19	0	36	11
24	اورنگ آباد	Aorungabad,§	300	695	0	251	0	400	44	0	0	0	0
25	اورنگ آباد قاضی	Aorungabad Ka- zee, ..	491	557	0	71	0	437	49	250	3	0	10
Carried over, ..			10125	12930	605	777	23	9256	2269	5866	1435	854	740

* Allahpoor was formerly a town of some notoriety, and the principal town of a division, called after it, Zillah Allahpoor. The town is still extensive, but divided into puttees. Zillah Allahpoor was, in 1845, incorporated in Pergunnah Budaon.

† A market is held in the part of the village belonging to this estate.

‡ At Settlement, Puttee Motee and Puttee Hurdial formed one Mouzah. Subsequent to Settlement, they were formed into two Mouzahs, under Regulation XIX. of 1814.

§ Originally rent-free; resumed in 1840; Roobakree of Settlement, dated 7th June 1845.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVA- TED.		Culturable.	HINDOOS.		MUSSUL- MEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	10125	12930	605	777	23	9256	2269	5866	1435	854	740
26 ..	اوسیتھا	Oosaitha,*	0	436	436	0	0	0	0	73	0	56	0
27 ..	اوگھنہ	Oogehnee,	451	435	7	18	2	324	84	292	79	179	25
28 ..	اونولا	Oonowla,	390	435	0	44	1	355	35	497	178	0	20
29 ..	اھورامی	Ahoramye,	325	515	6	3	0	190	316	167	18	0	0
30 ..	ایکری بھسیانی	Eekree Buseeanee,	1211	1673	0	21	6	1142	504	353	0	263	60
31 ..	بابٹ	Babut,	402	565	27	6	0	498	34	332	47	22	18
32 ..	بادھل	Badhul,	200	308	8	4	0	185	111	76	0	0	0
33 ..	باری کھیرہ	Baree Kherah,† ..	0	536	536	0	0	0	0	165	0	7	0
34 ..	باترپور	Bakurpoor,	225	360	6	15	0	191	148	32	8	33	0
35 ..	بجھیرہ	Bujhera,	180	217	12	18	0	187	0	54	0	8	0
36 ..	بجھوپور	Bichpooree,	250	307	3	18	0	245	41	0	0	0	0
37 ..	بجھوپور	Bichhuree,‡	0	473	473	0	0	0	0	64	0	64	12
38 ..	بدایوں خاص	Budaon Khas, ..	881	2169	404	479	13	622	651	1045	7380	601	12343
39 ..	بدھواے	Budhwae,	438	738	0	14	0	518	206	239	120	0	20
40 ..	برائتھدار	Bura Teghdar, ..	1220	989	18	116	0	630	225	862	159	13	92
41 ..	برارہ روپ پور	Burara Roop- poor,§	0	812	812	0	0	0	0	439	49	119	16
42 ..	براہم پور	Burahimpoor,|| ..	0	56	56	0	0	0	0	67	661	135	534
43 ..	برکھیرہ	Burkherah,¶	175	354	0	6	0	212	136	125	14	0	0
44 ..	بری شمش پور	Buree Shumush- poor,	225	523	7	8	0	249	259	105	0	39	12
45 ..	بشارت نگر چھاپر	Bisharutnuggur Chapur,	240	353	8	29	0	293	23	62	8	5	0
46 ..	بشن پوری	Bishunpooree, ..	200	301	0	33	4	219	45	101	4	6	5
47 ..	بیلھٹ	Bilhut,	1604	2007	22	65	13	1265	635	1044	38	122	53
48 ..	بلیا	Bulcea,	600	907	8	12	0	753	134	326	37	8	13
49 ..	بنارور	Bunawar,**	681	815	17	59	5	348	386	236	32	5	7
50 ..	بندولیا پلاسی	Bindolea Pul- lasee,	500	644	6	4	0	269	365	181	0	0	14
51 ..	بنکھیرہ	Bankhiree,	35	30	0	0	0	30	0	0	0	0	0
52 {	بنگورہ اعظم گنج یوسف نگر	Bungurh, Azim- gunj, Eusuf- nuggur,	1250	1907	12	75	2	843	975	619	106	61	76
53 ..	بنی	Bunae,	513	984	8	40	0	562	374	261	4	284	19
Carried over, ..			22321	32775	3497	1867	69	19386	7956	13683	10376	2884	14079

* Originally rent-free; resumed in 1843; Roobakree of Settlement, dated 7th September 1845. Realization of demand suspended by order of Government, pending decision of Special Commissioner on appeal preferred against order of resumption. Oosaita, rent-free in perpetuity by order of Commissioner, 5th February 1833.

† Released in perpetuity by order of Commissioner, 6th October 1830.

‡ Released in perpetuity by order of Government, dated 31st January 1831.

§ Rent-free tenure granted in perpetuity by order of Commissioner, dated 24th August 1830.

|| Released in perpetuity by order of Commissioner, dated 13th November 1834.

¶ Rent-free until 1843, when resumed; Roobakree of Settlement dated 21st June 1844.

** A market is held in this village every Monday. There is a saraie, built by Ferry Fund Committee in 1845.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	22321	32775	3497	1867	69	19386	7956	13683	10376	2884	14079
54	بورہ	Bora, ..	412	643	10	250	1	337	45	195	0	0	0
55	بوچا نگلا	Booncha Nugla, ..	315	365	36	9	0	258	62	100	17	0	0
56	بھانسی	Bhansee, ..	100	196	6	3	0	82	103	16	10	0	0
57	بھتاہ ایمن	Behatah Aymun,* ..	0	599	599	0	0	0	0	90	0	0	0
58	بھجپورہ	Bhujpoora, ..	341	384	14	12	0	311	47	115	4	0	0
59	بھسراہ	Bhusara, ..	490	577	81	13	0	481	2	175	46	309	117
60	بھگوتپورہ	Bhagotepoor,† ..	0	867	867	0	0	0	0	242	15	38	48
61	بھمنی	Bhumnee, ..	475	520	85	11	12	404	8	130	7	16	0
62	بھیرہ	Bheirca,‡ ..	0	191	191	0	0	0	0	0	0	0	0
63	بھبھپورہ	Beebcepoor, ..	291	467	23	26	0	348	70	222	45	0	4
64	بھور	Beor, ..	1490	3240	16	112	4	1145	1963	528	62	58	55
65	پٹسا	Putsa, ..	850	1557	20	856	4	667	10	687	147	21	68
66	پھتور	Puchtour, ..	67	248	0	220	0	28	0	229	0	0	0
67	پھتور بڈاؤن	Puchtour Budaon,§ ..	0	243	243	0	0	0	0	109	0	6	0
68	پڈھور	Pudhor,|| ..	0	389	389	0	0	0	0	238	0	0	0
69	پڈھولہ	Pudhoulca,¶ ..	300	384	69	73	0	191	51	24	0	42	0
70	پسپا کھیرہ	Pusseca Khera, ..	125	353	0	1	0	54	298	24	0	0	0
71	پلیا جھندا	Pulleca Jhunda, ..	450	555	13	26	0	471	45	406	0	46	9
72	پوتھی سراہ پٹی بہادر	Pothce Seray, Puttee Bahadur,** ..	806	1254	15	46	2	482	709	806	419	61	102
73	پوتھی سراہ پٹی ذریت	Pothce Seray, Puttee Nirput, ..	806	1254	14	46	2	482	710	(a)0	0	0	0
74	پورینیاں	Poorainca, ..	250	896	4	799	0	84	9	0	0	0	0
75	پھولچہ	Phoolacha, ..	311	302	12	34	1	219	36	76	0	0	0
76	تاتولہ	Tatowlee, ..	500	856	8	9	0	277	562	404	15	0	5
77	تکپور	Tukeepoor,†† ..	0	334	334	0	0	0	0	57	0	0	0
78	تلیا نگلا کھم بخش پور	Talleca, Nugla Kambuksh-poor,‡‡ ..	0	496	496	0	0	0	0	248	3	11	100
79	جکلی	Jukailce,§§ ..	0	427	427	0	0	0	0	346	13	7	29
80	جگت عمری	Jugut Oomree, ..	1100	1208	14	197	7	909	81	1158	273	37	298
81	جھندپور	Jhundpoor,||| ..	0	371	371	0	0	0	0	85	32	0	0
		Carried over, ..	31800	51951	7854	4610	102	26616	12769	20480	11490	3546	14914

* Released from assessment in perpetuity by order of Deputy Collector, dated 23rd April 1843.

† Released in perpetuity by order of Commissioner, dated 18th February 1851.

‡ Rent-free tenure confirmed in perpetuity by order of Government, dated 17th June 1843.

§ Released in perpetuity by order of Commissioner, dated 5th February 1833.

|| Released in perpetuity by Special Commissioner, dated 11th December 1843.

¶ Vide Appendix No. 1.

** This estate was divided into two separate Mouzahs by Boobakaree dated 10th December 1840. (a) Population included in the above.

†† Released in perpetuity by order of Commissioner, dated 5th February 1833.

‡‡ Released in perpetuity by order of Deputy Collector, dated 27th October 1843.

§§ Released in perpetuity by order of Commissioner, dated 22nd September 1833.

||| Released in perpetuity by order of Commissioner, dated 3rd March 1832.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	31800	51951	7854	4610	102	26616	12769	20480	11490	3546	14914
82	چٹورا دھنورا	Chitora Dhunora, ..	625	815	18	50	1	708	38	364	105	13	31
83	چمرولیا	Chumrouleca, ..	10	196	187	0	0	9	0	0	0	0	0
84	چوندھرا شکارپور { نگریا ہرداس }	Chundherah, Shikarpoor, Nugreca Hardas,* ..	560	704	5	5	0	677	17	61	0	0	0
85	حسپور	Husunpoor, ..	350	576	6	5	0	337	228	68	6	18	0
86	حسپور ہورہاے	Husunpoor Hor-hace, ..	402	604	36	31	2	503	32	90	2	0	0
87	حسپور نگر	Husunnuggur,† ..	102	259	0	1	0	130	128	191	0	7	8
88	حسپور کروتیہ	Hoseinpoor Ka-rowteca, ..	250	522	68	3	0	253	198	137	18	129	6
89	حضرت پور پورہا	Huzruthpoor Torha,‡ ..	0	223	223	0	0	0	0	0	0	0	0
90	خاص پور	Khaspoor, ..	325	553	19	18	0	302	244	193	0	0	50
91	خیرپورہ	Khyrpoora,§ ..	0	221	221	0	0	0	0	0	0	0	0
92	ددمکی	Dudmace,|| ..	292	474	5	43	0	313	113	242	0	206	8
93	دنورہ	Dunowra,¶ ..	202	273	0	24	0	202	47	52	0	0	0
94	دوگریا براہم پور { ڈوگریا ہراہم }	Dograia Bura-humpoor, ..	1000	1046	10	27	0	835	174	391	112	152	18
95	دوگریا نروتم پور { ڈوگریا نروتم }	Dounree Nro-tumpoor, ..	991	826	8	84	6	663	65	292	60	14	8
96	دھمی	Dhemee, ..	1259	1025	14	59	2	719	231	461	58	72	37
97	دھیری ہاشم پور { ڈھیری ہاشم }	Decoree Hashimpoor, ..	325	336	7	25	5	299	0	132	44	0	0
98	دیوری بورا	Deoree Bowra, ..	150	256	6	186	0	64	0	42	0	0	0
99	دیوری جیت	Deoreejcet,** ..	0	647	647	0	0	0	0	434	59	45	2
100	ڈلوا سریدا	Dulwa Shureeda,†† ..	0	483	483	0	0	0	0	115	0	0	0
101	ڈھکیا	Dhakeca, ..	300	625	9	30	0	177	409	61	0	0	0
102	رام پور عرف دارا نگر { رام پور دارا }	Rampoor, oorf Daranuggur,‡‡ ..	0	223	223	0	0	0	0	169	48	0	0
103	رجلامی	Rujlamye, ..	600	544	0	17	0	243	284	56	1	11	0
104	رجولی	Rujoulee, ..	300	381	9	4	2	270	96	119	16	0	0
105	رسول پور بلہیری { رسول پور بلہیری }	Rasoolpoor Bil-haree, ..	615	579	7	38	0	530	4	353	28	5	7
		Carried over, ..	40453	64372	10065	5260	120	33850	15077	24503	12047	4218	15089

* At Settlement, the Jumma of each Mouzah was specified, but not the Area; entries accordingly.

† Rent-free until 1849, when resumed; Roobakaree of Settlement dated 15th May 1850.

‡ Released in perpetuity by orders of Lieutenant-Governor, N. W. P., dated 17th June 1842.

§ Released in perpetuity by Commissioner, dated 26th September 1831.

|| A rent-free Mouzah until 1842, when resumed; Roobakaree of Settlement dated 20th March 1843.

¶ Rent-free until 1847; Roobakaree of Settlement dated 2nd October 1847. Realization of demand suspended, pending decision of Special Commissioner.

** Released in perpetuity by Special Commissioner, dated 7th September 1843.

†† Released in perpetuity by Collector, dated 8th January 1831.

‡‡ Released in perpetuity by Commissioner, dated 22nd September 1833.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	40458	64372	10065	5260	120	33850	15077	24503	12047	4218	15089
106	رسول پور پوتی	Russolpoor Pootee,*	250	425	0	19	0	395	11	41	0	0	0
107	رفیع آباد	Rufceabad, ..	300	562	10	3	3	234	312	212	14	0	0
108	رکھرا کوہلا	Rukhora Koela,†	0	537	537	0	0	0	0	149	5	0	0
109	رنجولا	Runjola,‡	250	368	0	12	0	153	203	49	0	10	0
110	روپاپور	Roopapoor, ..	390	365	31	8	3	319	4	177	6	0	0
111	روپامی	Roopamye,§	0	159	159	0	0	0	0	175	7	28	0
112	راپورہ اعلیٰ پور	Raipoorah Al-lahpoor, ..	235	243	6	18	5	214	0	0	0	0	0
113	راپورہ بدایوں	Raipoorah Budaon,	360	419	10	45	0	243	121	112	48	7	0
	راہمہ خاص	Raemah Khas,||								380	92	244	38
	انہیا پور	Anbeahpoor, ..								155	9	0	0
	اوجھا	Oojha, ..								194	0	91	0
	اوجھولی	Oojhowlee, ..								56	28	18	7
	اھروہیا	Ahirooea, ..								221	15	4	0
	بھتولی	Bhutowlee, ..								209	7	10	0
	بھسامی	Bhusamye, ..								116	0	39	0
114	تلوک پور	Tilokpoor, ..	4050	6600	133	105	2	3034	3326	125	16	0	0
	چندن نگر	Chundunnuggur, ..								(a) 0	0	0	0
	سرک پور	Surukpoor, ..								127	5	0	0
	سینگرورا	Singrora, ..								209	13	1	5
	فتیہ آباد	Fuqeerabad, ..								224	0	0	0
	گورپورہ چندن	Goorpooree Chundun, ..								27	21	139	16
	ملکانوان	Mulganwan, ..								272	13	12	24
115	سالار پور	Salarpoor, ..	343	629	70	13	0	419	127	7	14	53	13
116	ساندی	Sandee, ..	350	428	72	23	1	294	38	316	373	0	4
117	سرسا تھپور	Sirsather,¶	0	316	316	0	0	0	0	91	0	0	0
118	سعد اللہ گنج بٹھرا	Sadoollagunj Bithera, ..	179	452	5	10	1	145	291	83	0	9	0
119	سعد اللہ گنج	Sadoollahgunj, ..	215	254	31	1	0	198	24	0	0	0	0
120	سکروری	Sikroree, ..	854	1674	141	120	2	613	798	427	77	137	170
121	سکھانوں	Sakhanoon, ..	1132	1443	87	83	6	1135	132	370	518	416	496
		Carried over, ..	49366	79246	11673	5720	143	41246	20464	29027	13328	5436	15862

* Settlement revised in 1847. Demand reduced from Rs. 400 to 250. Revision confirmed by orders of Government, No. 4189, dated 28th October 1847.

† Released in perpetuity by Board of Commissioner, dated 6th October 1830.

‡ Rent-free until 1837, when resumed; Roobakaree of Settlement dated 23rd July 1838.

§ Released in perpetuity by Commissioner, dated 30th November 1830.

|| The survey of Talooqua Raemah was made as one Mouzah. At the Settlement, the Jumma and cultivated area of each Mouzah was specified, but engagements were taken for the whole Mehal, without any further specification of area. The entries have been made, corresponding with Settlement record.

(a) Population included in Raemah. ¶ Released in perpetuity by order of Commissioner, dated 6th October 1830.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	49366	79246	11673	5720	143	41246	20464	29027	13328	5436	15862
122	سگوتی	Sigote,*	303	437	64	37	0	230	106	353	0	0	5
123	سلہیری	Sylheiree, ..	1001	898	10	12	0	801	75	223	20	0	24
124	سلیم پور	Suleimpoor, ..	500	558	12	50	0	438	58	438	18	0	0
125	سمریا اعلیٰ پور پٹی کندن	Simureeah Al-lahpoor, Put-tee Koondun,†	Rs. A. 37 8	58	25	1	0	32	0	0	0	0	0
126	سمریا اعلیٰ پور پٹی بوجن	Simureeah Al-lahpoor, Put-tee Lochun,†	37 8	59	26	1	0	32	0	0	0	0	0
127	سمریا بدایوں	Simureeah Budaon, ..	315	310	16	39	1	212	42	182	0	0	0
128	سنجورپور	Sunjurpoor, ..	280	256	15	20	0	221	0	56	0	0	0
129	سندرنگر	Sundurnuggur,‡	0	273	273	0	0	0	0	56	7	11	0
130	سوهن پور	Sobhunpoor, ..	240	341	7	3	0	239	92	218	0	0	0
131	سورج پور	Soorujpoor,§	210	206	0	6	0	195	5	0	0	0	0
132	سہورا	Sehora,||	0	394	394	0	0	0	0	241	11	0	35
133	سیدپور	Syedpoor, ..	280	416	7	104	0	229	76	0	0	0	0
134	شادی پور	Shadeepoor, ..	440	437	4	5	4	374	50	102	0	0	0
135	شکر پور	Shikrapoor,¶	0	577	577	0	0	0	0	158	29	4	15
136	عارف پور نوادہ	Aarufpoor Nu-wadah, ..	391	565	105	61	0	389	10	157	47	406	29
137	عالم پور	Aalumpoor, ..	150	310	69	4	0	172	65	10	0	60	0
138	عطا پور	Uttapoor, ..	308	611	218	32	0	315	46	0	0	0	0
139	عیسان پور	Ecsanpoor, ..	266	266	14	8	0	243	1	229	0	0	0
140	غوث پور	Ghospoor, ..	205	350	0	7	0	199	144	80	18	0	0
141	فتح پور	Futtehpoor,**	300	435	11	29	0	344	51	285	14	15	22
142	فریدپور چکولہ	Fureedpoor Chu-kola,††	0	787	787	0	0	0	0	0	25	384	47
143	فریدپور گولریا	Fureedpoor Gooluree, ..	172	253	3	2	0	134	114	55	11	0	0
144	فریدپور نوسانہ	Fureedpoor Nowsana, ..	2112	2281	63	80	3	1412	723	773	233	154	70
145	قاضی پور	Kazcepoor, ..	225	338	6	3	0	157	172	130	0	1	0
146	قطب پور تھرا	Kootubpoor Thera, ..	350	456	100	7	0	188	161	6	15	189	0
147	کان نگلہ	Kana Nuala, ..	100	258	10	1	0	137	110	40	0	9	9
148	کسیا مہرولی	Kussasseea Muhrolee, ..	330	495	102	11	2	179	201	125	0	0	0
		Carried over, ..	57919	91871	14591	6243	153	49118	22766	32944	13771	6669	16118

* Annexed to Budaon from Zillah Bareilly in 1844.

† Simureeah Allahpoor, divided into two Mouzahs, under Regulation XIX. of 1814; vide Roobakaree dated 26th April 1846.

‡ Released in perpetuity by order of Commissioner, dated 10th March 1832.

§ Vide Appendix No. 2.

|| Released in perpetuity by Commissioner, dated 10th March 1847.

¶ Released in perpetuity by Commissioner, dated 15th November 1833.

** Rent-free until 1830, when resumed; Roobakaree of Settlement dated 10th March 1847.

†† Rent-free tenure confirmed in perpetuity by order of Commissioner, dated 27th August 1831.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	57919	91871	14591	6243	153	48118	22766	32944	13771	6669	16118
149	کترا کھکائی	Kutra Khukace,*	0	686	686	0	0	0	0	235	34	23	5
150	کرتولی	Kirtowlee,†	0	993	993	0	0	0	0	261	0	10	0
151	کرولی	Kurowlee, ..	622	935	136	92	0	521	186	271	67	0	3
152	کریم پور پختور	Kureempoor Pachtour, ..	225	191	8	12	0	167	4	200	1	0	0
153	کسروا پٹی	Kusarowa Puttee,†	0	270	270	0	0	0	0	0	0	0	0
154	کسیروا	Kusairowa, ..	400	773	237	60	0	323	153	319	3	0	0
155	کمرگانوان	Kumarganwan,§	2018	2010	0	141	0	1560	309	1366	419	80	311
156	کندیلہ	Kundela, ..	945	985	23	56	6	587	313	429	152	22	33
157	کواڈندا قاسم پور	Koahdanda Kasimpoor, ..	200	378	10	4	0	138	226	81	2	0	0
158	کوپری کرپلہ	Koopree Karela, ..	590	792	18	269	0	494	11	372	15	6	2
159	کوٹری	Kootree, ..	356	389	73	15	0	299	2	190	8	45	0
160	کوٹی لطف پور	Kootee Lutuf-oollapoor,||	0	455	455	0	0	0	0	64	0	0	0
161	کونار	Koonar, ..	800	1096	72	8	3	705	308	125	1	0	0
162	کوندرا چکوند	Koondra Chukoond, ..	900	652	11	27	4	538	72	459	56	17	9
163	کوندیلی	Kondelee, ..	450	480	12	63	1	383	21	300	12	0	0
164	کھرکھولی بزرگ	Khurkhowlee Buzoorg, ..	592	740	0	24	0	490	226	232	72	0	2
165	کھرکھولی خرد	Khurkhowlee Khoord, ..	430	490	17	9	3	435	26	91	2	2	0
166	کھریا ریلو	Khirreea Reloo,||	0	500	500	0	0	0	0	410	43	84	9
167	کھومک بیجونی	Khoomik Bijoneea, ..	2001	2249	30	124	0	1651	444	805	201	95	15
168	کھیرہ بزرگ	Khairah Buzoorg,**	0	885	885	0	0	0	0	277	24	309	64
169	کیشوپور	Keshopoor, ..	125	136	6	9	0	121	0	70	3	7	0
170	کیلوتا	Kailota, ..	260	291	12	3	0	276	0	75	0	3	0
171	کیلی اللہ پور	Kylee Allahpoor, ..	275	587	254	8	0	290	35	0	0	0	0
172	کیلی بدایون	Kylee Budaon, ..	1113	2029	20	79	0	1064	866	674	33	47	29
173	گوبواین	Gubwacen, ..	1700	1730	6	34	0	1143	547	556	83	349	103
174	گدھول	Gudhowl,††	Rs. A. 1732 8	3380	0	1635	0	1399	346	1308	106	22	74
175	گردھ پور	Girdhurpoor, ..	200	399	4	3	4	203	185	128	6	0	3
176	گودھاری	Goodwaree, ..	175	465	11	331	0	123	0	18	0	0	0
		Carried over, ..	74028 8	116837	19340	9249	174	61028	27046	42260	15114	7790	16780

* Released in perpetuity by Commissioner, dated 29th August 1832.

† Released in perpetuity by Commissioner, dated 5th February 1833. ‡ Released in perpetuity by Commissioner, dated 6th Oct. 1830. Ten Beeswahs, bearing a Jumma of 1,034 Rs. settled with Bolah Singh,—the remainder with Nuwal Singh. A market is held in the village.

|| Released in perpetuity by Commissioner, dated 22nd September 1833.

¶ Released in perpetuity by Special Commissioner, dated 7th September 1843.

** Released in perpetuity by order of Board of Revenue, dated 5th May 1823.

†† At Settlement, engagements were taken for this estate, and for Goorgunwan, No. 181, as one Mouzah. They were separated under Regulation XIX. of 1814, by Roobakaree dated 24th January 1850.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	74028 8	116837	19340	9249	174	61028	27046	42260	15114	7790	16780
177	گودھنی	Goodhnce, ..	487	578	15	35	1	496	31	14	16	0	0
178	گور پوری پٹی (اندرا)	Goorpooree, Puttee Anund Ram,*	375	225	6	35	0	175	9	602	130	29	44
179	گور پوری پٹی پیمراج	Goorpooree, Puttee Pem Raj,*	Rs. A. 187 8	113	0	22	0	83	8	0	0	0	0
180	گور پوری پٹی چنی لعل	Goorpooree, Puttee Choonnee Lall,*	187 8	113	0	21	0	84	8	0	0	0	0
181	گورگانوان	Goorgunwan,†	1417 8	2444	0	977	0	1389	78	843	216	42	59
182	گولریا	Goolaree, ..	4050	4247	148	134	14	2642	1309	2003	468	192	281
183	گونتہ پٹی بھونی	Gounturah, Puttee Bhonce, ..	400	585	74	85	7	419	0	613	64	45	101
184	گونتہ پٹی مکت	Gounturah, Puttee Mookut, ..	350	491	42	135	0	285	29	354	86	0	31
185	گونتہ پٹی نجیب	Gounturah, Puttee Nujeeb, Puttee Nujeeb,†	250	388	28	31	1	311	17	139	27	47	55
186	گونتہ پٹی نجیب	Gounturah, Puttee Nujeeb, Puttee Nirput,†	250	360	0	26	2	301	31	(a)0	0	0	0
187	گونتہ پٹی نرپت (نسی)	Gounturah, Puttee Nirput Runsee, ..	335	503	43	135	5	320	0	398	6	9	2
188	گھت بیٹی	Ghutbetee, ..	250	427	10	3	1	212	201	83	27	0	0
189	گھت پوری	Ghutpooree,§	648	925	0	178	0	627	120	458	314	32	30
190	گیونتی دھرم پور	Geeontee Dhurumpoor, ..	560	760	7	70	1	578	104	254	59	0	5
191	لائی فرید پور	Lace Fareedpoor, ..	500	1127	100	8	0	346	673	338	3	189	66
192	لکھن پور	Lukhumpoor,||	0	893	893	0	0	0	0	462	97	13	49
193	لالی	Lulace, ..	250	303	6	9	0	271	17	(b)0	0	0	0
194	مٹا بھورا	Muta Bhora, ..	460	378	2	4	0	250	122	0	0	0	0
195	مچھیا	Mujheea, ..	423	414	26	22	0	338	28	165	92	0	0
196	مچھلی	Muchlaee,¶	0	383	383	0	0	0	0	270	111	26	199
197	محمد پور بیار	Muhumudpoor, Baiair,**	0	623	623	0	0	0	0	162	0	220	35
		Carried over, ..	85409	133117	21746	11179	206	70155	29831	49418	16830	8634	17737

* Partition effected under Regulation XIX. of 1814, vide Roobakaree dated 5th September 1845.

† Vide Remarks for No. 174.

‡ Partition made under Regulation XIX. of 1814, vide Roobakaree dated 24th February 1845.

§ Originally rent-free; resumed in 1847; Roobakaree of Settlement dated 2nd October 1847. Demand not realized, pending appeal preferred to Special Commissioner.

|| Released in perpetuity by Special Deputy Collector, 12th October 1843.

(b) Population included in Hussunnugur, vide remarks for Hussunnugur, No. 87.

¶ Released by Special Deputy Collector, 27th October 1843.

** Released by Special Deputy Collector, 12th October 1843.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	85409	133117	21746	11179	206	70155	29831	49418	16830	8634	17737
198	محمد نگر سولہرا	Muhmudnug-gur Solhura,	1160	1523	36	123	9	1089	266	978	221	40	67
199	محمدی	Mahomdee, ..	655	640	3	109	0	388	140	356	88	41	153
200	مرزا پور	Mirzapoor,*	0	316	316	0	0	0	0	92	0	0	0
201	معظم پور چھجو	Moazimpoor Chujoo, ..	100	328	0	2	0	164	162	69	0	0	0
202	معظم پور میکنگر	Moazimpoor Mchnuggur,	382	844	63	43	0	327	411	0	0	0	0
203	ملک پور	Malikpoor,†	0	438	439	0	0	0	0	160	0	11	0
204	ملہان پور	Mulhanpoor,‡	0	365	365	0	0	0	0	113	0	0	0
205	منکا پور سرور	Munkapoor Surora,	328	461	14	254	0	192	1	52	0	6	0
206	موساجاگ	Moosajag, ..	300	653	6	2	0	115	530	26	0	0	0
207	مونڈیا	Moondia,§	50	274	5	5	0	70	194	10	0	9	0
208	مونگر	Moongurh, ..	602	920	30	10	0	670	210	318	34	22	38
209	موہن پور	Mohunpoora, ..	95	184	2	0	0	149	33	0	0	0	0
210	مہرا	M'hera, ..	360	411	0	20	0	391	0	0	0	0	0
211	میاری سندر نگر	Maiarce Soon-dunnuggur, ..	390	510	11	106	5	372	16	0	0	0	0
212	مہرا	Mecaw,||	2365	3163	78	308	7	2502	268	1707	192	144	132
213	می بوچن	Myeboojun,¶	0	555	555	0	0	0	0	67	0	58	20
214	میران پٹی	Meeran Puttee, ..	139	355	65	18	0	170	102	0	0	0	0
215	میر رجو	Myr Rujoo,**	265	611	0	111	0	235	265	113	10	8	19
216	نڈولہا	Nudowleah, ..	250	400	11	3	0	193	193	74	8	8	2
217	نرکھراہ	Nurkherah, ..	578	542	8	6	0	378	150	281	49	12	53
218	نرو بووژورگ	Nuroo Boojoorg, ..	135	362	32	8	0	149	173	0	0	0	0
219	نرو پسا	Nurow Pusa, ..	300	379	7	11	3	257	101	145	18	0	0
220	نرو خورد	Nurow Khoord, ..	235	554	74	60	0	324	96	51	0	0	0
221	نرلی مہرا	Nurelee M'hera,††	525	629	162	108	0	359	0	290	52	9	40
222	نظام پور پچنور	Nizampoor Puchtour,‡‡	0	435	435	0	0	0	0	26	26	93	4
223	نگریا چکن	Nugureea Chuk-kun, ..	175	189	6	3	0	180	0	146	0	2	0
224	نگریا حسین گنج	Nugureea Hos-seingunj, ..	225	306	4	30	3	203	66	57	10	0	0
		Carried over, ..	95023	149464	24472	12519	233	79032	33208	54549	17538	9097	18265

* Released in perpetuity by Commissioner, dated 5th February 1833.

† Released in perpetuity by Commissioner, dated 10th March 1832.

‡ Released in perpetuity by Commissioner, dated 3rd May 1832.

§ Originally rent-free, resumed in 1840; Roobakaree of Settlement dated 24th March 1843.

|| A market is held in this village every Monday and Thursday.

¶ Released in perpetuity by Special Commissioner's order, dated 12th December 1843.

** Rent-free until 1847; assessed from 1st May 1848, vide Roobakaree of Settlement dated 28th January 1849.

†† Resumed in 1833; Roobakaree of Settlement dated 28th August 1833.

‡‡ Released in perpetuity by order of Commissioner, dated 23rd October 1832.

REGISTER OF MOUZAHS IN PERGUNNAH BUDAON—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	95023	149464	24472	12519	233	79032	33208	54549	17538	9097	18265
225	نگلہ شرقی پٹی خورد	Nugla Shirkee, Puttee Khoord,*	115	126	0	24	0	102	(a)0	0	0	0	0
226	نگلہ شرقی پٹی کلان	Nugla Shirkee, Puttee Kulan,†	1161	1147	28	126	0	925	68	451	286	27	77
227	نگلیا برسونیا	Nuguleea Bursonee,‡	100	312	7	253	1	51	0	34	0	0	0
228	نوادہ پٹی اجیت	Nowadah, Puttee Ajeet, ..	92	110	0	11	0	99	0	289	13	0	0
229	نوادہ پٹی انچھا	Nowadah, Puttee Incha, ..	105	124	0	6	0	115	3	(b)0	0	0	0
230	نوادہ پٹی بھوانی	Nowadah, Puttee Bhowanee, ..	105	122	0	17	0	95	10	0	0	0	0
231	نوادہ پٹی دربار	Nowadah, Puttee Durbar, ..	105	120	0	15	0	103	2	0	0	0	0
232	نوادہ پٹی رتی	Nowadah, Puttee Rutch, ..	13	15	0	0	0	15	0	0	0	0	0
233	نٹھو	Naithoo, ..	471	620	7	188	1	407	17	260	72	50	48
234	نیک پور	Nekpoor, ..	259	398	81	74	17	190	36	0	0	0	0
235	ہادی پور	Hadeepoor,§	190	331	0	65	0	265	1	0	0	0	0
236	ہدیورا	Hudeewra, ..	250	635	7	7	0	182	439	69	89	0	0
237	ہرناتھ پور	Hurnathpoor, ..	527	526	86	60	0	267	113	95	59	137	70
		Total, ..	98516	154050	24688	13365	252	81848	33897	55747	18057	9311	18460

* Nugla Shirkee is divided into two Mouzahs, under Regulation XIX. of 1814, vide Roobakaree dated 26th April 1845.

(a) Population included in the Puttee Kulan. † The Jumma includes Rs. 126 on account of resumed maafee. ‡ Vide Appendix No. 2.

(b) Population included in the above. § Originally rent-free; resumed in 1839; Roobakaree of Settlement dated 20th March 1847.

APPENDIX A.

No. 1.—PUDHOLEEA.—A mistake appears to have occurred in the professional survey return. The actual Area of the Mouzah being as follows:—

Total.	Rent-free.	Barren.	Cultivated.	Culturable.
443	64	119	251	9

No. 2.—SOORUPOOR AND NUGULEEA BURSONEE.—The Settlement was made on the area, as shown in the Register. A mistake however occurred, as the statistical survey books show the area of these villages to be as follows:—

	Total.	Rent-free.	Barren.	Cultivated.	Culturable.
Soorupoor, ..	246	0	13	223	10
Nuguleea Bursonee, ..	532	0	22	78	452

M. H. COURT,
Deputy Collector.

APPENDIX No. XXXI.

REGISTER OF MOUZAHS

IN

PERGUNNAH O O J H A N E E.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	آتور	Itwur, ..	255	382	8	44	2	262	66	87	0	0	0
2	آتھکان بھم پور	Atheacan Beempoor,	300	582	10	67	0	256	249	205	14	0	0
3	آچورا	Achora, ..	411	945	15	94	10	522	304	290	6	17	13
4	آچولہ	Acholee, ..	518	623	18	118	5	438	44	317	0	7	0
5	آسراسی	Usrasee, ..	910	1267	8	242	2	530	485	351	9	22	8
6	آکٹامی	Aktamye, ..	198	362	10	40	3	219	90	89	0	0	0
7	آلیہ پور بھوجی	Allapoor Bhojee,	800	729	14	115	5	595	0	333	99	36	78
8	آلیہ پور چماری	Allapoor Chamarie, ..	425	819	23	92	0	454	250	299	5	0	0
9	آنتوٹیا	Antoea, ..	168	469	6	50	0	335	78	134	0	0	0
10	آنی	Anee, ..	545	477	7	49	0	420	1	153	0	0	0
11	آوجھانی	Oojhane, *	1501	1615	34	393	33	896	269	1940	2694	264	1463
12	آھرورہ	Ahirwura, ..	650	624	27	45	0	552	0	419	0	121	5
13	آبارہ چہرہ	Barahchirra, ..	986	1399	8	123	1	1172	95	312	24	11	8
14	آبٹروٹی	Butroee, ..	780	1126	5	151	4	777	189	521	136	14	10
15	آبھولہ	Bicholah, ..	225	378	7	44	0	327	0	154	20	0	0
16	آبخت پور	Bukhtpoor, ..	225	201	7	22	0	126	46	100	11	0	0
17	آبدر پور	Budurpoor, ..	412	348	13	24	0	285	26	169	67	6	13
18	آبرمالدیو پٹی بہادر سنگھ	Bura Maldeo, Puttee Bahadur Singh, †	428	397	11	88	0	290	8	232	0	0	0
19	آبرمالدیو پٹی شنکر سنگھ	Bura Maldeo, Puttee Shunkur Singh, ..	140	127	3	22	0	100	2	(a)0	0	0	0
20	آبرامکرا	Bura Mekra, ..	950	886	10	126	0	697	53	303	111	10	9
21	آبرورہ	Bursorah, ..	800	873	14	68	12	779	0	509	0	0	8
22	آبروتیا	Burawteea, ..	400	406	15	52	2	337	0	158	0	38	0
23	آبسترا	Bustura, ..	500	497	7	126	0	356	8	134	0	109	16
24	آبسنٹ نگر	Busuntnuggur, ..	190	262	0	25	0	220	17	168	24	15	0
25	آبسومان	Busooman, ..	762	780	105	100	1	481	93	545	0	71	0
26	آبمنوسی	Bumnosee, ..	700	941	10	100	2	704	125	533	46	54	25
27	آبگنوان	Bungunwan, ‡	36	454	454	0	0	0	0	151	0	10	0
28	آبنیاد پور	Buneeadpoor, ..	528	684	0	20	0	372	292	0	0	0	0
29	آبوتلا پٹی دولت سنگھ	Bootla, Puttee Doulut Singh, §	979	1671	12	162	0	1049	448	1280	356	27	0
30	آبوتلا پٹی کنجن سنگھ	Bootla, Puttee Kunjun Singh, ..	913	1391	10	138	0	961	282	(b)0	0	0	0
Carried over, ..			16635	21715	871	2730	82	14512	3520	9886	3622	832	1656

* A market is held in this town every Saturday and Tuesday.

† Five Biswahs of this estate were separated under Regulation XIX. of 1814, vide Roobakaree dated 28th November 1850.

(a) Population included in the above.

‡ The 36 Rupees entered as Jumma are paid as Nuzarana by the masfeedars, who hold the estate rent-free in perpetuity.

§ This estate was divided into two Mouzahs under Regulation XIX. of 1814, vide Roobakaree dated 27th January 1842.

(b) Population included in Puttee Doulut Singh.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	16635	21715	871	2730	82	14512	3520	9886	3622	832	1656
31	بورہ فرید پور	Bourah Fureed-poor, ..	325	376	8	58	0	262	48	178	0	4	0
32	بورندری	Boondree, ..	575	724	9	108	24	313	270	301	52	0	4
33	بھتہ دمر نگر	Behtah Dumurnuggur, ..	810	942	30	82	3	631	196	41	0	160	120
34	بھدرولیا	Bhudrouleca, ..	114	307	0	12	0	97	198	71	0	0	0
35	بھدسیا بھوٹیا	Bhudussea Bhumoea, ..	828	1221	17	64	0	1084	56	130	9	255	12
36	بھوکوٹیا	Bhurkoea, ..	1000	734	12	26	0	623	73	417	212	15	112
37	بھوسورا	Bhusorah, ..	550	786	8	109	2	341	326	342	63	0	11
38	بھوکورا اسلام نگر	Bhukora Islamnuggur, ..	300	639	6	428	0	157	48	151	53	0	0
39	بھوپور ناراین پور	Bhojpoor Narayunpoor, ..	580	1787	15	188	0	712	872	88	0	0	0
40	بھورا بدروں	Bhoora Budrowl, ..	1014	1786	20	921	2	741	102	510	328	27	0
41	بھوریا	Bhooreea, ..	185	287	7	54	0	198	28	76	0	0	0
42	بھار ہرچند	Beear Hurchund, ..	222	303	4	38	1	219	41	67	0	0	0
43	بال پور	Pallpoor, ..	275	444	9	50	0	116	269	86	22	0	0
44	پپروں	Piprowl, ..	1688	2581	91	1486	0	601	403	739	380	33	0
45	پٹپور گنج	Putpurgunj, *	100	620	15	16	0	176	413	79	7	0	0
46	پٹورا	Putora, ..	215	353	8	36	0	189	120	104	0	0	0
47	پسائی	Pusaee, ..	423	525	7	48	2	416	52	186	0	26	0
48	پلیا	Pulleca, ..	583	593	0	0	0	0	0	160	0	6	0
49	پلیا کنچن پور	Pullea Kunchunpoor, †	1000	1014	9	114	0	593	298	317	238	0	3
50	پھولاسی	Phoolasee, ..	380	583	8	97	1	231	246	237	20	35	0
51	پھولپور	Phoolpoor, ..	400	685	7	90	2	183	403	129	0	0	0
52	پیربٹو	Peerbutoo, ‡	140	325	15	4	0	188	118	60	0	0	0
53	پیرنگر	Peernuggur, ..	220	441	9	51	0	205	176	83	5	0	0
54	تیار پور	Titarpoor, ..	700	799	14	56	0	732	0	312	42	41	56
55	تیرا	Tera, ..	296	342	14	10	0	254	64	37	13	0	0
56	جپ پور	Juppoora, ..	305	341	7	22	0	287	25	194	0	19	0
57	جرولیا	Jurowleca, ..	200	173	10	16	0	146	1	41	22	0	0
58	جرولیا کوالی	Jurowleca Kewalee, ..	817	775	29	27	0	663	56	207	3	0	0
59	جلال پور	Julalpoor, ..	1640	2872	13	938	23	1457	441	871	0	250	0
60	جورا پاروارا	Jeora Parwara, ..	900	1620	12	184	10	753	661	491	59	7	2
Carried over, ..			32837	46683	1864	8063	152	27080	9524	16621	5150	1710	1976

* Rent-free until 1839, when resumed; Roobakaree of Settlement dated 1st May 1842.

† At time of Settlement the cultivated area was separately assessed, viz. 303 acres, bearing a demand of Rs. 520, with Mya Singh; 281 acres, bearing a demand of Rs. 420, with Himut Singh, vide Roobakaree of Settlement.

‡ Rent-free, originally resumed in 1839, first assessed in 1842, vide Roobakaree of Settlement dated 12th May 1842.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	32837	46683	1864	8063	152	27080	9524	16621	5150	1710	1976
61	چمرولی	Chumroulee,	235	289	11	33	0	230	15	149	19	0	4
62	چندون پور	Chundunpoor,	825	1567	18	627	1	476	445	418	307	6	11
63	چندور	Chundow,	714	470	10	50	0	410	0	356	26	28	0
64	چندورا	Chundowra,*	285	475	0	12	0	433	30	79	12	0	0
65	چووریا	Chooreea,†	90	211	0	3	0	203	5	39	0	0	0
66	چوسنگا	Chowsingha,	350	233	6	30	0	145	52	60	25	4	0
67	چھونڈھیرا	Choundhera,	1000	1153	13	157	0	916	67	468	86	14	54
68	چھوتوہا	Ch'hutoeca,	306	843	10	76	3	407	347	227	106	0	2
69	چھیل پورا	Cheelpoora,	125	248	0	27	2	128	91	96	0	0	0
70	حسین پور	Husunpoor,	25	143	0	39	0	9	95	0	0	0	0
71	حسین پور	Hoseinpoor,	1750	1884	35	242	4	1020	583	627	629	80	9
72	حضرت گنج	Hazratgunj,	800	1196	13	130	0	829	224	381	62	0	2
73	دلور	Dilour,	700	520	11	64	0	340	105	93	0	3	0
74	دوندی نگر	Doondeennuggur,	470	478	18	88	0	372	0	207	118	8	52
75	دھیمون	Duhmoon,	900	1321	16	165	10	600	530	393	146	0	39
76	دھون پورا	D'hunoonpoora,	450	468	10	32	0	426	0	224	0	0	0
77	راے پور دوندھیرا	Racepoor Doundhera,	1750	2023	19	257	2	1279	466	889	15	13	73
78	رمضان پور	Ramzanpoor,†	0	1741	1741	0	0	0	0	661	83	668	70
79	رناو	Runow,	518	606	10	84	1	434	77	263	0	11	0
80	رونوہا	Runoeca,	1600	2523	25	317	7	996	1178	1020	17	2	3
81	روشن نگر	Roshunnuggur,	0	168	168	0	0	0	0	137	3	0	0
82	رولی پتی مشرق	Rolee, Puttee Mushruq,	665	553	7	86	0	454	6	216	117	18	0
83	رولی پتی مغرب	Rolee, Puttee Mughrub,	700	721	7	92	0	606	16	288	79	0	9
84	ریور	Rewur,	200	390	6	53	0	169	162	198	11	8	0
85	سارنگ پور	Sarangpoor,	350	226	8	23	0	195	0	204	0	0	0
86	سڈھانہیر	Sudhather,	175	256	4	0	0	252	0	161	35	0	0
87	سرائے سالہ پور کوٹھہ	Suraee Salehpoor Kotha,§	90	159	7	32	0	117	3	213	87	0	43
88	سرسا دبرئی	Sirsa Dubray,	422	742	9	95	0	546	92	310	17	15	0
89	سرسولی سلطان گنج	Sirsowlee Sul-tangunj,	1208	1605	55	241	23	1286	0	616	38	2	4
90	سورتیا	Surowtea,	925	672	14	80	4	456	118	347	137	11	8
91	سورورا	Surora,	230	276	81	0	0	195	0	0	0	0	0
92	سکری جنگل	Sukree Jungul,	1010	932	56	53	4	819	0	277	110	36	173
		Carried over,	51705	71775	4252	11251	213	41828	14231	26238	7435	2637	2532

* Originally rent-free; resumed in 1845; Boobakaree of Settlement dated 25th November 1846.

† Same remarks as for Chundowra, No. 64.

‡ Released from assessment in perpetuity by order of Sudder Board, dated 27th March 1838.

§ Rent-free until 1840, when resumed; Boobakaree of Settlement dated 20th March 1843.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	51705	71775	4252	11251	213	41828	14231	26238	7435	2637	2532
93	سکری قاسم پور	Sukree Kasimpoor,	950	826	11	37	8	770	0	390	60	0	21
94	سکندر آباد	Sikundurabad,	1364	2179	17	255	6	945	956	609	1	26	0
95	سنائی	Sunae,	236	312	10	104	0	198	0	312	14	4	2
96	سنجر پور پٹی کولال	Sunjurpoor, Puttee Koolal,	450	543	9	65	0	415	54	1011	231	68	24
97	سنجر پور ہوسہ پٹی	Sunjurpoor, Husee Puttee,	1601	1569	44	146	3	1368	8	(a)0	0	0	0
98	سوی ہامد پور	Sawae Hamidpoor,	580	1099	7	246	0	378	468	287	0	12	0
99	سورکا	Soorka,	750	1213	8	148	2	483	572	431	0	20	4
100	سوکھتیا	Sookutea,	215	426	7	9	1	247	162	135	0	0	0
101	سہسیان	Sahusean,	239	471	4	17	0	231	219	38	0	0	0
102	شیخوپور	Sheikhoor,*	3125	6177	2134	757	6	2883	397	1974	845	550	532
103	عبداللہ گنج	Abdoollahgunj,	900	879	20	124	4	731	0	694	328	59	36
104	علی پور مدیان	Alleepoor Mu-decan,	300	986	11	107	2	274	592	270	0	0	4
105	فتح پور	Futhepoor,	300	326	14	39	1	244	28	213	0	39	0
106	فیروز پور اکلاہی	Ferozepoor Ek-lare,†	165	272	0	33	0	219	20	58	0	0	0
107	قادر چوک	Kadirchoke,	1850	2870	0	832	0	1230	808	764	75	68	36
108	گتیاں پورچو	Kutinan Purchoo,	1400	1688	52	258	3	1180	195	804	209	38	24
109	کٹھولی	Kuthowlee,	520	640	10	107	3	503	23	251	68	0	35
110	کچورا	Kuchora,	800	2030	11	228	0	1462	329	385	0	31	0
111	کچھلا	Kuch'la,	2300	3197	27	743	36	1261	1130	1074	416	12	7
112	کشیوپورا	Kisooopoora,	50	100	4	0	0	96	0	0	0	0	0
113	ککورا	Kukora,	4000	4153	21	550	11	2477	1094	1644	391	27	85
114	کلپیا	Kulpeea,‡	0	307	307	0	0	0	0	0	0	75	0
115	کنعان پور	Kinanpoor,	225	292	7	27	0	258	0	80	11	0	0
116	کواہ داندہ	Kooah Danda,	420	517	11	67	3	307	129	237	41	0	5
117	کودھا	Kodha,	200	496	9	171	0	142	174	117	5	0	0
118	کودھا شاہ پور	Kodha Shahpoor,	1005	1799	16	753	0	406	624	739	58	35	17
119	کوروا	Kooraw,	717	730	29	28	0	564	109	388	206	75	4
120	کور کھیتہ	Koorah,	65	125	7	19	0	53	46	112	10	0	0
121	کھجورارا قاسم پور	Khujrara Kasimpoor,	1600	1492	53	124	0	823	492	801	0	11	0
122	کھریا باقر پور	Khireea Bakurpoor,	550	1464	8	141	0	398	917	286	0	13	0
123	کھورارا	Khurwara,	45	76	0	8	0	21	47	39	0	0	0
		Carried over,	78627	111029	7120	17388	302	62395	23824	40381	10404	3800	3368

(a) Population included in Surjunpoor, Puttee Koolal.

* A market is held in this village on Sundays and Wednesdays. † Same remarks as for Chundowra, No. 64.

‡ Released from assessment in perpetuity by order of Board of Revenue, dated 10th August 1833.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	78627	111029	7120	17388	302	62395	23824	40381	10404	2800	3363
124	گدھورا	Gudhora, ..	350	573	9	60	1	224	279	178	19	0	14
125	گدھیا گنگ برآمد	Gurheca Gung Buramud, ..	300	619	3	171	1	164	280	57	7	0	0
126	گنگ پور	Gungpoor, ..	35	598	0	365	0	0	233	66	0	0	0
127	گنگ چھورا	Gungchora,* ..	0	446	446	0	0	0	0	0	0	0	0
128	گورا مکی	Gooramye, ..	1139	1011	11	51	2	809	138	256	117	474	94
129	گورانی	Goorace, ..	707	575	10	30	0	535	0	187	47	0	42
130	گھٹونان	Ghutoonan, ..	700	674	11	34	4	625	0	499	0	64	0
131	گھٹیا ری	Ghutcearee, ..	489	455	8	41	3	361	42	242	0	6	0
132	لالو پور نگریا	Laloo poor Nugreea, ..	237	775	7	70	0	622	76	0	0	0	0
133	لبھاری	Lubharee, ..	1100	1468	13	469	34	904	48	604	33	0	27
134	لکھو پورا	Lukhoopoor, ..	550	533	9	115	2	372	35	294	33	0	0
135	للوہا	Lulloeca, ..	325	485	33	69	10	206	162	107	0	0	0
136	لوا	Lowa, ..	372	358	5	41	0	301	11	176	0	0	0
137	لوندابھری	Loundabherce, ..	314	1035	51	22	0	425	537	48	0	8	0
138	لوہر تھر	Lohurthee, ..	452	541	68	1	0	472	0	47	4	8	5
139	مانک پور	Manikpoor, ..	500	402	15	103	0	282	2	115	20	229	14
140	مزرہ گنگ برآمد	Myra Gung Buramud, ..	250	990	2	183	0	115	690	132	0	0	0
141	محشم پور	Mohsumpoor, ..	503	839	10	100	0	479	250	321	0	8	28
142	محمد گنج	Mohumudgunj, ..	1372	1318	19	149	35	1101	14	1040	0	75	44
143	مدھولی	Mudhoulee, ..	1800	2365	31	181	9	1744	400	502	0	153	0
144	مرزا پور	Mirzapoor, ..	230	229	5	24	0	200	0	82	0	0	0
145	مامون گنج	Maamoongunj, ..	825	1008	11	131	0	834	32	436	72	12	0
146	مگورا جلاسی	Mugurra Julasee, ..	600	548	10	99	1	409	29	251	97	20	4
147	ملک پور	Mulikpoor,† ..	175	374	0	22	0	334	18	171	0	0	0
148	ملہامی	Mulhamye, ..	325	417	8	38	3	368	0	193	0	0	0
149	مہونان	Mahonan, ..	921	931	10	223	1	604	88	400	15	0	0
150	ناگور	Nagur,‡ ..	0	146	146	0	0	0	0	73	61	0	0
151	ناگوری	Nagooree, ..	197	266	5	2	0	207	52	35	0	0	0
152	ندان پورا	Nidanpoora, ..	531	610	11	78	2	318	201	211	0	21	0
153	نراد	Nuraw, ..	405	498	35	77	0	348	38	152	0	0	0
154	نرسنگ پور	Nursingpoor, ..	300	592	6	71	0	374	141	163	0	0	0
155	نصرو اللہ پور	Nusuroollahpoor, ..	636	625	6	98	12	509	0	375	21	0	0
156	نظام آباد	Nizamabad, ..	550	921	6	130	11	485	239	257	4	6	0
157	نگلہ طیب پور	Nugla Tyubpoor, ..	161	159	6	17	0	130	6	122	0	0	0
		Carried over, ..	95983	134413	8151	20658	433	77256	27915	48173	10954	4884	8640

* Rent-free tenure confirmed in perpetuity by orders of Lieutenant-Governor, dated 17th June 1842.

† For remarks, vide Chundowra, No. 64.

‡ Rent-free tenure released in perpetuity by Commissioner's order, dated 2nd October 1837.

REGISTER OF MOUZAHS IN PERGUNNAH OOHANEE—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	95983	134413	8151	20658	433	77256	27915	48173	10954	4884	8640
158	نانا کھیرہ	Nanakherah, ..	2227	4014	89	1370	3	935	1617	792	509	172	42
159	نور پور	Noorpoor, ..	1409	2996	23	951	0	1103	919	435	6	180	24
160	نور گنج	Noorgunj, ..	101	53	1	1	0	51	0	38	10	0	0
161	ہرپال پور	Hurpalpoor, ..	375	409	7	18	0	240	144	73	60	39	4
162	ہلپورا	Hulpoora, ..	100	156	7	18	0	131	0	10	0	0	0
		Total, ..	100195	142041	8278	23016	436	79716	30595	49521	11539	5275	8710

M. H. COURT,

Deputy Collector.

APPENDIX No. XXXII.

REGISTER OF MOUZAHS

IN

PERGUNNAH SULEIMPOOR,

INCLUDING

ZILLAHS AZIMABAD AND HUZRUTPOOR.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	ابھ پور	Abheypoor, ..	600	450	12	5	0	282	151	267	30	43	0
2	آٹسنا	Atsena, ..	500	513	11	6	0	210	286	152	0	0	0
3	آریلا عرف داتا گنج	Arela, oorf D- tagunj, ..	295	324	33	41	4	219	27	421	924	52	301
4	اسمعیل پور	Ismailpoor, ..	350	334	10	10	1	266	47	68	17	28	0
5	اسوری	Asoree, *	342	487	0	102	0	202	183	0	0	0	0
6	اسی نوادہ	Asee Nowadah, ..	260	558	6	90	2	137	323	110	0	0	0
7	آصف پور	Asufpoor, ..	870	505	34	26	40	318	87	418	140	0	20
8	عظیم آباد	Azimabad, ..	60	192	5	0	0	70	117	0	0	0	0
9	عظیم پور بسوریا	Azimpoor Biso- reca, ..	890	636	23	10	5	416	182	455	53	23	30
10	افضل پور	Afzulpoor, ..	330	336	11	4	0	295	26	120	0	0	7
11	افضل پور حضرت پور	Afzulpoor Huz- rutpoor, ..	200	205	0	1	0	176	28	0	0	0	0
12	اکبر پور	Akbarpoor, ..	387	258	11	6	0	233	8	164	9	0	0
13	اگسی	Agsee, ..	190	266	7	2	0	120	137	35	0	0	3
14	امرونی	Amroulee, ..	400	788	7	2	0	252	527	87	0	0	0
15	اندھرو	Andhrow, ..	685	615	11	16	11	428	149	418	79	18	75
16	انگ پور	Angudpoor, ..	427	359	36	6	4	225	88	208	180	0	0
17	انند پور	Anundpoor, ..	270	258	11	10	0	134	103	111	0	0	0
18	انند پور حضرت پور	Anundpoor Huz- rutpoor, ..	55	139	4	7	0	61	67	215	0	0	0
19	اودنا اودنیان	Aodna Oodunee, ..	140	180	6	1	0	136	37	65	0	0	10
20	اورینہ	Aorchna, †	204	445	0	107	0	86	252	52	0	0	0
21	اگون پور	Aogunpoor, †	162	419	0	21	0	63	335	0	0	0	0
22	اھر پور	Ahirpoora, ..	150	85	0	0	0	74	11	0	0	0	0
23	باقر پور	Bagurpoor, ..	221	179	6	5	0	134	34	79	13	0	0
24	بچھلیا	Buchulcea, ..	722	679	16	116	2	430	115	623	51	31	24
25	بدھو پور	Budhoopoora, ..	560	207	14	11	0	150	32	169	4	0	7
26	براہے سہوڑ	Birahee Schora, ‡	600	912	177	112	90	255	278	503	200	0	62
27	بریاڈانڈی	Bireea Dandee, ..	301	201	8	6	7	175	5	379	0	0	0
28	بریار پور	Bareearpoor, ..	130	218	4	2	0	48	164	55	0	0	0
29	بسوریا	Bisourcea, ..	250	226	6	11	14	76	119	36	0	8	0
30	بسلا	Buselah, §	1900	2525	21	145	7	998	1354	799	38	0	6
31	بکسینہ	Buksena, ..	2281	2408	87	128	13	1520	660	1329	241	71	187
32	بمہیانا	Bumhecana, ..	350	245	12	16	1	185	31	310	18	2	0
33	بورا براہم پور فیروز پور	Boura, .. Berahimpoor, .. Ferozepoor, ||	475	977	17	127	101	332	400	371	0	4	0
Carried over, ..			15557	17129	606	1152	302	8706	6363	8019	1947	280	735

* Settlement revised in 1814, confirmed by orders of Government, No. 297, 1st September 1845.

† The Settlements of these two Mouzahs were revised in 1843; revision confirmed by order No. 2507, dated 30th July 1844.

‡ Settlement revised in 1844; revision confirmed by orders of Government, No. 11822, dated 22nd March 1845. A market is held in the village on Saturdays and Tuesdays.

§ Same remarks as for Nos. 20 and 21.

|| Vide remarks, No. 26.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	15557	17129	606	1152	302	8706	6363	8019	1947	280	735
34	بھاری پور چیمرام	Behareepoor Chem Ram, ..	35	69	0	0	0	55	14	0	0	0	0
35	بھاری پور عجب	Behareepoor Ajub,	725	428	8	8	6	312	94	308	68	0	5
36	بھاری پور ہنسراج	Behareepoor, Hunsraj, ..	50	173	0	0	0	0	173	0	0	0	0
37	بھاری پور مٹسینہ	Behareepoor, Moosena, ..	655	1220	21	19	0	486	694	351	40	37	12
38	بھتولی پٹی بھاری سنگھ	Bhutowlee, Put- tee Puharee Singh, *	Rs. A. 69 2	69	16	2	0	43	8	742	295	21	148
39	بھتولی پٹی تولک	Bhutowlee, Put- tee Toluk, ..	69 2	70	16	2	0	44	8	0	0	0	0
40	بھتولی پٹی بلجیت	Bhutowlee, Put- tee Baljeet, ..	138 4	139	30	4	0	89	16	0	0	0	0
41	بھتولی پٹی بھکا	Bhutowlee, Put- tee Bhikka, ..	69 2	70	16	1	0	45	8	0	0	0	0
42	بھتولی پٹی بسنت	Bhutowlee, Put- tee Busunt, ..	69 2	70	16	1	0	45	8	0	0	0	0
43	بھتولی پٹی نارائن	Bhutowlee, Put- tee Narayan, ..	69 2	70	16	1	0	45	8	0	0	0	0
44	بھتولی پٹی جیکشن	Bhutowlee, Put- tee Jykishun, ..	69 2	70	16	1	0	45	8	0	0	0	0
45	بھتولی پٹی مدھی	Bhutowlee, Put- tee Bidhee, ..	39 8	40	12	1	0	22	5	0	0	0	0
46	بھتولی پٹی چکن	Bhutowlee, Put- tee Chukun, ..	39 8	40	9	1	0	25	5	0	0	0	0
47	بھتولی پٹی نیچل	Bhutowlee, Put- tee Nechul, ..	39 8	40	9	1	0	25	5	0	0	0	0
48	بھتولی پٹی اردھو	Bhutowlee, Put- tee Oodoo, ..	29 10	30	8	1	0	17	4	0	0	0	0
49	بھتولی پٹی کملی	Bhutowlee, Put- tee Kumleh, ..	29 10	30	9	1	0	17	3	0	0	0	0
50	بھتولی پٹی جیکشن	Bhutowlee, Put- tee Jaikishun, ..	29 10	30	8	1	0	18	3	0	0	0	0
51	بھتولی پٹی درشن	Bhutowlee, Put- tee Durshun, ..	29 10	29	8	1	0	17	3	0	0	0	0
52	بھتہ مادھو	Behtah Madho, ..	425	485	14	6	4	278	183	218	18	0	0
53	بھکونڈہ	Bhukounda, †	0	405	405	0	0	0	0	10	0	0	0
54	بھگوان پور تلوک پور	Bhugwanpoor Tilokpoor, ..	550	442	10	20	1	317	94	269	0	0	0
55	بھگوتی پور	Bhugouteepoor, ..	380	506	118	53	8	273	54	220	94	0	24
56	بھمن پور	Bhumunpoora, ..	275	189	26	3	14	97	49	182	36	0	0
Carried over, ..			19442	21843	1397	1280	335	11021	7810	10319	2498	338	924

* Bhutowlee was divided into 14 separate Mouzahs, under Regulation XIX. of 1814, vide Roobakarree dated 1st January 1811. There is a market held in the village every Saturday and Tuesday.

† Rent-free during life of present Maafcedars, by order of Special Collector, dated 23rd January 1840.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Summa of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	19442	21843	1307	1280	335	11021	7810	10319	2498	338	924
57	بھون پور چھتری	Bhumunpoor Chitree, ..	232	323	5	4	1	180	133	112	15	0	1
58	بھورکا	Bhooreca, ..	25	135	2	0	0	21	112	0	0	0	0
59	بھیدا	Bheda, ..	300	289	12	11	6	189	71	161	7	0	0
60	بھیکم پور	Bheekumpoor, ..	127	142	4	2	0	48	88	112	1	0	0
61	بھیرم پور	Beerumpoor, *	410	681	70	24	7	215	365	404	44	0	6
62	پاپور ہوما پور	Papur Humza-poor, ..	1980	1320	85	74	31	995	135	1024	386	13	105
63	پپلا	Pipla, ..	995	614	9	42	40	379	144	535	637	25	96
64	پتھی بجا	Puttee Bija, ..	250	426	6	60	0	91	269	138	7	6	0
65	پتھی بلیا لٹو	Puttee Bullea Lultoo, ..	456	419	10	19	6	275	109	130	62	9	40
66	پدھرا	Pudhrah, ..	200	392	0	0	4	103	285	0	0	0	0
67	پورا	Purah, †	931	899	73	25	6	635	160	455	334	42	129
68	پورتور گنج	Purtowurgunj, ..	20	246	0	1	1	22	222	0	0	0	0
69	پرسیدھ پور	Pursidhpoor, §	530	518	15	113	0	301	89	308	143	0	37
70	پوروار	Purewar, ..	500	247	11	10	1	221	4	208	20	0	0
71	پسیدانگہ	Pusseca Ngla, ..	350	237	8	2	0	189	38	100	0	0	3
72	پلیا گو جر	Pulleca Goojur, ..	1789	1137	24	33	19	846	215	727	86	0	25
73	پلیا لٹو پتھی بھگونت سنگھ	Pulleca Luthoo, Puttee Bugwunt Singh, ||	134	112	1	18	0	80	14	51	22	9	21
74	پلیا لٹو پتھی دھرم سنگھ	Pulleca Luthoo, Puttee Dhurum Singh, ..	134	113	1	18	0	80	14	11	0	0	0
75	پلیا لٹو پتھی لچھی سنگھ	Pulleca Luthoo, Puttee Luchee Singh, ..	267	226	3	35	0	159	29	87	50	0	12
76	پندلی بیہیرا	Pandelec Bujhe-rah, ..	745	716	20	7	0	447	242	209	0	12	0
77	پندلی رگی	Pandelec Rugjee, ..	365	294	8	6	0	195	85	280	0	5	0
78	پورن بھیدا	Poorun Bhenda, ..	50	114	0	26	0	22	66	44	0	0	0
79	پورن پتھی	Pooraince, ..	720	507	11	23	8	408	57	409	30	15	45
80	پیرا	Peera, ..	150	124	5	3	0	66	50	19	0	0	0
81	تاج پور	Tajpoor, ..	150	194	0	0	9	46	129	0	0	0	0
82	تولا پور	Toolapoor, ..	597	1017	8	37	5	367	600	257	16	4	0
83	تکسینہ	Tuksena, ..	20	174	0	0	0	0	174	0	0	0	0
		Carried over, ..	31869	33460	1788	1873	479	17601	11719	16159	4373	484	1448

* Vide remarks, No. 20.

† A market is held in this village every Friday and Monday.

‡ A market is held in this village every Sunday and Wednesday.

§ Details of Settlement made in 1842, confirmed by orders of Government, dated 30th July 1843, No. 2307.

|| This estate was divided into three Mouzabs, by Roobakaree dated 15th July 1843.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Summa of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	31869	33460	1788	1873	479	17601	11719	16159	4373	484	1448
84	توکرا پلورا	Tokra Palora, ..	460	389	62	2	0	325	0	0	0	0	0
85	تیہی	Tihee, *	81	349	0	280	0	29	40	0	0	0	0
86	جرونہ کلہار	Jurona Koolhar, ..	375	931	8	19	0	106	798	114	0	0	0
87	جگواسی	Jugooa Saec, †	478	512	8	65	0	134	305	99	0	0	0
88	جمال پور	Jumalpoor, ..	1821	2928	62	89	10	1160	1607	1204	83	48	72
89	جوکساہ	Jooksah, ..	1000	1476	232	22	4	423	795	270	79	23	13
	جادو پور	Jadoopoor, ..								0	0	0	0
	نیٹھہ	Nythah, ..								70	5	0	0
90	چاپر کورہ	Chapar Korah, ‡	1325	1916	0	417	0	815	684	530	128	0	0
91	چٹری	Chitree, ..	684	2150	11	154	6	394	1535	1114	377	126	49
92	چٹموری	Chitmoree, ..	722	695	25	3	1	447	219	440	21	0	0
93	چیرا	Chirra, ..	299	385	6	4	9	271	95	134	0	0	0
94	چکوا	Chukwa, ..	450	320	6	58	8	162	86	219	86	0	29
95	چناکھراہ	Chunakherah, ..	250	412	0	0	0	373	39	0	0	0	0
96	چنجرہ	Chunjuree, ..	550	1017	10	744	0	263	0	403	0	0	0
97	چندر کھار پیللا	Chundoo Khar, Pailad, §	185	263	0	85	0	133	45	0	0	0	0
98	چندو کھار پیللا	Chundoo Khar Chitta, ||	240	347	0	44	0	134	169	124	0	0	0
99	چنگاسی	Chungasee, ..	1000	2286	13	63	10	504	1691	667	254	31	17
100	چہر	Ch'hujow, ..	576	596	10	11	0	454	121	323	24	0	45
101	حضرت پور	Huzrutpoor, ¶	955	489	12	29	15	365	68	519	505	0	28
102	خانپور بیراگی	Khanpoor Bairagee, ..	100	135	3	0	0	34	98	87	0	31	0
103	خانپور دیا	Khanpoor Daiah, ..	200	158	8	8	0	116	26	158	0	5	0
104	خانپور مزرعہ سوسا	Khanpoor, Muzra Sirsa, ..	24	21	0	0	0	21	0	0	0	0	0
105	خوردی پتھی چٹو	Khoordee, Puttee Chitoo, **	Rs. A. 333 5	244	4	21	0	196	23	156	43	51	26
106	خوردی پتھی رام پورشان	Khoordee, Puttee Rampurshad, ..	333 5	244	4	21	0	196	23	210	0	0	0
107	خوردی پتھی موہن	Khoordee, Puttee Mohan, ..	333 5	244	4	21	0	196	23	142	0	0	0
	ڈاندی	Dandee, ..								487	0	0	0
	بیلہ	Belah, ..	2730	2471	33	232	2	1533	671	339	0	33	0
108	پیرن پور	Peerunpoor, ..								94	0	0	0
	لعل پور	Lallpoor, ..								164	0	0	0
		Carried over, ..	47373 15	54438	2309	4270	544	26385	20930	24236	5978	832	1727

* Summary Settlement made in 1848, confirmed by orders of Government, dated 31st October 1848.

† Settlement revised in 1846, confirmed by orders of Government, No. 2502, dated 7th August 1849.

‡ Vide No. 90.

§ Revision of Settlement made in 1847, confirmed by orders of Government, No. 2571, dated 30th June 1847.

|| A market is held in this village on Fridays and Mondays. ** This estate was divided into three Mouzabs, by Roobakaree dated 15th July 1843.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	47373 15	54438	2309	4270	544	26385	20930	24236	5978	832	1727
109	دبرا	Dubra,	662	543	11	10	0	334	188	105	9	0	0
110	دوبري هسورا	Doobree Husorah, ..	900	881	14	7	1	486	372	168	0	0	0
111	دودھاري	Doodharee,	459	421	11	16	8	294	92	155	42	26	52
112	دولا پور	Dowlapoor,*	150	220	0	24	0	179	17	120	0	0	0
113	دھر پور	Duhurpoor,	1613	1483	146	115	6	1138	78	823	157	56	81
114	دھلوارے	Dhilwaree,	380	380	13	9	1	295	62	69	6	27	9
115	دھنولے	Dhunolee,†	200	247	0	101	0	81	65	0	0	0	0
116	دھنولے	Dhunolee,	40	163	0	81	0	28	54	0	0	0	0
117	دھونرا	Dhounraira,	335	290	9	14	0	195	72	142	40	22	0
118	دیر پور	Deerpoor,	300	404	11	3	0	163	227	58	0	0	0
119	دیرنیا	Deorunee,	65	102	0	0	0	23	79	0	0	0	0
120	دیرنیا	Deorunee,	340	426	7	32	2	211	174	250	0	27	0
121	دیرنیا	Deoree,	1498	1046	11	17	7	673	338	354	58	66	80
122	دیرنیا	Deoree,	754	969	5	160	0	462	342	396	94	23	23
123	دیر پور	Racepoor Deerpoo, ..	600	498	41	31	2	297	127	378	40	0	0
124	دیر پور	Ruthceen,	100	573	5	17	35	85	431	93	0	28	0
125	دیر پور	Rusoolpoor,	350	246	12	6	3	183	42	340	51	0	0
126	دیر پور	Rumpoorah,	81	454	312	48	0	11	83	9	0	0	0
127	دیر پور	Rumpoorah Huzrutpoor, ..	350	309	10	17	4	113	165	388	154	0	0
128	دیر پور	Rodailee Boodailee, ..	971	1003	28	14	4	579	378	260	83	0	26
129	دیر پور	Rokumpoor,	500	711	15	5	5	445	241	298	25	8	0
130	دیر پور	Rohuree,	1200	1048	8	18	0	471	551	469	0	10	12
131	دیر پور	Raipoorah,	350	278	6	8	6	182	76	203	41	4	5
132	دیر پور	Subulpoor,†	2363	1378	48	67	0	1078	185	1567	121	48	33
132	دیر پور	Rajpoor,								5	4	0	0
132	دیر پور	Futehoollahgunj, ..								95	8	7	3
133	دیر پور	Supraindah Bheekumpoor, ..	635	421	16	11	5	293	96	222	27	32	6
134	دیر پور	Suray Pipuree,	1112	1727	28	66	2	837	794	378	121	18	29
135	دیر پور	Suray Puchtour, ..	258	417	8	4	0	94	311	90	0	0	7
136	دیر پور	Sirsa,	1050	950	25	26	3	441	455	447	25	29	86
137	دیر پور	Sahdoollahgunj Akbar, ..	313	171	6	3	0	153	9	202	0	0	0
		Carried over, ..	65302 15	72197	3115	5200	638	36209	27035	32320	7084	1260	2228

* Formerly a rent-free Mouzah; resumed in 1839, assessed from 1847.

† Settlement revised in 1847, confirmed by Government order, No. 5318, dated 31st October 1848.

‡ Vide Dhunolee, No. 115.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	65302 15	72197	3115	5200	638	36209	27035	32320	7084	1260	2228
138	سعد اللہ گنج بسنت	Sahdoollahgunj, Busunt,* ..	487	260	23	4	0	221	12	360	0	32	0
139	سکت پور	Sukutpoor,	270	263	9	16	0	238	0	216	0	0	0
140	سکت پور حضرت پور	Sukutpoor Huzrutpoor, ..	80	133	0	1	0	44	88	0	0	0	0
141	سکوتیا	Sukoteea,	320	445	5	5	0	280	155	38	0	0	0
142	سکھورا	Sukhora,†								259	40	6	20
142	گولریا	Goolureea,								114	0	0	0
142	براهم پور	Birahimpoor,	2529	1925	459	43	3	1151	269	64	0	0	0
142	سعد اللہ گنج	Sadoollahgunj, ..								570	2	56	17
142	خانپور	Khanpoor,								69	0	0	0
143	سلی پور	Suleimpoor,								272	62	0	10
143	کلورا	Kulora,	2250	1563	66	28	9	906	554	194	24	7	36
143	گلونٹی	Gulountee,								94	9	6	0
144	سمریا	Simureea,	492	437	6	0	0	431	0	232	4	0	27
145	سمریا دامدو	Simureea Damdo, ..	125	382	6	76	0	59	241	0	0	0	0
146	سمریا بورا	Simureea Boura, ..	500	364	20	6	4	219	115	129	2	0	0
147	سمریا	Simreir,†								282	2	121	138
148	دھریا	Dhurelee,	1300	2161	18	213	0	497	143	296	14	49	17
148	گھمرولی	Ghumrolee,								20	0	0	0
149	سندر پور	Soondurpoor,	450	289	12	18	2	248	9	238	80	0	5
149	سورج پور	Soorujpoor,	360	277	3	2	16	166	90	0	0	0	0
150	سیجی	Sihjune,	485	263	13	13	10	227	0	319	44	9	8
151	سیجی قاضی کھیرا	Sihjune Ka-zeekherah, ..	1000	2156	12	129	4	577	1434	633	136	26	83
152	سہ گانی	Sahgane,	20	385	0	0	10	0	375	0	0	0	0
153	سیٹھ ڈانڈی	Seetah Dandee, ..	21	780	0	26	0	11	728	0	0	0	0
154	سیر جے لعل	Seer Jailal,	350	331	4	3	0	222	105	0	0	0	0
155	سیر ہاکشن پور	Serha Kishunpoor,§ ..								584	57	60	16
155	آس پور	Aspoor,								519	35	11	16
155	عالی نگلہ	Alee Nugla,								0	0	0	0
155	بونٹھرا	Bownthura,	3100	3077	0	444	0	1677	956	80	0	0	0
155	جے پال پور	Jypalpoor,								169	8	29	8
155	چندوکیا	Chundowkeea,								377	2	0	0
155	دھنورا	Dhunnoura,								0	0	0	0
156	سیسایہ خورد	Sesaiah Khoord, ..	299	255	9	5	0	194	47	99	0	0	0
		Carried over, ..	79740 15	87923	3780	6232	696	43577	33638	38547	7615	1672	2629

* A market is held in this village every Wednesday.

† The jumma includes 29 Rs. paid as nuzzurana on the rent-free area.

‡ Remarks, vide No. 20.

§ Settlement revised in 1848, confirmed by order of Government, No. 567, dated 23rd February 1850.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	79740 15	87923	3780	6232	696	43577	33638	38547	7615	1872	2629
157	سیسایہ کشن	Sesaiah Kishnah, ..	375	244	11	3	0	176	54	174	56	0	0
158	سیسایہ گوشاھن	Sesaiah Goshahen, ..	1480	1610	92	44	6	684	784	859	44	47	14
159	سیدوا نگلہ	Sewah Nugla, ..	100	427	4	9	2	110	302	34	0	0	0
160	شاہجہانپور	Shahjehanpoor, ..	242	228	13	7	3	151	54	180	52	5	0
161	شکوپور	Shunkurpoor, *	225	211	0	29	0	153	29	104	17	0	0
162	شہاب پور	Sh'habpoor, ..	410	315	3	24	0	265	23	0	0	0	0
163	شیخوپور	Shekhopoor, ..	250	141	0	10	11	106	14	0	0	0	0
164	شیرپور	Sherpoor, ..	365	792	58	5	22	105	602	426	65	0	2
165	ملاول نگر فیروزپور	Alawalnuggur Ferozepoor, ..	455	331	25	5	0	221	80	155	51	74	33
166	غازی پور کوکائی	Ghazee poor Kookay, ..	1350	1078	23	15	10	660	370	674	36	0	20
167	غوث گنج	Ghozgunj, ..	95	228	3	6	0	54	165	93	0	0	0
168	فٹھپور	Futtehpoor, ..	255	212	9	32	2	155	14	106	2	0	0
169	فیروزپور	Ferozepoor, †	225	273	3	20	0	159	91	0	0	0	0
170	فیروزپور حضرت پور	Ferozepoor Huz-rutpoor, ..	15	115	0	104	0	11	0	0	0	0	0
171	قادر آباد	Kadirabad, ..	505	516	12	4	2	293	200	153	24	16	26
172	کاسو نگلہ	Kasoo Nugla, †	196	194	0	46	0	100	48	91	2	0	0
173	کالا کوئڈا	Kala Koonda, ..	176	573	414	44	0	90	25	177	0	15	0
174	کاس پور	Kaispoor, ..	700	657	13	37	7	310	290	439	80	8	15
175	کانسی	Kansee, ..	314	320	20	38	2	169	91	354	16	0	6
176	کٹکا چٹھو	Kutka Chuthoo, ..	475	347	43	21	5	235	43	320	46	40	12
177	کٹکا کونہی	Kutka Kuncie, ..	200	206	10	15	0	112	69	65	15	0	0
178	کٹکورا	Kutkora, ‡	570	452	0	64	0	375	13	338	74	0	10
179	کدھیرگا	Kudherka, ||	195	286	0	15	0	66	205	46	0	0	0
180	کوکوار	Kurukwar, ..	75	549	3	0	0	211	333	0	0	0	0
181	کورپور	Kurumpoor, ..	750	806	10	5	1	355	435	274	0	0	0
182	کریم گنج	Kureemgunj, ..	400	442	0	339	0	81	22	190	15	0	0
183	کشنی مہرا	Kishnee M'hera, ..	720	2375	16	1710	1	448	200	611	118	9	88
184	کشورپور	Kishorpoor, ..	970	938	17	58	2	594	267	430	15	108	0
185	ککروا	Kukrowa, ..	100	198	0	11	0	34	153	0	0	0	0
186	ککاکاند	Kulkakund, ..	425	396	12	18	0	214	152	194	28	0	0
187	کلیانپور	Kulecanpoor, ..	220	334	11	2	0	91	230	93	0	0	0
188	کمان مرزا	Kuman Mirza, ..	Rs. A. 337 8	1035	14	20	1	420	580	291	11	0	8
189	کمان نواب	Kuman Nowab, ..	837 8	1036	13	20	1	356	646	341	0	0	0
		Carried over,	91248 15	105788	4632	9012	774	51146	40224	45814	8382	1994	2863

* Settlement revised in 1844, confirmed by Government, No. 1812, dated 30th April 1845.

† Summary Settlement made in 1843, confirmed by orders of Sudder Board of Revenue, No. 297, dated 25th August 1843.

‡ Vide Remarks, No. 20.

§ Settlement revised in 1846, confirmed by orders of Sudder Board, No. 315, dated 1st October 1847.

¶ Vide 20.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	91248 15	105788	4632	9012	774	51146	40224	45814	8382	1994	2863
190	کنک پور پٹی گھنا	Kunukpoor, Put-tee Ghunna, ..	260	167	0	20	0	112	35	65	26	0	0
191	کنک پور پٹی کنک	Kunukpoor, Put-tee Kunuk, ..	281	187	18	4	1	105	59	60	3	5	7
192	کنہی	Kunhee, ..	420	376	11	6	0	255	104	365	0	0	0
193	کوا کھوہ	Kooakhoh, ..	57	83	0	23	0	14	46	0	0	0	0
194	کورہ کوتیا	Korah Kotia, ..	540	513	49	22	8	309	125	373	149	11	93
195	کولہ	Kolee, ..	550	538	60	9	0	287	182	369	0	0	0
196	کوندرا اگوری	Kondra Agoree, ..	503	459	15	13	7	424	0	427	36	0	0
197	کوندہ دھکا	Kondha Dhuhka, ..	561	1065	17	26	0	492	530	340	0	12	0
198	کونر	Konr, ..	400	369	10	4	2	315	38	316	20	29	32
199	کونہی	Konee, ..	500	625	12	3	1	283	326	172	0	0	2
200	کونہیان	Koneean, ..	680	662	76	3	7	422	154	216	48	0	32
201	کونی جعفر آباد	Konee Jafrabad, ..	121	88	0	7	3	48	30	0	18	0	0
202	کھر سہاے کوندرا	Khursahae Kondra, ..	1550	1231	15	28	3	744	441	619	0	0	1
203	کھوکری	Khookree, ..	1946	1729	30	81	10	1125	483	541	59	115	12
	دھکونی	Dhukunee, ..								17	0	0	0
	سین پور	Sainpoor, ..								83	0	0	0
	گندھا	Gandha, ..								209	0	39	5
204	کیشوپور	Keshopoor, ..	250	214	8	2	0	130	74	26	0	0	0
205	کیشوپور حضرت پور	Keshopoor Huz-rutpoor, ..	210	109	4	4	1	81	19	229	58	14	0
206	کیلہاے	Kylhaee, ..	350	238	7	14	0	215	2	228	0	23	3
207	کیمہی	Kaimee, ..	375	407	6	15	38	175	173	238	18	0	0
208	گدرولی	Gudrowlee, ..	400	717	10	4	0	262	441	161	0	0	0
209	گدوہا	Gudowla, ..	400	529	7	74	8	112	328	53	28	0	0
210	گدھا	Gudha, ..	999	885	9	74	1	601	0	449	0	17	18
211	گدھیا پیغمبرپور	Gudheea Pygum-burpoor, ..	150	405	6	66	4	59	270	83	0	0	0
212	گدھیا شاہپور	Gudheea Shahpoor, ..	500	283	6	24	1	195	57	812	89	0	0
213	گدھیا لیچھا	Gudheea Luccha, ..	180	161	9	13	4	121	14	81	58	0	0
214	گردھو پٹی مکند	Girdhur, Puttee Mnkund, ..	206	369	136	23	0	131	79	106	63	43	19
215	گنگولہ	Gungola, ..	900	614	13	24	2	408	167	324	88	99	73
216	گوپالپور	Gopalpoor, ..	110	75	2	7	0	65	1	63	0	6	0
217	گوٹھا	Gotha, ..	70	163	4	0	0	47	112	105	0	0	0
218	گوٹتیا رام ناراین	Gountee Ram Narayan, ..	205	130	5	0	1	124	0	88	175	0	4
219	گوٹتیا کنک برار	Gountee Gung-bur, ..	10	61	0	0	0	0	61	0	0	0	0
		Carried over,	107982 15	119240	5177	9605	876	59007	44575	52532	9318	2412	3164

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	107982 15	119240	5177	9605	876	59007	44575	52532	9318	2412	3164
220	گوشتیا مزرعة	Gounteca, Muz-rah Lubharee,	180	708	3	12	0	62	632	0	0	0	0
221	گهاتم پور	Ghatimpoor, ..	157	198	11	2	0	92	93	133	12	0	0
222	گھٹمان پور	Ghutnapoor, ..	100	136	0	6	0	62	68	0	0	0	0
223	گھیلور	Ghilour, ..	1342	1355	10	99	0	1031	215	609	54	0	20
224	گھنچ پٹی	Ghunce Puttee, ..	135	97	6	0	0	69	22	71	0	2	4
225	لعل پور	Lalpoor, ..	140	155	0	0	0	68	87	0	0	0	0
226	لعل پور حضرت پور	Lalpoor Huzrut-poor, ..	265	222	6	21	0	176	19	88	0	7	0
227	لہاری	Lubharee, ..	800	1711	6	54	17	592	1042	669	66	23	0
228	لندھری پٹی چھتر	Lundheree, Put-tee Chittoor, ..	Rs. A. 678 5	260	0	29	0	212	19	44	5	0	0
229	لندھری پٹی رام پشاد	Lundheree, Put-tee Rampur-shad, ..	678 6	260	0	29	0	212	19	240	18	25	5
230	لندھری پٹی موہن	Lundheree, Put-tee Mohun, ..	678 5	260	0	29	0	212	19	142	6	36	0
231	لہدورا	Lhudora, ..	1200	632	19	9	4	550	50	541	1	231	0
232	مچھارہ	Mujhara, ..	459	414	11	49	4	284	66	441	1	29	69
233	مچھانہ امان آباد	Mujhana Aman-abad, ..	1000	867	63	36	28	498	242	649	174	21	31
234	مچھرا پٹی تیجرا	Mujhra, Puttee Tejracc, ..	Rs. A. 1033 5	906	36	258	0	433	179	250	209	13	0
235	مچھرا پٹی عطا حسین	Mujhra, Puttee Uta Hoscin, ..	1033 6	906	36	258	0	433	179	508	6	4	0
236	مچھرا پٹی مرزا	Mujhra, Puttee Mirza, ..	1137 5	906	36	258	0	433	179	310	194	0	46
237	موشم پور	Mohshumpoor, ..	508	541	135	19	0	293	94	212	0	0	0
238	موشم پور آنند پور	Mohshumpoor Anundpoor, ..	180	559	6	102	1	54	396	129	44	0	0
239	موشم پور چتری	Mohshumpoor Chitree, ..	220	211	6	3	3	173	26	96	4	0	0
240	مڈسینہ	Mudsena, ..	345	974	8	11	17	181	757	157	0	26	0
241	مہاشم پور	Moazimpoor, ..	400	810	7	112	0	221	470	224	81	5	8
242	مکھنڈ پور	Mukrundpoor, ..	344	362	0	31	0	198	133	122	0	0	0
243	ملک پور	Mulikpoor, ..	150	161	5	1	0	82	73	80	0	0	0
244	ملوک پور	Mulookpoor, ..	809	698	6	82	37	304	269	103	23	0	0
		Carried over, ..	121905 15	133550	5593	11115	987	65932	49923	58350	10216	2834	3347

* Settlement revised in 1849. Settlement confirmed by orders of Government, dated 27th March 1850.

† This estate was divided into three Mouzahs, by Roobakaroo, dated 1st September 1839.

‡ A market is held in this village on Monday and Friday.

§ Mujhra was divided into five Mouzahs, under Regulation XIX. of 1814, vide Roobakaroo dated 1st December 1837.

|| The Jumma includes Rs. 23 nuzarans.

REGISTER OF MOUZAHS IN PERGUNNAH SULEIMPOOR—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	121905 15	133550	5593	11115	987	65932	49923	58350	10216	2834	3347
245	منکاپور شکارپور	Munkapoor Shikarpoor, ..	715	519	9	22	1	430	57	162	50	0	6
246	منہریا	Munharee, ..	312	295	3	123	0	163	6	0	23	17	0
247	مودھا	Modha, ..	385	386	9	10	0	181	186	446	60	0	0
248	مونگورا	Moongurra, ..	200	373	0	18	0	184	171	123	0	23	0
249	مہوہ	M'howa, ..	25	157	0	9	0	24	124	0	0	0	0
250	میری بجن میری	Maireebujan Mairee, ..	325	626	12	9	0	122	483	134	0	0	0
251	میلہا	Mylaha, ..	1330	1449	89	63	13	658	626	864	353	40	103
252	پیلاد پور	Pailadpoor, ..	140	269	0	14	0	13	242	23	0	0	0
253	ناتھ پور	Nathpoor, ..	275	301	11	2	4	146	138	126	0	0	0
254	ناتھ پور بنواری	Nathpoor Bun-waree, ..	55	88	0	1	2	44	41	14	0	0	0
255	نصرو اللہ پور	Nasuroollapoor, ..	307	146	12	10	0	123	1	190	0	90	0
256	نکریا	Nuguree, ..	1700	1518	20	48	85	903	462	618	157	3	3
257	نکریا کھنو	Nuguree Khunoo, ..	Rs. A. 807 8	1018	15	213	19	139	632	391	304	42	2
258	نگلہ بھاؤ	Nugla Bhow, ..	90	296	3	25	0	80	188	40	0	0	0
259	نوناہی	Noonahae, ..	550	642	6	88	29	214	305	368	261	10	2
260	نوادہ بدن	Nowadah Budun, ..	1425	978	6	60	81	600	231	734	167	0	43
261	نوادہ مدھکر	Nowadah Mudhkur, ..	900	499	7	30	1	348	113	551	0	10	46
262	نور پور	Noorpoor, ..	163	145	5	0	0	76	64	0	0	0	0
263	نورگنواں	Nowgunwan, ..	725	839	192	3	1	375	268	220	28	0	0
264	نول پور	Nuvulpoor, ..	1115	1538	0	216	0	688	634	627	15	87	23
265	نونی نکلہ	Nownee Tigun-nah, ..	112	150	0	0	1	82	67	0	0	0	0
266	وزیر پور	Wazeerpoor, ..	163	155	7	8	3	121	16	111	7	7	0
267	ہاشم پور	Hashimpoor, ..	680	439	7	47	2	382	0	370	19	49	18
268	ہتھی پور	Hatnee Bhoor, ..	175	302	5	53	2	68	169	61	17	0	0
		Hurrampoor, ..											
		Total, ..	134580 7	146677	6011	12192	1231	72036	55147	64523	11677	3212	3593

* Revised Settlement of 1843, confirmed by orders of Government, dated 31st October 1849.

† Originally a rent-free Mouzah, resumed in 1839, Roobakaroo of Settlement dated 1st May 1847.

‡ Remarks, vide No. 20.

§ Remarks, vide No. 20.

Revised Settlement of 1844, confirmed by orders of Government, No. 4500, dated 21st October 1845.

M. H. COURT,
Deputy Collector.

BUDAON, COLLECTOR'S OFFICE, 1851.

APPENDIX No. XXXIII.

REGISTER OF MOUZAHS

IN

PERGUNNAH OOSAIH,

INCLUDING

ZILLAH MAHANUGGUR.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAITH.

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
1	آٹھیان	Athyan,	475	610	10	226	0	310	64	238	0	0	0
2	آٹور	Atwur,	145	134	12	8	0	90	24	91	54	0	0
3	آجر	Ajrow,	450	557	10	127	1	362	57	178	0	11	0
4	احمدنگر بچھولا	Ahmudnuggur Bi-chola,	925	1756	15	525	0	405	811	628	64	8	54
5	احمدنگر روکھارہ	Ahmudnuggur Rokhara,	450	575	18	111	1	445	0	317	41	0	3
6	اسدھرمی	Asdurmye,	362	363	8	9	3	308	35	374	49	0	0
7	اسمعة رفعت پور	Asma Rufatpoor,	650	834	10	118	0	355	351	343	52	15	0
8	اکبر پور	Akbarpoor,	450	696	8	13	0	327	348	412	13	0	0
9	اکتوئیان	Aktoneean,	195	377	6	1	0	119	251	16	0	0	0
10	اودیانگلا	Oodya Nugla,	375	803	9	77	0	233	484	409	39	0	9
11	اورولیا	Oorowleca,	335	288	38	45	0	208	0	52	16	110	27
12	اوسانوان	Oosanwan,	2317	3173	37	84	7	2190	855	2663	496	53	26
13	اوسانوان پٹی مدھی	Oosanwan, Puttee Mudhye,	123	237	6	8	2	173	48	41	3	6	15
14	اوسینہ خاص	Oosaith Khas,*	894	1320	119	209	3	658	331	564	894	265	628
15	اوگولی	Oogowlee,	600	672	8	1	0	393	270	209	8	11	3
16	باقور پور	Bakurpoor,	66	356	6	1	1	65	283	35	0	0	0
17	ببی	Bubace,	350	531	8	22	2	283	216	247	33	3	32
18	بیک پورہ	Butpoorah,	200	179	5	0	0	142	32	26	0	0	0
19	بیکولا خورڈ	Bichola Khoord,	175	198	6	25	0	112	55	164	0	0	0
20	بیکھلی	Bucheelee,	785	939	10	41	2	543	343	229	0	0	0
21	بیکھلی	Daranuggur,	852	1432	37	330	2	870	193	338	2	149	4
22	بیکھلی	Bichee Jugrow,	100	178	8	49	0	102	19	90	0	0	0
23	بیکھلی	Budhooa Rokhara,	151	461	8	1	0	151	301	89	0	0	0
24	بیکھلی	Budhow,	825	1403	16	208	0	666	513	279	4	16	0
25	بیریا دانڈہ چند پور	Birrea Danda Chundpoor,	500	589	0	26	0	281	282	456	46	51	0
26	بیرنیان	Bureneean,†	264	386	69	51	0	247	19	16	0	87	0
27	بیلہاری	Bilharee,	75	312	6	9	0	77	220	133	0	0	0
28	بن بوساری	Bunbosaree,	500	416	10	23	0	376	7	293	0	0	0
29	بنی	Bunye,	8	65	0	0	0	1	64	0	0	0	0
30	بھٹہ پٹی پرسرام	Behtah, Puttee Purus Ram,†	17	130	0	0	0	2	128	0	0	0	0
31	بھٹہ پٹی شرف الدین	Behtah, Puttee Shurufodeen,	275	638	7	76	0	153	402	121	4	0	0
32	بھٹہ پٹی	Behtee,	275	638	7	76	0	153	402	121	4	0	0
Carried over, ..			13889	20608	510	2424	24	10644	7006	9051	1818	785	801

* A market is held in this town every Saturday and Tuesday.

† This estate was held on a rent-free tenure until 1839 A. D., when it was resumed; Boobakaree of Settlement dated 1st April 1846.

‡ This estate was divided into two separate Mouzahs, by order, dated 7th September 1847.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAITH—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	13889	20608	510	2424	24	10644	7006	9051	1818	985	801
32 ..	بھڈلی	B'hudelee,	294	392	11	4	0	295	82	147	0	39	0
33 ..	بھسوندرا	Bhusoundrah,	72	90	0	4	0	72	14	0	0	56	0
34 ..	بھکرولی	Bhukroulee,	100	64	5	3	7	40	9	100	0	0	0
35 ..	بھکری	Bhukree,	340	1067	8	93	0	181	785	197	0	0	0
36 ..	بھمپورہ	Bhumunpoorah, ..	120	124	8	9	0	107	0	102	0	0	0
37 ..	بھوری پٹی	Bhooree Puttee, ..	64	71	1	6	0	64	0	0	0	0	0
38 ..	بھوندی	Bhoondee,	950	937	9	10	0	633	285	418	44	109	20
39 ..	بھرمپور	Beerumpoor,	110	227	8	5	0	64	150	155	0	0	0
40 ..	بھلمی	Belahmye,	735	624	6	25	0	420	173	460	0	59	0
41 ..	بھلمی	Belahmyee,	50	668	5	69	0	63	531	0	0	0	0
42 ..	بھتور جاگیر	Puchitour Jagheer, ..	130	146	4	5	0	121	16	0	0	0	0
43 ..	بھتور خالصہ	Puchitour Khalsah, ..	100	217	0	3	0	139	75	0	0	0	0
44 ..	بھدورا	Puchdora,	350	1079	10	137	0	469	463	259	15	0	0
45 ..	پرتھی نگلا	Pirthee Nugla,	168	267	12	4	0	93	158	136	16	0	0
46 ..	پھولچھالہ	Phoolch'hace,	125	281	8	2	0	135	136	105	59	0	0
47 ..	پرنیور	Peernugur,	25	501	0	501	0	0	0	0	0	0	0
48 ..	تاپو گنگ پور	Tapoo Gungburar,* ..	50	299	0	189	0	25	85	0	0	0	0
49 ..	تورسورا	Tursora,	150	591	8	67	2	178	336	71	0	0	0
50 ..	تیکہ	Tikae,	300	868	7	267	1	426	167	110	11	0	15
51 ..	تیکرا	Tikra,	688	678	8	82	2	429	157	132	14	0	0
52 ..	تیکری	Tikree,	475	475	8	62	6	268	131	313	54	0	9
53 ..	تیلوک پور	Tilokpoor,	415	768	10	19	0	198	541	83	11	0	0
54 ..	جائی	Jatee,†	335	1614	18	739	3	271	583	486	88	34	38
55 ..	جسمہ	Jusmah,‡	215	594	5	91	0	369	129	181	13	27	0
56 ..	جواہر نگلا	Jowahir Nugla,	27	43	0	0	0	23	14	0	0	0	0
57 ..	جویری نگلا	Jooree Nugla,	80	207	6	22	0	179	0	0	0	0	0
58 ..	چاند پور	Chandpur,	250	715	8	7	1	346	353	102	0	0	0
59 ..	حمیر پور	Humeerpoor,	80	887	0	320	0	0	567	0	0	0	0
60 ..	دلیل گنج	Dulelgunj,	860	831	8	157	0	305	361	216	0	0	0
61 ..	دندھا	Dundha,	257	269	11	40	0	197	21	71	5	0	0
62 ..	دھرم پور	Dhurumpoor,	175	237	7	38	5	186	1	97	20	0	0
63 ..	دیوریہ اسگونہ	Deoreea Asgonah, ..	700	1190	10	46	9	501	624	400	0	0	0
64 ..	دیوریہ پٹی	Deoreea Puttee, ..	432	372	0	39	0	266	67	0	0	0	0
65 ..	دیورکلی	Deokullee,	240	887	8	510	0	204	165	153	39	0	0
Carried over, ..			23351	38888	727	5999	60	17917	14185	13545	2207	1309	883

* This estate was thrown up by the Ganges in 1847.

† The details entered are those of a Summary Settlement made in 1844, confirmed by orders of Government, No. 453, dated 20th October 1845.

‡ Jumah was a rent-free Mouzah until 1841, when it was resumed.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAITH—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.		Culturable.	HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.		Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	23351	38888	727	5999	60	17917	14185	13545	2207	1309	883
66	رجوله	Rujowlah,* ..								973	46	22	14
	آجرو	Ajrow, ..								0	0	0	0
	عظیم نگر	Azceemnuggur, ..								0	0	0	0
	آهتومی	Ahtomye, ..								145	0	0	0
	بوسی	Busye, ..								106	0	0	0
	بیرکهره	Beerkherah, ..								0	0	0	0
	پدم پور	Padumpoor, ..								0	0	0	0
	پرتی کهره	Pirtce Kherah, ..								0	0	0	0
	پوتک کهره	Pootnk Kherah, ..								0	0	0	0
	پورکی گدھہ	Purkeegurh, ..								0	0	0	0
	پومے نگلہ	Pumee Nugla, ..								124	0	0	0
	تالگانو	Talgaon, ..								0	0	0	0
	جادون بہتہ	Jadoon Behtah, ..								0	0	0	0
	چمپٹنگر	Chumputnuggur, ..								0	0	0	0
	دلچنگر	Dulchnuggur, ..								171	0	0	0
	دیبی نگر	Debecnuggur, ..								0	0	0	0
	رام نگر	Ramnuggur, ..								197	0	3	0
	رمی نگلہ	Rumee Nugla, ..	5023	9262	256	114	6	4794	4092	0	0	0	0
	روپاپور	Roopapoor, ..								0	0	0	0
	روتہ	Rotah, ..								106	0	0	0
	سسونہ	Sesonah, ..								49	0	17	0
	سودی نگلہ	Sodee Nugla, ..								0	0	0	0
	سونیسار	Sonesar, ..								91	0	0	0
	سوحاٹی	Schace, ..								0	0	0	0
	کوتینہ	Kootena, ..								0	0	0	0
	گدھاپورہ	Gudhapoorah, ..								0	0	0	0
	گوبائی نگلہ	Gobai Nugla, ..								0	0	0	0
	گورہلا	Goorhela, ..								20	0	0	0
	لچھی نگلہ	Luchee Nugla, ..								0	0	0	0
	لونے نگلہ	Lonee Nugla, ..								0	0	0	0
	موشم پور	Mohsumpoor, ..								31	0	0	0
	مکروند پور	Mukrundpoor, ..								0	0	0	0
مولوک پور	Mulookpoor, ..								0	0	0	0	
مونکوا	Munkoa, ..								0	0	0	0	
مونجی نگلہ	Moujee Nugla, ..								0	0	0	0	
	Carried over, ..	28374	48150	983	6113	66	22711	18277	15558	2253	1351	897	

* Rujowlah Talooqua was formerly the property of a large community of Baia Thakoors, from whom the estate was purchased by Government for arrears of revenue. It was held for many years under kham management. Sold in 1832 to Mr. James Gardener, from whom the property passed into the hands of the present proprietor. The Talooqua comprises forty-three Mouzabs, as enumerated in heading No. 3, but is in fact one Mehal.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAITH—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVA- TED.			HINDOOS.		MUSSUL- MEN.	
												Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward, ..	28374	48150	983	6113	66	22711	18277	15558	2253	1351	897
		Rujowlah—(contd.)											
66	مہنا نگلا	Mehna Nugla, ..								44	0	0	0
	نصیر آباد	Nuseerabad, ..								0	0	0	0
	نکھار	Nakhar, ..								0	0	0	0
	نکھار بھونے	Nugureea Bhonee, ..								113	0	0	0
	نکھار جی چند	Nugureea Jychund, ..								0	0	0	0
	نکھار دوگانی	Nugureea Dogance, ..								127	0	0	0
	نوادہ پابو	Nowadah Paiboo, ..								0	0	0	0
67	نوادہ رائبے	Nowadah Raibee, ..								0	0	0	0
	ہنسو نگلا	Hansoo Nugla, ..								0	0	0	0
	رجولہ خورہ	Rujowlah Khoord, ..	31	310	6	166	0	12	126	0	0	0	0
	رسول پور مان داتا	Rusoolpoor Man- data, ..	300	784	10	12	0	154	608	220	8	14	0
	رسول پور نگلا	Rusoolpoor Nugla, ..	536	8	852	20	66	2	354	410	261	15	68
	رے پورہ	Raipoorah,* ..	400	651	8	49	1	232	361	245	4	0	0
	ستھرا پٹی بختی	Suthra, Puttee Bukhtee, ..	920	856	6	55	0	446	349	0	0	0	0
72	ستھرا پٹی کرپا	Suthra, Puttee Kirpa, ..	920	856	6	54	0	415	381	565	297	25	17
73	ستھولی	Sithoulee,† ..	206	1700	2	1129	0	120	449	120	0	0	0
74	سرنمی پٹی بھونے	Surunmye, Puttee Bhonee,† ..	59	143	0	1	0	141	1	34	0	0	0
75	سرنمی پٹی موتی	Surunmye, Puttee Motee, ..	31	74	0	0	0	74	0	0	0	0	0
76	سرنمی جاگیر	Surunmye Jagheer, ..	90	334	0	38	0	135	161	0	0	0	0
77	سریلی	Surelee, ..	875	1365	20	178	5	498	664	716	86	27	47
78	سکت پور	Sukutpoor, ..	703	665	7	102	0	323	233	302	34	15	0
79	سکندر آباد	Sikundrabad, ..	800	931	10	34	0	506	381	245	0	0	0
80	سلطان پور	Sultanpoor, ..	110	131	9	32	3	54	33	100	0	0	0
81	سوردمی	Soordemye, ..	75	126	12	5	1	83	25	69	35	0	0
82	سیدپور	Sydpoor, ..	300	386	8	47	19	221	91	163	1	28	0
83	سیہہ	Seha, ..	400	797	6	400	8	293	90	217	0	7	0
84	شاہ پور	Shahpoor, ..	403	575	80	14	2	293	186	275	73	7	0
85	شنکر پور	Shunkurpoor, ..	350	577	7	25	0	273	272	107	0	0	0
86	اصماد پور	Imadpoor, ..	Rs. A. 156 10	229	42	1	0	186	0	88	0	0	0
87	فتح گدھہ	Futteghurh, ..	150	473	8	8	0	219	238	125	6	0	0
88	کترا سعادت گنج	Kutra Sahadutgunj, ..	634	508	14	43	7	411	33	635	392	0	84
89	کتیان	Kutcean, ..	561	555	8	56	0	483	8	279	0	0	0
90	کروری سیدپور	Kuroree Sydpoor, ..	423	882	24	10	5	296	547	209	0	0	0
	Carried over, ..		37808	62910	1296	8638	119	28933	23924	20817	3204	1542	1045

* The details are those of a Summary Settlement, confirmed by orders of Government, No. 1833, dated 4th April 1849.

† Details entered according to Summary Settlement, confirmed by orders of Sudder Board of Revenue, No. 4, dated 8th January 1847.

‡ This estate was divided into two Mouzabs, by orders dated 10th August 1846.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAIH—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	37808 2	62910	1296	8635	119	28933	23924	20817	3204	1542	1045
91	کرم نگر	Kureemnuggur,	225	634	8	3	0	210	413	45	3	0	0
92	ککرا له فزیو پور	Kukrala, Fureedpoor,*	4236	5356	165	891	60	3582	658	797	1142	1812	721
93	ککروا کونعان	Kukrowa Koncean,	150	339	8	2	2	186	141	12	0	0	0
94	کملو نکلہ	Kumloo Nugla,	233	209	6	3	0	143	57	68	11	0	0
95	کمر گانو چرانی	Kumhurganoo, Chirane,	1055	1397	86	53	9	621	628	738	61	30	0
96	کوٹہ	Kotha,	224	265	7	30	3	192	33	43	0	0	0
97	کھجرا	Khujra,	700	643	17	80	0	506	40	212	42	0	0
98	کھیرا مدهکر	Khirreea Mudkur,	720	578	9	24	1	446	98	238	34	0	14
99	کھیرا ہمایون	Khirreea Humayoon,	650	406	10	12	2	375	7	250	61	10	8
100	کھیڑا جلال پور	Khyrah Jelalpoor,	484	1252	0	49	0	464	746	5596	1477	113	196
101	پٹی بھوپہ	Puttee Bhopee,	309	186	0	0	0	100	86	(a)0	0	0	0
102	پٹی نوبت	Khyrah Jelalpoor, Puttee Noorpat,	250	246	5	6	0	170	65	0	0	0	0
103	پٹی جلال پور	Khyrah Jelalpoor, Puttee Bhoopee,	842	552	0	3	0	353	196	0	0	0	0
104	پٹی من پھول	Khyrah Jelalpoor, Puttee Munphool,	862	379	0	10	0	195	174	0	0	0	0
105	پٹی جلال پور	Khyrah Jelalpoor, Puttee Sirree,	523	525	0	25	0	368	132	0	0	0	0
106	پٹی کشنہ	Khyrah Jelalpoor, Puttee Kishnee,	203	542	0	27	0	168	347	0	0	0	0
107	پٹی جلال پور	Khyrah Jelalpoor, Puttee Mohkam,	660	401	0	6	0	250	145	0	0	0	0
108	پٹی لوهی	Khyrah Jelalpoor, Puttee Lohee,	128	105	0	2	0	83	20	0	0	0	0
109	پٹی جلال پور	Khyrah Jelalpoor, Puttee Motee,	353	291	0	3	0	173	115	0	0	0	0
110	پٹی بھوجا	Khyrah Jelalpoor, Puttee Bhoja,	399	314	0	2	0	206	106	0	0	0	0
111	پٹی بھیکا	Khyrah Jelalpoor, Puttee Bhikka,	1004	710	5	33	0	442	230	0	0	0	0
112	پٹی ظالم	Khyrah Jelalpoor, Puttee Zalim,	466	542	0	26	0	448	68	0	0	0	0
113	پٹی جلال پور	Khyrah Jelalpoor, Puttee Nchal,	153	148	1	3	0	102	42	0	0	0	0
114	پٹی کھمانی	Khyrah Jelalpoor, Puttee Khomanee,	66	56	0	2	0	43	11	0	0	0	0
		Carried over,	52193 2	78993	1623	9933	196	38759	28482	28816	6035	3507	1984

* A market is held in this village every Sunday and Wednesday.

6

(a) Population included in the above.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAIH—(continued.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Jumma of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSUL-MEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	52193 2	78993	1623	9933	196	38759	28482	28816	6035	3507	1984
115	کھیڑا جلال پور	Khyrah Jelalpoor, Puttee Fatoorce,	747	590	4	25	0	342	219	0	0	0	0
116	پٹی فترری	Khyrah Jelalpoor, Puttee Oodeebhan,	732	550	0	6	9	376	148	0	0	0	0
117	کھیڑا جلال پور	Khyrah Jelalpoor, Puttee Alum,	906	1915	10	352	7	758	788	0	0	0	0
118	پٹی عالم	Khyrah Jelalpoor, Puttee Nirput,	148	112	0	3	0	100	2	0	0	0	0
119	کھیڑا جلال پور	Khyrah Jelalpoor, Puttee Bunwaree,	233	198	0	7	0	126	65	0	0	0	0
120	پٹی اودے بھان	Khyrah Jelalpoor, Puttee Lalsah,	260	227	3	13	0	131	80	0	0	0	0
121	کھیڑا جلال پور	Khyrah Jelalpoor, Puttee Pasyc,	119	83	0	2	0	42	39	0	0	0	0
122	پٹی بھوجا	Khyrah Jelalpoor, Puttee Bhoja Futch,	218	323	2	4	0	190	127	0	0	0	0
123	پٹی کشنہ	Khyrah Kishnee,*	535	1341	8	395	0	818	620	271	59	57	13
124	کیتھولہ	Kaitholah,	109	212	13	50	0	109	40	0	0	0	0
125	کیرے	Kairee,†	10	113	0	2	0	6	5	0	0	0	0
126	کیشو پور	Keshopoor,	70	172	0	17	0	55	100	0	0	0	0
127	کیلا	Kaila,	100	117	6	15	0	67	29	48	7	0	0
128	گدھیا جگہر	Gudheea Jagheer,	1000	1007	31	151	0	664	161	592	144	9	63
129	گدھیا مہانگر	Gudheea Mahanagar,	250	320	10	127	0	138	45	61	20	0	0
130	گودھانہ	Godhanah,	450	611	13	75	25	418	80	266	34	0	0
131	گورا بڑیلہ	Goora Burela,	810	1178	23	28	1	754	372	546	149	10	3
132	گورامی	Gooramye,	300	496	9	58	1	289	139	137	26	15	4
133	لوان پٹی بھٹیکہ	Lilwan, Puttee Bukhtee,	525	538	10	13	2	363	150	580	335	0	0
134	لوان پٹی کنہٹی	Lilwan, Puttee Kunhye,	527	592	9	30	2	362	189	612	67	0	5
135	لڑمی	Luloomye,	630	911	9	6	0	366	530	141	0	0	0
136	مبارک پور	Mubarikpoor,	156	279	11	7	0	92	169	90	44	0	0
137	مٹھلا	Muthla,	245	325	6	3	2	145	166	93	20	0	0
138	مٹھنان	Muthnan,	102	168	6	1	0	112	49	11	0	6	0
139	محمد پور	Muhumudpoor,	475	406	8	18	2	335	43	165	5	0	0
140	مرزا پور اتری	Mirzapoor Atrye,	200	401	8	6	0	157	230	118	8	4	0
141	مرزا پور بھولا	Mirzapoor Bicchola,	675	1484	22	201	2	711	548	348	0	0	0
142	مرزا پور بسنت	Mirzapoor Busunt,	364	429	31	6	2	229	161	96	0	0	0
		Carried over,	63109 2	93991	1875	11574	242	46517	33783	32991	6747	3608	2085

* Details are those of a Summary Settlement confirmed by orders of Government, No. 567, dated 28th February 1850.
† Summary Settlement made in 1844, confirmed by orders of Sudder Board, dated 1st March 1850.

REGISTER OF MOUZAHS IN PERGUNNAH OOSAITH—(concluded.)

Number in Pergunnah.	Name of Village in Oordoo.	Name of Village in English.	Highest Summa of Settlement.	Total Area.	Rent-free.	Barren and unculturable.	ASSESSED AREA.			POPULATION IN 1847.			
							CULTIVATED.			HINDOOS.		MUSSULMEN.	
							Irrigated.	Unirrigated.	Culturable.	Cultivators.	Non-cultivators.	Cultivators.	Non-cultivators.
		Brought forward,	63169 2	93991	1875	11574	242	46517	33783	32991	6747	2608	3085
143	موروزي	Muroree, ..	300	508	59	128	0	313	8	281	18	0	0
144	مسود پورا	Musoodpora, ..	230	525	8	5	1	179	332	57	0	39	0
145	معظم پور	Moazimpoor, ..	425	534	10	25	4	310	185	271	192	36	24
146	ملکيا	Milkeea, ..	59	184	6	15	0	126	37	36	0	0	0
147	منت پورا	Muntpoora, *	28	256	0	161	0	0	93	0	0	0	0
148	منسا نگله	Munsa Nigla, ..	153	163	8	22	0	122	11	104	13	0	0
149	مونج کھراہ	Moong Kherah, ..	255	639	10	0	0	181	443	104	0	0	0
150	مونگرا پٹی احمد شاہ	Moongurrah, Puttee Ahmad Shah, †	62	160	0	24	0	94	42	110	0	22	0
151	مونگرا پٹی چھدر	Moongurrah, Puttee Chiddoo, ..	63	161	0	14	0	94	53	0	0	0	0
152	مونگرا مہانگر	Moongurrah, Mahanagar, ..	400	364	8	16	2	252	86	244	0	6	0
153	نبي گنج	Nubeegunj, ..	834	1204	70	112	3	807	212	652	274	13	19
154	نکاسی پٹی بختی	Nikasee, Puttee Bukhtee, ..	230	276	7	5	2	155	47	143	9	0	0
155	نکاسی پٹی صاحب رائے	Nikasee, Puttee Sahib Roy, ..	250	204	5	5	0	189	5	82	0	0	0
156	نگریا ابھی	Nugureea Abhey, ..	675	947	24	15	3	627	278	448	36	0	0
157	نگلا شیمبو	Nugla Shimboo, ..	650	555	11	23	5	509	7	325	125	12	5
158	نونی قنوج آباد	Nolee Futooabad, †	1149	2910	0	1392	0	690	928	598	23	79	3
159	نیگونان نصیر نگر	Nygunwan Nuseernuggur, ..	560	1154	18	14	2	563	557	266	5	0	0
160	نے نے مٹی	Nyneemye, ..	173	278	11	11	0	213	43	24	0	0	0
161	عتو حافظ گنج	Huttoo Hafizgunj, §	9	107	0	79	0	10	18	88	0	0	0
162	عتو حافظ گنج، اراضی کٹرا	Huttoo Hafizgunj, Arazee Kuttra, ..	15	290	0	240	0	17	33	0	0	0	0
163	ہردی کیپڑا	Hurdee Kherah, ..	307	586	10	222	3	172	179	107	3	0	0
164	ہرندی	Hurendee, ..	375	326	15	50	11	238	12	456	27	49	81
165	ہزارا	Huzara, ..	150	286	11	3	0	191	81	0	0	0	0
		Total, ..	70432 2	106548	2166	14155	278	52569	37380	37387	7471	3874	2167

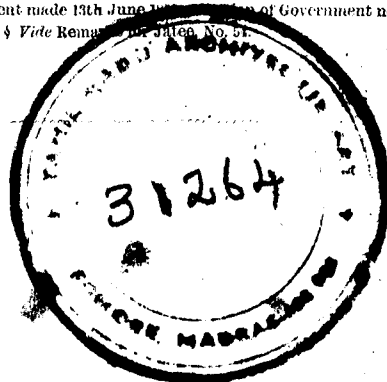
M. H. COURT,
Deputy Collector.

* Same Remarks as for Fairce, No. 125.

† Moongurrah was divided into two Mouzabs, by orders dated 5th July 1844.

‡ Details of a Summary Settlement made 13th June 1844. Details of Government not yet received.

§ Vide Remarks for Fairce, No. 51.



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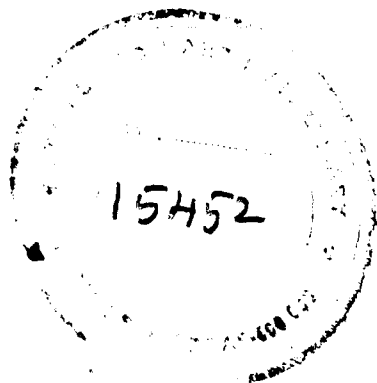
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RECORDS

OF

THE GEOLOGICAL SURVEY OF INDIA.

Part I.]

1905.

[January.

REVIEW OF THE MINERAL PRODUCTION OF INDIA DURING
THE YEARS 1898 TO 1903. BY T. H. HOLLAND, F.R.S.,
Director, Geological Survey of India. (With Plates 1—6.)

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I.—INTRODUCTION.

FOR the four years 1894 to 1897, a Review of the Mineral Production of India was issued annually by the Reporter on Economic Products; but in 1898 it was decided, owing to the want of uniformity in the rate of development of many minerals, to publish reviews of progress at wider intervals, covering periods sufficiently long to permit the determination of any decided secular variations in the mineral industry. The present Review, covering the period of six years, 1898 to 1903, is the first essay in this direction; but, in accordance with the orders of Government, five-year periods will be adopted for the future, and the Quinquennial Review of Mineral Production will be published in the Records of the Geological Survey of India.

In this review the minerals are grouped according to the system laid down by Government ten years ago, namely—

Group I.—Those for which approximately trustworthy returns are available; and

Group II.—Those regarding which definitely recurring particulars cannot be procured.

In the first review, issued by Sir George Watt in 1894, the minerals referable to Group I included only Salt, Coal, Iron-ore, and Petroleum, and in the three subsequent issues of the same publication no advance was shown in transferring minerals from Group II to Group I. It is possible now, however, to raise several minerals to the level of those for which approximately trustworthy returns are available, and the minerals thus included in this group are:—

Coal.	Mica.
Gold.	Petroleum.
Graphite.	Rubies.
Iron-ore.	Salt.
Jadeite.	Saltpetre.
Magnesite.	Tin.
Manganese-ore.	

In the case of Gold, the most precise and elaborate details are obtainable for more than 99 per cent. of the production, and approximate values are obtainable for the rest. For Graphite, accurate returns of quantity are obtained from the only company engaged in regular mining for the mineral. Although the returns sent in for the production of Jadeite and Mica are manifestly understated, both minerals are worked largely for export, and, as far as value is concerned, the export figures may be accepted as an approximate estimate of the trade in each case, whilst the nature of the error being known, the figures are not liable to be misleading. Manganese-ore has come into prominence since the older reviews were issued, and may now be transferred to Group I, as the mineral is worked entirely for export, and the totals obtained from returns made by the District Officers agree very closely with those obtained from the ports. Rubies admit of the remarks applicable to Gold: the amount recovered other than by the Burma Ruby Mines Company may be neglected as an unimportant fraction of the total. Saltpetre and Tin are, with less certainty, entitled to places in this group. For Saltpetre, the returns for production are evidently understated, being less each year than the quantity exported, but the export figures may be taken as only slightly less than those for the production of refined Saltpetre. The returns for Tin refer to two districts only in South Burma, but the estimates are probably more reliable than those for Iron, which was originally included in Group I.

This Review is directed primarily to a survey of the progress already made, and for anything approaching an idea of the material awaiting development the reader must consult the Manual of Economic Geology, now in course of revision by the Geological Survey Department. But besides the substances whose existence has been determined by the exploratory work to which a geological survey is properly restricted with regard to minerals of economic value, the attention of prospectors might be directed to the minerals which have lately come into prominence through recent industrial developments, and which, in a country including the geological variety of India, are at present conspicuous by an absence that is probably only the result of absence of search. Amongst these are some minerals of the so-called rare metals, which, being generally of high specific gravity, should be searched for in the heavy concentrates of river gravels (see p. 114).

Unless otherwise specified, the ton is invariably taken in this Review to be the English statute ton, or the so-called long ton of 2,240 lbs. To facilitate comparison with the returns of foreign countries, many of the larger quantities are also calculated to metric tons of 1,000 kilogrammes each. As exchange has been steadily maintained at the rate of Rs.15=£1 throughout the period under review, all values are expressed in terms of the sterling unit.

The data employed in this Review have been mainly extracted from the publications issued by the Director-General of Statistics; but additional information has been obtained from the following sources:—

- (1) Annual Reports of the Gold Mining Companies on the Kolar field, kindly supplied by the Managing Agents.
- (2) Annual Reports of the Chief Inspector of Mines for India and the Chief Inspector for Mysore.
- (3) Administration Reports of the various Local Governments and Local Administrations in India.
- (4) Administration Reports of the Railways.
- (5) Reports issued by various foreign Geological Surveys, and Statistics relating to Mines and Quarries, published by the English Home Office.

The writer is also indebted to the Managing Agents of several mining companies for much information supplied direct, and he is especially indebted to Mr. J. A. Robertson, Director-General of Statistics, for assistance in analysing the data hitherto published only in consolidated tables.

II.—SUMMARY OF PROGRESS.

THE following table summarizes the values of the principal minerals produced during the six years under review. The totals have the obvious defect of being due to the addition of unlike denominations; for export values, being the only returns obtainable in some cases, are ranged with spot values, while the latter necessarily vary with the position of the mine, representing not the *values*, but the *prices* obtainable. In the case of coal, for instance, the so-called value of a ton of good coal in Bengal is less than half that of the inferior material raised in Baluchistan or Burma; in the case of salt, the values given are the prices charged, and these, on an average, are but one-tenth of the duty, which is the principal value of the salt to Government; certain valuable mineral products, like building-stone, are omitted altogether for want of even approximate estimates.

The values returned for minerals exported are also necessarily lower than they would be if the minerals were consumed in the country, and it is consequently unfair to compare this table of values with corresponding returns for countries in which metallurgical industries flourish. Manganese-ore is a conspicuous example of a product which, according to its quality, may be worth 30 to 40 shillings a ton to the European steel-maker, but which is of less value to the Indian producer by the heavy cost of transport. The country is thus not only so much poorer by the loss of the metal exported in the ore, but is paid in return little more than half its market value.

The imperfections of the table are those confessedly inseparable from all such estimates of mineral production; and it is of use merely as a means of comparing one year with another, the same system being carried through the whole period under review. It will be seen that there has been, year by year, a steady, uninterrupted progress in production, from a total of £3,455,565 in 1898, to £4,988,527 in 1903—an increase of 44·37 per cent. in five years. To this total increase every mineral has contributed, except jadeite and amber, and for both of these

the figures are of more doubtful value than for most of the other minerals.

TABLE 1.—*Total Value of Minerals for which Returns of Production are available for the years 1898 to 1903.*

MINERALS.	1898.	1899.	1900.	1901.	1902.	1903.	Average.
	£	£	£	£	£	£	£
Gold . . .	1,608,504	1,724,906	1,891,767	1,930,411	1,970,230	2,302,493	1,904,719
Coal (a) . . .	957,162	1,063,820	1,343,081	1,323,372	1,366,909	1,299,716	1,225,677
Salt (b) . . .	358,933	312,682	325,970	409,019	344,633	336,147	347,897
Saltpetre (c) . . .	265,896	232,896	256,210	294,249	237,880	288,487	262,603
Petroleum (a) . . .	67,897	125,684	148,755	200,342	217,816	354,365	185,810
Rubies . . .	57,950	90,848	97,326	104,476	86,895	98,575	89,345
Mica (c) . . .	53,890	73,372	109,554	70,034	87,594	86,277	80,120
Manganese-ore . . .	27,426	39,529	77,304	79,119	120,538	132,741	79,443
Jadestone (c) . . .	41,780	42,120	58,955	46,377	31,713	47,676	44,770
Iron-ore (e) . . .	12,403	12,836	11,171	13,598	16,533	14,963	13,584
Graphite (d) . . .	110	7,620	9,145	13,635	24,410	16,970	11,981
Tin . . .	2,553	7,900	8,534	7,773	5,340	9,153	6,875
Magnesite (d) . . .	...	56	150	...	2,360	550	519
Amber . . .	1,061	151	103	11	432	414	362
TOTAL . . .	3,455,565	3,734,420	4,338,025	4,492,416	4,513,283	4,988,527	4,253,706

(a) Spot prices.

(b) Prices without duty.

(c) Export values.

(d) Estimated values.

(e) Estimated values for provinces other than Bengal.

On looking over the returns for mineral production in India for the past six years, two features stand out most conspicuously. Firstly, there has been a remarkable progress in developing the few minerals which are consumed by what conveniently might be called direct processes,

General character of the minerals worked.

such as Coal, Gold, Petroleum, Gem-stones, and Salt, or which are raised for simple export, such as Manganese-ore, Graphite, Saltpetre, Mica, and Tin. Secondly, there has been an equally remarkable neglect of the metalliferous ores and the minerals which are necessary to the more complicated chemical and metallurgical industries.

The principal reason for the neglect of metalliferous minerals is the fact that in modern metallurgical and chemical developments the bye-product has come to be a serious and indispensable item in the sources of profit, and the failure to utilize the bye-products necessarily involves neglect of the minerals which will not pay to work for the metal alone. Copper sulphide ores are conspicuous examples of the kind: many of the most profitable copper mines in the World could not be worked but for the demand for sulphur in sulphuric acid manufacture, and for sulphuric acid there would be no demand but for a string of other chemical industries in which it is used (*cf.* page 117). A country like India must be content, therefore, to pay the tax of imports until industries arise demanding a sufficient number of chemical products to complete an economic cycle, for chemical and metallurgical industries are essentially gregarious in their habits.

An examination of our import statistics shows how far the domestic production falls short of the requirements of the country in minerals and mineral products. During the three years 1901-1903 the average annual value of these imports was £10,158,252, and this figure does not include the value of glassware, earthenware, porcelain, machinery, railway material, hardware, and the innumerable articles which, though made from metals known to exist in India, have values greatly in excess of the raw materials used in their manufacture, and which, in any case, would be partly made elsewhere. Of the average annual total, 54·7 per cent., or £5,559,511, was paid for metals alone.

Summary for the Minerals of Group I.

In the case of Coal, the Indian output has risen from a little over 4 million tons in 1897 to 7½ million tons in 1903, and within the period under review, India, for the first, though probably also for the only, time, secured the leading place as a coal-producer amongst British dependencies. Of the total output, the Bengal coal-mines contributed the chief, and an annually increasing,

fraction, from 78·6 per cent. in 1898 to 85·5 per cent. of the total in 1903. On account of the fact that very little development has occurred in metallurgical industries, the coal consumption of India is not likely greatly to exceed that of Australia, and will certainly fall behind that of Canada, until our metalliferous ores, and especially those of iron, are raised for smelting in the country.

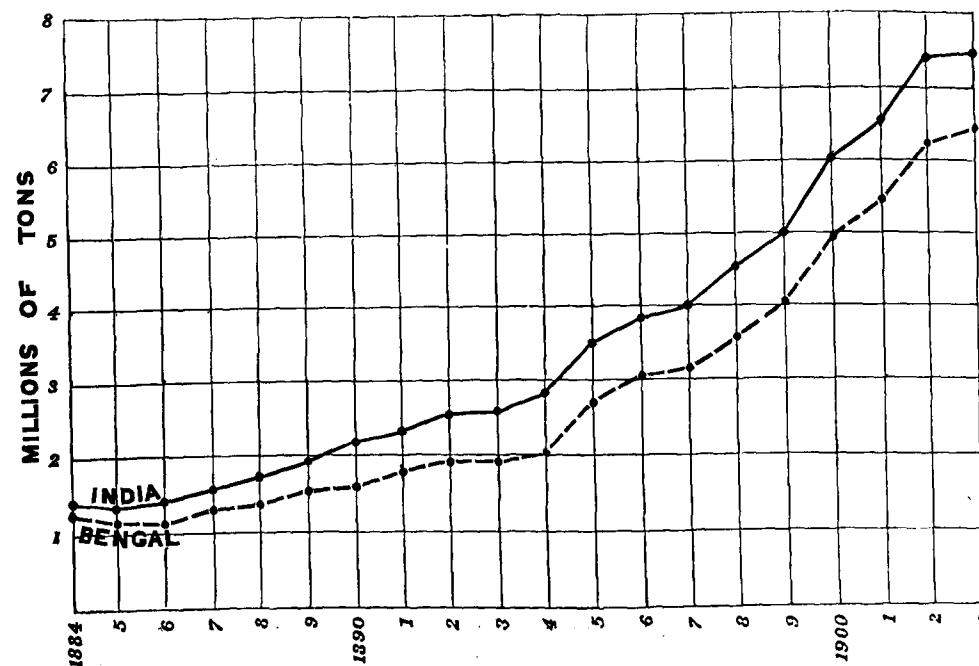


FIG. 1.—Production of Coal for 20 years.

As far as they go in their small way, it is satisfactory, from the coal-miners' point of view, to observe that, within the period under review, the figures for imports and exports have become reversed, with every sign of permanency in their present relative positions (figure 2, page 10).

Another feature of the coal trade—which is satisfactory also to those with wider interests than the coal-miner—is the fact that whilst the railways have reduced their purchases of foreign coal to the dimensions of mere samples—as shown graphically in figure 3 (page 11)—and whilst their total coal bill has been steadily increasing, they have

which distribute the cheap imported material, but in more remote parts of the Peninsula the old industry persists, and in parts of the Central Provinces has even improved. In the Sambalpur district there are over 200 small direct-process furnaces still at work.

During the six years under review the average annual value of iron and steel imported was £3,078,065, but as this does not include the amounts brought in in the form of machinery, the figures would present a very different appearance if workshops and foundries were more widely developed in India. As the imports of iron and steel have been rising year by year, and were valued at £4,136,184 in 1903, the figures, as far as they go, are quite sufficient to show that there is room in the country for a large iron-manufacturing industry, which would soon bring in its train the manufacture of machinery.

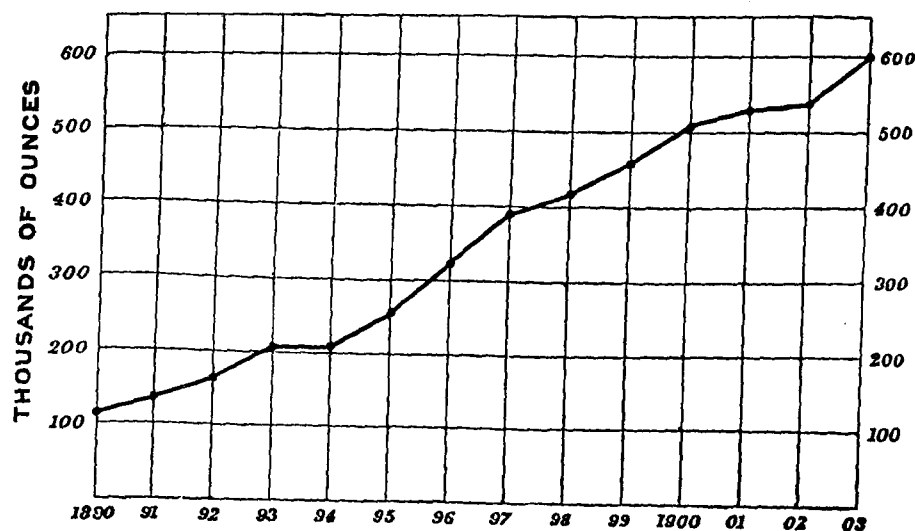


FIG. 4.—Production of Gold since 1890.

From the fact that the district returns for production show little more than half the quantities of "Jadestone" declared in the export statistics, it is evident that less interest is taken in the mineral than its value appears to justify. With an average annual value of £44,770 returned for the exports to the Straits and China, jadeite should be ranked amongst the important minerals, its value being nearly seven times that of the tin turned out and nearly half that of rubies.

Jadette.

Magnesite-mining was hardly established before the close of 1903, but preparations on a large scale are now being made to open up the well-known deposits near Salem, in which the mineral occurs in a condition of exceptional purity.

The rapid rise of Manganese-ore mining is probably just now the most conspicuous feature in the mineral industry of India. Twelve years ago the industry had not definitely started, whilst last year India turned out a larger quantity of high-grade ores than any country except Russia. The diagram forming figure 5 shows that, within the period under review, work commenced in the Central Provinces, and on account of the high degree of richness and purity of the ore-bodies there opened up, production rapidly developed, in spite of the handicap of a railway journey of 500 to 600 miles between the mines and the coast. The recent discovery of deposits in the Bombay Presidency nearer the coast will probably result in a still further expansion of the export trade, which, however, in view of the unlimited fuel supplies lying idle in India, and the annually increasing bill for imported steel, cannot be regarded with unmixed satisfaction.

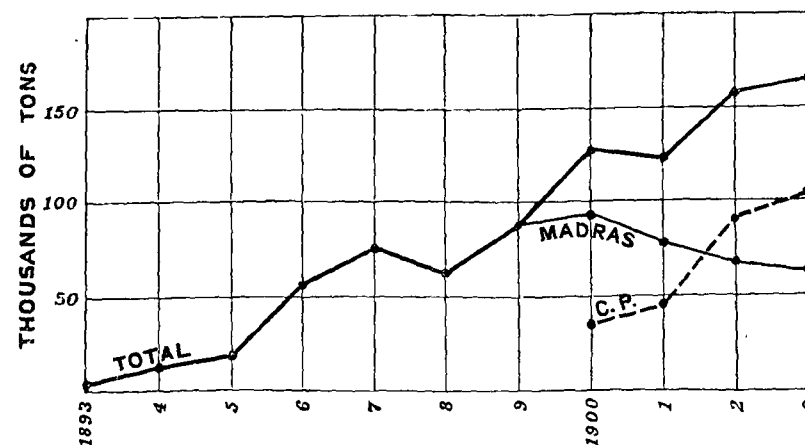


FIG. 5.—Production of Manganese-ore since the commencement in 1893.

Although India is still the leading producer, and is supplying something like half the World's wants in Mica, the miner in India has not secured a satisfactorily large share of the recently increased trade in this mineral, and the returns for India show a smaller degree of expansion than those for consumption in Europe and America.

Mica.

Figure 6, showing the fluctuations in total weight and total value of the mica exported, demonstrates in an interesting way the change which took place in the ratio of the two, when, near the beginning of the period under review, the Indian mica-miners began to turn over their waste heaps to supply the demand for the cheaper "flimsy" mica required for the newly-invented micanite.

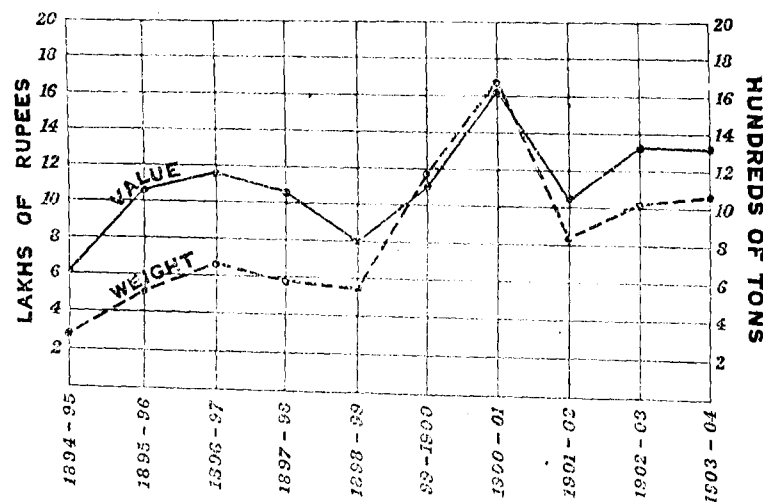


FIG. 6.—Exports of Indian Mica during the past 10 years.

The Petroleum industry has increased at a greater rate even than coal-mining. From a production of just 19 million gallons in 1897, the output rose to nearly 88 million gallons in 1903, and in addition to the export of considerable quantities of paraffin wax, the illuminating oils and petrol refined in Burma and Assam have at last shown signs of definitely displacing foreign supplies in the Indian market (figure 7, page 15).

Next to Petroleum, Rubies now form the chief source of revenue amongst mineral products in Burma, the Ruby-Mining Company under the new lease having entered a favourable phase after a long period of uncertainty in its prospects. The Company paid its first dividend of 5 per cent. in 1898, and continued to work with greater profits in 1899 and the following years.

The production of Salt has shown considerable fluctuations, from 1,102,039 tons in 1901 to 823,184 tons in 1903, the average annual production for India, exclusive

of Aden, having been 979,572 tons for the period under review. Of this amount 61.8 per cent. was obtained from sea-water, 27 per cent. was obtained from sub-soil brine and from lakes in areas of internal drainage, whilst the remainder, 11.2 per cent., was raised from the rock-salt deposits in the Punjab and North-West Frontier Province. The average annual import of foreign salt amounted to 433,754 tons, of which 89.8 per cent. was imported to Bengal, and 10.1 per cent. entered Burma.

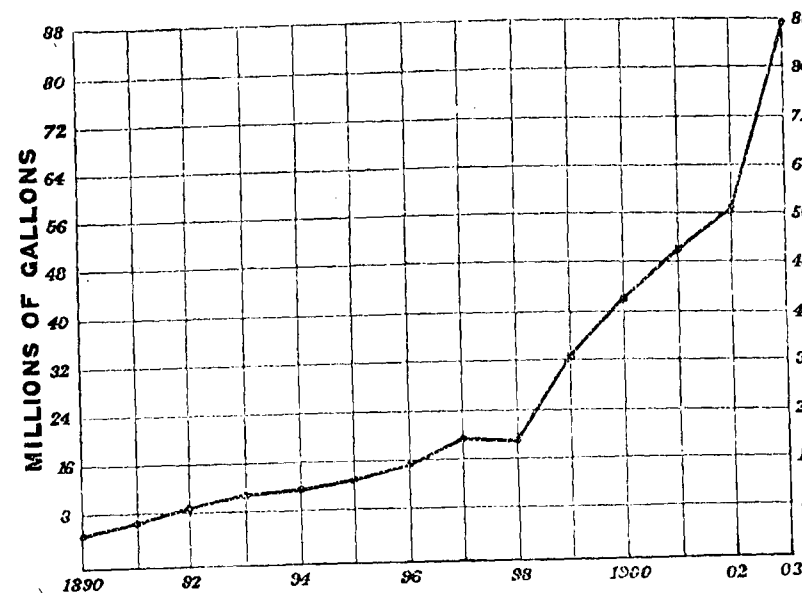


FIG. 7.—Production of Petroleum since 1890.

The production of Saltpetre is evidently understated, being considerably below the quantities returned as exports.

The average annual exports for the six years amounted to 382,353 cwt., of which 30.7 per cent. went to the United Kingdom, 25.7 per cent. to Hong-Kong, and 24.0 per cent. was exported to the United States. Most of the saltpetre was manufactured in Behar, and 98.5 per cent. of the total left India through the port of Calcutta. The only trans-frontier trade of importance is the import of saltpetre from Nepal, the average annual amount for the period under review being 9,417 cwts.

Although Tin-mining in South Burma is still practised on a small scale, there has been a marked improvement in the returns, and the persistently high price of tin is likely to inspire more enterprise in the exploitation of these deposits, which are a natural continuation of those in the Malay Peninsula, from which more than half the World's supply is obtained.

Tin.

III.—DETAILED ACCOUNT OF THE MINERALS OF GROUP I.

Coal.

DURING the period of six years under review, the output of Coal rose from a total of 4,066,294 tons in 1897 to 7,438,386 tons in 1903, an increase of 83 per cent. (table 2). The expansion was, however, mostly confined to the first five years of this period, as in 1903 the production exceeded that of 1902 by only 13,906 tons.

TABLE 2.—*Production of Coal during the years 1898 to 1903.*

YEAR.	Quantity.	Total value at the place of production.	Average value per ton at the mines.
	Tons.	Rupees.	Rupees.
1898	4,608,196	1,43,57,436	3'12
1899	5,093,260	1,59,57,301	3'13
1900	6,118,692	2,01,46,222	3'29
1901	6,635,727	1,98,50,582	2'99
1902	7,424,480	2,05,03,639	2'76
1903	7,438,386	1,94,95,741	2'62

From this table it will be noticed that during the latter half of the period under review supplies began to exceed the demand, and lower prices, on an average, were accepted. The average *prices* paid for coal at the pit's mouth are rather unfairly stated as *values*, but the figures are nevertheless interesting as indications of the rates at which coal can be raised with profit. The average rate given as Rs. 2'76 (3s. 8d.) in 1902 was much

Prices.

below that of most coal-producing countries of the same year. The following table shows the declared pit-mouth value in some other countries for 1902 :—

Countries.	Per ton.	Countries.	Per ton.
	<i>s. d.</i>		<i>s. d.</i>
United Kingdom . . .	8 2½	Australia . . .	7 9
Germany . . .	8 10½	New Zealand . . .	10 0
United States . . .	5 8½	Canada . . .	9 3

A reference to table 3 will show that in 1902 India, for the first time, secured the leading place as a coal-producer amongst the British dependencies, although the amount of coal raised was only 2·95 per cent. of the total for the British Empire in the same year, and only 0·94 per cent. of the World's total output. The figures are not mere curiosities to those who know the leading conditions affecting production. In 1895 Canada produced more coal than India, but India then began to supply the eastern steamship companies in consequence of the high prices produced by the English colliers' strikes of the two preceding years, and for the first time the returns for 1896 showed that India was leading as coal-producer, but was still well behind Australia. Australia was overtaken in 1902, and India thus enjoyed the first place; but it is unlikely that this position will be occupied for more than the one year, and the returns for 1903, when published, will probably show India giving way, not to Australia, but to Canada. If this prove to be true, the causes will be worth the attention of those interested in Indian coal-mining. Canada for many years was a small producer of iron and steel, and its rich deposits of iron-ore in the region of the Great Lakes, where Canadian territory is without coal deposits, were worked for export to the adjoining States of the American Union. In 1900 the total production of pig-iron in Canada amounted to 86,090 tons and of steel 23,577 tons only; but iron and steel works were started in the chief coal-producing colony, Nova Scotia, at the end of 1901, and the result is a reported production of 319,557 tons of pig-iron and 182,037 tons of steel for 1902. Iron and steel-making, more than most

manufacturing industries, creates a market for coal, and if this industry flourishes in Canada, India will resume its second place as a coal-producer until its resources in iron-ore can, in the same way, be utilized for the consumption of coal. Australia at present is, like India, dependent for most of its iron supplies from outside sources, and, like India, must depend on other industries and on exports for a coal market.

TABLE 3.—*Production of Coal in the three large British Dependencies.*

COUNTRIES.	1898.		1899.		1900.		1901.		1902.	
	Metric tons.	Per cent. of British output.	Metric tons.	Per cent. of British output.	Metric tons.	Per cent. of British output.	Metric tons.	Per cent. of British output.	Metric tons.	Per cent. of British output.
Australia .	5,490,776	2·49	5,539,382	2·31	6,479,991	2·61	7,000,227	2·86	6,968,514	2·72
Canada .	3,785,372	1·72	4,142,002	1·73	4,837,291	1·95	5,612,103	2·29	6,930,220	2·71
India .	4,203,199	1·91	5,016,390	2·09	6,216,882	2·51	6,742,214	2·76	7,543,625	2·95
TOTAL for British Empire.	220,301,426		239,995,118		247,938,725		241,463,996		256,003,411	

The market for Indian coal must be limited to (1) its own home industries, and (2) the Indian Ocean ports, where the manufacturing industries requiring coal are comparatively few, and where India is not the sole supplier of fuel. Tables 4 and 6 show that during the last six years India consumed on an average 93·1 per cent. of the coal produced in the country, and, in addition, imported annually on an average 298,940 tons of foreign coal, which must have been, in calorific value, very little below the slightly larger quantity of Indian coal sent out of the country during the same period.

The actual annual increment of consumption since 1897 has been, on an average, 509,919 tons a year, whilst the increment of production during the same period has averaged 562,015 tons. As the figures for consumption and production do not differ seriously, the great expansion

which has taken place in the Indian coal trade must have been made possible by industrial developments in India itself. The next few years will show whether this expansion is a correct index to the development of other industries, or whether it is the result mainly of increased facilities of transport and of consequent access to new markets.

TABLE 4.—*Relation of Consumption to Production.*

YEAR.	Total consumption of coal in India.	CONSUMPTION OF INDIAN COAL IN INDIA.(a)	
		Quantity.	Percentage of Indian production.
	Tons.	Tons.	
1898 . . .	4,650,154	4,280,929	92·9
1899 . . .	5,269,563	4,788,373	94·1
1900 . . .	5,719,136	5,576,669	91·1
1901 . . .	6,396,466	6,110,680	92·1
1902 . . .	7,221,241	6,992,679	94·2
1903 . . .	7,189,167	6,996,438	94·1
<i>Average</i> .	6,075,954	5,790,961	93·1

(a) The consumption of coal is assumed to be production *plus* imports *minus* exports. In the exports a ton of coke is taken to be equivalent to $1\frac{1}{2}$ tons coal required for its production. The imports include Government stores.

The railways in India have consumed on an average 29·7 per cent. of the coal produced during the past six years and table 5 shows that there has been a slight tendency for the consumption of Indian coal on the railways to form a gradually smaller fraction of the output from the mines. This is probably not merely a temporary effect, as the figures for a corresponding period ten years back, namely, 1888 to 1893, show, when treated in the same way, that the consumption of Indian coal on the railways averaged at that time 32·6 of the production. As the differences between exports and imports have been, on an average, insufficient to affect seriously the figures for total coal consumption,

and as the railways in India now consume a smaller percentage of the output than in former years, the expansion in Indian coal production may be regarded as a partial measure of the expansion of other industrial enterprises. It is not a complete measure of such expansion, as new markets have been found in recent years for Indian coal; and as probably most of the available markets have been entered now, the rate of increase in production in the future will be more nearly limited to the rate of expansion in the industries of the country. For this reason, the future of Indian coal-mining would be brighter if there were a prospect here, as in Canada, of a sensible development of the metallurgical industries; these are the real consumers of coal, and it is only when they are developed in India that the expansion in coal-mining will make a serious inroad into the enormous supplies of coal available in the country.

TABLE 5.—*Coal consumed on Indian Railways during the years 1898 to 1903.*

YEAR.	INDIAN COAL.			FOREIGN COAL.		TOTAL Consumption.
	Quantity.	Per cent. of Total.	Per cent. of Indian output.	Quantity.	Per cent. of Total.	
	Tons.			Tons.		Tons.
1898 . . .	1,422,103	97·3	30·9	39,904	2·7	1,461,107
1899 . . .	1,557,000	95·0	30·6	82,446	5·0	1,639,446
1900 . . .	1,855,610	97·2	30·3	54,339	2·8	1,909,949
1901 . . .	1,956,601	99·3	29·5	13,248	0·7	1,969,849
1902 . . .	2,091,992	99·0	28·2	21,469	1·0	2,113,461
1903 . . .	2,203,889	99·2	29·6	17,696	0·8	2,221,585
<i>Average</i> .	1,847,866	...	29·7	...	...	...

The country is now rapidly assuming the position of supplying its whole wants in mineral fuel. Table 6 and figure 2 (page 10) show that the imports of foreign coal for all purposes have been gradually diminishing,

Foreign coal on Indian railways.

whilst table 5 and figure 3 show that on the railways foreign coal has been almost entirely cut out. Twenty years ago the foreign coal consumed on the railways amounted to 31 per cent. of the total; ten years ago this was reduced to 10·7 per cent., whilst during the past six years the foreign coal has averaged 2·16 per cent. of the supplies to the railways, and during the last three years this has been reduced to under 1 per cent. In other words, twenty years ago foreign coal was a serious item in the fuel supplies of the railways: it is now imported in mere samples.

The interchange of positions, which has occurred between exports and imports during the last 20 years, is clearly shown in figure 2, and in more detail on plate 1. The actual reversal has occurred within the period under review, as shown in table 6.

TABLE 6.—*Imports and Exports of Coal during the years 1897-98 to 1902-03, including Government Stores.*(a)

YEAR.	Imports.	Exports.
	Tons.	Tons.
1897-98	276,407	213,146
1898-99	379,225	327,267
1899-00	481,190	304,887
1900-01	142,467	542,023
1901-02	285,786	525,047
1902-03	228,562	431,811
<i>Average</i>	298,940	390,695

(a) The figures include coke and patent fuel, each ton of coke being counted as 1½ tons of coal.

It is important to observe, with regard to both imports and exports, that the reversal of position, although it looks striking when expressed in diagrammatic form, has taken place on comparatively small quantities, both being insignificant beside the production and consumption within India itself.

The countries from which foreign coal supplies have been obtained are shown in table 7, from which it will be seen that the principal portion of the supplies has been obtained from Great Britain, and that practically all of the remainder has come from Australia and Japan.

TABLE 7.—*Origin of Imported Coal, Coke, and Patent Fuel.*

YEAR.	United Kingdom.	Australia.	Japan.	Other Countries.	TOTAL.
	Tons.	Tons.	Tons.	Tons.	Tons.
1897-98	245,555	16,406	14,213	233	276,407
1898-99	326,794	18,778	32,281	1,372	379,225
1899-00	375,269	20,282	82,936	2,703	481,190
1900-01	98,315	14,638	27,967	1,547	142,467
1901-02	211,327	19,685	53,440	1,334	285,786
1902-03	210,904	6,237	6,975	4,446	228,562
<i>Average</i>	244,694	16,005	36,302	1,939	298,940

The distribution of exported Indian coal is shown in table 8, from which it will be seen that Ceylon and the Straits Settlements have taken the principal share, the averages for the six years being 246,352 tons of coal in the case of Ceylon and 85,095 tons in the case of the Straits, the returns for coke being of small importance.

The variations in exports to the two chief customers are shown graphically on plate 1. Of the causes which led to the decline in the exports to Ceylon during the last three years, one has been reported to be the unfavourable reputation earned by the shipment of inferior coal to meet the increased demands made in 1900. If this is the case, the cure is in the hands of the Bengal coal-owners, for the demand must have been no real strain on the supplies available, and the figures given in table 9 will show that the markets of Ceylon and Singapore are

Possible expansion of the export trade.

both large enough to be worth the serious attention of Indian coal-shippers.

TABLE 8.—*Exports of Indian Coal.*

—	1897-98.	1898-99.	1899-00.	1900-01.	1901-02.	1902-03.	Average.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Aden . . .	8,094	14,416	4,000	53,305	47,194	21,214	24,704
British East Africa .	3,619	150	...	20,569	16,922	11,562	8,804
Ceylon . . .	104,524	214,986	180,909	368,031	335,651	274,010	246,352
Mauritius . . .	7,317	2,708	18,128	5,759	18,745	14,690	11,224
Natal . . .	...	287	6,072	598	160	2,324	1,573
Straits Settlements .	85,280	93,452	86,951	65,715	89,592	89,567	85,095
Sumatra . . .	...	...	3,531	10,863	10,690	14,655	6,623
Other Places . . .	3,439	769	4,392	15,450	5,012	3,032	5,349
TOTAL Exports .	212,273	326,778	303,983	540,290	523,966	431,054	389,724
VALUE .	£142,283	£223,100	£217,776	£393,889	£375,977	£257,968	£268,499

TABLE 9.—*Foreign Coal Imports of Ceylon and Singapore for the years 1901 to 1903.*(a)

ORIGIN OF THE COAL.	CEYLON.			SINGAPORE.		
	1901.	1902.	1903.	1901.	1902.	1903.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
England . . .	286,842	288,362	246,500	60,419	50,984	52,500
Japan . . .	6,300	...	26,400	433,548	370,426	400,000
Australia . . .	5,522	3,752	12,200	38,965	36,087	44,500

(a) For Indian coal sent to Ceylon and Singapore, see table 8.

Practically all the coal exported leaves by the port of Calcutta, which, being the nearest port to the Bengal coal-fields, is the centre of distribution to the other ports of India. The quantity exported from Calcutta during the past six years is shown in table 10 to have averaged 1,622,686 tons, with the two highest records in 1901 and 1903 and a distinct general increase from the year 1898 onwards.

TABLE 10.—*Coal shipped from Calcutta during the years 1898 to 1903.*

—	1898.	1899.	1900.	1901.	1902.	1903.	Average.
To Foreign Ports .	314,562	269,112	488,555	587,100	428,995	438,975	421,216
„ Indian Ports .	906,509	867,161	1,245,996	1,407,913	1,257,528	1,513,711	1,201,470
TOTAL .	1,221,071	1,136,273	1,734,551	1,995,013	1,686,523	1,952,686	1,622,686

Of Indian ports, Bombay is by far the most important market for Bengal coal, having, during the period under report, taken on an average 679,445 tons a year, with a maximum of 881,806 tons in the last year, 1903. The amount of Bengal coal taken at Bombay is now well beyond the foreign imports, which, during the same period, averaged 192,237 tons, by far the largest fraction having come from the United Kingdom.

The distribution of Bengal coal to Indian ports is shown in table 11, on page 26, from which it will be seen that the places of importance after Bombay have been, in order, Rangoon, Madras, Karachi, Cuddalore, and Negapatam.

Table 12 (page 27) shows that amongst the provinces Bengal occupies the leading position as a coal-producer, whilst a glance at figure 1 (page 9) will show that the Bengal output is not only the largest part, but has been a yearly increasing fraction of the total, the contribution having risen from 78·6 per cent. in 1898 to 85·5 per cent. in 1903. Three coal-fields in Bengal, namely, Raniganj, Jherria, and Giridih, have yielded nearly all the coal hitherto credited to Bengal, but the Daltonganj field, which is now connected with the East Indian Railway system, has recently been opened up by the Bengal Coal Company.

TABLE 11.—*Distribution of Bengal Coal to Indian Ports.*

PLACES.	1898.	1899.	1900.	1901.	1902.	1903.	Average.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Akyab . . .	1,614	2,167	5,575	6,160	9,745	2,293	4,592
Balasore . . .	2,681	219	4	...	...	13	486
Bassein . . .	...	4,622	3,900	7,221	15,112	9,852	(b) 8,141
Bhownagar . . .	...	...	...	...	...	15,690	(a) 15,690
Bombay . . .	449,302	399,121	824,080	861,859	660,504	881,806	679,445
Chandbali . . .	6,985	1,875	625	465	192	212	1,726
Chittagong . . .	785	2,671	3,791	3,637	2,288	3,374	2,758
Cocanada . . .	100	...	...	4,226	...	1,000	888
Cuddalore . . .	22,635	28,706	12,088	31,591	21,492	33,293	24,968
Karachi . . .	20,801	...	4,730	14,108	84,825	54,824	29,881
Kyaukpyu . . .	473	514	605	497	181	40	385
Madras . . .	193,102	193,667	136,189	173,171	150,850	170,760	169,623
Mandapam . . .	...	...	...	...	...	13,974	(a) 13,974
Marmagoa . . .	...	...	...	...	...	14,380	(a) 14,380
Moulmein . . .	1,359	1,120	2,270	1,338	3,571	1,619	1,879
Negapatam . . .	24,226	18,930	28,199	31,009	23,754	21,557	24,613
Pondicherry . . .	...	6,120	3,994	10,088	7,571	5,000	(b) 6,555
Port Blair . . .	750	1,000	1,000	750	6,000	6,009	2,585
Rangoon . . .	169,979	188,619	209,469	242,777	261,213	264,344	222,734
Tuticorin . . .	10,677	17,007	9,237	18,285	12,505	12,918	13,438
Other Ports . . .	1,040	803	240	731	7,725	753	1,882
TOTAL . . .	906,509	867,161	1,245,996	1,407,913	1,267,528	1,513,711	1,201,470

(a) One year only. | (b) Average for 1899 to 1903 only.

TABLE 12.—*Output of Indian Coal by Provinces for the years 1898 to 1903.*

YEAR.	Assam.	Balu-chistan.	Bengal.	Burma.	Central India.	Central Provinces.	Hyderabad.	Punjab and Kashmir.	Rajputana.	TOTAL.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1898 . . .	200,329	13,372	3,622,090	6,975	134,726	149,709	394,622	85,862	511	4,608,196
1899 . . .	225,623	15,822	4,035,265	8,105	164,569	156,576	401,216	81,835	4,249	5,093,260
1900 . . .	216,736	23,281	4,978,492	10,228	164,489	172,842	469,291	74,083	9,250	6,118,692
1901 . . .	254,100	24,656	5,487,585	12,466	164,362	191,516	421,218	67,733	12,094	6,635,727
1902 . . .	221,096	33,889	6,259,236	13,302	171,538	196,981	455,424	56,511	16,503	7,424,480
1903 . . .	239,328	46,909	6,361,212	9,306	193,277	159,154	362,733	44,703	21,764	7,438,386

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Most of the coal raised has been obtained from the Gondwana system of strata in Peninsular India, where the coal-mines, being nearer the coast, and generally within touch of the main railway lines, have been developed more rapidly than those of the Extra-Peninsular Cretaceous and Tertiary coal-beds (table 13).

TABLE 13.—*Origin of Indian Coal raised during the years 1898 to 1903.*

YEAR.	FROM GONDWANA STRATA.		FROM TERTIARY STRATA.		TOTAL production.
	Tons.	Per cent. of Total.	Tons.	Per cent. of Total.	
					Tons.
1898	4,301,147	93·4	307,049	6·6	4,608,196
1899	4,757,626	93·4	335,634	6·6	5,093,260
1900	5,785,114	94·6	333,578	5·4	6,118,692
1901	6,264,681	94·4	371,046	5·6	6,635,727
1902	7,083,179	95·4	341,301	4·6	7,424,480
1903	7,076,376	95·1	362,010	4·9	7,438,386
<i>Average</i>	5,878,021	94·5	341,769	5·5	6,219,790

The contribution from the Gondwana coal-fields in 1898 amounted to 93·4 per cent. of the total output for the year. This increased to 95·1 per cent. in 1903, whilst the average for the whole period of six years has been 94·5 per cent. Comparing 1898 with 1903, there has been an increased output in all the Peninsular Gondwana fields, except in the case of Singareni, where the rapid expansion which had been going on without interruption until 1902 was suddenly checked by a serious mining accident in June 1903, and a consequent drop in the year's output from 455,424 tons in 1902 to 362,733 tons in 1903. In the case of the Extra-Peninsular

fields, there has also been an increase, though a much smaller one, in all the provinces, except in the Punjab, where the Dandot colliery in the Salt Range, which has been the chief producer, has been gradually failing (*cf.* table 17, page 35).

TABLE 14.—*Output of Gondwana Coalfields for the years 1898 to 1903.*

COALFIELD.	1898.	1899.	1900.	1901.	1902.	1903.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Bengal :—</i>						
Daling	2,191	2,098	1,490	...	...	...
Daltonganj	...	...	707	3,881	19,352	33,557
Giridih	653,047	628,777	712,727	694,806	776,656	766,871
Jherria	749,988	1,007,236	1,710,757	1,946,763	2,420,786	2,493,729
Rajmahal	423	412	397	436	219	335
Raniganj	2,216,441	2,396,742	2,552,414	2,841,699	3,042,223	3,066,720
<i>Central India :—</i>						
Umaria and Johilla	134,726	164,569	164,489	164,362	171,538	193,277
<i>Central Provinces :—</i>						
Mohpani	22,472	23,596	39,612	43,046	43,645	31,443
Pench valley	...	...	...	...	...	88
Warora	127,237	132,920	133,230	148,470	153,336	127,623
<i>Hyderabad :—</i>						
Singareni	394,622	401,216	469,291	421,218	455,424	362,733
TOTAL Gondwana beds .	4,301,147	4,757,626	5,785,114	6,264,681	7,083,179	7,076,376

Taking the Gondwana areas first, we find that the Raniganj field, which was the first to be developed, still holds the lead (*see* table 14), having turned out 41·2 per cent. of the total production for India in 1903. Jherria, further

west in the Damuda valley, is, however, rapidly overtaking Raniganj since its railway connection to the capital by the East Indian line has been supplemented by a branch from the Bengal-Nagpur system. In 1897 Jherria contributed only 8·2 per cent. of the Indian output, whilst in the last year, 1903, the production of this field amounted to 33·5 per cent. of the total.

The coal from the Raniganj field is mainly derived from seams in the highest beds of the Damuda series, the lowest, or Barakar stage, being less developed in the exposures along the northern margin of the field. In the Jherria field the converse is the case: the uppermost stage has yielded poor coal, whilst in the Barakar series there are some eighteen well-defined seams, of which the upper eight seams include enormous supplies of good coal. The two classes of coal present a well-marked and constant difference in the amount of moisture they contain: the older, Barakar, coals, both in the Raniganj field and in Jherria, contain on an average about 1 per cent. of moisture, whilst the average for the younger coal of the Raniganj series is 3·8 per cent. in the lower seams, and nearly 7 per cent. in the upper seams. There is a corresponding, but less marked, difference in the proportion of volatile hydrocarbons, which form a larger percentage of the younger coals than of those at lower stages in the Damuda series.

The small patch of coal-bearing Gondwana rocks near Giridih is practically divided between the Bengal Coal and the East Indian Railway Companies. The chief wealth of the field is stored in a 15-foot seam of good steam and coking coal near the base of the Damuda series. This coal has the following average composition:—

Fixed carbon	66·4
Volatile matter	24·4
Ash	9·2

The output of the field, which is controlled largely by the requirements of the railway company, has been rising gradually during the last six years from 660,665 tons in 1897 to 766,871 tons in 1903, and the remaining workable supplies probably do not exceed 77 million tons. A proposal for introducing modern methods of coke-making with a view to the recovery of the valuable bye-products is now being considered by the East Indian Railway Company.¹

¹ T. H. Ward: Modern methods of coke-making. Rec. Geol. Surv. Ind., vol. XXXI, 92 (1904).

The other principal coal-fields being worked on the Peninsula are, Warora, Mohpani, and those of the Pench valley in the Central Provinces, Umaria in the Rewah State, and Singareni in the Nizam's Dominions.

In the Pench valley and the belt of related coal-bearing Gondwana rocks dipping under the Satpura range, only Pench valley. prospecting work has been done so far; but favourable results have been obtained by locomotive trials on samples of the coal, and the proximity of the fields to the great manganese-ore deposits, and (when connected by direct rail to Nagpur or Itarsi) to the markets of Bombay and the mills of the Deccan, will give these deposits an opportunity of developing whatever intrinsic merits they possess.

The coal-bearing rocks which dip under the Upper Gondwanas of the Satpura range re-appear near Mohpani. Mohpani. in the Narsinghpur district, where they have just escaped total concealment by the Narbada alluvium. The Mohpani colliery has been worked since 1862 by the Nerbudda Coal and Iron Company, and, through various difficulties, has made very little progress. Between the years 1898 and 1903 the annual output from this colliery rose from 22,472 to 43,645 tons during the first five years, but a drop occurred in 1903, due to the final abandonment of the old mines and the development of work in the newly-discovered area two miles further west.

The Warora basin, about 62 miles south of Nagpur, in the Chanda district, has been worked since 1871 by the Warora. State. About half the coal raised, which averaged 137,146 tons a year for the years 1898 to 1903, has been taken by the Great Indian Peninsular Railway, the rest going to cotton mills and factories in Nagpur and other parts of the Central Provinces. The coal is liable to spontaneous combustion, and a large part of the field has been lost by fire and walled-off. The Warora colliery has been worked under distinctly greater natural difficulties than those usually met with in Bengal, but an examination of the chief results obtained by the present able management will probably be of value to those interested in Indian coal-mining. Table 15 shows the financial results of the past six years' working of the colliery. These results are shown graphically in relation to coal output on plate 3.

TABLE 15.—*Financial Results of the Warora Colliery during the years 1898 to 1903.*

YEAR.	Gross earnings.	Working expenses.	FINANCIAL RESULT.	
			Net earnings.	Percentage on Capital.
	£	£	£	
1898	39,719	28,247	11,472	9.58
1899	40,193	27,661	12,532	10.96
1900	40,507	26,939	13,568	12.22
1901	46,085	28,875	17,210	15.90
1902	46,669	29,267	17,402	17.11
1903	39,499	26,616	12,883	13.16

The average selling price of coal at Warora during the past six years has been Rs. 4-7 a ton, and the average cost of its production during the same period has been Rs. 3-1-5, of which a considerable fraction is due to charges for the sinking fund. This cost has been distributed as follows:—

<i>Mine Working Expenses—</i>		Annas
Superintendence		3.24
Coal-cutting		12.85
Underground haulage, including maintenance of shafts, roads and working ways, with repairs		9.87
Surface haulage, including lighting and maintenance of permanent way		1.25
Pumping		7.54
Ventilation		1.65
Staff-quarters and other buildings		0.42
Miscellaneous		1.52
<i>Management and Office Expenses—</i>		
Local Offices, Police, Medical and India Office charges		3.07
Sinking Fund charges		8.01
TOTAL		49.42 annas.

The returns for labour at Warora, notwithstanding the difficulties arising from water and liability to spontaneous combustion, show that the system of mining adopted permits of a satisfactory output per person employed, whilst the deaths due to accidents have been reduced to

a low rate. During the six years, 1898 to 1903, the average annual output of coal per person employed was 132 tons, whilst there were four deaths only during the period in which 822,876 tons of coal were raised, and the death-rate from mining accidents averaged 0.64 per 1,000 employed. Another three or four years will probably see the end of the Warora colliery, but, with the extension of the Wardha valley line southwards, the extensive deposits near Bellarpur will be opened up.

The great belt of Gondwana rocks, near the north-west end of which Warora is situated, stretches down the Godavari valley as far as Rajamundry, and at one or two places the equivalents of the coal-bearing Damuda series in Bengal are found cropping up from below the Upper Gondwana rocks. One of these occurrences near Yellandu in the Nizam's Dominions forms the coalfield well known by the name of Singareni. The principal seam of coal, some 5 to 6 feet thick, being worked at the Singareni colliery, was discovered by the late Dr. W. King of the Geological Survey in 1872, but mining operations were not commenced until 1886, since when the output has rapidly risen to over 400,000 tons a year, although the production last year, 1903, showed a decline to 362,733 tons, owing to a serious subsidence in one of the workings (see table 14 and plate 2).

Coal-mining at Singareni has been accompanied by a heavier loss of life by accidents than in the general run of Gondwana fields. Table 16 shows the death-rate on this field compared with the rate in Bengal.

TABLE 16.—*Death-rate from Accidents at Singareni compared with Bengal.*

—		1898.	1899.	1900.	1901.	1902.	1903.	Average.
SINGARENI.	Number of persons employed.	6,788	8,450	8,045	7,616	7,538	6,359	7,473
	Deaths from accidents .	9	8	9	12	17	29	14
	Death-rate per 1,000 employed.	1.33	0.94	1.12	1.58	2.25	4.56	1.87
Death-rate in Bengal coal-fields		0.45	0.52	0.60	0.53	0.53	0.85	0.58

The Bilaspur-Katni Branch of the Bengal-Nagpur Railway passes through the small coalfield of Umaria in the Rewah State, Central India. The quantity of workable coal in this field is estimated at about 24 million tons, and during the past six years the output has been gradually rising from 134,726 tons in 1898 to 193,277 in 1903 (see table 14, and plate 2). The four coal seams being worked vary from about 3 to 12 feet in thickness, and dip about 4° to the north-east. The mines were opened in 1882 under the direction of Mr. T. W. H. Hughes of the Geological Survey, and were controlled by Government until the 1st January 1900, when they were handed over to the Rewah State. Most of the coal raised is sold to the Indian Midland (Great Indian Peninsular) Railway, and a small quantity to the Bengal Nagpur Railway and other customers.

Cretaceous and Tertiary Coalfields.

The younger coals are nearly all of Cretaceous and Tertiary age, although some thin and poor seams of Upper Jurassic coal have been worked in Cutch. The Cretaceous beds occur in the Khasia and Garo hills in Assam, where they are found in small basins resting on the Archæan schists and gneisses. The Cretaceous coals of Assam are generally distinguished by the inclusion in them of nests of fossil resin, and this character was noticed in the coal recently discovered to the north of Shillong.¹

Coal of Tertiary age is found in Sind, Rajputana, Baluchistan, along the foot-hills of the Himalayas, further east in Assam, in Burma, and in the Andaman and Nicobar Islands. The most frequent occurrence is in association with nummulitic limestones, though the richest deposits, namely, those in North-East Assam, are younger, probably miocene, in age. Of these Extra-Peninsular fields, the only ones producing coal are of Tertiary age. The output for each of these for the years 1898 to 1903 is shown in table 17 (page 35).

On the whole, the younger coals, which are being worked in Extra-Peninsular areas, differ from the Gondwana coals in containing a larger proportion of moisture and volatile hydrocarbons, and though as variable in composition as they are in thickness of seam, coals are obtained,

as for instance in Assam, with a remarkably low percentage of ash and having a high calorific value.

TABLE 17.—*Production of Tertiary Coal during the years 1898 to 1903.*

Province and field.	1898.	1899.	1900.	1901.	1902.	1903.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Assam :—</i>						
Makum	202,178	232,933	215,962	254,100	220,640	239,328
Smaller fields	1,367	807	774	...	456	...
<i>Baluchistan :—</i>						
Khost	10,662	11,689	17,664	18,431	25,982	36,444
Sor Range and Mach	5	265	5,617	6,225	7,907	10,465
<i>Burma :—</i>						
Shwebo : Thingadaw	6,975	8,105	10,228	12,466	13,302	9,306
<i>Kashmir :—</i>						
Ladda	...	...	...	...	1,138	999
<i>Punjab :—</i>						
Dandot	74,590	81,218	74,083	67,730	55,373	43,704
Other mines	11,272	617	...	...	...	...
<i>Rajputana :—</i>						
Bikaner	...	...	9,250	12,094	16,503	21,764
TOTAL for Tertiary beds	307,049	335,634	333,578	371,046	341,301	362,010

The most promising amongst these young coals is the group of occurrences in North-East Assam, one of which is now being worked by the Assam Railways and Trading Company, who commenced operations at Makum (27°15'; 95°45') in 1881. The collieries are connected by a metre-gauge railway with Dibrugarh on the Brahmaputra river, which, being navigable, forms both a market and a means of transport for the coal. The most valuable seams occur between the Tirap and Namdang streams, where,

¹ P. N. Bose: Report on the Um-Rileng coal-beds, Assam. Rec. Geol. Surv. Ind., XXXI, 35 (1904).

for a distance of about five miles, the seams vary from 15 to 75 feet in thickness. The average dip is 40° , but as the outcrops in many places are several hundred feet above the plains, facilities exist for working the coal by adit levels. The average coal production of the Makum mines during the last six years has been 227,523 tons a year. The coal has the reputation of being a good fuel, and forms an excellent coke.

Coal occurs in various parts of Burma, and in the Shwebo district the annual output during the years 1898 to 1903 varied between 6,975 and 13,302 tons without signs of expansion. The only point worth adding to previously published accounts of the Burma coal is the fact that during the past year it has been definitely ascertained that in the Nammaw field, which is some 30 miles from the Mandalay-Lashio Railway line, the existence of seams of good coal, 10 feet thick, has been recently verified by the Geological Survey. This and the Lashio field, further north in the Northern Shan States, are likely to be of importance to the new railway lines in that area.

Possibly the most important of the coal deposits in the west occur in Baluchistan, where, however, the disturbed state of the rocks renders mining operations difficult, expensive, and often dangerous. Besides the small mines being worked in the Sor range, south-east of Quetta, and in the Bolan pass at Mach, collieries have been worked since 1877 at Khost ($30^\circ 12'$; $67^\circ 40'$) on the Sind-Pishin Railway. The two seams being worked have an average thickness respectively of 26 and 57 inches, and the output has gradually risen from 10,662 tons in 1898 to 36,444 tons in 1903.

To the natural difficulties of the ground is added a serious scarcity of trained labour, and as a consequence the working results of these mines appear to be unfavourable when compared with the exceptional conditions existing on the Gondwana fields of Peninsular India. Table 18 (on page 37) shows the financial results of the undertaking, which is under the control of the North Western State Railway.

The output per person employed at Khost has averaged only 44 tons per annum during the past six years, and the difficulties of the work are further shown by the fact that the death-rate from mining accidents has been, in the same period, 23·2 per thousand persons employed; but of this serious loss of life, 47 out of a total of 64 deaths were caused on October 12th, 1899, by a fire in the Takrai mine. Besides

the stratigraphical difficulties arising from working the Tertiary coal seams, which are often irregular in thickness and lie in disturbed, uncertain ground, there are additional dangers due to the liability of most of these pyritous coals to spontaneous combustion, and to the danger of explosions by the large quantities of dust generally formed in working such friable coals.

TABLE 18.—*Summary of the Financial Results of Working the Khost Colliery during the years 1898 to 1903.*

YEAR.	Gross earnings.	Working expenses.	FINANCIAL RESULT.	
			Net earnings.	Percentage on capital.
	£	£	£	
1898	9,423	8,371	1,052	25·00
1899	10,482	11,334	-852	...
1900	16,290	14,443	1,847	19·11
1901	14,500	11,379	3,121	22·77
1902	18,509	17,266	1,243	7·01
1903	23,804	19,978	3,826	17·02

The coal which has been most worked in the Punjab is that long known to exist in the Jhelum district, on the Dandot plateau of the Salt range. The only valuable seam varies in thickness from 18 to 39 inches, forming a basin under the nummulitic limestone. The mines at Dandot and at Pidh, 3 miles to the north-east, have been worked for the North Western Railway since 1884. During the period under review, 1898 to 1903, the collieries have shown a decline in output, from a maximum of 81,218 tons in 1899 to 43,704 tons in 1903, and during the last two years the mines have been worked at a loss. The annual output of coal per miner employed at Dandot during the last six years has averaged only 42 tons, against about 75 tons turned out per man in Bengal; but notwithstanding the difficulties connected with mining in this area, the loss of life through accident has been as low, on an average, as 0·74 per 1,000 employés.

The coal near Bhaganwala at the eastern end of the Salt range occurs in a seam of very variable thickness, in consequence of which widely discordant estimates have been made of the resources of the field. Between 1893 and 1898 the field was worked by the North-Western Railway, but the quality of the fuel was poor, and the collieries were worked at a loss. The output amounted to 11,272 tons in 1898, when arrangements were made to dismantle the colliery, which was closed on the 15th January 1899.

Some minor works, not beyond the scale of ordinary prospecting operations, have been conducted on the deposits of Jurassic coal in the Mianwali district. The deposits about 2 miles north of Kalabagh are estimated to contain about 72,000 tons of coal, of which less than 1,000 tons a year are extracted. More promising deposits of Tertiary coal occur in the Maidan range, 24 miles further west, but no mining in this locality has, so far been attempted.

A lignite of dark-brown colour, with included lumps of fossil resin, occurs in association with nummulitic rocks at Palana in the Bikaner State, Rajputana. In 1898 mining operations were started at a point where the seam was found to be 20 feet thick, and a branch line, 10 miles long, from the Jodhpur Bikaner Railway, has been constructed to assist the development of the colliery. The figures given in table 17 show a gradual increase of output since 1900, the returns for 1903 being 21,764 tons. The physical characters of the natural fuel form a drawback to its use in locomotives, but experiments recently made are said to show that satisfactory briquettes can be made in which the proportion of moisture is reduced, and the fuel made less vulnerable to atmospheric action.

Labour.

Coal-mining in India, from the point of view of labour, is quite ahead of all other forms of mining. The number of persons employed daily has averaged 84,805 for the years 1898 to 1903, but the returns for 1903 show 9,872 less workers than in 1902, although the output of coal has risen (see table 19). This difference is possibly in part due to a gradually increased precision in the system of making returns, and partly, no doubt, to the fact that the introduction of improved methods in mining is gradually increasing the average efficiency of the miner;

but the sudden rise to an output of 84 tons per person employed, shown in table 20 for the year 1903, is so much in excess of the Giridih return of 72 tons, that there is probably some fault in the returns made of persons employed.

Table 19 shows that 81·8 per cent. of the average number employed during the period have worked in Bengal coal mines, and that the changes elsewhere have been insignificant beside the rise in Bengal from 48,673 in 1898 to 74,538 in 1903.

TABLE 19.—*Number of Persons employed daily in Indian Coal-Mining during the years 1898 to 1903.*

PROVINCE.	1898.	1899.	1900.	1901.	1902.	1903.	Average.	Per cent. of average total.
Assam . . .	1,439	1,444	1,350	1,210	1,293	1,255	1,332	1·56
Baluchistan . .	238	310	493	635	828	843	558	·66
Bengal . . .	48,673	58,130	72,790	79,620	82,545	74,538	69,383	81·80
Burma . . .	315	230	279	203	170	80	213	·25
Central India . .	1,931	2,354	2,214	2,126	1,723	1,670	2,003	2·35
Central Provinces .	1,711	1,852	2,104	2,220	2,337	2,071	2,049	2·41
Nizam's Dominions .	6,788	8,490	8,045	7,616	7,538	6,359	7,473	8·80
Punjab and Kashmir .	1,879	1,640	1,826	1,536	1,742	1,621	1,707	2·01
Rajputana . .	...	...	147	152	136	93	(a) 132	·16
TOTAL .	62,974	74,450	89,248	95,318	98,312	88,530	84,805	100·00

(a) Average of three years only.

In the parts of Bengal where coal-mining has especially developed, the changes in the population of certain revenue areas since the Census of 1891 have been quite remarkable. The Census of 1901 showed that in the Giridih sub-division of the Hazaribagh district, there had been an increase of 4·0 per cent., part of which, in the Ganwan and Koderma *thánas*, was due to mica-mining, whilst in the Giridih *thána* the increase in ten years was 8·8 per cent. In the Gobindpur sub-division

Effect of coal-mining on the population.

of Manbhum district, which includes much of the Jherria field, the increase of population between 1891 and 1901 was 25·1 per cent., whilst in the Jherria *thána* itself the increase was 75·1 per cent., and in the adjoining *thána* of Topchanchi the increase, from the same cause, was 30·2 per cent.

It will not be surprising to those who know the habits of the Indian coal-miner to learn that the output per person employed is lower than in any part of the British Empire except in Cape Colony, where cheap native labour is largely employed. During the years 1901 and 1902 the outputs of coal per person employed in Indian mines were respectively 70 and 75 tons, whilst for the rest of the British Empire the corresponding figures were 281 and 285 tons (see table 21).

TABLE 20.—*Output of Coal per Person employed at Indian Collieries.*

	1898.	1899.	1900.	1901.	1902.	1903.
Number employed	62,974	74,450	89,248	95,318	98,312	88,530
Tons of coal raised.	4,608,196	5,093,260	6,118,692	6,635,727	7,424,480	7,438,386
Tons of coal raised, per person employed.	73	68	69	70	75	84

An important consideration, naturally, in every mining community is the risk to life involved in the occupation. As far as coal-mining is concerned in India, the industry, so far as it has progressed, has shown not only a very low death-rate from isolated accidents, but also a noteworthy freedom from disasters, which in European countries have done more, perhaps, than statistics to force special legislation for the protection of workers in "dangerous" occupations. Table 22 shows, for the period 1898 to 1903, the number of deaths from coal-mining accidents in India, compared with the amount of coal raised and the number of persons employed. It will be seen from this table that the average death-rate

from such accidents has been 0·88 per thousand employed, which will compare favourably with the returns for any other country.

TABLE 21.—*Amount of Coal raised per Person employed at Coal Mines in the British Empire.*

COUNTRIES.	1901.			1902.		
	Persons employed.	Tons of coal raised.	Tons per person.	Persons employed.	Tons of coal raised.	Tons per person.
United Kingdom .	792,648	219,046,945	276	810,787	227,095,042	280
New South Wales .	12,191	5,968,426	490	12,815	5,942,011	464
Queensland . .	1,266	539,472	426	1,336	501,531	375
Victoria . .	827	209,329	253	1,303	225,164	172
British Columbia .	3,974	1,460,331	367	4,011	1,397,394	348
Nova Scotia . .	7,663	3,625,365	473	8,062	4,366,869	542
Cape Colony . .	2,588	183,759	71	2,196	165,557	75
Natal . . .	3,397	569,200	168	3,850	592,821	154
New Zealand . .	2,754	1,227,638	446	2,885	1,362,702	472
Transvaal . .	..	...	...	5,439	1,590,330	292
British Empire except India . . .	827,308	232,830,465	281	852,684	243,239,421	285
India	95,318	6,635,727	70	98,312	7,424,480	75

In table 23 (page 43) the results for the rest of the British Empire for the years 1901 and 1902 (the latest years for which complete figures are obtainable) are compared with the corresponding years for India. It will be seen from this that India competes with Queensland for the lowest death-rate, and that the average rate for the rest of the Empire is 1·53 and 1·54 against 0·73 and 0·77 for India. The rate will also compare favourably with the principal foreign coal-mining countries: in Austria the rates for 1901 and 1902 were 1·39 and 1·60 per thousand

respectively; in Germany 2·22 and 1·93; in Belgium 1·02 and 1·07; in France 1·21 and 1·09; in Holland 1·47 and 1·27; and in the United States 3·10 and 3·25.

TABLE 22.—*Production of Coal compared with Deaths from Coal-Mining Accidents in India.*

	1898.	1899.	1900.	1901.	1902.	1903.	Average.
Deaths from coal-mining accidents	43	98	62	70	76	97	74
Thousands of tons of coal raised for each life lost . .	107	52	99	95	98	77	84
Lives lost per million tons of coal raised	9·3	19·2	10·1	10·5	10·2	13·0	1·20
Death-rate per thousand persons employed	0·68	1·32	0·69	0·73	0·77	1·10	0·88

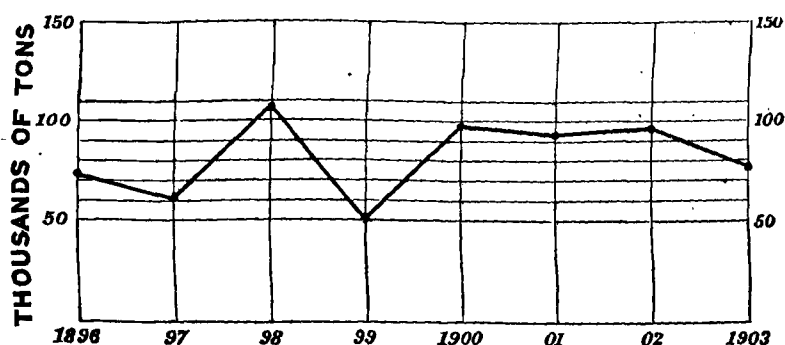


FIG. 8.—*Production of Coal per Life lost by Coal-mining Accidents.*

But the small output per person employed in India produces a far less favourable picture when we count the cost of a million tons of coal in lives lost by mining accidents. On this score it will be seen from table 23 that whilst in the years 1901 and 1902 the average numbers of lives lost per million tons of coal raised in the rest of the British

Empire were respectively 5·42 and 5·41, in India the loss in the same years came to 10·55 and 10·23. It will be noticed, however, that in India the number of persons employed in coal-mining is many times greater than in any part of the Empire, except the United Kingdom itself, where the large number of coal-miners, near 800,000, and the yearly output of more than 220 million tons of coal, together control and tone-out all the irregularities in the returns from the dependencies.

TABLE 23.—*Death-rate from Coal-Mining Accidents in the British Empire.*

	1901.				1902.			
	Number employed.	Deaths.	Death-rate per 1,000.	Deaths per 1,000,000 tons coal raised.	Number employed.	Deaths.	Death-rate per 1,000.	Deaths per 1,000,000 tons coal raised.
United Kingdom.	792,648	1,075	1·36	4·91	810,787	1,005	1·24	4·42
New South Wales	12,191	17	1·37	2·85	12,815	105	8·01	17·67
Queensland . .	1,266	1	0·79	1·85	1,336	1	0·75	1·99
Victoria . . .	827	4	4·84	19·11	1,303	1	0·77	4·44
New Zealand . .	2,754	3	1·09	2·44	2,885	2	0·69	1·47
British Columbia	3,974	102	25·67	69·87	4,011	139	34·65	99·48
Nova Scotia . .	7,663	14	1·83	3·86	8,062	19	2·36	4·35
Cape Colony . .	2,588	4	1·55	21·77	2,196	4	1·82	24·16
Natal	3,397	43	12·66	75·54	3,850	16	4·16	26·99
Transvaal . .	...	...	...	...	5,439	23	4·23	14·47
British Empire except India . .	827,308	1,263	1·53	5·42	852,684	1,315	1·54	5·41
India	95,318	70	0·73	10·55	98,312	76	0·77	10·23

The results for the coal-mines under the control of the Indian Mines Act of 1901 are slightly more favourable than for the total. For the

three years during which the Act has been in operation the average death-rates from accidents at coal-mines under the Act have been as follows:—

1901	.	.	.	.	.	0.68	per 1,000.
1902	.	.	.	.	.	0.66	"
1903	.	.	.	.	.	0.84	"

Mining methods.

The almost universal practice in Indian coal-mines is to extract the coal on the system variously known as the "bord and pillar," "post and stall," or "stoop and room" system. Although this system in Europe is fast being superseded by the more economical "long-wall" method, yet, owing to the thickness of most of the Indian seams, it is not easy to devise any more suitable plan of working. It is undoubtedly wasteful, for the pillars form from 25 to 65 per cent. of the available coal, and at the present time, except in certain mines, where local-trained labour and efficient supervision are possible, their extraction is not even contemplated.

The strong roof so frequently found in the mines worked in Gondwana rocks, due, not only to the intrinsic strength of the rocks, but to the remarkable freedom from geotectonic disturbances on the Peninsula, adds a feature of strength and safety not at once fully appreciated by those who have gained their experience in countries without these advantages, or where the galleries are subject to the stresses of a greater overburden.

In the Giridih coal-field, the system of working thick seams at the East Indian Railway collieries permits of the removal of over 90 per cent. of the coal. As the system here carried out has been subject to careful criticism by English colliery experts, and as it has been shown that the system is perfectly safe under the efficient standard of management and discipline observed at Giridih, workers in other fields are recommended to study the account given by Mr. T. Adamson in his paper on the "Working of a thick coal-seam in Bengal," (*Trans. Min. and Mech. Engineers*, vol. LII, p. 202, 1903).

The system described by Mr. Adamson has been worked for the last twelve years in the Railway Company's collieries at Giridih without a fatal accident being caused by it, but the sandstone roof is an unusually strong one and the coal is free of gas. During the past six years, 1898 to 1903, the average death-rate from accidents of all kinds in these mines has been only 0.40 per thousand persons employed.

The figures given in table 23 for other coal-mining countries will give an idea of the remarkable degree of efficiency in management which this figure indicates.

In the Makum field a highly inclined seam, 75 feet thick, is worked on a modification of the South Staffordshire system of "square work." The coal is removed in two, or sometimes three, sections, the top section being removed first, and a parting of stone and coal being left untouched between each pair of sections. In the Dandot and Khost mines, thin seams are worked in one operation, on a modified "long-wall" system.

Gold.¹

India, as shown in table 24, occupies the sixth or seventh position amongst the leading gold-producing countries of the World. The total Indian output is nevertheless comparatively insignificant, aggregating no more than 3½ per cent. of the World's annual supply.

TABLE 24.—*Production, in Ounces, of the Chief Gold-producing Countries for the years 1897 to 1902.*

COUNTRIES.	1897.	1898.	1899.	1900.	1901.	1902.
United States .	2,864,576	3,148,643	3,391,196	3,781,310	3,805,500	3,870,000
Australasia(a) .	2,539,491	3,013,763	3,831,937	3,568,279	3,719,103	3,989,083
Canada .	291,583	662,796	1,018,371	1,350,176	1,183,465	1,003,447
Transvaal .	2,744,010	3,777,009	3,529,826	348,760	238,991	1,704,410
Russia .	1,042,017	1,196,634	1,159,214	1,072,434	1,253,592	1,183,379
India .	390,595	418,944	456,020	512,985	532,126	517,639
Mexico .	344,518	398,487	448,832	455,204	499,725	546,373
China .	321,296	21,296	321,510	208,031	145,138	193,517
Korea .	52,927	55,432	70,954	87,882	111,272	217,706
Brazil .	70,736	76,613	107,644	127,820	133,636	146,898

(a) Includes the six States and New Zealand.

¹ This note on gold has been prepared mainly by my colleague, Mr. J. Malcolm Maclaren, B.Sc., F.G.S.

Table 25 shows the provincial production for India. In 1903 no less than 99½ per cent. of the Indian output was returned by Mysore. Three-fourths of the remainder was derived from the Nizam's Dominions, leaving only 18 per cent. as the produce of districts directly under British administration.

TABLE 25.—*Value of Gold produced during the years 1898 to 1903.*

	1898.	1899.	1900.	1901.	1902.	1903.
	£	£	£	£	£	£
Mysore	1,575,966	1,678,463	1,879,085	1,923,081	1,969,442	2,283,999
Nizam's Dominions . .	11,520	33,335	9,375	...	...	14,595
Burma	4,115	4,386	3,327	7,606	5,894	9,988
Madras	10,993	1,261	17	...	...	...
TOTAL (a)	1,602,694	1,717,445	1,891,804	1,930,687	1,975,336	2,302,492

(a) Exclusive of small quantities obtained by river-washing in various provinces for which accurate returns are not available.

The produce of the Mysore State is solely derived from the Kolar district, and from a single vein or reef in that district—a reef averaging only some four feet in thickness, and payably auriferous for a distance of little more than four miles. As has been the case with all other known auriferous deposits in Peninsular India, the attention of Europeans was directed to this vein by the numerous old native workings along its strike. During the Wainad gold "boom" of 1878-82, several companies with huge capitals were floated to work portions of a concession over the Kolar field. Of the capital subscribed the greater portion was devoted to purchase money, and comparatively little was left for working capital. The features of the auriferous deposits were not at first grasped, and much money was wasted in mining in barren ground and amidst ancient workings, which were eventually found to reach to a depth of 300 feet. All the companies floated with such extravagant hopes in 1881-2 were moribund in 1885, and it was only a dying effort of the Mysore Company in that year that disclosed the great richness of the reef and incidentally the disposition of the auriferous chutes.

By 1887 the adjacent companies had resumed operations, and since

then the history of the field has been one of uninterrupted progress and success. The deepest workings are now somewhat more than 3,000 feet below the surface, and the reef shows, at that depth, little diminution in the value or in the width of the quartz.

Neither mining nor milling offers any serious obstacles on this field. In the former the necessity for heavy timbering and filling to keep the roadways open is perhaps the most serious. The ore is not refractory, and yields its gold to a simple combination of amalgamation and cyaniding.

During the six years under review the annual tonnage crushed has been increased by 62 per cent., from 337,636 tons in 1898 to 546,752 tons in 1903. The gold yield has not shown a corresponding advance, rising only from £1,575,966 in 1898 to £2,284,000 in 1903, an increase of 44·3 per cent. The divergence between the increase of tonnage crushed and the increase of yield therefrom is due to the fact that, with the economies in mining and milling indicated by experience, it is now possible to profitably crush low-grade quartz that ten years ago must have been left in the vein.

For the six years under review the value of gold extracted was £11,310,038, or 60 per cent. of the total value (£18,687,818) extracted in the 21 years since the commencement of work under European supervision. With the increase in output dividends have also increased, rising from £739,114 in 1898 to £1,019,347 in 1903, or an increase of 38 per cent. The total dividends paid during the six years were £4,988,793, or 60 per cent. of the dividends (£8,287,071) paid since 1882, indicating that dividends and output have advanced *pari passu*.

The above dividends have been paid wholly by five companies situated on the line of the Champion reef—the Mysore, Champion Reef, Ooregum, Nundydroog, and Balaghat. A considerable amount of exploratory work has been done by other companies on the Kolar field and elsewhere in Mysore, but hitherto without profitable result.

Of the improvement schemes which will make greatly for the reduction of working expenses, and, to that extent, for the prolongation of the life of the Kolar field, the introduction of electric power from the Cauvery falls is probably the most important. This work was commenced about July 1902, and has since uninterruptedly supplied a little more than 4,000 horse-power to the various mining and metallurgical works. The power is transmitted from the Cauvery Falls over duplicate lines 91½ miles long. The cost to the companies for the first year was

£29 per horse-power, and for succeeding years the cost will be £18. The success of the scheme has led to its enlargement, and works in progress will enable the Mysore Government to materially increase the power available for consumption.

Table 26 shows the various statistics for the Kolar field for the period under review.

TABLE 26.—*Statistics of Production in the Kolar Gold-field.*

YEAR.	Tonnage crushed.	Ounces, bar gold.	Value of gold extracted.	Dividends paid.	Royalty.
			£	£	£
1898 . .	337,636	412,966	1,575,966	739,114	78,009
1899 . .	339,526	446,397	1,678,464	762,600	83,154
1900 . .	401,687	509,272	1,879,085	767,586	93,619
1901 . .	450,272	530,142	1,923,081	874,158	95,219
1902 . .	499,664	533,492	1,969,442	825,928	97,365
1903 . .	546,752	597,884	2,284,000	1,019,347	(a) 113,200
TOTAL . .	2,575,537	3,030,153	11,310,038	4,958,793	560,566

(a) Estimated.

Total value of gold produced from 1882 to 1903 inclusive ...	£ 18,687,818 11 3
“ “ of dividends paid “ “ “ “ “ “ ...	£ 8,287,071 7 2
Approximate value of Royalty paid to Mysore Government from 1882 to 1903 inclusive ...	£ 926,334 13 2

The work of the field is carried on by Europeans, Eurasians and Natives in the following proportions, calculated from the number employed during an average year (1902) :—

	Per cent.
Europeans (including Italian miners)	2'05
Eurasians	1'58
Natives : men	89'83
Natives : women (employed only on the surface)	6'54

The following table indicates the risks attendant on mining in the Mysore State :—

TABLE 27.—*Showing Fatal Accidents in Mysore Mines for the years 1898 to 1903.*

YEAR.	No. of persons employed.	Death-rate per 1,000 employed.	Death-rate per 100,000 tons quartz crushed.	Death-rate per £ 100,000 worth of gold obtained.
1898 . .	21,597	2'45	15'70	3'36
1899 . .	21,093	1'80	11'19	2'26
1900 . .	24,587	2'61	15'68	3'35
1901 . .	25,060	2'99	16'65	3'90
1902 . .	26,268	2'21	11'58	2'90
1903 . .	27,355	2'52	11'27	3'02
<i>Average . .</i>	<i>24,326</i>	<i>2'43</i>	<i>13'67</i>	<i>3'13</i>

Outside the Mysore State the only gold quartz mine producing gold at the end of 1903 was the Hutti (Nizam's) mine situated at Hutti in the Lingsugur district of Hyderabad. This company is an offshoot of the Hyderabad (Deccan) Company and was floated in 1901. Crushing with 10 head of stamps was commenced in February 1903, and 3,414 ounces were returned for that year. This result has been considered so promising that the crushing power is being doubled. The workings of this mine give evidence of the remarkable mining skill of the ancients, the auriferous chute having here been followed downwards to a depth of no less than 540 feet.

Another offshoot of the Hyderabad (Deccan) Company was formed in 1898 to work the adjacent mines of Wundalli, and during 1899 crushed 18,790 tons of quartz for a yield of 7,822 ounces. The yield of the Nizam's territory during 1898-99-1900 was almost exclusively the produce of the Wundalli Company. Work was, however, stopped at these mines towards the middle of 1900.

The yield shown from the Madras Presidency was derived from the Mysore (Kangundi) mines in the Kangundi zemindari of North Arcot. Work commenced

here in 1893, and was continued with varying success until 1900. The highest yield obtained was that for the year 1898, *viz.*, 2,854 ounces.

During the period under review the only other reef-mining of importance was carried on at the Kyaukpazat mine near Wuntho, in Upper Burma. This mine yielded, in 1898, 1,120 ounces, and maintained, and indeed increased its yield until 1902, when 1,984 ounces, valued at £7,606, were produced. This yield, however, formed merely another example of the general rule that auriferous deposits in andesitic rocks are extremely uncertain in extent and in richness. The pay chute was lost in 1903, and after some exploratory work the mine was closed down.

Alluvial gold-washing is carried on in many places in British India, but from the fact that the washers invariably combine this pursuit with other occupations, and because the individual return is exceedingly small and is locally absorbed for jewellery, complete returns are not available. Returns for 1903 show, however, that 106 ounces of alluvial gold were obtained from the Ladhaki wazirat of the Jammu and Kashmir State. This amount may perhaps be fairly taken as an indication of the annual yield from this portion of the Upper Indus.

Dredging for alluvial gold above Myitkyina on the Upper Irawadi was commenced about November 1902, with a dredger capable of dealing with 10,000 tons a week. The whole of the season (until June 1903) was spent in prospecting the river bed. Five or six spots were thus tried, and the results were considered to be sufficiently satisfactory to warrant an increase of dredgers.

During the past two years surveys of the auriferous deposits of India have been in progress. These, so far as they go, give little hope of the discovery of rich alluvial deposits in Peninsular India, or indeed in any part of India affected by the monsoon rains and dependent on them alone for the supply of the rivers. For concentration of gold a comparatively equable current is essential—a condition rarely obtainable in the gravel river beds of India, where alone gold would be found, for these are almost dry in the cold weather and roaring torrents in the rains. The greater possibilities of dredging on the Irawadi appear to arise from the fact that the waters of that river are derived from ranges where, even in the cold weather, there is a heavy rainfall.

Graphite.

The graphite deposits of Travancore occur under conditions similar to those of Ceylon, which is but a continuation of the charnockite series and associated rocks of South India. Similar geological occurrences of graphite are found in Coorg, and in the hill tracts of Vizagapatam and adjoining State of Kalahandi. The Ceylon graphite has been made the subject of an elaborate study by E. Weinschenk, who regards it as of igneous origin,¹ a conclusion in agreement with its occurrences in South India.²

Prospecting for graphite has been attempted in the Godavari district, Madras Presidency, and in the Ruby Mines district in Upper Burma, but the only progress made in mining has been in the Travancore State. Regular returns were not available before 1901, but the following figures are returned for Travancore for the remaining three years of the period under review:—

1901	.	.	.	.	.	.	.	2,490 tons.
1902	.	.	.	.	.	.	.	4,575 "
1903	.	.	.	.	.	.	.	3,394 "

Iron.

Notwithstanding the fact, very widely published, that rich deposits of iron-ore occur in India, only one attempt to manufacture iron on European lines has been so far successful, and as it is doubtful if the ores are sufficiently valuable to bear the cost of transport to Europe, no attempt has been made to raise Indian iron-ore for export.

The production of ore is thus confined to that used by the Bengal Iron and Steel Company in its works at Barakar, and the smaller quantities, for which accurate returns are not obtainable, used in the numerous small native furnaces still surviving in parts of Central India, the Central Provinces, Madras, Mysore, and Rajputana. Iron-ore is also used in small quantities in the steel furnaces at the East Indian Railway Company's workshops, Jamalpur.

¹ Die Graphitlagerstätten der Insel Ceylon. Abhand., d. k. Bayer., Akad., 1901, xxi, 279—335.

² Holland: The Charnockite series, Mem. Geol. Surv. Ind., XXVIII, 1900, 126; and the Sivamalai series, Mem. Geol. Surv. Ind., XXX, 1901, 174.

The figures returned for Bengal, in which most of the ore used at Barakar is raised, are given in table 28.

TABLE 28.—*Iron-ore raised in Bengal during the years 1898 to 1903.*

YEAR.	Quantity.	Value.	Value per ton.
	Tons.	£	Shillings.
1898	41,854	7,006	3'35
1899	52,000	6,333	2'44
1900	57,000	7,333	2'57
1901	57,800	8,352	2'89
1902	76,056	11,287	2'96
1903	61,355	9,717	3'17
<i>Average</i> .	57,678	8,338	2'89

Up to the present the Barakar Iron and Steel Company has manufactured pig-iron only, of which with two blast furnaces they have turned out about 35,000 tons of pig-iron a year. But a third blast furnace is now in course of erection, and arrangements are complete for starting the manufacture of steel.

Outside Bengal there is very little done in the way of iron-manufacture. The Central Provinces show the largest returns, varying from 2,400 to 4,800 tons, and there is also a sensible industry surviving in Bijawar, Panna, and Orchha, amongst the Central India States, as well as in Mysore and in parts of the Madras Presidency.

Steel is made, both in the form of ingots by the carburization of wrought-iron in crucibles, and, on a much smaller scale, by the decarburization of cast-iron shot in a small open hearth.

Jadeite.

The mineral jadeite, like the jade with which it is often confused, is especially prized by the Chinese, and the quarrying of the mineral forms quite an important industry in Upper Burma. Some of the mineral raised passes by the overland route into South-West China,

whilst most of it finds its way down to Rangoon, whence it is exported to the Straits Settlements and China. The following table shows the extent of this export trade:—

TABLE 29.—*Exports of Jadeite from Burma to the Straits Settlements and China. (a)*

YEAR.	Weight.	Value.	Value per cwt.
	Cwts.	£	£
1897-98	4,036	41,780	10'35
1898-99	4,532	42,120	9'29
1899-00	3,130	53,955	18'83
1900-01	4,531	46,377	10'24
1901-02	3,015	31,713	10'52
1902-03	4,220	47,676	11'06
<i>Average</i> .	3,911	44,770	11'45

(a) Overland trade and exports *via* Rangoon combined.

Amongst prehistoric relics found in various parts of the World, both jade and jadeite implements and ornaments are widely distributed, and an admiration for the beauty of the stone, descended from a belief in its magical properties, maintains the value of the mineral in the eyes of the Chinese, who are the chief buyers, and to whom the different varieties of both minerals, and possibly some others, are known under the generic name *Yu-esh*. The softer, serpentinous mineral bowenite passes on the North-West Frontier under the name of *Sang-i-yeshm*, and though its characters are unmistakeably distinct from those of jade and jadeite, it is evidently regarded as a poor variety of jade.

Some jadeite, and often the best material, is obtained as pebbles in the gravels of the Uru river, a tributary of the Chindwin, but most of the material is obtained by quarrying near Tammaw (25° 44'; 96° 14') in the Mogaung subdivision of the Myitkyina district, Upper Burma. At this locality the jadeite forms a layer in the dark-green serpentine, against which, on a

fresh surface, it stands in striking contrast on account of its lighter colour. The serpentine is apparently intrusive into miocene sandstones, and the jadeite must have been separated as a primary segregation from the magma.

There is a general external resemblance between jadeite and jade, or nephrite as it would be more appropriately called, but mineralogically the two are quite distinct. Jadeite is essentially a silicate of soda and alumina, Na_2O , Al_2O_3 , 4SiO_2 , with the crystallographic characters of the pyroxene group. Jade is a silicate of lime and magnesia, CaO , 3MgO , 4SiO_2 , with the essential characters of a hornblende. Their crystallographic characters sufficiently distinguish them in microscopic sections, but in hand-specimens jadeite can be distinguished by its superior hardness and higher specific gravity, as well as by its greater fusibility.

Jadeite occurs in masses of closely interwoven crystals, a structure which gives rise to its great toughness. The purest, though not the most valued, forms are white in colour, but more often there are various shades of green, and, in the case of stones found embedded in the laterite of Upper Burma, there is a red staining often extending to considerable depths in the pebbles, and, in the eyes of the Chinese purchaser, greatly increasing the value of the mineral. The white jadeite with emerald-green spots, caused by the presence of chromium, is also valued greatly for the carving of ring-stones or bracelets.

The prices paid for rough stones vary too greatly to permit of an average figure being given, but the export values declared give an idea of the value of the stone: the value so determined has averaged £11-9s. per cwt. during the last six years.

No jade (nephrite) of the kind which would be regarded as a marketable mineral is known in India. A mineral having the essential composition, and approaching coarse jade in physical characters, is known in South Mirzapur.¹ True jade, however, has been largely worked in the Karakash valley in South Turkistan for many centuries.²

Magnesite.

In South India there are numerous occurrences of the ultra-basic igneous rocks in which olivine is an abundant constituent, and at

¹ F. R. Mallet, *Rec. Geol. Surv. Ind.*, v, 22.

² Cf. papers quoted by Mallet in *Manual, Geol. of Ind.*, part iv, 1887, p. 85.

several places these highly magnesian silicates have been decomposed with the formation of magnesite of great purity. The largest and best known of these occurrences is near Salem, where the area occupied by the white magnesite veins has been named the "Chalk" hills.

Prospecting operations have been in progress in this area for some years, but the industry may now be described as having passed into the mining stage, and on account of the remarkable purity of the mineral being raised it is expected to command a special price for the preparation of the refractory bricks used for the linings and hearths of steel furnaces, and for lining the fire-bricks of the electric calcium-carbide furnace. The production so far has been small—amounting to 3,540 tons in 1902 and 825 tons in 1903—but work is now being organized on a larger scale.

Manganese-ore.

The mining of manganese-ore has sprung-up within the last 12 years, and has developed so rapidly that India now takes second place amongst the manganese-producing countries in the World, with an output during the year 1903 of 171,806 statute tons. Table 30 shows the output for each of the past six years and figure 5 (page 13) shows the progress of the mining industry since its commencement.

TABLE 30.—*Production of Manganese-ore for the six years 1898 to 1903.*

YEAR.	Madras.	Central Provinces.	Central India.	TOTAL.	
	Statute Tons.	Statute Tons.	Statute Tons.	Statute Tons.	Metric Tons.
1898 . .	60,449	...	...	60,449	61,419
1899 . .	87,126	...	...	87,126	88,524
1900 . .	92,458	35,356	...	127,814	129,865
1901 . .	76,463	44,428	...	120,891	122,831
1902 . .	68,171	89,608	...	157,779	160,311
1903 . .	63,452	101,554	6,800	171,806	174,563

It will be seen from this table that the mining of manganese-ore was confined to the Madras Presidency until 1899, after which the rich deposits in the Central Provinces were attacked, and are now, notwithstanding their great distance from the coast, providing the chief part of the mineral exported to Europe and America.

The statistics published by different countries cannot be directly compared, as different definitions of a manganese-ore are followed. According to the rulings of the United States Treasury before 1899, a manganese-ore was so-called only when it carried 50 per cent. of the metal; but in 1899 lower grades were admitted if they contained less than 3 per cent. of iron, and the recognised lower limit is now 44 per cent., those below this grade being generally manganiferous iron-ores. The statistics for 1902 show, in the case of the United States, a total production of 901,214 statute tons of manganiferous iron-ore, but only 16,477 tons came within the Treasury definition of a manganese-ore, whilst in the same period as much as 235,576 tons of the 50 per cent. ore was imported. Of the countries which supplied this amount, Brazil contributed 102,550 tons, India 64,170 tons, Cuba 36,294 tons, Turkey 12,609 tons, and Spain 10,464 tons.

Table 31 (on page 57) shows the chief producers of manganese-ore in the World. Of these Brazil has developed as rapidly as India, its output having risen from 14,710 tons in 1896 to 156,269 tons in 1902. Spain, the next producer, for many years turned out over 100,000 tons, but since 1900 has been declining rapidly. Russia has always been the leading producer, the chief source being beds of pure ore interstratified with eocene sands and shales in the province of Kutais.

The mineral is now assuming such importance that it will perhaps be useful for those who are following the developments to put on record a sketch of the distribution in India of deposits considered to be of possible value.

In the Central Provinces, where mining is at present most active, the principal occurrences are in the Ramtek tahsil of the Nagpur district, where in some 17 different villages quarrying operations are being actively carried on. In the north-west part of the Bhandara district there are 14 localities known to contain manganese-ore, and a certain

amount of work is in progress. In the Balaghat district 10 occurrences are known in the west of the district, whilst mining is being carried on near the town of Balaghat, and on another large deposit at Ukua in the Behir tahsil. In Chhindwara manganese-ore is known at 11 localities in the Sausar tahsil, whilst the mineral has long been known near Gosalpur and Sihora in the Jabalpur district. The ore has also been reported from the Khairagarh and Kalahandi States.

TABLE 31.—*Principal sources of Manganese-ore, and latest reported productions.*

COUNTRY.	Year.	Production.	COUNTRY.	Year.	Production.
		Tons.			Tons.
Russia	1900	884,200	Cuba (Exports)	1902	39,628
India	1903	171,806	Chili (Exports)	1901	31,477
Brazil (Exports)	1902	156,269	France	1901	22,300
Spain	1902	62,944	United States	1902	16,477
Turkey (Exports)	1902	50,000	Japan	1901	15,858
Germany	1902	49,812	Greece	1901	14,166

The deposits in the Central Provinces possibly belong to the same group of rocks which further to the south-east were first worked for manganese-ore in the Vizianagram State, and the intermediate jungle-covered country, which is very little known, will possibly yield further occurrences of the ore on more systematic exploration. In other parts of the Madras Presidency the ore has been reported in the Kallikota State, in the Ganjam district, and in the Sandur hills of Bellary.

One occurrence has been recorded in the Gwalior State, and one is now being worked in Jhabua, from which 6,800 tons were turned out in 1903, whilst there are several localities at which poor ores are found in the Dhár forest.

On the Bombay side, manganese-ores have been found at several places around Mahabaleshwar and Satara; in the southern part of Belgaum district; in Bijapur; near Jambughora in Rewa Kantha; and in the Dharwar district where prospecting operations are in

progress. If the deposits in Dharwar and Belgaum approach those in the Central Provinces in quality, they will, on account of their proximity to the coast, develop very rapidly. Manganese has been reported also in the Tavoy and Mergui districts of South Burma, in the Nizam's Dominions, and in the form of manganiferous iron-ore near Chaibassa in Chota Nagpur.

In the Nagpur area the manganese-ore occurs as lenticular masses and bands in the quartzites, schists, and gneisses, and as regards origin appears to have been formed at least partly, by the alteration of rocks composed of manganese-garnet, with which the mineral rhodonite, a manganese pyroxene, is often associated. Consequently the ore is frequently found to pass, both laterally and along the strike, into partly altered or quite fresh spessartite-quartz rock, or rhodonite-spessartite-quartz rock.

The ore-bodies often attain great dimensions, and their disposition as irregular lenses along the strike of the enclosing schists naturally influences the miner in laying out the boundaries of his "claims." A deposit near Balaghat is $1\frac{3}{4}$ miles long; at Manegaon in the Nagpur district the ore-body is $1\frac{1}{4}$ miles long; whilst at Thirori in the Balaghat district it is nearly 6 miles in length. As examples of great breadth may be quoted Kándri, 100 feet thick, of pure ore, and Rámdongri, 1,500 feet of ore and unaltered spessartite (manganese-garnet) rock. The depth of these ore-bodies is quite unknown, as the so-called mining has so far passed little beyond the quarrying stage, and the question of possible exhaustion does not enter into the calculations of the present owners.

This Nagpur ore is typically a mixture of braunite, and psilomelane, sometimes, though, entirely braunite—a hard, compact, pure ore, ranging well over 51 per cent. of manganese. The average material now being raised ranges between the following limits on analysis:—

	Per cent.
Manganese	51–54
Iron	5–8
Silica	5–9
Phosphorus	0.05–0.12
Moisture	usually below 1.0

The Vizianagram ore occurs under geological conditions apparently

resembling those of Nagpur, though the enclosing rocks are sometimes too decomposed for precise petrological determination. There is another mode of occurrence in the Nagpur district, the ore occurring as nodules in crystalline limestone associated with piedmontite, and in places where there has been a dwindling of the limestone through water-action, these nodules of ore have accumulated in layers of a size which might be worth working. Occasionally in cavities in this limestone beautiful pyrolusite crystals are found.

Being near the coast, and consequently free of the tax of railway freight, it is possible to export a lower grade of ore from Vizianagram than from the Central Provinces. The ores shipped from Vizianagram show, according to Mr. H. G. Turner (*Journ. Iron and Steel Inst.*, 1896, I, 160) the following range of composition:—

Manganese	45–50 per cent.
Iron	7–13 „
Silica	2–5 „
Phosphorus	0.12–0.27 „
Moisture	1.10–1.80 „

Manganese-ore occurs under different conditions in the Jabalpur district, where it is found in the Dharwar-like schist series which forms a belt with a maximum width of 7 miles stretching for 20 miles in a N.E.—S.W. direction. The rocks in this belt are various quartzites, phyllites, and schists, including hematite-schists and jaspers. The hematite-schists are slightly manganiferous and are often capped by a secondary deposit of limonite, in which psilomelane has formed into irregular nodules. Pyrolusite and psilomelane also occur in this district, sometimes occupying cavities in a siliceous breccia which is rather common.

The manganese-ore occurring in the neighbourhood of Mahabaleshwar forms irregular nodules distributed through the laterite cover on the Deccan Trap, and the nodules are formed presumably by concentration of the residue from the action of meteoric waters on the basaltic rocks.

For use in steel-making, manganese-ores should contain not more than 0.15 per cent. phosphorus nor more than 10 per cent. of silica. Under conditions laid down by the Carnegie Steel Company, ores containing less than 40 per cent. manganese and more than the above-mentioned quantities of phosphorus and silica may be rejected at the option of the

buyer. Deductions from the scheduled price per unit are made also for every 1 per cent. of silica above 8 per cent. and for each 0.02 per cent. of phosphorus in excess of 0.1 per cent. Steel manufacturers pay an additional price per unit of iron present in the ore.

TABLE 32.—*Variation in the Price of Manganese-ore c. i. f. at United Kingdom Ports.*

Date.	50 per cent. Mn. and upwards.	47—50 per cent. Mn.	40—47 per cent. Mn.
	Pence per unit.	Pence per unit.	Pence per unit.
January 1898	9—12	8½—11	7½—10½
July 1898	9—12	8½—11	7½—10½
January 1899	10—12½	9—11	7½—10½
July 1899	12—14	10½—11½	8—10
January 1900	13—15	12—13	10—12
July 1900	13½—15	11½—12½	10—12
January 1901	12—14	11—12	10—11
July 1901	10½—11	9—10	—8
January 1902	9½—10½	9—9½	8—9
July 1902	9½—10½	9—9½	8—9
January 1903	10—10½	8½—9	7½—8½
July 1903	10—10½	8—9	7½—8½
January 1904	9—9½	8—9	6—8

The prices paid for manganese-ore carrying over 50 per cent. of the metal, delivered at United Kingdom ports or at New York, ranged between 9 and 10 pence per unit at the end of 1903. Thus, an ore with 52 per cent. manganese

would be valued at $\frac{52 \times 9}{12} = 39$ shillings a ton. Table 32 (page 60) and the following diagram (figure 9) show the recent variations in the prices of ore of different grades:—

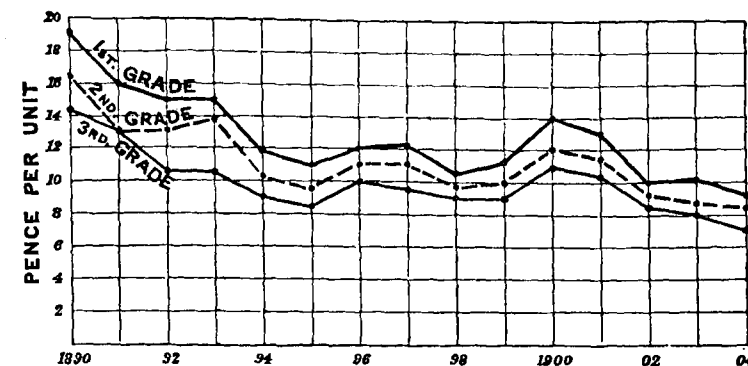


FIG. 9.—*Variation in the Prices of Manganese-ore at United Kingdom Ports since 1890.*

Owing to the distance of the chief deposits from the sea-board—amounting in the case of the Central Provinces to about 500-600 miles—and the heavy freight charges to Europe and America, only the high grades of ore can be touched. Ores which would be considered valuable within range of a steel-making centre are rejected in India, and the result is a regretful waste of the natural resources, which will continue until there is a demand in the country for ferro manganese and facilities for its manufacture. As the ore sent out of India ranges a little over 50 per cent. of manganese, the metal for which it is valued is charged with nearly double freight; but the present owners of mines have so far sunk comparatively little capital, and the so-called mines are mere open quarries worked by the assistance of no expensive plant; there is thus no present inducement for husbanding resources, and there will probably be no attempt, either to manufacture ferro-manganese from low-grade ores, or to make steel, before the inevitable decline in the mining industry takes place. There is now an apparent haste to make the most of the present circumstances, and as the Indian and Brazilian outputs have already affected the market, there is a very evident fear of depreciation in prices; and consequent curtailment of the life of the industry; for

the export of manganese-ore will cease to be profitable long before the natural stocks of higher grades of ore are exhausted—when, in fact, quarrying passes into mining, and the simple excavation of rich ore now in sight in great quantities gives place to the more expensive process of selection. However, by all accounts and all appearances, there is yet a fair future before the present owners of manganese-ore quarries, and the wonder is, not that manganese-ore mining has developed so greatly in India, but that such rich deposits could have remained so long prominently exposed and yet untouched, as attention was directed to the best of them many years ago.¹

One cannot help the feeling of regret that the whole industry is at present equivalent to a heavy loss to the country. The ore exported is worth perhaps Rs. 30 a ton in the country to which it is sent: this country gets out of it merely the margin left after paying the heavy freight charges, and possibly Rs. 15 a ton can be regarded as the profit to India, divided between the railways, the miners and the owners of the land. At the same time, India has to pay the foreign manufacturer's profits and the cost of return carriage for the manganese brought back in the form of steel. If a flourishing steel-manufacturing industry existed in the country, much of the manganese would be retained in India, and the lower-grade ores also would be economically developed. As it is, our manganese-ore is being exported to the three great steel-producing countries—England, United States, and Germany. The exports to Holland and Belgium shown in table 33 are in part for transmission to Germany, whilst the consignments sent to Egypt were booked to Port Said to await orders for delivery to ports further west.

It is only, however, within recent years that the demand for manganese in steel-making has grown so rapidly.

Uses of manganese-ore. Manganese-ore was formerly used in the chemical trade in various ways, but mainly for the production of the chlorine necessary to manufacture bleaching powder: it was then valued especially for its content in oxygen, in which respect the Indian braunite is inferior to pyrolusite. Now the conditions are reversed, and the ore being valued mainly on account of its manganese content, the sesquioxide, in braunite, which predominates in the Indian deposits, is more valuable than the dioxide, pyrolusite.

¹ V. Ball, *Manual of the Economic Geology of India*, 1881, 329.

TABLE 33.—*Distribution of exported Indian Manganese-ore for the years 1897-98 to 1902-03.*

COUNTRIES.	1897-98.	1898-99.	1899-00.	1900-01.	1901-02.	1902-03.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom	54,279	51,931	63,175	86,269	65,150	95,540
Belgium . .	...	...	5,350	13,300	...	1,000
France . .	...	...	...	5,850	...	...
Germany . .	...	...	...	...	11,300	10,734
Holland . .	...	...	8,350	16,500	...	5,050
Egypt . .	...	...	...	3,400	15,000	...
United States .	24,550	10,900	18,350	5,350	41,720	42,950
TOTAL .	78,829	62,831	95,225	130,669	133,170	155,274

Mica.

The returns of production for mica grossly understate both quantity and value, as both are below the export returns.

Incomplete returns for production. As the only mica on which royalty is charged is that raised in Government land, and as many mica miners have mines in both Zemindari and Government land, there are obvious reasons for understating the production, and, besides this fact, the flourishing industry of stealing mica diminishes the returns for production without affecting the export figures.

A considerable quantity of mica of the poorer grades is consumed in the country for ornamental and decorative purposes, and a small quantity of the larger sheets is used for painting pictures on in various parts of the country. As far as the figures for *quantity* are concerned, therefore, the exports cannot be accepted as an approximate expression of the production; but as regards *value*, the export returns may be accepted as a closer approach to the figures which should express production.

From table 34 it will be seen that, during the years 1897-98 to 1902-03, the mica exported averaged 19,173 cwts., and had an average annual value of

Variations in value.

£77,613, or £4·05 per cwt. The variations in yearly value reflect a serious change in the trade which occurred in 1899. The diagram forming figure 6 (page 14) brings out this feature very strikingly. In 1898 Indian mica miners began to realize that their waste dumps contained a large supply of the material wanted for the manufacture of micanite, in which thin films of mica are cemented together and moulded into sheets, to serve many purposes for which the natural sheets only were used formerly. The waste heaps were consequently turned over, and the clear sheets of muscovite cleaned and split into thin films by gangs of children, who, by practice, could select the films of the required thickness with an accuracy which could scarcely be exceeded by the use of a micrometer. The large quantities of "flimsy" mica thus suddenly thrown on to the market raised the weight of mica exported, without a corresponding increase of value. Thus, figure 6 shows the curve for weight, suddenly rising in the years 1899—1901 until it crosses that for value, falling back with the reaction in the following year, but with a closer approximation of the two curves marking the years subsequent to 1901 when compared with those before 1898.

TABLE 34.—*Exports of Indian Mica during the years 1897-98 to 1902-03.*

YEAR.	Quantity.	Value.	Value per cwt.
	Cwts.	£	£
1897-98	11,608	71,234	6·14
1898-99	10,947	53,890	4·92
1899-00	22,599	73,372	3·25
1900-01	33,175	109,554	3·30
1901-02	16,298	70,034	4·30
1902-03	20,412	87,594	4·29
<i>Average</i>	19,173	77,613	4·05

The same lesson is expressed in table 34, from which it will be seen that the average value of the mica sent out of the country in 1897-98 was £6·14 per cwt., and that this value dropped down to £3·25 in

1899-1900, when the cheaper mica was exported in quantity, with only a partial recovery in the following years, during which both the cheap kinds and the more expensive sheets were exported together.

Table 35 shows the relative contributions of the mica exporting provinces, and in the case of Bengal and Madras the only provinces in which the industry can be regarded as established, the mica exported was that produced within the Presidency in each case. It will be seen from this table that, during the years under review, the two chief producers contributed to the average total as follows:—

Bengal	12,282 cwts., valued at . .	£52,272
Madras	6,872 „ „ . .	£25,241

The average value of the mica sent out of Bengal was thus £4·26 per cwt., whilst that from Madras was £3·67.

TABLE 35.—*Exports of Mica for the years 1897-98 to 1902-03.*

YEAR.	BENGAL.			BOMBAY.			BURMA.			MADRAS.		
	Weight.	Value.	Value per cwt.	Weight.	Value.	Value per cwt.	Weight.	Value.	Value per cwt.	Weight.	Value.	Value per cwt.
	Cwt.	£	£	Cwt.	£	£	Cwt.	£	£	Cwt.	£	£
1897-98	8,344	50,051	5·99	...	...	...	...	...	...	3,264	21,183	6·49
1898-99	7,720	31,954	4·14	11	50	4·55	10	258	25·8	3,206	21,628	6·75
1899-00	15,473	47,234	3·05	51	90	1·76	3	13	43·3	7,071	26,035	3·68
1900-01	13,633	63,049	4·62	25	100	4·00	...	...	...	19,517	46,405	2·38
1901-02	11,870	53,140	4·48	7	19	2·71	...	...	...	4,421	16,875	3·82
1902-03	16,651	68,502	4·10	6	72	12	...	...	...	3,755	19,320	5·15
<i>Average</i>	12,282	52,272	4·26	20	66	3·30	3	54	18·00	6,872	25,241	3·67

Table 36 shows the average distribution of exported mica during the period under review. It will be noticed that the United Kingdom took the largest share, amounting to 73·2 per cent. of the average total

value, but much of the mica sent to the United Kingdom is sold there for transmission to the Continent and America. The mica sent direct to America brought a higher price, as only the better qualities could face the heavy import duty imposed by the Dingley Tariff in 1897.

TABLE 36.—*Average Distribution of Indian Mica exported during the years 1897-98 to 1902-03.*

EXPORTED TO	AVERAGE QUANTITY.		AVERAGE VALUE.		Value per cwt.
	Cwts.	Per cent. of total.	£	Per cent. of total.	
United Kingdom	14,843	77·4	56,799	73·2	3·83
United States	2,978	15·5	15,596	20·1	5·24
Germany	1,027	5·4	3,920	5·0	3·82
Belgium	141	0·7	634	0·8	4·50
France	55	0·3	522	0·7	9·49
Hong Kong	90	0·5	26	...	0·29
Other Countries	39	0·2	116	0·2	2·97
Average Total	19,173	100·0	77,613	100·0	4·05

According to the Dingley Tariff, imported mica was divided into "unmanufactured" and "cut or trimmed," both being charged with a duty of 20 per cent. *ad valorem*, plus 6 cents a pound in the former case and 12 cents a pound in the case of "trimmed" mica. The duty had an immediate effect on the American mines by excluding all the lower grades of foreign mica, and thereby giving new life to many mines unable to face foreign competition without protection. For the five years preceding 1897 the average value of mica produced in the United States averaged £14,573 a year, whilst for the five years following 1897 the average annual value of the production was £25,518. The tariff was, however, insufficient to retard the growing demand for mica, and whilst the imports into the United States for the five years before 1897

had an average annual value of £33,481, those for the following five years averaged £61,880.

The tariff, however, naturally affected the Indian producer, who then contributed the chief part of the mica consumed in America, whilst the practice of preparing the mineral for the market became affected by the classification adopted, though some Indian producers were slow in observing the fact that mica sent to the London market in neatly trimmed rectangles was, on account of the higher duty, worth slightly less to the American buyer than the roughly dressed material.

For many years India met with little competition from other countries in the American market, but during the last two years Canada has produced large quantities of phlogopite, and by meeting the requirements of the consumers of mica, has seriously challenged the supremacy of India. Table 37 shows approximately the relative positions of the three countries which, between them, produce well over 90 per cent. of the World's supply. India has so far enjoyed an easy lead, but there was a sudden expansion of the Canadian output in 1902, though reports recently received forecast a return to near the normal value of £32,000 for the year 1903.

TABLE 37.—*Value of Mica raised in the three principal producing countries.*

YEAR.	1898.	1899.	1900.	1901.	1902.	Average.
	£	£	£	£	£	£
India (a)	53,890	73,372	109,554	70,034	87,594	78,888
United States (b)	25,219	24,293	29,592	23,715	23,769	25,518
Canada	24,324	33,493	34,110	32,877	(c) 82,192	41,399

(a) Exports only. | (b) Value at the place of production.
(c) Preliminary figures subject to revision.

The methods of mining and the distribution of mines do not differ materially from those described in a special Mining methods. Memoir issued two years ago.¹ The short-sighted

¹ T. H. Holland: The Mica Deposits of India. Mem. Geol. Surv. Ind., vol. XXXIV, part 2, 1902.

policy then described is beginning now to impress itself on the mica-miners, who will be fortunate if no other country steps in to secure the market which could be controlled by India, or no artificial substance is found to meet the growing demand for mica, before the miners learn the necessity for reorganizing their methods.

The rules for the grant of prospecting licenses and mining leases for mica in Bengal were revised in April 1902, and are printed *in extenso* with those for Madras in the Memoir on Indian Mica published by the Geological Survey in 1902. The important changes introduced in the rules were:—

- (1) The levy of a royalty in the case of prospecting licenses at the rate of 5 per cent. on the sale value of mica;
- (2) The abolition of the system of putting up leases of mica mines to auction, and provision for restricting operators to approved methods;
- (3) The raising of the maximum period of leases to 30 years;
- (4) The grant of power to lessees to relinquish their grants during the currency of their leases.

Of the prospecting licenses issued during the period under report, seven were granted in Nellore, four in Coimbatore, one in Godavari, and one in the Tinnevely district, Madras Presidency. In the Central Provinces, one was granted in each of the three districts, Balaghat, Hoshangabad, and Chhindwara. In Burma, one license was issued for each of the two districts of Magwe and Mandalay, and two each for Myitkyina and the Ruby Mines district. In Assam, one license was granted in the Khasia and Jaintia hills. In Rajputana, four licenses were granted in Ajmer-Merwara, making a total of 27 licenses, covering 3,223 square miles.

Most of the mica mines having come under the control of the Indian Mines Act of 1901, labour statistics for the last three years of the period under review are now available. These are summarised in table 38, from which it will be seen that the mica industry comes next to gold in providing labour, whilst the risks attending mica-mining, as now practised, are rather greater than those of coal-mining in India, though the period is too short for a fair comparison of the two industries.

TABLE 38.—*Labour Statistics of Mica Mines for the years 1901 to 1903.*

	Province.	1901.	1902.	1903.	Average for 3 years.
Number of persons employed.	Bengal .	6,254	7,363	6,464	6,694
	Madras .	2,965	21,137	2,312	2,471
	TOTAL .	9,219	28,500	8,776	9,165
Number of Deaths from Accidents at Mica Mines.	Bengal .	2	2	9	4.33
	Madras .	16	...	...	5.33
	TOTAL .	18	2	9	9.66
Death-rate per 1,000 persons employed at Mica Mines.	Bengal .	0.32	0.27	1.39	0.65
	Madras .	5.39	...	...	2.16
	Average .	1.95	0.21	1.02	1.05

Petroleum.

More progress has been made, during the period under review, in developing the petroleum resources than those of any other mineral. The output in 1897 amounted to 19 million gallons, and at the time was a record production, but the outturn has since been quadrupled, and in 1903 amounted, as shown in table 39, to nearly 88 million gallons.

But still India contributes little more than $1\frac{1}{4}$ per cent. of the World's supply of mineral oil.¹ Figures for all other countries are not yet obtainable for 1903, but table 40 (page 71) shows the position India occupied amongst oil-producing countries in 1901 and 1902, when its output exceeded 50 million gallons. With the United States and Russia overwhelming all others by producing over 90 per cent. of the World's supply, India takes a place amongst the second group of producers, and at the present rate of expansion will soon be competing with the Dutch East Indies, where the oil-fields are situated on a geological extension of the Assam-Burma belt.

¹ Preliminary returns for 1903 show that the Indian output was 1.29 per cent. of the World's total supply. (*Petroleum Review*, Oct. 22, 1904, p. 330.)

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TABLE 39.—*Production of Petroleum during the years 1898 to 1903.*

YEAR.	QUANTITY.		Value.
	Gallons.	Metric tons. (a)	
			£
1898	22,234,438	89,295	76,821
1899	32,934,007	132,265	125,684
1900	37,729,211	151,523	148,755
1901	50,075,117	201,105	204,342
1902	56,607,688	227,340	217,816
1903	87,859,069	352,848	354,365

(a) The metric ton is assumed to be equivalent to 249 gallons of crude petroleum having a specific gravity of 0·885.

India is, however, still far from meeting all its own requirements in mineral oil. The imports during the past six years have averaged nearly 85½ million gallons, valued at £2,314,801 (table 41, page 72), but the fall after the maximum of 1901-02 was continued into 1903-04, and it now appears, consequently, that foreign supplies are actually being displaced. It is interesting to notice that, of the two great producers, Russia and the United States, which have been supplying between them 93·5 per cent. of the imported foreign oil, Russia has been gradually increasing its predominance over the United States in the Indian market. In 1897-98 Russia contributed 58·1 per cent. of the imports and the United States 29·7 per cent., but in 1901-02 the former had secured 85·5 and the latter only 9·5 per cent. of the Indian custom, though a slight reversal occurred in 1902-03 (see table 41).

As shown in table 42 (page 73), the predominance of Russia as a supplier of mineral oil to India is more a matter of quantity than of value, for although both countries supply large quantities of the cheaper kinds of oil, the supplies of more expensive kerosenes come from America, and the average price per gallon of the American oil is greater than that from Russia, prices on the whole having been enhanced in the former case from an

average of 6·66 pence per gallon in 1897-98 to 7·81 pence per gallon in 1902-03, and having been depressed in the case of Russian oil from an average of 6·47 pence per gallon in 1897-98 to 5·93 pence in 1902-03.

TABLE 40.—*World's Production of Petroleum in 1901 and 1902.*

COUNTRIES.	1901.		1902.	
	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.
United States	2,428,621,790	41·84	3,106,842,060	47·94
Russia	2,980,899,460	51·38	2,818,901,575	43·50
Sumatra, Java and Borneo.	106,354,500	1·84	205,100,000	3·17
Galicia	113,804,040	1·96	144,975,600	2·24
Roumania	49,215,600	0·85	72,097,550	1·11
India	50,075,117	0·86	56,607,688	0·87
Japan	38,500,000	0·67	41,755,000	0·64
Canada	20,037,500	0·35	18,200,000	0·28
Germany	10,977,050	0·19	12,378,625	0·20
Peru	2,529,135	0·04	2,100,000	0·03
Italy	353,500	0·02	420,000	0·02
Other Countries	700,000		910,000	
TOTAL	5,802,067,692	100·00	6,480,288,098	100·00

The petroleum resources of India are confined to the two systems of folded rocks at either end of the Himalayan arc—

- Occurrences of Indian petroleum.
- (1) The Iranian system on the west, including the Punjab and Baluchistan, and continued beyond British limits to Persia, where the oil-fields have attracted interest for many years.
 - (2) The Arakan system on the east, including Assam and Burma, with their southern geotectonic extension to the highly productive oil-fields of Sumatra, Java, and Borneo.

TABLE 41.—Origin of Foreign Mineral Oil imported into India during the years 1897-98 to 1902-03.

COUNTRIES.	1897-98.		1898-99.		1899-00.		1900-01.		1901-02.		1902-03.		Average.	
	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.	Gallons.	Per cent. of Total.
Russia	50,672,226	58.1	50,540,879	62.2	57,658,254	76.9	67,350,856	83.4	84,514,016	85.5	71,197,917	80.1	63,722,358	74.6
United States	25,967,322	29.7	23,602,079	28.8	15,043,622	20.1	9,798,257	12.1	9,437,107	9.5	13,425,470	15.1	16,212,310	18.9
Other Countries	10,685,478	12.2	7,408,514	9.0	2,257,557	3.0	3,639,469	4.5	4,935,082	5.0	4,249,857	4.8	5,520,326	6.5
TOTAL	87,325,026	100.0	81,951,472	100.0	74,959,433	100.0	80,786,582	100.0	98,886,205	100.0	88,673,244	100.0	85,463,994	100.0
Value	£ 2,433,976		£ 2,163,152		£ 2,120,085		£ 2,304,562		£ 2,557,882		£ 2,309,151		£ 2,314,801	

PART I.] HOLLAND: Mineral Production, 1898-1903.

TABLE 42.—Average Annual Value of Mineral Oil imported during the years 1897-98 to 1902-03.

COUNTRIES.	Average annual value.	Average value per gallon.
	£	Pence.
Russia	1,666,571	6.28
United States	483,220	7.22
Other Countries	165,011	7.17
Average Annual Total and Average Price.	2,314,802	6.50

In both areas the oil is associated with Tertiary strata, and has had probably similar conditions of origin in both cases, but the structural features of these areas are not equally suitable for the retention of oil in natural reservoirs. In Burma, however, the conditions have been locally ideal: the well-known Yenangyaung field lies in a N. N. W.—S. S. E. flat anticline, the axis of which by variation in pitch has produced a flat dome in the Kodaung tract. The rocks in this dome include a porous sand at depths of 200—300 feet, covered by impervious claybeds, which have helped to retain the oil until the impervious layers are pierced by artificial wells. In the Baluchistan area the rock-folds have been truncated by agents of denudation, or have been dislocated by earth-movements, and much of the original stores of oil have disappeared. Oil-springs are common enough, but they are mere “shows,” not connected with reservoirs which can be tapped by artificial means.

In the Punjab, oil-springs have been known for many years to exist in the Rawalpindi district and further to the south-west, but the total output of the Punjab is small, ranging between 1,000 and 2,000 gallons a year. During the past six years the recorded production has been as follows:—

1898		1,510 gallons.
1899		1,104 "
1900		1,874 "
1901		1,812 "
1902		1,949 "
1903		1,793 "

Unsuccessful attempts have been made to develop the oil resources indicated by springs in different parts of **Baluchistan.** Baluchistan; the most prominent of these are near Khatan in the Mari hills and Moghal Kot in the Sherani country, where small oil springs which were examined in 1891 were found to yield oil of a very high quality. The oil-spring in the neighbourhood of Moghal Kot affords a good illustration of the way in which a country, originally well endowed with the necessary conditions for the natural production of petroleum, may lose its resources by subsequent destruction of the natural reservoirs. The Moghal Kot oil-bearing beds form a very open anticlinal fold, whose axis pitches to the E.N.E., and if the dome possessed the necessary plastic, impervious envelope, the oil rising up from below would have become concentrated in the porous beds which form the saddle, but for the fact that along this line the rocks are more easily eroded by surface water, and the anticline thus forms the gorge of a river by which the rocks have been opened to permit the waste of oil for an indefinite time. This is, unfortunately, the history of most of Baluchistan and the Punjab, where the oil-bearing strata are either disturbed beyond the plastic limit of the impervious layers, or the whole series of beds (those which are porous and hold the oil, as well as those which are impervious and limit its movements underground) have been exposed to the air. In this respect the Punjab-Baluchistan area offers fewer prospects of success than the eastern group of Assam and Burma, where, especially in the latter area, the rocks are less disturbed and the softer shales have retained their nearly impervious character.

Up to the present, however, all attempts to develop the oil prospects of India have been without success, except in Burma and North-East Assam. Burma holds an easy lead, and if its resources hold out, the present rate of development will soon displace foreign supplies.

The delay in the development of the promising petroleum resources of Assam is an instance of a remarkable diffidence and want of enterprise existing in a commercial community which could show the reckless speculation of the gold boom of 1890. As long ago as 1865 an account of the Makum area was published by Mr. H. B. Medlicott, F.R.S., in the Memoirs of the Geological Survey, and trial borings were then recommended. This advice was followed in 1867, when a Calcutta firm obtained permission to prospect, and struck a promising oil-spring at a depth of 118

feet near Makum; but nothing more was done until 1883, and only very slow development occurred in the following sixteen years. The Assam Oil Company was, however, formed in April 1899 with a nominal capital of £310,000, most of which was quickly called up and invested in the erection of a new refinery at Digboi and in systematic drilling operations, with the result that the output rose from 631,571 gallons in 1901 to 2,528,785 gallons in 1903. Besides the ordinary illuminating oil and solid paraffins, the Assam Oil Company has made a successful attempt to put petrol on the Indian market. The following table shows how the output in this area has been rising during the last six years:—

1898	.	.	.	.	.	547,965	gallons.
1899	.	.	.	.	.	623,372	"
1900	.	.	.	.	.	753,049	"
1901	.	.	.	.	.	631,571	"
1902	.	.	.	.	.	1,756,759	"
1903	.	.	.	.	.	2,528,785	"

The belt of Tertiary rocks extending from the north-eastern corner of Assam for some 180 miles south and west shows frequent signs of oil, nearly always in association with coal and sometimes associated with brine-springs and gas-jets. The series of earth-folds in which this corner of Assam occurs stretches southwards to Cachar, where oil springs are also known, through the little-known Lushai hills into Arakan, and in the same system of parallel folds occur the oil-fields of the Arakan coast on one side of the Yoma and those of the Irawadi valley on the other (see plate 6).

The most productive oil-fields of Burma are those on the eastern side of the Arakan Yoma, in the Irawadi valley, **Burma.** forming a belt stretching from the Magwe district, in which the well-known field of Yenangyaung occurs, through Myingyan, in which Singu occurs, across the Irawadi into Pakokku, where Yenangyat is situated. Oil is, however, known further south in Minbu, Thayetmyo and Prome, and further north in the Chindwin valley, but these areas have not so far been thoroughly prospected, and the great development which has recently taken place has been the direct outcome of work in the three fields, Yenangyaung, Yenangyat, and Singu.

Yenangyaung, the best known and most developed of the fields, **Yenangyaung.** still holds the lead as a producer. The oil in this area has been worked by native wells on both

sides of the dome for well over 100 years, and before 1886 the annual yield was generally over two million gallons, but soon after systematic drilling was introduced in the central Kodaung tract in 1887 the output gradually rose to over 10 million gallons in 1894, and last year, 1903, reached a record of 56,920,662 gallons.

TABLE 43.—*Production of the Burma Oil-fields between 1898 and 1903.*

YEAR.	Yenang- yaung, Magwe District.	Singu, Myingyan District.	Yenangyat, Pakokku District.	Akyab.	Kyauk- phyu.	TOTALS.	
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Metric tons.
1898 . .	15,484,301	...	6,036,088	58,025	103,549	21,684,963	187,088
1899 . .	22,111,514	...	10,030,790	50,559	116,668	32,309,531	129,757
1900 . .	27,123,325	...	9,701,769	36,852	112,342	36,974,288	148,491
1901 . .	37,482,935	...	11,843,341	22,355	93,103	49,441,734	198,561
1902 . .	40,712,142	174,880	13,824,350	36,794	100,774	54,848,980	220,277
1903 . .	56,920,662	5,617,381	22,665,518	52,968	71,962	85,328,491	342,685
<i>Average</i> .	33,305,813	2,806,130 (a)	12,350,316	42,926	100,233	46,764,665	187,810

(a) Two years only.

Yenangyat yielded very small supplies of petroleum before 1891, when drilling was started by the Burma Oil Company. The expansion was slow until 1894, when 324,086 gallons were produced, but rose rapidly to 6,036,088 gallons in 1898 and to 22,665,518 gallons in 1903. The oil from the Yenangyat area, and that from its southward extension on the other side of the Irawadi river near Singu, contains a higher proportion of the lighter hydrocarbons than the Yenangyaung crude oil.

Singu has suddenly come into prominence. Petroleum was first struck by the Burma Oil Company in this area on the 30th October 1901, and arrangements were then made to provide tanks for its reception. Production did not consequently begin till 1902, when only 174,880 gallons were turned

out with the opening of the new wells, but the output jumped up to 5,617,381 gallons in 1903. The crude oil first obtained had a specific gravity of 0·8247 and flash point under 40° F., in consequence of which primary stills were erected on the field to remove the light naphthas before transport to the Rangoon refineries.

Besides the Upper Burma oil-fields, the islands off the Arakan coast, noted for their mud volcanoes, have also been known for many years to contain oil deposits of uncertain value. The chief operations have been carried on in the Eastern Barongo Island near Akyab and on Ramri Island in the Kyaukphyu district. During the past six years the average output of the former area has been 42,926 gallons, whilst in Kyaukphyu the output in the same period has averaged about 100,000 gallons, with a distinct tendency to decline.

The main factor which has contributed elsewhere to the recent great advances in oil production, namely, the general adoption of the bulk system of transport and distribution, has been receiving the attention of those interested in the development of the Burma oil-fields. The Burma Oil Company have laid a pipe-line from Yenangyat, through Singu, to the Yenangyaung area, and are now preparing to connect all the fields in a similar way with their refineries in Rangoon, a distance of 275 miles; they are adding several large tank steamers to their present fleet of five, with storage tanks at the principal Indian ports. The enterprise shown in the laying out of capital in Burma evidently anticipates an expansion in the trade well beyond the record output of 1903, and the fact that mineral oil is being rapidly adopted as fuel instead of coal, removes the fear of over-production which seemed likely as long as petroleum was used only as an illuminant.

Ruby.

During the period under review the ruby-mining industry in Upper Burma underwent a new and favourable phase, the mineral having become, next to petroleum, the most profitable source of revenue amongst Burmese minerals. Various leases were granted in the ruby-bearing area near Nanyaseik in the Myitkyina district, and in the "stone-tract" of the Sagyin hills, in Mandalay district, and the results have been mostly profitless; but the returns for the Mogok area, where the Burma

Ruby Mines Company is paramount, show that the industry has entered a most encouraging phase. The Company was granted the right in 1889 to mine for rubies and to levy royalties from persons working by native methods, the lease being renewed in 1896 for 14 years, at a rent of Rs. 3,15,000 a year *plus* a share of the profits. The results being, however, unsatisfactory from the shareholders' point of view, the rent was reduced in 1898 to Rs. 2,00,000, the share of the profits being, at the same time, raised from 20 to 30 per cent. A dividend of 5 per cent. was paid for the first time in 1898, when the value of the rubies obtained amounted to £57,950. In 1899 the Company obtained rubies to the value of £90,848 and paid a dividend of 12½ per cent. : in this year three unusually valuable stones were found, one of 77 carats being valued at 4 lakhs of rupees (£26,666). In the following year, 1900, the value of the stones raised increased to £97,326, and the Company paid a dividend of 17½ per cent. The year 1901 showed the record output of stones valued at £104,476, whilst in 1902 they brought £86,895. In the last year, 1903, the Company's receipts were £98,575, and profits on the year's working £44,950.

Salt.

There are three kinds of sources from which salt is produced in India :—

Origin of Indian salt.

- (1) Sea-water, from which 61·8 per cent. of the total production was obtained during the period under review ;
- (2) Sub-soil water and lakes in areas of internal drainage, in both of which the origin and mode of concentration of the salt are the results of essentially similar natural processes. From these sources about 27 per cent. of the total was obtained ; and
- (3) Rock-salt beds, from which 11·2 per cent. of the total was obtained by mining and quarrying.

During the past six years, 1898 to 1903, the average annual production of salt in India amounted to 979,572 statute tons. Table 44 shows the variations for the past

six years and plate 4 shows graphically the position India has taken amongst the large salt-producing countries during the past 22 years.

TABLE 44.—*Production of Salt in India (excluding Aden).*

YEAR.	Statute Tons.	Metric Tons.
1898	986,158	1,001,982
1899	920,619	935,432
1900	1,005,185	1,021,315
1901	1,102,039	1,119,672
1902	1,040,206	1,056,899
1903	823,184	836,394
<i>Average</i>	<i>979,572</i>	<i>995,282</i>

TABLE 45.—*Provincial Production of Salt during the years 1898 to 1903.*

	1898.	1899.	1900.	1901.	1902.	1903.	Averages.
	Statute Tons.	Statute Tons.	Statute Tons.	Statute Tons.	Statute Tons.	Statute Tons.	Statute Tons.
Aden	41,217	41,181	49,763	87,800	58,953	71,656	54,428
Bengal	...	...	174	112	44	94	(a) 106
Bombay	343,569	368,072	460,262	323,909	381,611	267,619	357,507
Burma	18,223	23,240	20,835	21,500	20,013	26,174	21,664
Gwalior State	456	333	352	491	485	489	434
Madras	251,875	268,962	322,244	330,544	358,450	244,923	297,666
Northern India	359,790	248,574	190,532	405,068	269,177	270,068	290,535
Sind	12,245	11,478	10,786	11,415	10,426	13,817	11,695
TOTAL Statute Tons .	1,027,375	961,840	1,054,948	1,189,839	1,099,159	894,840	1,038,000
<i>Metric Tons</i>	<i>1,043,862</i>	<i>977,269</i>	<i>1,071,877</i>	<i>1,208,033</i>	<i>1,116,797</i>	<i>900,200</i>	<i>1,054,665</i>

(a) Average of 4 years.

Of the provinces contributing to this amount, Bombay, with an average annual production of 357,507 tons, and Madras, with an average of 297,666 tons, between them contributed almost exactly two-thirds of the total. Of the salt produced in Bombay, about 78 per cent. was obtained from sea-water, the rest being manufactured from sub-soil brine at Kharaghora and Udu on the border of the lesser Rann of Cutch, and possibly derived from infiltrated sea-water. The Madras salt is practically all made from sea water, a very small quantity of spontaneous salt being collected at Pandraka in the Masulipatam sub-division.

The chief manufacture of salt in Burma takes place also along the sea-coast, but sub-soil brine is evaporated at various places in Upper Burma, notably in the Lower Chindwin, Sagaing, Shwebo, Myingyan, and Yamethin districts, and in smaller quantities in Minbu and Meiktila, as well as at Mawhkeo in the Hsipaw State. During the past six years the average annual production of this salt in Burma has been 3,432 tons.

In Sind 88 per cent. of the salt raised during the years 1898 to 1903 was obtained from sea-water, and 12 per cent. from the Saran and Dilyar deposits on the edge of the great desert.

From the point of view of the geologist and mineralogist, the last two groups of occurrences, namely, sub-soil salt and rock-salt, are naturally of more interest than the first, though from the financial point of view the salt from sea-water, being the predominating fraction, is the most important source of revenue.

The second form of occurrence is characteristic of areas in which evaporation of rain-water is excessive compared to run-off, and the salt recovered in these areas is that merely arrested on its journey to the sea, where, in the same way, it is concentrated by evaporation of the water. The most prominent of such areas is the desert-belt of Rajputana including the salt-lakes of Sambhar, Didwana, Falodi, Lonkara-sur and Kachor-Rewassa, with a brine-impregnated sub-soil along the whole valley of the Luni, as well as the country to the west in Sind, around the Rann of Cutch and the delta of the Indus. To the north of the Rajputana country sub-soil brine is raised and evaporated for salt in a cluster of villages in the Sultanpur mahal, south-west of Delhi. Other places occur in parts of the United Provinces and in Berar, where large

quantities of salt were formerly obtained from sub-soil brine in the alluvium of the Purna River. In Gwalior State salt is regularly manufactured from sub-soil brine, the average annual production during the years 1898 to 1903 having been 434 tons. In Behar a small quantity of salt is separated in the manufacture of saltpetre. The returns for the past four years for Bengal, with an average of 106 tons per annum, quoted in table 45, refer to salt made in this way.

The most important source of salt of this group is the Sambhar Lake in Rajputana. Recent investigations have shown that Sambhar is a silt-filled depression in the Aravalli schists and gneisses, in which a body of mud and sand, with kankar and gypsum (some 75 feet thick in what appears to be about the centre of the depression) includes from 2 to 12 per cent. of sodic chloride, with smaller quantities of sodic sulphate, sodic carbonate, and potassic sulphate. Every year the water brought in by the rivers, which are in flood during the monsoon, forms a lake some 60 square miles in area and 2 to 3 feet deep. The water, which is fresh when it first comes in, takes up salt from the accumulated stocks in the silt and forms a strong brine, which is partly led into prepared enclosures (*kyars*) for the separation of salt by solar evaporation, partly isolated by temporary reservoirs constructed to cut off bodies of the lake-water in anticipation of the recession towards the centre during evaporation, and partly forms a thin crust of white glistening salt on the bed of the lake, where it is allowed to remain until the arrival of the next monsoon and the usual annual flooding of the lake.

During the past six years the average annual removal of salt from the Sambhar brine has been 135,051 tons, which is 13·8 per cent. of the average annual production for India during the same period. Since the lake came under the direct control of Government in 1871 the salt removed has amounted to about 4 million tons. During the past few years the quality of Sambhar salt is said to have depreciated, and it has been suspected that the large quantities which have been removed have at last made an impression on the great stores of salt which must have accumulated in the lake silt, appreciably raising the proportion of the associated compounds, sodium sulphate, sodium carbonate, and potassium sulphate. An investigation is now being made with a view to forming an estimate of the total and relative amounts of these salts present in the lake mud, and of obtaining a forecast of the effects of

fractional solution and crystallization under the existing system of manufacture.

The chief fraction of the output of Sambhar is consumed in the United Provinces, but small quantities reach as far even as Behar against the competition of foreign salt imported through Calcutta. The following table shows the average annual distribution of Sambhar salt during the years 1897-98 to 1902-03:—

**Distribution of Sam-
bhar salt.**

United Provinces	91,443 tons, or 68·3 per cent. of total.
Rajputana	20,371 " " 15·3 " "
Central India	11,713 " " 8·8 " "
Punjab and North-West Frontier Province	9,109 " " 6·8 " "
Central Provinces	716 " " 0·5 " "
Behar	175 " " 0·1 " "
Sind (in 1902-03 only)	294 " " 0·2 " "

The salt being manufactured at Didwana is practically all consumed in Rajputana and the adjoining districts of the Punjab. During the years 1897-98 to 1902-03 the average annual amount, 10,502 tons, disposed of from this source was divided into 8,123 tons for the Punjab and 2,379 tons for Rajputana. Pachbadra salt, of which only small lots entered the Punjab, had an average distribution as follows during the period under review:—

**Distribution of Didwana
and Pachbadra salt.**

*Average Distribution of Pachbadra Salt during the years
1897-98 to 1902-03.*

United Provinces	15,346 tons, or 45·6 per cent. of average total
Rajputana	9,216 " " 27·3 " "
Central India	5,553 " " 16·5 " "
Central Provinces	3,562 " " 10·6 " "
TOTAL	33,677 tons.

The production of rock-salt in the Punjab, North-West Frontier Province and Mandi State is shown in table 46, from which it will be seen that, of the average annual output of 109,540 tons, 89,023 tons, or 81·2 per cent., came from the Salt Range mines, whilst 14·5 and 4·3 per cent. respectively came from Kohat and Mandi,

TABLE 46.—*Production of Rock-Salt during the years 1898 to 1903.*

YEAR.	Salt Range, Punjab.	Kohat North-West Frontier.	Mandi State.	TOTAL.	Percent- age of total salt pro- duction of India.
	Tons.	Tons.	Tons.	Tons.	
1898	91,117	17,225	4,754	113,094	11·4
1899	91,488	17,693	4,621	113,802	12·3
1900	81,534	14,900	4,122	100,556	10·0
1901	91,816	14,565	4,845	111,226	10·1
1902	87,426	14,674	5,152	107,252	10·3
1903	90,735	15,598	4,554	110,888	13·5
<i>Average</i>	<i>89,023</i>	<i>15,842</i>	<i>4,675</i>	<i>109,540</i>	<i>11·2</i>
<i>Per cent. of Average Total .</i>	<i>81·2</i>	<i>14·5</i>	<i>4·3</i>	<i>100·0</i>	

The chief deposits of rock-salt are in the so-called Salt Range of the Punjab, where the seams of salt and included marl partings have, where worked in the Mayo mines at Khewra, an aggregate thickness of 550 feet, of which five seams of pure salt make up 275 feet, the rest, known as *kolar*, being too earthy and impure to be marketable. These beds occur in a formation lying directly underneath beds of Lower Cambrian age, but it is suspected that they may be of Lower Tertiary age, like the other salt deposits of this part of India, and that they have arrived in their present apparently anomalous position by an overthrust of the older fossiliferous beds.

Mining for rock-salt is carried on in the Mayo mines, Jhelum district, the Warcha mines in the Shahpur district, and across the Indus at Kalabagh. The rock-salt in this area varies from white to brick-red in colour and thus differs in colour from that of the Kohat area.

The most important of the mines in the Salt Range are the Mayo mines near Khewra (32° 39'; 73° 3'). In this area salt-quarrying was practised for an unknown period before the time of Akbar, and was continued in a primitive fashion

until it came under the control of the British Government with the occupation of the Punjab in 1849. In 1872 the system of mining was reorganized, and the work now in operation was planned out by Dr. H. Warth, late Deputy Superintendent, Geological Survey of India.¹

The rock-salt being raised in the Mayo mines has, on account of its purity, a wide distribution. A recent analysis of one of the seams gave the following results:—

Sodium chloride	.	.	.	.	.	.	98.86
Sodium sulphate	.	.	.	.	.	.	0.57
Sodium carbonate	.	.	.	.	.	.	trace
Magnesium chloride	.	.	.	.	.	.	nil
Moisture	.	.	.	.	.	.	0.08
							99.51

In the Warcha mine, Shahpur district, the seam of rock-salt being worked is 20 feet thick, with a one-foot parting of marl, dipping 30° to the N. N. W.

About two miles E.N.E. of Kalabagh on the Indus, rock-salt is worked in open quarries on the east slope of Sandagar hill.

The rock-salt raised in the *cis*-Indus mines and Kalabagh quarries is principally consumed in the Punjab and North-West Frontier Province. During the past six years the average annual sales in these provinces amounted to 70,964 tons, or 82.3 per cent. of the total. In the same period the rock-salt sent to the United Provinces averaged 10,049 tons a year, or 11.3 per cent., whilst as much as 5.7 per cent. of the total sales, or an annual average of 4,933 tons, reached as far as Behar, and small consignments of about 10 tons a year were despatched to Lower Bengal. The average annual amount of 580 tons which entered Sind formed 0.7 per cent. of the sales for the years 1897-98 to 1902-03.

The Kohat salt is grey in colour with transparent patches. It is worked in open quarries, and the masses exposed may be regarded as practically inexhaustible at the present rate of output. In the anticlinal at Bahadur Khel, where the salt is seen to be at the base of Tertiary system, the beds can be

¹For detailed description, see "Report on the Inspection of the Mayo Salt Mine," by J. Grundy, 1898, pp. 13-15.

traced for a distance of about eight miles, with an exposed thickness of over 1,000 feet.

In Mandi State, rock-salt is worked in open quarries near the faulted junction of the Tertiary and the older unfossiliferous rocks at Guma and Drang. The Mandi salt is of a dirty plum-colour, containing earthy impurities which bring down the available sodic chloride to 60 or 70 per cent.

With low freight-rates from Europe, large quantities of salt are imported, especially into Bengal and Burma, against the competition of the domestic produce. The salt imported during the six years under review averaged 433,754 tons per annum, of which 56.1 per cent., as shown by table 47, came from the United Kingdom, the remaining supplies being obtained, in order of average quantity, from Germany, Aden, Arabia, Egypt, and Persia. The average annual value of the salt imported during the six years was £456,263.

TABLE 47.—*Origin of the Salt imported during the years 1897-98 to 1902-03.*

Imported from	Average annual quantity imported.	Per cent. of total.
	Tons.	
United Kingdom	243,216	56.1
Germany	56,928	13.1
Aden	49,350	11.4
Arabia	42,887	9.9
Egypt	28,377	6.5
Persia	12,441	2.9
Other Countries	555	0.1
Average Total for the years 1897-98—1902-03 .	433,754	100.0

The amounts taken by the different provinces maintained a fairly

constant ratio throughout the period, with the following yearly averages:—

Imported to Bengal	.	.	.	.	.	389,376 tons.
" " Burma	.	.	.	.	.	43,978 "
" " Bombay	.	.	.	.	.	260 "
" " Madras	.	.	.	.	.	91 "
" " Sind	.	.	.	.	.	49 "
TOTAL						433,754 "

Of the average annual amount imported, therefore, 89·8 per cent. entered India through Bengal. The distribution of foreign salt in India in competition with the chief sources of production is reviewed in the annual reports of the various Salt Departments.

Small quantities of salt are also imported across the land frontier, coming in with borax mainly from Tibet. During the years 1898 to 1903 these imports averaged 1,476 tons annually, of which 1,416 tons came from Tibet. At the same time considerable quantities of Indian salt were sent across the frontier. The average annual export in this way during the six years under review amounted to 41,170 tons. The principal fractions went to Nepal (12,943 tons) and into Kashmir (11,234 tons).

Saltpetre.

For the formation of saltpetre in a soil the necessary conditions are (1) supplies of nitrogenous organic matter, (2) climatic conditions favourable to the growth and action of Winogradsky's so-called nitroso and nitro bacteria, converting urea and ammonia successively into nitrous and nitric acids, (3) the presence of potash, and (4) meteorological conditions suitable for the efflorescence of the potassium nitrate at the surface. An ideal combination of these necessary circumstances has made the Behar section of the Gangetic plain famous for its production of saltpetre.

In this part of India we have a population of over 500 per square mile, mainly agricultural in occupation, and thus accompanied by a high proportion of domestic animals, supplying an abundance of organic nitrogen. With a mean temperature of 78° F., confined to an annual range of 68°, and for a large part of the year, when the air has a

humidity of over 80 per cent., with a diurnal range not exceeding 8° above or below 84° F., the conditions are unusually favourable for the growth of the so-called "nitrifying" bacteria.

With a population largely using wood and cow-dung for fuel, the soil around villages naturally would be well stocked with potash; and finally, with a period of continuous surface desiccation following a small rainfall, the sub-soil water, brought to the surface by capillary action in the soil, leaves an efflorescence of salts, in which, not surprisingly, potassium nitrate is conspicuous. Under these conditions Behar has for many years yielded some 20,000 tons of saltpetre a year.

The system of manufacture has been very frequently described in detail,¹ and consists essentially in dissolving out the mixed salts contained in soil around villages, and effecting a first rough separation of the two most prominent salts—sodium chloride and potassium nitrate—by fractional crystallization. The impure sodium chloride is consumed locally, whilst the saltpetre is sent to refineries for further purification before export.

The returns for production are so manifestly imperfect, being considerably below the amounts of export, that the export figures must be taken as the only index, though still an imperfect one, to the extent of the manufacture. The export figures for the past six years are given in table 48, showing an average annual export of 382,353 cwts., valued at £262,592.

There is no definite directional change indicated by these figures, but a comparison with the returns for the past 20 years shows that there has been only a slight reduction in the amount of exported saltpetre, in spite of the discovery elsewhere of large deposits of sodic nitrate, now being largely consumed in America, of variations in tariff, and of wholesale changes in the substances used for manures and for the manufacture of explosives. For the six years 1878—1883 the average quantity of saltpetre exported amounted to 405,568 cwts. a year, whilst for a similar period ten years later, namely, 1888 to 1893, the average annual exports were 389,989 cwts. The highest values, ranging from about £600,000 to nearly £900,000 a year, occurred at the time of the American Civil War from 1860 to 1864, but saltpetre was then an essential constituent of explosives and India had almost a monopoly of supplies.

¹ G. Watt, *Dictionary of the Economic Products of India*, vol. VI, part II, s. 686, p. 433, and literature quoted.

TABLE 48.—*Total Exports of Saltpetre during the years 1897-98 to 1902-03. (a)*

YEAR.	QUANTITY.		Value.	Value per cwt.
	Cwts.	Metric tons.		
			£	Shillings.
1897-98	417,788	21,224	265,831	12'73
1898-99	365,256	18,555	232,896	12'75
1899-00	397,402	20,189	256,210	15'16
1900-01	348,636	17,711	294,249	16'88
1901-02	354,412	18,005	237,880	13'42
1902-03	410,626	20,861	288,487	14'05
<i>Average</i>	382,353	19,424	262,592	13'73

(a) Includes exports across the frontier which averaged 380 cwts., due mainly to 2,233 cwts. sent into Kashmir in 1900. The saltpetre sent across the frontier seldom exceeds a ton per annum.

There have been various changes amongst the consumers of small quantities, amounting altogether to about 20 per cent. of the total, but the quantities sent annually to the three larger markets, United Kingdom, United States, and Hong Kong, amounting to 80 per cent. of the total, have remained fairly constant.

Calcutta is still, as it always has been, the chief port through which saltpetre leaves India, the exports through Calcutta, during the period under review, having amounted to 98·5 per cent. of the total. Of the remaining small amount exported, 1·2 per cent. left *via* Karachi. The average annual exports from the different provinces have been as follows during the years 1897-98 to 1902-03 :—

Bengal	376,254	cwts.
Bombay	930	"
Madras	61	"
Sind	4,728	"
TOTAL	381,973	"

The Calcutta supply is obtained mainly from Behar, as shown in table 50, which has been compiled from returns published each year by the Commissioner of Northern India Salt Revenue.

TABLE 49.—*Average Distribution of Saltpetre exported by Sea during the years 1897-98 to 1902-03.*

EXPORTED TO	Average annual quantity.	Per cent. of average total.
	Cwts.	
United Kingdom	117,126	30·7
Hong Kong	98,320	25·7
United States	91,790	24·0
Mauritius	24,070	6·3
France	22,752	6·0
Straits Settlements	10,012	2·6
Ceylon	7,569	2·0
Japan	5,227	1·4
Other Countries	5,107	1·3
Average Total for the years 1897-98—1902-03	381,973	100·0

TABLE 50.—*Average Annual Imports of Saltpetre into Calcutta for the years 1897-98 to 1902-03.*

OBTAINED FROM	Average annual quantity.	Per cent. of average total.
	Cwts.	
Behar	230,120	59·1
United Provinces	113,680	29·2
Punjab	44,300	11·3
Rajputana and Central India	1,540	·4
Lower Bengal	100	...
Average Total	389,740	

Only very small quantities of saltpetre for chemical and medicinal purposes are imported into India by sea, but a considerable quantity comes from Nepal. During the past six years the imports from Nepal have averaged 9,417 cwts. with considerable yearly variations, as shown below :—

Saltpetre imported from Nepal.

1897-98		9,308 cwts.
1898-99		12,836 „
1899-00		15,655 „
1900-01		4,590 „
1901-02		11,352 „
1902-03		2,758 „
<i>Annual Average</i>		<u>9,417 „</u>

As the total annual imports of saltpetre averaged only 9,430 cwts. during the six years under review, the contribution from Nepal was the only one of importance. The annual values returned for the total imports give an average of £5,816, or of 12·34 shillings per cwt.

Tin.

Tin has a wider distribution than is generally recognised, and its minerals are often overlooked through the difficulty in distinguishing them from other heavy minerals. Isolated crystals of cassiterite have been found recently in pegmatites associated with gadolinite in the Palanpur State,¹ whilst in the Hazaribagh district of Chota Nagpur instances have been recorded of the accidental production of tin from river sands by the native iron smelters, in addition to the recorded occurrences of ores *in situ*. The principal deposit, which has either been wrongly described or has received less attention than it deserves, occurs in the Palganj estate near the Barakar river.

The only persistent attempts made to work tin have been in Burma, where cassiterite is obtained by washing river gravels in the Bawlake State, Karenni, Southern Shan States, and in the Tavoy and Mergui districts of South Burma. The work done on these deposits hitherto has been, however, on a

¹ Rec. Geol. Surv. Ind., xxxi, 1904, 43.

smaller scale than might be expected from the favourable reports which have been made as to their extent and richness. Table 51 shows the amounts of tin-ore raised during the years under review in Tavoy and Mergui, but the returns are probably approximate only, and no returns are available for Upper Burma. The average for the period has been 1,645 cwts. (82·5 tons) valued at £6,876.

TABLE 51.—*Production of Tin-ore in South Burma.*

YEAR.	Tavoy.	Mergui.	TOTAL.	
			Quantity.	Value.
	Cwts.	Cwts.	Cwts.	£
1898	...	780	780	2,553
1899	14	1,408	1,422	7,900
1900	19	2,059	2,078	8,534
1901	22½	1,372	1,395	7,773
1902	25	1,970	1,995	5,340
1903	34	2,164	2,198	9,153
<i>Average</i>	19	1,626	1,645	6,876

The metal is exported mainly in the form of block tin, almost all of it going to the Straits Settlements. This, during the years 1897-98 to 1902-03, averaged 661 cwts. a year, as shown in table 52.

The tin exported from Burma is a small quantity compared to the requirements of the country. Table 53 shows the amounts of foreign unwrought block tin which have been consumed in India during the period under review, and in addition to these quantities, smaller quantities of tin-plates are imported. By far the largest quantity of block tin imported into India comes from the Straits Settlements. Out of the average total of 26,867 cwts., the quantity coming from the Straits averaged 25,407 cwts. per annum. A curious feature connected with the imports is the fact that the quantities of foreign tin imported have not increased since statistics of weight were first recorded in 1875-76. In that year the tin

92 *Records of the Geological Survey of India.* [VOL. XXXII.
imported was reported to amount to 36,159 cwts., of which 31,479 cwts.
came from the Straits.

TABLE 52.—*Exports of Burmese Block Tin for the years 1897-98
to 1902-03.*

YEAR.	Quantity.	Value.
	Cwts.	£
1897-98	905	2,816
1898-99	810	2,898
1899-00	757	4,613
1900-01	534	3,08
1901-02	455	2,574
1902-03	502	2,881
<i>Average</i>	661	3,144

As regards the prospects of tin-mining in Burma, it may be worth
notice that the country in which the ore occurs
Prospects of tin-mining. lies in a belt connecting Yunnan, the south-west
province of China, in which tin-mining is said to support a large popula-
tion,¹ and the well known tin-ore deposits of the Straits Settlements to
the south, from which, in 1903, 54 per cent. of the World's supply
of tin was obtained.

At the same time, it should be kept in mind that the tin-ore of the
Straits has been obtained entirely from alluvial deposits, and that the
ore found in lodes has always turned out to be too poor to work.
The rapid rate of rock denudation in the wet zone of the tropics is
responsible for the fact that rich alluvial deposits may accompany poor
lodes, and consequently the occurrence of tin-ore in the sands and
gravels of Burma does not warrant the hope that workable lodes will
be found before the placer deposits are exhausted. That rich placer
deposits exist of sufficient magnitude in Burma also does not necessarily
follow from the fact that there is a continuity in the solid geology;
the existence of a placer deposit is but a temporary accident in the
geological history of a country, and each one must be gauged for itself.

¹ A. Leclère. Exploration géologique des Provinces chinoises voisines du
Tonkin. *C. R., 29eme Session, Assoc. Fr.*, 1900, ii, 916-926. *Abs. Trans. Inst.*
Mining Engineers, XXII, 1901-02, 715.

TABLE 53.—*Consumption of Foreign Block Tin in India.*

YEAR.	IMPORTS.		Re-exports.	Consumption.
	Quantity.	Value.		
	Cwts.	£	Cwts.	Cwts.
1897-98	38,483	146,554	1,609	36,874
1898-99	29,099	110,667	1,396	27,703
1899-00	17,292	91,525	2,473	14,819
1900-01	22,591	146,135	2,624	19,967
1901-02	25,907	156,212	1,853	24,054
1902-03	27,830	169,731	1,495	26,335
<i>Average</i>	26,867	136,804	1,908	24,959

IV. — MINERALS OF GROUP II.

Alum and Aluminium-ore.

THE separation of the sulphate of alumina from decomposed pyritous shales, and the preparation of the double sulphate of alumina and potash, by the introduction of nitre or wood-ashes, was formerly an important industry in a few places, and, on a smaller scale, was practised at numerous places in India. But the importation of cheap alum, principally from the United Kingdom, and its wide distribution by the gradually extending network of railways, have now nearly killed the native industry. Table 54 shows that during the past six years the consumption of foreign alum in India has averaged 66,086 cwts.

TABLE 54.—*Consumption of Foreign Alum in India.*

YEAR.	IMPORTS.		Re-exports.	Consumption of foreign alum.
	Quantity.	Value.		
	Cwts.	£	Cwts.	Cwts.
1897-98	103,307	30,928	3,050	100,257
1898-99	70,999	18,837	3,320	67,679
1899-00	65,953	17,404	4,037	61,916
1900-01	64,528	18,398	3,137	61,391
1901-02	49,914	15,137	2,240	47,674
1902-03	61,081	18,789	3,478	57,603
<i>Average</i>	69,296	19,015	3,210	66,086

No returns are available to show the amount of production in India. Near Kalabagh, on the Indus, considerable quantities of a pyritous shale are extracted for this purpose, but the mining is carried on in an irregular, fitful way, and the returns are probably mere rough

estimates. In 1898 the output was reported to amount to 750 tons, valued at £3,150, but no returns are available for 1899 and 1903. In 1901 and 1902 the production was reported to be 98 and 112½ tons respectively.

India possesses a possible asset of great value in the deposits of laterite which cover considerable areas in the Peninsula and Burma. On account of their commonly rusty colour, and on account of the fact that locally the native smelters, content with a poor ore, have employed laterite as a source of iron, the only chemical work done on laterite was formerly devoted to a determination of its content in iron. It has only recently been ascertained that many of the deposits contain large quantities of alumina, and are in all essential respects identical with the substance known as bauxite, which is now the chief source of aluminium. It is a curious coincidence that for a long time the original bauxite of Les Baux was, like laterite, first worked without success as a source of iron.

It is difficult at present to fully estimate the value of this discovery, as a deposit of laterite, which would ordinarily be regarded as small and of little consequence, contains enough alumina in some of the instances examined to completely swamp the market of bauxite, of which the World's total production is at present little more than 110,000 tons a year. Without any disturbance of present prices, the aluminous laterites would hardly pay, at the ordinary rate for first class bauxites of 21 to 22 shillings a ton, to mine for export to Europe and America, and they must consequently be utilized for the extraction of alumina on the spot, either for export as such, or for the manufacture of aluminium in the country. To prepare the alumina from the bauxite (or laterite) would, according to the most recent processes, require the use of caustic soda, which is not at present made in the country. But one of the latest successful processes for the manufacture of caustic soda involves the separation of chlorine (from which bleaching powder is prepared) by the electrolytic decomposition of dilute brine, and as both caustic soda and bleaching powder are now largely imported for use in paper-making, there would be a market for both, apart from the requirements of alumina manufacture.

Amber.

The returns for amber show the irregularities which might be expected of an industry conducted in a casual fashion. by the

half-civilized inhabitants of an unadministered area. The following table (table 55) shows the estimated production for the six years under review :—

TABLE 55.—*Production of Amber in the Myitkyina District, Upper Burma.*

YEAR.	Quantity.	Value.
	Cwts.	£
1898	114	1,061
1899	20	151
1900	9	103
1901	97	(a) 11
1902	30	432
1903	37	414
<i>Average</i>	51	362

(a) Poor qualities only raised for medicine in 1901.

The Burmese diggings for amber are situated in the Hukong valley in the Nangotaimaw hills near Lalaung village at about lat. $26^{\circ} 10'$ and long. 96° . The substance is found in clays of probably miocene age, and fragments of amber have been similarly found in association with beds of this age in other parts of Burma, for example, at Mantha in the Shwebo district, and on the oil-field of Yenangyat in the Pakokku district. Most of the material is brought from the Hukong valley in Upper Burma to Mandalay, where beads for rosaries, *nadaungs* (ear-cylinders) and other trinkets for personal ornament are made from the transparent varieties.

The amber of Burma differs in chemical and physical characters from previously known varieties, and the name *burmite* has been consequently suggested for it as a specific distinction.¹ The well known amber of Eastern Prussia contains from $2\frac{1}{2}$ to 6 per cent. of succinic acid, and

¹ O. Helm, *Records, Geol. Surv. Ind.*, xxv, 180 (1892), and xxvi, 61 (1893).

is consequently known to the mineralogist as succinite, but the Burmese amber contains no succinic acid, though the products of its dry distillation include formic acid and pyrogallol. Its ultimate chemical composition has been determined to be as follows :—

Carbon	80.05
Hydrogen	11.50
Oxygen	8.43
Sulphur	0.02
	100.00

The specific gravity of burmite varies between 1.030 and 1.095. It is distinguished from many other amber-like resins by its superior hardness and greater toughness, which render it fit for carving and turning. It possesses a peculiar fluorescence, like that which distinguishes the Sicilian variety simetite.

Apart from the occurrence of a large percentage of discoloured and opaque pieces, many of the large fragments obtained are damaged by cracks filled in with calcite; but otherwise there appears to be a large quantity of material which might be put on the market with profit. At present it is said to be unable to withstand the competition of imported Prussian amber, even in the Mandalay bazar, and the market has to a certain extent been depressed by cheaper foreign material and by an artificial substance re-made from amber chips.

Antimony.

Prospecting operations for antimony-ores, amongst which stibnite is the most prominent, have been carried on in South Burma, and in Lahoul, where a large deposit occurs near the Shigri glacier. The latter occurrence is included in a mining lease recently granted, and an attempt is about to be made to mine the ore.

Much of the material sold in the bazars under the name *surma* includes galena as well as antimony, and the word has the same wide significance which the term "black lead" once possessed.

Arsenic.

Details with regard to the production and use of Indian arsenic are not available, but there has been a considerable trade in both Indian and foreign arsenic, presumably in the form of the white oxide.

Table 56 shows the extent of this trade for the period under review, but does not include the trade in orpiment, which is shown separately.

TABLE 56.—*Average Annual Exports and Imports of Arsenic for the years 1897-98 to 1902-03.*

	Quantity.	Value.
	Cwts.	
<i>Exports of Indian Arsenic—</i>		
To Straits Settlements	308	
„ Other Countries	26	
TOTAL	334	£ 525
<i>Imports of Foreign Arsenic—</i>		
From the United Kingdom	421	
„ „ Germany	829	
„ „ China	909	
„ „ Straits Settlements	99	
„ „ Other Countries	88	
TOTAL	2,346	£ 3,110
<i>Re-export of Foreign Arsenic</i>	<i>111</i>	

Orpiment, the yellow sulphide of arsenic, is largely imported into Burma from Western China for use mainly as a pigment. During the six years 1897-98 to 1902-03, the average annual imports across this frontier amounted to 9,551 cwts., at an estimated value of £11,470, or 24 shillings per cwt. The last three years have shown a decided increase in the trade, with, however, an average reduction in the price per cwt. (see table 57).

TABLE 57.—*Imports of Orpiment from Western China.*

YEAR.	Quantity.	Value.	Value per cwt.
	Cwts.	£	Shillings.
1897-98	3,165	4,534	28'65
1898-99	5,253	7,523	28'64
1899-00	8,712	11,582	26'59
1900-01	12,075	14,822	24'55
1901-02	17,268	21,195	24'55
1902-03	10,831	9,163	16'92
Average	9,551	11,470	24'02

The mineral is used as a pigment in the manufacture of Indian ornamental lac-wares and the Burmese lacquer-work, in which the favourite greens of the Pagan workers are produced by mixtures of indigo and orpiment, and the so-called gold-lacquer of Prome by powdered orpiment and gum. It is used also for the designs on the Afridi wax-cloths.¹

Asbestos.

Asbestos has not yet passed beyond the prospecting stage in India, although attempts have been made, during the past three or four years, to work the occurrences in Merwara, Rajputana, Garhwal in the United Provinces, and Hassan in Mysore.

Borax.

No undoubted occurrence of borax is known within British Indian territory, and the material exported, which, during the last six years, has averaged annually 4,481 cwts., of a value of £6,370 (table 58), is practically all obtained from Tibet, being imported across the frontier into the Punjab and United Provinces. The word *tinca*, by which it is known in the bazars, is possibly a corruption of the Tibetan name for borax, and is in common use on the Punjab frontier, where one meets,

¹ G. Watt, *Indian Art at Delhi*, 1903, pp. 211, 221, 222, 231.

in the Himalayan passes, herds of goats and sheep coming down in the spring from Tibet, each carrying two small bags of borax or salt to be bartered for Indian and foreign stores.

TABLE 58.—*Exports of Borax by Sea from India during the years 1897-98 to 1902-03.*

YEAR.	QUANTITY.		Value.	Value per cwt.
	Cwts.	Metric tons.		
			£	Shillings.
1897-98	3,624	184	4,339	23'95
1898-99	4,999	254	6,429	25'72
1899-00	4,405	224	6,304	28'62
1900-01	3,190	162	5,020	31'47
1901-02	5,666	288	8,594	30'34
1902-03	5,002	224	7,534	30'12
<i>Average</i>	4,481	228	6,370	28'43

In addition to the borax sent by sea to foreign countries, small quantities cross the frontier into Nepal, Kashmir, and Kalat. During the six years, 1897-98 to 1902-03, these trans-frontier exports of borax have averaged 23 cwts. a year, with an average total value of Rs. 377 (£25) or Rs. 16'4 (22s.) per cwt. The export trade has very seriously declined. Twenty years ago the borax sent out of India amounted to over 16,000 cwts. a year, valued at £24,000. At that time the principal part of the material exported went to the United Kingdom (14,134 cwts. in 1883-84), but with the discovery of large deposits of calcium borate in America the demand for borax from India ceased, and now the only large customers are in the Straits Settlements and China, the latter having taken 3,827 cwts., and the former 468 cwts., of the average annual total of 4,481 cwts. exported.

The amount of borax imported into India across the frontier has averaged (as shown in table 59) 21,955 cwts., of the value of £17,369; adding to this the small quantity of refined material imported by sea,

namely, an average of 214 cwts., it is seen that the consumption in India has averaged 17,655 cwts. per annum during the years 1897-98 to 1902-03.

TABLE 59.—*Imports of Borax by Land during the years 1897-98 to 1902-03.*

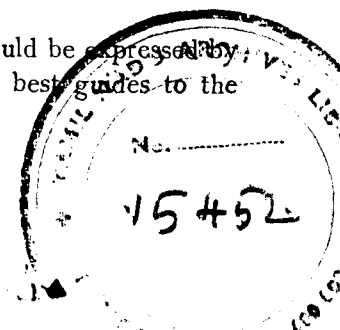
YEAR.	Quantity.	Value.	Value per cwt.
	Cwts.	£	Shillings.
1897-98	15,273	12,097	15'84
1898-99	16,564	13,053	15'76
1899-00	20,315	16,424	16'17
1900-01	18,621	15,065	16'18
1901-02	31,085	24,096	15'50
1902-03	29,874	23,482	15'72
<i>Average</i>	21,955	17,369	15'82

Of the amounts brought across the frontier, and shown in table 59 to have an annual average of 21,955 cwts., 1,117 cwts., or 5'1 per cent., came from Ladakh, whilst 20,831 cwts., or 94'9 per cent., came from Chinese Tibet.

The borax obtained in the Puga valley of Ladakh, Kashmir, is deposited from hot springs, associated with sulphur deposits, which probably represent the final phase of declining volcanic action. The material collected in Tibet is obtained from salt lakes, which have possibly obtained their borax in a similar way from hypogene sources. In other parts of the World, as in California, Argentina, Bolivia, and Chile, deposits of calcium borate, colemanite, are worked for their boracic acid, besides the borax of salt lakes and marsh deposits. In Italy borax is obtained from volcanic fumaroles.

Building-Stone.

If the extent of the use of building materials could be expressed by any recognised standard, it would form one of the best guides to the



industrial development of a country. The attempt made to obtain returns of building-stone, road-metal and clays used in India was abandoned when it was shown in 1899 that the returns could not possibly rank in value much above mere guesses. The same remark might possibly apply to any other country, where figures are regularly reported, though they are of little value for comparative purposes on account of the varying systems of making estimates.

In the United Kingdom, where land is generally sufficiently valuable to cause an increase of depth in quarrying to be less expensive than horizontal extension, a large proportion of the quarries come under the control of the Mines Acts, and regular returns for production are consequently available; but in India there are only a few quarries of more than 20 feet in depth, and the returns from them represent an unimportant fraction of the total amount of material which is being raised all over the country for public works of all kinds. For the present, therefore, we must be content with a general statement to represent the changes from one period to another.

In the absence of statistics, it is difficult to express shortly the trade in material so widespread as common building-stone. There are, however, a few features which are specially developed in, if not peculiar to, India. In the southern part of the Peninsula, various igneous rocks—the charnockite series near Madras, and the gneissose granites of North Arcot and Mysore—are largely used; in the centre slates and limestones from the Cuddapah series, and basalt from the Deccan trap-flows are largely used. In Central India, Central and United Provinces, the great Vindhyan system provides incomparable sandstones and limestones, whilst in Bengal the Gondwana sandstones are used on, and within easy distance of, the coal-fields.

The abundant development of concretionary carbonate of lime in the great alluvial plains, and the extensive development of laterite on the Peninsula and in Burma are dependent, in their more pronounced forms, on conditions peculiar to tropical climates, and these two substances, the so-called kankar and laterite, are about the most valuable assets in building material possessed by the country.

The three great physical divisions of India, being the result of three distinct geological histories, show general contrasts in the materials available for simple as well as ornamental architecture. In the great alluvial plains, buildings of importance are naturally most often made of brick, but the margins on all sides admit of a certain inward

diffusion of stone, which has been extended by increased facilities for transport. In this respect it is interesting to see that at last the monotony of brick buildings in Calcutta is being relieved by the introduction of the Vindhyan sandstones of Mirzapur, and the calcareous freestones and buff traps brought from the west coast. But the use of Italian marble, mainly for floorings, and, in a smaller way, the introduction of polished granite columns and blocks from Aberdeen and Peterhead, have been persisted in mainly because these materials, which are no better than, and possibly on the whole inferior to, those of Indian origin, are placed on the market in a manner suitable to the immediate requirements of the builder and architect. It is thus not because of the dearth of natural resources, but it is on account of the want of enterprise, that Indian ornamental building stone is less used in the chief cities.

During the six years under review the stone and marble imported from foreign countries into India had an average annual value of £19,848, and of this amount the value of marble from Italy was £10,221, or 51·5 per cent. of the average annual total. It is naturally surprising to find that a country which owes its reputation for architectural monuments as much to the fact that it possesses an unlimited supply of ornamental building stone as to the genius of its people, is dependent on foreign supplies to the extent indicated by these import returns. It can hardly be an accident that each dynasty, which has existed in India since the wonderful Buddhist topes of Sanchi and Bhahrut were erected, has been marked by the erection of great monuments in stone, and there can be little doubt that the abundance of suitable material has been an important contributory cause in the growth of India's reputation for architecture.

A recent development of importance has occurred in quarrying the nummulitic limestones of the Khasia and Jaintia hills, partly for use in the manufacture of lime or for use as simple limestone, and partly for the manufacture of cement near Calcutta. In 1898 the amount of limestone quarried in this district was estimated at 61,105 tons, but considerable fluctuations were shown in subsequent years with a general improvement to 88,675 tons in 1903.

For some of the quarries in Lower Vindhyan limestone near Katni, which have come under the control of the Indian Mines Act, returns are available since 1901, when the quantity raised was 28,000 tons, followed by 30,091 tons in 1902, and 35,238 tons in 1903. A limestone

of Upper Vindhyan age is being worked near Sutna by a joint stock company, but much of the material is carried by rail a distance of 530 miles to the Barakar Iron Works, where it is used as a flux in the blast furnaces.

Chromite.

Chromite is known to occur with the peridotites of the Chalk hills near Salem, in the Andamans, and in Baluchistan. Attempts were made long ago to work the deposits near Salem, but nothing has been done since. In Baluchistan the ore occurring in the Pishin and Zhob districts is being opened up for export, the output for the first year of work, 1903, being returned as 284 tons. Larger quantities are now being raised, the amount for the first half of 1904 being 1,816 tons.

Clays.

No statistics approaching any degree of completeness are obtainable to show the extent of the undoubtedly great industrial value of the clays in India. They include the common clays used all over the country for the manufacture of bricks, tiles and the cheaper forms of pottery; finer varieties used for glazed pottery, which in places has obtained a reputation for artistic merit; fire-clays raised in considerable quantities on some of the Gondwana coal-fields; and fuller's earth, which is mined in the Central Provinces and in Rajputana.

The imports of materials coming under this head show that there is room for the development of the raw materials which are suitable for the manufacture of articles required in a modern civilized community. In 1903 the value of earthenware and porcelain imported amounted to £187,390; of earthenware piping, £6,659; of clay, £6,186; and of bricks and tiles, £38,618.

Copper-ores.

Copper was formerly smelted in considerable quantities in South India, in Rajputana and at various parts of the outer Himalayas where a killas-like rock persists along the whole range, and is known to be copper-bearing in Kulu, Garhwal, Nepal, Sikkim, and Bhutan. Native-made copper has, however, completely given way to the imported material, and all attempts by European companies to open up the

deposits have proved to be unsuccessful so far. Mining leases are still held, and prospecting licenses frequently granted for copper-ores. The Indian purchases of copper and brass form a sensible item in the imports of metals. During the six years under review the average annual value of copper imported was £813,701, whilst during the last three years the copper imported was valued at over a million sterling per annum.

Corundum.

The use of abrasives in manufacturing communities seems to be on the increase, and new forms are being put on the market yearly. Emery formerly served most requirements, until purer forms of corundum were discovered in quantity. The cheaper forms of garnet have long been used to adulterate emery, and members of the spinel family, like hercynite, have been used inadvertently as such. During the last ten years carborundum, manufactured by the cheap electrical power developed in America, has come into use, the production of the United States having now reached about 1,700 tons a year. Artificial corundum is also being manufactured from bauxite at Niagara, and crushed steel is being used to an increasing extent.

Natural corundum has thus many competitors in the market of abrasive materials, and as a large portion of the alumina in igneous magmas is necessarily used up during the processes of consolidation by the silica and bases present, it is theoretically unlikely that the free oxide can exist anywhere in an abundance comparable to the vast quantities of combined alumina in the earth's crust. In most cases the corundum is scattered as isolated crystals through the rock, and only the most economical devices for its separation can make mining remunerative.

In India, where the use of corundum by the old *saikalgar* (armourer, sword-grinder) and lapidary has been known for many generations, the requirements of the country have been met by a few comparatively rich deposits, but it is doubtful if these are worth working for export in the face of the competition referred to above in Europe and America, or will even stand against the importation of cheap abrasives.

There is still, and for many generations has been, a certain trade in Indian corundum, but the returns for production are manifestly incomplete. No workings exist of the kind that could be ordinarily described as mining, but attempts have been made to increase the scale of operations at Palakod and Paparapatti in the Salem district,

near Hunsur in Mysore, and in South Rewa. In 1898, the figures returned showed a production of 7,603 cwt., but the output never approached this figure in any subsequent year.

Corundum is very widely distributed throughout the Mysore State, and is said to occur in every district except Shimoga. The annual production in Mysore has been estimated as follows:—

1898	.	.	2,937 cwt., valued at	.	.	£ 698
1899	.	.	879 " " "	.	.	171
1900	.	.	1,386 " " "	.	.	225
1901	.	.	1,634 " " "	.	.	357
1902	.	.	574 " " "	.	.	108

Much of the corundum, which is a regular item of trade in the bazars of cities like Delhi, Agra and Jaipur, where the Indian lapidary still flourishes, is collected in a casual way by agriculturists and cowherds, who dispose of it through the village *bania* to the larger dealers of the great cities. Our information as to the mode of occurrence and distribution of the mineral was summarized in a special memoir published by the Geological Survey in 1898.

Since that year interesting developments have occurred in working the corundum in Ontario, Canada, where the mineral occurs in association with nepheline-syenite like that near Kangayam in the Coimbatore district.¹ By the adoption of mechanical means for concentration it has become possible to separate corundum from the felspar rock in which it is embedded, and to put a product on the market, not only for local use, but for export to the United States and Europe. The output of Canadian corundum in 1902 reached 805 tons, which was about double the production of 1901.

Gem-stones.

The most valuable of the precious stones raised in India is undoubtedly the ruby, but this and the other stones obtained in the country do not approach in value the unset stones and pearls imported, which, during the period under review, had an average annual value of £511,206.

Of the precious and semi-precious stones in India, the most important, Amber, Jadeite and Ruby, have been already referred to. Of

¹ T. H. Holland : The Sivamalai series of Elæolite and Corundum-Syenites, *Mem. Geol. Surv., Ind.*, XXX, pt. 3, 1901.

the others, the only ones which are of immediate concern are Beryl, Diamond, Garnet, Sapphire, Spinel, Tourmaline, and Turquoise. All of these except the last have been, or are still being, worked to some extent in India, and the Turquoise may be dismissed with the mere mention of the fact that India, besides being a large importer for local use, is one of the channels by which the material raised in Persia and adjoining areas reaches the European and Eastern market. The other minerals deserve more particular mention.

There is still a considerable trade in agate and the related forms of silica, known under the general name of *hakik*, and obtained from the amygdaloidal flows of the

Deccan Trap. The best known and perhaps still the most important of the places at which agate and carnelians are cut and prepared for the market is Cambay, the chief city of the state of that name under the Kaira Political Agency, Bombay Presidency. The agates come from various states and districts on or near the edge of the trap, but mostly from the State of Rajpipla, where the chief source is a conglomerate near the village of Ratanpur. The right to collect *hakik* at Ratanpur is leased for a period of five years at a fixed annual rental, but precise data as to the value of the stones sent to Cambay are not obtainable. A certain amount of agate-cutting is also carried on at Jabalpur, and at a few other places within range of the Deccan Trap.

Much of the agate retailed in Europe is sent from Cambay, and large quantities are also exported to China.

In the Tanjore district, Madras Presidency, fragments of rock-crystal are collected and cut for cheap jewellery, being known as "Vallum diamonds," whilst the bi-pyramidal quartz-crystals found in the gypsum of the salt marl near Kalabagh, on the Indus, are to a certain extent used for making necklaces, and rock-crystal is similarly used for cheap jewellery in Kashmir.

Beryl in its pale-coloured varieties is of common occurrence in the granite-pegmatites of India, but the crystals are generally too much fissured for use as gem-stones. Occasionally in the pegmatite veins which are worked for mica in Behar and in Nellore, large crystals of beryl, many inches across, are found to include clear fragments which might be cut as aqua-marines; but the only places in India where attempts have been made to excavate pegmatite solely for its aqua marines are at Padur (Pattalai), near Kangayam, Coimbatore district, and at different places in the Toda

hills in Rajputana. Stones of considerable value were obtained from the mine which was worked at Padyur in the early part of the nineteenth century: a pit some 30—40 feet in depth is still in existence, but no one seems to have taken an interest in the place since J. M. Heath held a lease in 1818. The whole area is impregnated with igneous intrusions, and deserves more attention than it has so far received.

Notwithstanding the reputation (stretching back even as far as Ptolemy in the European, and further in the Hindu, classics) which India has had as a diamond-producing country, the output of to-day is very small and comparatively unimportant. The places which, according to accounts, have been most productive in the past form three great groups, each in association with the old unfossiliferous rocks of probably pre-Cambrian age now known as the Purána group, and distinguished locally as the Cuddapah and Kurnool systems in South India, and as the Vindhyan system in the northern part of the Peninsula.

The southern of the three groups of diamond-occurrences includes localities, with apparently authentic records, in the districts of Cuddapah, Bellary, Kurnool, Kistna, and Godavari. Loose stones have been picked up on the surface of the ground, found in deposits of alluvium and in workings which have been undertaken in the so-called Banaganpilly stage of the Kurnool series of strata.

In the second group of occurrences in the Mahanadi valley, the stones have been found in the alluvium of the Sambalpur and Chanda districts, and though strata similar to those of the Vindhyan and Kurnools are known in this area, no diamonds have been found in these older rocks.

The third group of occurrences occupies a tract some sixty miles long by ten miles wide, with the Vindhyan conglomerates near Panna as the centre. The diamond-mining industry still persists in this area, both in the old conglomerate of Vindhyan age, and in deposits which, though described as alluvium, are possibly relics of Lameta (Upper Cretaceous) deposits.

The only garnets worked to any considerable extent in India occur in the mica schists of Rajmahal in Jaipur, and near Sarwar in the adjoining State of Kishengarh.

Returns are not available to show the condition of the industry in Jaipur, but there is still a considerable industry in the Kishengarh State, though the yearly estimates are altogether too variable to permit of a fair average being drawn, varying from about £10,000 to £2,000.

Sapphires of considerable value were formerly obtained in Zanskar, Kashmir State, but the mines are said to be exhausted, and returns for recent work are not available. Occasionally the normal blue sapphire, and the rarer green, yellow and white varieties are found in the ruby-bearing gravels in Burma.

Spinel is a constant associate of the ruby, both in the gravels and in the limestone, and the crystals, on account of their perfect ruby colour and their octahedral habit, are often mistaken for the true ruby with its eight-faced combination of the basal plane and rhombohedron.

Several attempts have been made to work the beautiful red variety of tourmaline (rubellite) which occurs in the Ruby Mines district of Upper Burma. In 1898 an output worth £359 was reported for this area, in 1900 the value was estimated at £1,240, and in 1903 at £196, but returns are not available for 1899 and 1902.

Gypsum occurs in considerable abundance in various parts of India, occurring both in the fibrous form and as clear selenite crystals. In Sind it occurs in beds sometimes 3 to 4 feet thick near the top of the Gáj beds of the Kirthar range; in Cutch it occurs in abundance in the rocks below the Nummulitic limestones; in the Salt Range it occurs in large masses with the salt-marl, lying below Cambrian beds. A very interesting, and, judging by the returns, important occurrence is N.-N.-W. of Nagore in Jodhpur, Rajputana, where a bed, 5 feet thick or more, occurs in silt probably formed in an old salt-lake. From this area an annual average output of 5,394 tons is reported for the years 1898 to 1903. Selenite crystals of similar origin have been recently found in the kankar near the base of the silt in the Sambhar lake.

Glass-making Materials.

The common, impure sands of the rivers and the efflorescent alkali salts, so common in many parts of India, are used in various places for

the manufacture of the inferior varieties of glass used for bangles; but attempts to make the better kinds of glass on a large scale have hitherto failed in India.

The chief difficulty in the way of manufacturing the better grades of glass in India is the absence of known deposits of quartz-sand of the requisite purity and of suitable texture. For the finer qualities of glass, the sand which is, of course, the chief natural substance used, should be rather fine and uniform in grain, angular rather than rounded, and perfectly white. For the commoner kinds of glass, in which colour is of no importance, a considerable quantity of impurity can be tolerated and allowed for in making up the melting charge. The well-known Fontainebleau sand of France, used largely for glass-making, will yield as much as 99 per cent. of silica, with 0.50 per cent. of alumina and a trace of iron oxide; but good window glass can be made from sand containing iron oxide up to .02 per cent. without the use of the corrective manganese oxide.

To what extent a glass-making industry would find a market in India may be judged by the fact that during the past six years the annual imports of glass and glassware have gradually risen in value from £441,529 in 1898-99 to £661,377 in 1903-04.

Lead, Silver, and Zinc.

Galena alone, or with blende and other sulphide ores, is known in various parts of India and Burma, and has been worked in various places for lead, or lead and silver, under past Native rulers; but the mining of lead-ores has long been extinct, and the only recent attempt calling for special mention is that now being made to develop the deposits near Pang Yung in the Northern Shan States formerly worked by the Chinese, who left behind large heaps of slag reported to be amenable to profitable treatment by modern metallurgical processes for the extraction of silver.

Millstones.

The manufacture of millstones is almost universal in India, any local hard stone being turned to account. On the plains small millstones of about 15 inches in diameter are worked by hand, but in the Himalayas, where a fall of water can be easily arranged, a rude form

of turbine is made to work a heavier stone by a direct-acting vertical shaft, and the ordinary meal of the hill-man is manufactured in these primitive mills. These small mills are familiar objects in a Himalayan valley, but no returns are available to gauge the industry of stone-cutting.

Mineral Paints.

Up to the present the manufacture of mineral paints appears to be very small compared to the demand and the natural resources in minerals apparently suitable. In the Jabalpur district mineral paint-works are utilizing the soft hematites of Jauli and are drawing supplies of yellow ochre from the Panna State, whilst similar works near Calcutta are dependent largely on imported material.

Ochres, red, yellow and of other colours, are commonly used by natives in many parts of the country, in a crude or simply levigated form and are known under the generic name *geru*. A common source of supply is the laterite in the Peninsula and Burma, but well-defined ochres occur in deposits of various geological ages down to the Archæan hematites. In Trichinopoly district yellow ochre is obtained from the Cretaceous rocks, and in Burma large deposits are known amongst the Tertiary beds of the Myingyan district. A black slate near Kishengarh has been successfully tried on the Rajputana-Malwa Railway. Barytes, used as a substitute or adulterant for "white lead," is obtainable in quantity near Alangayam in the Salem district and in the Jabalpur district, but no attempts have been made to turn the deposits to account for paint-making.

Orpiment, the yellow sulphide of arsenic, has been already referred to under "Arsenic" (*supra*, p. 97.)

Mineral Waters.

One curious feature in connection with Indian minerals is the neglect of our numerous hot and mineral springs. To what extent the value of these is purely fanciful is a matter of small concern for the time being; for whether they have the medicinal properties claimed for them or not, there is no doubt that well-advertised mineral waters have an economic value, and numerous varieties from Europe and Japan are scattered over India, and brought to the continual notice of

the travelling public in all railway refreshment rooms. Natives of India have for many ages recognised a value in mineral waters and in the hot springs which are often charged with more than usual quantities of mineral matter. In many cases these, like most unusual natural phenomena, have become sacred to the Hindus, and have consequently become places of resort for pilgrims from great distances. Of instances of this sort may be mentioned the hot springs at Manikarn in Kulu, where the pilgrims cook their rice in the hot springs emerging in the shingle beds close to the ice-cold stream of the Parbatti river. The water is led into the neighbouring temple and rest-house for baths, being supposed to be of value for rheumatism. At Lasundra in the Kaira district, and at Vajrabai in the Thana district, Bombay Presidency, springs of sulphurous water, having a temperature of 115°F. , are also resorted to by Hindu pilgrims. Generally it may be said that hot springs, often sulphurous, are common throughout the Tertiary areas of Sind and Baluchistan on one side, and of Assam and Burma on the other side, of India, the distribution being similar (and perhaps dependent on similar causes) to the distribution of petroleum, with its constant associates of salt and gypsum. Other springs occur along the foothills of the Himalayas, in the Kharakhpur hills, etc., sufficiently well distributed to permit of easy transport. The provincial gazetteers contain sufficient references to these springs to guide private enterprise, but more might be done in the way of analysis of the waters, which would be as interesting from a scientific as possibly from an economic point of view. The mineral water of Sitakhund in the Kharakhpur hills is the only one which has been turned to account.

Phosphates.

One regretful feature in connection with the Indian mineral resources is the absence, in a country where agriculture is such a predominant industry, of any phosphatic deposits of value, and a further circumstance to be regretted is the continued export of phosphates in the form of bones, due primarily to the fact that, being without means for the manufacture of cheap sulphuric acid, superphosphates are not made in the country, and the little that is used is imported from Europe. During the past six years the materials imported under the head of manures have varied in value from £6,367 in 1898-99 to £2,144 in

1902-03, whilst the exports of manures, amongst which bones make up 99 per cent. of the total, have been as follows:—

TABLE 60.—*Exports of Manures from India during the years 1897-98 to 1902-03.*

YEAR.	Quantity.	Value.
	Tons.	£
1897-98	72,664	263,500
1898-99	74,971	272,263
1899-00	110,927	408,581
1900-01	113,465	394,228
1901-02	94,243	344,128
1902-03	105,634	381,784
<i>Average</i>	95,317	344,081

Amongst the phosphatic deposits of India, the principal and perhaps the only one worth considering is the deposit of phosphatic nodules of the septarian kind, occurring in the Cretaceous beds of the Perambalur taluk, Trichinopoly district, Madras Presidency. Dr. H. Warth in 1893 estimated that to a depth of 200 feet the beds contained phosphates to the amount of about 8 million tons, but the nodules are distributed irregularly through clay, varying, in the different deep excavations made, between 27 and 47 lbs. per 100 cubic feet, and in some shallow diggings 70 lbs. per 100 cubic feet. Analyses of these nodules show them to contain from 56 to 59 per cent. of phosphate, and about 16 per cent. of carbonate of lime, with considerable variations in different nodules. The alumina and oxide of iron vary between 4 and 8 per cent.

Two attempts made to dispose of these phosphates in a finely powdered condition for use as a fertilizer on coffee plantations in South India were reported to be unprofitable, and mining leases have consequently not been applied for. No attempts have been made to export the material. Its value would possibly be about the same as a

third-grade Algerian phosphate, which brings about £1 a ton delivered at European ports, and as the sea freight from Madras would be added to the cost of a railway journey of 248 miles and cartage of 20 miles, there is no present prospect of profitable mining for export.

Small quantities of apatite are turned out and thrown away with the waste in the Hazaribagh and Nellore mica-mining areas, and a few other occurrences of unknown, and presumably smaller, value have been reported at different places—near Mussoorie, in East Berar, and in the eocene shales above the coal near Dandot colliery in the Punjab Salt Range.

Rare Minerals.

Minerals of the so-called rare metals have received hitherto practically no attention in India, although some are known to exist in the country, and others, judging by the geological conditions, might be hopefully searched for. Molybdenite has been found as isolated crystals in pegmatite and quartz-veins in parts of Chota Nagpur; tungsten occurs in the mineral wolfram as a common associate of tin-ores in South Burma and in the Southern Shan States; platinum and iridium have been found in the auriferous gravels of the rivers draining the slopes of the Patkoi ranges, both on the Assam and the Burma sides; uranium-ores have been detected in the mica-bearing pegmatites of the Singar mica mine in the Gaya district, occurring as pitchblende, torbernite and uranium-ochre; titanium is widely distributed in the form of ilmenite and sphene; and zircon occurs associated with the elæolite-syenites in the Coimbatore district. Of these minerals possibly the wolfram (tungstic ore) of Burma offers the best prospects of immediate development.

No undoubted occurrence has been recorded of the minerals which are valuable, like monazite and the new Ceylon mineral thorianite, on account of the incandescent rare earths they contain, although some of these minerals are very widely distributed amongst crystalline rocks resembling those of Peninsular India. Columbite, tscheffkinite, gadolinite, and allanite containing helium have, however, been definitely determined in India.

Slate.

Slate-quarrying gives a means of livelihood to numbers of workers along the outer Himalayas, where the foliated rocks, though often not

true clay slates, possess an even and perfect fissility which enables them to be split for slabs and even fine roofing slates. In the Kangra district a joint-stock company has organized the work in a systematic manner, and for the past six years has declared dividends of 12 per cent. with the addition of considerable sums to the reserve funds. The same company works quarries in clay-slate amongst the Aravalli series near Rewari, south of Delhi.

In the Kharakpur hills, a private company is working a slightly metamorphosed phyllite, which, though not giving the thinnest varieties of roofing slate, produces fine slabs, for which a more extended use is continually being found. Slate is also being worked in various parts of the so-called transition series of rocks on the Peninsula; but no figures are available to show the extent of the trade.

Sodium Compounds.

Besides sodium chloride other salts of soda, notably the sulphate (*khari*) and carbonate (*sajji*), accumulate in the soil of areas where the climate is dry, and both the sulphate and carbonate are prominent amongst the sodic compounds in the brine of the Rajputana salt lakes. A conspicuous instance of a salt lake in which the carbonate is most prominent is the crater-like Lonar lake occurring as a roughly circular depression in the Deccan trap-flows of Berar.

Besides the impure *sajji-matti*, of which considerable quantities are still in use, the trade statistics show that imports are distinctly increasing, and that common country *sajji* is becoming displaced. For information concerning the alkali compounds used and manufactured in India, see *Agricultural Ledger*, No. 5 of 1902, published by the Reporter on Economic Products, Calcutta.

Steatite.

One of the most widely distributed minerals in India is steatite, either in the form of a coarse potstone—so-called on account of its general use in making pots, dishes, etc.,—or in the more compact form suitable for carvings, and in its best form, suitable for the manufacture of gas-burners. There is a trade of undetermined value in nearly every province, but it is impossible to form even a rough estimate of its value. An exhaustive account of the Indian occurrences of steatite was published by Mr. F. R. Mallet in the *Records*,

Geological Survey of India, vol. XXII, part 2 (1889), and a note by Mr. H. H. Hayden in vol. XXIX (p. 71) of the same publication adds further details with regard to the deposits in Minbu district, Burma, where the annual outturn is estimated to be worth from £300 to £500. The returns, which are confessedly incomplete, give an average annual production in India of about 35,000 tons, valued at £1,900.

Sulphur, Sulphuric Acid, and Soluble Sulphates.

Small quantities of sulphur are obtainable on the dying volcano of Barren Island, and on some of the volcanoes in Western Baluchistan, whilst it has been reported in connection with the petroliferous Tertiary rocks in the Baluchistan-Persian belt, as well as in the Arakan system on the east. There are, however, no deposits of free sulphur known to be worth working.

Pyrite is known in various parts of India, and in one place, near Kalabagh on the Indus, it is sufficiently abundant in the shales which have been worked for alum to give rise to frequent cases of spontaneous combustion. An occurrence of this sort is one that, suitably placed, might be of value as a source of sulphur. Otherwise, the only chance of sulphur to compete with the imported article is bound up in the problem of developing the metalliferous sulphides for both metal and sulphur.

In view of the value of the imports of sulphur and sulphuric acid, and in consideration of the fact that a cheap supply of the acid would be the key to many industries now either non-existent or in a feeble condition, the manufacture of sulphuric acid on a large scale and cheaply would be the starting point of an economic revival. During the six years under review the imports of sulphur averaged 34,136 cwts. a year, valued at £12,612, whilst the annual average for sulphuric acid was 45,374 cwts., valued at £32,273. A small quantity of the acid, on an average 250 cwts. a year, was re-exported, chiefly to British East Africa. In addition to sulphuric acid, there are several chemicals imported which could be produced in India more cheaply if the acid were made in the country in large quantities at a sufficiently low price. The average annual value of imported "chemicals for paper-making" alone has been £54,810 during the past six years, and if, as seems likely, an attempt is made to turn the bye-products in coke-making

to account, the demand for sulphuric acid will increase, whilst the only chance of these industries springing up will depend on the possibility of obtaining a cheap supply of sulphuric acid.

For many years pyritous deposits in India have been turned to account for the manufacture of soluble sulphates of iron and copper. The case of alum has been referred to already (*supra*, p. 94), and with the alum, which was formerly obtained in quantity from the decomposed pyritous shales at Khetri and Singhana in Rajputana, copperas and blue vitriol were also obtained. No statistics are, however, available with regard to the history of these industries, which have had to give way to the importation of cheap chemicals from Europe.

Through the accident of an alphabetical arrangement, the last subject to be considered enables us to point the lesson taught by a general survey of progress (*cf.* page 7). Sulphuric acid is the key to most chemical and to many metallurgical industries; it is essential for the manufacture of superphosphates, the purification of mineral oils and the production of ammonium sulphate, various acids, and a host of minor products; it is a necessary link in the chain of operations involved in the manufacture of the alkalies, with which are bound up the industries of making soap, glass, paper, oils, dyes and colouring matters; and, as a bye-product, it permits the remunerative smelting of ores which it would be impossible otherwise to develop. During the last hundred years the cost of a ton of sulphuric acid in England has been reduced from over £30 to under £2, and it is in consequence of the attendant revolution in the European chemical industries, aided by increased facilities for transport, that in India the manufacture of alum, copperas, blue vitriol and the alkalies have been all but exterminated; that the export trade in nitre has been reduced instead of developed; that copper and several other metals are no longer smelted; that the country is robbed every year of nearly 100,000 tons of phosphatic fertilizers; and that it is compelled to pay over 10 million sterling for products obtained in Europe from minerals identical with those lying idle in India.

Although sulphuric acid and the alkalies are essential to so many other industries, the conditions for their profitable manufacture will balance the "protective" effect of transport charges only when there is a market in the country for the bye-products which are now essential parts of the cycle of operations in a chemical industry. These

conditions, as shown by the import statistics, are rapidly ripening, but the enterprising capitalist should remember, also, that the present requirements of India represent but a fraction of the consumption which will follow any material reduction in prices by local production.

LIST OF PLATES.

- PLATE 1.**—Diagram showing the imports of foreign and the exports of Indian coal in statute tons during the decade 1894–1903.
- PLATE 2.**—Diagram showing the provincial output of coal in statute tons for the years 1884–1903. The output for Bengal is necessarily omitted from a diagram on this scale, but is shown in figure 1, p. 9.
- PLATE 3.**—Progress of the Warora colliery since the commencement in 1871. For details of the last six years, see p. 32.
- PLATE 4.**—Output of the principal salt-producing countries. The information for Foreign countries has been obtained mainly from *Mineral Industry*.
- PLATE 5.**—Production of the Upper Burma oil-fields for the decade 1894–1903, stated in Imperial gallons.
- PLATE 6.**—Map showing the occurrences of petroleum in Assam and Burma, prepared by Mr. T. D. LaTouche, B.A., F.G.S., Superintendent, Geological Survey of India.

RECORDS OF THE GEOLOGICAL SURVEY OF INDIA.

Part 2.] 1905. [April.

GENERAL REPORT OF THE GEOLOGICAL SURVEY OF
INDIA FOR THE PERIOD APRIL 1903 TO DECEMBER
1904. BY T. H. HOLLAND, F.R.S., *Director.*

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INTRODUCTION.

THIS Report covers the work done by the Department between the beginning of April 1903 and the end of December 1904, the composite period being adopted to permit of a reversion to the system followed, up to the end of 1896, of reporting results in periods of calendar years instead of during financial years. Of the ordinary field season, which lasts in India from early in November to about the end of April, the first two months are necessarily taken up with preliminary traverses in a new area, whilst the latter part, after the beginning of January, is naturally the most fruitful in results. As the work at head-quarters is the natural complement of the field work, and is invariably necessary for its interpretation, the system of reporting at the end of the first quarter, which is found to be convenient for Departments in which financial results are of direct importance, would separate halves of the geological working year which should be naturally joined, and would bring together unrelated parts of two separate years. The system now adopted of reporting by calendar years, however, permits of the field observations being joined to the succeeding recess results, the conclusions of which attain a greater degree of finality through the full discussion of progress reports by the whole body of officers assembled at head-quarters.

2. The distinct revival of interest in Indian minerals, which has occurred during the past year, has been one of the means by which we have had new material of interest brought to our notice, and has been the cause of an increase in the work of the Laboratory altogether beyond the capacity of the Curator and his Assistant; but the extraordinary series of results, of scientific interest as well as of immediate economic value, is due mainly to the enthusiasm and energy displayed by my colleagues, amongst whom I find it impossible to make a selection for special notice.

3. A more perfect acquaintance with one another's work, a closer approach to uniformity in nomenclature, and, through mutual criticism, a distinct development in quality of finished product, have resulted largely from the newly organized, bi-weekly meetings of the whole Department during the

recess term, when all papers and reports are discussed, and often revised, before submission to Government or issue to the public.

DIRECTOR'S TOURS.

4. Besides the visits to different parts of the country in connection with the engineering enquiries referred to below in paragraphs 37 and 38, the Director's tours have included—(1) visits to Bombay to discuss the proposed boring for artesian water north-east of Wadhwan in Gujarat, and to consult the Bombay Government with reference to reported mineral discoveries in the Panch Mahals; (2) tours in the Central Provinces to examine certain manganese-ore deposits and some new occurrences of bauxite; (3) a tour in Rajputana to superintend the boring work in the Sambhar salt-lake, to examine certain marble quarries, copper deposits and the newly discovered sodalite localities in Kishengarh, and to make a traverse of the Aravalli schists near Ajmer; (4) a visit to the Monghyr district to examine the slate formation of the Kharakhpur hills; (5) to the Raniganj coal-field in connection with boring operations being conducted by the East Indian Railway Company to test the eastward extension of the coal-field under the Damuda alluvium.

DISPOSITION LIST.

5. During the period under report the officers of the Department were employed as follows:—

Superintendents.

Mr. R. D. Oldham .	At head-quarters till 21st March 1903; posted to Jammu and Kashmir, and returned on the 16th October 1903.
Mr. Tom D. La Touche .	Returned from leave on the 23rd June 1904; posted to Northern Shan States, Burma, and left for the field on the 4th November 1904.
Mr. C. S. Middlemiss .	Deputed to Ceylon on the 22nd April 1903, and returned to head-quarters on the 4th June 1903. Posted to the Vizagapatam hill-tracts and Eastern Godavari district on the 14th November 1903; returned to head-quarters on the 23rd May 1904. Posted to Central India on the 1st November 1904.

Mr. H. H. Hayden .	Deputed to Madras on the 7th April 1903, and returned to head-quarters on the 16th June 1903. Posted to the Tibetan Frontier Mission on the 6th September 1903, returning to head-quarters on the 24th September 1904.
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Deputy Superintendents.

Mr. P. N. Bose .	Returned from Assam on the 19th May 1903. Posted to Assam on the 16th October 1903, and returned to head-quarters on the 24th November 1903.
Mr. P. N. Datta .	Returned from the Northern Shan States, Burma, on the 25th May 1903. Deputed to the same area on the 8th November 1903, and returned to head-quarters on the 19th May 1904. Deputed to the Central Provinces, and left for the field on the 20th November 1904.
Mr. F. H. Smith .	Returned to head-quarters from Chota Nagpur on the 23rd April 1903.
Mr. E. Vredenburg .	At head-quarters as Curator throughout the period.
Mr. L. L. Fermor .	Returned to head-quarters on the 18th April 1903. Posted to the Central Provinces for examination of the manganese-ore deposits on the 17th October 1903, returning to head-quarters on the 8th May 1904. Deputed to the Central Provinces, Bombay, and Madras for completion of the examination of the manganese-ore deposits, and left for the field on the 29th October 1904.
Mr. Guy E. Pilgrim .	Returned from Burma on the 14th May 1903. Deputed to Nasik district, Bombay, on the 21st January 1904, and returned on 22nd February 1904. Posted to the Persian Gulf, and left head-quarters on the 5th November 1904.

Assistant Superintendents.

- Mr. G. H. Tipper . . . Joined the Department on the 5th December 1903. Deputed to accompany Mr. La Touche to Burma on the 4th November 1904, subsequently posted to the North Andaman Exploration Party, which he joined on the 18th November 1904.
- Mr. H. Walker . . . Joined the Department on the 15th October 1904, and deputed to accompany Mr. Middlemiss on the 1st November 1904.

Palæontologist.

- Dr. F. Noetling . . . At head-quarters till the 15th October 1903.

Mining Specialists.

- Mr. R. R. Simpson . . . Returned to head-quarters on the 12th May 1903. Posted to the Jammu territory on the 3rd November 1903 for continuation of coal investigation. Returned to Calcutta on the 12th January 1904. Deputed to Madras for examination of site of Somesaram dam on the 8th February 1904, and returned to head-quarters on the 18th idem. Deputed to Mohpani for examination of the coal-field on the 17th March 1904, and returned to Calcutta on the 27th idem. Posted to the Northern Shan States for survey of Lashio and Namma coal-fields, and left on the 1st November 1904.
- Mr. J. M. Maclaren . . . Returned to Calcutta on the 16th April 1903. Deputed to the Kolar Gold-field, Madras, on the 1st September 1903, and returned to head-quarters on the 24th idem. Posted to Assam on the 7th November 1903, returned to Calcutta on the 8th May 1904. Posted to the Bellary and Dharwar districts for examination of the auriferous tracts and left for the field on the 29th October 1904.

Sub-Assistants.

- Hira Lal . . . At head-quarters till the 16th May 1904.
- S. Sethu Rama Rau . . . Joined the Department on the 11th February 1904. Deputed to accompany Mr. Middlemiss on the 1st November 1904.
- M. Vinayak Rao . . . Joined the Department on the 26th October 1904. Deputed to accompany Mr. Maclaren on the 29th October 1904.

Assistant Curator.

- Mr. T. R. Blyth . . . Was on duty at head-quarters throughout the period.

ADMINISTRATIVE CHANGES.

6. A considerable number of changes have occurred in the staff during the period under report, the balance of result being a deficiency of three graded officers below the sanctioned strength of the Department. The Department has not only been undermanned by retirements, but a number of officers have been on leave, and the effect of a diminished numerical strength has been accentuated by the fact that the newly-appointed officers have necessarily to undergo a period of probation before they are fully efficient.

7. Mr. P. N. Bose retired on the 1st of December 1903, and Mr. R. D. Oldham on the 1st May 1904; and Mr. F. H. Smith resigned through ill-health on the 29th July 1904, whilst Dr. F. Noetling's services were dispensed with by order of the Governor-General in Council from the 15th October 1903. The two Sub-Assistants, Kishen Singh and Hira Lal, having completed their period of service for pension, retired on the 6th June 1903 and the 16th May 1904, respectively.

8. This review of the changes which have taken place in the staff since the issue of the last report affords the pleasurable opportunity of recalling the extent and value of Mr. R. D. Oldham's services, as a partial compensation for the regret with which his retirement from active work in India has been received by all his colleagues.

Mr. Oldham joined the Department in 1879, with the advantages of an all-round training which has shown itself in the breadth of field covered by his unusually heavy record of literary productions. As the son of the founder of the Department, and the relative of some past members, he brought with him the inspiration of family traditions, which gave rise to a manifest identity of his own interests with those of the work and the service to which he has devoted the most valuable part of his life. During a service of 24 years Mr. Oldham's field-work covered parts of every province in India, and the variety of subjects in which he was interested is shown by his contribution of some 40 papers and memoirs to the Survey publications, besides numerous contributions to extra-departmental journals. His selection by the late Dr. W. King for the work of revising the official Manual correctly expressed the feelings of the other officers with regard to his superiority in knowledge of general Indian geology, whilst his latest large work, on the great earthquake of the 12th June 1897, may be taken as a representative sample of his papers, which invariably passed beyond the purely descriptive stage in applying newly-acquired data to the revision of the current ideas concerning the standard theories which make science of practical value.

9. So far only two recruits have been appointed to fill the vacancies

New Appointments. on the graded list: Mr. G. H. Tipper, B.A., who joined the service on the 5th December 1903, and Mr. H. Walker, A.R.C.S., F.G.S., who joined the service on the 15th October 1904, the first of these two officers being appointed to fill the vacancy caused by Mr. C. L. Griesbach's retirement on the 25th February 1903.

The two vacancies for Sub-Assistants were filled by the appointment of S. Sethu Rama Rau, B.A., on the 11th February 1904, and of M. Vinayak Rau, B.A., on the 26th October 1904.

10. In consequence of the vacancies caused in the higher grades,

Promotions. Mr. H. H. Hayden was promoted to be Superintendent with effect from the 2nd May 1904;

Mr. Vredenburg was appointed to be Deputy Superintendent with effect from the 1st December 1903, and Messrs. L. L. Fermor and G. E. Pilgrim, on the completion of their period of probation, were promoted to be Deputy Superintendents with effect from the 29th October 1904. Mr. G. E. Pilgrim has also been appointed to officiate as Palæontologist, with effect from the 15th October 1903.

11. Mr. La Touche, Superintendent, returned from furlough and rejoined his appointment on the 23rd June 1904; **Leave.** Mr. R. R. Simpson, Mining Specialist, was granted privilege leave from the 20th July to the 25th October 1904; Mr. P. N. Datta, Deputy Superintendent, was granted privilege leave from the 3rd October to the 4th November 1904; Mr. H. B. W. Garrick, Artist, was granted combined leave for 15 months from the 18th February 1904; Sub-Assistant Hira Lal was granted privilege leave for 28 days from the 31st August 1903. In addition to the above, the officers who retired at the end of their leave were Mr. F. H. Smith, who was granted combined privilege and special leave for six months from the 29th May 1903, afterwards extended on medical certificate to the date of his resignation; Mr. R. D. Oldham, who was granted combined privilege and special leave for six months from the 2nd November 1903; and Sub-Assistant Kishen Singh, who was granted leave on medical certificate for six months from 27th January 1902, extended to the date of his retirement on medical certificate.

INTERNATIONAL GEOLOGICAL CONGRESS.

12. The Department was represented at the International Geological Congress at Vienna in August 1903 by Mr. C. L. Griesbach, C.I.E., late Director, and by Mr. T. D. La Touche, Superintendent. The separate reports of the delegates were forwarded to Government.

ST. LOUIS EXHIBITION.

13. The Department was invited to send a collection to the St. Louis Exhibition, but the pressure of urgent work on a small staff made it impossible to arrange for the preparation of a collection of specimens, and our contribution, consequently, was limited to the exhibition of a set of the Departmental publications, with unfolded duplicates of published maps. For this exhibit the judges awarded two grand prizes, one in the class for maps, and the other in the class for literature relating to mining and geology.

PUBLICATIONS.

14. During the past year the *Records* of the Department, which **Records.** were issued as yearly volumes between the years 1868 and 1897, were revived, and the four parts, forming volume XXXI, containing the following papers and notes,

fairly illustrate the range of interests with which the Department has been concerned :—

- On a deposit of Copper Ore near Komai, Darjeeling District, by H. H. Hayden, B.A., B.E., F.G.S.
- Note on the Zewan Beds in the Vihi District, Kashmir, by R. D. Oldham, A.R.S.M., F.G.S.
- Report on the Coal Deposits of Isa Khel, Mianwali, Punjab, by R. R. Simpson, B.Sc.
- Report on the Um-Rileng Coal-Beds, Assam, by P. N. Bose, B.Sc., F.G.S.
- Note on a Sapphirine-bearing Rock from the Vizagapatam District, by C. S. Middlemiss, B.A., F.G.S.
- Lieut.-General C. A. McMahon, F.R.S., by T. H. Holland, F.R.S.
- Note on *Cyclolobus Haydeni*, Diener, by Professor C. Diener, Ph.D.
- The Auriferous Occurrences of Chota Nagpur, Bengal, by J. Malcolm Maclaren, B.Sc., F.G.S.
- On the feasibility of introducing modern methods of Coke-making at the East Indian Railway Collieries, by T. H. Ward, A.M.I.C.E., F.G.S.
- The Upper Palæozoic Formations of Eurasia, by Th. Tschernyschew, Director of the Russian Geological Committee, translated by Professor P. Brühl.
- Note on the Glaciation and History of the Sind Valley, Kashmir, by R. D. Oldham, A.R.S.M., F.G.S.
- On the Occurrence of a Species of *Halorites* in the Trias of Baluchistan, by E. Vredenburg, B.A., B.L., A.R.C.S.
- Notes on the Geology and Mineral Resources of Mayurbhanj, by P. N. Bose, B.Sc., F.G.S.
- The Geology of Upper Assam, by J. Malcolm Maclaren, B.Sc., F.G.S.
- The Auriferous Occurrences of Assam, by J. Malcolm Maclaren, B.Sc., F.G.S.
- On a curious occurrence of Scapolite from the Madras Presidency, by E. Vredenburg, B.A., B.L., A.R.C.S.
- Miscellaneous Notes on*—
 - Tin-ore and Gadolinite in Palanpur.
 - Tin-ore in Burma.

Elæolite and Sodalite-Syenites in Kishengarh.
 Gem-sands from Ceylon.
 Gem-sands from Burma.
 Prehnite in Las Bela.
 Cretaceous fossils from Persia.
 Ancient kitchen-midden in the Andamans.
 Selections from assays made in the Laboratory on ores of copper, lead, manganese, and on coal.
 Fossil bones in the Godavari alluvium.
 Fossils from the Yenangyaung oilfield, Burma.
 Assays of Raniganj coals.
 Titaniferous iron-ore smelted in native furnaces.
 Discovery of Thenardite at Didwana.
 Discovery of Cancrinite in Kishengarh.
 Pyrrhotite from the Kirána hills, Punjab.
 Vivianite in the alluvium of Bengal.
 Recent or sub-recent marine bed in Calcutta.
 Pleistocene fossils from the Ganges alluvium.
 A new form of blue Amphibole from Central India.
 An unusual occurrence of common salt.
 Assays of coal and coke from the Jherria and Raniganj fields.

15. As a bye-product obtained during the course of reorganizing the office records with regard to the progress of mineral developments in India, material was obtained for the preparation of a Review of Mineral Production, for which statistics have been prepared to cover the period since the last issue of a Review by the Reporter on Economic Products to the Government of India. The new Review, covering the six years 1898—1903, is ready for issue to-day as part 1 of Volume XXXII of the *Records*, and, in accordance with the orders of Government, such reviews will be issued in future for every five years.

16. Besides the papers issued with the *Records*, the following *Memoirs* have been published since April 1903 :—

- Report on the Jammu Coal-fields, by R. R. Simpson, B.Sc., *Memoirs*, vol. XXXII, part 4.
- Note on the Sandhills of Clifton near Karachi, by R. D. Oldham, F.G.S., *Memoirs*, vol. XXXIV, part 3.

The diurnal variation in frequency of the Aftershocks of the Great Earthquake of 12th June 1897, by R. D. Oldham, F.G.S., *Memoirs*, vol. XXXV, part 2.

The Seismic phenomena in British India and their connection with its Geology, by Count F. de Montessus de Ballore, *Memoirs*, vol. XXXV, part 3.

The Geology of Spiti, by H. H. Hayden, B.A., B.E., F.G.S., *Memoirs*, vol. XXXVI, part 1.

The Permian fossils of the Central Himalayas, by Professor C. Diener, *Palæontologia Indica*, series XV, vol. I, part 5.

The Jurassic fauna of the Central Himalayas, by Professor V. Uhlig, *Palæontologia Indica*, series XV, vol. IV, part 1.

The Trigonæ of Kach, by F. L. Kitchin, M.A., Ph.D., *Palæontologia Indica*, series IX, vol. III, part 2.

17. A considerable portion of the officers' time during the year has been taken up by the preparation of separate articles on the Geology of each of the Provinces, Agencies, States, and Districts of India for the new edition of the Imperial Gazetteer.

MUSEUM AND LABORATORY.

18. Mr. E. Vredenburg has been in charge of the Museum and Laboratory throughout the whole period under report, and, through his energy and extensive knowledge of the variety of subjects necessarily dealt with at headquarters, as well as through the untiring energy of Mr. T. R. Blyth, the Assistant Curator, we have been able to deal, with a fair measure of success, with the great increase which has occurred in the work. The number of specimens sent in for determination and report amounted to 917 during the period under report, but this does not include, of course, the collections made by officers of the Department, or the samples sent by them for determination, and, as an officer in the field sends in only specimens which offer special difficulties, this part of the Curator's work forms a serious fraction of his total duties. For the ten years previous to 1903, the specimens so received from extra-departmental sources averaged only 94 a year. As Curator for much of that period I can gauge the serious additional task which has thus recently been thrown on the Curator, whom we have all been compelled to assist, with, however, the knowledge that desirable lines of research have had to be neglected, and desirable improvements in the Museum

have had to be postponed in consequence of the pressure of urgent current duties.

19. To a certain degree the extra work done in the Laboratory has been accomplished by the introduction of carefully selected students who have shown an aptitude for chemical and petrological determinative work. One student holding a research scholarship from the Bengal Government has completed a course of training, combining the field and laboratory work, with very satisfactory results; one was deputed by the Gwalior Durbar, and another at his own expense came from Madras, both in special ways having shown the advantages of the training received, and both can be regarded as having returned by assistance the trouble taken in their training.

20. It is quite evident, however, in view of the lines of profitable investigation which we have had to avoid, and in view of the recently increased importance of the rarer elements in mineralogy, that the want of a special chemist, pure and simple, in charge of the Laboratory has now become a serious consideration, which, in the interests of practical efficiency, must soon be faced. A certain amount of work on material of a specially difficult kind is being undertaken by scientific friends abroad, such as that in connection with the peculiar rocks and minerals of the Vizagapatam hill-tracts, now being investigated by Professor T. L. Walker of Toronto University, formerly Assistant Superintendent in this Department. But most of the cases of interest, or, at any rate, cases which can be turned to full account only through chemical aid, require investigation before the officers leave the areas in which petrological and mineralogical puzzles are met, and special provision for such work at headquarters is urgently needed.

21. Several new meteorites, obtained by donation or exchange, have been added to the collection during the past year. Amongst the most important additions is a superb mounted specimen of the Cañon Diablo meteoric iron, presented by Professor H. A. Ward of Chicago. The most interesting amongst the new meteorites is that which was seen to fall as a bright meteor to the east-north-east of Calcutta on the 22nd of October 1903. In falling, the meteor broke into several pieces, of which fifteen aerolites have been obtained for the Geological Survey Museum. The largest of these pieces weighed 1,538 grammes, and, like the smaller fragments,

was completely invested with a crust, which showed that fusion of the surface occurred during flight after disruption of the meteor. Fragments were found as widely separated as $7\frac{1}{2}$ miles, aligned about east-north-east—west-south-west along a band crossing one of the branches of the Ganges near Kolapara ($23^{\circ} 28'$; $90^{\circ} 17'$) in the Dacca district.

22. Amongst the large number of donations made to the Museum during the period under report, the following specimens are of special value and interest:—

Donations.

Emeralds from Columbia and Norway, presented by Mr. Isaac Shrager; sodalite and garnet from Kishengarh, presented by Rao Syam Sunderlal Bahadur, C.I.E.; gadolinite and tin-stone from Palanpur, presented by Babu Baidyanath Saha, M.A.; samples of the new mineral thorianite and of thorite, presented by Mr. W. D. Holland, Ceylon; thenardite from the Didwana salt-lake, presented by the Commissioner of Northern India Salt Revenue; two aërolites which fell in the Dacca district on 22nd October 1903, presented by Raja Srinath Roy; and a large number of specimens of marbles from various States, including specimens from Baroda, Jodhpur, Kishengarh, Nimkhera, and Kharwa.

23. In addition to the fine collection of marbles which has now been made, representative specimens have been obtained of other varieties of stone used in the famous ancient buildings of India, and a summary of our knowledge concerning the distribution of the chief ornamental building stone, with which India is so conspicuously endowed, has been prepared by the Director, and published by the Trustees of the Victoria Memorial.

Ornamental Building Stone.

LIBRARY.

24. The additions to the Library during the period 1st April 1903 to 31st December 1904 amounted to 4,789 volumes, compared with 2,017 volumes in 1902-03. Of the books received this year, 2,988 were acquired as presentations from other institutions and authors, as against 1,184 volumes so obtained in 1902-03.

PALÆONTOLOGICAL WORK.

25. The list of publications given above (paragraph 16) indicates the palæontological work which has been done on behalf of the Department in Europe. Professors Diener and Uhlig of Vienna have continued to

Descriptive Work in Europe.

give their valuable help, and, besides the work done by Mr. A. C. Seward, F.R.S., and Dr. A. Smith Woodward, F.R.S., referred to below (paragraph 80), the description of fossils recently collected in Upper Burma has been undertaken by Miss Healey of Oxford and Mr. F. R. Cowper Reed of Cambridge, the last-named authority having just completed an exhaustive memoir on the Lower Palæozoic fossils of the Northern Shan States.

26. Considerable progress has been made by Messrs. Pilgrim and Tipper in the registration and sorting of the

Head-quarters' Work.

large collections of fossils accumulated at head-quarters, and Mr. Pilgrim has made a number of determinations of fossils obtained during the year from localities of special interest. These include Cretaceous fossils collected by Mr. G. B. Reynolds in Persia (*Rec. Geol. Surv. Ind.*, XXXI, 45), Tertiary fossils obtained by Mr. L. G. Boyde in the Yenangyoung oilfield of Burma (*Rec. Geol. Surv. Ind.*, XXXI, 103), and a number of Permo-Carboniferous fossils obtained in Kashgar by Herr H. Keidel, the descriptions of which have been withheld out of deference to a specialist in Europe, who, it was found afterwards, had undertaken to describe Herr Keidel's main collections. Two other instances deserve more complete notice, both being interesting additions to the older pleistocene alluvium of the Indo-Gangetic plain and the Peninsula, including species of several extinct mammals, as well as remains of *Hippopotamus* now no longer living in India.

27. Our attention was directed to the first of these two finds

Pleistocene Fossil-bones in the Godavari alluvium.

by Mr. H. F. G. Beale of the Public Works Department, and Mr. Pilgrim was deputed at once to excavate the fossil bones, which were exposed in the Godavari river-bed near Nandur Madmeshwar, Nasik district.

Mr. Pilgrim succeeded in excavating the cranium of a remarkably large specimen of *Elephas namadicus*, together with portions of a femur and the pelvic bones. In the gravels near the same spot he found a single tooth of *Equus namadicus*, some crocodile teeth, several species of recent molluscs, and the lower jaw of *Hippopotamus palæindicus*, which was afterwards stolen. In a special paper, to be published in the *Records*, Mr. Pilgrim has given a full description of the bones found, has discussed the evidences on which these beds are grouped with the pleistocene deposits in the Narbada valley, and has pointed out the wide distribution of *Elephas antiquus*, of which

E. namadicus is a variety, indicating the eastward migration of the forms from an European centre of distribution.

28. The second instance of this kind was discovered by Mr. R. R. Gales of the Public Works Department, whilst sinking wells for the foundations of the new railway bridge across the Ganges at Allahabad. **Pleistocene Fossils in the Gangetic alluvium.** The fossils were found embedded in a calcareous conglomerate 80 to 100 feet below low-water mark, and 120 feet below the surface of the banks in the river. On examination by Mr. Pilgrim they were found to include remains of *Bos namadicus*, associated with remains of *Hippopotamus*, *Elephas*, *Cervus* and *Bubalus*, thus adding another instance to the occurrences of pleistocene deposits below the recent alluvium of the Indo-Gangetic plain. From the advanced type of structure shown by the specimens of *Bos namadicus*, which was the only form that could be identified specifically, it is concluded that these deposits below the present Ganges, like those described by Dr. Falconer in 1830 below the Jumna, are slightly younger than the pleistocene deposits of the Narbada valley (*Rec. Geol. Surv. Ind.*, XXXI, 176).

29. The discovery in July last of an old oyster-bed in Calcutta at a level well above present high-tide mark shows that, besides the general depression which has occurred to permit of the accumulation of alluvial deposits in the Gangetic delta, there have been oscillations also of the relative level of sea and land during recent geological times (*Rec. Geol. Surv. Ind.*, XXXI, 174).

SEISMOLOGY.

30. Two papers dealing with earthquake phenomena have been issued since the last report, forming parts 2 and 3 of volume XXXV of the *Memoirs*. The first of these two, by Mr. R. D. Oldham, dealing with the "diurnal variation in frequency of the aftershocks of the great earthquake of 12th June 1897," gives a detailed discussion of the questions raised by the same author in a paper read before the Asiatic Society of Bengal.¹ It had previously been pointed out by Mr. Oldham, that any effect which the attraction of the sun and moon may have in determining the occurrence of a shock will be found most probably at or about the times when the tidal stresses reach their

¹ On tidal periodicity in the earthquakes of Assam. *Journ. As. Soc. Ben.*, LXXI, 1902, 139—153.

maximum; as these times vary with the latitude of the place of observation and the declination of the attracting body, the effect will be obscured if earthquakes are grouped merely by their time of occurrence, irrespective of the variation in the time when the tidal stresses reach their maximum. Treated on these lines, the discussion of the record of aftershocks shows that there seems to be a distinct tendency to an increase in frequency about the time when the horizontal tidal stress is varying most rapidly in amount and direction, and a decrease in frequency at the times when it is changing most slowly. The vertical stresses appear to be practically without influence.

31. The Count de Montessus de Ballore, who has made a special study of seismology, courteously offered the results, published in the second memoir,¹ of his enumeration of earthquake occurrences in India, showing the greater frequency of shocks in the areas most recently subjected to geotectonic movements.

ECONOMIC ENQUIRIES.

Coal.

32. Mr. R. R. Simpson has made a detailed examination of the Tertiary coal-seams in the Jammu State, forming the fields known as Ladda, Sangarmarg, Mehowgala, Siro valley, Kalakot, and Lodhra, the results of his investigations being published as a special memoir (*Memoirs*, vol. XXXII, part 4, 1904). The work was commenced in March 1903 with a conference on the ground between Messrs. R. D. Oldham, R. R. Simpson, and E. L. Hope of the Dandot Colliery, the investigation being afterwards carried on by Mr. Simpson alone.

The value of the coal in this area has recently been forced into prominence by a revival of the old project for building a railway to connect the city of Jammu with Srinagar, one intention being to arrange the alignment so as to tap the coal-bearing area in the Jammu hills.

The coal in all cases is extremely friable, due to crushing by earth-movements, and generally has a high percentage of ash; it sometimes exhibits coking qualities, and, on account of the pyrites it contains, is

¹ The Seismic Phenomena in British India, and their connection with its Geology. *Mem. Geol. Surv. Ind.*, XXXV, part 3, 1904.

in some places liable to spontaneous combustion. The quality of the material is subject to great variation in different fields, that from the Anji valley, Sangarmarg and Lodhra being little better than carbonaceous shale. Locomotive trials made on briquettes of Ladda coal gave satisfactory calorific results, but difficulties were experienced on account of the insufficient strength of the briquettes—difficulties which might possibly be avoided by improvements in the system of their manufacture.

The following estimates of the workable coal in the Ladda field were made as the result of extensive prospecting operations:—In the areas from which coal might be brought to a railway with a terminus at the foot of the Ladda slope, the yield would be 795,029 tons for the Ladda slope itself, and for the Sukhal gully a *probable* addition of 696,383 tons, with a *possible* further amount of 613,730 tons. The area from which coal might be brought to a railway aligned along the Anji valley, was estimated to yield 1,657,117 tons. In this field, therefore, the total yield of coal might amount to just 3½ million tons. For the other fields the results were so unsatisfactory that the working of the coal on a large scale was considered to be out of the question.

The washed and briquetted Ladda coal was considered, as the result of several analyses and trials, to be probably as valuable as average Bengal coal, but the cost of mining would be so heavy, when taking into account also the loss of coal through washing and the additional unusual charges due to briquetting and transport to Tawi station, that it could not compete with coal brought from Bengal, and the proposal to undertake the exploitation of these coal-fields is thus regarded, at present rates, to be distinctly unpromising.

33. Mr. R. R. Simpson was deputed, during March 1904, to inspect the Mohpani colliery, in order to advise the Government with reference to the proposed transfer of the property from the Nerbudda Coal and Iron Company to the Great Indian Peninsula Railway Company. A detailed report of the investigation was forwarded to Government.

34. Mr. Datta surveyed the boundaries of the Lashio coalfield during the course of his mapping in the Northern Shan States, and, at the end of the season 1903-04, paid a short visit to the Namma coal-field, where he discovered some new seams of coal, of which one seam

was some 10—12 feet thick, with, however, a coal containing an undesirably high percentage of moisture. Mr. Simpson, who is now making a detailed examination of these fields, has partly exposed the thick seam found by Mr. Datta, and so far has found it to be quite 14 feet thick. The work, commenced with the current field season, has not yet progressed sufficiently to permit of drawing any definite conclusions with regard to the value of these coal deposits.

35. The publication of Mr. T. H. Ward's paper on the feasibility of introducing recovery ovens for the manufacture of coke (*Rec. Geol. Surv. Ind.*, XXXI, 92) has led to further tests of Bengal coal and distinctly favourable estimates as to their suitability for the recovery of bye-products, for which arrangements are now well developed.

Engineering Questions.

36. During the period under report the advice of the Department Ceylon mountain rail- has been requested on several occasions in way: connection with engineering problems directly Mr. C. S. Middlemiss. depending on the nature of local geological formations. Towards the end of April 1903 the services Mr. C. S. Middlemiss were lent to the Ceylon Government to join a committee appointed to deal with the questions of tunnelling and landslips on the hill railway.

37. At the end of the last field season Mr. Middlemiss was deputed Tungabhadra, Penner, to report on the site selected for a proposed dam across the Tungabhadra river near Hospet. Mr. Karmnassa, and Ramtek irrigation projects. Simpson was similarly deputed to examine the proposed site for a large dam across the Penner river in the Nellore district. In January 1904 the Director made a report for the Bengal Government on the site suggested for the formation of a large irrigation reservoir in the Karmnassa valley on the Kaimur range; and in November a similar investigation was carried out on behalf of the Central Provinces Administration in connection with the proposed dam across the Sur river, near Ramtek, Nagpur district.

38. In connection with the Himalayan stations special inspections and reports were made by the Director—(1) Himalayan Stations. with regard to the effect of the railway cuttings on the hill-slopes below the new Civil Secretariat buildings in Simla, (2) on the site of the jail and some of the higher slopes in Dharmasala,

and (3) on two occasions in Darjeeling, first in connection with the training works in the cutcherry jhora and on the Rungaroon road, and second, to give an opinion on a claim for damages alleged to have been accelerated in the lower part of the station in consequence of drainage changes introduced on the recommendation of the Landslips Committee of 1899.

Gold.

39. During the last field season Mr. J. M. Maclaren made a survey of the auriferous gravels in Upper Assam, and, in spite of the natural difficulties of the country, managed to make a very thorough exploration of the area. The results of Mr. Maclaren's examination of the river gravels have been published in a special paper,¹ in which he has summarized the history of previous investigations in this area.

40. The most striking result in connection with the work is, perhaps, the universal distribution of the gold in extremely small percentages throughout the river gravels. This wide distribution is considered to be due chiefly to the wandering of the Brahmaputra river over the plain, and to the extensive development of the Tipam sandstones, which are auriferous in places, and are now undergoing erosion.

41. The gold of the recent gravels and of the older Tipam sandstones is probably obtained originally from the quartz veins of the crystalline schists in the Miju ranges beyond the Brahmakhund. From the presence of gold in the Assam valley above the mouth of the Dihong, and from the negative evidence as to the occurrence of gold in the Tibetan Tsangpo, it is regarded as extremely improbable that the Tibetan plateau furnished any of the gold now found in Assam.

42. The gold is generally most abundant in the beaches at the ends of long pools in the rivers, especially when high banks are being eroded, and in the longitudinal boulder beaches to which the gold is carried by the back eddies, whilst the fine-grained, homogeneous masses of sand are quite barren.

43. The most prominent spots noticed were, (1) the Guri Mara, above Sadiya and opposite the Chunpara stockade, (2) the Sibia Mukh on the Dihong river, and (3) the Derpai pool of the Subansiri river. Of these the deposit in the Subansiri river was considered to be the one

¹ The Auriferous Occurrences of Assam. *Rec. Geol. Surv. Ind.*, XXXI, 205-232 (1904).

most worth prospecting, with a view to exploitation by dredging operations, for which Mr. Maclaren has outlined the chief difficulties likely to be met, and the line of operations offering the fewest chances of failure.

44. The Assam river gravels, like those known to be auriferous in Peninsular India, have the serious drawback of being completely disturbed every year by the floods of the monsoon. For the concentration of gold a comparatively equable current is essential—a condition rarely obtainable in the rivers of India, for these are almost dry in the cold weather and roaring torrents in the rains.

45. It is to be regretted that the race of Sonwals, who formerly flourished by washing for gold in Upper Assam, have almost completely disappeared, being tempted, under recent changes in the system of administration and other industrial developments in the province, to forsake their ancestral calling. In the interests of those who may be found later to undertake the work of gold recovery on a large scale, it is desirable that the native worker should be encouraged: the amount of gold he recovers from the gravel is insignificant compared to the value of his information to the prospector and investor.

Laterite.

46. The stages by which we have arrived at the conclusion, that the peculiar weather-product known as laterite, so commonly found in moist, tropical countries, often shows the essential constitutional characters of bauxite, were summarised in a special paper published in the *Geological Magazine* in February 1903.¹ Since that paper was published, Dr. H. Warth, late Deputy Superintendent of the Geological Survey, has continued the interesting line of research which he pioneered, by recently showing that the weather products of a basaltic rock exposed to the temperate climate of England differ essentially from those of the similar Deccan trap in the Bombay Presidency.²

47. The questions raised by the results of these researches have a two-fold interest to the owners of lands in the humid parts of the tropics: (1) the origin of laterite explains some or all of the occurrences

¹ Holland. On the constitution, origin, and dehydration of Laterite. *Geol. Mag.*, decade IV, vol. X, p. 59.

² H. Warth. Weathered Dolerite of Rowly Regis compared with the Laterite of the Western Ghâts near Bombay. *Geol. Mag.*, decade V, vol. II, 21st January 1905.

of bauxite, and raises the interesting questions naturally suggested by the remarkable differences between the chemical products of weathering in temperate and tropical climates; (2) the fact that bauxite must always be the main, and up to the present practically the only, source of the metal aluminium, indicates a possible value for laterite not hitherto suspected. It is not without interest in this connection to observe that the original bauxite of Les Baux in the south of France was first worked without success as a source of iron, just as many laterites in India have been employed by the native iron-smelters, and, on account of their commonly rusty colour, have been regarded as essentially ferruginous products, without raising the suspicion that many contain large proportions of alumina in the form of free hydrates, available for separation as soluble alkaline aluminates.

48. The high percentage of alumina in an Indian laterite was first remarked by Mr. F. R. Mallet, late Superintendent of the Geological Survey, in a paper on the iron-ores and subsidiary materials for the manufacture of iron in the Jabalpur district,¹ whilst in 1903 Dr. H. Warth published the results of a number of analyses of Indian laterites showing a variation in alumina percentage up to 67·88 per cent.²

49. In April 1903, Mr. H. H. Hayden was deputed to South India to examine some of the promising occurrences of laterite in the Madras Presidency; and it was intended to extend this work to other parts of the Peninsula where aluminous laterites were known or suspected to occur, but the investigation was interrupted by Mr. Hayden's deputation with the Tibetan expedition in the following September (paragraph 85). Other officers, however, whose survey work necessarily took them across lateritic areas, were instructed to pay special attention to any considerable deposits showing the characters generally displayed by the aluminous varieties of laterite. Mr. Middlemiss made a special study of the occurrences in the Vizagapatam hill-tracts; Mr. Fermor collected specimens from the highly aluminous deposits in the Central Provinces, some of which were examined also by myself, whilst Mr. La Touche took advantage of an opportunity during the last Puja holidays to sample the laterites of Nalhati in Bengal. The result has been the definite determination of a number of instances in which the

percentage of alumina is as high as in the high-grade bauxites mined as sources of alumina in Europe and America, and the material appears to exist in quantities altogether out of proportion to the present consumption of the mineral.

50. In the Vizagapatam hill-tracts Mr. Middlemiss paid especial attention to the high-level laterites of the Kalahandi State, and his observations tended to confirm, in his opinion, the conclusions drawn from an examination last year of the adjoining estate of Jeypore.¹ Mr. Middlemiss found in both areas that the higher hills rising above 4,000 feet are never capped by laterite, and that the latter occurs as deposits, in places 80 to 100 feet thick, limited to a very well marked plane surface, 3,500 to 4,000 feet above sea-level. This surface, he considers, on account of its uniformity and extent, to have originated as a plain of marine denudation, on which the laterite was subsequently formed, and which was afterwards modified by the ordinary erosive action of subaerial agencies of denudation.

51. The upper layers of these high level laterites show the usually hardened, variegated, vesicular, and tubular characters, whilst the lower layers are of the more homogeneous and uniformly coloured, light-red, soft and earthy material. Although these high-level deposits may be found as far south as Yendriki hill ($18^{\circ}12'$; $82^{\circ}38'$) and Ontali hill ($18^{\circ}1'$; $82^{\circ}40'$), or even further south on a few high ridges, the area over which they are mainly developed stretches from the neighbourhood of Korlapat ($19^{\circ}41'$; $83^{\circ}12'$) in Kalahandi to the hills north of Doliamb ($18^{\circ}39'$; $82^{\circ}56'$) on the Jeypore-Vizianagram road. Viewed from some prominent hill to the east of the main watershed, for example, Niamgiri, 4,973 feet ($19^{\circ}34'$; $83^{\circ}29'$), or from the plateau south-west of Giriliguma ($19^{\circ}7'$; $82^{\circ}55'$), this assemblage of closely approximating laterite-caps gives the impression of a vast and almost continuous plain existing at the present day; but this impression is nevertheless deceptive, for in those parts where the laterite is most widely spread its area is small compared to that of the uncovered rock. That these disconnected outliers of laterite were, however, once parts of a continuous bed, which has, with the crystalline rock below, been since deeply eroded, is considered by Mr. Middlemiss to be a justifiable conclusion.

¹ F. R. Mallet. *Rec. Geol. Surv. Ind.*, vol. XVI, 1883, 113.

² H. and F. J. Warth. The composition of Indian Laterite. *Geol. Mag.*, decade IV, vol. X, 154, April 1903.

¹ General Report for 1902-03, p. 25, para. 63.

52. The deposits hitherto referred to as laterite in the Balaghat and Jubbulpore districts cannot be regarded as normal, recent weather-products; they agree much more perfectly with the ordinary bauxites of Europe in petrological characters; they often show well-defined bedding, and are disturbed in a way which, in Peninsular India, we have learned to regard as evidence of considerable geological age. They certainly are not products of any superficial process now in operation in that region, and we look forward to their economic development as an opportunity of displaying evidence which will add materially to our knowledge of the past physical history of this area.

53. With the establishment of the fact that high-grade aluminous laterites, or bauxites, do exist in India, the work of prospecting and exploitation of the most promising areas may be left appropriately to private enterprise. But there are certain aspects of the problem, which, in view of the haste being shown in securing concessions, it appears desirable to point out for the assistance of prospectors. The low average values of bauxites at European and American ports makes it unlikely that simple export of the raw material will be remunerative, except possibly in the case of some remarkably rich forms which have been found; and to extract the alumina, either for export as such, or for use locally in the manufacture of the metal, will require a supply of alkali, which, however, can be partially recovered after the separation of alumina from the alkaline aluminate, and its cost, consequently, should not be any serious handicap to the suggested industry. The whole problem is, however, now open to private enterprise, and so far as we can judge, after the preliminary investigations which have been carried out, the economic prospects are no less promising than the theoretical questions awaiting solution.

Manganese.

54. In consequence of the rapid expansion of manganese-ore mining, and the growing importance of the industry, an officer of the Department was reserved last year for an examination of the manganese-ore deposits, with a view to the preparation of a special memoir along the lines adopted two years ago in the case of mica. Mr. L. L. Fermor was selected for this work, and during the field season 1903-04

completed the first section of his task by a study of the occurrences in the Central Provinces, his survey covering the districts of Nagpur, Chhindwara, Bhandara, Balaghat, Mandla, Seoni, and Jubbulpore.

55. Mr. Fermor's progress report for the season gives an elaborate account of the manganese-ores and of the crystalline rocks with which they occur, and although the relationships of the ore-bodies to the "country rock" are indicated, the theory of their ultimate origin is very properly withheld until the similar ores in other areas, being examined during the current field season, have been thoroughly studied.

56. Braunite is the predominating oxide of manganese in the ore-bodies which are being worked. The ore-bodies occur as lenticular masses lying in the ordinary gneisses, schists, and quartzites of presumably Archæan age, and as regards immediate origin appear to have been formed, at least partly, by the alteration of manganese silicates, amongst which spessartite, rhodonite, and manganese-pyroxenes are prominent species. Manganiferous silicates—piedmontite, spessartite, and mangan-hedenbergite—are found also in the crystalline limestones of the Nagpur and Chhindwara districts, and have been changed in some instances into oxides, which would be considered worth working but for the unlimited quantities of richer ore exposed in the same area.

57. Some of the manganese minerals found during the course of this survey, such as dialogite, spessartite, mangan-hedenbergite, and piedmontite, have not been recorded hitherto in India, whilst others are apparently species new to science. One of these new forms from the Nagpur district displays the essential family characters of the pyroxenes, but has a remarkable pleochroism of red, blue and lilac, whilst another pyroxenic form, found in the Chhindwara district, changes from a pink to a greenish-brown colour. In association with the deposits of Bhandara district, a crimson manganiferous mica was found with characters apparently novel amongst the mica family, whilst specimens of a blue amphibole, obtained from the deposits in the Jhabua State, Central India, have been described by Mr. Fermor as a new variety of the amphibole family (*Rec. Geol. Surv. Ind.*, XXXI, 235).

58. In the four districts grouped together near the eastern edge of the Deccan Trap—Nagpur, Chhindwara, Bhandara, and Balaghat—Mr. Fermor obtained detailed descriptions of over 60 deposits of manganese ore, most of which contain valuable material, rich enough and pure enough to command a price sufficient to cover the cost of mining and of transport to the European and American markets. Although

the higher grades only are being exported, the large amounts which have been quarried have made no serious impression on the total stocks in sight, and for the time being the removal of the valuable mineral from the country, at rates which return less than half its market value, may be regarded with a complacency which will be less tolerable when steel manufacture in India reaches a stage comparable to the growing requirements of the country. The statistics with regard to the trade in manganese-ores have been reviewed in a special paper published to-day.¹

59. An interesting feature in connection with the area in which the manganese ore-bodies lie is the extensive silicification which has occurred amongst many of the Archæan crystalline rocks, as well as in the infra-trappean Lameta beds. This effect is probably directly connected with the action of the great Deccan trap-flows, which have but recently been removed by erosion and cut back to their present position near Nagpur. We are not at present prepared to connect these phenomena with the removal of silica from the manganese silicates from which the oxide ores have apparently been formed, but it is at least significant that our most valuable ore-bodies—in the Central Provinces, in Jhabua, and the recently discovered deposits in Belgaum—are all near the edge of the trap formation. We have, however, no present evidence to show the former extension of the trap as far east as the Vizianagram area, where manganese ores occur under conditions apparently similar to those of the Central Provinces.

Salt.

60. The first stage has been completed of a special enquiry into the condition of the large salt lake at Sambhar in Rajputana. The questions of the origin of the salt and of the prospective resources of the Lake were raised by Mr. R. M. Dane, C.I.E., Commissioner of Northern India Salt Revenue, in 1901, in consequence of the general impression then developing as to the depreciation in quality of, and the increased difficulty of obtaining, salt at Sambhar. A very accurate map of the lake was made by the Survey Department, and a report was submitted in 1902 by Dr. F. Noetling of the Geological Survey, who suggested a

¹ T. H. Holland: Review of the Mineral Production of India. *Rec. Geol. Surv. Ind.*, XXXII, p. 55.

theory for the origin of the salt, and pointed out the necessity of exploring the lake-bed by borings in order to finally settle this question.

Arrangements were made in 1903 for the boring operations, the sites being determined by the Director, in consultation with the Commissioner of Salt, in December 1903, and the work was commenced in March 1904. Three borings—one near Sambhar at the eastern end of the Lake, one at the so-called *khasana* near the centre, and one off Nawa in the west—passed through the silt, and touched the underlying Aravalli schists at depths of 61, 70, and 76 feet, respectively. At the same time, samples of the silt were obtained at various points at depths of 4, 8, and 12 feet, in order to determine by analysis the amount of salt stored in the upper layers.

61. A report, now in course of preparation, gives the full details of evidence from which it is concluded that the salt resources of Sambhar are limited to the body of silt filling-in the depression in the Aravalli schists, where the sodium chloride, along with large quantities of sodium sulphate and sodium carbonate, has accumulated in a way common to arid regions of internal drainage.

62. In the lake-brine formed by the absorption of the salts from the silt, the ratio of chloride to other soda salts is now about 86 : 14, and, judging by the few analyses recorded, this represents a distinct depreciation in the quality of the lake-brine, in which the ratio of chloride to other soda salts in 1869 was 90·9 : 9·1. As a similar result is shown by analyses of the subterranean brines and of the lake-mud, it appears to be certain that the artificial removal of a little over 4 million tons of salt during the past 34 years has appreciably diminished the richness of the lake in chloride, although there has been but a microscopic inroad made into the enormous stores of salt lying in the silt. A preliminary estimate gives the present amount of salt in the upper 12 feet of the silt as just a million tons per square mile.

63. The present system of manufacture consists of the simple solar evaporation of the compound brine until, by separation of the excess of chloride, a point is reached at which the solution is nearly saturated by the sulphate, which is the next most abundant salt. The manufacture is then stopped, the salt being removed for sale and the bitterns being returned to the lake. On account of the rapid increase in the solubility of the sulphate between 0° C. (32° F.) and 33° C. (91° F.) with, at the same time, a small and, for practical purposes, unimportant, variation in

the solubility of the chloride, the saturation point for the sulphate is reached much sooner when the brine is cold than when it is warm. On this account it is possible to extract a larger proportion of the chloride in the hot weather than in the cold season, whilst, on account of the diurnal variation in temperature, a brine will precipitate sulphate in the night and redissolve the whole or part of it in the heat of the day. These facts have been observed in a general way by the experienced manufacture officers, but there is room for the introduction of greater precision in the present system of removing the simple chloride, and it is to be hoped that a still more important step will be taken by making a practical test of a scheme which I have suggested for the circulation of the brines and bitterns amongst the kyars, for the purpose of first removing the excess of chloride, and then, by treatment of the bitterns in the cold season, of removing the sulphate. As the sulphate is much less soluble than the chloride at low temperatures and much more soluble than the chloride in the hot weather, a judicious system of alternation of crops, such as should be possible under the natural great ranges of temperature at Sambhar, will permit of the removal of both instead of only a small fraction of one of the sodium salts. At present there appears to be a prospect, in the opinion of the salt officers, of such a system being practicable, and if it prove to be possible under the natural conditions at Sambhar, as it certainly is when the temperature can be controlled artificially, the result will be the indefinite extension of manufacturing operations for the more important chloride, as the bitterns will thus be prevented from returning to the Lake, and so fouling the reserves of brine.

64. By the present system of manufacture the separation of the clean chloride stops at a point when, according to the temperature, from 10 to 40 per cent. only of the salt has been extracted, and as the only available supplies are probably those in the uppermost layers of the silt, of which only the sandy portions readily yield their salts to the inflowing fresh water, the economic life of Sambhar would, under existing conditions of manufacture, come to an end long before an appreciable inroad had been made into the total reserves in the lake mud.

65. For the continued success of the system of manufacture, either that now observed, which results in yearly depreciation of the lake-brine, or the proposed modification, which, if practicable, will indefinitely lengthen the term of operations, a full supply of water is essential, and only a distinctly more important interest should be allowed to curtail the limited supplies now being obtained from the inflowing rivers.

Water.

66. As the outcome of orders issued by Government in consequence of the recommendation of the Irrigation Commission, numerous enquiries have been made for advice concerning the prospects of obtaining artesian water: these include enquiries by the Bombay Government with regard to Gujarat; by the Madras Government with regard to Chingleput; by the Bengal Government with regard to Muzaffarpur; by the Burma Government with regard to the districts of Myingyan, Yamethin, and Meiktila; by the Punjab Government with regard to the Mianwali district and the neighbourhood of Dera Ghazi Khan; by the Assam Administration with regard to the Silchar area; by the Central Provinces Administration with regard to the Damoh district; and by the Agents to the Governor General in Baluchistan, Rajputana, and the North-West Frontier Province.

GEOLOGICAL SURVEYS.

Assam.

67. During the course of his survey of the river-gravels in Upper Assam, with special regard to their auriferous characters, Mr. Maclaren found opportunities for studying some of the geological features of the country, of which our information hitherto had been but fragmentary. Observations were made on most of the formations, representing a material advance on our previous knowledge, the whole subject being summarized in a special paper published in the *Records*, illustrated by a geological map.¹

68. The interesting discovery of Fermo-Carboniferous marine fossils in the Subansiri river is referred to in another paragraph (83). These fossils are at present being described by Professor Diener, of the Vienna University, whose preliminary examination of them has confirmed Mr. Maclaren's field determination of their general affinities.

69. Examination of the unfossiliferous shales and sandstones previously distinguished as the Disang series appears to indicate, though much of the evidence is of a negative character, that they are of older Tertiary age, but, from their

¹ Vol. XXXI, pp. 179—204.

general resemblance to certain rocks in the Mikir hills, they are considered to be post-Nummulitic.

70. An addition has been made to the previously known development of the valuable Tertiary coal-bearing series by their discovery in the Manbhum range, a long spur parallel to the Noa Dihing, and running out from the Miju Mishmi country into the plains as far as the Tengapani.

71. The question of the age of the Tipam sandstones has been advanced by the extension of a practically unbroken series of observations from the area in which they are typically developed, round the head of the Assam valley, to the Sub-Himalayan sandstones of the normal Siwalik type of Upper Tertiary age.

72. The fascinating problems in geotectonic geology presented by the Upper Assam valley (where two opposed systems of folds—the Himalayan arc on one side and the Malayan arc on the other—are separated by a wedge of crystalline rocks, forming what Mr. Maclaren conveniently terms the Miju ranges) have been summarized with characteristic charm in Professor Suess' chapter on the "Syntaxis of the mountains of India."¹ But Mr. Maclaren's observations, exceeding in precision those made by workers who have hitherto been able to make only isolated observations in limited parts of this area, have shown that the reversed dips in the two opposed systems of folds do not truly justify the conclusion that the valley between is cut out along a simple anticlinal axis: the dips are the results of the overfolds produced by tangential pressure from opposite directions acting on separate systems of rocks, which are kept apart further east by the immovable mass forming the Miju ranges. The Patkails form the northern termination of the Malayan arc, and they, as well as the Himalayas, which end also with the head of the Assam valley, are distinct, orographically and geologically, from the great meridional mountain system of Upper Burma, Tibet, and Western China.

Bombay.

73. Whilst in the Nasik district in connection with the excavation of fossil bones in the Upper Godavari, Mr. Pilgrim took the opportunity of examining the Deccan Traps, with the object in view of descri-

Nasik district:
Mr. G. E. Pilgrim.

¹ Das Antlitz der Erde, 1892, Chapter VII.

minating between the different lava-flows, in a selected section over 900 feet thick, displayed on the hill face to the north-east of the reservoir at Igatpuri. The specimens collected have been registered and stored in the Museum in view of further work in adjoining areas at a future date.

Burma.

74. Mr. P. N. Datta continued the mapping of unsurveyed ground in the Northern Shan States, and covered the area represented by standard sheets Nos. 377 and 378, together with the eastern portion of sheet 331, the south-west corner of sheet 432, and north-west part of 433. Much of this area was occupied by the groups of rocks previously reported, the old classification being followed pending the revision now under consideration and awaiting the results of palæontological work being done in England. Collections of fossils and rock-specimens were made, and notes were recorded of the few minerals exposed of possible economic value. The only mineral of special importance is the coal occurring in the Lashio and Namma basins, referred to in another paragraph (paragraph 34).

Northern Shan States:
Mr. P. N. Datta.

Kashmir and Tibet.

75. During the summer of 1903 Mr. Oldham was engaged on a survey of parts of south-east Kashmir. The principal results of interest obtained have been published in two separate papers in the *Records*, one dealing with a number of outcrops of the Permo-Carboniferous Zewan beds in the Vihi district, and the other containing an account of the glaciation and physical history of the Sind valley.

76. In connection with the Zewan beds Mr. Oldham has pointed out that their apparent conformable superposition on the volcanic series, hitherto regarded as real, is probably deceptive, and as evidence of unconformity he calls attention to the great variation in development of the shaly bottom beds of the Zewan stage, and the abrupt cessation of the volcanic rocks on every section.

The Zewan beds.

77. Near Sonamarg Mr. Oldham found a fine series of lateral and terminal moraines pointing up the valley of the Sind, and, after further exploration of the

Sind valley.

valley, he found the peculiar position of these to be due to a great reversal of drainage. At the time of the formation of these moraines the waters from the hills round Sonamarg must have escaped northwards through the valley now forming the Zoji-la. As the date of the formation of the Sonamarg moraines seems to coincide with the latest and least extension of the glaciers, the Sind valley must have captured the head-waters of the adjoining Gumber, and so extended its course by about 20 miles. This also involves an elevation, within quite recent times, of the range through which the Zoji-la runs by at east 2,500 feet relatively to the next range to the south of Sonamarg.

78. Mr. Oldham found several opportunities for examining the *karewa* deposits in the Kashmir valley, and came to the conclusion that the old idea of their lacustrine origin needs revision.¹ The complete absence of laminated shales, the limited extent of bedding when sufficiently distinct to be recognizable as such, the common occurrence of coarse sands, and fragmentary state of the fossil shells, indicate that lacustrine conditions could not have been any more thoroughly developed when these deposits were formed than at the present time.

79. In the General Report for 1902-03 (page 22) I referred to the discovery by Dr. F. Noetling of plant and vertebrate remains in beds reported to occur below *Productus* limestones in a conformable series of strata near Khunmu, south-east of Srinagar. These fossils have now been critically examined by Mr. A. C. Seward, F.R.S., and Dr. A. Smith Woodward, F.R.S., through whose courtesy we are able to publish full descriptions in a forthcoming part of the *Palæontologia Indica*.

80. The plant remains prove to be several more or less imperfect fronds of a new species of *Gangamopteris*, for which Mr. Seward proposes the name *G. kashmirensis*, together with a single fragment of a leaf doubtfully referred to Schimper's genus *Psymophyllum*. The evidence, so far as it goes, is in favour of assigning the Khunmu beds in Kashmir to a position at least as low as the Talchirs. The vertebrates, described by Dr. Smith Woodward, include remains of fishes and of a labyrinthodont, the former being referable to two new species of *Amblypterus*, whilst the latter is a new species of *Archegosaurus*, all having near relatives amongst the Lower Permian or the Carboniferous rocks of Europe.

¹ Manual of the Geology of India, 2nd Ed., 1893, 420.

81. The plant and vertebrate bearing beds of Khunmu were first reported by Dr. Noetling to be seen lying below the *Productus* limestone in a conformable series of strata, but subsequent examination of the ground by Mr. R. D. Oldham (whose observations have since been confirmed by Mr. J. A. Cunningham) showed that no beds of any sort actually rest on the plant-bearing series, that the *Productus* limestones are half a mile off, and that the area is too highly disturbed to accept the approximate parallelism of the two series alone as evidence of any order of stratigraphical superposition. We must, therefore, regretfully fall back on the few fossils which have been found as our only grounds for assuming the Palæozoic age of the beds. The testimony of the plants does not, naturally, alter the state of the Gondwana problem, for *Gangamopteris* in Kashmir has the same significance as *Gangamopteris* in Hindustan. The fish remains, however, afford independent confirmation of the Palæozoic age of the beds, and give us our first direct support for the accepted age of the Lower Gondwana system. It is possible, and, judging by the fossils, even probable that the plant-bearing beds are stratigraphically below the *Productus* limestone; it is to be hoped that further field work will show the stratigraphical relationship of the two; but, meanwhile, we have to be content with the unsupported testimony of the fossils, the probable stratigraphical order having been prematurely reported as an observed fact.

82. The geography of the old Gondwana continent, on which the great fluviatile formations were laid down, is a subject no less interesting than the question of geological age of the older strata, and during the past year observations have been made which have added materially to the precision of the ideas so ably summarised in Professor Suess' great work *Das Antlitz der Erde*.

83. In north-east Assam Mr. J. M. Maclaren has made an important discovery of Permo-Carboniferous marine fossils at a point not far from the previously known Lower Gondwana strata of the Dikrang valley, and although the specimens were not obtained from beds *in situ*, there is no doubt, from the lithological characters of the boulders, that they could not have travelled for any great distances.¹

84. We may assume, therefore, that the beds in Kashmir at one

¹ J. M. Maclaren. The Geology of Upper Assam. *Rec. Geol. Sur. Ind.*, XXXI, 1904, 186, 187.

end of the Himalayan range, and those in Assam at the other end, indicate roughly two points on the northern coast-line of Gondwana land. The observations made by Mr. H. H. Hayden during the past year have contributed still further towards the solution of this problem, for he has found that, immediately to the north of the crystalline masses of Sikkim, there is a great basin of fossiliferous strata, with a general east-west strike, forming without doubt the south-eastward extension of the well-known fossiliferous zone of Garhwal and Spiti far away to the north-west, where the fossiliferous beds lie also on the northern flanks of the great central crystalline zone of the Himalayan range. There is thus little doubt that the crystalline axis of the Himalayas has been a long persistent landmark in the physical history of Central Asia, marking approximately the northern boundary line of the great Gondwana continent, and forming the southern shore of the old Eurasian ocean to which Professor Suess has given the name *Tethys*.

85. The observations with regard to the geology of Southern Tibet

Southern Tibet: were made by Mr. H. H. Hayden during the
Mr. H. H. Hayden. progress of the recent mission to Lhasa under
 Colonel Sir F. E. Younghusband, K.C.I.E., who

has called my attention to the untiring energy displayed by Mr. Hayden in taking advantage of the necessarily limited opportunities for work in a hostile country of a physically difficult character. His results are, however, of an importance and interest which, when published in full, will merit the appreciation of the scientific world.

86. The crystalline complex forming the chief part of the State of Sikkim has been recently described by Professor E. J. Garwood in an appendix to Mr. Douglas Freshfield's "Round Kangchenjunga," and references will be found in that work to Sir Joseph Hooker's glimpse in 1849 of the fossiliferous zone forming the unknown land to the north in Tibet, and of Dr. W. T. Blanford's exploration as far as the northern borders of Sikkim in 1870.

87. The Tibetan zone to the north of the Sikkim boundary is composed of a variety of sedimentary formations, often metamorphosed but occasionally highly fossiliferous, and represents the lower Tertiary, Cretaceous, Jurassic, probably Trias and possibly some of the Palæozoic systems. The east-west trend of the crystalline zone prevails equally in the sedimentary rocks, the component

beds of which strike parallel to the Himalayas and dip as a rule to the north; but in parts of the zone, especially at and around Gyantse, intense folding has occurred, with consequent metamorphism, reducing the local rocks (in this case of Jurassic age), almost to a series of crystalline schists.

88. The only beds, which can with any show of probability be referred to the Palæozoic group, are a series of slates and schistose limestones found along the north-eastern border of the crystalline zone in the Khongbu valley, between Phari and Sikkim: they are cut off by faults from all the other sedimentary formations, and, in the absence of fossils, there is no means of determining their age. A thick series of limestone, slate, and quartzite, found in the hills to the south of the Phari plain, may represent the Triassic and probably also the lower Jurassic systems. They are sparsely fossiliferous in their upper beds.

With these two exceptions, the whole of the sedimentary zone is composed of beds of younger Mesozoic age, with great intrusive masses of granite and basic igneous rocks: the former is most conspicuous in the valleys of the Tsang-po and Kyi Chhu and in the immediate neighbourhood of Lhasa, and the latter at Gyantse and along the shores of Yamdok Tso.

89. Beyond the northern frontier of Sikkim a broad zone of Jurassic slate, quartzite and shale, striking east-west, extends for several miles to the north, its upper boundary being defined approximately by a line running through Tinki, Khamba dzong and Tuna. A subordinate band of limestone included in these slates about 8 miles to the south of Khamba dzong has yielded a number of well-preserved fossils, which include cephalopods, brachiopods and lamellibranchs of middle Jurassic (dogger) age. Immediately south of Khamba dzong the familiar Spiti shales can be recognised by their characteristic fossils, which here, however, are, as a rule, only fragmentary.

90. To the north of the Jurassic boundary, a series of parallel east-west ridges stands out conspicuously above the rolling downs of shale: these ridges are formed chiefly of limestone, and almost certainly comprise the whole of the Cretaceous system, and the eocene stage of the Tertiary. Fossils characteristic of the cenomanian and turonian stages occur towards the middle of the series, and include *Turrilites costatus*, Lam., below and *Hippurites* sp. and *Radiolites* sp. above. The highest beds found consist of Tertiary sandstone overlying Nummulitic limestone: between these a thick series of fossiliferous limestone, with

subordinate sandstones, probably includes the uppermost Cretaceous and oldest Tertiary.

91. These beds extend for only a comparatively short distance to the north and soon give place again to an endless succession of more or less metamorphosed slate and sandstone, extending far to the north beyond the Tsang-po and almost, if not quite, up to the southern shores of Tengri Nur. Fossils are rare, but have been found at several localities, and indicate that the whole of this vast series, with the exception of some limestones found in the hills to the west and north of Lhasa—which may be of Cretaceous age—belongs to the Jurassic system.

92. The fossiliferous character of the strata lying on the northern flank of the crystalline axis stands in remarkable contrast to the unfossiliferous character of the beds which form the southern or Lower Himalayan zone. The persistence of the northern fossiliferous zone eastwards as far as Sikkim, now established, naturally accentuates this contrast, and increases the suspicion, which has recently been growing amongst the members of the Geological Survey, that the Lower Himalayan rocks, like those of Simla, Kumaon, and Bhutan, are members of very ancient systems of sediments, all or in part pre-Cambrian, nothing other, in fact, than northerly extensions of the Vindhyan, Cuddapah, and similar old systems on the Peninsula, which have been caught, like the much younger Gondwana beds of Darjeeling and Assam, in the great earth-folds that have produced the Himalayan range. That one, two or more stratigraphical stages on the south could be unfossiliferous whilst their equivalents on the north are fossiliferous might be possible; that such an accident could be carried through every geological epoch from Cambrian to Cretaceous is so highly unlikely, that we are driven to regard the ingenious and elaborate systems of lithological correspondences, which have been propounded to distribute the strata of the Lower Himalayan zone over the standard fossiliferous scale, as so much misdirected, though well intended, mental energy.

Madras.

93. In November 1903 Mr. Middlemiss continued his work in the Vizagapatam hill-tracts, taking the extreme northern and southern areas for exploration. The northern parts were finally linked up with

Mr. Smith's work in Ganjam and with Dr. Walker's in Kalahandi State, whilst the southern parts were similarly linked with Dr. King's work in the Rajahmundry area. The main rocks forming the solid geology of the former area proved to be a mere continuation in this direction of the Archæan rock systems (khondalites, charnockites, and gneissose granite) already described further to the south. They occur in a monotonous series of bands of one or the other rock in dreary repetition. Towards the south, in the direction of the Godavari river, through the Rampa Agency and the northern parts of the Godavari district, the same remarks hold good with regard to the Archæan systems. No further examples were found of either the elaeolite-syenite gneiss or the sapphirine-bearing rocks. It was incidentally established that some of the old local varieties of gneiss named by Dr. King, such as the Kailassa and Bezwada gneiss, are variations of the khondalite series. On comparing King's Bezwada gneiss (distinguished by containing murchisonite) with some of the khondalite series in the gorge of the Godavari, the two were found to be identical; but the crystals and bands of murchisonite are regarded as adventitious in the ordinary khondalite, and probably due to injection of pegmatitic intrusions or contemporaneous veins. The Kailassa gneiss is simply typical khondalite.

94. During the latter part of the field-season Mr. Middlemiss was engaged on some questions in connection with the Gondwana strata near Rajahmundry, in consequence of some alleged discoveries of the coal-bearing series in positions not in accordance with the geological map. A number of plant remains found in the purple sandstones and shales at Gudigudem ($17^{\circ} 9' : 81^{\circ} 35'$) proved to be identical with, or nearly related to, those described as of Golapilli age from near Ellore.¹ The original mapping of the ground at this point is, therefore, vindicated by fossil evidence. A certain number of minor instances were recorded towards the revision of Dr. King's original survey in other parts of the area; but, subject to the results of proposed boring operations, there appears to be no reason for modifying the accepted ideas concerning the structure of the ground as inferred from the official geological map.

95. On the left bank of the Godavari between the Deccan Trap escarpment (north-north-east of Rajahmundry) and Korukondah ($17^{\circ} 10' : 81^{\circ} 53'$), in addition to the crystalline schists, marked on

¹ Pal. Ind., series II, vol. I, 163 (1877).

Dr. King's map, evidence was found, in road-metal pits, of purple sandstones representing one of the upper Gondwana stages. A small upstanding hill, east-south-east of Raghudavapuram ($17^{\circ} 10'$; $81^{\circ} 46'$), is composed of the same formation. This shows that the Upper Gondwanas persist on the left bank of the Godavari, and are probably connected by a series of such outcrops, generally hidden by the recent alluvium, with the patches of Upper Gondwanas further east at Juggumpett ($17^{\circ} 10'$; $82^{\circ} 7'$).

Rajputana.

96. One of the most interesting results obtained during the year was the discovery of a new series of the remarkable family of *clæolite-syenites* near Kishengarh in Rajputana. Our attention was first directed to these rocks by the receipt of specimens of blue sodalite sent in mistake for corundum. On subsequent examination of the ground by Mr Vredenburg, the intrusions of *clæolite-syenite* were discovered, together with a variety of sodalite, presenting characters, so far unexplained, and unique amongst minerals (*Rec. Geol. Surv. Ind.*, XXXI, 43). When freshly broken, the patches of sodalite are carmine in colour and the fresh rock face gives the appearance of being splashed with blood, but in daylight the colour rapidly, and in direct sunlight almost suddenly, disappears. Many of the specimens when kept in the dark for a few months recover their carmine colour, losing it again on exposure to either daylight or to electric light. The sodalite does not, so far as we can find, differ in chemical composition from the ordinary varieties of the mineral, and neither the loss nor the recovery of colour is affected by the humidity of the atmosphere. Specimens have been sent to Europe for more critical examination, but no explanation of the remarkable phenomenon has so far been offered, and although the recovery of colour has not occurred in some specimens after short intervals of concealment in the dark, there is now no doubt, after the numbers of instances which have been examined by various observers, that both the disappearance and the reappearance of the carmine colour are real and regularly recurring phenomena.

In the course of a geological reconnaissance of the Kishengarh State made by Babu Baidyanath Shaha, M.A., as part of his work as a research scholar, an extension of the *clæolite-syenites* was found to

the north-north-east of Kishengarh, and with it the mineral cancrinite was found for the first time in India.

CONCLUSION.

97. It is dangerous in any branch of natural history to assess the ultimate scientific value of an established conclusion, or to arrange the results of observations in any order of merit, and consequently, within the usual limits of this Report, it has been possible to review only those of our past year's results whose importance and proximate bearing on current problems are at present manifest. There are possibly many more important observations recorded in the special papers published during the year in the *Records* and *Memoirs* of the Department, but the discovery referred to in the last paragraph, the work which has been done in Kashmir, Tibet, and Assam, and the additions to our knowledge of the older alluvial deposits, can be safely selected as advances of unusual scientific interest. In economic work, besides the results selected for special mention in this Report, the Department has kept in touch with the numerous developments of private enterprise, and I think it is not rash to say that the prospects of a healthy development of the mineral resources of India are now more favourable than they have ever been. Besides the continued progress in the development of those minerals which are described in the Review of Mineral Production as minerals raised for consumption by direct processes and for export, there has been the definite determination of the essential conditions for the utilization of raw products which enter into the web of industrial enterprises far more important to a civilized community than gold and precious stones. The recent discoveries of aluminous ores and the demonstration of the existence of iron-ores in quantity and richness sufficient to counterbalance the heavy assembly costs of other raw materials required to manufacture iron and steel, will create the conditions necessary for the utilization of our enormous supplies of coal, and for the development of bye-products which will insure the gradual increase in the production of those materials for which India is at present dependent on foreign countries.

T. H. HOLLAND, *Director,*
Geological Survey of India.

CALCUTTA:

The 2nd January, 1905.

PRELIMINARY NOTE ON THE GEOLOGY OF THE PROVINCES OF TSANG AND Ü IN TIBET. BY H. H. HAYDEN, B.A., B.E., F.G.S., *Superintendent, Geological Survey of India.* (With Plate 7.)

THE despatch of the recent British Mission to Tibet, under Colonel Sir F. E. Younghusband, K.C.I.E., afforded an invaluable opportunity for geological exploration in the little-known provinces of Tsang and Ü, which lie to the north of Sikkim and Bhutan. With the exception of the work of Sir Joseph Hooker¹ and of Dr. Blanford² along the north-eastern, and of Professor E. J. Garwood³ on the north-western, borders of Sikkim, our knowledge of the geology of these two provinces was confined to a few scattered observations to be found in the writings of Captain Turner and subsequent travellers, and little or nothing was known of the great extent of country lying between the northern frontier of Sikkim and Tengri Nur lake.

The greater part of the area visited during the recent expedition lies between the meridians 88° and 91° E. and the parallels 28° and 30° N.; much of this area, as well as the Chumbi Valley has now been surveyed, geological mapping having been carried on concurrently with the topographical survey, and I am greatly indebted to Captain C. H. D. Ryder, R.E., who was in charge of the Survey party, for his kindness in providing me with tracings of his work as it progressed.

The geology of the greater part of Sikkim is already fairly well known, and my traverse through that State was too rapid to afford opportunities of making any appreciable additions to the observations of previous writers. To the north of Gangtok, the prevailing rock is gneiss, which is for the greater part merely a foliated granite, but includes also beds of sedimentary origin, represented by quartzite, schists, slate, and crystalline limestone.

¹ Himalayan Journals.

² Journ. As. Soc. Bengal, 1871, p. 367.

³ Round Kangchenjunga, by D. W. Freshfield (1903). Appendix by Prof. E. J. Garwood, M.A., F.G.S.

On the right bank of the Tista, at a short distance above Tung, the limestone is a grey and white banded marble of great beauty: quartzite and white crystalline limestone also occur in both the Lachen and Lachung valleys at a few miles above Chungtáng. These beds, however, are of no great extent, the prevailing rock up to the Tibetan frontier being granite, usually more or less foliated. Between Lamteng and Tangu, white marble, similar to that near Chungtáng, occurs in some quantity, with pyroxene-scapolite granulite and a graphitic biotite-sillimanite gneiss. To the north of Tangu, granite and gneiss continue up to the frontier, where they pass through schists into quartzites, conglomerates, and slates of Mesozoic age.

The boundary between the crystalline rocks and the younger sedimentary beds has a general east-west trend, following the line of high peaks, which constitutes the line of greatest altitudes of the eastern Himalayas. This line includes the peaks of Pauhanri, Kangchenjau, and Chumiumo, all of which consist of crystalline rocks, the boundary of the sedimentaries running along their northern slopes. Similar conditions prevail throughout the Himalayas of Sikkim, Chumbi, and Bhután, all the highest peaks being composed of the more resisting crystalline rocks, while the lower hills to the north are composed of softer sedimentary beds of limestone, slate, and sandstone.

As has already been pointed out by Professor Garwood, much of the so-called gneiss of Sikkim consists of foliated granite, and the same applies to the rocks of the Chumbi valley, which are merely the easterly continuation of those of Sikkim and consist chiefly of gneiss—in large part a foliated granite—with schists, quartzites, and some limestone. Throughout the valley of the Ammo Chhu, the prevailing rock is a coarse granite, which forms the steep, forest-clad hills on either side of the river, but at Dothák, about 20 miles above the village of Chumbi, the crystalline rocks are suddenly replaced by beds of limestone, quartzite, and slate. Granite and gneiss are again found to the north of Phari, forming the mountain of Chumolhari, and the greater part of the snowy range running northwards from that peak and separating Bhután from Tibet.

Although the greater part of the area surveyed during the recent expedition is covered by sedimentary rocks, there is a rather disappointing monotony in their Palæozoic (?) rocks.

character. It was hoped that some continuation of the beds, from which the Permian and Triassic exotic blocks of northern Kumaon are derived, might be found between the Himálayas and Lhásá, but with the exception of a small area in the Khongbu valley, between Phári and eastern Sikkim, no beds older than Mesozoic were found anywhere north of the crystalline zone. The small area referred to lies round Tálung in the Khongbu valley, and consists of schists, phyllites, and altered limestones. The rocks are highly metamorphosed and quite unlike any of the Mesozoic rocks found near Phári or to the north of Sikkim: it seems probable that they may represent some of the Palæozoic systems, but the apparent absence of fossils leaves their age uncertain.

To the east of these supposed Palæozoic beds, and separated from them by a fault, is a thick series of limestone with subordinate bands of quartzite and slate, well seen in the hills east of Dothák and again on the Pemo Lá, between Phári and Bhután. On the south it is in abrupt contact with the Chumbi granite, by which the various beds have been considerably metamorphosed. There are apparently no fossils in the lower beds, any that there may have been originally having now been destroyed by the metamorphism: a badly preserved cast of an ammonite, possibly *Danubites* sp., but quite undeterminable, was found in a flaggy quartzite near the middle of the series above Dothák. The same series continues along the hills between the south-western edge of the Phári plain and Bhután, and probably forms the peak of Masongchungdong. At about 5 miles to the south south-west of Phári, the highest beds of the series are limestones, which contain a few badly preserved brachiopods resembling Jurassic forms: these are overlain by slates and quartzites of undoubtedly Jurassic age. It is therefore probable that the Dothák beds include part at least of the Triassic system, but whether they include older beds also it is impossible to say, since any fossils that they may have contained have now been obliterated by the metamorphism that they have undergone, and no beds older than Jurassic have been found in any other locality.

By far the most extensive system met with is the Jurassic, which covers almost the whole area lying between the Himálayas and Lhásá, and extends far to the north into the hill-ranges separating the Pemu valley from the basin of Tengri Nur. In spite of its great extent, it has

yielded but little of interest, for the whole area has suffered so severely from metamorphism that the rocks consist chiefly of crushed and altered slate and limestone, with quartzite and calc-schist. In northern Sikkim and in the neighbourhood of Phári, the Jurassics are found in contact with the crystalline zone and have been locally metamorphosed by the granite of Chumolhari and neighbouring peaks. The lowest beds, which appear to belong to that system, are the limestones already mentioned as occurring to the south-south-west of Phári: these are overlain by an endless succession of slate and quartzite—or, in less disturbed localities, shale and sandstone—with occasional beds of conglomerate. Fossils are very scarce in the lower part of the series, and have been found only in a few localities: they include an impression of an ammonite in the slates and some brachiopods in the quartzite: the latter were found on the south side of the Kangra La, below Me-do, and include a specimen of *Rhynchonella* sp.

Above the slate and quartzite, at Mekhyi-gunru,—about 8 miles south of Khámbá dzong—a band of limestone, about 50 feet thick, contains a large fauna: the fossils are well preserved and include cephalopods, brachiopods, and lamellibranchs. One of the commonest species is *Trigonia costata*, Sow., which occurs in large numbers in the lower beds of the limestone. Ammonites and belemnites occur in some quantity, and a large *Nautilus* is fairly common. The brachiopods include chiefly species of *Rhynchonella* and *Terebratula*: the commonest genera of lamellibranchs are *Trigonia* and *Ostrea* or *Alectryonia*. The fossils have not yet been determined, but the presence of *Trigonia costata* indicates that the age of the limestone is middle Jurassic. The strike of the beds is east-west, but the whole area has been greatly disturbed and the limestones were found only in this one locality: they may possibly occur again between Phári and Tūna, but, if so, they are hidden by the moraine material which covers the Tang La and the Tūna plain.

The limestones are overlain by a belt of dark shale, which extends from the flanks of Chumolhari on the east, to the northern Nepal frontier on the west, and covers the greater part of the plain surrounding Khámbá dzong: these are the representatives of the Spiti shales, and contain concretions enclosing fragments of the ammonites characteristic of that stage in other parts of the Himalayas. Immediately behind Khámbá dzong, and at Tūna, they are overlain by shales, limestones, and sandstones,

probably representing the whole of the Cretaceous system, with a small band of lower Tertiary rocks. The Cretaceous beds extend from Khámbá dzong to Tüna in a comparatively narrow strip, resting on the Jurassics. From their northern boundary again Jurassic slates and shales extend in an endless succession of comparatively low ranges far to the north beyond the Tsangpo.

The Cretaceous beds consist of shales and flaggy limestones below, followed by brown shales with concretions; these are overlain by grey shales passing up into massive limestones, overlain by sandstone and again limestone and calcareous shale. The lowest beds have yielded no fossils, but the concretions near the top of the brown shales contain ammonites (*Acanthoceras* sp.) and *Turrilites costatus*, Lam.; this horizon therefore belongs to the cenomanian stage of Europe. The overlying grey shales contain, near their base, large numbers of *Gryphaea* sp., and, higher up, a few well-preserved echinoids, chiefly species of *Hemiaster*, resembling *H. cenomanensis*, Cot. The shales pass up into a thick limestone series, consisting of three bands of limestone, each about 100 feet thick separated by shaly limestone and shale. The lowest bed is sparsely fossiliferous, and the fossils, chiefly echinoids, are poorly preserved and in most cases not determinable. The overlying shales contain a few badly-preserved lamellibranchs. The two upper limestone bands, with their intermediate shales, contain great numbers of *Rudistæ*, chiefly *Radiolites*, sp. *Foraminifera* occur more or less throughout the whole limestone series, but are much more numerous in the upper beds, in which they form bands of foraminiferal limestone, overlying the *Radiolites* beds: the commonest genera are *Orbitoides* and *Orbitolites*. The *Rudistæ* limestones pass up into thin-bedded arenaceous limestone with corals and lamellibranchs: the corals include species of *Cyclolites*, with *C. regularis*, Leymerie; among the lamellibranchs *Hinnites* is very common. Echinoids also occur, though as a rule badly preserved: the genus *Hemipneustes*, however, has been recognised.

The coral limestone is overlain by a thick bed of coarse, gritty sandstone, often highly ferruginous and containing in places small masses of hæmatite and limonite, but apparently no fossils beyond worm-tracks.

The fossils collected from the above series have not yet been worked out, but a few could be readily identified and indicate that the whole of the Cretaceous system is represented between the Spiti shales

and the top of the ferruginous sandstone. The lower flaggy limestone and brown shales overlying the Spiti shales, have not yielded any fossils, but the concretionary bands at the top of the brown shales contain cenomanian cephalopods, and the echinoids of the overlying grey shales are probably also of cenomanian age. The lower, massive limestones and the *Rudistæ* limestones may represent the turonian, and possibly in part the senonian, stages of Europe, while the overlying coral limestone, with *Cyclolites regularis*, *Hemipneustes* sp., and *Hinnites* ? sp. (cf. *H. foliaceus*, Noetling) should probably be referred to the upper senonian. The overlying sandstone may therefore represent the danian stage.

The sandstone is overlain by massive limestone containing large numbers of gastropods. Near the base of the limestone is a band composed largely of *Orbitoides* sp., and somewhat higher up a specimen of *Nautilus*, resembling *N. sublævigatus*, d'Orb., was found in a bed with a few gastropods. The remainder of the limestone contains chiefly gastropods and some echinoids, all very badly preserved; the former include species of *Ovula*, *Phasianella*, *Conus*, and *Oliva*. Until the fossils have been worked out, the age of this limestone must remain doubtful, but its stratigraphical position certainly points to a Tertiary age, and it has therefore been included provisionally in that system. It is overlain by shaly and nodular limestone full of *Foraminifera*, but containing also a few *Nautili* and large numbers of *Velates schmidtiana*, Chemn. This foraminiferal limestone passes up into calcareous shale containing lamellibranchs—including *Spondylus* sp.—and overlain by nummulitic limestone.

Above the nummulitic limestone there is a small thickness of dark micaceous shale and flaggy sandstone, with calcareous bands containing gastropods and bivalves.

The above Tertiary series is well exposed in the valley behind Khámbá dzong, on either side of the stream flowing west from the Dzongbuk Lá. The beds dip to the north, and the uppermost shales are seen at about one-third of the way up the ridge on the right (north) side of the valley. Here they are cut off by a fault which runs more or less parallel to their strike, and throws them in some places below the lower Tertiary foraminiferal limestone, in others below the *Rudistæ* limestone. No younger Tertiary rocks were found in the neighbourhood of Khámbá dzong, or at Tüna, but they may very

possibly occur in the hills to the west of Guru, where Cretaceous and Tertiary beds can be seen from the ridge north of Tūna; but owing to political considerations, that area could not be visited and could not therefore be mapped in detail.

As will be seen from the map, the outcrop of the Cretaceous and Tertiary beds is comparatively narrow; near Do-chen they give place to Jurassic rocks, which extend beyond the Tsangpo and probably almost

Fossils of Jurassic strates.

to Tengri Nur. These are in places interrupted by granite, as between Kángmá and Gyántse and again in the valleys of the Tsangpo and Kyi Chhu; they are everywhere crushed and folded, and are often intersected by dykes of basic igneous rock. Fossils are exceedingly rare and in almost all cases very poorly preserved: they have been found in only five localities, *viz.*, 3 miles north of Do-chen (*Gryphæa* sp.), in the hills above—east of—Mangtsa (*Gryphæa* sp., and casts of *Spiriferina* sp.), Kángmá (crinoids), on a hill 3 miles east of Gyántse (*Perisphinctes* sp.), and in the valley of the Rálung Chhu, between Gubshi and Lungma (*Perisphinctes* sp., belemnites and brachiopods). Of these, the least badly preserved are the belemnites, which occur in black shales, with brachiopods, at Gorchhi and Sálákhung; these beds probably represent the Spiti shales and can be followed for many miles, forming the higher parts of the hills between the Rálung Chhu and the Yung Lá.

The only ammonites found in the Spiti shales were obtained near Khámbá dzong, where they form the nuclei of concretions; they are as a rule only fragmentary.

How far the Jurassics extend to the north it is impossible to say, but they have been traced up to Penam dzong, in the Nyang Chhu, whence they are almost certainly continuous up to and beyond the Tsangpo; thence they are apparently continuous to Cháksám on the Tsangpo, and though interrupted by granite intrusions, appear to extend over the greater part of the ranges to the west of the Kyi Chhu valley up to Lhásá, although the Kyi Chhu itself has cut its course along a mass of intrusive granite. Above Lhásá, again, they appear to extend for many miles to the eastward, and certainly occur again at about 7 miles to the north of Lhásá, where they form the higher parts of the range separating the Kyi Chhu from the Pembu valley. To the north of Pembu they can be seen extending far into the hill-ranges separating that valley

from the Tengri Nur basin, where Cretaceous rocks are known to occur, and although, on the higher ridges, they may be capped by younger beds, they probably cover the greater part of the intervening country.

Although no well-preserved ammonites have been found in the Spiti shales in the area visited during the recent expedition, beautiful specimens are, nevertheless, frequently to be found in Tibetan houses, being employed, it is said, in certain religious rites. Those seen by me were said by the Tibetans to have been brought from certain black hills near Shikar dzong, and similar fossils are said to be found also further to the west. It is probable, therefore, that a zone of Jurassic rocks extends from at least as far east as the 91st meridian, along the north of Nepal to Hundes, and the excellent state of preservation of the specimens said to have come from near Shikar dzong points to the probability that the rocks in that area are comparatively little disturbed.

The uplands to the north of Sikkim and Bhután furnish abundant evidence of the former greater extent of glacial conditions in the trans-Himalayan region. This is seen in the old moraines, erratics, old lake-basins, and the many other phenomena indicative of former glacial action. Throughout the plain of the Yáru river, around Khámbá dzong, characteristic *roches moutonnées* show the direction of flow of old glaciers from the northern slopes of the Himalayas: at the same time erratic blocks of granite which are stranded on the hills, now at a height of several hundred feet above the surrounding plain, and which were probably derived from Kangchenjau and its neighbourhood, prove that the drainage from that area must at one time have had a northerly trend, and that consequently the Lachen river has captured much of what was formerly the watershed between the north and south systems of drainage, while even the Yaru plain and valley itself, which now drains into Nepal, has probably been captured from the northern system by the gradual encroachments of the southward-flowing streams.

On the northern flanks of Chumolhari, too, old moraines extend for many miles beyond the limits of the now comparatively insignificant glaciers, into the Tūna plain.

Of the lakes, both Kala Tso and Yamdok Tso apparently owe their existence to the damming up of old river valleys by fans from side valleys, and the consequent formation of an area of closed drainage.

That both lakes have shrunk since their formation is proved by the existence of old terraces at some height above the present levels of the lakes, whilst, at the same time, the waters of both are slightly, though distinctly, brackish.

Igneous Rocks.

Both acid and basic igneous rocks are found in this part of Tibet.

Granite of Sikkim and Chumbi.

The former are represented by granite, which forms the greater part of the main range of the Himálayas of Sikkim, Chumbi, and Bhután. It is found again among the snowy peaks to the north of the Karo Lá, in the valley of the Tsangpo between Shigatse and Cháksám, and throughout the valley of the Kyi Chhu up to Lhásá. The Himálayan granite, as seen in Sikkim and Chumbi, is either a foliated biotite granite ("gneiss") or a fresh schörl granite—usually occurring in the form of pegmatite. The presence of hornblende has also been recorded by Professor Garwood.¹

The granite of the peaks to the north of the Karo La was not seen *in situ*, but blocks were found on the plain to the north of Rálung and in the streams draining the northern slopes of the Karo Lá group of snowy peaks.

Granite of peaks north of Karo La.

The granite of the Tsangpo and the Kyi Chhu forms a wide belt following the valleys of those two rivers, which appear to have found less difficulty in cutting their way through this rock than through the Jurassic slates and quartzites, which now form the adjoining hills. This might seem, at first sight, somewhat anomalous, but the explanation would appear to lie in the wide diurnal range of temperature, which has a more powerful disintegrating effect on a coarse and heterogeneous rock like the Kyi Chhu granite, than on the softer, but more compact and homogeneous, slates, rendering the former friable and easily eroded, while having comparatively little effect on the latter.

The Tsangpo and Kyi Chhu rock differs from the Himálayan granite in containing large quantities of hornblende and sphene. At Nam, on the Kyi Chhu, about 20 miles below Lhásá, the granite is a very handsome porphyritic variety with large crystals of flesh-coloured orthoclase.

¹ *op. cit.* p. 289. But Professor Garwood does not state whether he regards the hornblende-bearing variety as a granite or as a gneiss of sedimentary origin.

In the neighbourhood of Lhásá, the rock is more compact, but otherwise similar in mineralogical character; in places it is a comparatively fine-grained, grey rock which is largely used for building purposes.

At Chaksam ferry, a large hill-mass on the right bank of the river is composed of a greenish-grey rock, approaching syenite, and undoubtedly related to the granites, seen on the opposite bank of the river, from which it differs only in the larger proportion of plagioclase (oligoclase) and of ferro-magnesian silicates which it contains.

Syenite.

The basic rocks occur as dykes and sills in the Jurassic slates, and

Dolerite.

are most conspicuous in the neighbourhood of Gyantse and round the shores of Yamdok Tso. They are chiefly fine-grained rocks of doleritic type, but include also serpentines. The latter occur in some quantity between Dongtse and Penam, in the valley of the Nyang Chhu, and are probably responsible for the native reports of the occurrence of coal in that valley. At a little distance and in certain lights, they appear black and shiny, and might easily be mistaken for that mineral, as indeed one native informed me that they had been.

Serpentine.

Economic Geology.

The area visited during the recent expedition is strikingly poor in minerals of economic value, the only one found *in situ* being gold, which was obtained in very small quantities from the coarse gravel beds of the Tsangpo; these were panned at various points near Cháksám, but the largest yield was only at the rate of '28 grain of gold per ton of gravel. The concentrates, which were examined by my colleague, Mr. Maclaren, were found to contain, in addition to much magnetite and zircon, a small quantity of rutile, tourmaline, and hercynite, and probably uraninite.¹

Persistent rumours of the existence of coal at Lhásá, where it was said to be used in the local "arsenal," proved groundless; the local rocks consist chiefly of granite, Jurassic slate, and quartzite, with no trace of carbonaceous beds, while the fuel employed in the "arsenal" was charcoal.

¹ See note by Mr. Maclaren, on pages 171-172.

Some quantity of graphite was found in that building, Leing used for the manufacture of crucibles, and I am indebted to Mr. E. C. Wilton, C.M.G., Assistant to the British Commissioner, for samples of the mineral, and also for the suggestion that it represents the so-called "coal".

The graphite, Mr. Wilton tells me, is said to come from the Rong valley between Yamdok Tso and Shigatse. The same valley is also said to yield lead, but the report was not substantiated by any reliable evidence.

While at Lhasá, I bought a number of samples of the gem-stones employed by the local jewellers; these included turquoise, ruby, tourmaline, emerald, and sapphire. The jewellers stated that all these stones were brought from considerable distances, the turquoise being obtained from Ládáki and Mongolian traders, the rubies and emeralds from India and Mongolia, and the sapphires from Ládák and India. I could obtain no reliable information as to the existence of any indigenous source of gems. The rubies and emeralds were small and very pale: the sapphires were, on the whole, of better quality, but small, often pale and flawed, and though a few stones of good colour were to be obtained, they were very small and of little value. Pink tourmaline is also apparently used largely, not being distinguished from ruby of similar colour. Yellow and white rock-crystal and red garnet are also used. It appears that, with the exception of turquoise, practically all the gem-stones used in Lhasá come from foreign countries, and it is not at all improbable that quite a large proportion of them come from Ceylon and Burma, *via* Calcutta and Nepal. In fact, no mineral industries of any kind appear to exist in the area visited by the Commission.

Before closing this note, I must record my very great indebtedness to Colonel Sir Frank Younghusband, K.C.I.E., not only for his unflagging interest in the work, but also for his assistance, so generously given at all times, and without which much of the exploration would have been impossible.

Summary.

1. The northern parts of Sikkim and Chumbi are composed chiefly of gneiss and granite. Some schists and crystalline limestones, found at Tálung in the Khongbu valley, may be of Palæozoic age.
2. A thick series of limestone, with subordinate beds of quartzite

and slate, occurring to the east of Dothák, probably includes at least a part of the Triassic system.

3. The greater part of the provinces of Tsang and Ü is covered by Jurassic rocks. The lower beds contain few fossils, but highly fossiliferous limestones of middle Jurassic age were found to the south of Khámbá dzong, and fossiliferous representatives of the Spiti shales occur at Khámbá dzong and in the hills to the east and south-east of Gyantse.

4. A comparatively narrow strip of Cretaceous and Tertiary rocks runs from Khámbá dzong to Tüna. The Cretaceous rocks are shales, limestones, and sandstones, and represent the whole of that system. The lowest fossiliferous horizon is of cenomanian age and contains *Turritiles costatus*, Lam. The turonian, and probably part of the senonian stage is represented by Rudistæ limestone, with *Radiolites* sp. The upper senonian is represented by limestone with *Cyclolites regularis*, Leymerie, *Hemipneustes* sp., and *Hinnites* sp. A thick bed of coarse, ferruginous sandstone may be of danian age.

5. The Tertiary system is represented by gastropod-bearing limestone, overlain by shaly foraminiferal limestone with *Velates schmidiana*, Chemn. This is followed by nummulitic limestone and shale. It is probable that none of these are younger than eocene.

6. Basic igneous rocks, including dolerite and serpentine, occur as dykes in the Jurassic slates near Gyantse and along the shores of Yamdok Tso. Granite is found in the valleys of the Tsangpo and Kyi Chhu and also at Lhasá, where it is used as a building stone. The Lhasá rock is a fairly coarse-grained, biotite granite, containing oligoclase, hornblende, and sphene.

7. Few minerals of economic value were found *in situ*; gold occurs in very small quantity in the Tsangpo gravels, and an efflorescence, composed largely of sodium carbonate, is found at Utsi, 6 miles north-west of Khámbá dzong.

Note by J. M. Maclaren, B.Sc., F.G.S., Geological Survey of India, on Auriferous Concentrates from Cháksám on the Tsangpo.

Two samples of concentrates were brought by Mr. H. H. Hayden, of this Department, from the Tsangpo, near Cháksám. No. 1 weighed 500 grains and was the result of washing 112 lbs. of gravel from the left bank of the river, one mile above Cháksám. 399 grains, or 80 per cent., of the concentrate, proved to be magnetite, while the greater

part of the remainder was composed of zircons. Of gold, there were only four extremely fine specks, far too fine to be weighable.

No. 2 sample, of 790 grains, was the result of washing 160 lbs. of gravel from the right bank of the Tsangpo above the Cháksám ferry. This contained 612 grains of magnetite sand, or 77 per cent., nearly the same as the preceding. The residue of 178 grains was carefully washed and yielded a number of extremely small grains of gold, weighing .02 grain. The total gold content per ton of these gravels is .28 grain, or a little more than $\frac{1}{4}$ grain, of a value of one half-penny.

The minerals associated with the gold are magnetite and zircon, making up, as already stated, nearly the whole of the concentrates. There are also occasional grains of rutile, of tourmaline, and of hercynite. With the gold, and impossible to separate from it by ordinary washing, there remained a little dust, which was resolved, under the high powers of the microscope, into black, cubical crystals with cubical cleavage. These, from their extremely high specific gravity, their crystalline form and their colour, are probably uraninite or pitchblende.

The washings were made at a wide portion of the river, and gold was obtained in the dish only when washing was carried on in the coarser gravels, the stones of which ranged up to 6 inches in diameter. There is no record of gold-washing along the Tsangpo, and the poverty of its gravels, as indicated by the above results, confirms previous assumptions that the gold of the Assam valley has not been derived from the Tibetan highlands. The extreme fineness of the gold, combined with its flaky character,—the largest grain is no more than .3 mm. long and .01 mm. thick—indicates a distant source, possibly as far distant as the gold-regions of the Manasarowar lakes.

Geographical Index.

	Latitude, N.	Longitude, E.
	° '	° '
Ammo Chhu	27 30	89
Chaksam	29 18	90 43
Chumbi	27 25	88 57
Chumiumo	28 2	88 35

	Latitude, N.	Longitude, E.
	° '	° '
Chumolhari	27 50	89 18
Chungtang	27 36	88 41
Do-chen	28 8	89 20
Dongtse	29 1	89 27
Dothák	27 37	89 6
Dzongbuk La	28 16	88 41
Gangtok	27 20	88 40
Gorchi	28 50	89 50
Gubshi	28 40	89 48
Guru	28 6	89 20
Gyantse	28 52	89 37
Kala Tso	28 18	89 26
Kangchenjau	28	88 42
Kangma	28 34	89 39
Kangra La	28 6	88 42
Karo La	28 53	90 6
Khāmbā dzong	28 17	88 33
Khongbu Valley	27 40	89
Lachen R.	27 50	88 35
Lachung R.	27 40	88 45
Lamteng	27 44	88 35
Lhāsā	29 38	91 6
Lungma	28 50	89 56
Mangtsa	28 25	89 33
Masongchungdong	27 33	89 9
Me-do	28 5	88 42

	Latitude.	Longitude.
	0 1	0 1
Mekhyi-gunru	28 10	88 33
Nam	29 28	90 55
Nyang Chhu	29	89 30
Pauhanri	27 55	88 53
Pembu La	29 48	91 8
Pemo La	27 42	89 14
Penam dzong	29 9	89 13
Phari	27 43	89 12
Ralung	28 48	90 3
Rong Valley	29 10	90
Salakhang	28 50	89 52
Shigatse	29 18	88 55
Shikar dzong	28 42	87 10
Talung	27 40	89
Tang La	27 51	89 13
Tangu	27 54	88 34
Tengri Nur	30 40	90 30
Tsangpo R.	29 16	
Tūna	27 58	89 16
Tung	27 33	88 40
Utsi	28 20	88 32
Yamdok Tso	28 50	90 35
Yaru R.	28 15	88 20
Yung La	29 4	89 47

THE OCCURRENCE OF BAUXITE IN INDIA. BY T. H. HOLLAND, F.R.S., *Director, Geological Survey of India.*

IN the Review of the Mineral Production, published in the first part of the present volume, attention is called to the fact that India possesses a possible asset of value in the deposits of laterite which cover considerable areas in the Peninsula and Burma.¹ The object of this note is to announce, as the result of the exploratory work which has been in progress during the past year, the determination in India of a number of "prospecting propositions" in aluminous deposits, similar to those known in Europe and America as bauxites, and now being developed as the only practicable source for aluminium, and as one of the materials employed for the manufacture of aluminic salts.

Reference to the literature quoted in the General Report of the Geological Survey published in this part of the *Records* (*supra*, pp. 141, 142) will give an idea of the interesting scientific problems opened up by the investigation into the origin and nature of laterite, and the solution of these will be helped materially by the economic development of the deposits, which appear to come within the category of marketable aluminous ores. The actual prospecting work comes properly within the sphere of private enterprise, but those who wish to undertake the problem of testing the economic value of the deposits mentioned below may find the information we have collected to be of material assistance, though it should be understood that, in an industry which has developed so rapidly as has the manufacture of aluminium and the processes for extracting alumina from bauxites, any scheme of operations employed as a means for estimating economic probabilities is likely to be out-of-date almost as soon as it is announced.

In conducting this exploratory work I have assumed that the simple export of aluminous laterites to Europe would not be practicable in the face of the present low values of bauxites, and in view of the fact that discoveries of new occurrences, elsewhere as well as in India, have been made at a rate well beyond the rate of increase in the

¹ *Supra*, p. 95.

demand for alumina. I should consequently regard an occurrence to be a reasonable prospecting proposition only on the understanding that it is possible to manufacture pure calcined alumina in India, either for export as such to the European and American markets, or for utilization in the manufacture of aluminium and aluminic salts in the country. It is necessary, however, to state that some of the deposits which have been sampled contain percentages of alumina so well in excess of the average bauxites on the market, that it may be possible, by calcination on the spot, to turn out a product which can bear the heavy cost of transport to the coast and the charges necessarily added to a heavy sea-freight. This is a question for the prospector to settle, and it is capable of simple solution within a very narrow limit of error.

The analyses given below represent some samples which have been taken from normal deposits of laterite, and others which would ordinarily be described as bauxites. Without discussing the question of nomenclature at this stage, it will perhaps be sufficient to explain that the writer is not disposed to accept bauxite as a separate mineral species, that is, a definite chemical compound with specific physical properties. Its composition, often approaching that expressed by the formula $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$, is the result of an intimate admixture of two minerals, gibbsite, $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$, and diaspore, $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$.¹ It is, in fact, a rock composed essentially of these two minerals, with varying amounts of accessory compounds of silica, iron, and other substances. To the trade bauxite is a substance in which there are large quantities of aluminic hydrate, in contradistinction to clay, in which the alumina is combined with silica in a form unsuitable for economic separation by present methods. Some laterites have the essential characters of bauxite; others would not be looked upon in the trade as such. Some of the deposits referred to in this note show more of the characters of ordinary bauxite than those recognised as typical of laterites, and some of them are certainly not laterites in the sense of being the product of weathering processes now in operation in the areas in which they are found: they are possibly, however, laterites of a past geological age. This point will probably be settled by the observations made during the economic development of the deposits, and with the establishment of their history and origin we shall be able to define with

¹ The relations of these two compounds are discussed in my paper "On the constitution, origin, and dehydration of Laterite." *Geol. Mag.*, decade IV, vol. X, pp. 59 to 69, 1903.

more precision the meanings and limitations of the terms laterite and bauxite. For the present we regard the former as the wider term, and say that some laterites are in all essentials bauxites.

In estimating the value of the analyses given below it should be kept in mind that the mineral diaspore has a theoretical composition of

Alumina, 85.0; water, 15.0, per cent.

whilst the higher hydrate, gibbsite, is composed of—

Alumina, 65.4; water, 34.6, per cent.

Bauxite, being essentially a mixture of these two, must contain, therefore, less than 85 per cent. of alumina, and it generally contains very much less on account of a partial replacement of the alumina by the isomorphous compound ferric oxide, and by the mechanical admixture of clay, quartz, and other impurities.

A large number of analyses of bauxites on the market will be found quoted in the bibliography given at the end of this note. For those who wish to have a rough mental idea of the composition of a marketable bauxite, it will be sufficient to indicate the very wide limits of variation which occur.

For French bauxites the recorded analyses show alumina varying from 30.3 to 76.9 per cent., and ferric oxide from 0.10 to 48.8. An average sample of Georgia bauxite is given by A. E. Hunt¹ as follows:—

Silica	.	.	.	.	.	.	3
Ferric oxide	.	.	.	.	.	.	1.5
Titania	.	.	.	.	.	.	4.50
Alumina	.	.	.	.	.	.	58.67
Water	.	.	.	.	.	.	32.33
							100.00

A series of 21 analyses of Alabama bauxites quoted by H. Mc Calley² shows variations in alumina from 39.44 to 62 per cent., ferric oxide from under 1 to 22.6 per cent., silica from 0.40 to 37.87 per cent., and water from 12.8 to 38.2 per cent. The Arkansas bauxites are returned as varying in alumina percentage between 44.81 and 62.05. The Irish bauxites show similar variations in analyses of individual specimens, but with, in general, a lower percentage of free alumina.

¹ *Trans. Amer. Inst. Min. Eng.*, XXIV, 1895, 858.

² *Min. Industry* for 1893, p. 64.

The following partial analyses represent the best samples of Indian bauxites which have so far been tested :—

Laterites (Bauxites) in the Madras Presidency.

	A	B	C	D	E	F	G
Alumina, Al_2O_3 .	62.80	64.34	31.37	45.77	63.14	38.28	35.38
Ferric oxide, Fe_2O_3 .	0.44		40.18	9.30		37.88	34.37
Water, H_2O .	33.74	31.58	24.18	28.30	16.81	20.70	19.60
Silica, SiO_2 .	2.78	4.68	2.16	14.58	19.32	3.14	10.75
Titania, TiO_2 .	0.04	0.95	2.01	0.52	—	—	0.10
Lime, CaO .	0.20	—	—	—	—	—	0.40
Magnesia, MgO .	0.03	—	—	1.32	—	—	—
TOTAL .	100.03	101.55	99.90	99.79	99.27	100.00	100.00

A. Specimen collected and analysed by H. Warth (*Min. Mag.*, XIII, 1902, 172). Specific gravity, 2.42; cream-coloured nodules forming a layer about 1 foot in thickness, mixed with various forms of clay and decomposition products of the charnockite series. The specimen analysed is practically pure gibbsite, $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$, soluble in boiling sulphuric acid and in boiling caustic soda solution. Locality, Kodaikanal, Palni hills.

B. Laterite collected by H. H. Hayden, at Fort Hamilton, 12 miles south of Kodaikanal, Palni hills. The analysis does not show the ferric oxide distinct from the alumina, but the former is present in small quantities only. Geological Survey collection, No. J. 574.

C. Laterite collected by H. H. Hayden near the Golf Club Pavilion, Ootacamund, Nilgiri hills. In making the analysis the silica and titania were not completely separated from one another.

D. Collected by H. H. Hayden, 4 miles south of Kodaikanal, Palni hills. The analysis does not distinguish the combined silica which would hold a portion of the alumina from that present as quartz, which would not interfere with extraction of the alumina. Geological Survey collection, No. J. 575.

E. Laterite collected by C. S. Middlemiss, from hill south-west of Girliguma in the Vizagapatam hill-tracts. The analysis does not

separate the ferric oxide which is present in quantity sufficient to give the specimen a rusty colour. Geological Survey collection, No. 15,704.

F and G. Specimens from the Nilgiri hills, obtained through the Superintendent of the Government Museum, Madras, and analysed by H. and F. J. Warth (*Geol. Mag.*, dec. IV, vol. X, 1903, 155). Of the silica in specimen G, 10.52 is returned as quartz. Specific gravity of F = 3.09, of G, 3.07.

Laterites (Bauxites) in the Central Provinces and Central India.

	H	I	J	K	L	M
Al_2O_3	65.48	52.67	51.62	54.20	67.88	57.50
Fe_2O_3	3.77	7.04	5.51	4.02	4.09	6.53
H_2O	19.38	29.83	30.72	27.93	26.47	26.94
SiO_2	0.38	1.26	0.05	1.55	0.93	2.35
TiO_2	11.61	7.51	7.51	12.21	1.04	6.61
CaO	...	1.75	5.25	...	0.36	0.15
MgO	trace	trace	...	...	...	nil
TOTAL .	100.62	100.06	100.66	99.91	100.77	100.08

H. Light buff-coloured, coarsely pisolitic form, collected by P. C. Dutt, near Katni, Jubbulpore district. Analysis by T. R. Blyth. Of the water returned as 19.38 per cent., 1.06 was moisture lost at 100°C., and the rest, 18.32 per cent., was combined.

I. Brown, pisolitic material, collected at Katni, Jubbulpore district, by T. H. Holland. Referred to by F. R. Mallet as aluminous laterite (*Rec. Geol. Surv. Ind.*, XVI, 1883, 113). In large deposits associated with H and used commonly for road-metal and ballast on the railway. Analysis by T. R. Blyth. Corresponding specimens collected by F. R. Mallet (Nos. F. 155—157) analysed by H. and F. J. Warth, gave Al_2O_3 , 54.80, and TiO_2 , 0.38 (*Geol. Mag.*, 1903, 155).

J. Yellowish, pisolitic rock, collected by L. L. Fermor, from a hill 1½ mile, E-N-E. of Rupjhar, Baihir tahsil, Balaghat district. Analysis by T. R. Blyth. The water, returned as 30.72 per cent., includes 0.74 moisture lost at 100°C.

K. Brownish-yellow, pisolitic rock, collected by H. H. Hayden, from west side of scarp 2 miles north of Samnapur, Baihir tahsil, Balaghat district. Analysis by H. H. Hayden and T. R. Blyth.

L. Mottled laterite collected by T. L. Walker on Korlapat hill, Kalahandi State. Geological Museum No. 15,215. Analysis by H. and F. J. Warth (*Geol. Mag.*, dec. IV, vol. X, 1903, 155). Checked by determination in the Geological Survey laboratory: SiO_2 , 0.92; H_2O , 26.82; Al_2O_3 and Fe_2O_3 , 72.63.

Laterites (bauxites), with the same characters as those proved to be aluminous by analysis, occur also in the Baihir tahsil of Balaghat at—

(1) Laughar, near the P. W. D. bungalow on the road from Balaghat to Baihir.

(2) A low mound, three-quarters of a mile long, near Gudma.

(3) Forming low hills, $1\frac{1}{2}$ miles north-east of Samnapur.

(4) High hills, due north of Samnapur.

(5) A hill, 4 miles west of Sihora, Jubbulpore district.

M. Laterite collected by C. A. Hacket, from Bijecragogarah, Marwara, Central Provinces. Analysis by H. and F. J. Warth (*Geol. Mag.*, 1903, 155). Specific gravity, 2.39. Geological Survey No. 32,111.

Laterites (Bauxites) in Bengal and Bombay.

	N	P	R	S
Al_2O_3	64.64	58.23	50.46	43.83
Fe_2O_3	6.21	5.48	23.41	26.61
H_2O	24.00	28.10	24.99	23.88
SiO_2	1.79	2.01	0.72	0.37
TiO_2	3.30	6.49	0.42	4.45
CaO	0.04	0.45	—	0.86
MgO	0.02	—	—	—
TOTAL	100.00	100.76	100.00	100.00

N. Pisolitic laterite collected by V. Ball, Neturhat, Palamau, Chota Nagpur. Analysis by H. and F. J. Warth (*Geol. Mag.*, 1903, 155). Specific gravity, 2.59. Geological Survey collection No. 772.

P. Earthy laterite, Sarguja State, Chota Nagpur. Analysis by

H. and F. J. Warth (*Geol. Mag.*, 1903, 155). Geological Survey collection No. 1,295.

R. Laterite said to have been obtained from Mahabaleshwar, and consequently resting on the Deccan Trap. Analysis by H. and F. J. Warth (*Geol. Mag.*, 1903, 155).

S. Laterite interstratified with the nummulitic rocks, Turkesar, Satara. Analysis by H. and F. J. Warth (*Geol. Mag.*, 1903, 155). Geological Survey collection No. 1,309.

An interesting feature in the analyses is the high return so frequently made for titanitic acid, and the same circumstance is noticed in connection with foreign bauxites, especially those of America, where a large number of analyses have been made in the deposits being developed in Georgia, Alabama and Arkansas. The very high percentages of 11.61 for the Katni sample (H) and 12.21 for Samnapur sample (K) indicate the probable existence of some unfamiliar substance being precipitated with the titania. This material is now under investigation, but has so far eluded detection by the ordinary tests applied to well known substances in the same class. Dr. R. S. Bayer, whose process for the extraction of alumina by digestion of bauxite in caustic soda has been largely employed, studied the insoluble residues of bauxites, and amongst a great variety of the rarer elements, obtained reactions for some strange substance which he considered to be a new element.¹

It is not the intention of this paper to discuss methods for the profitable exploitation of Indian bauxites; but as a warning to those who may be in haste to take out prospecting licenses, and as a help to the usually smaller number by whom mineral exploitation is not classified with the games of pure chance, it may be desirable to indicate some of the obstacles which will possibly be met between the prospecting and the mining stages.

In the first place, it is practically certain that, with present prices ruling a limited market, no bauxite will be found in quantity of the quality which could cover the costs of simple export to existing markets. The prices quoted in the New York market up to the end of last month for wholesale lots of Georgia and Alabama bauxites varied between 21 and 22 shillings per ton of the first-grade qualities. The capacity of the market is indicated by the following table, showing the World's production during the years 1898—1902. Although there has

¹ *Chemical News*, LXXI, 1895, 128.

been a considerable percentage of increase in the five years, the total consumption is small compared to the quantity of material in sight in India.

Production of Bauxite in Metric Tons.

YEAR.	France.	United States.	United Kingdom.	TOTAL.
1898 . .	36,723	27,220	12,600	76,543
1899 . .	48,215	37,402	8,137	93,754
1900 . .	58,530	23,556	5,873	87,959
1901 . .	76,620	19,207	10,357	106,184
1902 . .	96,900	29,690	9,192	135,782

In the second place, it is not always easy to distinguish the valuable aluminous bauxites from the associated varieties of clay, and the considerable variations from one part of the deposit to another will involve an additional expense in supervision of the product before despatch to the market.

Finally, the analyses given above are insufficient in themselves to indicate the suitability of the ores for the separation of pure alumina. Bauxites with low percentages of total alumina sometimes lend themselves to the present processes for extracting the oxide better than those shown by bulk analysis to be rich. Apart from the fact that some of the alumina may be in combination with silica, the lower hydrate, diaspore, $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$, which raises the alumina percentage, is far less soluble than the less aluminous form, gibbsite, $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$. The precise determination of the chemical constitution will thus form the first stage in the prospecting operations which are warranted by a satisfactory result for chemical composition.

To what extent the most recently patented processes have reduced the cost of extracting pure alumina from bauxites is unknown; but it may be assumed that reticence on the part of the few companies engaged in the manufacture of aluminium is not due to the narrowness of the profitable margin on which they are able, without appeal to the public, to extend their scale of operations. It is at any rate

certain that one of the large items in the total cost of a pound of aluminium is the cost due to the preliminary manufacture of the pure oxide by such processes as extraction by sulphuric acid, heating with carbonate of soda, or digestion with caustic soda.

The value of the alumina will largely determine the question as to whether the deposits are worth working simply for the preparation of the pure oxide, or whether it will be necessary to combine this process of extraction with the manufacture of the metal.

For a practical test of the first proposal the apparatus is comparatively inexpensive, but the installation of plant necessary for the manufacture of the metal should not be undertaken without counting the cost. The comparatively high price of the purified alumina has recently forced attention to processes for the preparation of the oxide at sites near the deposits of bauxite: this is being attempted in the United States, whilst the oxide used at Foyers in Inverness is prepared at Larne from the Antrim bauxites.

The manufacture of the purified alumina from bauxite is of course a purely chemical process, involving no unusual expenditure of energy and, in the case of the alkali processes, only small loss of chemicals, as the alkali employed to make the sodic aluminate is recovered during the separation of the alumina. For the manufacture of aluminium electric power works will be necessary, and the purpose of this note will end by reminding possible investors that in Bengal coal we have a reserve of energy which can be converted into electricity at a cost probably as low as water power. Besides being the immediate source of the metal, alumina is used in dyeing and as a base for the manufacture of aluminic salts.

Besides general works on chemistry and metallurgy, the following publications contain information of special value to those who wish to follow up this subject:—

J. W. Richards. Aluminium, its history, occurrences, properties, metallurgy, and applications. 3rd Edition, Philadelphia and London, 1896.

The Mineral Industry, published annually (New York), with special articles on *aluminium* by J. W. Richards (1893), J. B. C. Kershaw (1901 and 1902); on *alum* by J. Enequist (1894); and on *bauxite* by H. McCalley (1893) and J. Struthers (1902).

- F. Laur.* The Bauxites: a study of a new mineralogical family. *Trans. Amer. Inst. Min. Eng.*, XXIV, 1895, 234—242, 855—861.
- C. W. Hayes.* The geological relations of the Southern Appalachian bauxite deposits. *Amer. Inst. Min. Eng.*, XXIV, 243—254.
- C. W. Hayes.* The Arkansas bauxite deposits. *21st Ann. Report, U. S. Geol. Surv.*, 1899—1900, pp. 435—472.
- E. Ristori.* Aluminium. *Encycl. Britannica*, vol. XXV, 1902, 339.
- T. L. Watson.* The Georgia bauxite deposits; their chemical constitution and genesis. *Amer. Geologist*, vol. XXVIII, 1901, 25.

MISCELLANEOUS NOTES.

Imports and Exports of Mineral Products during 1904.

THE returns for sea-borne, foreign trade for the calendar year 1904 include figures of considerable value to those interested in the mineral industries of India. The following table shows the values recorded for imported minerals and products obtained directly from minerals, exclusive of hardware, cutlery, plated ware, machinery, millwork, railway plant, glass, earthenware and plate of gold and silver.

Imports of Minerals and Products directly obtained from Minerals during 1904

(including Government Stores).

	1904.	Average for the three years 1901-1903.
	£	£
Salt	471,034	451,766
Metals: Brass	69,932	66,084
Copper	1,751,744	1,090,843
German silver	127,563	127,614
Iron	2,831,493	2,244,908
Steel	1,799,018	1,517,969
Lead	129,319	136,444
Quicksilver	27,472	28,269
Tin	253,528	187,740
Zinc or spelter	110,891	87,989
Unenumerated	81,244	71,651
Total of metals	7,187,204	5,559,511
Carried over	7,658,238	6,011,277

	1904.	Average for the three years 1901-1903.
	£	£
Brought forward	7,658,238	6,011,277
Inorganic chemicals	394,982	377,497
Mineral oils and paraffin	2,207,995	2,456,875
Coal, coke, and patent fuel	325,613	302,314
Precious stones and pearls, unset	589,679	835,319
Stone and marble	17,877	19,520
Other building materials	226,428	155,450
TOTAL	11,420,812	10,158,252

It will be noticed with regard to these products, which are nearly all of a kind that might be obtained directly from known minerals in the country, that there has been a very substantial increase in the total value of the imports, the total for the year 1904 representing an increase in value by over $1\frac{1}{2}$ million sterling, or 12.43 per cent. compared with the average total for the preceding three years, 1901 to 1903.

The two groups of products which have principally affected the totals are metals, of which there has been an increased import to the value of £1,627,693, and mineral oils, of which there has been a decrease in value, to the extent of £248,880. There is a satisfactory deduction to be drawn from both these results: the increase in the imports of metals indicates the approach of the necessary conditions of market required for the profitable exploitation of the large deposits of ore known in the country, whilst the decrease in the imports of mineral oils shows the development of our own oil-fields.

Amongst the metals, the remarkable increase in the demand for foreign copper, rising from an average annual value of one million to $1\frac{1}{2}$ million sterling, is perhaps the feature of most interest in view of the fact that, amongst metallic ores in India, those of copper are, next to iron, the most conspicuous examples of neglected natural resources. The figures for iron and steel only partially indicate the increased requirements of the country, as there has been an increase also in the imports

of materials made of iron and steel. The imports of machinery and millwork in 1904 were valued at £2,925,260 against an annual average for the preceding three years of £2,142,541, whilst the cost of railway plant and rolling stock imported during 1904 was £3,547,556 against an annual average for the preceding three years of £3,507,979.

A feature of serious importance in connection with the purchases of steel is the fact that only two-fifths of the private imports come from the United Kingdom.

The exports of mineral products from India make a small show beside the imports. The values returned for borax, coal, jade-stone, manganese-ore, mica, paraffin and petroleum rubies, and saltpetre make a total of less than £900,000, whilst the gold raised in Mysore and the Nizam's Dominions during 1904 must have been worth over £2,300,000, as the output in crude ounces was 623,688, being an increase on the production for 1903 by 23,628, ounces.

The borax trade, which has been declining against the cheap supplies of Europe and America, showed an export in 1904 of **Borax and Saltpetre.** 4,246 cwt., valued at £5,419, against an annual average for the three preceding years of 5,385 cwt., valued at £7,898. The saltpetre trade showed no definite variation in any direction; there has been a slight increase, during the past year, in the exports by sea, which amounted to 390,970 cwt., valued at £266,349, against an annual average for the years 1901—1903 of 377,536 cwt., valued at £259,420.

The slight increase in the imports of foreign coal has been more than counterbalanced by an increase in the exports from India, due largely to an improved market at Colombo. **Coal.** The quantity exported during 1904 amounted to 602,810 tons, against an average of 486,641 tons for the preceding three years. The return for the past year, though a small amount compared to the whole trade, and though still a small contribution to the total requirements of Singapore, is the highest recorded export of Indian coal.

The exports of mica have not definitely changed. The annual average value of the mica exported during the years 1901—1903 **Mica and Jadeite.** was £83,952, which is very near the value, £83,183, returned for the mica exported during 1904. The "jadestone" exported from Burma *via* Rangoon represents only a part of the total, as considerable quantities of jadeite are sent overland from Upper Burma to China. The quantity of the mineral sent out through Rangoon in 1904 was 2,869 cwt., valued at £43,946, against the average annual quantity of 3,576 cwt., valued at £43,359, for the three years 1901—1903.

The preliminary returns for 1904 show an export of 154,880 tons of man- **Manganese-ore.** gane-ore against an average of 147,950 tons for the three preceding years.

An interesting feature is the fact that, besides a growing sale in India, there has been a rapid increase in the export of our mineral oil, as shown by the following figures :—

Exports of Indian Mineral Oils.

YEAR.	Quantity.	Value.
	Gallons.	£
1901	21,305	236
1902	44,002	1,186
1903	747,834	25,037
1904	4,014,077	128,030

The oil exported to the Straits comes into competition with that from the Dutch East Indies, which has also been assisting to replace Russian kerosene in the Indian market. The import of Russian kerosene has dropped from 90,119,318 gallons in 1901 to 42,256,738 gallons in 1904, whilst that from America, consisting largely of the better grades, has maintained a fairly steady position near $7\frac{1}{2}$ million gallons. The remarkable rise in the imports of oil from the Dutch East Indies, from half a million gallons in 1901 to over 20 millions in 1904, has taken place chiefly during the past year. It is thus evident that the main competitor with Burma and Assam for the Indian market is now the south-eastern extension of the same oil-bearing Tertiary rocks cropping up in the Dutch East Indies.

The exports of paraffin wax show no signs of expansion so far. In 1901 the wax exported amounted to 41,057 cwt., valued at £48,721, but after the rise to 65,041 cwt., in 1902, the trade fell back to 43,206 cwt. in 1903 and to 42,940 cwt., valued at £58,018, in 1904.

[T. H. HOLLAND.]

RECORDS OF THE GEOLOGICAL SURVEY OF INDIA.

Part 3.] 1905. [September.

NOTES ON AN ANTHRACOLITHIC FAUNA FROM THE MOUTH OF THE SUBANSIRI GORGE, ASSAM. BY PROF. C. DIENER, PH.D., of the Vienna University. (With Plate 8.)

A PAPER published by Mr. J. Malcolm Maclaren in the Records of the Geological Survey of India (Vol. XXXI, Pt. 4) gives a detailed report on the progress of his geological survey in N.-E. Assam. During his survey some fossils, supposed to be of permo-carboniferous age, were obtained by him in boulders in the Subansiri river at Derpai, near the mouth of the Subansiri gorge, North Lakhimpur, Assam. Provisional determinations of the fossils were made by Mr. G. H. Tipper.

The Subansiri valley being an impenetrable jungle occupied by hostile tribes, every fragment of evidence may be considered valuable until this almost unknown area is more thoroughly explored. In view of the interest connected with the problem of a relation between the coal-bearing Gondwanas of Assam and marine beds of Permo-Carboniferous (Anthracolithic) age,¹ Mr. T. H. Holland, Director of the Geological Survey of India, had Mr. Maclaren's fossils sent to me for examination, and asked me to determine them and to prepare a paper for the *Records*. I am greatly obliged to him for entrusting this interesting material to me.

¹ I prefer to use the term "Anthracolithic" under which I understand both the Carboniferous and Permian systems. The reasons for adopting this denomination introduced by W. Waagen, have been detailed in my memoir on the Anthracolithic fossils of Kashmir and Spiti. (*Palæont. Indica*, ser. XV, Himál. Foss., Vol. I, Pt. 2, p. 1).

The fossils were all obtained from a small number of boulders occurring in the bed of the Subansiri. From the differences in the matrix and the state of preservation of fossils the rock-specimens may be divided into two groups:—

(a) Matrix arenaceous and only slightly calcareous. The fossils are, as a rule, very badly preserved as weathered casts and subjected to considerable crushing.

(b) Matrix extremely hard, blue, argillaceous limestone nodules, recalling the limestone nodules in the Kuling shales of Lilang (Spiti) with *Cyclolobus div. sp.* They are rich in casts of *Chonetes carbonifera* Keyserl. Together with them other fossils occur, but, as a rule, their impressions only are preserved, the fossils themselves having been entirely destroyed. By making plaster-casts of the impressions, I have succeeded in obtaining several examples allowing a satisfactory determination.

The impressions of *Crinoidea* in one of the boulders are of a rather remarkable habit. The stems have been destroyed entirely, but a cast has been left of the interior canal in the shape of a long column, provided with numerous projecting annuli.

A.—FOSSILS FROM THE ARENACEOUS ROCKS.

PRODUCTUS CF. PUSTULOSUS, Phill. Fig. 1.

1836. *Productus pustulosus* Phillips, *Geology of Yorkshire*, Vol. II, p. 216, Pl. VII, fig. 15.

For a complete list of synonyms I refer to my memoir on the anthracolithic fossils of Kashmir and Spiti, *Palæontologia Indica*, ser. XV, Himál. Foss., Vol. I, Pt. 2, p. 34.

The impression of a dorsal valve, incomplete as it is, agrees closely with the dorsal valves of *Productus pustulosus*, as illustrated by Davidson on Pl. XLI of his monograph of British carboniferous Brachiopoda. The impression is slightly depressed in the middle, this depression corresponding to a small mesial fold in the cast, and is covered with numerous concentric wrinkles. The spaces between the concentric wrinkles are interrupted by numerous coarse pustules, which are often square-shaped and arranged irregularly.

PRODUCTUS DIV. SP. IND. Fig. 2.

There are numerous casts of *Producti* among Mr. Maclaren's fossils. They do not permit of a specific identification, but are valuable as evidences of the Anthracolithic age of the Subansiri fauna.

A large cast of a ventral valve reminds one of the group of *Productus Cora* d'Orb.

Three casts show the interior of dorsal valves, with the median septum, adductor and reniform impressions partly preserved. One of those casts has been illustrated in fig. 2.

SPIRIFER DIV. SP. IND.

The genus *Spirifer* is rather richly represented among the fossils from the mouth of the Subansiri gorge, but all specimens are fragmentary and only internal casts devoid of their shelly substance. Among them some transversely fusiform shapes with widely expanding wings have been noticed, reminding one of *Spirifer alatus* Schloth., or of *Sp. convolutus* Phill.

The cast of a large dorsal valve, measuring at least 115 mm. in width, shows strong and coarse ribs with distinctly triangular sections and sharp edges, and a strongly elevated mesial fold, which has been severely injured. It recalls *Spirifer convolutus* Phill., *Sp. trigonalis* Mart., or *Sp. resperilio* Sow.

SPIRIFERINA SP. IND

A weathered fragment of a ventral valve reminds one of *Spiriferina Kentuckensis* Shum., or of *Sp. insculpta* Phill. It is greatly extended transversely and provided with rounded plications, which are crossed by numerous lamellæ of growth.

RETICULARIA CF. INÆQUILATERALIS (?) Gemmellaro.

1899. *Reticularia inæquilateralis* Gemmellaro, *La fauna dei calcari con Fusulina della valle del F. Sostio*, Fasc. IV, Pt. I, p. 336, Tav. XXXV, figs. 2-21. LXVI, fig. 13.

1903. *R. inæquilateralis* Diener, *Himálayan Fossils, Palæontologia Indica*, ser. XV, Vol. I, Pt. 5, p. 23, Pl. I, fig. 6.

A single cast without any trace of its shelly substance is provisionally and with much hesitation referred to *Reticularia inæquilateralis* as comparable on account of its remarkable similarity with this species.

That the cast belongs to the family of *Spiriferidæ* or rather to one of the subgenera of *Spirifer* distinguished by their smooth shells, is pretty certain. The general shape of the two valves, the presence of a large, slightly incurved beak in the ventral valve, the short

hinge-line, and the indistinctly marked-off area with its deltoidal fissure are all characters agreeing with the group of *Spirifer lineatus* Mart.

With *Reticularia inæquilateralis* from the permian rocks of Sicily and of the Tibetan region of exotic blocks in the Himálayas, the present species agrees in the remarkably asymmetrical shape of the valves and in the position of the apex, which is shifted to the right, the specimen having been placed into its proper position, front margin upwards.

A mesial sinus is marked by a shallow impression in the ventral valve. Traces of concentric lines of growth have been noticed.

Whether this species of *Reticularia* really bears such close affinities to *R. inæquilateralis*, as I am inclined to suppose, cannot be decided. The fossils from the arenaceous boulders being very often crushed and deformed, its asymmetrical shape may, perhaps, be accidental only and due to pressure in the rocks.

DIELASMA SP. IND. AFF. URALICO Krotow. Fig. 8.

The fairly well preserved cast of a ventral valve reminds one very strongly of the Russian *Dielasma uralicum* Krotow (The Artinskian stage, Mem. Soc. of Naturalists Kasan, Imper. University, Vol. XIII, Pt. 5, 1885, p. 287, and Geologische Forschungen am westlichen Ural-Abhange in der Gebieten von Tscherdyn und Ssolikamssk, Mém. Comité géol. St. Pétersburg, 1888, Vol. VI, p. 429, Pl. I, figs. 33-36). It is strongly curved, bordered by straight lateral margins, which unite in the partly broken-off beak under a very sharp angle, and is provided with a high and regularly vaulted mesial elevation. This median elevation increases in width towards the front, where it terminates in a strongly protracted tongue. It is accompanied on each side by a flatly arched depression, above which the marginal region of the valve is slightly elevated.

The present cast differs from Krotow's type-specimen by larger dimensions, by a narrow mesial fold and by broader lateral wings. But those differences are of small importance only compared to the general agreement of the two shells. This Indian species is certainly most nearly allied to *Dielasma uralicum*, which for its peculiar characters is one of the most remarkable types of the genus.

Its affinity to the Russian form is much stronger than to *Dielasma La Touchei* Diener (Himálayan Fossils, Vol. I, Pt. 5, p. 111, Pl. V,

figs. 7-9), from which it is easily distinguished by its different outlines. *Dielasma La Touchei* is nearly triangular, with a slightly emarginated front-line, the angles of which correspond to the greatest transverse diameter, whereas in the present cast the outline is trapezoidal and the greatest breadth occurs in the second fifth of the entire length of the shell.

The measurements of this cast are as follows:—

Length	} of the ventral valve {	:	:	28	mm.
Breadth		:	:	22	"
Thickness		:	:	15	"

DIELASMA SP. IND. EX. AFF. D. BIPLEX, Waagen. Fig. 7.

A cast of a ventral valve recalls in its outlines and in the presence of a median ridge the group of *Dielasma biplex* Waagen from the Productus limestone of the Salt Range (Productus limestone foss., Palæontologia Indica, ser. XIII, Vol. I, p. 349).

It cannot be identified with any of the species illustrated by Waagen on Pl. XXV of his memoir, but probably belongs to a new species. It is of larger size than *D. biplex*, a longitudinal diameter of 45 mm. corresponding to a transverse diameter of 32 mm. The mesial ridge is more strongly developed and originates in the apical region. The greatest width occurs nearer to the front. The outline is distinctly pentagonal, with a biplicate front-line. By this character the present cast is easily distinguished from *Dielasma La Touchei* Diener, of which it reminds one in the development of a comparatively high and narrow mesial ridge.

DIELASMA SP. IND.

An imperfect cast suggests *Dielasma ficus* McCoy, but has its dorsal valve provided with a sharp mesial edge, from which the shell slopes obliquely towards the marginal region. The bad state of preservation does not allow of a decision as to whether this character is, indeed, a specific feature or only accidental.

B.—FOSSILS FROM THE HARD, BLUE, ARGILLACEOUS LIMESTONE NODULES.

CHONETES CF. CARBONIFERA Keyserling. Figs. 3-6.

1845. *Chonetes sarcinulata* Verneuil, Géologie de la Russie d'Europe II. Paléontologie, p. 272, Pl. XV, fig. 10.

1846. *Chonetes sarcinulata* var. *carbonifera* Keyserling, Reise in das Petschoraland, p. 215.

1876. *Chonetes variolata* Trautschold *ex parte*, Die Kalkbrüche von Miatschkows, II, p. 67; l. Pl. VII, figs. a-c.
 1890. *Chonetes pseudovariolata* Nikitin, Dépôts carbonifères, et puits artésiens de la région de Mescou, Mém. Comité Géol. Pétersbourg, Vol. V, No. 5, p. 27; Pl. II, figs. 1-3.
 1898. *Chonetes pseudovariolata* v. Loczy, Wissenschaftliche Ergebnisse der Reise des Grafen Béla Széchényi in Ostasien, Bd. III, Abt. IV, p. 73, Taf. III, figs. 8-12.
 1902. *Chonetes carbonifera* Tschernyschew. Die obercarbonischer Brachiopoden des Ural and des Timan. Mém. Comité Géol. St. Pétersbourg, Vol. XVI, No. 2, pp. 233, 595.
 1903 (?) *Chonetes pseudovariolata* Schellwien in Futterer "Durch Asien" III, Bd., Abt. 3, p. 142, Taf. I, figs. 5-8.

This species is represented by numerous and fairly well preserved casts of both valves. They agree most closely with the Chinese specimens figured by L. v. Loczy and identified by him with *Chonetes pseudovariolata* Nikitin. All of them are of small size with rectangular outlines and rounded-off frontal corners.

The ventral valve is moderately inflated and not sinuated, but occasionally provided with a very flat mesial depression only. The dorsal valve is flatly concave.

The majority of my specimens are casts, with fragments of the shelly layer preserved. From plaster casts of impressions, however, a fairly good idea of the ornamentation of the shell may be got. The shell is covered with numerous and thin, thread-like, radiating striæ, which increase in number from the apex to the front by bifurcation. None of my casts is sufficiently well preserved to allow the presence of concentric striæ of growth to be noticed. The casts devoid of their shelly layer are covered with numerous grooves, arranged radially along the intercostal spaces.

The deep median septum of the ventral and the two converging hinge-plates of the dorsal valve are distinctly marked.

There is no species of *Chonetes*, to which the specimens from the Subansiri gorge show an equally close affinity as to *Chonetes carbonifera* Keyserl. The absence of a distinct sinus excludes an identification with *Ch. variolata* d'Orbigny (voyage dans l'Amérique méridionale, Vol. II, Paléont., p. 49, Pl. IV, figs. 10, 11) or with any of the Indian types of the group of *striatæ* hitherto described. With *Ch. granulifera* Owen (Meek in final report of the United States Geological Survey of Nebraska, p. 170, Pl. IV, fig. 9; Pl. VI, fig. 10; Pl. VIII, fig. 7, they cannot be identified, on account of the absence

of strongly expanding rings. From *Ch. platynota* White (in Wheeler's report on the United States Geographical Survey of the 100th meridian, Vol. IV, p. 121; Pl. IX, fig. 6) they differ by the curvature of their dorsal valve, which is distinctly concave, not flat or even convex, as in *Ch. platynota*. *Ch. dalmanoides* Nikitin is of much larger size. Among all the asinuated forms of *Chonetes striatæ* it is *Ch. carbonifera* with which the specimens from the Subansiri gorge agree most closely.

For this species, which is widely distributed throughout the upper carboniferous rocks of Europe and Asia, Count Keyserling's original name, *Chonetes carbonifera*, must be retained, as has been argued by Th. Tschernyschew.

MYALINA SP. IND. Fig. 11.

The plaster-cast of an impression of a right valve might at a first glance be mistaken for a *Mytilus*, nearly allied to a species from the Kuling shales of Spiti, which has been illustrated on Pl. VIII, fig. 4, of Vol. I, Pt. 5, of the "Himalayan Fossils" (Palæontologia Indica, ser. XV). But a closer examination revealed the presence of a moderately long hinge-line.

The generic separation of *Myalina* and *Mytilus* has been based on the character of the hinge-line by L. de Koninck (Description des animaux foss. du terr. carbon. de la Belgique, 1842, p. 125). It is short and very narrow in *Mytilus*, but elongated, thickened, and provided with longitudinal grooves in *Myalina*. Of all those characters of distinction enumerated by L. de Koninck only the length of the hinge-line is accessible to examination in my specimen, which, I think, must be classed with the genus *Myalina*. An identification with *Modiola* is excluded by the terminal position of the beak.

Myalina lamellosa de Kon. (Faune du calcaire carbonifère de la Belgique, Annales du Musée d'hist. nat. de Bruxelles, T. XI, p. 169; Pl. XXIX, fig. 11) shows a distant similarity with the present species, but the gibbosity of the median part of its umbonal region is more distinctly developed.

MONOPTERIA SUBANSIRICA, nov. sp. Fig. 10.

Among Mr. Maclaren's materials there are a cast and an impression of the left valve of a very remarkable representative of the family of *Pteriidae* Meek, distinguished by its large posterior wing and by the

complete absence of an anterior one. *Pteriidae* of this kind have been described as *Limoptera* by Hall (Palæontology of New-York, Vol. V, Pt. 1; Lamellibranchiata, p. 243), as *Monopteria* by Meek and Worthen (Geological Survey of Illinois, Pt. II, Palæontology, p. 340). The absence of the anterior wing in my specimens induces me to place them in the genus *Monopteria*, although they differ considerably from the prototype of that genus, *Monopteria gibbosa* Meek and Worthen (l. c., p. 340; Pl. XXVII, fig. 11) from the coal-measures of Illinois.

The plaster-cast of the impression allows a sufficiently good reconstruction of the left valve to justify the introduction of a new specific denomination. The differences in sculpture from *Monopteria gibbosa* are, perhaps, remarkable enough to be considered of subgeneric value, but my materials are too scanty for proposing a new subgeneric name.

Shell of equal height and length. Anterior margin truncate, posterior margin broadly rounded, uniting with the straight hinge-line in a right angle. Neutral margin passing into the posterior margin in a regular curve and meeting the anterior one in a blunt angle. From this angle a sharp edge runs to the beak, separating the vertical anterior part from the remainder of the shell. A second edge running from the beak towards the posterior margin is less distinctly defined.

Median portion of the shell elevated and gibbous along the umbonal slopes. Apex shifted to the anterior termination of the hinge-line, which corresponds to the greatest length of the valve.

Surface covered with numerous concentric lines of growth, which become obsolete along the anterior wall.

The measurements of the illustrated plaster-cast are as follows:—

Length	} of the shell {	.	.	.	.	.	.	19 mm.
Height		.	.	.	.	.	.	19 "
Thickness of the left valve		.	.	.	.	.	.	5 "

LOXONEMA SP. IND. Fig. 12.

A turreted shell with deep sutures and S-shaped growth-lines is provisionally referred to this genus, but its fragmentary state renders it unfit for an exact determination. Neither the apical whorls nor the body-whorl have been preserved. The whorls are somewhat angular in the middle, but the growth-lines are not turned backwards along this angular band as along the slit-band of *Pleurotomaria* and its allies. The sutures are remarkably deep and take the shape of spiral furrows or channels as in *Loxonema Walcidiadorensis* de Koninck.

(Faune du calcaire carbonifère de la Belgique, Annales Musée Royal d'hist. nat. Bruxelles, T. V, 3ème ptie, p. 55; Pl. V, figs. 5, 6).

PLEUROTOMARIA SP. IND. AFF. PUNJABICA Waag. Fig. 13.

An impression of a *Pleurotomaria* reminds one of this species from the Productus limestone of the Salt Range (Salt Range Fossils, Palæont. Indica, ser. XIII, Vol. I, Productus Limestone Foss., p. 115; Pl. XI, figs. 3, 4) or of the examples of *Pleurotomaria* from the permian Productus (Kuling) shales of the Lissar valley, described and figured in "Himalayan Fossils," Vol. I, Pt. 5, p. 100; Pl. V, figs. 1—3).

The spire is a little less noticeably depressed, but consists of an equally small number of whorls. The profile of the body-whorl is not evenly rounded. The ridges bordering the narrow and angular slit-band are distinctly marked. The zone between the slit-band and the suture of the preceding whorl is covered with a small number of delicate spiral striæ. The lower part of the body-whorl is apparently smooth.

BELLEROPHON SP. IND. Fig. 14.

The cast of a small, bilaterally symmetrical shell, coiled in one plane, undoubtedly belongs to a species of *Bellerophon*. The globose shell is narrowly umbilicated on both sides and exhibits no trace of a slit-band.

FENESTELLA SP. IND. Fig. 15.

Traces of Bryozoa have been noticed in the condition of impressions left by the removal and decay of the polyzoarium. The delicate shape of the colony, with rectangular fenestrules and thin dissepiments reminds one of the *Fenestellæ* from the Zewan-beds of Kashmir and from the Fenestella-beds of Spiti, probably allied to *Fenestella plebeia* McCoy.

CONCLUSION.

Notwithstanding the unsatisfactory state of preservation of the materials from the mouth of the Subansiri gorge, their examination leads to the interesting result, that they contain a marine fauna of Anthracolithic age. This result fully confirms Mr. Holland's suggestion with regard to the relation between the Gondwanas and the marine Permo-Carboniferous strata in N.-E. Assam.¹

¹ General Report, Geol. Surv. Ind. for 1903-04. *Records*, XXXII, p. 153.

The assemblage of forms does not leave a shadow of doubt about the Anthracolithic age of the Subansiri fauna. The large number of *Producti*, among which a species closely allied to a well-known European one (*Prod. pustulosus* Phill.), has been noticed, the presence of the widely distributed *Chonetes carbonifera* Keyserl., of a species of *Dielasma* nearly allied to *D. uralicum* Krotow, of a *Reticularia* of strongly inequilateral shape, are all characters of great stratigraphical importance. Their value is strengthened by the complete absence of any type which has hitherto been met with in strata of the lower Palaeozoic systems.

The fauna is too poor in determinable fossils for me to say anything with regard to its correlation with either Carboniferous or Permian strata.

EXPLANATION OF PLATE 8.

- Fig. 1. *Productus* sp. cf. *pustulosus* Phill. Impression of a dorsal valve.
 „ 2. *Productus* sp. ind. Cast of the interior of a dorsal valve, with adductor and reniform impressions and median septum.
 „ 3. *Chonetes* cf. *carbonifera* Keyserling. Dorsal valve with its test partly preserved.
 „ 4. *Chonetes* cf. *carbonifera*. Dorsal valve, with its test partly preserved.
 „ 5. „ „ „ Fragment of a ventral valve, with its test partly preserved.
 „ 6. *Chonetes* cf. *carbonifera*. Cast of a ventral valve.
 „ 7. *Dielasma* sp. ind. ex aff. *biplex* Waagen. Fragmentary cast; a ventral view, b lateral view, c front view.
 „ 8. „ *Dielasma* sp. ind. aff. *uralicum* Krotow. Cast of a ventral valve; a ventral view, b lateral view, c front view.
 „ 9. *Reticularia* cf. *inequilateralis* Gemmellaro. Cast; a ventral view, b dorsal view, c lateral view, d front view.
 „ 10. *Monopteris subansirica* Diener. Plaster-cast taken from the impression of a left valve.
 „ 11. *Myalina* sp. ind. Plaster-cast taken from the impression of a right valve.
 „ 12. *Loxonema* sp. ind. Cast, with fragments of the test adhering.
 „ 13. *Pleurotomaria* sp. ind. aff. *punjabica* Waagen. Plaster-cast taken from an impression.
 „ 14. *Bellerophon* sp. ind. Cast.
 „ 15. *Fenestella* sp. ind. Impression of the polyzoarium.

ON THE OCCURRENCE OF *ELEPHAS ANTIQUUS* (*NAMADICUS*) IN THE GODAVARI ALLUVIUM, WITH REMARKS ON THE SPECIES, ITS DISTRIBUTION AND THE AGE OF THE ASSOCIATED INDIAN DEPOSITS. BY GUY E. PILGRIM, B.SC., *Geological Survey of India.* (With Plates 9—13.)

IN February of last year, Mr. H. F. G. Beale, of the Public Works Department, informed the Geological Survey of the discovery of fossil bones at Nandúr Madmëshwar (Lat. $20^{\circ} 1'$; Long. $74^{\circ} 11'$), which I was at once deputed to excavate. The locality is on the Godavari river and is about eight miles south of Niphád station on the G. I. P. Railway in the Nasik district of the Bombay Presidency.

Great interest must attach to any discovery of fossil bones in the Godavari alluvium, as so few records of such exist. As compared with the alluvial deposits of the Nerbada, which flows in a contrary direction, and enters the sea on the west coast of India, our knowledge of those of the Godavari is very limited, both as regards the fossil contents, and even as to the nature, thickness, and superficial extent of the alluvium itself. It may not therefore be out of place to touch upon these points in the course of this paper, as tending to throw some light upon the origin both of the Godavari and of the Nerbada deposits.

That the fossil fauna of the Godavari beds is no less rich than that of other Indian river deposits, is proved by the reports we have in the past of exceptionally large “finds” of bones in them. In but few cases, however, has any trouble been taken to preserve the bones or turn the discovery to scientific account. At some time during the fifties, an elephant skull was found in the Godavari valley. No account of the discovery seems to have been published, and, so far as I know, the only authentic record of it is contained in a manuscript note by the late General Twemlow, the original discoverer. To this Dr. W. T. Blanford had access when he wrote his note on the Godavari gravels.¹ He considers that it is the same as

¹ Mem. Geol. Sur. Ind., VI, p. 232.

that referred to by Dr. Falconer in a paper read before the Geological Society of London,¹ when he mentioned the occurrence of *Elephas namadicus* "in richly fossiliferous fluviatile deposits of Southern India." Major-General Twemlow also seems to have been under the impression that the skull in question was examined and named by Dr. Falconer. We may therefore conclude that this Godávari elephant was identified by Falconer as *Elephas namadicus*, Falc. and Cautl. It was obtained from a place near Paitán, a town on the Upper Godávari, south of Aurangabád, ($19^{\circ} 45'$; $75^{\circ} 30'$) on the left bank of the river, and had been washed out of a calcareous conglomerate, of which the bank consisted. The skull was sent to Sir Philip Egerton in England, but I have no knowledge of what eventually became of it. It appears to have been of immense size, as the tusk is said to have been 29 inches in circumference. The tusk of the animal which forms the subject of the present paper measures 25 inches in circumference at the base.

General Twemlow also met with very extensive deposits of mammalian bones in the valley of the Pem Ganga at Hingóli ($19^{\circ} 55'$; $77^{\circ} 2'$), and is of opinion that these ossiferous gravels are widely spread throughout the valleys of the Godávari and the Pem Ganga.

In 1867 Mr. Fedden, of the Geological Survey of India, examined the whole area through which the Pem Ganga flows. He discovered a few bovine bones, but neither at Hingóli nor elsewhere did he come across any extensive fossil remains.

It appears from his observations that the gravels, though widely scattered, are not continuous, and while in some places they form the bed of the river, in others the Pem Ganga has cut down its channel into the Deccan Trap or even into the older crystalline rocks below.

Since 1867, however, no collections were made from these interesting deposits until February 1904. I shall therefore proceed to the details relating to this latest fossil find.

In the area which I was able to examine, most of the alluvial deposit lies on the left bank of the Godávari. The alluvial cliffs rise to a height of about 60 feet above the general level of the river-bed and are highest at a point about 1 mile farther up the river than Nandúr Madméshtar. It was here that I found, embedded in the

¹ Q. J. G. S., XXI, p. 381; Falconer Pal. Mem., II, p. 463.

gravels, in the very channel of the river, a magnificent skull of the ordinary Narbada elephant. These cliffs consist of conglomerates, gravels, and clays quite devoid of any stratification and showing evidences of a continuous period of deposition, marked only by such changes in the character of the deposit as might be expected in the history of most rivers. Calcareous concretions (*kankar*) were not observed in any portion of the deposit. The river-bed here was perhaps a quarter of a mile wide, but at the time of my visit most of it was entirely dry and the flow was kept up only in two or three channels. The broadest of these is shown in plate 9, and occupies the extreme right-hand margin of the river-bed. The falls shown are not more than 15 feet high, and are entirely of the Deccan Trap. In fact, all the rock within sight here is of the same nature, as is also the greater portion of the dry bed of the river. To the right of the river just here, there seems to be hardly any trace of alluvium, although lower down, opposite Nandúr Madméshtar, the right bank is alluvial. On the left of the river, however, the alluvial deposit stretches away some distance, but has been deeply carved out into innumerable small gullies showing to what an extent the forces of denudation have been acting. It would seem as if this alluvial deposit were confined to the immediate neighbourhood of the Godávari or of its main tributaries, one of which, the Kadva, I followed from the railway. At various places near its banks, the same network of deep channels had been cut out of the soft alluvial gravels, the existence of which I have noted on the Godávari. The smaller tributaries, however, had cut down into the Deccan Trap, and in many cases their sides consisted only of trap and soil arising from disintegration of trap. One is therefore led to the conclusion that the alluvium, though distributed over a wide area and accumulated locally to a considerable

thickness, does not persist equally, and, except in the immediate neighbourhood of the depositing streams, is either superficial or altogether absent. It seems highly probable, however, that the alluvium of the Godávari valley as a whole, even if it be only superficial, is sufficient to merit a recognition on the geological map as distinct as that which has been accorded to the more northern rivers.

Immediately at the foot of the alluvial cliff above mentioned, the river flowed in three small adjacent channels, in one of which were the fossil remains. These channels were separated from one another by a

Extent of the Godavari alluvium.

Situation and excavation of the Elephant remains.

hard calcareous, gravelly conglomerate, which, next to the bones, had become cemented into a refractory concrete material inseparable from the bone. The skull was almost entirely covered by water about three feet deep. On account of the alteration in the general level of the water being but slight for a considerable distance, it proved difficult to lower it at the required place, while the porous nature of the rock prevented the dams from being very effective. I supplemented the dams, however, by keeping a large gang of coolies continually baling, and in this way I was able to dry the spot sufficiently to extract all the fossil bones embedded there.

Throughout the operations I was much indebted to Mr. A. Hill, C.I.E., Executive Engineer at Nasik, for the assistance and implements which he kindly placed at my disposal.

The position of the animal, as found, was facing up stream. The cranium was resting on the vertical portion of its occiput, while the inferior part must have been subjected to the erosive action of the river for several years. Under these circumstances its imperfections are not surprising. A portion of a tusk lay detached a few feet in front of the cranium. Closely cemented to the cranium was the distal end of the femur, the head of the bone having evidently been jammed by some projecting part of the skull. About 4 feet behind the cranium, the pelvic bones were found. Through the kindness of Mr. H. M. Phipson, the Honorary Secretary of the Bombay Natural History Society, the proximal end of the femur and another portion of a tusk have been placed in our possession. Both of these had previously been obtained from the same spot by Mr. Beale and sent by him to Bombay. The whole of the remains are now deposited in the Geological Museum at Calcutta. Their reconstruction and present position in the Museum galleries will be dealt with later. That all of these belonged to a single individual no reasonable doubt can be entertained.

In the gravels near the same spot was found a portion of the lower jaw of a *Hippopotamus*, containing the incisor and canine teeth. This specimen is unfortunately missing,¹ but there is little doubt that it belonged to the subgenus *Tetraprotodon* and may be assigned to the species *H. palæindicus*, Falc. et Cautl. A single tooth has been

Other fossils from Nandur Madmeshwar.

¹ It was stolen during the night from my collection of specimens at Nandur Madmeshwar, presumably by a villager, and subsequent enquiries failed to elicit any information with regard to it.

identified as that of *Equus namadicus*, Falc. et Cautl. Crocodile teeth were also found, and several shells of Mollusca which are identical with those that exist in the area at the present day.

The cranium and bones, which I am describing, and which represent the species *Elephas antiquus* (*namadicus*), Falc. et Cautl., belonged to an individual of remarkable size. It cannot have stood much less than 16 feet at the shoulder. The cranium, as found, is larger than any hitherto recorded. Individual bones have, however, been found both in India and in Europe, the original owners of which must have attained an equal or even a greater stature. The validity of the name *Elephas antiquus*, as applied to the Narbada elephant, will be referred to later. It will be more convenient to describe first the portions of the animal which the present find has put into our possession.

The cranium.—The cranium either on one or both sides possesses all the essential features of the portion above the maxillaries and the foramen magnum. The occiput on the right side is complete, with the exception of a small region lying between the posterior depression and the vertical boss. On the left side this region is retained, but on the other hand the whole of the occiput external to the left vertical boss is broken away, together with portions of the parietal and frontal and the upper part of the temporal. The foramen magnum and the occipital condyles are missing. The frontal region and the nasals are perfect. The incisors are only partially preserved, the missing portions being indicated in the plate. It will, however, be observed that sufficient of them has been left bordering the nasal fossa, as well as in the distal region, to determine their shape and dimensions. The portions of the temporal fossa below the level of the external auditory meatus are broken away; on the left side the auditory opening cannot be observed, but on the right its position is distinctly indicated. The base of the zygomatic process of the temporal is preserved on the right side, and on both sides the orbit with the supra-orbital and post-orbital processes are well shown. The cranium, like all the bones, was surrounded by a very hard, unyielding calcareous conglomerate, in removing which the bones have lost some substance.

The accompanying plates exhibit all the more important characters of the present cranium, and the most casual inspection of it can leave no doubt as to its identity with the crania from the Narbada beds, figured

Other existing crania of *E. antiquus* (*namadicus*).

by Falconer in the *Antiqua Fauna Sivalensis*, Plates 12A, 12B, figs. 1-3, and Plate 24A, figs. 4, 4a, as *Elephas namadicus*. These are the two most complete crania which have been known up to now, and are preserved in the British Museum. One of them has small tusks and probably belonged to an adult female. The tusk sheaths are broken off almost immediately in front of the nasal foramen. The other, that of a young male, has large tusks, and shows also the characteristic divergence of the incisive alveoli. Five other crania exist in the Geological Museum at Calcutta. These are all exceedingly imperfect. Two of them, however, show the supra-orbital ridge, which, until Pohlig's extensive discoveries of *E. melitensis*, Falc., in the Grotto di Pontale von Carini in Sicily,¹ had been considered peculiar to the Indian species, if indeed there were not still some Palæontologists left, who favoured Professor Leith Adams's surmise that this peculiar frontal projection was a deformity or a distortion produced by compression after death. The present skull is that of a fully grown male.

It seems that the supra-orbital ridge grew forward with age, so that in young skulls there is a considerable interval between its margin and the extreme tip of the nasal process; in the large female skull in the British Museum this interval is sensibly diminished, while in this latest specimen, which represents the largest and presumably the most aged type with which we are acquainted, the supra-orbital ridge almost overhangs the nasal fossa, and the interval is reduced to its smallest dimensions.

The craniological material of *Elephas antiquus* (stem. sp.), though fairly extensive, is very imperfect. A comprehensive account of it is given by Pohlig² in his masterly monograph on *E. antiquus*.

The two most complete fragments are preserved, the one in Heidelberg which has been figured by Pohlig,³ and the other in Florence photographed by Weithofer.⁴ Nothing is present in these beyond the intermaxillaries and the basal portion of the cranium including the maxillæ and the basioccipitals.

The other varieties of *Elephas antiquus* are included under the

¹ Abh. d. k. Bayer. Akad., XVIII, p. 75.

² Act. Acad. C. L. C. G. Nat. Cur. LVII, 1892, p. 337, &c.

³ id. Taf. B. figs. 5, 5a, p. 276.

⁴ Beitr. z. Pal. Ost. Ung. Bd. VIII., 1891, Taf. II, fig. 2 & Taf. III, fig. 1.

various pygmy types found in Sicily, Malta, Crete and Cyprus, and described by their authors under the names *E. melitensis* Falc.,¹ *E. Falconeri* Busk,² *E. mnaiadriensis* Leith Adams,³ and *E. cypriotes* Bate.⁴

Considering only the teeth and mandible of *E. antiquus* and of *E. namadicus*, Leith Adams⁵ remarked that they seemed to him to be indistinguishable. This opinion of Leith Adams has been endorsed by many subsequent writers, among whom I need only mention Naumann, Weithofer, Pohlig and Lydekker.

There are three varieties of molars observable in *Elephas antiquus* :—

1. The broad-crowned variety with closely packed, faintly crenulated ridges with no definite angulations or central expansions. This is the usual type of molar found in *E. namadicus*.

2. The narrow-crowned variety with a central expansion of the enamel discs, annulation, and well-marked crenulation in the ridges.

3. A thick-plated variety presenting intermediate characters. This type is represented by the *Elephas priscus* of Goldfuss, and it often closely approaches the lozenge-shaped disc of *E. africanus*.

These same three varieties of molar are present in the dwarf Maltese fossil Elephants.

For a long time the similarity of the dentition of the pygmy Elephants to that of *E. antiquus* has caused many Palæontologists to class them as mere varieties of the latter, although no complete crania of either existed. It would seem to have been assumed by Lydekker and others that the crania, when found, would be of a different type to the Indian form and would possess no supraorbital ridge. So far is this from being the case, however, that all the skulls of the dwarf forms which Pohlig⁶ has figured from the Grotto di Pontale von Carini in Sicily bear a striking resemblance to *Elephas namadicus*, and leave us no excuse for

¹ Parthenon 1862, p. 780, & Falconer Pal. Mem. II, p. 298.

² Trans. Zool. Soc., VI, 1867, p. 251.

³ Trans. Zool. Soc., IX, 1874, pp. 112, 116.

⁴ Proc. R. Soc., LXXI, 1903, p. 498, & Ann. Mag. of Nat. Hist., Vol. XIV, 1904, p. 162.

⁵ Leith Adams, Br. Foss. Elephants, p. 67, 56.

⁶ Abh. d. k. Bay. Akad. XVIII, p. 75.

separating the two forms specifically. The accompanying text-figure, taken from one of Pohlig's plates, brings out these resemblances in a remarkable degree. There is no doubt that future discoveries will prove that the original *E. antiquus* of Europe possesses the same craniological peculiarities as its Indian variety.

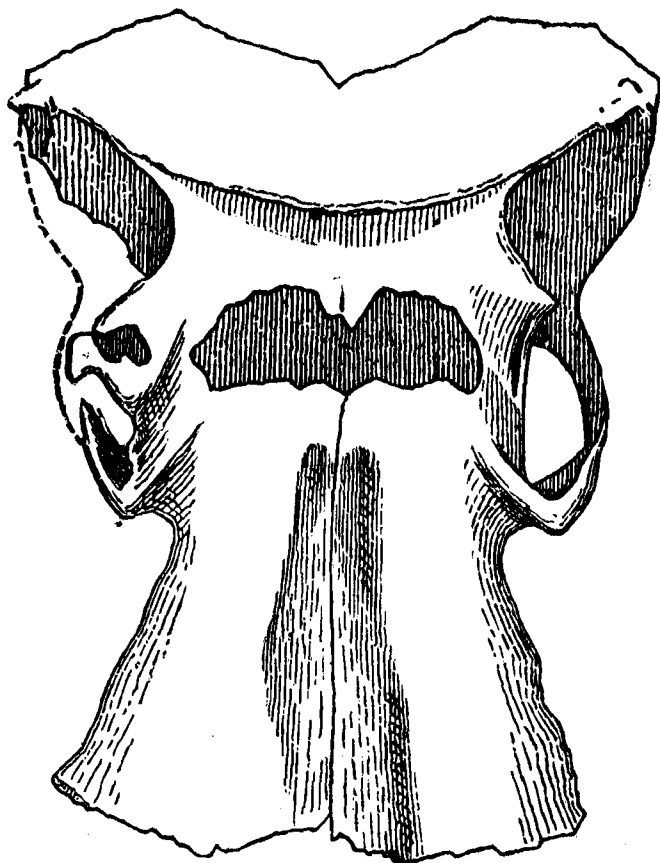


FIG. 1.—*E. antiquus* (*melitensis*) Falc. after Pohlig. [Fossile Elephantten aus Sicilien, Abh. d. k. Bay. Akad. XVIII. Taf. I, fig. 1.]

The crania of *E. antiquus* (stem. sp.), imperfect as they are, show the following points in common with the Indian variety and the pygmy types which serve to distinguish them from all other elephants:—

1. The extreme divergence of the incisive alveoli and the broad shallow depression which occupies their centre.

2. The great distance of the occipital fossa from the foramen magnum and the basal breadth and extreme depth of the fossa.

3. The strong convexity of the occiput in a horizontal direction, which pushes the zygomatic process of the temporal to the front in an unusual degree.

The crania of the Sicilian and of the Narbada elephants exhibit in addition the following points of likeness:—

4. The shortness and breadth of the brow and the widening out of the cranium from below upward.

5. The rhomboidal outline of the temporal fossa and its sharply-cut, acute-angled upper margin.

6. The presence of protuberances on either side of the occipital fossa.

7. The almost rectangular bend by which the occipital passes into the parietal, and the obtusely-angled junction between the parietal and frontal surfaces.

8. The well-marked frontal projection of the crown, which must have given an exceedingly beetling aspect to the living animal.

9. The approximately transversely oval contour of the cranium, when viewed in a direction at right angles to the plane of the occiput. It is much broader than high.

E. africanus also approaches them to some extent in regard to the 1st, 4th, 5th and 9th of the above characters. This is quite in accordance with the view that *E. africanus* is the living representative of an old ancestral form from which it took its origin along with *E. planifrons* Falc. & Cautl, *E. antiquus*, and possibly *E. meridionalis* Nesti. Pohlig¹ remarks that he can hardly recognize any essential differences between the portions of the cranium of *E. antiquus* (stem. sp.) known up to now and the London crania of *E. namadicus*. He calls attention to the differences in the molars and to the greater absolute dimensions of *E. antiquus* (stem. sp.). But as has been explained above, with the exception of the generally higher ridge formula, which prevails in the Indian variety, the molars of the latter are indistinguishable from the broad-crowned type of *E. antiquus*, while the present remains show that the advantages in point of size by no means lay with the European form. Pohlig considers that the suborbital foramen is larger and shorter in *E. namadicus*; that the occipital condyles do not attain such a colossal size; that the maxillary

¹ Act. Acad. C. L. C. G. Nat. Cur., LVII, p. 353.

zygomatic process lies somewhat higher; and that the profile line of the occiput appears to have formed a less obtuse angle with the extension of the sphenoidal portion. The importance of the last of these is, however, discounted by the equally obtuse angle exhibited in the corresponding region of the present cranium. In addition to this and the already mentioned excessive forward growth of the frontal ridge, the present cranium differs from the hitherto described crania of *E. namadicus* in the following particulars:—

The depth of the intermaxillary sinus at its proximal end is rather greater, and would seem to resemble the specimen of *E. antiquus* (*melitensis*) figured by Pohlig.¹

As far as I can judge, the protuberances on either side of the occipital fossa are by no means so prominent as in the London cranium of *E. namadicus*, nor are the corresponding external depressions so marked.

The occipital fossa is extremely wide below and narrows to an unusual extent above, bearing some resemblance to a cranium from the Narbada described by Falconer.² The occiput itself is also exceptionally wide.

Below is a table giving the actual dimensions of the present cranium and of the London cranium figured in the Antiqua Fauna Sivalensis plates 12A, 12B, along with those of the Florence cranium of *E. antiquus* (stem sp.) and of the Palermo cranium of *E. antiquus* (*melitensis*).

Measurements of Crania in inches.

	E. ANTIQUUS (NAMADICUS).		E. antiquus (stem sp.) Florence.	E. antiquus (<i>melitensis</i>) Palermo.
	Calcutta.	London.		
Maximum length from occipital to tip of premaxillaries.	55.0	...	63.0	...
Maximum breadth at widest part of occiput.	42.4	30.0	...	19.7
Vertical height from occipital condyles to vertical plane.	23.7	15.5	...	...
Width of brow between temporal fossae at narrowest part.	27.4	20.0	...	10.2
Width of brow between centre of orbits.	25.0	20.0	...	...

¹ Abh. d. k. Bay. Akad. XVIII, plate III, fig. 2.

² Falconer, Pal. Mem. I, p. 115.

	E. ANTIQUUS (NAMADICUS).		E. antiquus (stem sp.) Florence.	E. antiquus (<i>melitensis</i>) Palermo.
	Calcutta.	London.		
Width between postorbital processes.	32.0	25.0	...	...
Vertical distance between plane of vertex and tip of nasal process.	11.5	8.2	...	3.5
Transverse extent of nasal opening.	20.0	15.0	...	...
Vertical height of nasal opening at sides.	5.6	5.3	...	...
Distance from anterior margin of nasal opening to tip of premaxillaries.	34.0	...	...	13.4
Distance from vertex to tip of premaxillaries.	50.4	...	...	...
Maximum width of premaxillaries at the distal end.	36.2	...	37.0	...
Maximum width of premaxillaries at orbital foramen.	19.8	...	18.9	..
Width of intermaxillary fossa at proximal end.	4.1	5.8	...	...
Width of intermaxillary fossa at distal end.	13.2	...	...	...
Vertical diameter of orbit.	9.5	6.2	...	...
Transverse diameter of orbit.	5.0	...	...	...
Depth of occipital fossa from plane of vertical bosses.	12.5	7.5	...	...
Maximum width of occipital fossa below.	8.5	5.6	...	...
Minimum width of occipital fossa above.	3.1	4.8	...	...
From external auditory meatus to frontal margin of fossa at contraction.	15.7	13.3	...	...
From external auditory meatus to anterior margin of orbit.	17.5	14.0	...	...
From posterior plane of occiput to tips of nasals.	27.0	17.4	...	...
From posterior plane of occiput to anterior margin of orbit.	26.5	22.2	...	...
Width between margin of nasal opening and margin of orbit.	5.0	3.7	...	...
Width between margin of nasal opening and adjoining portion of temporal fossa.	4.5	4.1	...	...
Maximum diameter of tusk near origin.	8.0	...	...	...
Maximum circumference of tusk near origin.	25.0	...	...	..

E. antiquus may be classed with the short-crowned elephants,

Allied species. *E. africanus* Blum., *E. planifrons* Falc. et Cautl., and *E. meridionalis* Nesti. Correspond-

ing with this character is the ratio between the length from the vertex to the extremity of the premaxillaries and the breadth of the cranium between the post-orbital processes.

E. antiquus approaches nearest to *E. africanus* in the flattened

E. africanus. shape of the vertex, in the shortness and breadth of brow, in the form of the temporal

fossa and of the interjugal space, and in the obtusely angled junction between the frontal and occipital surfaces. It differs in the slope of the occipital surface, in the greater length and shallowness of the intermaxillary median fossa, in the convexity of the occiput, in the higher position of the maxillary zygomatic process, and in the shorter length and greater width of the sub-orbital foramen.

E. planifrons differs from *E. antiquus* in the extreme lowness

E. planifrons. of the vertex and of the occiput, the lower position of the maxillary zygomatic process,

the extremely small dimensions of the nasal aperture, the excessive length and narrowness of the sub-orbital foramen, and in the small width and great depth of the intermaxillary fossa; this species stands, however, in a closer relation to *E. africanus*.

E. meridionalis, though possessing the deep and large occipital

E. meridionalis. fossa of *E. antiquus* and an excessive development of the occipital protuberances, differs

essentially in the extreme narrowness and great concavity of the frontal region, in the trifling divergence of the incisive sheaths, the deeper intermaxillary fossa, in the narrowness and length of the sub-orbital foramen, and in the long and pointed shape of the temporal fossa.

It seems probable that all these species were developed from a common ancestor in a great Indo-Africo-European province in eocene or oligocene times and the subsequent disconnection, or partial disconnection, of these areas led to the differentiation of the individual types.

Although there is no impossibility in the teeth of *E. indicus*

Improbability of the descent of *E. indicus* from *E. antiquus*. Linn., being derived from those of *E. antiquus* (*namadicus*), the teeth of the former being of a more advanced type in the same direction,

yet Mr. Lydekker¹ considers that such a descent would be most improbable, with which opinion I concur. Considering the long, high, narrow cranium of *E. indicus* Linn., with its pointed, concave vertex, it is inconceivable that the one form should have been derived from the other within the short period which we know to have elapsed between the latest remains of *E. antiquus* (*namadicus*), and the present day.

The pelvis.—The portions of the hip bones which I was fortunate enough to obtain are the following.

Description of the pelvis. That part of the pelvis lying between the two

acetabula is complete with the exception of the lower part of the pubic symphysis; the bones are, however, fractured in various places. Of the two ossa innominata the left one is the better preserved. In it the acetabulum is perfect and is united to the internal region of the ilium; the external part of the latter is, however, missing. The ischium is broken off between the acetabulum and its own ascending ramus, so that the obturator foramen is incomplete. Of the right os innominatum only portions of the acetabulum and of the ilium are preserved besides the pubis as mentioned above. The central portions of the innominate bones across the pubic symphysis are figured in plate 13, fig. 1, and the upper part of the left ilium with its sacral margin in plate 13, fig. 2. These show the total width of the pelvic opening as well as the superior half of the obturator foramen. The remaining fragments have not been photographed.

The following are the measurements of the pelvis in inches:—

Distance between the inner margins of the two acetabula	19.0 in.
Antero-posterior diameter of acetabulum	8.5 "
Transverse diameter of acetabulum	8.3 "
Breadth of pelvic opening	21.6 "
Breadth of obturator foramen	5.6 "
Girth of pubis at midshaft	13.0 "

It will be seen that, contrary to what is the case in the Indian elephant, the antero-posterior measurement of the acetabulum is slightly greater than the transverse one. The cotyloid fossa is narrower than in the recent species, and opens directly on to the outer border of the obturator foramen and not on to a flat surface.

¹ Pal. Ind., ser. X, Vol. I, p. 289.

The femur.—Both ends of the femur and a great portion of the shaft are in our possession. These are shown in Plate 13, figs. 3 and 4. The distal portion has been photographed end on, and the proximal portion lengthwise. It appears to be very similar both to those assigned to *E. namadicus* already in the Indian Museum, as well as to the one of *E. antiquus* figured by Leith Adams (Br. Foss. Elephants, Pl. XXII, fig. 5). The bone is long and slight. The patellar surface is broad and shallow. The intercondyloid space is not great. The neck is short and appears to be almost erect with very little inclination. The digital pit is shallow. The head seems to be rather oblique. The following are the measurements of the femur, the total length of which is estimated as having been about 69 inches:—

Length of fragment of femur from distal end to fragmented margin	40.0 in.
Length of fragment of femur from proximal end to fragmented margin	19.0 "
From distal end to narrowest portion	35.0 "
Maximum circumference of distal extremity around the tuberosities	34.0 "
Maximum diameter of distal extremity around the tuberosities	12.0 "
Minimum circumference of femur	20.5 "
Breadth of proximal end at great trochanter	19.0 "
Girth of ball of head	25.0 "

I shall now add some brief explanations in reference to the mounting of the cranium and the photographs which have been taken of it, in connection with which I wish to acknowledge the assistance and the many useful suggestions which my colleagues Mr. E. Vredenburg and Mr. H. H. Hayden have kindly given me in the course of the erection and reconstruction of the specimen. The cranium, with certain plaster additions to it, stands in the vertebrate gallery of the Geological Museum, Calcutta, on a firm iron support, and the remaining bones of the skeleton are arranged near it. It was not deemed advisable to attempt any other restoration than that which was necessary to show the relation of the broken fragments to the main part of the cranium, and as to the correctness of which there could be no doubt. The tusks represented in the plates do not consist in any part of the original tusk, but are copied therefrom out of wood. In this way a more secure support has been obtained on which the pieces of bone and plaster are fastened. The white

colour of the plaster in the plates shows sufficiently well how much of the specimen is restoration. It must however be remarked that in the course of transport as well as during the erection many losses and breakages have occurred. On this account an inspection of the plate may perhaps produce the impression that the information at my disposal for the restoration was less precise than is really the case; not only were the junctions between the fragments much more clearly defined originally, but also while clearing away the matrix the position of the parts was more apparent than it is at present. The photograph of the cranium in front view reproduced in Plate 11 was taken by Mr. E. Vredenburg with a telescopic lens at a distance of 18 yards, so as to prevent any distortion in the picture. As this method was impossible in the case of the side view owing to the position of the cranium in the Museum, Plate 12 was drawn in cylindrical projection, and as the orbital portion is much better preserved on the left side, this has been combined in the drawing with the remainder of the right-hand side of the cranium. Plate 10 represents a view of the cranium from the left before the restoration.

The question of the age of these deposits containing *E. antiquus* (*namadicus*) now demands some consideration. Comparing the fauna of the Godavari alluvium with that of the older Narbada deposits, we shall see that the only three mammalian species found in it up to now are identical with Narbada forms. Of these *E. antiquus* (*namadicus*) Falc. et Caut., and *Hippopotamus palæindicus* F. et C., are quite absent from the older deposits of the Siwalik beds, while *Equus namadicus* F. and C. comes up from below. We are therefore justified in regarding the two series of alluvia as of approximately the same age, and any conclusion we arrive at with respect to the Narbada deposits must apply equally to those of the Godavari. We must also extend this statement to include a great portion of the older Gangetic deposits, where in the valleys of the Jamna and Ganges near Allahabad have been found the following:—¹

<i>Semnopithecus</i> sp.	<i>Sus</i> sp.
<i>Elephas namadicus</i> F. and C.	<i>Cervus</i> sp.
<i>Mus</i> sp.	<i>Bubalus palæindicus</i> F.
<i>Hippopotamus palæindicus</i> F. and C.	<i>Bos namadicus</i> F.
<i>Equus</i> sp.	<i>Antelope</i> sp.

¹ Q. J. G. S. XXI, p. 377; Falconer Pal. Mem., II, p. 640, and Rec. Geol. Surv. Ind., XXXI, p. 176.

The following is a list of the Narbada vertebrate fauna, which has
The Narbada fauna. hitherto been identified :—

<i>Ursus namadicus</i> F. and C.	<i>H. namadicus</i> F. and C.
<i>Bubalus palæindicus</i> F.	<i>Equus namadicus</i> F. and C.
<i>Leptobos frazeri</i> Rut.	<i>Rhinoceros unicornis</i> Linn.
<i>Bos namadicus</i> F.	<i>Elephas namadicus</i> F. and C.
<i>Cervus duvaucelli</i> Cuv.	<i>E. insignis</i> F. and C.
<i>Sus</i> sp.	<i>E. ganesa</i> F. and C.
<i>Hippopotamus palæindicus</i> F. and C.	
<i>Pangura tectum</i> Bell, and other reptilia.	

It will be remembered that Dr. Falconer designated these beds as pliocene at the same time as he concluded that the typical Siwaliks of the outer Himālayas, now classed as middle and upper Siwaliks, were miocene. The arguments for the pliocene age of the latter have been stated in the Manual of the Geology of India,¹ and are based on—

1. Their stratigraphical relation to the Mánchhar beds of Sind. The position of the latter immediately above the Gáj beds containing marine strata of miocene age, fixes their age as not older than the upper miocene. The beds of the original Siwalik area must therefore be pliocene.

2. The general facies of the fauna as compared with recent types and with the mammalian beds of the Mánchhars and Baluchistan; the latter have a distinctly older aspect.

Moreover, the immense thickness which has actually been proved for these middle and upper Siwaliks is evidence of a prolonged period of deposition; and the frequently observed occurrence of older as well as of more recent types confined to definite disconnected areas or to demonstrably different horizons in the series renders it probable that a very long period was required for the differentiation of such a diverse fauna. The Mánchhars as well as the ossiferous beds of Baluchistan are now classed with the Siwaliks, and the strong relationship which their fauna bears to that of the Pikermi and Samos deposits is quite recognized. Dr. W. T. Blanford, Mr. R. Lydekker and others class these beds in the lower pliocene,² which gives us a still

¹ Man. Geol. Ind., 1st. ed., ch. XXIV; 2nd ed., ch. XIV.

² Blanford, address to Br. Ass., 1884; Lydekker, Geog. Hist. of Mammals, 1896, p. 197; Geikie, Text book of Geol. II, p. 1296, 4th ed., 1904.

newer age for the middle and upper Siwaliks referred to above. Mr. Lydekker¹ in 1883 gave it as his opinion that the topmost beds of the Siwaliks, containing the newer types, *Camelus sivalensis*, *Bubalus palæindicus* and *Equus namadicus*, were probably upper pliocene or even pleistocene; his latest classification does not tend to invalidate this view.

The unconformity between the older alluvial deposits of the plain and the Siwaliks has been generally admitted²; the alluvial strata are nowhere inclined, and the deposit must in all cases have taken place subsequently to the great earth movements, which resulted in the upheaval of the outer Himālayas. These peninsular deposits must therefore be put at any rate into the pleistocene, and since the deposition could not have been continuous with that of the Siwaliks, there may be a considerable time break between the two series.

So much for stratigraphical evidence. The fossil molluscan fauna³ of these beds does not contain any species, which is not identical with those at present living in the same area, although many species now living have not been found, while the relative proportion which the individual species bear to one another is different from that which prevails at the present day. As regards the vertebrate fauna there is no single genus which does not exist at the present day, although *Elephas* and *Hippopotamus* are in part represented by subgenera, which are now extinct. *Rhinoceros unicornis* is identical with the living species, while *Bubalus palæindicus* and *Cervus duvaucelli* are nearly allied respectively to the modern Indian buffalo and the barasingha. *Pangura tectum* and possibly others of the *Reptilia* are also identical with forms which frequent the Indian rivers of to-day. *Elephas insignis*, *Elephas ganesa* and *Equus namadicus* have come up from the Siwaliks, and *Hippopotamus namadicus* may have originated from a Siwalik ancestor; *Hippopotamus palæindicus* belongs to a subgenus now only found in Africa. *Elephas namadicus* is identical with the European *E. antiquus*, while the phylogeny of *Ursus namadicus*, *Bos namadicus* and *Leptobos frazeri* is obscure. A fauna

¹ Pal. Ind., X, II, 96.

² Mr. Medlicott (Rec. G. S. I., VI, pt. 3, p. 52) states that the older alluvial clay of the Ganges rests on the denuded upturned surface of the upper Siwaliks at Hardwar. The topmost beds containing *Bubalus* and *Camelus* mentioned in the text are inclined, according to Falconer, at an angle of 20°, while at Bubhor strata with the same fossils are vertical (Rec. G. S. I., IX, p. 57).

³ Mem. G. S. I., II, p. 284.

of such a type and with such recent affinities shows no inherent likelihood of having lived at a time approximating very closely to that of the Siwaliks, and we cannot reasonably assign to it a date earlier than pleistocene.

In conclusion, it may be of interest to review briefly the various regions where remains of *Elephas antiquus* are found along with the geological horizons through which they are distributed. The case of *Elephas antiquus* is of special interest as it is a species which, by virtue of its powers of locomotion and its adaptability to varying environments, had a very wide geographical distribution and has been recorded from deposits ranging through a very considerable period.

In the first place we have to notice that it is entirely absent from all the Siwalik strata, nor, as we have seen, is there any ancestral Siwalik type from which it might claim immediate descent. But as soon as we begin to examine the younger deposits of the Godavari, the Narbada and the Ganges, we at once find its remains in abundance. It has also been found in Burma,¹ China and Java, though *sparingly* so as compared with many other mammalia, which the researches of Owen,² Martin,³ Koken⁴ and Schlosser⁵ have disclosed to us in the same countries. Naumann⁶ has also recorded a tooth of *E. antiquus* from Japan. All these deposits are considered to be of younger date than those of Siwalik age.

On the other hand *E. antiquus* is found widely distributed in the upper pliocene of Europe. It was essentially a southern type and its remains are found most

abundantly in Italy. Thence it extended both to northern Africa, which in upper pliocene times or later was united to the mainland of Europe, to England¹ and to Germany. It attains its maximum in the pleistocene deposits of the same countries, mingling with northern species, perhaps in the course of seasonal migrations according to the views expressed by Prof. Boyd Dawkins.²

The four dwarf races of *E. antiquus* are confined to four isolated areas centred respectively in the islands of Sicily, Malta, Crete and Cyprus. One can therefore hardly avoid the conclusion that the dwarfing of the type was due to its insulation in these areas under similar conditions of overcrowding and starvation. It may be remarked that additional evidence for this belief is afforded by the presence of pygmy species of Hippopotamus, *H. pentlandi* Meyer and *H. minutus* Blainv. in Sicily, Sardinia and Cyprus. These are both nearly allied to *H. major*, the large continental species. In Sicily Pohlig has also described a small race of red deer, which he considers indistinguishable from *Cervus elaphus* Linn., except in point of size. That the conditions of existence were somewhat abnormal is perhaps indicated by the presence of a gigantic dormouse, *Myoxus melitensis* Leith Adams. Remains of these animals Pohlig found in Sicily mingled with typical Pleistocene forms, *Bos primigenius* Boj., *Bison priscus* Boj. and *Hyæna spelæa* Gold. It seems likely therefore that the severance of these islands from the mainland, which resulted in the differentiation of this peculiar fauna, took place in early pleistocene times.

The geographical and geological distribution of *Elephas antiquus* outlined above, suggests the probability that this is a species which originated in Europe and migrated thence to India and the Oriental regions.

It may be that the causes to which we can ascribe such a migration are to be found in the increasing cold of the glacial period in Europe, and in the closure of a line of retreat southward into Africa.

¹ Remains of *E. antiquus* are found in the Norwich Crag, which is probably older than the topmost Siwaliks; according to Leith Adams molars of the species were obtained from the Red Crag.

² Q. J. G. S., XXVIII, p. 428, etc.

¹ Lydekker, Cat. Pleist. Vert. Ind. Mus., 1886, p. 14, and Foss. Mam., IV, p. 168.

² Owen, Fossil remains of Mammals found in China, Q. J. G. S., XXVI, 1870, p. 417.

³ Martin, Fossile Säugethierreste von Java und Japan, Samm. d. Geol. Reichs. Mus., Lei. IV, 1886, 25.

⁴ Koken, Ueber fossile Säugethiere aus China. Pal. Abhandl., III, 1886, 31.

⁵ Schlosser, Die fossilen Säugethiere Chinas. Abhandl. d. k. Bay. Akad., XXII, 1903, p. 1.

⁶ Palæontographica, XXVIII, 1881, p. 25, Taf. 6 and 7.

It may possibly be worth considering whether a similar migratory theory may not explain the resemblances of the later pleistocene and recent faunæ of India, to those of pleistocene Europe, and of Africa of the present day. Be that as it may, however, *E. antiquus* seems to have lived on in India long after its relatives had perished on the continent of Europe; still here too it died out, leaving no descendants to carry down its special characteristics to posterity, for, as we have seen, the present Indian elephant cannot claim kinship with it.

Summary.

The points to which special attention has been invited in this paper may be shortly summed up as follows:—

1. That the Godáviri alluvial deposits are of approximately the same age as those of the Narbada.
2. That they must be considered as not *earlier* than lower pleistocene.
3. That their distribution is wider than would be inferred from the geological map.
4. That through the researches of Prof. Pohlig and others we have definite proof that the Narbada elephant is only a variety of *Elephas antiquus*.
5. That the distribution of *Elephas antiquus* strongly suggests a European origin for the species.

THE TRIASSIC FAUNA OF THE TROPITES-LIMESTONE OF BYANS. BY PROF. C. DIENER, PH.D., of the Vienna University.

IN Byans cephalopoda of upper Triassic age have been collected by C. L. Griesbach in a grey limestone in the upper valley of the Kali river near Kalapani. The credit for their correct interpretation is due to E. v. Mojsisovics, who was able to determine a small number of forms agreeing with, or very nearly allied to, species of the Alpine *Subbullatus*-beds of the upper carnic stage.¹

A full description of the meagre fauna of the Tropites-limestone of Kalapani has been given by E. v. Mojsisovics in *Denkschriften Kais. Akad. d. Wissenschaften, Wien*, 1905, Bd. LXIII, and in the 3rd volume of "Himalayan Fossils" (*Palæontologia Indica*, ser. XV). Although the fossils were too badly preserved to permit a specific determination, the carnic type of the faunula showed itself so clearly in the association of genera, that he did not hesitate in correlating it with the fauna of the Alpine zone of *Tropites subbullatus*.

The genus *Tropites* being the chief leading fossil of this horizon, the name Tropites-limestone has been given and accepted generally in Indian literature.

Equivalents of the zone of *Tropites subbullatus* were not found in the sections closely examined by C. L. Griesbach, C. S. Middlemiss, and myself in 1892. Therefore, it seemed most desirable that the fossiliferous localities in Byans should be revisited and that larger collections of fossils should be made in the Tropites-limestone. Geological researches were made in Byans by F. H. Smith in the summer of 1899 and by A. v. Krafft in 1900, and large collections of cephalopoda from the Tropites-limestone were obtained from the following localities: Lilinithi, Tera Gádhi, Kalapani on the Kali river, Nihal and Kuti on the Kuti Yangti river.

The following is a section through the lower, middle and part

¹ E. v. Mojsisovics, Vorläufige Bemerkungen ueber die Cephalopodenfaunen der Himalaya-Trias. Sitzgsber. kais. Akad. d. Wiss., Cl. 1. Abt., Mai 1892.

of the upper Trias, as observed in Byans by F. H. Smith and A. v. Krafft:

Noric stage	. 3. Black shales . . .	1,000 feet
Carnic stage	. { 2. Massive limestone . . . Near top, <i>Tropites</i> , etc.	250 "
Ladinic "	. { 70 feet above base, cephalopoda of upper Muschelkalk ; immediately below, brachiopoda of the zone of <i>Spiriferina Stracheyi</i> .	
Muschelkalk	. {	
Lower Trias	. 1. Chocolate limestone . . .	150 "

According to A. v. Krafft, the fossiliferous horizon with *Tropites* is invariably found at the top of the massive grey limestone, which in its lower portion has yielded cephalopoda (*Gymnites Follyanus*) and brachiopoda of the muschelkalk. The Tropites-limestone, occurring near the base of the black shales of noric age, does not exceed three feet in thickness and is the only upper Triassic horizon of Byans rich in ammonites, whereas all the other beds are practically unfossiliferous.

The beautiful materials collected by Smith and A. v. Krafft have been entrusted to me for examination by the Director of the Geological Survey of India. The full description of the fauna of the Tropites-limestone will form the first part of Vol. V of "*Himálayan Fossils*" (*Palæontologia Indica*, ser. XV). Although the manuscript has been finished and sent to Calcutta, considerable time must elapse before its publication. The remarkable interest connected with the results of my examination induces me, however, to give this short preliminary notice.

There are, altogether, 168 forms known to me from the Tropites-limestone of Byans, 155 species belonging to the order of *Ammonoidea*. The fauna of this horizon is therefore one of the richest Triassic faunas hitherto known. Its most characteristic feature consists in the overwhelming predominance of cephalopoda.

Among 155 species of ammonites 104 are peculiar to the Tropites-limestone of Byans, 51 are identical or probably identical with species from the Triassic Hallstatt-limestone of the Eastern Alps, or from the upper Triassic Halorites-limestone of the Himálayas. But among the new species the number of forms very nearly allied to European ones

is much larger than the number of types which impart to the Indian Triassic province the character of a zoogeographical region of its own.

As faunistic elements peculiar to the Tropites-limestone of Byans, but unknown in the Mediterranean region, the following may be considered: *Trachypleuraspides*, a sub-genus of *Dittmarites*, with remarkable morphological affinities to *Trachyceras*; the sub-genus *Himavatites*, in which characters of *Acanthinites*, *Sagenites* and *Trachyceras* have been united; the strange genus *Fellinekites* with three external keels, which are repeatedly interrupted by transitional constrictions; the group of *Sirenites Vredenburgi*, distinguished from other congeneric species by its very delicate sculpture, thin, thread-like ribs and transversely elongated tubercles; the groups of *Drepanites Schucherti* and of *Clionites gracilis*, differing considerably from all congeneric forms of the Alpine region; the groups of *Tropiceltites arietitoides*, imitating liassic *Arietidæ* in its external characters, and of *Distichites ectolcitiiformis*, a transitional shape between the two genera *Distichites* and *Ectolcites*.

The relations with upper Triassic faunæ of the Mediterranean region are most clearly indicated by the occurrence of numerous identical or closely allied forms in the two areas. But the assemblage of those species in the Tropites-limestone of Byans is very peculiar, and exhibits rather conflicting characters.

In Griesbach's small collection ten species of ammonites were noticed by E. v. Mojsisovics, all of them pointing to a correlation with the carnic stage of the Hallstatt limestone, especially with the zone of *Tropites subbullatus* (tuvalic sub-stage). In the rich materials collected by Smith and A. v. Krafft the carnic type of the fauna shows itself in the assemblage of the following genera: *Thisbites*, *Arpadites*, *Trachyceras*, *Protrachyceras*, *Fovites*, *Gonionotites*, *Eutomoceras*, *Anatropites*, *Carnites*, *Proarcestes*, *Pararcestes*, *Lobites*. There are altogether 27 species identical or probably identical with species of the carnic stage of the Salzkammergut. Among them 16 belong to the tuvalic, 8 to the julic sub-stage, 3 are common to both sub-stages. The majority of faunistic elements consequently points to the zone of *Tropites subbullatus*. Especially those groups of carnic elements, which give to the fauna its peculiar type and are conspicuous for their specific fecundity—*Tropites*, *Margarites*, *Anatropites*—are leading fossils of the tuvalic sub-stage of the Hallstatt limestone.

The species of ammonites bearing the stamp of a tuvalic age are contained in the following list:—

Tropites subbullatus v. Hauer.
 „ *cf. fusobullatus* Mojs.
 „ *cf. discobullatus* Mojs.
 „ *cf. Estellæ* Mojs.
 „ *cf. Paracelsi* Mojs.
Margarites Georgii Mojs.
 „ *cf. auctus* Dittm.
Polycyclus Henseli Oppel.
Sandlingites cf. Oribasus Dittm.
Sirenites Pamphagus Dittm.
 „ *Agriodus* Dittm.
Anasirenites cf. Menelaus Mojs.
Anatomites cf. Edgari Mojs.
 „ *cf. Theodori* Mojs.
 „ *cf. crasseplicatus* Mojs.
Arcestes bicornis Hauer.

The following species of the Tropites-limestone of Byans are leading fossils of the zone of *Trachyceras Aonoides* (julic sub-stage) in Europe:—

Arpadites Tassilo Mojs.
Isculites Heimi Mojs.
Anatomites cf. Fischeri Mojs.
Tropites Wodani Mojs.
Carnites cf. floridus Wulf.
Proarcestes Gaytani Klipst.
Pararcestes cf. Sturi Mojs.
Lobites cf. ellipticus Hauer.

Protrachyceras is represented by two, *Trachyceras* by one species. In Europe these two genera make their appearance for the last time in the julic sub-stage, but have been found in the Tropites beds of California of undoubted tuvalic age by J. Perrin Smith (*Amer. Journ. Geol.*, II, p. 607, III, p. 377).

Three species of the Tropites-limestone, *Pinacoceras cf. rex* Mojs., *Eutomoceras sandlingense* Hau., *Margarites cf. circumspinitus* Mojs., are common to the julic and tuvalic sub-stages.

From this proportion of julic and tuvalic elements in the Tropites-limestone it is evident, that a greater number of relationships and analogies speaks in favour of a correlation with the tuvalic sub-stage.

There is, however, a second faunistic element equally distributed in the Tropites-limestone of Byans. This element consists of genera and species of ammonites characteristic of the *noric* stage of the Hallstatt limestone. The following species are identical with species from the noric stage of the Salzkammergut:—

Helicites cf. geniculatus Mojs.
 „ *cf. subgeniculatus* Mojs.
Phormedites fasciatus Mojs.
Parathisbites cf. Hyrtli Mojs.
 „ *cf. scaphitiformis* Hauer.
Distichites cf. Harpalos Dittm.
Sirenites Evæ Mojs.
 „ *cf. Argonautæ* Mojs.
 „ *cf. Dianæ* Mojs.
Didymites tactus Mojs.
Pinacoceras parma Mojs.
 „ *Metternichii* Hauer, var.
Arcestes dicerus Mojs.
Cladiscites cf. neortus Mojs.

To this list of noric types must be added 6 species of *Distichites* (*megacanthi*), 3 species of *Drepanites* and of *Didymites*, 4 species of *Ectolcites*, 2 species of *Stenarcestes*, 1 species each of *Dionites*, *Acanthinites* and *Daphnites*—genera which up to now have only been found in the noric stage of the Hallstatt limestone. It is especially the genus *Didymites*, restricted to the alaunic (middle noric) sub-stage in Europe, which is very richly represented in the Tropites-limestone at all localities from which collections have been made by Smith and A. v. Krafft.

The fauna of the Tropites-limestone of Byans has also close affinities to that of the Halorites limestone of the Central Himálayas (Bambanag section) of lower noric age. The following species are common to both horizons:—

Steinmannites Lubbocki Mojs.
Tibetites Ryalli Mojs.
Anatibetites Kelvini Mojs.
Paratibetites Adolphi Mojs.
 „ *Bertrandi* Mojs.
 „ *Geikiei* Mojs.
Parajuavites Jacquini Mojs.
Pinacoceras parma Mojs.

As elements pointing to a close relation with the fauna of the Halorites beds must be mentioned moreover—

Paratibetites sp. aff. *Tornquisti* Mojs.

Halorites sp. aff. *procyon* Mojs.

Clionites sp. aff. *Hughesii* Mojs.

„ sp. aff. *aberrans* Mojs.

Sandlingites sp. aff. *Archibaldi* Mojs.

Bambanagites *Krafftii* nov. sp.

The representatives of *Tibetites* (including the two sub-genera *Anatibetites* and *Paratibetites*) are scarcely inferior to the genus *Tropites* in number of individuals.

The total number of species of ammonites with noric affinities in the *Tropites*-limestone of Byans is 49, or one-third of the entire number of species.

The above analysis shows that the cephalopod fauna of the *Tropites*-limestone of Byans has relations with *both the carnic and noric faunæ* of the Hallstatt limestone. Such an assemblage of forms has never been met with in any Triassic horizon of the Eastern Alps, where noric and carnic faunæ are invariably confined to entirely different horizons.

This strange association of faunistic elements in a single bed of three feet in thickness offers a problem, the explanation of which may be attempted from different points of view.

The easiest explanation would be to suggest that the two faunæ have been mixed together accidentally in the collections from different localities. Two deposits of equal lithological characters might easily be mistaken for a single horizon, although they contain two separate faunæ, if a careful examination of the fossils is not possible in the field. If each of the two faunæ of the *Tropites*-limestone were found concentrated in the collections of a single locality and not mixed there with the second fauna, we might take this explanation as the fittest.

A detailed examination of the lists of fossils from different localities has, however, convinced me that the noric and carnic faunæ do not occur at separate localities but are amalgamated in the *Tropites*-limestone at every locality from which collections have been made. Thus we are led to the conclusion that two faunæ, which in the Alpine Trias are known to characterise two horizons of different

geological age, have in Byans been found mixed together in one single bed of three feet in thickness.

It must be especially remarked that A. v. Krafft, when surveying the Mesozoic territory of Byans, did not overlook the remarkable mixture of two different elements in the fauna of the *Tropites*-limestone. I quote the following passage from his diary:—

“Palæontologically the fauna of the *Tropites*-limestone is very remarkable. The genus *Tropites* being very common and *Tropites subbullatus* occurring among other species, the fauna must be nearly allied in age to that of the *subbullatus*-beds of the Salzkammergut. But with these upper carnic types forms occur which bear a strong resemblance to species from the limestone of the Sommeraukogel near Hallstatt, considered to be of noric age by E. v. Mojsisovics. No explanation of this fact can be attempted so far.”

In the face of these facts it is impossible to maintain the suggestion that the noric and carnic faunæ contained in the *Tropites*-limestone of Byans have been mixed together accidentally in the collections from different localities.

It is a well-known fact that in the entire Alpine Trias there is no greater gap in the development of faunæ than between the noric and carnic stages. The question arises, whether the strange association of carnic and noric elements in the *Tropites*-limestone of Byans might not constitute a transitional fauna, bridging over the hiatus which exists between the carnic and noric stages of the eastern Alps. If this suggestion could be proved to be correct, the *Tropites* beds of Byans might be considered as passage beds from the tuvalic (upper carnic) into the latic (lower noric) sub-stage.

This suggestion is, however, not confirmed by any facts. There is only an extremely small number of transitional forms connecting the two faunæ. As such connecting links might be considered *Placites polydactylus* var. *Oldhami* Mojs., a group of *Dittmarites* uniting characters of *D. Dorceus* Mojs. of carnic and of *D. Lilli* Guembel of noric age, *Buchites Emersoni* nov. sp., a representative of the carnic sub-genus *Buchites* but very nearly allied to the noric sub-genus *Phormedites*. But this is a very small number, whereas the overwhelming majority of ammonites in the *Tropites*-limestone are allied to either carnic or noric types, but do not constitute transitional forms between the two faunæ.

It has been stated that among the carnic elements of the fauna of

the Tropites-limestone two groups can be distinguished, one with tuvalic, the other with julic affinities. In the noric elements of the fauna similar relations with the faunæ of the latic and alaunic sub-stages are obvious. There is undoubtedly a preponderance of latic affinities in them, but the affinity to the alaunic sub-stage is nevertheless sufficiently remarkable. This affinity is most clearly marked in the presence of *Didymites* and *Ectolcites*, two genera, which in the Alpine Trias are restricted exclusively to beds of alaunic age.

A fauna with so strange a mixture of julic, tuvalic, latic and alaunic types, does certainly not exhibit a transitional character. It is widely different from the fauna of a passage-bed between the tuvalic and latic sub-stages, in which we should expect an overwhelming preponderance of exclusively tuvalic and latic species and of transitional links connecting them. The Tropites-limestone can consequently not be considered as a passage bed, but is a horizon distinguished by the mixture of two different faunæ.

This mixture of faunæ agrees in a remarkable manner with the association of Kelloway and Oxford ammonites in the Jurassic oolite of Balin (Galicia). As has been proved by Neumayr (*Abhandl., k. k. Geol. Reichsanst.*, Bd. V, 1871) the oolite of Balin contains in a very thin bed 66 species of ammonites of Kelloway and Oxford age, ranging from the zone of *Oppelia aspidoides* to the zone of *Quenstedtoceras Lamberti*. It would be in contradiction with our knowledge of the distribution of Jurassic ammonites to suppose, that two faunæ, which in all other parts of the world have been found confined to geologically different horizons, had lived together at the same period in the sea, in which the oolite of Balin was deposited. As in analogous cases the want of sediment seems to be the chief cause of the mixture of Kelloway and Oxford types at Balin.

Taking all this into consideration we are led to the conclusion that the Tropites-limestone is not only a homotaxial equivalent of the *Subbullatus*-zone of Europe, but also an equivalent of the latic Halorites beds of Johár and Painkhánda, with which it has a considerable number of species in common. The intimate connection of carnic and noric faunæ in this thin bed of limestone might be explained by the small amount of sediment deposited during the tuvalic and latic periods. With this suggestion the remarkable reduction in the thickness of all Triassic sediments in the Himálayas from Spiti to Byans would be well in accordance.

In Spiti the ladinic stage amounts to approximately 300 feet and is overlaid by strata of carnic age, 1,300 feet in thickness. In the Bambanag and Shalshal sections the ladinic stage dwindles down to such an insignificant extent, that Griesbach and myself failed to discover it in 1892, but the carnic stage is still represented by shales and limestones 800 feet in thickness. In Byans muschelkalk, ladinic and carnic stages are represented by a lithologically uniform mass of grey limestone of 200-250 feet in thickness. Counting 70 feet for the muschelkalk, the maximum thickness of the carnic stage cannot be more than 180 feet (800 in Johár, 1,300 in Spiti).

If we suppose that the sedimentation was nearly exhausted in the seas of the upper carnic and latic periods, the entire result of sedimentation during those periods might have been a lithologically uniform bed of limestone, three feet in thickness. Then it would be impossible to separate carnic and noric fossils within this limestone. This is exactly the case we find in the Tropites-limestone of Byans, which contains in a single bed the faunæ of two different Triassic horizons.

ON THE OCCURRENCE OF AMBLYGONITE IN KASHMIR.
BY F. R. MALLET, *late Superintendent, Geological Survey of India.*

IN 1881, or early in the following year, an important discovery of sapphires was accidentally made in the Zânskâr Range of the Himâlayas, and considerable quantities of the mineral, including many valuable gems, were subsequently obtained.¹ The yield, however, some years later, was steadily diminishing, in consequence of which the Kashmîr Darbâr, in 1887, applied to the Government of India for a Geologist to examine the mines, and Mr. T. D. LaTouche was detailed for the duty in question. It appears from the results of his investigations, which are given in *Records*, Vol. XXIII, p. 59, that the mines, or more correctly diggings, are situated at an elevation of over 13,000 feet, about two miles west-north-west from Sumjâm, a village in the district of Pâdar, in N. latitude $33^{\circ} 25' 30''$, E. longitude $76^{\circ} 28' 10''$.² Although most of the sapphires were obtained from loose débris fallen from the cliffs above, the original matrix of the gems, in which they were actually found *in situ*, was a (generally pegmatitic) granite that traverses the gneiss of the surrounding hills in numerous dykes, though the sapphires were only observed in some particular ones. Other accessory minerals observed were black tourmaline, euclase, kyanite, and garnet.

"Besides the corundum,"³ LaTouche continues, "several other minerals, interesting from a scientific point of view, though not commercially valuable, are found in the granite of this region. For a determination of the species of most of these I am indebted to Mr. F. R. Mallet, late of the Geological Survey, who kindly examined them for me. These are the following:—1, green tourmaline; 2, cookeite; 3, spodumene; 4, prehnite; 5, copper carbonate; 6, beryl; 7, lazulite; 8, rock-crystal; concerning the third of these the author writes, "a few lilac-coloured crystalline blocks of this mineral,

which also¹ contains lithia, were found in a valley to the north of the Sapphire mines, between them and the place where the green tourmalines were found: none of these were found *in situ*." The green tourmaline was discovered about a mile from the ridge in which the sapphires occur.

As mentioned by LaTouche, I determined some of the above, but not the remainder, and amongst the latter was the mineral alluded to as spodumene. When retiring from the survey, however, I brought home a few Indian minerals, with the permission of Dr. King, the then Director, in the hope of being able to examine them at some future time, and amongst them was a piece of the mineral in question.

The physical and chemical characters of the specimen show that it is *amblygonite*, a mineral sometimes found in association with spodumene, and resembling it in containing alumina and lithia as the principal bases; but the acidic element is phosphoric instead of silicic.

The specimen is cleavable massive, with one fairly perfect cleavage, and another only faintly developed. Fragments suitable for goniometric measurement are obtainable with extreme difficulty. One excellent morsel, however, was found, with smooth planes yielding good reflections, and giving a measured cleavage angle of $104^{\circ} 58'$. The hardness is 6; the specific gravity 3.05; and the colour pale bluish gray to faint violet. The mineral is unusually transparent for amblygonite: thus the print of these *Records* could be easily read through a parallel-faced cleavage fragment nearly half a centimetre thick—the thickest obtainable without flaws. Solid inclusions are very rare or absent: some parts are free from inclusions of any kind, while in others there are numerous minute cavities, and some larger ones, which are partially filled with liquid. A few of the bubbles are moveable. Analysis showed that the principal constituents of the mineral are phosphorus pentoxide, alumina, and lithia, with minor proportions of soda, potash, fluorine, and water. It resembles the amblygonite of other localities by its occurrence in granite, and in its association with other lithia-minerals, represented in the present case by green lithia-tourmaline and cookeite.

The above is the only locality where amblygonite has been found within the limits of the Indian Empire, and I may add that none of the works on mineralogy I have consulted mention its occurrence in any part of Asia.

¹ *i.e.*, in common with the cookeite.

¹ *Records*, Vol. XV (1882), p. 138, and *Manual of the Geology of India*, Part IV, p. 40.

² The village (with the name spelled Sunjâm) is marked on Lydekker's geological map of Kashmîr, *Mem. G. S. I.*, Vol. XXII.

³ Sapphire.

MISCELLANEOUS NOTES.

The Kangra Earthquake of 4th April, 1905.

AFTER a lapse of only eight years since the great earthquake of 1897, India has again been visited by another disaster of considerable magnitude, namely, the Kangra Earthquake of the 4th April, 1905, by which an unfortunate loss of human life occurred, estimated at 20,000. An investigation was immediately taken in hand by this Department among others, not only by sending officers personally to the affected parts, but by the issue of many thousand question-forms to local officials throughout the various Presidencies and Native States. The facts and information thus collected are now being arranged and sifted, and the first result will appear in the next issue of the "Records" as a preliminary account. Meanwhile, it may be summarily stated that the quake appears to have originated in a geotectonic movement taking place below an epifocal area some 160 miles long and extending in a north-west—south-east curve from the neighbourhood of Kangra to that of Mussoorie. It seems to have been connected with a reversed fault or series of related faults intimately bound up with the structural history of the Himalaya. This axial form of centrum must have had a distinct pitch to the south-east, whilst it emerged quite near the surface in the Kangra Valley and gave rise at that locality to a destructive intensity of 10 of the Rossi-Forel scale. On account of its increasing pitch towards the south-east, the intensity along the epifocal tract diminished to 9 in Kulu, and to about 8 near Mussoorie and Dehra Dun. In other words, the first few isoseismals close up round the north-west end of the centrum and widen out towards the south-east. The area of extensive damage to masonry buildings is only about 5,800 square miles as compared with 150,000 square miles in the Assam earthquake of 1897; whilst a further area of 27,000 square miles, surrounding the former, represents that of slight, but still frequently destructive damage to masonry buildings. On the other hand, the isoseismals of still more diminishing intensity expand out relatively, especially along the Indo-Gangetic alluvium; so that finally the total area over which the shock was sensibly felt works out not far below that of the 1897 quake, its western, southern and eastern limits being, respectively, Quetta, Surat, False Point, and Lakhimpur.

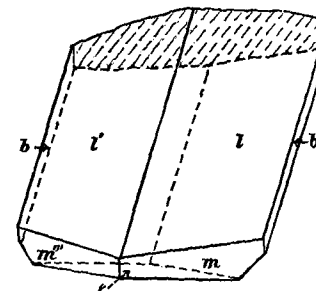
The unfelt earthquake, besides being recorded by the seismographs of Calcutta, Bombay, and Kodaikanal in India, was of world-wide effect, and has furnished long-distance traces to the instruments in Europe and Japan.

[C. S. MIDDLEMISS.]

An unusual form of Selenite from the Pachpadra Salt-Source, Jodhpur, Rajputana.

Some interesting samples of various substances obtained during the manufacture of salt from the brine obtained from brinewells at Pachpadra, and regarded as impurities, were forwarded by Mr. A. F. Ashton, Officiating Commissioner, Northern India Salt Revenue, Agra, to the Geological Survey Office for examination. One sample is impure Epsom salt and the remainder consist of selenite sometimes associated with common salt.

The most interesting of these specimens is locally called *anetha* and consists entirely of selenite crystals. These were sorted into three portions. The first (J. 843) consists of crystals of unusual habit. As will be seen from the accompanying figure, owing to the subordinate development of the faces m (110) and b (010), the pyramid faces l (111) become the most prominent and this, aided by the presence of the hemiorthodome e (103), causes the crystals to assume a flattened aspect roughly parallel to the negative hemi-pyramid (111).



The face (e) is exceedingly roughly developed and is not always present. In colour they are usually creamy, more or less opaque, and often show zoning on the faces l , l' parallel to the edges lm and lb . The

largest crystals measure about $\frac{3}{4}$ inch along the edge ll' and are $\frac{3}{16}$ to $\frac{1}{4}$ inch thick.

The second portion of these crystals (J. 844) consists of many small swallow-tail twins ranging up to $\frac{1}{2}$ and $\frac{3}{4}$ inch across the "tails," and having a (100) for twinning plane. They usually have the normal development of selenite crystals, *i.e.*, tabular parallel to b , but are occasionally of the preceding type.

The third portion (J. 845) consists of many more or less radiate aggregates of small crystals averaging $\frac{1}{4}$ to $\frac{1}{2}$ inch in length, some of the crystals showing the abnormal habit of J. 843, while some are twinned.

[L. L. FERMOR.]

RECORDS
OF
THE GEOLOGICAL SURVEY OF INDIA.

Part 4.]

1905.

[November.

MEDLICOTT AND BLANFORD.

THE joint-authorship of the first Manual of Indian Geology has served to link together the names of Medlicott and Blanford in the minds of many scientific men, who were not aware of the close partnership which existed between these two great men from the time they joined the Indian Service just fifty years ago. Now both have passed away in the same year and in the order of seniority observed throughout their official careers. When the news of Mr. Medlicott's death reached India in April last, Dr. Blanford, as the one conspicuously most suitable, was asked to review his friend's services to science; but before the note printed below could be set up in type, or its receipt even acknowledged, the sad news arrived that its author too had gone: the last effort of a literary activity, hardly surpassed in the history of science, was thus spent characteristically on an appreciative memorial to a fellow-worker.

[T. H. HOLLAND.]

H. B. MEDLICOTT, M.A., F.R.S.

HENRY BENEDICT MEDLICOTT was born at Loughrea, County Galway, Ireland, on August 3rd, 1829. He was the second of three sons of the Rev. Samuel Medlicott, Rector of Loughrea, and of Charlotte, daughter of Colonel H. B. Dolphin, C.B. His elder brother, Joseph G. Medlicott, was also for several years on the staff of the Geological Survey of India. Henry Medlicott was educated in France, Guernsey, and Dublin, where he graduated at Trinity College and took the degree of A.B. in 1850, with diploma and honours in the School of Civil Engineering. He took the M.A. degree in 1870.

He was thus, from his early education, an excellent French scholar, and his acquaintance with the classical works of the great French geologists may be often traced in his writings.

In 1851 he joined the Geological Survey in Ireland, and in 1853 he was transferred to the English Survey, where, for a time, he worked with Mr. Aveline in Wiltshire. He was then engaged by Dr. Oldham for India, and joined the Geological Survey, then occupied in the Rájmahál Hills, at or near Bhagalpur, on March 24th, 1854. His brother, J. G. Medlicott, had joined the Survey a year or two earlier. Before, however, Henry Medlicott had commenced field work, he was appointed, in August 1854, by the Court of Directors of the East India Company, Professor of Geology in Rurki College, and he remained in this post till October 1862, when on some additions being made to the staff of the Geological Survey, he rejoined it as Deputy Superintendent for Bengal.

During his tenure of the Rurki Professorship, however, he did most important work in field geology. By an arrangement with Dr. Oldham he was allowed to occupy the field season in surveying, and thus he was enabled to examine part of the Nerbudda Valley and Bundelkhand in 1854-55 and in 1856-57, whilst in the other years he was engaged in working out the geology of the Lower Himálayas between the Ganges and the Rávi (Hardwar to Dalhousie) and of the Siwálik beds and their associates at the base of the mountains. In 1857 he served as a volunteer, with the garrison of Rurki, against the mutineers of the Bengal army, and on the close of the campaign was awarded the Indian Mutiny Medal for Special Service. An instance of the service rendered may be added here.

Rurki, during the outburst of the sepoy mutiny, was isolated, like most of the small garrisons in the Upper Provinces, where the natives of the villages were associated with the rebels. No European could possibly traverse the country in safety. News was received at Rurki, one day, of a Christian family who were held by the villagers as prisoners at a few miles' distance, and who were in imminent danger of being killed. It was arranged that Henry Medlicott and one other European companion should go out with an escort of sowars to endeavour to rescue these unfortunate people; but on the day before the attempt, the sowars showed signs of mutiny and were disarmed. Medlicott and his companion, whose name appears now impossible to trace, left in the morning, and by sheer pluck, at the risk of their

lives, succeeded in bringing back the imprisoned people in safety, the villagers apparently being so astonished at two Europeans coming among them that they surrendered their prisoners. Only the outline of the story can be recovered: it was told to the present writer in 1866 by Colonel Baird Smith, who commanded the Rurki garrison in 1857.

After rejoining the staff of the Geological Survey in 1862, Mr. Medlicott was engaged for many years, first in one part of the country, then in another, generally by himself, though occasionally in charge of a party, in enquiring into economical problems or in investigating geological questions, and not infrequently in clearing up difficulties that had proved too serious for his predecessors. In 1862-63 he was in South Rewah; in 1863-64 in Behar; in 1864-65 he traversed Assam from the farthest eastern extremity of the province to the Khasi Hills; in 1865-66 he was in Central India and Rajputana. In other years he examined various tracts from the Jammu hills of Kashmir, the Satpura ranges of the Central Provinces and Chhattisgarh to the Garo Hills in Assam. Twice he officiated as Superintendent of the Survey during Dr. Oldham's absence on leave, once in 1870 for a short period, and in 1873-74 for seventeen months.

On April 1st, 1876, Mr. Medlicott succeeded Dr. Oldham as head of the Survey, and from that time the duties of his office kept him mainly in Calcutta. The title of Superintendent was altered to that of Director in 1885, but the change was confined to the title.

Dr. Oldham had been in weak health for some time before he retired, and he naturally left many arrears for his successor to carry out. Foremost among these was the preparation of a general account of Indian Geology. This had long been required: a mass of scattered papers and reports, not a few of which were in manuscript, represented about a quarter of a century's progress in the systematic examination of Indian Geology, and before those who had helped from the beginning had left India for good, it was essential that they should prepare a record of the work in which they had taken part, for the information of their successors. Moreover, until a general description of the country as a whole was compiled, it was impossible for any one, either in India or in Europe, without an enormous amount of labour, to gain a correct idea of its geological features. Henry Medlicott at once set to work at this general account, and dividing the chapters between Mr. Blanford and himself, brought it to a conclusion in 1879, and published

the "Manual of the Geology of India." It is unnecessary to point out the great importance of this book, or the assistance it has afforded not merely to Indian geologists, but to those throughout the world.

This, however, is only one of the subjects to which the new Superintendent of the Survey devoted his attention. Of the effect of his superintendence on the work of the staff, a fair example may be furnished by the Survey publications. From 1877 the *Records* which, as describing recent work, are the best illustrations of Survey progress, doubled in size, and they certainly did not fall off in the importance of the contributions printed, either economic or scientific. Besides these, Mr. Medlicott edited, during his tenure of office, about ten volumes of the *Memoirs*, and numerous parts of the *Palæontologia Indica*, comprising Dr. Feistmantel's descriptions of Gondwana plant fossils, most of Mr. Lydekker's accounts of the Siwalik and other vertebrata, and the largest portion of Dr. Waagen's great work on the Salt Range fossils, and of the descriptions of Tertiary corals and echinoderms from Western India by Dr. Duncan and Mr. Percy Sladen. There was the same thorough progress in other directions, for instance, in the arrangement of the Museum and Survey offices. His work absorbed him entirely. Living almost the life of a hermit, and confining himself to his office, he devoted all his time to the Survey. He was a man of retiring disposition originally, not in the least from want of energy or courage, but because the social pursuits of men in general did not attract him; he had, in fact, something of the ascetic temperament.

After the completion of his 55th year in 1884, Mr. Medlicott was retained by the Government in his office until 1887. He retired on April 27th in that year, having served almost continuously for rather more than 33 years. He was only on leave for 6 months in 1865, less than 6 months in 1871, and again 6 months in 1884, or 18 months during the whole period of service.

After his retirement he lived very quietly at Clifton near Bristol and took but little part in scientific discussion, though always keenly interested in the progress of the Indian Survey. His time, as long as he remained in good health, was mainly devoted to philosophical problems, to which he had always been devotedly attached. He published two short pamphlets on "Agnosticism and Faith" in 1888, and on "The Evolution of Mind in Man" in 1892, and was engaged on a large work which has not been finished. A few years since a

strain caused by bicycling led to serious symptoms, and although for a time a partial recovery was made, a relapse early in 1904 reduced him greatly. The end came quietly on April 6th, 1905, when he was seated in his study.

Medlicott joined the Geological Society of London in 1856 and received the Wollaston Medal in 1888, on his retirement from the Indian Service. He was elected a Fellow of the Royal Society in 1877. He was a Fellow of the Calcutta University, and from 1879 to 1881 he was President of the Asiatic Society of Bengal. He was also Honorary Fellow of several Foreign scientific societies, but he never made use of his titles, which he regarded as simply "official." It may be remarked that he carefully omitted the letters F.R.S. after his name in all his Survey publications, and even in the "Manual" he struck out the initials after his own name, whilst leaving them after his colleague's. Throughout his career, in fact, he appears almost unnecessarily to have disregarded the honours to which he was entitled for brilliant original work as well as good official service.

His policy as head of the Survey was to assist his colleagues, in every way, to publish the account of their observations in their own words. Occasionally the result was that their views drew upon the authors replies from other officers, who took different views, or from geologists who had another opinion on the subject. This was especially the case in palæontological questions, on which he never pretended to decide difficult points. He published both views. The policy adopted is perhaps not quite in accordance with official usage, but there can be no doubt that the result of Medlicott's principle was to bring out the facts in a discussion, and not unfrequently in a difficulty of high scientific and economic importance, as in the various disputes over the Gondwana flora. And not only did he obtain the help of the staff of the Survey in forwarding the progress of Indian Geology, but he succeeded in securing the valuable assistance of the late General McMahon and others, who contributed observations on subjects of high interest in the geological history of the Indian Empire. That he contributed no lengthy memoirs of his own was simply due to the fact that he regarded with horror any attempt to gain credit by others' work. Short notes and an annual report were for many years his sole contributions to the Survey publications. He was not a fluent writer, though he could write strongly and earnestly, never so strong as when he was dealing with attempts at injustice or plausible but misleading

statements. He was absolutely fearless, and cared but little whose pet theory he was disputing, if the theory was in his opinion worthless.

It is difficult to appreciate Henry Medlicott's work in India without some acquaintance with the knowledge of the geology available when he entered the Service. So great a change has taken place in the half century that has elapsed since 1854, that it is scarcely possible to reconstruct the conditions under which geological surveying was carried out fifty years ago. There were no railroads and very few roads. Travelling was difficult and very slow. The early surveyors had often to make their own maps in the wilder parts of the country. Some idea of the geology known in the days before the Survey may be gained from Dr. H. J. Carter's Summary of the Geology of India between the Ganges, the Indus, and Cape Comorin, published in 1854, the year that Mr. Medlicott landed in India. In this remarkable work, to take only one instance out of many, Vindhyan and Gondwānas, both upper and lower, with limestones from every formation in India, from metamorphics to the Bāgh beds and intertrappeans, are included in the "Oolitic Series." An equally remarkable confusion is shown by Greenough's Geological Map of India published about the same time.

Nothing had been done to clear up the nebulous condition of Indian Geology before 1854. Henry Medlicott's first season in India was signalised by the earliest and most important step in the classification of the Peninsular rocks. He and his brother, J. G. Medlicott, separated the Vindhyan north of the Nerbudda valley from the Gondwānas to the south. The name Vindhyan was given by Dr. Oldham, who, however, when announcing the discovery (*Journal, Asiatic Society, Bengal*, 1856, vol. XXV, p. 250, and more clearly *Memoirs, Geological Survey, India*, vol. II, p. 304), stated that the separation had been made by the Medlicotts before he visited the country. In the first memoir he wrote (vol. II of the *Memoirs*) Henry Medlicott reduced the whole mass of Vindhyan, infra-Vindhyan and Bijāwar rocks, that extend throughout Bundelkhand, to a sequence which has received no great subsequent alteration, the principal change, perhaps, being in the substitution of the term Lower Vindhyan for Sub-Kymores. This masterly paper, though published in a most imperfect condition, ill-arranged and not very clearly written, was not only the beginning of our accurate knowledge of the Vindhyan and infra-Vindhyan rocks, but a firm foundation on which much since has been built. From his earliest work to his

jatest, these wonderful azoic rocks of India were Mr. Medlicott's especial favourites, perhaps because all the knowledge of them was derived from purely physical observations, and not interfered with by organic remains, which in the younger Gondwānas have not always proved an accurate indication of the age of the beds or their relations to each other. Throughout the annual reports issued during his Directorship, point after point is brought forward tending to the correlation of these formations in various parts of India, and showing the relations between Kurnool and Cuddapah, Kalādgi, Gwalior, and many other similar rocks on the one hand, and the Vindhyan and Bijāwars on the other.

The next great work of his was the arranging of the rocks of the Lower Himālayas in the Simla and neighbouring areas, and of the Siwālik rocks and their associates at the base of the mountains, and of first sketching the history of the Himālayan range on a definite geological basis. The first named has been one of the most difficult questions in Indian Geology, and although the work was commenced in 1855, it cannot be regarded even now as nearly solved. The Tertiary Himālayan beds have, however, been fairly classified since Mr. Medlicott's memoir was published in 1864. The important observations made in this memoir are essentially physical. The demonstration that Himālayan elevation is shown, by the relations of the lower nummulitics to the older hill rocks, not to have begun before Tertiary times, and the beautiful illustration proving the permanence of the great river valleys by their coincidence with the maximum of conglomerates in the Siwāliks are amongst the observations that connect our first clear ideas of Himālayan elevation with Henry Medlicott's work.

It has been already noticed that not unfrequently Medlicott was occupied in clearing up difficulties that had been too great for his predecessors in the Survey. An illustration may be taken from the geology of the Khāsi Hills. A comparison of his observations as recorded in the VIIth volume of the *Memoirs*, should be made with the earlier account of the same area in the 1st volume. In the first account, amongst other differences, the bedded Sylhet traps (Mesozoic) are not distinguished from the ancient greenstone rocks of the inner hills, and the occurrence of fossiliferous Cretaceous rocks was not recognized; their fossils, then supposed to have been nummulitic, having been lost. The alterations that were made in the geology by Medlicott may be seen by comparing the map and section on Pl. VIII

in vol. I, with the map and section at p. 154 in vol. VII. The earlier observations, it is true, were made in the monsoon, when, of course, the ground was not so well exposed. Again, the sketch map of the Satpura or Nerbudda coal area as corrected by Henry Medlicott in vol. X of the *Memoirs* may be compared with the earlier map published in vol. II. It was quite true that the principal discrepancy in this case is easily explained. J. G. Medlicott, who not merely geologically examined the country, but who also to a considerable extent surveyed the map, had practically completed the western portion containing the typical Mahadevas, without separating them from the underlying Damudas, when, in the early part of 1856, Dr. Oldham, the head of the Survey, went over the field, and almost at the end of the season, discovered that the Mahadeva was a separate series. The attempt to record this distinction on the map led to some confusion which was subsequently straightened by Medlicott.

Almost his only important geological paper published outside the Survey publications was that on "The Alps and the Himalayas, a Geological Comparison," issued in the *Quarterly Journal of the Geological Society* for 1868, vol. XXIV. This paper narrowly escaped rejection; it was postponed for a time, but finally published. Nor was this wonderful, for it attacks, and in no doubtful way, the conclusions of all the great Alpine geologists, von Hauer, Gümbel, Studer, Desor, and others, and there is no question that in the main Medlicott was right. Some of the views expressed by him required, and have since received, revision; but as an original description of mountain-building from uniformitarian views as opposed to catastrophic it is worth far more attention than it has received.

There can be no question of his uniformitarianism. One of his objections to some of his colleagues' work was to their use of faults to explain abrupt boundaries. It is, however, characteristic of his love of truth that when Mr. R. D. Oldham found that the typical Náhan-Siwálik section, to which Henry Medlicott had so long referred as an example of deposition against a pre-existing cliff, might be a fault after all, he revisited the section and in the simplest manner admitted that he had misunderstood it (*Records, Geological Survey, India*, XIV, 1881, p. 169). Only those who remembered the whole controversy about faults can have any idea of how great a blow to his theories this must have been, and there are few Directors of Surveys of whom it could be said that an error of so much importance was so frankly acknowledged.

On the large question, whether, for instance, the great lines terminating the Gondwána basins of Bengal, Orissa, and the Central Provinces are simple faults, or whether they represent the boundaries of the old river valleys to which the beds were limited, these boundaries having been subsequently slightly crushed and distorted, but not greatly faulted, is a question to which a complete answer has not yet been given. In some cases at least, for instance in the Mohpáni field of the Sâtpuras, strong evidence was brought forward by Medlicott in favour of his views of his original limit, and even in the case of Rániganj, where unquestionably considerable faulting exists, the absence of outliers of the coal-bearing rocks south of the field is a difficulty in supposing that a simple great upthrow alone terminates the Gondwána area. Between the two authors of the *Manual of Indian Geology* there was a difference of opinion on this point, and it cannot be said that the question is finally decided.

The above may serve to recall a few of the services of Henry Medlicott to the Geological Survey and to India, and some of the discoveries which he made in science. It cannot do more than suggest the amount of labour that he devoted to his work. His memory should remain as a striking example of a thoroughly honest and capable geologist and as a worthy head of a scientific branch of the Indian Government Service.

[W. T. BLANFORD.]

W. T. BLANFORD, A.R.S.M., LL.D., C.I.E., F.R.S.

WILLIAM THOMAS BLANFORD was born in London on the 7th October 1832, and was educated at Brighton and in Paris. After a short interval of business life in Italy and London he matriculated in 1852 at the Royal School of Mines, London, where, with his younger brother, the late Henry F. Blanford, F.R.S., he had the privilege of training under a group of famous teachers in science—Lord Playfair, Sir Andrew Ramsay, Sir Warrington Smyth, Edward Forbes, and T. H. Huxley under the directorship of Sir Henry De la Beche. The Blanford brothers successively headed the list of candidates at the final examinations, each in his year receiving the Duke of Cornwall and the Council scholarships. After further training at the Freiberg School of Mines, both brothers were appointed to the Geological Survey of India and joined at Calcutta in September 1855.

Henry Blanford some years later was transferred to organize the Meteorological Department, whilst his brother remained in the Geological Survey until his retirement from the service in 1882.

A simple extract from the annual distribution lists will show the wide experience obtained, and, to those who knew him, the great influence exercised by W. T. Blanford on Indian Geology:—1855-56, Orissa coalfields; 1856-57, Rájmahál hills; 1857-58, the Orissa coastal tracts; 1858-59, Rániganj coalfield, Trichinopoly, Nilgiris, Birbhum; 1860, Pegu; 1861, Upper Burma; 1862-65, various parts of the Bombay Presidency, Sind, and Central Provinces; 1866, Godávári area, Central Provinces; 1867-68, Abyssinia; 1869-70, Wardha valley, Central Provinces, Sikkim; 1870-71, Lower Godávári, Madras Presidency; 1871-72, Sind and Persia; 1874-75, Surát and Sind; 1876, Rájputána; 1877-1879, Calcutta; 1881-82, Baluchistán and Punjab.

During this period, when much of his time was occupied by purely official routine work and in travelling, at a time when neither railways nor roads were developed in India as they are now, Mr. Blanford published just 150 scientific papers, many of which were large memoirs, all descriptive of original work, not merely details of observation, but contributions to the philosophical aspects of geology and zoology which have made some of these papers classical works. His services to science were naturally recognised in Europe: in 1874 he was elected a Fellow of the Royal Society; in 1881, whilst representing India at the International Geological Congress at Bologna, he was elected a Vice-President of the Congress, and was decorated by the King of Italy with the Order of St. Maurice and St. Lazarus. He was also Vice-President of the Congress on three subsequent occasions—Berlin 1885, London 1888, and Paris 1900. On his retirement from the Indian Service in 1882, the Geological Society of London conferred on him the highest distinction at their disposal, the Wollaston medal. In 1884, he was selected President of the Geological section of the British Association at Montreal, and at the same time the McGill University conferred on him the honorary degree of LL.D. He was elected President of the Geological Society of London in 1888, served three times as Vice-President of the Royal Society, and on other occasions as Vice-President of the Zoological and the Royal Geographical Societies.

Although much of his time was taken up after his retirement with

his duties as a member of Council or as an office-bearer in the various scientific societies of which he was such an active member, Dr. Blanford added another 24 papers to his enormous record of scientific work, these including three volumes of the Fauna of British India, and his well known memoir on the distribution of Indian vertebrates, for which he received the Royal medal of the Royal Society in 1901.

Those who enjoyed the inestimable privilege of his friendship will agree that Blanford's enormous record of published work was not greater than that which he freely contributed to friends in private correspondence. Amidst his duties at home he never failed to respond to a question or difficulty presented by the most junior member of his old Department: no section of Indian Geology appeared to be too small or local to be considered worthy of his earnest attention, and times without number, during the recollection of the writer, by private correspondence he has given his successors new lines for profitable research, pointed out, by his unique knowledge of literature and width of experience, the significance of new observations, and has frequently saved his less experienced juniors from the pitfalls of hasty deductions drawn from imperfect data in this country, where the paradoxical character of the Geology is as liable as its Sociology to exemplify in the new-comer the dangers of a little learning.

It would not be possible in a few pages to even enumerate the many ways in which Blanford influenced the lines of Indian Geology, as well as moulded the working principles of the science generally. But possibly the feature of his career of most interest to India was the way in which he brought his wonderfully wide range of information, and his well known ability to sift the value of apparently contradictory evidence, to bear on the tangled controversy with regard to the age of the Gondwána system. Dr. O. Feistmantel, the official Palæontologist of the Department, who was mainly a palæobotanist, following with conservative faithfulness the accepted principles of correlation with the European order of succession, enumerated the plant forms occurring in the different stages of the Gondwána beds, and by comparison of them with the types known in European systems, placed the lower (Talchir) limit of the Gondwánas on a level with the European Trias, whilst the uppermost beds in Cutch he correlated with the Lower Oolite¹. Dr. Blanford, however, laid stress on the greater value of marine forms in the Cutch beds as indicating an age for the uppermost Gondwánas as young as the uppermost Jurassic of Europe, whilst as

¹ O. Feistmantel. *Rec. Geol. Surv. Ind.*, IX, 28 and 63, 1876.

regards the lowest stages he brought in indirect evidence obtained in Australia, where similar fossil plants having a Mesozoic facies were associated with, and even lying below, undoubtedly Palæozoic marine beds. He thus showed the accuracy of the opinions previously expressed by T. Oldham and H. F. Blanford with regard to the Palæozoic age of our productive coal measures.¹

Following up this subject in his Presidential address to the Geological section of the British Association at Montreal in 1884, he summed up a mass of biological statistics to account for the apparent contradictions in the order of succession of plants and animals in the beds of intermediate position and age, demonstrating the truth of the provision made fifteen years before by Huxley, that on isolated land-areas animals and plants have their own special rates of evolutionary development, and that it is only by the forms living in the ocean, under more uniformly distributed physical conditions and with greater freedom for migration, that approximate contemporaneity can be obtained in stratigraphical correlation.

Five years later, as President of the Geological Society of London, Dr. Blanford was able to assume without question the truth of the Gondwana proposition, and from it to draw conclusions affecting the much debated question of the permanence of oceanic depressions and continental plateaux. He then brought together in his inimitable way a mass of apparently isolated and unrelated data to show that, "not only is there clear proof that some land-areas lying within continental limits have at a comparatively recent date been submerged over 1,000 fathoms, whilst sea-bottoms now over 1,000 fathoms deep must have been land in part of the Tertiary era, but there are a mass of facts both geological and biological in favour of land-connection having formerly existed in certain cases across what are now broad and deep oceans."

Whether considered from the standpoint of a philosopher in his recognition of identity amidst apparent diversity in phenomena of independent branches of science, or regarded merely as a patient worker in the accumulation of descriptive detail, Dr. Blanford's record would place his name in the front rank of scientific workers. And to those who knew him the great range of his knowledge was no more remarkable than his unfailing generosity of disposition and courtesy of manner either to friend or opponent.

[T. H. HOLLAND.]

¹ W. T. Blanford. *Rec. Geol. Surv. Ind.*, IX, 79, 1876.

As a Naturalist William Thomas Blanford has raised for himself a monument that will withstand the assaults of time, for it was patiently built of attested material upon a foundation of unique width. Whether as observer or writer, he will always be remembered as one of the foremost of those who brought Indian Zoology out of the region of chaos.

No one can be more wise than destiny; and by the nature of things the greater part of Blanford's zoological work was of a descriptive kind; but the imagination of an interpreter was constantly behind it.

Of this descriptive work, a very great part of which refers to collections made by himself, the earliest to appear in print (1860) was that on the Land and Fresh-water Mollusca of India and Eastern Asia. This was a subject in which, as a Geologist, he naturally had a particular and perennial interest, and the very last zoological paper that he wrote was one, describing some new Indian and Burmese species, published, just before his death, in the Proceedings of the Zoological Society.

Of his work in this field one of the most important results was a series entitled "Contributions to Indian Malacology," which appeared at intervals in the Journal of the Asiatic Society of Bengal between 1860 and 1880. Though chiefly of taxonomic value, these papers record numerous facts of anatomy, and are often animated by judicious observations upon such matters as geographical distribution, the interpretation of specific and varietal characters, the influence of environment, etc., all revealing the author's philosophic breadth of touch. That the final product of these critical investigations would form one of the volumes of his own "Fauna of British India" was an expectation that is, unhappily, unfulfilled.

While still busy in many other directions, Blanford, in 1867, made his first contribution to Indian Ornithology, the starting-point of a comprehensive series of papers, which, published from time to time during the following 27 years in various scientific journals, took finished shape in two of the four well-known volumes on Birds in the "Fauna of British India." In these two volumes all the birds except the Order of Passerines are included; and their treatment at the hands of an author who combined the qualifications of the expert, of the field-naturalist, and of the sportsman, appeals with equal appreciation to the trained Ornithologist and to that large company of educated people who take a general interest in living nature.

His connection, as Naturalist, with the Abyssinian Expedition of 1868, seems to have led Blanford to pay attention, among other things, to recent Reptiles and Amphibia; for between that year and 1881 he contributed to various scientific serials a number of papers in which many new species in these groups are described, chiefly from collections made during his own travels in north-western India, Baluchistan, and Persia, as well as in certain parts of the Peninsula. In respect of the reptilian fauna of the Indo-Persian desert region, Blanford came to be regarded as one of the leading authorities: here, as was generally the case, his knowledge of the fauna was part of a large organised knowledge of the country in its physical aspects and its geological history, acquired at first hand.

From 1868, too, dates Blanford's first published work on recent Mammals, another group of animals which he approached from many points of view. He was in working touch with Mammals for 35 years, and, as in the case of the Birds, his old experience was condensed into a volume in the "*Fauna of British India*"—another volume which is of the greatest use to the field-naturalist and amateur, without any detracton from its value as a standard scientific work.

In 1870 Blanford published his "*Observations on the Geology and Zoology of Abyssinia*," and in 1876 his "*Zoology and Geology of Eastern Persia*," the former dealing with land-vertebrates and mollusca, the latter with land-vertebrates alone. Both books are distinguished by that comprehensiveness, discernment, and balance, which characterize all their author's zoological work. His varied observations are digested: his materials are proportioned and attuned: and we get not merely a good description of a fauna, but also some notion of the manner in which the several differences of environment have affected its component parts.

Blanford's experience, grown ripe in bringing into order the results of 27 years of scientific survey of this and neighbouring countries, gave him such a unique position, that when, in 1883, he was chosen to organize an official work on the "*Fauna of British India*," it was felt that official and professional judgment were in complete accord.

Under his able editorship 18 volumes of this official serial have been published, and they include the whole of the Vertebrates and portions of 10 groups of Arthropods—chiefly Insects. Reference has already been made to Blanford's own contribution to the series—

the volume on Mammals, the first instalment of which appeared in 1888, and the two volumes on Birds, published in 1895 and 1898: these volumes, in their clearness and directness of style, in their moderation in matters of nomenclature and species-splitting, and in their freedom from all the delusions of faddism, are models of what a work of general reference should be.

The series is still far from complete; but to find a successor to carry it to a worthy conclusion—a successor possessing the ripe and varied knowledge, the fairness of mind, the tact, and the general wisdom of the first editor—will in truth be no easy task.

To those interested in the finer problems of zoology the most taking parts of Blanford's work are his essays on the geographical distribution of Indian animals. This subject, indeed, was at the back of all his systematic papers, and was separately treated by him, in a tentative way, as early as 1870. But in 1876 he published, in the "*Annals and Magazine of Natural History*," a critical and constructive paper, in which the elements of the Indian vertebrate fauna are segregated from a physiographical standpoint, their relations to the Ethiopian fauna are emphasized, and the argument that certain common elements suggest a vanished land-connection between South Africa and the Indian Peninsula is clearly stated.

Twenty-five years later the material accumulated in the compilation of the "*Fauna of British India*" was used by him for an exhaustive examination of this subject, and in 1901 he crowned his zoological work with an elaborate essay entitled "*The Distribution of Vertebrate Animals in India, Ceylon, and Burma*," which was published in the "*Philosophical Transactions of the Royal Society*."

In this fine monograph the entire land and fresh-water vertebrate fauna of the region is critically analysed by genera, and is split, by considerations of habitat, into definite geographical units: these, again, are recombined into subregions, the relations of which to each other, to neighbouring zoological regions, and to past geological land-connections and former geological climates being minutely and most effectively discussed.

It was characteristic of Blanford, in connection with this subject, upon which his profound knowledge of cognate branches of natural science entitled him to speak with authority, that his views were expressed with singular moderation. Though he was among the first to realize that modern zoological regions which ignore past geological

changes on the large scale must be artificial, and, conversely, that instances of what are commonly regarded as anomalies of distribution may possibly afford corroborative evidence of those very changes, he allowed his opinions to mature before giving utterance to them.

No notice of Blanford as a Zoologist would be complete that failed to emphasize his telling personal influence, and his abundant sympathy with all who were in any way interested in the natural history of this country. It seemed to be natural to apply to Blanford, and natural to Blanford to sacrifice his time in order to help others. No man ever showed a warmer side to the amateur, or was so entirely free from the narrow prejudice of the professional. Of liberal intellect, of just and charitable temper, he was imbued with the true scientific spirit. In the annals of Indian Science—

*"Notus in fratres animi paterni,
Illum aget penná metuente solvi
Fama superstes."*

[A. W. ALCOCK.]

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1860. "On the Rocks of the Damúda Group, and their Associates in Eastern and Central India, as illustrated by the Re-examination of the Rániganj Field" : Journ. As. Soc. Bengal, xxix, pp. 352-358.
- 1860-1. (With Mr. H. F. Blanford) "Contributions to Indian Malacology" : Journ. As. Soc. Bengal, xxix, pp. 117-127, and xxx, pp. 347-367.
1861. "Note on the Geological Structure and Relations of the Rániganj Coalfield, Bengal" : Mem. Geol. Surv. India, iii, pp. 1-195.
1861. "Note on a species of *Plectopylis*, Benson, occurring in Southern India" : Ann. Nat. Hist., vii, pp. 244-246.
1862. "Contributions to Indian Malacology, No. 3: Descriptions of new Operculated Land-Shell from Pegu, Arakan, and the Khasi Hills" : Journ. As. Soc. Bengal, xxxi, pp. 135-144.
1862. "Account of a Visit to Puppádoung, an Extinct Volcano in Upper Burma" : Journ. As. Soc. Bengal, xxxi, pp. 215-226; Rep. Brit. Assoc., pt. ii, pp. 69-70.

1863. "On Indian Species of Land-Shells belonging to the genera *Helix*, Linn., and *Nanina*, Gray" : Ann. Nat. Hist., xi, pp. 81-86.
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1865. "On the Stratigraphy and Homotaxis of the Kota-Maledi (Maleri) Deposits" [1873] : Pal. Ind. (Pret. Vert.), i, 1865-85 (pt. 2), pp. 17 (bis)-23.
1866. "Contributions to Indian Malacology, No. 6 : Descriptions of New Land-Shell from the Nilgiri and Anamullay Hills and other places in the Peninsula of India" : Journ. As. Soc. Bengal, xxxv, pt. 2, pp. 31-42.
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PRELIMINARY ACCOUNT OF THE KANGRA EARTHQUAKE
OF 4TH APRIL 1905. BY C. S. MIDDLEMISS, B.A.,
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(With Plates 14 and 15.)

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1.—INTRODUCTION.

AFTER a lapse of only eight years since the great earthquake of 1897, India has again suffered a similar, though somewhat less intense calamity, in the disastrous shocks of the 4th of April last. Whilst that of 1897 originated in Assam and Northern Bengal, the starting-point of the present earthquake was the Kangra district of the N. W. Himalaya. Beginning at an early hour of the morning, when many people were still asleep, the more violent phases of the shock dealt summary destruction to life and property in the neighbourhood of the Kangra valley and Dharmśāla; accomplished very great damage and caused considerable loss of life in the hilly tracts of Mandi State and Kulu; did serious damage to Dehra Dun, Mussoorie, Chakrata, and other towns in the vicinity; and slight damage to the large towns of Lahore, Amritsar, Jullundur, Sahāranpur, and others similarly placed with reference to the centre. Outside these points, again, in ever-widening closed curves, the

earthquake was felt with continually diminishing intensity, until the limits of its appreciation by the unaided senses coincided roughly with part of an ellipse passing through the following localities:—Quetta, Surāt, Ellichpur, False Point, and Lakhimpur. This curve, if continued, passes into the little-known and unreported-on regions of the higher Himalaya and Tibet; but it may be trusted to represent approximately the limit of sensible appreciability in that direction also, and to include a total area of about 1,625,000 square miles. Finally, outside these points (save for a few doubtful observations from isolated places) the record of the now greatly reduced vibrations is instrumental alone, but at the same time very complete. Not only did the seismological stations of India and the Far East—including those of Bombay, Kodaikanal, Calcutta, Batavia, New Zealand, and Japan—automatically register the earthquake, but so also did those of Europe and America, the records being unmistakably those of a very powerful shock. The earthquake must therefore be regarded as a notable one in the seismological history of the present and just concluded centuries, and, inasmuch as 20,000 human beings are estimated to have perished by it, it must also be ranked as one of the most disastrous of modern times.

Owing to the interruption of communications, it was not until the 6th of April that the full significance and magnitude of the shock became generally known in India, and steps could be taken by this Department for the proper scientific investigation of it. By that date, however, telegraphic warnings were issued by the Director of the Geological Survey to all District Engineers, Meteorological Observers, Telegraph Masters, Railway officials, and others, through their respective Departments, to record in writing the exact time and other details of the shock. These were followed by letters sent to the principal newspapers inviting volunteers all over India to answer a formulated set of questions, and to help in other ways by furnishing exact data. Question-forms were also printed, and in due course despatched, to all the provinces through the above channels, as well as to Political Officers and Residents of Native States. For the personal gathering of detailed observations of the effects of the earthquake in the more seriously disturbed tracts, the following officers of the Geological Survey were deputed: Mr. R. R. Simpson (followed later by Mr. K. A. K. Hallows) to Dehra Dun, Mussoorie, and the neighbourhood lying S.-E. of Simla;

Brief outline of the shock: its great range and importance.

Organization of its investigation.

Mr. E. H. Pascoe to Lahore, Jullundur, and other large cities of the plains, and myself to the epicentral tracts of Kágra, Mandi, and Kulu, lying north-west of Simla. Mr. R. D. Oldham (late of the Geological Survey, and the compiler of the account of the Assam earthquake of 1897) has been asked to collect all information available from the extra-Indian instrumental records.

The present account—which must only be considered as a preliminary one—has been compiled as quickly as possible on my return to head-quarters from the field. It, therefore, makes no pretensions to finality, except as regards the general features and effects of the shock. Besides expressing the results of my own field-work, it is based (1) on special reports sent in by my colleagues, Messrs. Simpson, Pascoe, and Hallows; and (2) on the results of a necessarily brief examination of over a thousand earthquake-forms returned filled-in by official observers all over India, as well as by a considerable number of private individuals, to whom, collectively at present, the best thanks of the Department are here expressed for their generous response, which will be recorded in full detail in the final memoir. In addition to the above as sources of information, mention may be made of the principal newspapers of northern India, which spared no pains in reporting the earthquake in great detail, and whose early telegraphic accounts I found an excellent guide for prosecuting my own particular enquiries.

2.—GENERAL ACCOUNT OF THE SHOCK: ITS SUPERFICIAL ASPECTS.

All reports gathered from places near the earthquake centre agree as to the suddenness with which the great shock came, and the absence of anything of the nature of a crescendo. In this respect it presents a feature common to most earthquakes of the destructive class. To obtain a very connected account of its inception and progress from eye-witnesses in the more violently affected areas, has, however, been impossible—partly from the fact that many of those who would have been best fitted to speak were overwhelmed and lost their lives; partly because, on account of the early hour, many were still asleep, or only just preparing to rise; and partly because, out of those who escaped with their lives, so many were

incapacitated by wounds, injuries or fright, that only a small minority remained who might have made useful observations had not they at once been fully occupied in aiding the wounded and rescuing those buried alive. The silent testimony of the long death-roll is, however, sufficiently convincing as to the rapid development of the shock, and the absence of any reasonably prolonged warnings conveyed by the preliminary tremors. In Kágra and the civil station of Dharmśála the proportion of killed to living is exceedingly high, and indicates a proportionately sudden attainment of the maximum vibrations. In Dharmśála cantonment the single-storied barracks and bazars were mostly evacuated just in time by the able-bodied, whereas double-storied buildings became either death-traps or scenes of extraordinary escapes. If one allows 3 seconds for the severity of the shock to awake and impress itself on any one situated in an upstairs room, 2 more seconds to prepare for flight, and 5 more to traverse rooms and passages and to descend a staircase to the means of exit, we might, I think from the evidence before us, limit the time for escape to, in all, about 10 seconds after the commencement of the earthquake. Many who were fortunately situated, or alone, probably accomplished this; but in a crowded double-storied barracks the outlets would become congested, and confusion cause further delay; whilst (as was certainly the case with households) the search for the various members, especially children, must have delayed the escape too long, and so the occupants were caught and overwhelmed by the falling débris. Of reliable witnesses whom I interviewed, no one of those living in upstairs rooms who must have extended the moments of grace beyond about 10 seconds were able to get clear of the house before the crash came; and their ultimate escape was due to their protection by the fortuitous falling of wood-work, beams, etc.

In other localities along the epicentral tract there is also a consensus of opinion as to the suddenness of the shock, whilst even at Lahore and the neighbouring cities of the alluvial plains it is described as jerky and abrupt, following on preliminary tremors to be reckoned in seconds only.

That there were preliminary tremors of very brief duration is, however, clear from the accounts of survivors in the Kágra valley and neighbourhood, as well as at more distant points. In some cases in Dharmśála these preliminary warnings are stated to have enabled persons to leave their dwellings just in time. Although 135 perished in the big Gurkha

barracks, such tremors are nevertheless implied by the fact that scarcely any of them were found killed in their beds. One account from McLeodganj bazar states that these first effects were of the "nature of tremulous vibrations" and were likened to the "rustling of leaves in the wind." In Dehra Dun, also, minor preliminary vibrations are recorded which enabled those who were awake to reach the door. In Mussoorie, according to an eye-witness, preliminary tremors lasted from 15 to 20 seconds; and the same were noticed in Landour by several people. In Lahore preliminary shocks with intervals appear to have lasted for about 11 seconds before the arrival of the main shock.

Regarding the nature, duration, and direction of the main shock or shocks, there is considerable diversity of opinion expressed in the narratives of observers within the epicentral tract. This is probably due, not so much to personal bias, as to actually subsisting differences in the character of the shocks, especially so in widely-separated areas differently aligned with reference to the actual centre. A common description of the main destructive oscillatory movement applicable to the Kágra valley and Dharmśála, and based on such scanty information as is available, is that it consisted of a violent horizontal shock from north to south followed by an equally violent counter-shock from the opposite direction. A few observers noticed a third shock like a "downward sinking." There is preponderance of evidence in favour of the second shock being slightly the more violent, or at least the more destructive of the two, inasmuch as it was during it that "everything collapsed." The evidence is not clear as to the time intervening between the two shocks, but it seems to have been from one to four seconds. Sometimes the evidence appears to be distinctly contradictory, but it is highly probable, as already stated, that there were actual differences in often closely related localities. That these shocks really were brief and of powerful intensity, rather than long-continued and moderate, seems a generally correct deduction from the havoc wrought to many strongly and solidly-built structures, as well as from the testimony of survivors. The evidence from the former source will be considered later under a separate heading. As regards testimony, it seems certain that not only was it a physical impossibility at Dharmśála to keep one's feet whilst standing or walking, but also that people were "thrown to the ground." A similar violent effect is related at Pálapur, at least in

double-storied buildings, whilst even as far away as Bajaura in Kulu, where the shock was considerably less intense, men clung to trees to steady themselves and some were sent "sprawling on all fours."

At Kágra the mortality was so terrible, especially among Europeans and officials, that no accounts have come to us through the usual channels—a sad fact which must be left to speak for itself as to the devastation wrought.

At Dharmśála cantonments Captain Muscroft first felt a tremor, called out to his companions, and escaped outside where he was "thrown to the ground as the house crashed down amidst the roar of the two shocks."¹ The Kotwáli bazar, Dharmśála civil hill, was shaken to pieces in a few seconds, tilted upwards, it is said, by the first shock, which ran down from the hills above, and then sent crashing to the ground by a second shock which came from the opposite direction almost instantaneously.² Mr. Naurojee Khujoorina (of Messrs. Framjee & Co.) was an eye-witness at McLeodganj bazar, Dharmśála civil hill, and he says that he rushed out at the first shock. He looked into the valley and saw native houses falling one after the other, and as the second shock came his house collapsed into a heap of ruins.³ In his report to the Geological Survey the same observer describes three shocks, first a tremulous vibration with a minute's interval between it and the second shock. No sound was heard before, but a "rattling noise with a shrill high note" preceded the second shock. Captain C. Stansfeld, 7th Gurkha Rifles, in his report, describes two distinct shocks with 3 or 4 seconds' interval. The houses fell flat and not to any one direction, and he thinks without any oscillation. The first shock woke him, then a roar came from the north or north-east. He ran out of the house and was thrown to the ground south-east or east.

Mr. A. H. Machean, of Clachnacuddin Tea Estate, reports three shocks, the second longer and more violent than the first and from the north-east or east. The third seemed a sudden circular shock in which all the buildings collapsed, followed by a sudden jerk from north-east and back again.

Mr. F. A. FitzGerald, of the Baijnáth Tea Estate, was standing before a window open towards the south, when, preceded by a terrific roar, the house began to shake.

¹ *Pioneer* of 17th April 1905.

² *Civil and Military Gazette* of 16th April 1905.

³ *Pioneer* of 19th April 1905.

He rushed outside with difficulty. The shock appeared to come from south to north beginning with a tremulous vibration, which increased in intensity until he was nearly thrown off his feet. His houses partially collapsed, trees swayed to within a few feet of the ground, birds rose from the trees with deafening shrieks and a cat and dog ran away terrified.

Summing up the meagre narrative evidence for the main shock in the Kánga valley and Dharmasála neighbourhood, the following characteristics are plainly established :—

- (1) The sound was a roar or crash.
- (2) There were two or three violent shocks.
- (3) People were thrown to the ground.
- (4) Buildings fell almost instantaneously into utter ruin.
- (5) There was very great mortality.

In the less violently affected parts of Mandi State and in Kulu,

Mandi and Kulu. where everything points to a greater depth of the focus, the evidence is still scanty, owing largely to the fewer inhabitants and the absence of large towns and military stations. Fortunately, we have been supplied with detailed accounts by Colonel R. H. F. Rennick (Indian Army, retired), and General Osborn, both residents of the Kulu valley, and present at Bajaura on the morning of the earthquake. Neither of these observers record a distinct breaking up of the main movement into separate shocks. General Osborn states that the brief preliminary tremor increased with a regular accelerating motion till it reached its climax of greatest violence, remained at that for a few seconds, and then diminished and died away as it had begun. Colonel Rennick was awakened by the approach of an underground sound of the nature of a dull rolling noise, which became a roar like a bombardment when the main shock was established. Both observers place the direction of the vibration as approximately north and south, but whereas General Osborn puts the duration at $1\frac{1}{4}$ minutes, Colonel Rennick estimates it at fully 5 minutes. The former also thought the vibration a fairly regular to-and-fro motion, whereas the latter observed a vertical component in the shock, which made the house and other things dance like "peas on a drum." Considerable damage was done to buildings, the upper stories of even well-built houses being partially wrecked. The loss of life was also great. Landslips and earth-fissures were a prominent feature as is natural in a country of steeply-carved mountain-slopes and precipices. These

will be referred to again later. Captain A. T. Banon's account of the effects in the Upper Kulu Valley agrees substantially with the above. In a second letter, dated 6th May, he gives some further interesting details of the earthquake effects in the higher valleys north of the Dhauladhar range.

Summing up, we have for Kulu :—

- (1) A dull, rolling noise which became a roar.
- (2) The shock was a single, continuous vibration, increasing and diminishing regularly.
- (3) People had to cling to trees for support, or were sent sprawling.
- (4) Buildings show considerable damage, amounting to ruin in some cases.
- (5) There was considerable mortality.

In Dehra Dun, Mussoorie, and the neighbourhood the chief vibra-

Dehra Dun-Mussoorie area. tions appear to have been horizontal, and to be once more divisible into two or three main shocks, or maxima of oscillation, accompanied by a rocking motion causing trees to sway, and sufficient to disturb the balance of people standing or walking. Estimates of duration vary from 15 seconds to 2 minutes. A positive bit of exact information is afforded by Colonel S. B. Burrard, R.E., F.R.S., Superintendent, Trigonometrical Survey, at Dehra Dun, who considered that the horizontal vibrations had a frequency of 3 per second, as also by Lieutenant H. W. Kettlewell of Landour, who estimated them at 4 horizontal vibrations per second. Some observers at Mussoorie noted 3 distinct shocks with intervals of 2 or 3 seconds. The earthquake sound was a moaning, rushing, rumbling or rattling noise, just before and accompanying the shocks. The direction was north and south or N. E.—S. W. There can be no doubt from the recorded sensations of observers, as well as from the evidence of damage to buildings, that the intensity of the earthquake was generally less at these places than in the greater part of Kulu or in the Kánga valley.

Summing up for the Dehra Dun-Mussoorie area we have :—

- (1) Moaning, rushing and rattling sounds.
- (2) There were two or three discontinuous shocks.
- (3) People standing or walking lost their balance.
- (4) Buildings show serious damage, chiefly fissures and cracks.
- (5) Loss of life insignificant.

At Lahore, Amritsar, Jullundur, Sahāranpur, Rurki, and other cities on the alluvial plains, where the energy of the earthquake had already been so greatly reduced by diffusion, that the fall of even parts of high and unstable buildings was a rare occurrence, the shocks are still often described as jerky and abrupt, and as causing considerable alarm. There were two or three distinct shocks, the second (where two are mentioned) being the stronger. Rumbling sounds were generally heard, but they are not recorded from Lahore. There was no difficulty in standing with feet wide apart. Trees rustled as in a strong breeze, and books and light articles as well as cupolas from towers were projected from their supports. The direction of the shocks was either very complex or else there was more than one distant source of them.

Outside the limits just indicated, the progress of the shock must for the present be followed in very brief outline. The sound phenomena gradually die away; damage to buildings and even cracks in walls cease; the effects become limited to shaking of bedsteads, rattling of doors and roofs, with the swinging of light articles, especially clothes suspended from pegs.

Next come very great areas where the shock, although felt distinctly, was a mere vibration; beyond that, again, others where it was scarcely felt at all, and where the evidence for the shock is very largely made up of observations of the movements of water in reservoirs.

3. —THE ISOSEISMALS.

The accompanying two maps will show the disposition of the few isoseismals, or curves of approximately equal surface intensity, which it is considered prudent to insert in this preliminary account. In the full report, when all the earthquake forms and other sources of information have been estimated, it is hoped that the intervening lines may be added. Notwithstanding their present deficiencies, the curves express much of a very interesting nature, which it is the object of this section to roughly outline.

In drawing these curves the Rossi-Forel scale of intensity has been used, with the exception that isoseismals 1 and 2 must necessarily be differently interpreted at the present day, when great earthquakes are recorded

by seismographs all over the world. Prof. Omori's intensity scale for destructive earthquakes, on the other hand, though very complete in the higher grades, allows place for two more isoseismals of still greater degrees of intensity than the Rossi-Forel No. 10. These latter were framed by their author to include surface intensities sufficient to destroy large iron bridges and railway lines, to shatter and convulse low cultivated lands, causing trees and vegetables to die, and to produce fault scarps at the surface—a degree of surface intensity not reached by the present earthquake. On this account, and because the lower isoseismals are less complete in Omori's than in the Rossi-Forel scale, the latter has been found more useful in the present instance. Only the outermost curve, No. 1, representing the limits of human sensibility, and the innermost four isoseismals, Nos. 7, 8, 9, and 10, representing the highest intensities, are here given, that of greatest intensity, No. 10, appearing to fit the position assigned to it fairly accurately.

The area of maximum intensity included within isoseismal 10 is roughly bounded by Dharmśāla, Rehlu, Daulatpur, Bawarna, and Pālampur; and it includes of course the important town of Kāngra, besides some smaller towns and hamlets. The size of the area is about 200 square miles; but on the east-south-east it fades away very gradually into the area of next intensity. With few exceptions, all or practically all buildings were found to be destroyed within this area; only the very strong, *e.g.*, the Dharmśāla magazine and treasury, and a few pliable wooden structures and low huts escaping. Bazars such as those at Kāngra and the Kotwāli bazar at Dharmśāla, built mostly of sun-dried bricks and with slate or thatch roofs, were literally levelled to the ground. Many of the smaller scattered bazars of Dharmśāla, Bawarna, Pālampur, etc., were nearly so levelled, and the same is true for the hamlets dotted about at intervening points. During my tour through area 10 of the epicentral tract, nothing impressed me so much in the valley area as the contrast between the expanse of ripening wheat fields, the trim tea-gardens, the well-kept roads, the avenues of trees and occasional wooded patches—all untouched by the earthquake—and the utter desolation presented by the mounds and rubbish heaps that alone marked the sites of former villages and towns. This contrast clearly indicates:—

- (a) That the shock was of very great violence at the surface.
- (b) That it was not, however, cataclysmic,

thus giving a fairly precise upper limit for the surface energy over the area of greatest destruction.

Besides the usual roughly-built bazars and villages, the following were also ruined and mostly wrecked :—

- (1) The stronger and massively-built temples of considerable antiquity, *e.g.*, the Golden Temple and others at Kánga, besides many small overturned temples and shrines.
- (2) The ancient massive fort at Rehlu.
- (3) Solidly-built court houses, police stations, jails, and barracks.
- (4) Tea factories with their heavy machinery.
- (5) Mission houses, and the English churches at Dharmśála and Pálampur.
- (6) Many bungalows of various designs and strength.

Of all these, the roofs, towers, and generally all the walls were demolished, or with here and there mere remnants left. The degree of destruction to such solid masonry buildings was perhaps not so extreme as at Shillong during the 1897 quake—where scarcely a stone was left in position; but still it represents complete ruin with no alternative but entire rebuilding. There were, however, one or two notable exceptions in the hilly parts of Dharmśála: a particularly well-built bungalow, a few of the Gurkha lines, a portion of a bazar—all sheltered in hollows or bays along the hill-side—having marvellously escaped, sometimes without even a pane of glass being broken.

The damage to hill-sides by fissuring and slips is reserved for description to a section to follow, as such damage depends far more on the rock-structure and angle of slope, than on the actual intensity of the shock.

The next isoseismal, No. 9 of the scale, embraces the much larger area of about 1,600 square miles, surrounding

Isoseismal No. 9.

No. 10 in a rough ellipse. The greater part of this area lies to the east-south-east of the 10 area with only a comparatively narrow band continuing round the north-west part of that area. On the west and south this isoseismal can be located with considerable accuracy as it cuts Sháhpur, Ránital, and Sujánpur; but further east-south-east by Mandi and Manglaur it is less well defined, the destructive effects within it dying away very gradually in that direction just as was the case within isoseismal 10. Its northern course also is somewhat vague where it cuts the uninhabited and little-trodden snowy ridge of the

Dhauladhár, passing thence to the Beas valley between Sultánpur and Naggar.

The destructive intensity within this area was found to vary considerably, but as regards the number of houses destroyed it averages about one-half. The western part of the area is geographically continuous with the area within No. 10, and it possesses a similar style of village architecture. To the east-south-east, however, the Kánga valley proper comes to an end, and a few parallel and lofty hill-ranges sweep round from the north, through which two chief passes, the Bubu and Dulchi, over 8,000 and 6,000 feet respectively, give entrance to the Kulu valley with its imposing and varied mountain scenery, its bazars built in many styles, and the quaint timber-bonded houses of the hill-people. Throughout this area the only approach to a constant type of building able to be used as a rough intensity measure, is to be found in the road-inspection and travellers' bungalows, which occur at regular stages along the various routes. These buildings were in most cases badly rent and broken, but not often entirely ruined, as were all buildings in area 10. They were, however, completely uninhabitable, and demanded reconstruction amounting nearly to entire rebuilding.

From the large portions still standing, the towns of Baijnáth, Guma, Mandi, Sultánpur, Bajaura, etc., were seen to compare favourably with the devastation wrought within isoseismal 10; but individually these towns show so many and such various stages of destruction according to purely local conditions, that their further description must be held over until the full report is written. Most of the small solidly stone-built Hindu temples within this area at Mandi, Baijnáth, Bajaura, Kulu, etc., successfully withstood the earthquake, as compared with those of area 10 which have mainly fallen.

The more steeply mountainous country beginning east of the Dhelu-Mandi road, and extending throughout the rest of this area, has given rise to many landslips, which severely damaged road communication and caused the Lárji lakes. They will be mentioned again later.

The next isoseismal, No. 8, may be split into two detached parts.

Isoseismal No. 8.

The greater of these elliptically surrounds the 9 area, and in its southern curve cuts Telokenáth (Mangla Devi) near Kotluh, a point between Dera Gopipur and Jawálamukhi, Suket, and Rámpur; whilst in its northern curve it cuts less definitely a point between Naggar and Manáli, another a little east of Manikarn and a third at Gaora near Rámpur. Its area is about 2,150

square miles. The lesser part of the isoseismal embraces a small detached area of about 1,200 square miles including Mussoorie, Landour, and Dehra Dun, and takes an elliptical form with long axis parallel to the greater ellipse. The evidence for this separation and parallelism is considerably strong, being based on the reports of Messrs. Simpson and Hallows in the Dehra-Mussoorie area, combined with local reports from other outside places along the same axis, namely, the Chor mountain, Nahan, Tiri, Srinagar (in Garhwál), Ránikhet, and Almora. It is only fair, however, to say that one strip of intervening ground between it and the Rámpur end of the greater area has not been examined and no local reports have been received from it. At the same time any connection that way seems to me highly improbable, and could it be proved by surface indications would even then be difficult of explanation.

The damage to buildings within these two ellipses was found to be still sufficiently pronounced to be apparent at a glance. In the northern area it took the form of a roof gone here, the end house of a row there, a hill-tower bulged or partially shattered, and so on. But there is no doubt that the intensity has become greatly weakened, especially near the boundary line. The road bungalows were found to be partially habitable, and obviously repairable without entire reconstruction. The accounts of Messrs. Simpson and Hallows with regard to the area within the southern ellipse, indicate about the same grade of intensity, and are well illustrated by the record of damage to buildings at Dehra Dun, Mussoorie, Landour, etc. There, badly built and unstable structures have been seriously shattered, verandahs and house corners are out of plumb or partially shot away, cracks, amounting sometimes to rents and fissures, pervade most brick and stone buildings, and have sometimes necessitated extensive repairs and partial rebuilding.

From Chakráta accounts implying a similar or slightly inferior degree of damage have been received.

As just mentioned, the 8th isoseismal is coincident with a great, and universally marked, rapid decline in the visible intensity as expressed in house damage, so that on entering on the very large area circumscribed by isoseismal No. 7, we are manifestly getting away from the epicentral regions altogether, and into a tract where the power of the earthquake to carry destruction with it had very nearly ceased. Up to isoseismal

No. 8, the effects of the earthquake were found to be everywhere sufficiently dominant to command general attention. Beyond it the villages and towns presented an ordinary everyday appearance, and it was only on investigating things closely, by overhauling individual houses, that cracks, generally of small account, falls of plaster and of unstable light articles were still to be found subsisting. Nevertheless, the great alluvial plains away from the hills, and especially the larger towns and cities, undoubtedly did evince a slight amount of easily apparent damage that might at first sight be imputed to a slightly increased intensity in this direction. As instances may be cited the serious damage to the Town Hall, Railway Station, and market in Lahore; the practical universality of cracks in bungalows in Jullundur, the twisted and broken clock-tower at Amritsar, and the earth-fissures at Rurki. It seems probable, however, that the natural intensity at these localities has been really augmented in the above instances by the nature of the alluvial bed. It should also be remembered that very large towns such as Lahore, with their numerous and diverse architectural subjects, give a greater range for the law of probabilities to furnish us with some few remarkable effects.

The isoseismal surrounding the above area has been drawn passing slightly to the south of Jamu, cutting Sialkote and Lahore, passing between Jullundur and Ludhiána, and thence curving round by Muzufarnagar and Bijnor. Its course on the north-east side of the epicentral tract is altogether problematical. It may be said to include an area of about 36,000 square miles where damage to buildings in the form of small cracks is very slight as a rule, sometimes almost entirely absent, and only very occasionally destructive. But in the terms of the Rossi-Forel scale, it nevertheless represents a degree of intensity sufficient to have caused general panic, coupled with overthrow of moveable objects. In using the above expressions it must be understood that percentages of damage and not actuals are meant. Now that our isoseismals are so large, and the affected area so immense, a very small percentage of destruction aggregates a great deal.

The systematic description of the lower isoseismals will not be continued further in this short paper, because their delineation no longer depends on personal observation, but on the comparative estimation of a large number of individually recorded impressions furnished by the earthquake forms.

4.—THE ISOSEISMALS IN RELATION TO THE FOCUS.

Taking the isoseismals so far described in one general and comprehensive view, some noteworthy peculiarities may now be tabulated concerning them, and their bearing on the nature of the focus pointed out.

We may note :

- (1) The elongated epicentral tract enclosed within the last 3 isoseismals of highest intensity in the Kángra-Kulu area.
- (2) The close approximation of their curves at the west-north-west end of that tract.
- (3) Their widely-separated positions in an opposite direction, viz., east-south-east.
- (4) The small, isolated ellipse forming the southern part of isoseismal No. 8 in its course round the Mussoorie area.

With regard to (1) the elongated form of the Kángra-Kulu epicentral tract, it seems certainly to indicate that the original earthquake impulse proceeded from a centrum of the nature of a line or plane following beneath this longitudinally extended tract.

With regard to (2), it should be remarked that in travelling from Nurpur to Kángra, and from Haripur or Dera-Gopipur to Kángra, we cross in each instance through the grades of intensities from such as are marked by trivial cracks in the plaster and corners of walls to those of complete destruction to buildings, and all within the short radial distance of 8 or 9 miles. In other words, the surface intensity increases extremely rapidly in these directions and indicates a proportionately shallow depth for the position of the centrum in the vicinity.

With regard to (3)—which briefly expresses the fact that in travelling from the Kángra neighbourhood across the same isoseismals but in an east-south-east direction we must cover about 100 miles of continuous and slightly diminishing intensity—an exactly opposite conclusion is indicated, namely, the increasing depth of the centrum in that direction.

With regard to (4), the conditions imply a smaller separate centrum, following an axis parallel to that of the Kángra-Kulu area, once more rather nearer the surface, and of an actual focal intensity much less than that at the Kángra-Kulu centrum.

For the present we must be content to regard these two axial lines, lying within planes (probably of faulting), as being the main and subsidiary loci either of one universal and contemporaneous shock, or of two, or even a series, of separate but almost instantaneous shocks, following one another sympathetically along lines of great tension.

In the earlier days of seismology, when the focus or centrum of an earthquake shock was conceived of as approximately a point from which one kind of elastic vibrations proceeded in a perfectly radial manner, a great deal of attention was bestowed on overthrown objects and on the direction and angles made by planes of fissuring in buildings; that is to say, the earthquake was treated as more ideal in its simplicity than has subsequently been shown to be the rule. In the present instance also, a large amount of data of the above kind has been laboriously accumulated on the chance that it might all tend to the localisation of a fixed centrum at a given depth. As it has turned out, the above data have generally given no uniformity of result, either as regards direction or depth. Very locally some of them point approximately to the nearest seat of disturbance; but taken as a whole they can only be interpreted in one of two ways. They must either be considered entirely untrustworthy owing to the secondary effects of different rocks, rock structures, and soils on the passage of the waves, or their diverse indications must be taken literally as pointing to innumerable foci having varying positions and depths. One other interpretation, which is a blending of the two previous ones, is to consider that the facts imply a complication of centra, or points of maximum impulse, distributed along a line of the kind found probable from a study of the isoseismal chart. This being so, we are once more driven to make use of the above chart as our chief guide in searching for further and more quantitative details about the exact position and depth of the originating disturbance. The method adopted by Major C. E. Dutton¹ recommends itself here by its reasonableness and general applicability.

On the assumption of a uniform medium, and that the intensity varies inversely as the square of the distance from the origin, Dutton shows that the variation of *surface* intensity along a horizontal line drawn from the epicentre is most rapid at a particular point which depends on the depth of the focus only, a point also where the intensity must be $\frac{2}{3}$ of the maximum intensity at the epicentre. The relation

¹ "Earthquakes in the light of the New Seismology," Chap. IX (1904).

between the two is exhibited by the formula $x = q \tan 30^\circ$, where x is the horizontal distance of the place from the epicentre, and q the depth of the focus. If x is known, then $q = x\sqrt{3}$. In the diagram, fig. 1, A B represents the surface of the ground, O the centrum, and the vertical lines are proportional to the intensities at the several points on A B. The resulting curve is steepest at the point where it touches the $\frac{3}{4}$ intensity line.

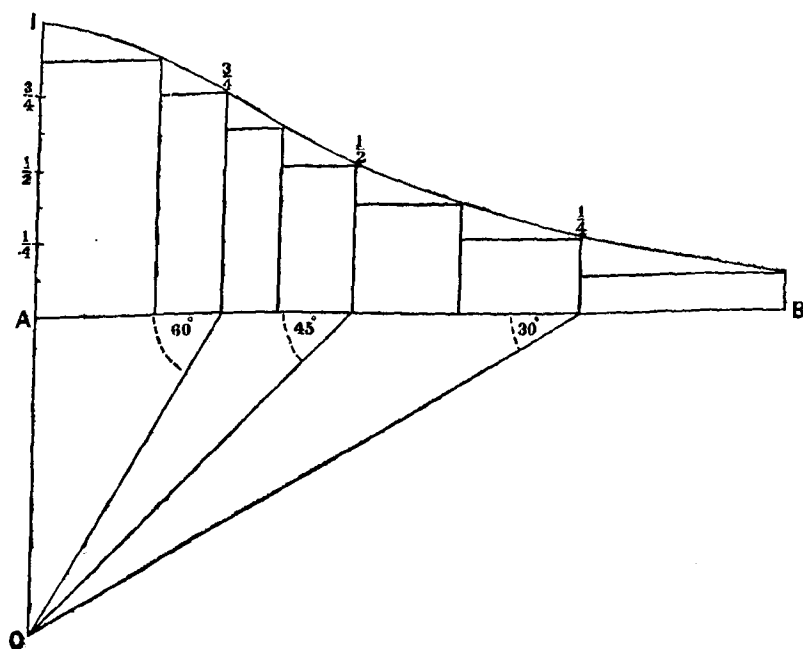


FIG. 1.

Now, it seems that we may apply this formula to the present earthquake by making sections across the epicentral tract at right angles to its long axis. The only difficulty is the recognising of that portion of the cross-section where the intensity declines or varies most rapidly. With regard to the Kánga end of the northern epicentral tract, there is no difficulty, as has already been shown, in making a selection of points situated near its W.N.W. end which must be correct within a few miles. From those points the distance to the epicentral line cannot be less than 7 or more than 12 miles. The centre, therefore, between Kánga and Dharmśála must lie at some depth greater than $7\sqrt{3}$ and

less than $12\sqrt{3}$ miles, *i.e.*, between about 12 and 21 miles. Taking another cross-section over the tract from Naggar through Sultánpur, Mandi, and Suket, the horizontal measurements, though less exact, cannot be less than 12 or greater than 24 miles, and therefore the depth must lie between $12\sqrt{3}$ and $24\sqrt{3}$, or between 21 and 40 miles. The centrum thus deduced for this part of the earthquake-area can, therefore, be represented by a line or axis running from a point about midway between Kánga and Dharmśála in an E.S.E. direction towards Bajaura, a distance horizontally of 50 miles and at a depth of from $>12 < 24$ to $>21 < 40$ miles, the average being from 18 to about 30 miles, with a dip or pitch of $13\frac{1}{2}$ degrees with the horizontal.

It will no doubt be thought by many that the above depths are possibly exaggerated, and in any case there is no doubt about their vagueness. Whilst freely admitting the possibility of serious refraction caused by change of rock-formation through which the shock must have been propagated, there are two general facts which point to at least a *considerable* depth for the part of the centrum below the Kulu area. One is the extremely large area over which the shock has undoubtedly been felt, and the other the only moderate violence at the surface. In other words, a shock of intensity 8 at the surface at Kulu, if of shallow origin, would not have been so powerful at that origin as to have been felt in such remote parts as the Bombay Presidency and Assam, nor would one of intensity 10 at Kánga unless it also were proportionately deep-seated.

With regard to the smaller subsidiary focus for the isolated Dehra-Mussoorie area, the fact that the latter is delineated by only one isoseismal, which has only been crossed by my colleagues at one point on its southern limb, and at a time when its isolation from the Kánga-Kulu epicentral tract was not suspected, renders impossible the application of Dutton's method of estimating the depth, inasmuch as there are no data for approximately determining the points of most rapid decline of intensity. On general grounds one would expect the depth of the centrum to be considerably less than at the Kulu end of the northern area.

5.—INTENSITY: ACCELERATION OF WAVE PARTICLE.

The foregoing isoseismal lines and their enclosed areas, it will be observed, have been mapped mainly according to the general effects produced by the earthquake on buildings. That no specific measure-

ments have been made of the acceleration, amplitude, or period of the wave particle is a necessary misfortune in an area destitute of suitable seismographs. The common practice of drawing a certain amount of limiting values for these measurements from overthrown or projected natural bodies has also in this area had little scope, partly because of the general absence of suitable objects, and partly because of the extreme complexity of such cases as have occurred. The same causes which have tended to obscure the conclusions to be drawn from the direction of objects overthrown have also confused those deducible from the amount of that overthrow. For the present, I propose to mention only the following selected cases as evidence in this connection, because they appear to be less open to objections on the score of complexity than any others.

The old European cemetery at Kāngra Bhāwan lies in the middle of a flat plain, and at the time of my visit exposed a number of rectangular masonry pillars, overturned or broken with more regularity of direction than I have seen elsewhere (see fig. 2.) They comprise:—

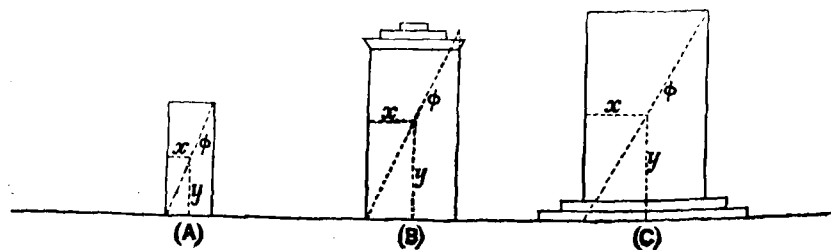


FIG. 2.

- (A) Two small, rectangular upright tombs, 3 ft. high, by $1\frac{1}{8}$ ft. square. Fallen as a whole towards N.E.
 (B) A pair of gate-pillars, of dressed stone and lime-mortar outside, with rubble within, 5 ft. high by $2\frac{1}{2}$ ft. square. Fallen as a whole, one towards E.25°N. and one towards W.20°S. (*i.e.*, nearly in opposite directions).
 (C) A pair of pillar-like tombs, constructed like the gate-pillars, $5\frac{1}{2}$ ft. high by $3\frac{1}{2}$ ft. square. Not upset as a whole, but shattered above the base into fragments.

Using West's simplified formula for determining the acceleration of the wave particle, a formula which has stood the test of much experimental proof, we have:—

$$f = g \frac{x}{y}$$

where x = half diameter of the base and y = the height of the centre of gravity.

Then, in the three cases above, we have as follows:—

For (A) f =	>	$11\frac{1}{2}$ ft. per sec. per sec.
For (B) f =	about	13 " " "
For (C) f =	<	19 " " "

Since in the case of (A) both bodies were upset towards the direction of shock, and in the case of (B) one towards and one away from that direction, whilst in the case of (C) they were not upset at all, we may deduce a rate certainly between $11\frac{1}{2}$ and 19, and probably near 13 ft. per sec. per sec. for the acceleration of the wave particle at Kāngra.

But, according to Prof. Omori,¹ the formula:—

$$2a = \frac{4x(x^2 + y^2)}{3y^2}$$

where $2a$ is the double amplitude or range of motion of the overturning edge, will yield a limiting value for the amplitude of the earth vibrations in the case of short periods where the pillar is overturned towards the direction of impulse. Using it we obtain the result,

$$a = 9\frac{3}{4} \text{ inches,}$$

an amplitude which is large, but not excessive in the case of soft ground near the epicentre of a great earthquake.

Using this value for a in the general formula:—

$$f = \frac{4\pi^2 a}{t^2} = \frac{v^2}{a}$$

where t is the period of the wave and v the maximum velocity of the earth particle, we can obtain values of t and v . We thus have altogether:—

Acceleration	$f = 13$ ft. per sec. per sec.
Amplitude	$a = 9\frac{3}{4}$ inches.
Velocity	$v = 3\frac{1}{4}$ ft. per second.
Period	$t = 1\frac{1}{2}$ seconds.

On the other hand, by using Prof. Omori's second formula for the case of a pillar overturned in the forward direction when the period of motion is comparatively long, and applying it to the second of the pair of gate-pillars overturned away from the direction of shock, we get:—

$$v = \sqrt{\frac{8g y (1 - \cos \phi)}{3 \cos^2 \phi}}$$

where ϕ is the angle between a vertical side and the diagonal of the pillar. That is:—

$$v = 3.87 \text{ ft. per second,}$$

a value which is sufficiently near the one previously obtained by the other method to be corroborative of it.

6.—TIME OF THE EARTHQUAKE: RATE OF PROPAGATION.

The remarks made by Mr. R. D. Oldham in his memoir on the Assam earthquake of 1897¹ as to the varying standards of time in India, and the varying accuracy with which they are kept for ordinary purposes apply equally today. Without an exhaustive statistical treatment of all the returns sent in, the only way to arrive at an approximately correct result is to take a selected few of them, which *prima facie* seem the most reliable. Fortunately, with seismographs of the Milne type installed at Bombay, Kodaikanal, and Calcutta, there is the less need to weigh a large body of doubtful evidence. These selected few mark a great advance on the records available in 1897.

From the Kánga-Kulu epicentral area it may at once be said that we have no accurate details, and indeed very few at all. From the Dehra-Mussoorie area the automatic records of the Survey of India instruments have furnished times, which, however, are still a matter of enquiry as regards details.² From Simla the time of arrival of the shock is given as 6h. 9m. 30s. A.M. (Madras time). From towns about the nearness of Sialkote, Lahore, Amritsar, and Jullundur there is a general body of testimony derived from well-regulated clocks giving 6h. 10m. os. as the time of arrival of the first big shock. From Rawalpindi and Saharunpur the time is 6h. 11m. os. So that from the above times we may reasonably conclude that at the chief epicentral tract the time was about 6h. 9m. os. within a second or two of error.

Skipping the intervening areas for the present in this account, there are available from the Government Observatory, Bombay (Colaba), a number of detailed automatically-recorded times (provisional and subject to future correction in detail), from which I naturally

Arrival of large waves at Bombay, Kodaikanal, and Calcutta.

¹ Mem. G. S. I., Vol. XXIX, Chap. IV, (1899).

Later information received points to a discrepancy with the times here recorded. The subject will be discussed in the forthcoming full report.

select those furnished by the seismograph, it being the instrument best qualified for the purpose. Neglecting the preliminary tremors, and confining our attention to the large movements which are most easily distinguishable in the seismograms, we find they began about 4 minutes after the preliminary tremors, the latter being given as 6h. 13m. 1½s. Thus the time of arrival of the large movements at Colaba was about 6h. 17m. os. At Kodaikanal and Calcutta (Alipur) Government Observatories the seismographs recorded the same phase at 6h. 21m. 48s. and 6h. 17m. os. respectively.

Now, assuming that these large movements as registered on the seismogram films represent the first arrival of the large waves which travelled along the surface of the earth (a generally accepted conclusion) and that they began at 6h. 9m. os. at the epicentre, we can tabulate the following distances, periods of transit and rates, thus:—

PLACE.	Distance in miles from centre of large epicentre.	Seconds during transit.	Deduced rate in miles per second.
Bombay (Colaba) . . .	950	480	1.98
Kodaikanal	1,497	768	1.95
Calcutta (Alipur) . . .	950	480	1.98

It so happens that Colaba and Alipur are exactly the same distance from the central point of the larger epicentral area, a point fixed by a personal survey of the devastated region; and the agreement in the time and consequent rate is extremely satisfactory, and it may be further noted to agree to the second place of decimals with the mean value arrived at by Mr. R. D. Oldham for the 1897 earthquake. The Kodaikanal time and deduced rate come sufficiently near to be in every way corroborative. If, neglecting the time at the epicentre, we take the difference of the Kodaikanal time and that of either Alipur or Colaba, and also the difference of their distances from the known epicentre, we get 547 miles in 288 seconds, or a rate of 1.90 miles per sec., a rate which, if applied through the whole distance, would give a time of 6h. 8m. 40s. for the beginning of the shock.

Agrees with average for 1897 earthquake.

Besides the above time of 6h. 17m. os. recorded at Calcutta, we have further corroborative times afforded by Mud Point and Saugor Island, which agree in giving 6h. 17m. os. Other time evidence in Calcutta that may be mentioned here has been derived from the stoppage of clocks. At St. Xavier's College the electric clock stopped at 6h. 20m. os.; at Alipur Observatory the astronomical clock stopped at 6h. 19m. os., but it is important to remember that so far from the centre as Calcutta, where the shock was necessarily very weak, it is probable that these clocks did not stop all at once, and therefore that they considerably overstate the time.

Prof. Omori in his note on the present earthquake seismogram as registered at Tokyo¹ and other places in Japan, deduces a rate of 3.3 kilometers per second for the surface transmission—this rate being obtained by considering the times of arrival of the 3rd phase of the principal portion of the wave along the minor and major arcs respectively of the great circle joining Tokyo and Kágra; together with the time of re-arrival of the former after making one complete circuit of the Earth. The length of time for that complete circuit was 3h. 15m. 4s. The value 3.3 kilometers or 2.05 miles per second differs from the value 1.98 by only .07 of a mile and may be considered as further corroborative evidence regarding the rate of transmission of the shock.

7.—FORE-SHOCKS AND AFTER-SHOCKS.

The usual large number of attendant after-shocks have succeeded the great shock of the 4th April, but their discussion will be reserved for the present. As to fore-shocks, there is no evidence that any were felt in the disturbed area. It may be mentioned, however—although the occurrence is probably only a coincidence—that on the 2nd April a considerable earthquake shock was felt at Ongole, Markapur (Kurnool district) and Madras, and that after-shocks of it continued up to and subsequent to the 4th April. On geological grounds there is no reason for regarding the connection in time as anything but accidental, and it is

¹ Appendix to Pub. Earthquake Invest. Com. in Foreign Languages, No. 25 Tokyo, 1905).

only mentioned here because of the importance of anything that might possibly bear on the matter.

8.—GEOLOGICAL CONDITIONS IN RELATION TO THE EARTHQUAKE.

On the now generally accepted theory that great earthquakes are due to strains set up in the earth's crust by geotectonic movements, and to their sudden relief by slipping along a fault, it is of importance to consider the geological structure of the area. Although one can hardly hope to identify the particular local structural accident that constituted the earthquake, the matter is of such gravity to mankind that any hopeful suggestions should be recorded. The above is one aspect of the bearing of geology on the earthquake. Another aspect is the superficial and secondary effects of the earthquake consequent on the nature and disposition of the rocks at the surface. Taking these two aspects of the subject in order, and premising that the subject is very complex, the suggestions which follow are made with a full recognition of their hypothetical nature.

Neither the accompanying maps, nor any that could be conveniently used for such a great area, do anything like justice to the topography of the main and subsidiary epicentral tracts, which really are of a very varied and characteristic relief according to their geological composition. However, if Mr. Medlicott's map¹, or even the general geological maps of India on smaller scales be consulted for an outline view of the geology, there will be noticed a striking structural peculiarity at these two points of the Himālayan area, namely, the great inbaying of the younger Tertiary formation of the Sub-Himālaya towards the higher central regions of the mountains. The line of the "main boundary" fault separating these Tertiaries from the very old Himālayan rocks of that region may be observed to take a huge sweep inwards and eastwards from the Rávi River to Drang, and then to return almost in a N.—S. sweep by Mandi, Suket, and Sabāthu, and round the foot of the Simla mountain spurs. The Tertiaries then pursue a normal direction until the Dehra Dun area is reached, when there occurs another, but much smaller, inbaying of them towards the central area. Nowhere else along the Himālayan mountain-foot, as we know it, is there such

¹ Mem. G. S. I., Vol. III, 1864.

exceptional irregularity, unevenness one might say, in the disposition of these bordering bands of Tertiary strata (see fig. 3).

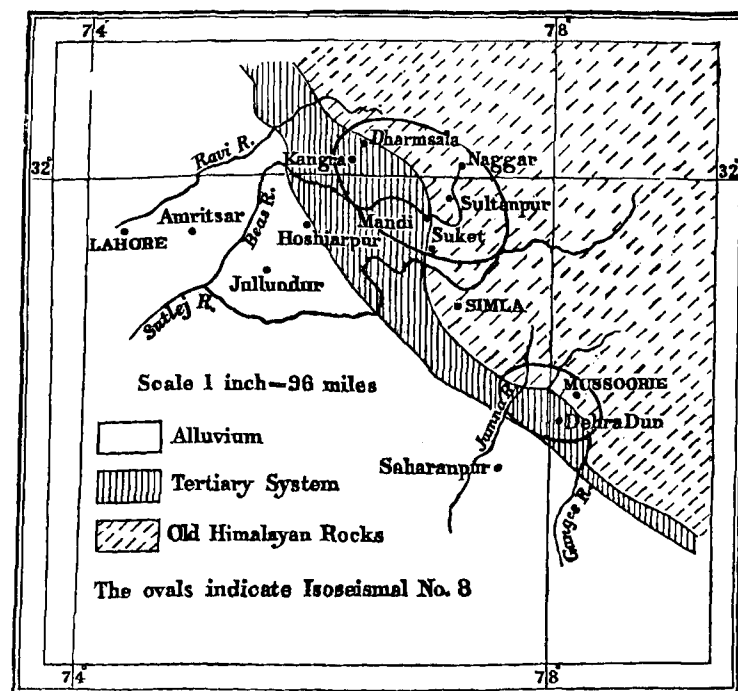


FIG. 3.

Now, the special function of all the folding and fold-faulting of the Sub-Himālayan tract that has gone on in Tertiary, post-Tertiary and possibly still more recent times has undoubtedly been to straighten out this mountain-foot into a very uniform curve—the great southwardly convex curve of the whole Himālayan chain. Therefore, areas which show any marked irregularities still left, such as those just pointed out, may well be in a peculiar condition of strain, extremely favourable to geotectonic movements, including faults.

This view is strengthened by the fact that already on the plainward edge of the Sub-Himālayan band considerable straightening has taken place, as is testified to by the long, straight strike-ridges behind Hoshiarpur and south-west of the Dehra Dun, respectively; whereas the areas in the angle of the inbayings show wavering irregularity

of strike following the contours of the older Himālayan mass, succeeded by gently dipping areas forming longitudinal valleys, or, as at Dehra, the so-called "Dun."

Another source of such strain, and consequent tendency to movements, is undoubtedly provided by the steep slope from the Kágra valley at about 3,500 feet to the Dhauladhār ridge at about 16,000 feet, a horizontal distance of only 6 miles. With such a gradient the local interchange of load by denudation of the latter, coupled with deposition on the former, is inevitable; and that it has gone on for long ages is evident by the great debris fans and terraces of sand, clay, and enormous granite boulders that strew the valley-floor and also extend up the lower hill-spurs near Dharmasala. In a much less important degree the Dehra Dun presents some similar features.

From what we know of the isostasy of the earth's crust, especially along the Himālaya, such a continuously maintained change of loading cannot go on without further state of strain requiring re-adjustment. Such re-adjustment generally implies only folding and faulting with occasional insignificant earthquake shocks; but at the same time it carries with it the chance of a sudden change of strain enough to cause a great earthquake. As a matter of fact earthquakes in this area are said to be common, but generally non-destructive, whilst underground sounds of the nature of "Barisāl guns" have long been known.¹

If the above structural peculiarities in the Kágra valley and Dehra Dun respectively, may be considered to have any influence in producing special lines of strain, then the major epicentre located at the former and the subsidiary epicentre at the latter place, carry out the same idea by possessing magnitudes proportional in size and intensity to the assumed causes. Should the particular local causes just outlined, however, be dismissed as fanciful, there can still be no doubt that the general tendency to instability of the Himālayan mountain-foot as a whole, consequent on rapid change of profile accompanied by

¹ Mentioned in a letter by Mr. C. Michie Smith, Government Astronomer, Madras. Mrs. W. S. Meyer, at "Townsend," Simla, about twelve days before the earthquake, also reports having heard rumbling sounds, not to be confounded with thunder, which the Meteorological Reporter to the Government of India reports as absent during the day on which the sounds were heard.

change of load, is an adequate cause in itself and one which is universally recognised by seismologists in all similar cases.

As to effects, that the earthquake, as felt disastrously and sensibly at the surface, was in many cases a very much modified product, depending largely on the nature of the stratified upper crust and on the surface-deposits, is abundantly clear for general and particular reasons. The subject is too vast, however, and also too full of unsolvable problems to do more than refer to it here very briefly. The following points are noteworthy:—

Geological conditions influencing surface-effects of the earthquake.

- (1) All the surface valley deposits of alluvium, sand, gravel, and boulders appear to have been proportionately more heterogeneously shaken than solid rock.
- (2) Of rock, the soft Tertiary sandstones have been thrown into more destructive vibrations than the older and more compacted strata.
- (3) Narrow ridges with free ends (spurs) have been very much more shaken than broad areas and the flat hollows between the spurs.
- (4) In the case of the more distant vibrations and tremors, the great alluvial tracts, and the flat-lying Vindhya and Deccan trap with cotton-soil, have rendered such weak vibrations apparent, whilst the ancient and steeply-dipping Aravalis have resisted the shocks in a very noticeable way. As a consequence, there occurs an isolated area round about Udaipur, Dungarpur, Partāgarh, etc., from which no accounts of any shock have reached us. It is interesting to note that this area was similarly barren of results in the 1897 earthquake, although the shock was recorded both east and west of it.

9.—SPECIAL SURFACE-EFFECTS OF THE EARTHQUAKE.

(a) Earth-fissures: Rock and Land-slides.

In a short paper without illustrations it is difficult to convey a true impression of the size and importance of the secondary surface effects, relatively to the magnitudes (of mountain and valley) concerned. The

Though serious all are of superficial origin.

danger of over- or under-stating is equally great. But it may at once be laid down that of all the ruptures of the hill-sides that have taken place with their accompaniments of rock-showers and soil-cap slides, none can be definitely regarded as having been caused by mass-movements of the solid rock from below upwards. Although the origin of the earthquake must be accepted without hesitation as due to just such a movement having taken place suddenly at a depth below the present surface, yet it nevertheless appears certain that the planes of such movement nowhere emerged at the actual surface of the ground producing changes of contour and drainage, or originating fault-cliffs, such as was a feature of the Assam earthquake of 1897 and the Japanese earthquake of 1891. The great majority, probably all, took place in a direction with gravity and not against it: all are secondary, and the expression simply of the shaking or vibrating of loose unstable material (whether in the form of soil, rock, crag or mountain-spur) followed by the descent of the disrupted masses to lower levels.

Two causes have contributed to bring into special notice the rock and soil-cap slides in Kulu. One is the extremely fissile and sheared condition of the quartz-schists and epidiorites, which together with a considerable amount of much "mashed" limestone make up the principal rocks of the Kulu valley. The other is the extremely steep angle to which many of the slopes and precipices of the Beas river and its tributaries have been reduced by the continuous steady erosion of the river-bed. The Beas is much more gorge-like in its windings, especially near Lārji, than the majority of large rivers similarly situated in the Himālaya. It is no wonder, then, that when the earthquake came, such greatly splintered rock materials and such impending slopes—far above the limiting angles of safety—afforded ideal conditions for the production of landslips on a gigantic scale.

A brief reference to actual examples must suffice here. In the immediate vicinity of Kāngra and Dharmśāla, where the hill-slopes are comparatively gentle for a mountainous district, though they steepen rapidly above Dharmśāla, the appearance of fissures along many of the slopes, such as the Sessions House ridge at the former place, and the cantonment spur at Dharmśāla, is a fair indication among other evidence of

Kāngra valley and neighbourhood.

the greater intensity of the shock in that area. Special cases such as the narrowness of the ridge at McLeodganj bazar and at "Bryn," as also the peculiar lie and rock-composition of the Jail site (all on Dharmśāla civil hill) have resulted in specially marked destruction, numberless fissures or, as at the Jail, an actual subsidence of the land in great blocks.

Above Pálampur, at the head of the Neogal gorge, one very noticeable rock-slide in the bare steep crystalline axis of the Dhauladhār range continued active for months after the earthquake. Each subsequent after-shock combined with the effects of melting snow dislodged further loose material, which, in its descent over precipices several thousand feet sheer into the bed of the gorge, gave rise to a dust-cloud of great volume that overtopped the great range and was visible for many miles away. It discoloured the snow-covered ridges far and near and was so continuous as to alarm the timid by its resemblance to a volcanic eruption. The nearer hill-spurs above Pálampur were also much damaged. In particular the fresh soil-cap, left whence snow had just retreated, showed that these slender ridges must have shaken like a quivering jelly and split up into fissures every few yards. Nearer Pálampur, again, and at other stream-outlets along the Dhauladhār, the shedding of the scarps of gravel terraces, and the skinning of the steep slopes carried away with them many miles of water-channels used for irrigating the lower parts of the Kángra valley.

A parallel instance to the Neogal Nullah dust-cloud is also afforded by the Fojal Nullah, about eight miles due west of Naggār in Kulu, where phenomena of the same kind, simulating volcanic action, took place, and where on the day of the earthquake the water joined the Beas river as a black torrent. Mr. W. H. Donald, Executive Engineer, Kulu, informs me that on the 24th May 1894 there was a previous rock-movement, or landslip, at the same place, accompanied by a flood and by a dust-cloud that continued for four months.

Near Guma and Drang the new cart-road from Pálampur to Mandi has been carried along the line of the main-boundary fault. The hill-sides for some way on both sides of the fault are much disfigured by cracks and landslips, but especially just along the junction, where not only are the rocks in that greatly-splintered and powdered condition

usually presented in such places by the shearing and crushing that have gone on for geological ages, but also are rendered more unstable by reason of the local outcrops of easily soluble rock-salt. Much of the new road has been destroyed and many of the salt quarries blocked by rock-showers.

The bridle-roads over the Dulchi and Bubu passes have also suffered in the same way, the latter, which enters a defile near the top, continuing blocked for many months.

The Parbati river in Kulu, especially in its higher snow-fed tributaries, where precipices of white, much splintered quartz-schists abound, has been phenomenally prolific in rock-showers, which have often carried away with them pine forests as well as roads, and filled up the torrent-beds with streams of sliding debris.

At Larji, near where the confluence of the Beas with the Tirthan and Sainj streams takes place in profound gorges, the havoc wrought among the steeply-convex spurs is at first sight appalling. The Larji slips were still active when I was there, two months after the earthquake, and they showed signs of a probable great increase during the ensuing south-west monsoon. This river focus will indeed in my opinion give much trouble to communications for years to come.

Both the Tirthan and the Sainj streams have been temporarily dammed up by the debris cones, some miles above Larji, forming lakes. The latter was still inaccessible when I was there, but I examined the Barwar lake, three miles up the Tirthan river. It is about three-fourths mile long in an S-shaped curve, and by reason of the rotten and much scarred precipices above, will be long before it attains a condition of rest. There seems to be no danger of the dam bursting, as a steady outflow had been established with a moderate gradient.

South-east of the Barwar lake damage to the hill-sides gradually diminishes. The northern ascent to the Jalori pass exhibits a few minor rock-slides and showers, and then there sets in comparative stability, especially in the wide open valley of the Sutlej near Luri. Near Mussoorie, however, a prominent rock-slide at the Kempte falls still shows the readiness of very steep slopes to give way under even the moderate shaking which this part of the area underwent.

(b) Miscellaneous Effects.

A common accompaniment of earthquakes is the disturbance of lines of natural water-springs. The usual form of which this takes is an increase in the volume of water discharged: a result easily seen to be due to the surface-shaking of the rocks causing a loosening of the joints or other fissures along which the water escapes.

Springs. The water-supply of Jawalamukhi, which has its source in springs, was about doubled; but the temple springs, with their natural inflammable gas, were not affected.

The boiling springs at Manikarn were slightly affected by the earthquake. One was checked altogether, and left a public bathing-place to run dry, whilst others within a short range shifted their channels.

Boiling springs at Manikarn. The character of the springs and their temperature (high enough to cook rice and other food-stuffs) remained unchanged.

Near Tipri, in the Parbati valley, a very small spring issuing from a rock-cleft flowed muddy for some months after the earthquake. Probably the continuance of after-shocks kept the water from clearing.

Spring at Tipri. The springs at Mackinnon's Brewery, Mussoorie, increased their discharge by from 20 to 30 per cent.: a result accurately determined by Mr. Mackinnon. After 20th May the increase showed a gradual falling off until the end of June, when they resumed their normal flow.

The water in ordinary "tanks," or local reservoirs, was often visibly affected by the earthquake and thrown into waves or overflowed their edges, at localities where the shock was otherwise not felt. This was a common phenomenon round about Calcutta, at Ahmedabad, Bombay, and other places. In the case of tanks divided by partitions, the latter commonly burst. On many canals the water-wave due to the shock was also distinctly noted.

Reservoirs: Canals. Many cases of so-called earthquake "shadows" seem to have occurred, whereby a house, village or bridge sheltered behind and below a violently agitated hill or gravel cliff were spared the shock, which had locally exhausted itself in visible disruption of the sheltering mass. As examples may

be mentioned "Woodside," a house in Dharmśāla cantonment; part of Forsythganj bazar; the Gurkha lines east of the Magazine, and those north of the upper parade ground; and many road-bridges in the epicentral tract. The numerous small hamlets immediately north of Dharmśāla, and divided from it by a deep ravine or by a saddle in the hills, were probably partly protected by being in shadow, partly by being on firmer rock, and partly by reflection of the wave from the main boundary fault. Several small villages and shops lying on the lower north slopes of a hill of soft tertiary sandstone, one or two miles east-south-east of Baijnāth, were also protected, apparently by being in shadow.

Instances of the opposite effect—the very violent movement of long narrow ridges—are too numerous to mention. Every house-site in Dharmśāla and other towns, desirable for its good position, drainage, and view, became a most undesirable site from the standpoint of the earthquake.

From Sind and Burma the long drawn-out distant undulations of the earthquake affected the bubbles in level tubes during survey operations, the movement at the former place indicating a surface tilt of about 30 seconds of arc both above and below the horizontal, in a north-east—south-west direction. No sensible motion was felt at those places, and the gentle oscillations of the bubbles embodied all the local energy that remained of this powerful earthquake after its wide sweep across the half of India.

Movements of bubbles in level tubes.

10.—GEOGRAPHICAL INDEX.

Places within Isoseismal No. 10.

Name of town or village.	District.	Lat. N.—Long E.	Distance in miles from nearest point of main epicentre.
Bawárna	Kángra	32° 3'—76°33'	All within a few miles.
Chari	Do.	32°12'—76°19'	
Daulatpur	Do.	32° 3'—76°19'	
Dharamsála	Do.	32°13'—76°24'	
Kángra	Do.	32° 6'—76°19'	
Nagrota	Do.	32° 7'—76°26'	
Pálapur	Do.	32° 7'—76°36'	
Rehlu	Do.	32°13'—76°16'	

Places between Isoseismals Nos. 9 and 10.

Name of town or village.	District.	Lat. N.—Long E.	Distance in miles from nearest point of main epicentre.
Baijnáth	Kángra	32° 3'—76°42'	About 4
Bajaura	Do.	31°51'—77°13'	" 10
Barwar (lake)	Mandi	31°42'—77°19'	" 17
Bhuin	Kangra	31°53'—77°13'	" 9
Bubu (pass)	Do.	31°57'—77° 3'	" 6
Dhelu	Mandi	32° 0'—76°51'	" 4
Drang	Do.	31°49'—77° 1'	" 4
Dulchi (pass)	Do.	31°50'—77° 9'	" 5
Guma	Do.	31°58'—76°55'	" 4

Places between Isoseismals Nos. 9 and 10.

Name of town or village.	District.	Lat. N.—Long. E.	Distance in miles from nearest point of main epicentre.
Jhatingri	Mandi	31°57'—76°57'	About 3
Kohad	Kángra	32° 5'—76°52'	" 9
Lárji	Do.	31°44'—77°17'	" 14
Mandi	Mandi	31°42'—77° 0'	" 10
Paprola	Kángra	32° 3'—76°42'	" 4
Ránítál	Do.	32° 1'—76°18'	" 10
Sháhpur	Do.	32°12'—76°15'	" 8
Sujánpur	Do.	31°50'—76°33'	" 14
Sultánpur	Do.	31°57'—77°10'	" 10
Swar	Do.	32° 5'—76°55'	" 11

Places between Isoseismals Nos. 8 and 9.

(1) In Kángra—Kulu Area.

Name of town or village.	District.	Lat. N.—Long. E.	Distance in miles from nearest point of main epicentre.
Banjár	Kángra	31°38'—77°24'	About 24
Hamirpur	Do.	31°41'—76°35'	" 22
Jalori (pass)	Do.	31°32'—77°27'	" 30
Jari	Do.	32° 0'—77°18'	" 18
Jawalamukhi	Do.	31°52'—76°23'	" 16
Jibhi	Do.	31°36'—77°15'	" 26
Kot	Do.	31°31'—77°29'	" 33
Manglaur	Do.	31°40'—77°22'	" 21

Places between Iseismsals Nos. 8 and 9.

Name of town or village.	District.	Lat. N.—Long. E.	Distance in miles from nearest point of main epicentre.
Manikarn	Kángra	32° 2'—77° 25'	About 24
Nadaun	Do.	31° 47'—76° 24'	" 21
Naggar	Do.	32° 7'—77° 14'	" 20
Plách	Do.	31° 39'—77° 24'	" 23
Suket	Suket	31° 32'—76° 58'	" 22
Telokenath	Kángra	32° 14'—76° 8'	" 14

(2) In Dehra Dun-Mussoorie Area.

Name of town or village.	District.	Lat. N.—Long. E.	Distance in miles from epicentre.
Chakráta	Dehra Dun	30° 43'—77° 54'	All within a few miles.
Dehra Dun	Do.	30° 19'—78° 5'	
Landour	Do.	30° 27'—78° 7'	
Mussoorie	Do.	30° 27'—78° 2'	
Rájpur	Do.	30° 24'—78° 5'	

Places between Iseismsals Nos. 7 and 8.

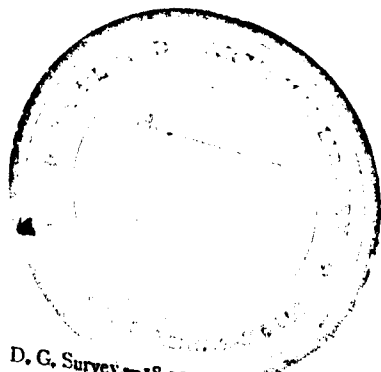
Name of town or village.	District.	Lat. N.—Long. E.	Distance in miles from nearest point of main epicentre.
Amritsar	Amritsar	31° 37'—74° 58'	90
Bilaspur	Simla States	31° 20'—76° 49'	
Chamba	Chamba	32° 29'—76° 10'	42
Chawai	Kángra	31° 27'—77° 30'	29
			33

Places between Iseismsals Nos. 7 and 8.

Name of town or village.	District.	Lat. N.—Long E.	Distance in miles from nearest point of main epicentre.
Chini	Bushahr	31° 32'—78° 19'	72
Dagshai	Simla	30° 53'—77° 6'	67
Dalhousie	Gurdaspur	32° 32'—76° 0'	35
Dera Gopipur	Kángra	31° 53'—76° 16'	20
Gurdaspur	Gurdaspur	32° 3'—75° 26'	53
Hardwar	Saháranpur	29° 57'—78° 14'	144
Haripur	Kángra	32° 0'—76° 13'	16
Hoshiarpur	Hoshiarpur	31° 33'—75° 58'	48
Jullundur	Jullundur	31° 19'—75° 38'	70
Kálka	Umbálla	30° 50'—76° 59'	70
Kapurthála	Kapurthála	31° 24'—75° 25'	77
Kasauli	Umbálla	30° 53'—77° 1'	65
Kotgarh	Simla States	31° 15'—77° 34'	45
Lahore	Lahore	31° 34'—74° 21'	122
Luri	Simla States	31° 20'—77° 29'	42
Mozuffarnagar	Mozuffarnagar	29° 28'—77° 45'	170
Náhan	Sirmur	30° 32'—77° 21'	90
Najibabád	Bijnor	29° 37'—78° 20'	170
Nurpur	Kángra	32° 18'—75° 51'	26
Pathankot	Do.	32° 17'—75° 42'	39
Pauri	Brt. Garhwál	30° 9'—78° 46'	141
Rurki	Saháranpur	29° 53'—77° 57'	144
Sabáthu	Simla States	30° 58'—77° 2'	61
Saháranpur	Saháranpur	29° 58'—77° 35'	129

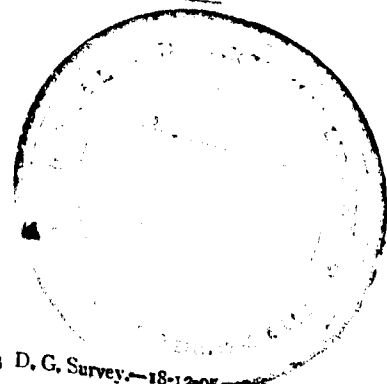
Places between Isoseismals Nos. 7 and 8.

Name of town or village.	District.	Lat. N.—Long E.	Distance in miles from nearest point of main epicentre.
Sialkot	Sialkot	32°30'—74°34'	106
Simla	Simla	31° 6'—77°11'	58
Srinagar	Brt. Garhwál	30°13'—78°46'	147
Tarn Taran	Amritsar	31°26'—74°54'	96
Tiri	Garhwál	30°22'—76°32'	128
Umbála	Umballa	30°21'—76°52'	102



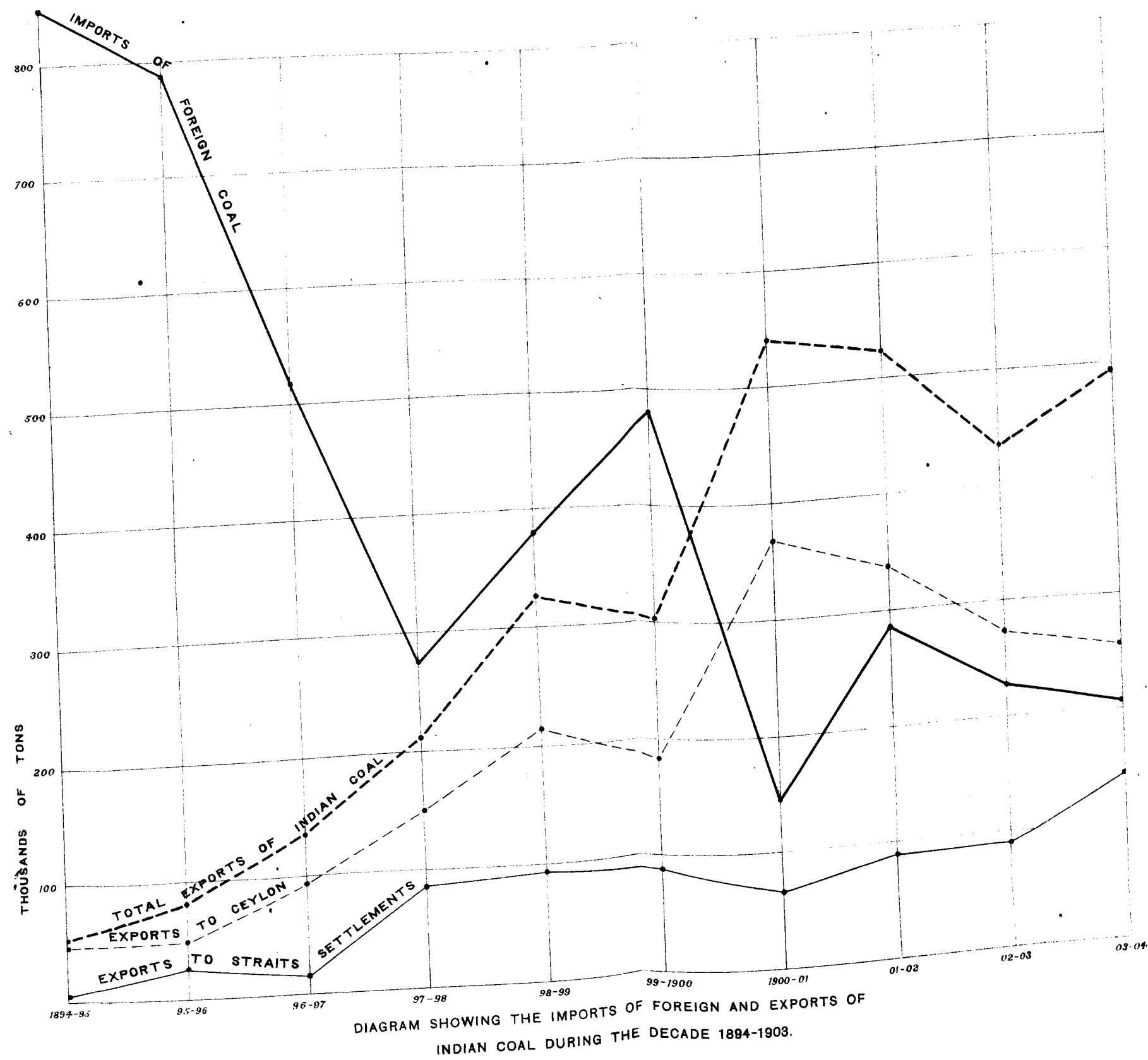
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Sialkot	Sialkot	32°30'—74°34'	106
Simla	Simla	31° 6'—77°11'	58
Srinagar	Br. Garhwál . .	30°13'—78°46'	147
Tarn Taran . . .	Amritsar	31°26'—74°54'	96
Tiri	Garhwál	30°22'—78°32'	128
Umbála	Umballa	30°21'—76°52'	102

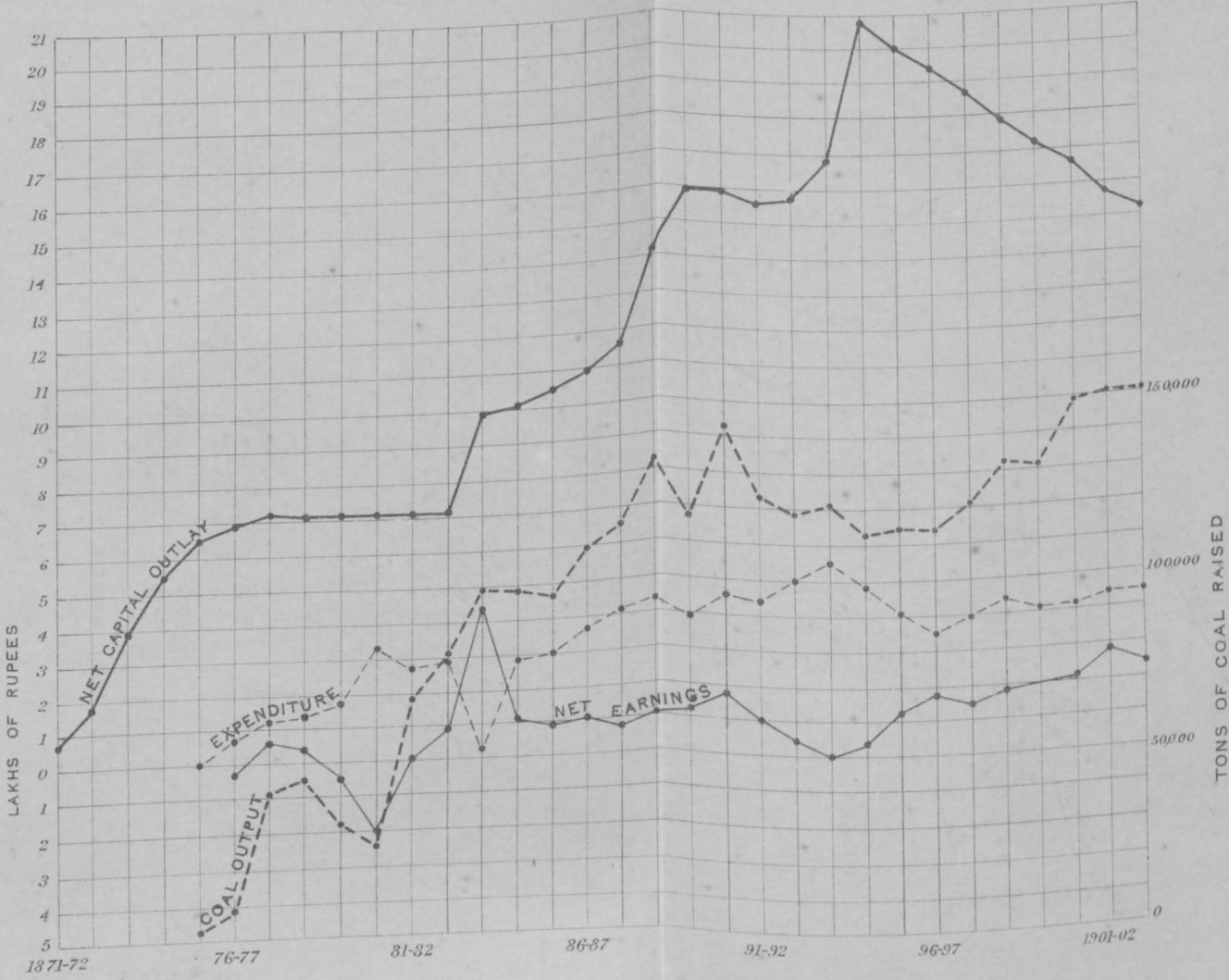


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Holland: Mineral Production.



Holland: Mineral Production.

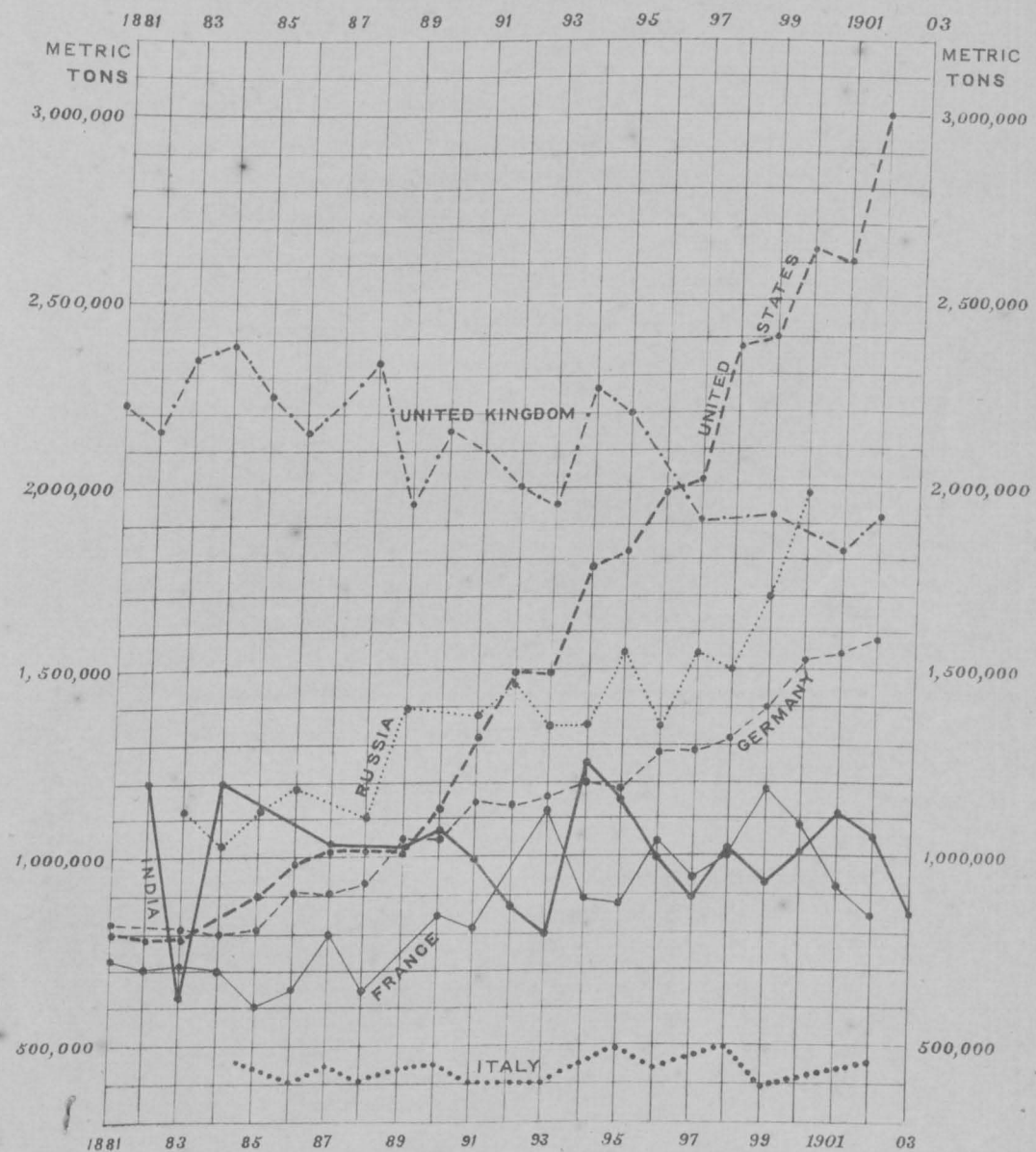


PROGRESS OF THE WARORA COLLIERY.

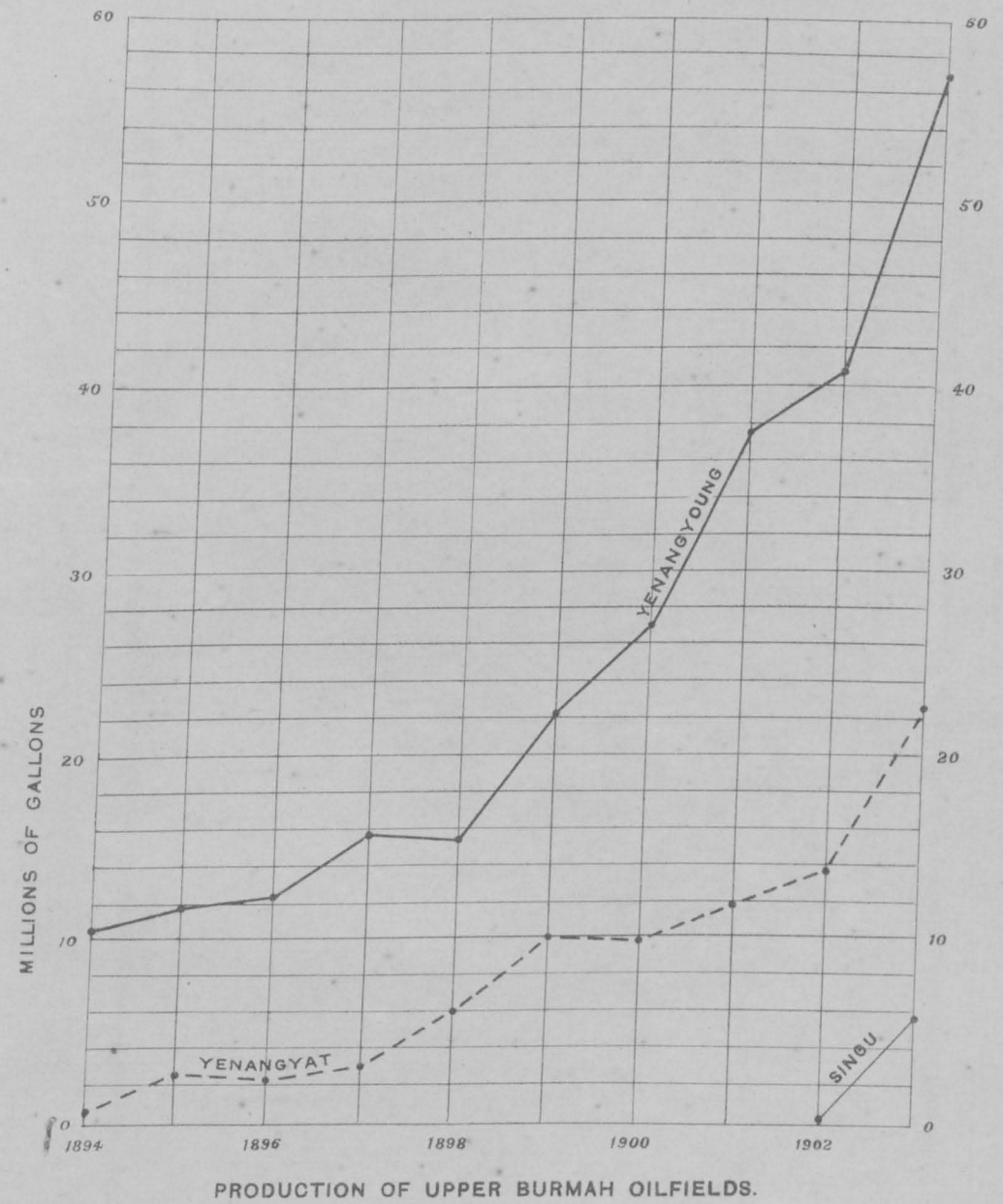
GEOLOGICAL SURVEY OF INDIA

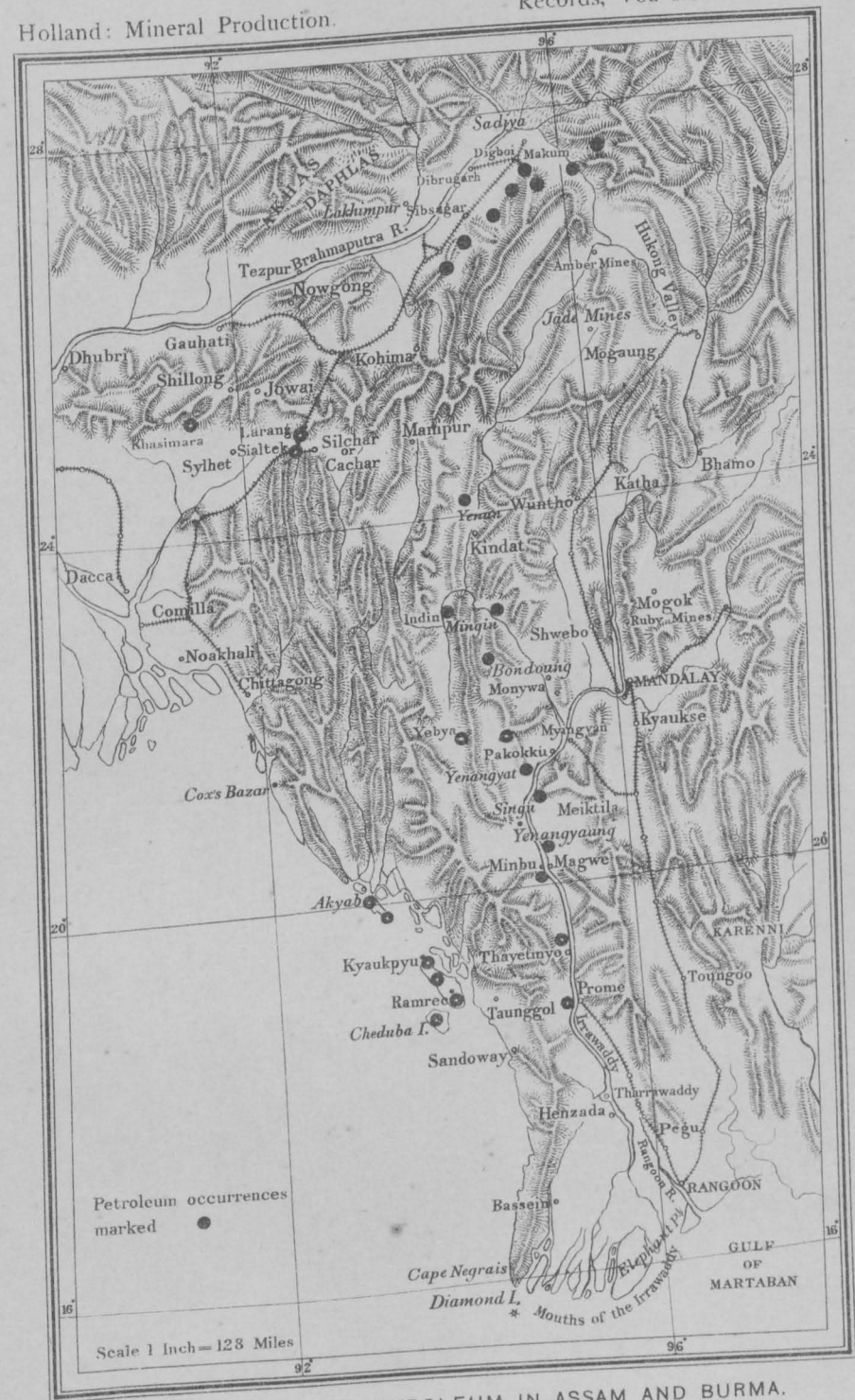
Holland: Mineral Production.

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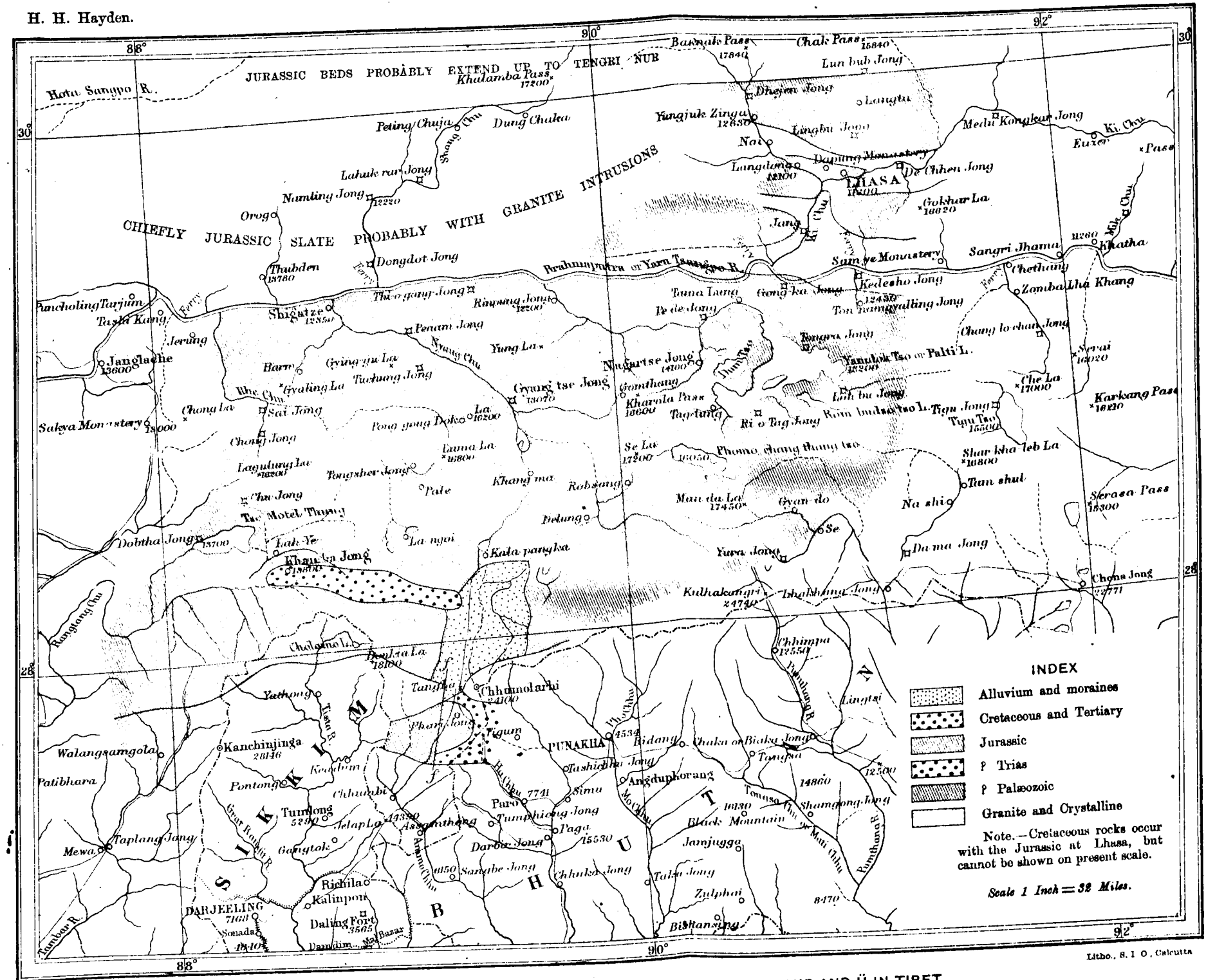
OUTPUT OF PRINCIPAL SALT-PRODUCING COUNTRIES.



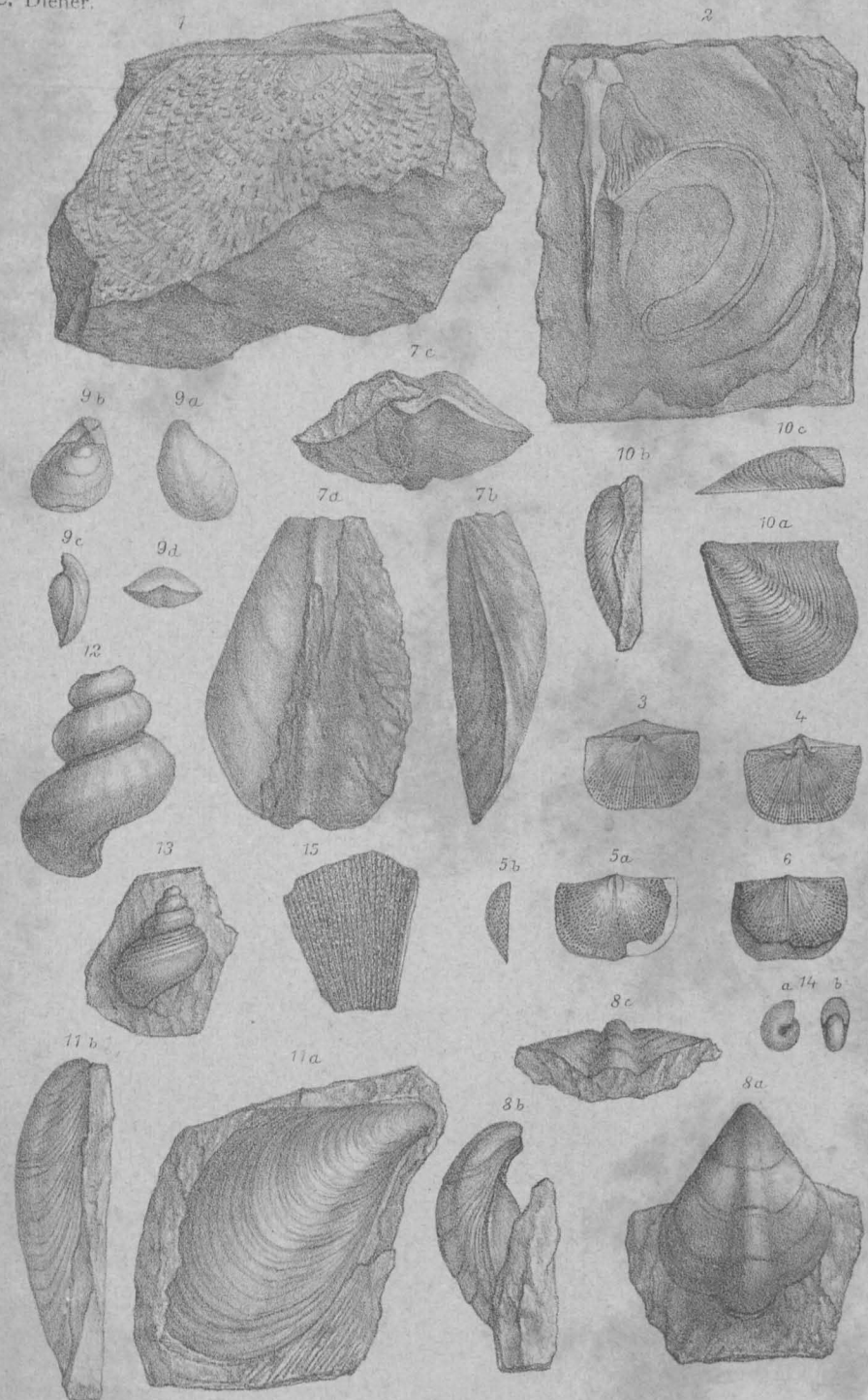


OCCURRENCES OF PETROLEUM IN ASSAM AND BURMA.

H. H. Hayden.



GEOLOGICAL SKETCH-MAP OF PARTS OF THE PROVINCES OF TSANG AND Ü IN TIBET.



Alb. Berger print.

A. Snoboda, del.

ANTHRACOLITHIC FOSSILS FROM THE SUBANSIRI GORGE.

G. E. Pilgrim.



Photographed by G. E. Pilgrim.

Bemrose. Collo., Derby, Eng.

CHANNEL OF THE GODAVARI NEAR NANDUR MADMESHWAR.

G. E. Pilgrim.



Photographed by H. H. Hayden.

CRANIUM OF *ELEPHAS ANTIQUUS* (NAMADICUS).

Side view taken previous to restoration.

Benrose, Collo., Derby, Eng.



Photographed by E. Vredenburg.

Bemrose, Collo., Derby, Eng.

CRANIUM OF ELEPHAS ANTIQUUS (NAMADICUS).

The scale is indicated by the foot-rule seen between the tusks.

G. E. Pilgrim.



Geol. Surv. Office, Calcutta.

Lithd and Printed at the

ELEPHAS ANTIQUUS (NAMADICUS)

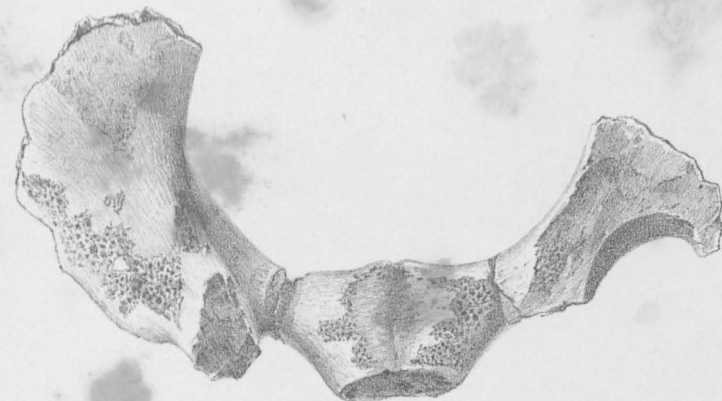


Fig. 1.



Fig. 4.



Fig. 2.

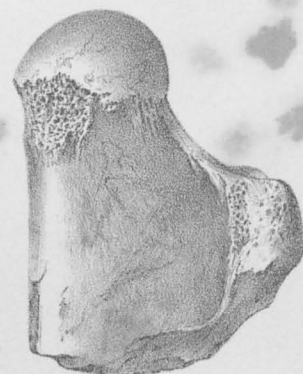


Fig. 3.

- Fig. 1. Pelvic Girdle
Fig. 2. Upper portion of Ilium
Fig. 3. Proximal end of Femur
Fig. 4. Distal end of Femur

H. H. Hayden, Photo.

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ELEPHAS ANTIQUUS (NAMADICUS)

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RECORDS
OF
THE GEOLOGICAL SURVEY OF INDIA.

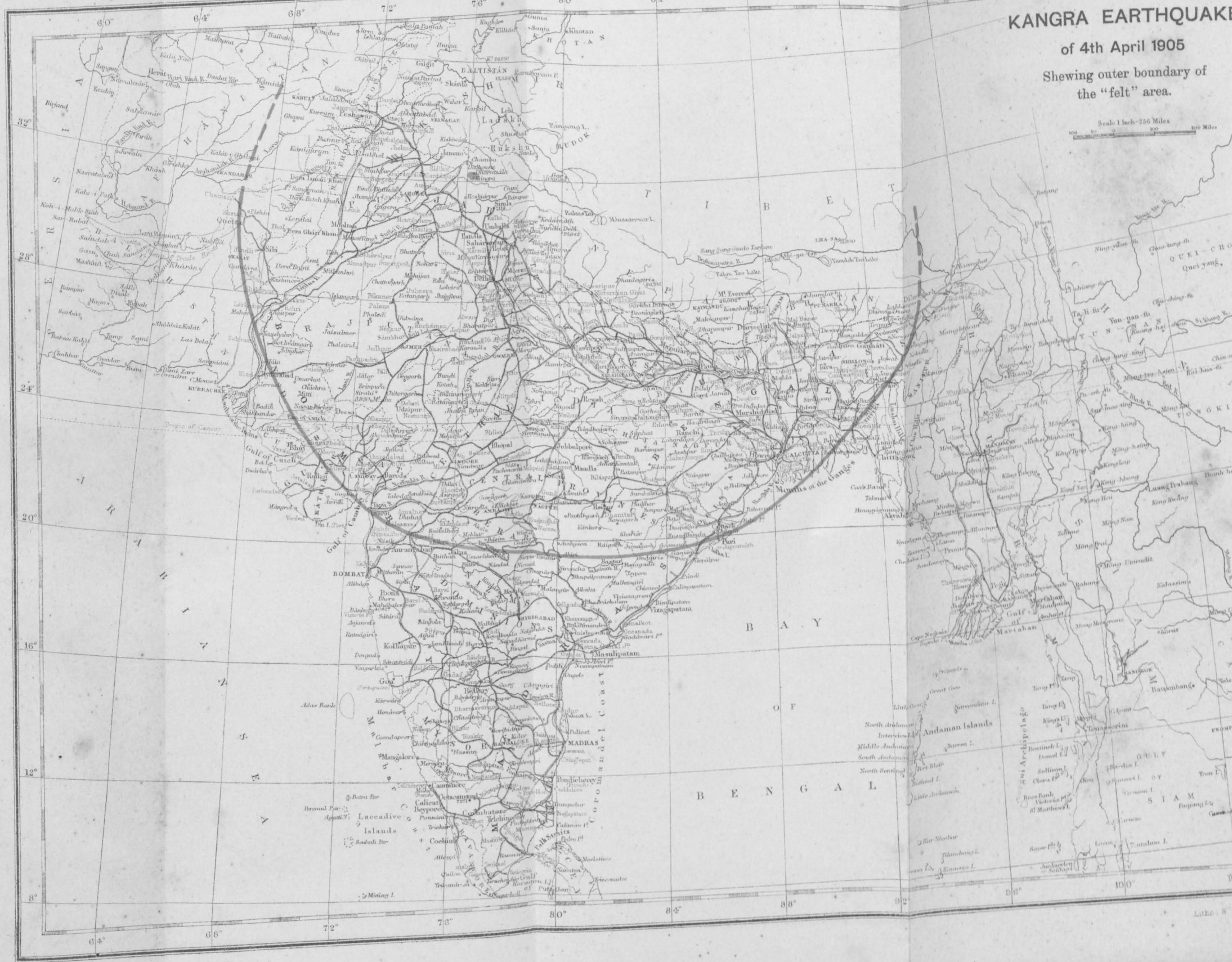
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C. S. Middlemiss.

KANGRA EARTHQUAKE

of 4th April 1905

Shewing outer boundary of
the "felt" area.Scale 1 Inch = 250 Miles
100 Miles

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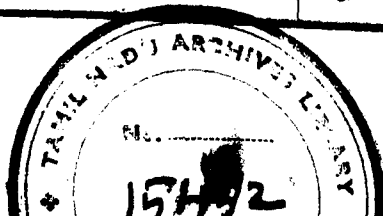
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