

Government of the Punjab,

PUBLIC WORKS DEPARTMENT.

ADMINISTRATION REPORT

OF THE

BUILDINGS AND ROADS BRANCH

FOR THE YEAR

1913-1914.

E 10

10989



Lahore:

CAXTON PRINTING WORKS.

1914.

E-10  
13-14

Price:—With diagram, 1s. 1-0 or 1 shilling and 6 pence.

## Agents for the Sale of Punjab Government Publications

### IN ENGLAND.

CONSTABLE & Co., 10, Orange Street,  
Leicester Square, London, W. C.

P. S. KING & SON, 2 and 4, Great Smith  
Street, Westminster, London, S. W.

KEGAN PAUL, TRENCH, TRUBNER & Co.,  
680-74, Carter Lane, London, E. C.

B. QUARITCH, 11, Grafton Street, New  
Bond Street, London, W.

MESSRS. OLIVER & BOYD, Tweeddale Court,  
Edinburgh.

MESSRS. E. PONSONBY, LTD., 116, Craften  
Street, Dublin.

MESSRS. HENRY S. KING & Co., 65,  
Cornhill, E. C.

MESSRS. GRINDLAY & Co., 54, Parliament  
Street, London, S. W.

MESSRS. W. THACKER & Co., 2, Creed  
Lane, London, E. C.

MESSRS. LUZAC & Co., 46, Great Russell  
Street, London, W. C.

T. FISHER UNWIN, 1, Adelphi Terrace,  
London, W. C.

### ON THE CONTINENT.

ERNEST LEROUX, 28, Rue Bonaparte,  
Paris.

MARTINUS NIJHOFF, The Hague, Holland.

### IN INDIA.

THACKER, SPINK & Co., Calcutta & Simla.

NEWMAN & Co., Calcutta.

THACKER & Co., Bombay.

HIGGINBOTHAM & Co., Madras.

V. KALYANARAM IYER & Co., 189, Esplanade  
Row, Madras.

G. A. NATESAM & Co., Madras.

SUPERINTENDENT, AMERICAN BAPTIST  
MISSION PRESS, Rangoon.

A. CHAND & Co., Imperial Book Depot  
Office, Delhi.

GULAB SINGH & SONS, Mufid-i-'Am Press,  
Lahore.

MOHAN LAL, Panjab Law Book Depot,  
Lahore.

N. B. MATHUR, SUPERINTENDENT AND PRO-  
PRIETOR, Nazair Kanun Hind Press,  
Allahabad.

MESSRS. D. B. TARAPOREVALA SONS & Co.,  
Bombay.

T. FISHER UNWIN, Calcutta.

MESSRS. RAM KRISHNA & SONS, Lahore.



Government of the Punjab,

PUBLIC WORKS DEPARTMENT.

---

ADMINISTRATION REPORT

OF THE

BUILDINGS AND ROADS BRANCH

FOR THE YEAR

1913-1914.



Lahore:

CAXTON PRINTING WORKS.

1914.

PRICE :—One shilling or twelve annas.

Department of the Interior

PUBLIC WORKS DEPARTMENT

ADMINISTRATIVE REPORT

OF THE

ENGINEERS AND SURVEYORS

FOR THE YEAR

1911



1911

OFFICE OF THE CHIEF ENGINEER

1911

Washington, D.C.

**READ—**

The Administration Report of the Public Works Department, Buildings and Roads Branch, for 1913-14.

**REVIEW.**—The prosperous state of the provincial finances during the past year is clearly reflected in the report on the working of the Public Works Department, which is the chief spending department of the administration. The Punjab is now after many years in a position to meet the pressing demands for more and better Government buildings, and for improvement in communications incidental to a rapidly progressing Province. The expenditure in the Buildings and Roads Branch of the Public Works Department amounted during the year 1913-14 to Rs. 91,60,282, the highest figure yet attained. In the two previous years the expenditure stood at Rs. 70,21,581 in 1911-12, and Rs. 79,70,169 in 1912-13. Most of the increase has been under the head of Civil Buildings, but there have also been increases under all heads of Provincial Works. At the same time the establishment charges have remained practically constant for the last eight years. The result has been that the proportion of the cost of establishment to that of works has been reduced from 30.95 in 1909-10 to 13.27 in 1913-14. This decrease in establishment charges is satisfactory, and shows that when sufficient funds are forthcoming to meet the growing requirements of the Province and to utilize to the full the establishment available, the agency of the Public Works Department is not an expensive one. The lowest limit in the percentage of cost of the executive establishment of the Department has, however, probably now been reached. The Provincial expenditure during the year amounted to Rs. 73,32,886, but there was a large lapse (Rs. 19,64,114) on the budget grant. Instructions have been issued for the exclusion from the budget in future of provision for schemes which have not been fully worked out, and it is hoped that in consequence future budget grants will be more fully and more economically utilized.

2. A new feature in this year's Administration Report is a diagram showing graphically the expenditure incurred under service and departmental heads during the last ten years. The total expenditure has risen by 32½ lakhs or 55 per cent. since 1904-05, but the Lieutenant-Governor regards the increase with satisfaction rather than anxiety, for the Province has in the past been starved as regards public works, and liberal expenditure will be necessary for many years to make good the existing deficiencies.

3. While the provision that it is necessary to make for repairs and maintenance will increase gradually as new works are constructed, the demand for new works is not likely to diminish. Residential buildings, especially, are likely to be in demand for several years to come, especially in the larger centres, where private landlords are in a position to charge exorbitant rents for the most indifferent accommodation. On the other hand, in small stations, private persons will often not come forward to build at all, and Government is compelled to step in to provide residences for its officers; while in large stations like Lahore, with a steadily growing official population, the paucity of accommodation has compelled Government to take upon itself the responsibility of providing suitable residences for a certain number of its officers. The expenditure incurred on such residential buildings is, in almost every case, remunerative, and the rent is recovered in full in nearly every instance. While deprecating undue or lavish expenditure, the Lieutenant-Governor cannot help feeling that it is a blot on the administration, that the offices in which the administration is carried on should frequently be mean and unworthy buildings, and he will have no hesitation in making reasonable provision to remove the reproach. Much has been accomplished within the past 2 years, and many schemes for further improvement have been sanctioned or are under consideration.

4. Many buildings have been erected for the Police and Education Departments, during the year. In the case of the Police Department, accommodation has been provided for a large number of the staff, both European and Indian. In the Education Department large schemes for construction of high schools, normal schools, and boarding houses have been taken in hand in order to keep pace with the expansion of the Department.

5. From what he has seen of other provinces of India, the Lieutenant-Governor has formed the conclusion that the Punjab, though in many respects the most progressive, is in the matter of roads among the most backward. It appears that the enormous Railway expansion in the Province instead of



stimulating has retarded the extension and improvement of the roads, and this tendency has been pushed so far that in some places where a new Railway has been constructed, the roads running parallel to it were either entirely neglected, or incredible as it may seem, in some cases purposely dismantled. The Lieutenant-Governor trusts that such wanton vandalism will not be repeated. He is glad to notice, that in the past year, a considerable advance has been made in improving the main lines of road communication in the Province. The majority of the large rivers have hitherto only been bridged by the railway. This state of affairs has been a serious handicap to the movement of troops by road, and to all traffic that is not carried by rail. Three of the main rivers of the Punjab will shortly be spanned by permanent road bridges. A new bridge is in course of construction over the Ravi at Lahore, and the old abandoned railway bridges over the Beas and Sutlej have been converted into road bridges.

The question of a more extensive use of stone metal, to replace kankar for the surfacing of the roads, is engaging the attention of the Engineers. Kankar quarries are giving out in various districts in the neighbourhood of main roads, and the kankar obtained is of too inferior a quality to stand the wear and tear of modern traffic.

6. Sanitary work is assuming an ever growing importance, and water-supply and drainage schemes have been undertaken in a number of towns. Tube wells have been found useful in many places, both in increasing existing supplies, and in tapping deep water-bearing strata. It is hoped that Municipalities will co-operate with the Sanitary Engineer, in maintaining their water-supplies and drainage schemes in an efficient condition. Lack of interest in these matters which, unfortunately, prevails in a great many Municipalities, renders the best and most carefully devised schemes not only useless, but a source of danger to the health of the community.

7. Architectural work will receive its proper share of attention now that a Consulting Architect has been appointed for the Province, and Government will look for a much needed improvement, in the style of small buildings as well as of large ones. Hitherto only the latter could receive architectural treatment at the hands of the Consulting Architect to the Government of India.

8. Electric light and power installations are now working at Simla and Lahore, and it is hoped that Amritsar will soon have its own electric supply. Other large towns will probably follow suit, and the conveniences that electricity affords, should eventually become general throughout the Province.

9. The Lieutenant-Governor desires to thank Colonel Maclagan for his efficient and vigorous administration of the Department during the past year, and for a lucid and interesting summary of the work accomplished. He has been ably assisted by the Superintending and Sanitary Engineers.

[By order.]

R. S. MACLAGAN, COLONEL,  
*Secretary to Government, Punjab, P. W. D.,*  
*Buildings and Roads Branch.*

---

PUBLIC WORKS DEPARTMENT,  
PUNJAB,  
BUILDINGS AND ROADS BRANCH.

TOTAL EXPENDITURE.

1. The total outlay for the year 1913-14, amounted to Rs. 91,60,282 under the following main heads:—

	Rs.
Imperial Military Works ... ..	1,43,443
Imperial Civil Works ... ..	3,94,399
Provincial Civil Works ... ..	73,32,886
Contributions (including local loans) ... ..	12,89,554
<b>TOTAL</b> ... ..	<b>91,60,282</b>

2. Owing to the flourishing state of the Provincial finances, a larger grant than usual was received for Provincial Public Works expenditure. Unfortunately, the budget was inflated by a number of schemes that had not been fully thought out. A good many of the schemes for which provision had been made were altogether abandoned, and the delay in working out other projects and in preparing estimates for them, left, in many cases, little time for carrying out the works themselves, with the result that there was a lapse of Rs. 19,64,114, on a Provincial budget grant of Rs. 92,97,000.

It is hoped that a modification in the system of budgetting, which will be introduced this year, will prevent the recurrence of large lapses in the future. Heads of Departments will be held responsible that only such works are brought forward for inclusion in the budget, as will stand a reasonable chance of being carried out in time.

3. A diagram has been appended to this report showing the expenditure incurred under service and departmental heads during the last ten years. While the total increase in expenditure is phenomenal, particularly under the heads of Provincial Civil Works and Contributions, the cost of establishment has been maintained at a fairly constant level. The percentage for establishment amounted to 13.27 during 1913-14, as against

30.95	per cent.	in 1909-10.
30.12	"	" 1910-11.
17.57	"	" 1911-12.
15.54	"	" 1912-13.

This indicates that the improved state of the Provincial finances has permitted of a considerable increase in the work carried out, and of utilizing the existing staff to the best advantage. Such a low percentage of establishment charges can, however, only be maintained when large works are concentrated at few centres.

ADMINISTRATIVE CHANGES.

4. The office of the Chief Engineer and Secretary to Government, Punjab, Public Works Department, Buildings and Roads Branch, was held by The Hon'ble Colonel R. S. Maclagan, C. B., C. S. I., throughout the year.

The charge of the 1st Circle of Superintendence was held by Mr. A. S. Montgomery from 22nd March 1913 to 23rd October 1913, when he was relieved by Mr. V. Stainton, and reverted to his former post of officiating Sanitary Engineer.

Mr. L. F. Robertson held charge of the 2nd Circle until 29th October 1913, when he went on leave, and Mr. D. W. Aikman, C. I. E., for the remainder of the year.

Mr. A. E. Orr held charge of the 3rd Circle throughout the year.

The office of Sanitary Engineer, was held by Mr. D. W. Aikman until 23rd October 1913, when Mr. A. S. Montgomery took over charge for the remainder of the year.

Captain A. S. Holme, R. E., was Under-Secretary throughout the year.

The post of a Consulting Architect for the Punjab was sanctioned by the Secretary of State, and Mr. B. M. Sullivan, A. R. I. B. A., took over the office in January 1914. The appointment will help greatly in

expediting work, and the Consulting Architect to the Government of India, will be relieved of the designing of the Provincial buildings in the Punjab. Smaller buildings will receive better architectural treatment than was the case formerly, and it is hoped that there will be a general improvement in the design of buildings throughout the Province.

There has been a large increase in sanitary work in the Punjab, and an addition to the staff of the Sanitary Engineer was sanctioned.

In addition to his ordinary duties, the Sanitary Engineer has supervised the working of the Boiler Inspector's Department, and acted as President of the Board of Examiners constituted under the Punjab Steam Boiler and Prime Mover Act for issue of qualification certificates in the Province. The Board held three sittings and granted 272 certificates during the year. Mr. W. Watson continued to act as Boiler Inspector and issued 440 licenses during the year. The fees collected by him for these issues amounted to Rs. 18,999, and he also inspected 50 boilers and steam road rollers belonging to Government for which no fee was realized. For all these inspections the Boiler Inspector travelled 26,226 miles in the year, and the question of providing him with an assistant is under consideration.

A Factory Inspector was appointed for the Province in October. The proposal to combine the offices of Factory and Boiler Inspector, and to employ one officer for both duties was found to be quite impracticable, and the sanction of the Secretary of State was obtained to keeping the offices entirely separate, the Factory Inspector working under the Director of Agriculture and Industries, while the Boiler Inspector continued to be employed under the Sanitary Engineer.

#### IMPERIAL MILITARY WORKS.

5. The total outlay on Original Works was Rs. 90,600, and on Repairs Rs. 35,156.

A combined gravitation water-supply for the cantonment and civil station of Upper Dharmsala was practically completed, the source being the Charan Nala, from which a portion of the Upper Dharmsala and the whole of the Lower Dharmsala civil station has hitherto drawn its supply. As a result of this scheme, the station will now be relieved of anxiety as to water famines during the hot weather, and the health of the troops should be materially improved.

Remount stables were built at Sargodha, and stallion stables at Dera Ghazi Khan, Khanuana, Kanjwana and Tandlianwala.

#### IMPERIAL CIVIL WORKS.

6. The total outlay on Original Works was Rs. 2,92,594, and on Repairs Rs. 46,355.

The reconstruction of the Protestant Church at Dharmsala which had lain in ruins since the earthquake of 1905, was taken in hand towards the end of the year. The Church is being re-built practically on the lines of the original building. The estimated cost is Rs. 29,161 towards which Government has made a grant of Rs. 4,500, and the balance has been collected privately.

The Anglican Church at Lyallpur was completed early in the year.

The Imperial Legislative Council Chamber at Simla was completed during the year, at a total cost (up to date) of Rs. 4,09,473. This building forms an extended wing of Viceregal Lodge, and the architectural style of the main building was adopted by the designer Mr. J. Begg, F. R. I. B. A., Consulting Architect to the Government of India.

The main feature of the building is the Chamber proper, measuring 53 ft. long by 38 ft. broad by 30 ft. high, and providing seating accommodation for the President and 100 members. At either end are galleries, one a large one for the public, and the other a small one, for the press.

The walls are panelled in teak to a height of 12 feet, and the ceiling is covered and decorated with fibrous plaster work.

In addition to the Chamber proper the building contains a large library in the basement, four Committee rooms and an ante-room for the President.

The furniture for the Chamber is of teak and upholstered in green morocco. The floor of the Chamber and the main staircase are also of teak. The vestibule is paved with Belgian marble.

The construction of the Council Chamber presented many difficulties, chiefly owing to the steepness and inaccessibility of the site, the want of



space for stacking building material, and the necessity for avoiding a constant transport of stone through the estate during the season.

Work was commenced on the 11th May 1912, and the building was ready for use in April 1914.

Its construction reflects great credit on Mr. A. R. Astbury, Executive Engineer, Mr. Moss, Sub-Divisional Officer, and his staff.

Other Imperial Civil Works carried out or in progress during the year were:—

- (a) The construction of a Protestant Church at Bhatinda (through the agency of the North-Western Railway).
- (b) Dismantling and re-building peons' and menials' quarters at the Post Office, Simla.
- (c) Additional improvements to "Courteen Hall," (Simla).

#### PROVINCIAL CIVIL WORKS.

7. The total outlay on Original Works was Rs. 48,90,833, and on Repairs Rs. 16,41,890.

The year under review has been remarkable in providing various classes of work out of the ordinary type that usually falls to the lot of the Engineers of the Buildings and Roads Branch. The experience gained will be of the greatest value to the officers concerned. Amongst the works referred to are the Hydro-Electric Scheme at Simla, the Nammal Dam, the Grain Elevator at Lyallpur, and the bridge over the Ravi at Lahore.

#### SIMLA HYDRO-ELECTRIC SCHEME.

8. The Simla Hydro-Electric Scheme was taken in hand as long ago as the close of 1908, and was completed during the year under report under the superintendence of the Sanitary Engineer.

The scheme has been installed for the dual purpose of supplying light and energy to Simla, and also of supplying energy to pump water in order to augment the present supply.

Power is obtained from the 'Nauti' Khud, a tributary of the Sutlej, and a minimum flow of 28 cusecs is available from it. The water is led in an open masonry flume which runs along the hill-side to a large storage reservoir which holds eight hours full working supply and thence passes down the pen-stocks to the power-house, which is situated on the bank of the Sutlej, 545 feet below.

The power-house is constructed in two halves. Each half will contain three Pelton wheels, which are each direct coupled to alternators, two of 250 K. W. and one of 500 K. W. capacity. At present only three sets have been installed, but the power-house will eventually contain six complete sets. Owing to the heavy demand for light and energy in Simla, this extension will have to be carried out almost immediately.

The power is generated at 2,200 volts and is then stepped up through transformers to 15,000 volts for transmission to Simla.

Two transmission lines run from the power-house, one to Simla direct, (length 9 miles) and one to the pumping station at Chair (length 12 miles). A third line connects Chair with Simla direct (length  $7\frac{1}{2}$  miles).

The current which reaches Simla at a pressure of 15,000 volts, is stepped down in the Main Simla Sub-station to 2,200 volts and is again stepped down in the small sub-stations to 220 volts for street and house lighting.

The total cost of this scheme, is Rs. 13,33,745.

#### SIMLA WATER-WORKS EXTENSION.

9. Interconnected with the Hydro-Electric Scheme is the water-works extension. The water-supply of Simla is in immediate need of being increased, and advantage has been taken of electric energy being available to transmit current to Chair about 13 miles from Simla and 3,000 feet below Fagu village on the Hindustan-Tibet road, where a copious supply of water is available. The pumping station at Chair has been equipped with two induction motor-driven slow speed plunger pumps, which raise the water at a rate of 280 gallons per minute, in one lift to a small reservoir, 2,800 feet above, whence the water gravitates to Simla.

The existing pumping station of the Simla water-supply will also be electrified, thus admitting of a great saving in fuel.

The pumps installed at Chair were supplied and erected by Messrs. James Simpson and Company, and have passed their official tests satisfactorily. The lift of 2,800 feet is believed to constitute a world's record.

The cost of the water-works extension has been Rs. 5,65,442, exclusive of the cost of the electrification of the existing pumping station, which work has been carried out by the Simla Municipality.

The Hydro-Electric Scheme was brought into operation on the 15th July 1913, and was maintained for the first nine months by the Public Works Department, after which it was handed over to the Simla Municipality for operation.

Great credit is due to Captain Battye, Executive Engineer, for having pushed the work to a successful completion, and to his assistants, Messrs. Milne and Kaul, for their loyal co-operation.

#### DANE DAM AT NAMMAL.

10. The Dane Dam at Nammal in the Mianwali District was completed in November, and was opened on the 2nd December 1913 by His Honour the Lieutenant-Governor, Sir Michael O'Dwyer. It is the first large masonry dam constructed by the Punjab Public Works Department. The maximum height is 105 ft., the width at base is 72.5 ft., and the mean length is 175 ft. It has been built across the rocky gorge of the Vahi stream, and impounds a maximum canal supply of 4637.5 million gallons. The water irrigates an area of about 18,000 acres in the neighbourhood of Mianwali. The cost of the dam has been Rs. 3,60,631, and that of the canal working in connection with it Rs. 1,14,553.

#### GRAIN ELEVATOR AT LYALLPUR.

11. The Grain Elevator at Lyallpur is the first attempt made at handling and storing grain by modern methods on a large scale in the Punjab. Smaller silos have been constructed at Lahore Cantonment, Faridkot, and Hissar, but this is the first attempt to introduce bulk-handling of grain at one of the large grain exporting centres. It is hoped that it will prove the first step in bringing the great export trade of Indian wheat into line with the up-to-date systems prevailing in Canada and the Argentine.

The elevator will consist of 16 large hexagonal bins each having a capacity of 5,158 maunds, six small rectangular bins, each having a capacity of 1,246 maunds, and 10 small trapezoidal bins, each having a capacity of 1,092 maunds. The total capacity will be 1,01,830 maunds.

Four sacking off bins will also be provided.

Little has been done during the year under report as regards actual construction. There was some delay in deciding upon the best site, and various difficulties encountered in obtaining suitable material for ferro-concrete work proved serious obstacles to progress. The foundation raft for the main storage bins has now been laid down, and it is hoped that rapid progress will be made with the work during the present year. An expenditure of Rs. 55,639 was incurred, exclusive of the value of some English stores costing Rs. 42,000.

#### RAVI BRIDGE AT LAHORE.

12. The construction of a road bridge over the Ravi near Shahdara was commenced in February 1913, and work was continued throughout 1913-14. This bridge is of 15 spans of 90 ft. 9 in. clear, and is being constructed parallel to, and 150 yards below, the existing railway bridge. It is founded on octagonal wells 18 ft. in diameter, sunk to a depth of about 70 ft. below low-water level. The height of the piers is approximately 18 ft.

The roadway is 18 ft. 9 in. wide between wheel guards; the surface will be of tarmacadam on steel trough plates, which are supported on rolled steel joists, 12" x 6" in section, placed transversely to the main girders. The girders are those belonging to the old railway and road bridge which were removed when the line was doubled.

All sixteen wells have been sunk to the full depth necessary, and the two abutments and thirteen piers have been built. A sudden flood stopped the building of the fourteenth and last pier, and the river has never fallen sufficiently to admit of its being begun. Girders were erected on six spans and have been bolted down to the piers and cross-braced. Rolled steel joists were put in position on five spans, and rivetted to the girders.

The earthwork of the approach roads has been completed.

The river has been unusually high this year, and has added considerable difficulties to the work. The expenditure during the year was Rs. 3,27,537 out of a total expenditure of Rs. 4,78,822, against an estimate of Rs. 5,36,952.

13. A very large portion of the building work in the Province was carried out in Lahore itself, and the three executive divisions in Lahore were kept very fully employed.

The estimate for the King Edward Memorial Scheme, which is the largest work in the Province, was submitted to the Government of India for sanction on the 6th January 1914. The cost will be about 36 lakhs towards which 16½ lakhs have been contributed by private subscriptions. Some expenditure has already



been incurred on the work, and now that the Secretary of State's sanction to the scheme has been received, it is hoped that rapid progress will be made during 1914-15. So far the only portion that has been taken in hand has been the extension of the Mayo Hospital. The expenditure during the year has been Rs. 1,67,405, out of a total expenditure up to date of Rs. 3,68,720.

As the site of the existing Veterinary College at Lahore is required for the extensions of the Mayo Hospital, a new site was chosen, and the construction of a new Veterinary College was put in hand on the 17th December 1913, and good progress was made during the year. Seven buildings were completed up to roof level and another one nearly so, while the walls of the main college averaged 6 ft. above plinth level. The estimate for this work is Rs. 6,71,072, and the expenditure during the year was Rs. 3,40,253.

The hostel for the college will be located on the site now occupied by the old Government Press, and consequently a new Punjab Government Printing Press was commenced in June 1913. The subsidiary buildings have been practically completed and also the walls of the main building. The administrative portion of the building, which is two storeyed, has been roofed, and the trusses for the remaining portion have been erected ready for the roofing material to be fixed. The expenditure during 1913-14 has been Rs. 1,76,588, against an estimate of Rs. 2,90,232.

Another important work in progress at Lahore was the construction of a Biological Laboratory for the Government College, which was very nearly completed during the year. The building was designed by the Consulting Architect to the Government of India. It is of red brick. The main feature is the dividing up of the semi-circular arches with brick pillars. The rooms are large and lofty, and special arrangements have been made for getting a good north light into many of the rooms, especially those where instrument work is to be done. The amount of the estimate is Rs. 1,50,493, the expenditure to date being Rs. 1,19,018.

#### Administration.

14. At Ambala a residence and office were constructed for the Commissioner. The former should be completed during the hot weather of 1914. The latter, which cost Rs. 44,421, was completed in 1913-14 and taken into use.

A residence was constructed for the Deputy Commissioner, Montgomery.

At Multan a scheme was taken up for the construction of a new house for the Commissioner. Land being difficult and expensive to acquire in a suitable locality, it was decided to convert the Shish Mahal (which is the old Divisional Court building) into a residence for the Commissioner by making certain additions and alterations. The situation is excellent and the compound extensive, containing a good number of fine shady trees. A new set of out-houses and stables, a kitchen and a visitors' room have been built.

To provide for the Divisional Judge's Court, the Commissioner's present office building is being divided into two, to accommodate the Divisional Judge's and the Commissioner's office, new wings being added, on either side, in front for the two court rooms. The proposed additions will greatly improve the appearance of the existing building. Work on both buildings is well advanced.

#### Minor Departments.

15. *Monuments and Antiquities.*—Total expenditure, Rs. 20,276.

A full report of the archæological works carried out in the Punjab will be found in the Annual Progress Reports of the Superintendents, British and Muhammadan and Hindu and Buddhist Monuments, Northern Circle.

Most of the archæological work carried out by the Public Works Department was at, or near, Lahore.

Some improvements were made in the Hazuri Bagh, outside the Lahore Fort. These were commenced in 1912 and completed during the year at a total cost of Rs. 23,427. The garden which occupies the open space in front of the Badshahi Mosque had been very much neglected and was a mass of jungle. It has now been levelled and grassed, raised paths have been made, between the rectangular grass plots, and suitable trees have been planted. Raised masonry water channels and fountains have been built. A water-supply has been provided by installing an oil engine and pump at an old well outside the south wall. Water for irrigation and for working the fountains will be distributed by pipes.

The restoration of the facade of the Badshahi Mosque at Lahore was completed during the year. Rupees 3,379 had been expended on this work up to March 31st.



Some improvements were made in the floor of Nur Jahan's tomb at Shahdara, towards the cost of which His Highness the Maharaja of Burdwan generously contributed Rs. 5,000. The work was completed at a cost of Rs. 4,925.

#### Educational.

16. Total expenditure, Rs. 5,82,553.

A large grant was provided in the year's budget for Educational buildings, but owing to the fact that many of the projects were entirely new ones, for which no plans or estimates had been prepared, a considerable proportion of them had to be dropped.

A new standard plan for a Government High School was brought out and an ornate design for the elevation of the building was prepared by Sirdar Bahadur Bhai Ram Singh, M. V. O., late Principal of the Mayo School of Art.

Besides the Biological Laboratory at Lahore already mentioned, the following were the principal works carried out:—

At Dharmasala a Government High School, capable of accommodating 500 day scholars, and a boarding house for 150 boarders was completed at a cost of Rs. 1,25,095.

A start was made late in the year with High Schools at Gujranwala, Sialkot, Dera Ghazi Khan, and Hoshiarpur. At Ludhiana, land was acquired for a High School, and at Mianwali additions consisting chiefly of new science and drawing rooms and quarters for 40 more boarders were made at a cost of Rs. 17,801.

A Normal School was built at Lyallpur.

At Karnal an old hospital building has been adapted for use as a Government High School at a cost of Rs. 45,464.

A house was built for the Principal of the Lawrence Memorial Asylum at Murree, and a double storied school building, designed by the Consulting Architect to the Government of India, was taken in hand.

#### Jails.

17. Total expenditure, Rs. 1,56,190.

The work of converting the District Jail, Lahore, into a Borstal Central Jail was begun in August 1910 and completed during the year, the total expenditure incurred being Rs. 5,24,076.

A subsidiary jail was nearly completed at Amritsar, at a total cost of Rs. 88,129 up to date. At Lower Dharmasala a subsidiary jail, commenced in 1911, was completed at a cost of Rs. 55,774.

At Sargodha a subsidiary jail was put in hand at the end of the year.

#### Police.

18. Total expenditure, Rs. 6,50,566.

The budget grant for Police buildings was a large one during the year.

Besides providing for a number of police stations and several Police hospitals, 6½ lakhs were set aside for providing accommodation for Police officers at numerous centres in the Province. The scheme had not been fully worked out at the beginning of the year, and a revision of the standard plan of quarters for Indian Inspectors and Sub-Inspectors delayed the work to some extent, so that the full allotment could not be utilized.

A new kotwali was begun in Lunda Bazar, Lahore. It was designed by Sirdar Bahadur Bhai Ram Singh, M. V. O., late Principal of the Mayo School of Art, Lahore, and is estimated to cost Rs. 61,535.

#### Medical.

19. Total expenditure, Rs. 2,57,808.

A new dispensary was constructed at Lower Dharmasala to replace the temporary buildings that had been run up after the earthquake of 1905. The work was commenced during 1912-13, and continued through the year. Some delay was caused by heavy rain during the spring. The expenditure during the year has been Rs. 27,936 out of a total expenditure of Rs. 36,891 against an estimate of Rs. 49,399.

In the Lahore Lunatic Asylum quarters were built for 15 attendants at a cost of Rs. 7,777, and the construction of 20 quarantine cells was taken in hand. On the latter an expenditure of Rs. 13,972 was incurred during the year, against an estimate of Rs. 22,682. These cells are urgently required for new admissions to the asylum who have to be kept under observation for ten days.

A new Civil Hospital at Dera Ghazi Khan was commenced in April 1913. Rupees 27,011 were spent on it during the year, out of a total estimate of Rs. 31,337. The work is being paid for from District and Municipal funds as well as from private subscriptions collected for the King Edward Memorial Fund. The Local Government has given a grant of Rs. 15,000 towards the work,

Some additions and improvements have been made to the Walker Hospital, Simla, alterations have been made in the main block, and quarters for nurses and for servants, as well as a kitchen block are being provided. Rupees 17,507 were spent on this work up to the end of the year.

#### Miscellaneous.

20. Total expenditure, Rs. 2,48,574.

A large number of civil rest-houses were taken in hand during the year, and several that were in progress were completed, in various districts all over the Province.

#### COMMUNICATIONS.

21. The Provincial outlay on works amounted to Rs. 9,42,805, and on repairs to Rs. 11,77,020. The figures for the three preceeding years were:—

	Works.		Repairs.	
	Rs.		Rs.	
1910-1911	...	3,97,385	...	10,59,300
1911-1912	...	2,14,974	...	10,88,445
1912-1913	...	5,48,096	...	11,37,247

22. The following table shows the total mileage and cost of maintenance of metalled and unmetalled roads, Provincial and District, outside Municipal limits during the year.

CLASS OF ROAD.	METALLED.				UNMETALLED.				
	Provincial.		District.		Provincial.		District.		
	Maintained by	Provincial.	District Board.	Provincial.	District Board.	Provincial.	District Board.	Provincial.	District Board.
Total mileage	...	1094.49	164.14	3.03	1353.17	704.38	1079.96	1.37	19051.93
Cost of maintenance	...	9,79,450	73,387	1,615	9,38,376	1,03,108	17,664	482	3,29,197
Rate per mile	...	895	447	533	693	146	16	352	17

23. The year has seen a marked advance in the communications of the Province. The Grand Trunk Road, which formed the main artery of the Punjab, lost much of its importance on the advent of the railways, but the extensive use of the motor car in India has greatly increased its importance during recent years. The absence of road bridges over the main rivers has been a handicap to its development, and a substantial start has been made to remedy the state of affairs.

24. As already noted, excellent progress has been made with the bridge over the Ravi at Lahore, and it is hoped that it will be completed early in 1915.

25. The North-Western Railway have doubled the line of railway from Lahore to Ambala, and, in order to do so, have abandoned the old bridges over the Beas and the Sutlej, and have constructed new bridges over both those rivers. Advantage has been taken of this opportunity to acquire both the old bridges from the railway, and to convert them into road bridges by fixing trough plating to the old girders. The work has made good progress and it is hoped to open both bridges to traffic in the autumn of 1914. The estimated cost of the alterations is for the

	Rs.
Beas	2,58,440
Sutlej	2,69,280

and the outlay up to the end of the year has been Rs. 2,07,894 for the Beas and Rs. 2,27,174 for the Sutlej bridge.

Proposals are under consideration for bridging the Omla and Tangri streams near Ambala, on the road to Delhi. These streams present no serious obstacle to traffic during dry weather, but are quite impassable during the rains, and the necessity for bridging them has been fully established.

26. The North-Western Railway have constructed a new bridge over the Jumna near Saharanpur, and have abandoned the old bridge. The Government of the United Provinces have approached the Punjab Government on the question of acquiring the old bridge and converting it into a road bridge, the cost being shared equally between the two Governments. The proposal has been accepted by the Punjab Government, when it is carried out, connection will be established with the Grand Trunk Road *via* Abdullapur, Ladwa, and Pipli.

27. The question of the supply of metal for the Grand Trunk Road as well as for feeder roads in the plains has become a serious one. The supply of kunkar is becoming limited, owing to the exhaustion of quarries, and the

quality of the kankar is getting worse, while the price continues to rise. The North-Western Railway has been approached on the subject of extending their concession rates for the carriage of stone metal to all roads, whether main or feeder roads. The problem of metalling will be made much easier if stone can be obtained at reasonable rates; it is hoped that stone may eventually displace kankar wherever the traffic is heavy.

28. Owing to the heavy traffic on the road from Rawalpindi to Murree it has been found necessary to widen the metalled portion of the road from Rawalpindi to Baracow to 16 feet, and thence to the Toll Bar to 15 ft. It is hoped that it will now be possible to keep the road surface in better condition and that the dust nuisance will be lessened.

29. The road to Dalhousie has been improved by metalling the length between Dunera and Naini Khad,  $11\frac{1}{2}$  miles, at a cost of Rs. 30,407. The work was difficult and costly, owing to the fact that stone had to be brought from a distance, and also to the scarcity of water between Dunera and Katori.

30. The communications with the Kulu valley are being improved. Work on the bridle road over the Lower Jalori pass has been pushed on. Steady progress is being made with the Larji-Mandi cart road, which will connect Kulu with Mandi and Suket and thence *via* the Dehar bridge and Bilaspur with the plains. The road runs through the Beas gorge below Larji, keeping on the right bank of the river for some miles. It will then cross the Beas by a suspension bridge and will follow the left bank all the way to Mandi. The precipitous sides of the gorge necessitate some very stiff rock cutting, but flat gradients are obtained which will make the road an easy one for carts. The work has been delayed by heavy rains and scarcity of labour, but six miles out of nine in the first section have been completed at an expenditure of Rs. 78,745.

31. Various improvements have been made to the Hindustan-Tibet road. Gradients have been improved by re-alignments, in certain miles, stone parapets have been built to make the road safer, a new rest house has been built at Poo, and a suspension bridge is in course of construction over the Shiassu Khud. At Wangtu, the wooden gallery on which the roadway was carried along the face of a vertical cliff has been dismantled, and a road cut in the solid rock chiefly in half tunnelling. The work was difficult and dangerous, but has been completed at a cost of Rs. 11,990.

32. The opening of the Jullundur-Hoshiarpur Railway has necessitated the improving and metalling of feeder roads near Hoshiarpur. The roads that have been taken in hand are those leading to Hariana and Mahalpur, respectively. The main difficulty encountered in improving these roads is the crossing of numerous 'Chos,' *i. e.*, sandy river beds which for the greater part of the year are dry, but after rains become raging torrents. The cost of metalling is very high, on account of the distance that stone has to be carried, and the very broken nature of the country.

#### MISCELLANEOUS PUBLIC IMPROVEMENTS.

33. The total expenditure was Rs. 7,44,362 on Works, and Rs. 67,512 on Repairs.

#### SANITARY WORKS.

34. The Sanitary Engineer's branch has been actively employed in the construction and preparation of numerous water-supply and drainage schemes, as well as in the inspection of existing ones.

The Simla Hydro-Electric Scheme and the Dharmsala Water-supply have already been mentioned.

A large water-supply scheme was put in hand at Sialkot on November 1st, and good progress has been made. The total cost is estimated at Rs. 4,59,357. A special sub-division was formed and Mr. E. S. Heard, Assistant Engineer, was placed in charge. The staff quarters have been completed, and the service reservoir and wells are well in hand. Pipes are arriving from England, and machinery is awaited from the makers, Messrs. James Simpson and Company, Limited. The water-supply scheme, when completed, will be in the unique position of depending on 'tube wells' as the source of supply. The result of the first year's pumping will be anxiously awaited. If our hopes are realized, the problem of how to provide many towns in the Punjab with water will be solved.

Water-supply schemes, either new ones or extensions of old ones, have been carried out at Lyallpur, Jaranwala, Chak Jhumra (Chiniot Road) and Toba Tek Singh, all places in the Lyallpur District.

At Ambala the drop in the spring level of the water has necessitated the lowering of the pumps and suction mains (estimated cost, Rs. 38,703).



A number of trial borings have been put down at Isa Khel, in order to find a source of supply of water for the town, the present sources being notoriously bad. Unfortunately the investigations made up to date have met with no success, the water from all sources having been pronounced by the Chemical Examiner to be unfit for consumption.

Drainage works have been carried out at Gurdaspur, Chuharkhana, Tandlianwala, Chiniot, Rawalpindi, and Hazro, which should materially improve the sanitary conditions of these towns. Inspections by the Sanitary Engineer and his assistant unfortunately reveal a state of apathy on the part of some of the smaller Municipalities, for whom drainage schemes have been installed. The most carefully devised sanitary schemes are, of course, useless, unless drains are regularly flushed and unless the discharge of rubbish into them is strictly forbidden.

#### ELECTRICAL WORKS.

35. Electrical works are still in their infancy in the Province; the only large installations being those at Simla and Lahore.

The Simla Hydro-Electric scheme has already been mentioned.

The first licensed public supply company in the Punjab is the Lahore Electric Supply Company, which commenced supplying energy to the Public and to Government on the 18th November 1912. There has been a great demand for energy, both for power and lighting, and the substitution of electric fans for punkhas in offices and private houses is greatly appreciated.

The Electric Inspector's time is largely taken up with work at Lahore, but he has also to visit a number of factories, mills, and other buildings, scattered all over the Province, that have their own installations. The standard of work carried out by many electric wiring contractors is very poor, and a thorough inspection is necessary to ensure the provisions of the Indian Electricity Act being complied with.

Schemes have been prepared for various Municipalities, the largest new scheme being one for supplying electrical energy within the Municipal area of Amritsar. The scheme, the cost of which is estimated at Rs. 4,15,000, has been sanctioned, and tenders have been invited. The Municipality has obtained a loan of Rs. 4,50,000 from Government to carry out the project and to keep the installation working until it becomes remunerative.

Other schemes are under consideration for providing electric energy at Lyallpur, Gujranwala, Dalhousie, Ambala, and Rawalpindi.

#### ARCHITECTURAL WORK.

36. Mr. B. M. Sullivan took over the duties of Consulting Architect on January 19th, 1914.

The following are the more important of the works on which he has been engaged:—

- (1). Additions and alterations to Government House, Lahore, (estimated cost, 1½ lakhs).
- (2). New Civil Secretariat, Lahore.
- (3). New Military Accounts Office, Lahore, (estimated cost, 1½ lakhs).
- (4). Lay out of an estate for Officers' residences at Lahore.

#### MISCELLANEOUS.

37. The Government School at Rasul promises well under the management of Mr. Gemmill, Executive Engineer, Irrigation Branch, Punjab. The first batch of students passed out in June 1913, and out of 51 students who qualified, 48 have obtained employment under Government or Local Bodies.

38. The Local Government have granted a concession to the Kashmir-Iron Mines and Power Syndicate for the manufacture of cement near Dhandot, in the Salt Range. It is hoped that the Company will commence turning out cement in the autumn of 1915. The result of the local manufacture of cement will be to encourage its use in many forms of construction for which its high cost has hitherto made it prohibitive.

#### CONTRIBUTION WORKS.

39. The total outlay was Rs. 11,15,489.

The following works were in progress:—

Water-supply and sanitary arrangements in Queen Mary's College, Lahore; wiring and installing fans and lamps in Queen Mary's College, Lahore; improving 4th and 5th miles of the road from Chak Jhumra to Kot Khudayar; additions and alterations to the Pasteur Institute, Kasauli, and constructing a female hospital at Hissar.

#### DAMAGE BY FLOODS, LANDSLIPS, ETC.

40. In the Ambala District some slight damage was done during the monsoon to the Ghazipur protective works, and a stone causeway in mile 22 of the Ambala-Kalka road was washed away.

At mile 128 of the Grand Trunk road floods washed over the road damaging the road surface.

## WORKS OF PUBLIC UTILITY.

41. Works aggregating Rs. 1,60,215 were carried out by private individuals. In the previous year the expenditure was Rs. 1,30,200.

The most important works were :—

(1). A school building in the village of Bundala in Jullundur District, costing Rs. 26,000 built by Chaudri Ganga Singh, Zaildar, Shamsher Singh, Lambardar, Milkhi Ram, Lambardar, Dhian Singh, Sahukar, Chaudri Turlok Singh, Chaudri Chahr Singh and Narindra Singh of Bundala.

(2). A water-supply by building tanks and laying out pipes for certain villages in Thana Hajipur of Dasuya Tehsil, costing Rs. 8,000, built by Lala Rupa Mall and Nihaloo Mall, sons of Chiraga Mall, Suds of Paragpur, Tehsil Dera Gopipur, Hoshiarpur District.

(3). A pucca well in village Siwani, Hissar District, costing Rs. 7,000, built by Tansukh Dass, son of Jodha, Mahajan of Siwani.

(4). A Dharmsala with a well at Budhlada costing Rs. 8,000, built by Kala Chhanga, Mahajan of village Budhlada.

(5). A Dharmsala in the town of Sonapat, Rohtak District, costing Rs. 5,500, built by Lala Ude Ram, son of Tota, Mahajan of Sonapat.

(6). A Serai at Pakpattan, Montgomery District, costing Rs. 12,000, built by Lala Khem Chand.

(7). A Musafir Khana at Serai Sidhu, Multan District, for the use of travellers, costing Rs. 8,000, built by Pujara Mal, son of Chanan Mal.

(8). A bungalow known as Darbar Manzil, costing Rs. 16,200, built at Momanwala, Tehsil Chunian, Lahore District, by Khan Sahib Haji Nur Burhan and Mian Mohammad Ali, Zaildar, Ganja Kalan, Tehsil Chunian, in commemoration of the Delhi Darbar and Coronation of His Majesty.

## ASSISTANCE RENDERED TO LOCAL BODIES.

42. Projects aggregating Rs. 32,89,518 were scrutinized for Local Bodies and others aggregating Rs. 20,55,499 were prepared for them for works which will in most cases be done by the Public Works Department.

## CAPITAL COST OF BUILDINGS.

43. The table below gives the capital cost and cost of maintenance of buildings for the year :—

Class of buildings.		Capital cost.	Cost of main-tenance.	Percentage.
		Rs.	Rs.	
Imperial	... { Permanent	19,00,728	29,171	1.53
	... { Semi-permanent	18,14,455	24,461	1.34
	... { Temporary	2,55,042	4,633	1.81
Provincial	... { Permanent	1,11,45,972	1,22,612	1.10
	... { Semi-permanent	1,84,20,889	2,87,093	1.55
Provincial (for which Capital and Revenue Accounts are kept).	... { Permanent	38,47,829	58,919	1.53
	... { Semi-permanent	77,572	1,449	1.86
	... { Temporary	10,86,136	14,878	1.36
		1,33,173	4,714	3.53

## PERSONAL.

44. The sanctioned strength was 41 officers, and of the actual strength of 43 officers 33 were present on duty; 1 died, 6 were on leave, and 3 on deputation.

Captain B. C. Battye, R. E., who was on deputation from the Military Works Services, was in charge of the Simla Hydro-Electric Division throughout the year.

Mr. A. H. Johnston, Executive Engineer, retired on 26th May 1913, and, after a short period of service as Temporary Engineer, took up the appointment of Resident Engineer, Simla, in November 1913, relieving Mr. E. L. Crawford, Executive Engineer, who reverted to the ordinary line.

Captain W. H. Roberts, R. E., Mr. H. M. Griffiths and Bawa Budh Singh, Executive Engineers, were on deputation under the Chief Commissioner, Delhi. Lala Raja Ram, Assistant Engineer, returned from deputation to the Faridkot State in June 1913.

Messrs. A. E. Knox and G. T. Pound joined the Department from England.

Mr. H. C. Greenwood, held the post of Electric Inspector to Government throughout the year.

Sirdar Sahib Balwant Singh, died after a prolonged illness on the 14th March 1914. He entered the Department as a temporary overseer in 1887 and worked his way up to the rank of Assistant Engineer, which he attained in 1908. He was rewarded with the title of Sirdar Sahib in 1912, and received the medals for the Delhi Darbars of 1903 and 1911.

R. S. MACLAGAN, COLONEL,

Secretary to Government, Punjab, P. W. D.,

Buildings and Roads Branch.

## STATEMENT A.

Statement of expenditure on Public Works during 1913-14.

Service Heads.	ORIGINAL WORKS.		REPAIRS.		TOTAL.	
	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.
1	2	3	4	5	6	7
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<b>IMPERIAL.</b>						
33.—FAMINE RELIEF.						
III.—Civil Works.						
Communications ... ..	...	...	...	...	...	...
Miscellaneous Public Improvements	...	...	...	...	...	...
Establishment ... ..	...	...	...	...	...	...
Tools and Plant ... ..	...	...	...	...	...	...
Total, Famine Relief ... ..	...	...	...	...	...	...
47.—MILITARY WORKS.						
SPECIAL DEMANDS.						
Works ... ..	46,200	46,194	...	...	46,200	46,194
Establishment ... ..	...	...	...	...	...	(a)
Tools and Plant ... ..	...	...	...	...	...	(b)
Suspense ... ..	...	...	...	...	...	...
Barrack Department ... ..	...	...	...	...	...	...
Expenditure in England ... ..	...	...	...	...	...	...
Total, Special Demands ... ..	46,200	46,194	...	...	46,200	46,194
ORDINARY DEMANDS.						
Works ... ..	45,704	44,406	33,444	35,156	79,148	79,562
Establishment ... ..	...	...	...	...	18,136	16,305
Tools and Plant ... ..	...	...	...	...	1,186	1,113
Suspense ... ..	...	...	...	...	...	...
Barrack Department ... ..	...	...	...	...	286	269
Expenditure in England ... ..	...	...	...	...	...	...
Total, Ordinary Demands ... ..	45,704	44,406	33,444	35,156	98,756	97,249
Total, Military Works ... ..	91,904	90,600	33,444	35,156	1,44,956	(b) 1,43,443
Carried over ... ..	91,904	90,600	33,444	35,156	1,44,956	1,43,443

(a) Charges for Establishment and Tools and Plant are debited to the Military Works Grant for "Ordinary Demands," vide Government of India, Army Department, letter No. 262 S., dated the 27th July 1909.

(b) The expenditure incurred was adjusted by debit to accounts between Civil and Military Works.



## STATEMENT A.—continued.

Statement of expenditure on Public Works during 1913-14.

Service Heads.	ORIGINAL WORKS.		REPAIRS.		TOTAL.	
	Grant.	Outlay.	Grant.	Outlay.	Grant	Outlay.
	2	3	4	5	6	7
IMPERIAL—concl'd.	Rs	Rs.	Rs.	Rs.	Rs.	Rs.
Brought forward ...	91,904	90,600	33,444	35,156	1,44,956	1,43,443
45.—CIVIL WORKS.						
Civil Buildings ...	2,92,074	2,92,594	48,415	46,355	3,40,489	3,38,949
Communications ...	...	...	...	...	...	...
Miscellaneous Public Improvements.	...	...	...	...	...	...
Establishment ...	...	...	..	...	70,514	55,401
Tools and Plant ...	...	...	...	...	4,823	3,622
Suspense ...	...	...	...	..	...	- 355
Expenditure in England ...	...	...	...	...	-2,680	-3,218
Total, Civil Works ...	2,92,074	2,92,594	48,415	46,355	4,13,146	3,94,399
Total, Imperial ...	3,83,978	3,83,194	81,859	81,511	5,58,102	(c)5,37,842
PROVINCIAL.						
45.—CIVIL WORKS.						
Civil Buildings ...	33,34,171	32,08,666	4,33,350	3,97,358	37,67,521	36,01,024
Communications ...	9,05,276	9,42,805	11,82,712	11,77,020	20,87,988	21,19,825
Miscellaneous Public Improvements.	7,52,401	7,44,362	71,210	67,512	8,23,611	8,11,874
Establishment ...	...	...	...	...	8,65,632	8,67,207
Tools and Plant ...	...	...	...	...	78,284	47,603
Suspense ...	...	...	...	...	12,174	-1,14,647
Total, Provincial ...	49,91,848	48,90,833	16,87,272	16,41,890	76,35,210	(d)73,32,886
Carried over ...	53,75,826	52,74,027	17,69,131	17,23,401	81,93,312	78,70,728

(c) Excludes expenditure incurred in the Imperial Sub-Division under the control of Government of India, the accounts of which are kept under the civil system.

(d) Includes outlay on Diamond Jubilee Museum, Lahore, in terms of Panjab Government, Public Works Department letter No. 123 B., dated the 16th January 1906 as under :—

	Rs.
Works ...	1,322
Repairs ...	1,118
Total ...	2,440

## STATEMENT A—concluded.

Statement of expenditure on Public Works during 1913-14.

Service Heads.	ORIGINAL WORKS		REPAIRS.		TOTAL.	
	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.
1	2	3	4	5	6	7
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Brought forward ...	53,75,826	52,74,027	17,69,131	17,23,401	81,93,312	78,70,728
<b>LOCAL FUNDS.</b>						
Incorporated Local Funds ...	...	...	...	...	...	...
Excluded Local Funds ...	...	...	...	...	...	...
Contribution including Local Funds ...	...	...	...	...	...	...
Municipal and Local Loans ...	...	3,03,850	...	937		(e)3,04,787
Establishment ...	...	...	...	...		31,167
Tools and Plant ...	...	...	...	...	(f)	280
Private and other funds ...	...	59,580	...	1,889	5,23,432	61,469
Establishment ...	...	...	...	...		4,547
Tools and Plant ...	...	...	...	...		506
Military and other Departments ...	...	7,52,059	...	19,676	...	7,71,735
Establishment ...	...	...	...	...	...	1,05,423
Tools and Plant ...	...	...	...	...	...	9,440
Total, Local Funds ...	...	11,15,489	...	22,502	5,23,432	12,89,544
GRAND TOTAL ...	53,75,826	63,89,516	17,69,131	17,45,903	87,16,744	91,60,282

(e) Includes Local Loans—

Works ...	...	Rs.
Establishment ...	...	5,260
		568
Total ...	...	5,828

(f) Local Loans ...	...	Nil
Contributions ...	...	5,23,432
Total ...	...	5,23,432

## STATEMENT B.—continued.

Statement of Provincial Roads in the Punjab, not within Municipal boundaries, maintained by the Public Works and Local Authorities, respectively, during 1913-14.

Name of Division.	Name of District.	Length of metalled roads maintained by the P. W. D.	Length of unmetalled roads maintained by the P. W. D.	Length of metalled roads maintained by the Local Authorities.	Length of unmetalled roads maintained by the Local Authorities.	Total metalled roads.	Total unmetalled roads.
1	2	3	4	5	6	7	8
2ND CIRCLE. Ambala	Brought forward	339.94	68.78	81.42	809.79	421.86	878.57
	Ambala	83.04	9.0	3.66	28.25	86.70	37.25
	Karnal	79.51	...	8.37	...	87.88	...
	Ludhiana	69.59	...	10.0	...	79.59	...
	Simla	7.0	15.80	...	...	7.0	15.80
	Total	239.14	24.80	22.03	28.25	261.17	53.05
Gurgaon	Gurgaon	47.53	...	...	...	47.53	...
	Rohtak	35.25	...	35.57	22.81	70.82	22.81
	Hissar	...	...	6.50	88.00	6.50	88.00
	Total	82.78	...	42.07	110.81	124.85	110.81
Simla	Simla	57.38	270.49	...	...	57.38	270.49
	Total	57.38	270.49	...	...	57.38	270.49
Jullundur	Jullundur	65.98	...	...	...	65.98	...
	Hoshiarpur	9.27	...	4.37	28.41	13.64	28.41
	Ferozepore	55.43	...	3.35	...	58.78	...
	Total	130.68	...	7.72	28.41	138.40	28.41
	Total, 2nd Circle	509.98	295.29	71.82	167.47	581.80	462.76
	Carried over	849.92	364.07	153.24	977.26	1003.16	1341.33



## STATEMENT B.—continued.

Statement of Provincial Roads in the Punjab, not within Municipal boundaries, maintained by the Public Works and Local Authorities, respectively, during 1913-14.

Name of Division.	Name of District.	Length of metalled roads maintained by the P.W.D.	Length of unmetalled roads maintained by the P.W.D.	Length of metalled roads maintained by the Local Authorities.	Length of unmetalled roads maintained by the Local Authorities.	Total metalled roads.	Total unmetalled roads.
1	2	3	4	5	6	7	8
	Brought forward	849.92	364.07	153.24	977.26	1003.16	1341.33
<b>3RD CIRCLE.</b>							
Lahore I	Lahore	73.18	...	1.70	16.50	74.88	16.50
	Total	73.18	...	1.70	16.50	74.88	16.50
Lahore II	Lahore	11.12	...	...	...	11.12	...
	Angrisar	45.37	...	1.50	16.50	46.87	16.50
	Gurdaspur	38.25	25.37	7.70	69.70	45.95	95.07
	Total	94.74	25.37	9.20	86.20	103.94	111.57
Kangra	Kangra	76.65	314.94	...	...	76.65	314.94
	Total	76.65	314.94	...	...	76.65	314.94
	Total, 3rd Circle	244.57	340.31	10.90	102.70	255.47	443.01
	TOTAL, PROVINCIAL ROADS.	1094.49	704.38	164.14	1079.96	1258.63	1784.84

## STATEMENT B.—continued.

Statement of District Roads in the Punjab, not within Municipal boundaries, maintained by the Public Works and Local Authorities, respectively, during 1913-14.

Name of Division.	Name of District.	Length of metalled roads maintained by the P. W. D.	Length of unmetalled roads maintained by the P. W. D.	Length of metalled roads maintained by the Local Authorities.	Length of unmetalled roads maintained by the Local Authorities.	Total metalled roads.	Total unmetalled roads.
1	2	3	4	5	6	7	8
<b>1ST CIRCLE.</b>							
Rawalpindi	Rawalpindi	...	...	17 00	745 36	17 00	745 36
	Jhelum	...	...	4 39	916 00	4 39	916 00
	Gujrat	...	...	12 34	660 56	12 34	660 56
	Attock	...	...	25 25	641 00	25 25	641 00
	Total	...	...	58 98	2962 92	58 98	2962 92
Shahpur	Shahpur	...	...	49 11	1045 70	49 11	1045 70
	Mianwali	...	...	3 00	510 70	3 00	510 70
	Jhang	...	...	10 10	758 02	10 10	758 02
	Total	...	...	62 21	2314 42	62 21	2314 42
Lyallpur	Lyallpur	...	...	90 00	1079 25	90 00	1079 25
	Gujranwala	...	...	136 00	1423 42	136 00	1423 42
	Sialkote	...	...	55 00	736 87	55 00	736 87
	Total	...	...	281 00	3239 54	281 00	3239 54
Multan	Multan	...	...	34 99	1222 25	34 99	1222 25
	D. G. Khan	...	...	0 15	210 00	0 15	210 00
	Muzaffargarh	...	...	17 77	751 36	17 77	751 36
	Montgomery	...	...	6 00	1070 00	6 00	1070 00
	Total	...	...	58 91	3253 61	58 91	3253 61
	Total, 1st Circle	...	...	461 10	11,770 49	461 10	11,770 49
Carried over	...	...	461 10	11,770 49	461 10	11,770 49	

## STATEMENT B.—continued.

Statement of District Roads in the Punjab, not within Municipal boundaries, maintained by the Public Works and Local Authorities, respectively, during 1913-14.

Name of Division.	Name of District.	Length of metalled roads maintained by the P.W.D.	Length of unmetalled roads maintained by the P.W.D.	Length of metalled roads maintained by the Local Authorities.	Length of unmetalled roads maintained by the Local Authorities.	Total metalled roads.	Total unmetalled roads.
1	2	3	4	5	6	7	8
	Brought forward	...	...	461·10	11,770·49	461·10	11,770·49
<b>2ND CIRCLE.</b>							
Ambala	... Ambala	...	...	90·27	252·00	90·27	252·00
	Karnal	...	...	88·75	684·00	88·75	684·00
	Ludhiana	...	...	117·58	198·78	117·58	198·78
	Simla	...	...	...	...	...	...
	Total	...	...	296·60	1134·78	296·60	1134·78
Gurgaon	... Gurgaon	...	...	120·72	543·19	120·72	543·19
	Rohtak	...	...	118·0	623·84	118·00	623·84
	Hissar	...	...	21·0	856·00	21·00	856·00
	Total	...	...	259·72	2023·03	259·72	2023·03
Simla	... Simla	...	...	...	17·00	...	17·00
	Total	...	...	...	17·00	...	17·00
Jullundur	... Jullundur	...	...	115·0	817·75	115·0	817·75
	Heshiarpur	...	...	21·09	716·25	21·09	716·25
	Ferozepore	...	...	55·82	695·0	55·82	695·0
	Total	...	...	191·91	1729·0	191·91	1729·0
	Total, 2nd Circle	...	...	748·23	4903·81	748·23	4903·81
	Carried over	...	...	1209·33	16,674·30	1209·33	16,674·30



## STATEMENT B.—concluded.

Statement of Provincial Roads in the Punjab, not within Municipal boundaries, maintained by the Public Works and Local Authorities, respectively, during 1913-14.

Name of Division.	Name of District.	Length of metalled roads maintained by the P.W.D.	Length of unmetalled roads maintained by the P.W.D.	Length of metalled roads maintained by the Local Authorities.	Length of unmetalled roads maintained by the Local Authorities.	Total metalled roads.	Total unmetalled roads.
1	2	3	4	5	6	7	8
	Brought forward	...	...	1209.33	16,674.30	1209.33	16,674.30
3RD CIRCLE.							
Lahore I	Lahore	...	...	35.79	610.15	35.795	610.15
	Total	...	...	35.79	610.15	35.795	610.15
Lahore II	Lahore	...	...	...	...	...	...
	Amritsar	...	...	70.39	289.44	70.39	289.44
	Gurdaspur	...	...	37.66	528.79	37.66	528.79
	Total	...	...	108.05	818.23	108.05	818.23
Kangra	Kangra	3.03	1.37	...	949.25	3.03	950.62
	Total	3.03	1.37	...	949.25	3.03	950.62
	Total, 3rd Circle	3.03	1.37	148.84	2377.63	146.87	2379.00
	TOTAL, DISTRICT ROADS.	3.03	1.37	1353.17	19,051.93	1356.20	19,053.30

# DIAGRAM

SHOWING EXPENDITURE IN THE PUNJAB PUBLIC WORKS DEPARTMENT

BUILDINGS AND ROADS BRANCH

FROM 1904.05 TO 1913-14

FIGURES GIVEN IN LAKHS OF RUPEES

LAKHS 95

95 LAKHS





