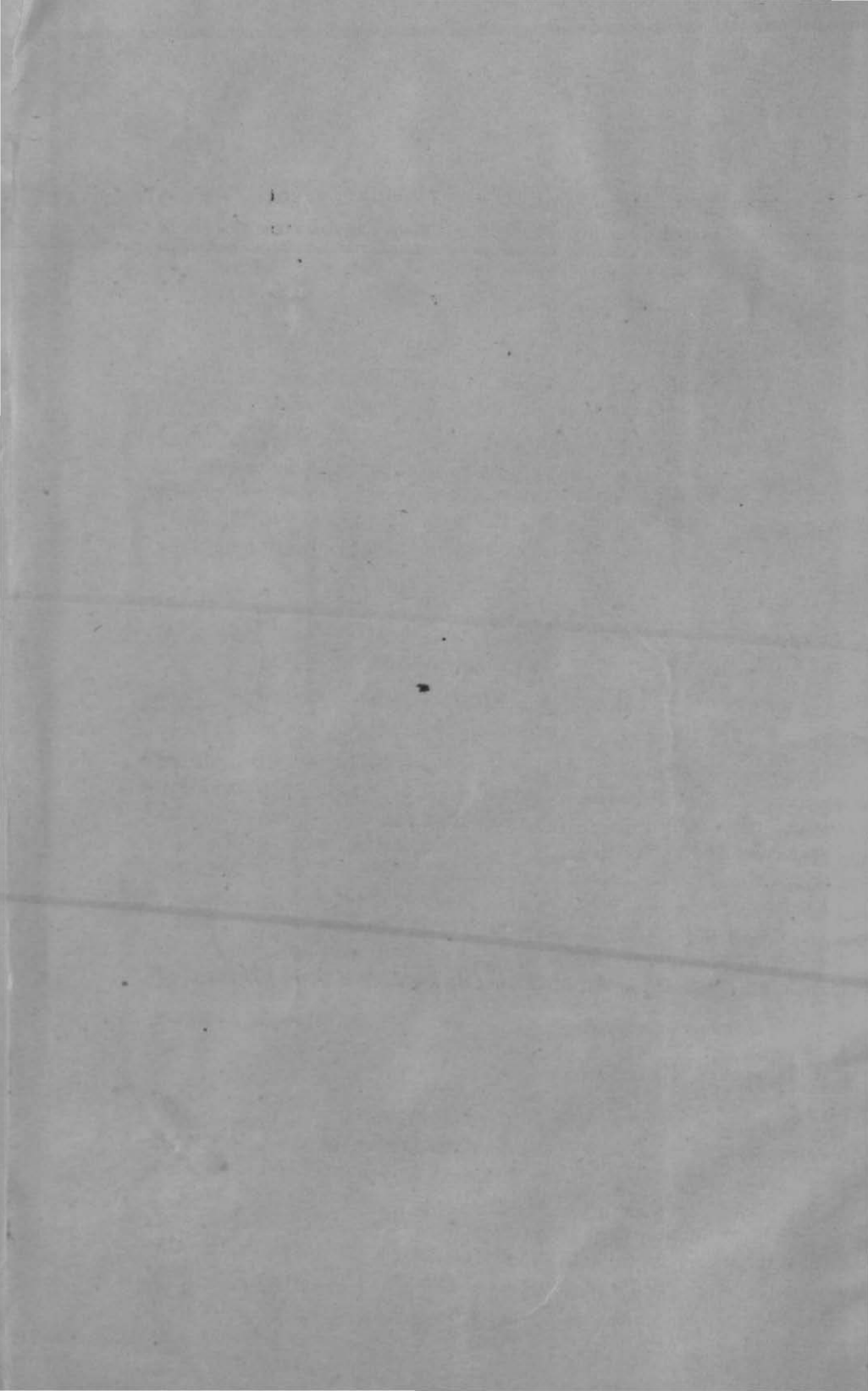


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Review of the Administration Report
of the Punjab Public Works De-
partment, Buildings and Roads
Branch, for the year 1927-28.

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The Administration Report of the Punjab Public Works Department, Buildings and Roads Branch, for 1927-28.

**Proceedings of the Punjab Government (Ministry of
Agriculture) in the Public Works Department,
Buildings and Roads Branch, No. 180-G.,
dated 24th January 1929.**

READ—

The Administration Report of the Punjab Public Works Department, Buildings and Roads Branch, for 1927-28.

THE activities of this Branch continue to increase and expand in every direction and this report is a record of the progress not only of buildings and roads, but of public health, urban and rural, electrical (other than the Uhl River Hydro-Electric Project) and also of engineering education.

The total expenditure during the year has reached the figure of Rs. 2,36,48,000, about one crore above the figure for 1921, which was Rs. 1,36,39,504.

The establishment percentage figure is only 11.06, compared with 17.6 in the year 1922.

Recruitment to the Indian Service of Engineers having ceased 7 years ago the number of officers available for Divisional charge has become much reduced, and it is eminently desirable that the draft rules, which have been formulated for a new Provincial Service of Engineers, should be made effective without delay. The transition period is a difficult one and the Ministry would take this opportunity of recording its appreciation of the uncomplaining and devoted service rendered by a depleted and hard tried cadre of engineers.

Communications.—At the end of the year under review there were 2,148 miles of metalled road and 1,732 unmetalled road in charge of this Branch.

The growth of motor traffic after the war led to a demand for more and better roads, and it was realised that certain roads would be largely used by through traffic, from which districts would derive no direct benefit, though having to bear the consequent increase in the cost of maintenance. This led to a reconsideration of the whole problem with the result that Government decided to accept entire responsibility

for all arterial roads connecting district headquarters and towns of over 20,000 inhabitants, and to give grants-in-aid to District Boards towards the upkeep of main roads.

Thus the present state of affairs is that the Provincial Government through the agency of the Buildings and Roads Branch of the Public Works Department maintains from Provincial revenues all roads classified as "Arterial," as well as certain other roads, it also develops these roads from Provincial revenues and in special cases from Provincial loans (such as the Nili Ear Scheme). The District Boards maintain from their own funds with the assistance of grants-in-aid given by the Provincial Government from Provincial revenues all those roads classified as "Main" and solely from their own funds "Other" or "Class III" roads. Thus District Boards develop the "Main" and "Other" roads from similar financial sources. The canal roads are made as part of the canal system from capital expenditure and the cost of maintenance is charged to canal revenues.

The development of "Arterial" roads is proceeding according to a programme by which it is expected to metal about 100 miles of unmetalled roads annually at an average cost inclusive of land acquisition of about Rs. 25,000 a mile. The programme includes occasional works such as bridging, widening the metalling of existing metalled roads, etc., on which the average expenditure annually is estimated at Rs. 5 lakhs.

These successive additions to the metalled length bring a corresponding increment to the maintenance bill. It is estimated on the figures of 1926-27 that the average cost of maintenance of metalled roads is about Rs. 1,900 a mile, and of unmetalled roads about Rs. 240 a mile. The latter figure appears high until it is explained that the unmetalled class maintained from Provincial funds includes a large proportion of Himalayan roads which are maintained as important trade routes. It is of course possible and even probable that the increasing intensity of traffic on roads may render an increasing expenditure on maintenance necessary. Thus the financial position as regards the maintenance and development of "Arterial" and "Other" roads by the Public Works Department is approximately as follows:—

Repairs—

	Rs.
1. 2,140 miles of metalled roads at Rs 1,900 a mile	
... ..	= 40,66,000

	Rs.
2. 2,580 miles of unmetalled roads at Rs. 240 a mile	= 6,19,200
<i>Construction (15 years') programme—</i>	
3. Metalling of 100 miles of road at Rs. 25,000 a mile	= 25,00,000
4. Occasional works	Say 5,00,000

From Provincial revenues ...	76,85,200

Repairs —

	Rs.
<i>Construction on the Nili Bar Scheme (10 years' programme)—</i>	
5. Making 47 miles of metalled road a year at Rs. 27,800 ... ..	.. 13,06,600
Making 38 miles of unmetalled road a year at Rs. 5,540 .. ...	... 2,10,520

From Provincial loans ...	15,17,120

The annual amount spent under construction can of course be varied according to the financial situation in the Province, but under repairs it is essential to meet the annual bill, and if the 100 mile a year rate of construction is carried on the increment to the repairs bill is $100 \times (1,900 - 240) = 1,660 = \text{Rs. } 1,66,000$.

The increment on account of the Nili Bar Scheme is to be added—

	Rs.
47 miles of metalled road at Rs. 1,900 a mile	= 89,300
38 miles of unmetalled road at Rs. 100* a mile	= 3,800

	93,100

*Above figure is taken as no mountain roads are in question.

The annual grant-in-aid from Provincial revenues to District Board funds may be assumed at Rs. 7 lakhs. Summarising, we have—

	Rs.
Expenditure on present road lengths maintained by the Public Works Department. Repairs =	46,85,200
Expenditure on development on a 100 mile/15 year programme. Ordinary Construction =	30,00,000
Expenditure on special development on a 47/38 mile/10 year programme. Nili Bar Capital Construction =	15,17,120
	92,02,320
Annual grant-in-aid	7,00,000

	Rs.
Annual increment to repairs bill—	
On ordinary construction	1,66,000
On special construction	93,100
	2,59,100

In short, the annual road bill for construction, maintenance and grants-in-aid is about Rs. 1 crore, increasing by Rs. 2½ lakhs annually so long as the present rate of development is maintained.

The following arterial roads are now metalled from end to end :—

Grand Trunk Road. Lahore-Ludhiána. Delhi-Alwar. Campbellpur-Hatti. Fatehjang-Miánwáli. Ráwalpindi-Kobála.		Wazírabad-Jammu. Amritsar-Bájnáth. Chakki-Dalhousie. Delhi-Muttra. Saháranpur-Pipli. Rohtak-Bhíwáni.
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An extension of metalling is in progress on the following arterial roads :—

Lahore-Miánwáli. Lahore-Bhakkar. Lahore-Lorálái.		Delhi-Montgomery. Lahore-Moga.
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The extension of metalling on the remainder of the arterial roads awaits their turn.

The rapid growth of motor traffic is making it necessary to consider the need for widening the metalling and strengthening it. The growth is shown clearly by the following figures giving the progressive total of motor vehicles registered in the Punjab :—

Up to the end of 1913	...	...	463
Up to the end of 1914	...	...	819
Up to the end of 1923	...	...	6,683
Up to the end of 1924	...	...	7,695
Up to the end of 1925	...	...	9,044
Up to the end of 1926	...	...	10,815
Up to the end of 1927	...	...	13,480

The above figure for 1927 does not include some 700 cars running under registered numbers of other provinces, nor does it include 59 commercial lorries (weighing more than 2 tons), which are registered by Deputy Commissioners.

In other countries faced with this problem the water-bound road is regarded as obsolete and everywhere tar, pitch, bitumen, asphalt or cement are being used to strengthen and bind the road. Fortunately tar, pitch and cement are made in India and the use of these materials will probably extend rapidly.

In this Province where the railway system is almost entirely State owned or managed the problem of co-operation between road and rail, which is exercising men's minds so largely elsewhere, is simplified. If for this purpose the interests of the Central Government and of the Punjab Government are regarded as one, the problem resolves itself into one of finance and public convenience.

The co-ordination of communications not only by road, but also by rail, tram, ropeway, water and air is the special function of the Punjab Communications Board established in accordance with Punjab Government Resolution No. 27509 of 10th December 1919.

In the event of any proposal affecting Indian States coming under consideration steps are taken to co-opt a member to represent their interest and similarly when any question affecting inter-communication with adjacent

Provinces is to be discussed a representative of that Province is invited to attend.

By attending the meetings of the Communications Board opportunity is afforded to selected members of the Legislative Council to become familiar with these problems and they are thereby enabled to bring to the debates a knowledge of the facts which is invaluable.

The Board exercises the powers of the Local Government in according administrative approval to all projects of District Boards, to the cost of which it contributes, and also to all communications projects of District Boards estimated to cost Rs. 30,000 or over. The grants-in-aid to District Boards are voted by the Board in accordance with a carefully devised procedure.

The District Boards maintain from their own funds, with the assistance of grants-in-aid given by the Provincial Government from Provincial revenues, all those roads classified as "Main" and solely from their own funds "Other" or "Class III" roads.

The village roads are maintained by the villagers themselves without any assistance either from Provincial or District funds, but the Communications Board have under consideration a scheme for giving the villages some assistance and guidance.

With the object of reducing the cost of improvement of roads the use of graders has been introduced. The grader is pulled along the road by means of a tractor. It operates like an enormous razor shaving off the high places and filling up holes in one operation. It is hoped that a large mileage of unmetalled roads can be brought quickly into beneficial use by means of these graders, and it is also hoped by their use to reduce considerably the cost of maintaining unmetalled roads in good condition. The work is at present in an experimental stage, and it is impossible at present to give reliable figures.

Steps must be considered for checking the deterioration of the village roads. Encroachments and obstructions are extremely common and the means for preventing or removing them are inadequate. It appears more than likely that fresh legislation on simple lines may be required to strengthen the preventive and curative measures.

The prominence of road engineering and the multiplicities of problems introduced by the new conditions of traffic which will no doubt become more intense and an ample expert engineering staff is needed to control road design and road making. The Ministry is glad to observe that several officers of the Buildings and Roads Branch have taken the opportunity during their leave to make a special study of this branch of their profession.

The "demonstration" unmetalled roads have generally proved a success and District Boards are gradually adopting the view that a good unmetalled road is preferable to a badly maintained metalled road.

Meanwhile the construction of arterial roads progresses as funds permit. With the linking up of Sargodha and Lahore by a metalled road, a definite goal in the progress of our communications has been reached. The demand for such roads is clearly demonstrated by the surprising volume of traffic which makes its appearance as soon as a newly constructed portion of highway is opened to the public.

It is obvious, however, that many of our existing roads were not designed for the incessant flow of ponderous vehicles which now ply on them. Such heavily trafficked sections must be strengthened and the width of metalled surface increased, if their use is to be unrestricted.

Buildings.—The report of the building activity of the Department discloses a varied and interesting performance of work. The total cost amounted to Rs. 80,99,264. Educational buildings were the largest item, but much progress was made also with Agricultural and Medical buildings.

The expenditure incurred on buildings for certain departments is tabulated below :—

	Rs.
1. { General Administration (Reserved) ...	1,06,783
{ General Administration (Transferred) ...	11,44,026
2. Jails and Convict Settlements ...	10,37,117
3. Police ...	3,74,464
4. Education ...	16,73,192
5. Medical ...	13,58,682
6. Agriculture ...	8,78,570
7. Industries ...	2,27,994
8. Civil works ...	10,16,170

Preliminary proposals were initiated for the women's Medical College in Lahore and expenditure was incurred in acquiring a suitable site.

The much needed Indian Clerks' Quarters at Lahore made satisfactory progress and the estate will in future be known as "Chourji Gardens."

This provision of 370 residential quarters is an interesting example of the present-day trend to leave the congestion of the city for the open places in the suburban areas. It is confidently hoped that "Chourji Gardens" will afford a vast improvement in the living conditions of this class of Government servant.

Surveys and the acquisition of land for residential purposes were made at Pálampur, which may shortly become one of the established hill resorts of the Province.

By the arrangement with Punjab Portland Cement, Limited, cement is available at cheap rates and consequently has given an impetus to the use of reinforced concrete as a building material.

The experiment of placing under the Superintending Architect the construction of buildings in Lahore designed by him is undoubtedly proving a success, thanks to the energy and enthusiasm displayed by Mr Sullivan. He is, however, seriously handicapped for want of trained architectural assistance and the dearth of properly qualified talent in the Province has led the Ministry to consider means for its encouragement.

The appointment of a Town Planning Engineer has been sanctioned and Mr. Sullivan should receive welcome assistance in furthering the good work he has done already as Secretary of the Committee on the Lahore and Amritsar Improvement Trusts, and Secretary of the Lahore Improvement Committee.

Public Health.—The activities of the Public Health Circle (previously known as the Sanitary Branch) show a remarkable increase. Projects estimated to cost 1,12 lakhs of rupees in the aggregate have been prepared and 129 town inspections were made.

The excellent arrangements made by this Circle for the fairs at Choa. Katas and Núrpur are an indication of its efficiency.

There is no doubt that with the spread of education and the general rise of the standard of living in the Punjab the appreciation of the benefits arising from a pure water supply and efficient drainage is rapidly spreading and this social advance is no longer confined to the towns, but is finding expression in the villages also. The need for satisfactory maintenance of the schemes installed is not sufficiently realised, but it is noteworthy that certain local bodies have voluntarily handed over to the Public Health Circle such maintenance for varying periods. Incidentally this shows the confidence with which the Public Health Circle is regarded by local authorities. A very desirable extension of urban work lies in town-planning, and it is hoped that ere long some practical developments will take shape and even advance to village models.

Electrical.—In the absence of Mr. Milne the duties of Electrical Engineer were carried out by various officers during the year until the arrival of Mr. Critchley, who was appointed Executive Electrical Engineer.

There is an increasing demand for electric power and the staff have had a busy time.

Mr. Critchley is warmly commended for the manner in which although new to the country, he has handled the work of the Electrical Circle.

Work of the Rural Drainage Circle.—The works initiated by the Rural Sanitary Board and executed in the Rural Drainage Circle have been wide-spread and a large amount of reclaimed land has been brought under cultivation by systematic drainage.

The efficacy of the reclamation of the water-logged Chel Nullah area near Hazro in the Attock District is shown by a drop of three feet in the level of the sub-soil water and a rise in the sale-value of the land affected.

The report of the Board (Appendix II of this report) shows the possibility for good which is within its reach, but the problems to be solved are not standard and require careful study and co-operation with the Civil authorities.

In view of the preponderance of hydraulic problems in these schemes it is under consideration to transfer this Circle to the Irrigation Branch with the Secretary, Transferred Departments, as its administrative head.

Engineering education.—The working of the Maclagan Engineering College is reviewed separately on the presentation of its own administration report and similarly with regard to the Government School of Engineering, Rasúl, but as both these institutions and the connection of the Punjab Government with the Thomason College, Roorkee, come under the Chief Engineer it is convenient here to take a comprehensive view of engineering education.

The Government School of Engineering, Rasúl, as at present constituted, is primarily intended for the training of young men as engineering subordinates and draftsmen for the public service. In addition it offers a short course in reinforced concrete practice to specially selected subordinates and engineers deputed from the Buildings and Roads and Irrigation Branches, Railways, and the Military Engineer Services.

The training of subordinates extends over a period of two years and consists of a theoretical course suitable to the status of the men and the practical application of this theory.

The draftsmen's training consists in the first instance of a two years' course. At the end of the second year those draftsmen who have qualified with distinction in the final examination of that year are given another year's course in advanced theory of structures and are also instructed in the elements of reinforced concrete construction. Those qualifying after the three years' course, when entering Government service, are appointed on a higher scale of pay than those who have only qualified after the second year's course.

The total number of students and others under training in Rasúl at the end of the College year, February 1928, was 157 made up as follows :—

Overseer Classes	...	...	...	120
Draftsmen Class	...	...	...	29
Reinforced Concrete Class	...	...	...	8

The net cost to Government per student of the overseer and draftsmen class was Rs. 574- per annum.

In reviewing the work of the year the Punjab Government took the opportunity of congratulating the Principal, Mr. C. E. Blaker, for a successful year's work.

At present the Punjab does not train its own civil engineers, but the question of establishing a college for this purpose has ^{(b) Roorkee.} been under consideration. In the meantime to cater for Punjabis, who wish to qualify as civil engineers, the Punjab Government have recourse to the Thomason Engineering College at Roorkee. The system in force is for the Punjab Government to nominate certain Punjabis who appear at the entrance examination at Roorkee and, of those who succeed in qualifying for admission, Government contributes the whole cost of the training of the first fifteen Punjabis in order of merit.

From the entrance examination held in June 1928 the Punjab Government has agreed to meet the cost of training 20 Punjabi students in order of merit who qualify for admission to the College.

The total number of Punjabi students under training at the Thomason College, Roorkee, for the year ending 15th July 1928 is 29 and the cost to Government, Rs. 3,240 per student per annum.

The MacLagan Engineering College is divided into two classes: the "A" Class and the "B" Class.

The "A" Class is meant to turn out qualified men suitable for the officer grade in Government service.

The "B" Class turns out the men suitable for the subordinate grade.

The course for the "A" Class consists of three years theoretical training and two years' practical training in the North-Western Railway Workshops.

For the "B" Class the course also extends over five years, during which period the student spends half of his time in the study of theory and half the time in doing practical work in the North-Western Railway Workshops.

The number of Punjab Government students in both A and B classes in the College is 183 made up as follows :—

A Class	...	...	... 54
B Class	...	...	... 129

The cost to Government for training A and B Class students is : A Class Rs. 1,102 per head per annum, B Class, Rs. 822 per head per annum.

The training given in the "A" Class is equivalent to the standard reached by those in England who obtain their B.Sc. degree in Mechanical or Electrical Engineering. Despite this high standard it is a matter of considerable regret that the Railway Board have not yet seen their way to recognize the "A" Class qualifying certificate as entitling the holder to sit for the competitive examinations held annually for admission to the various departments of Government railways.

The Ministry congratulates the Principal, Captain H. Whittaker, on the solid progress made by the College.

Administration.—During the year under review Mr. W. S. Dorman officiated as Chief Engineer and Secretary to Government, until the return of Mr. Astbury from leave in October. The Companionship of the Indian Empire was conferred on Mr. Astbury in the New Year's Honours, which he earned by his efficient administration of not only his own Department, but also as Secretary of the Hydro-Electric Department, with all its problems and consequent anxieties.

By order of the Punjab Government (Ministry
of Agriculture).

JOGENDRA SINGH,

Minister for Agriculture.

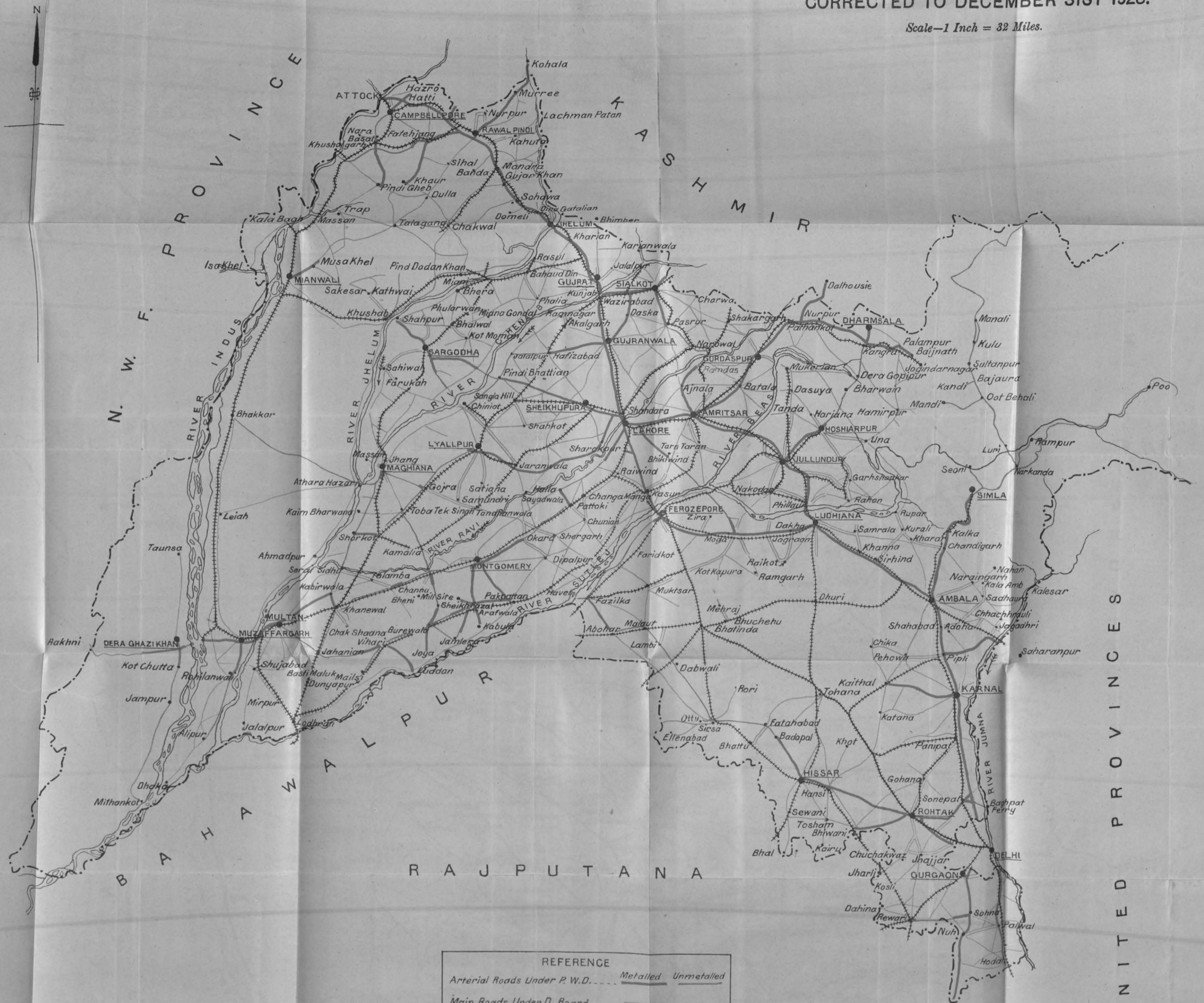
A. R. ASTBURY,

Secretary to Government,
Punjab, Public Works Department,
Buildings and
Roads Branch.

PUNJAB

SHOWING ARTERIAL AND MAIN ROADS
CORRECTED TO DECEMBER 31ST 1928.

Scale—1 Inch = 32 Miles.



REFERENCE	
Arterial Roads Under P.W.D.	Metalled Unmetalled
Main Roads Under D. Board	
Railways	
Rivers	
District Headquarter	
Provincial Boundary	

UNITED PROVINCES

