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PUNJAB PUBLIC WORKS DEPARTMENT.
HYDRO-ELECTRIC BRANCH.

E-76

ADMINISTRATION REPORT

FOR THE YEAR

1932-33.

E-76

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Lahore :

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, PUNJAP,
1933.

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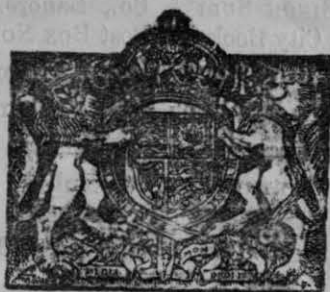
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ADMINISTRATIVE REPORT

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ADMINISTRATION REPORT, 1932-33.

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Proceedings of the Punjab Government (Ministry of Local Self-Government) in the Public Works Department, Electricity Branch, No. 840-W., dated 30th November 1933.

READ—

The Administration Report of the Punjab Public Works Department, Hydro-Electric Branch, for the year 1932-33.

The year 1932-33 saw the concluding stages of the construction of the Uhl River Hydro-Electric Scheme, on which work commenced early in 1926. In the power production area, the lining, mantling and testing of the tunnel were successfully completed by the end of September, 1932, after continuous and arduous work commencing on the 1st January 1928. The power-house was completed, equipped, and ready for service by February 1933. On the transmission system, the erection of the trunk and branch lines from Jogindernagar to Lahore, Lahore to Lyallpur and Ferozepore, and Amritsar to Kartarpur was finished, and the sub-stations and other buildings were constructed on the trunk line, and sub-station equipment installed, though not tested. The scheme was officially opened by His Excellency the Viceroy at the Shalimar Receiving Station (Lahore) on the 10th March 1933.

In pursuance of the decision of Government to undertake departmentally local distribution in certain towns on the system, the erection of poles and construction of local distribution sub-stations was commenced in Pathankot, Dinanagar and Gurdaspur, while in other towns, due to receive supply later, preliminary work including surveys, selection of sub-station sites and location of poles made satisfactory progress.

On the financial side, the expenditure on the main scheme during the year was roughly Rs. 106 lakhs, and up to the end of the year from the inception of construction about Rs. 494 lakhs. The outlay during the year on local distribution was somewhat less than Rs. 3½ lakhs, against a sanctioned estimate of over Rs. 40 lakhs. The figures of Rs. 494 lakhs and Rs. 3½ lakhs quoted take no account of bills outstanding at the end of the year 1932-33, or of commitments, or of work still to be carried out against the estimates.

On the commercial side, tariffs and abridged conditions of supply of power to the various categories of consumer were framed and circulated. Negotiations were conducted with various prospective purchasers of energy on a large scale. The Amritsar Municipal Committee agreed to take additional power for their head water-works. Discussions with the North-Western Railway regarding their requirements at their power-house at Moghalpura were in progress at the end of the year. Attempts during the year to come to terms with the Electric Supply Companies at Lahore and Jullundur proved infructuous. Load possibilities were investigated in several localities, of which mention may be made of Kangra, Phillaur and neighbouring villages, the Lahore and Amritsar suburban areas and the Faridkot State. Publicity work in various forms was undertaken, and the local engineering staff in the various towns canvassed and registered the demands of prospective consumers. The Assistant Commercial Manager devoted much care to the working out of a suitable accounts system for the operation of the project.

In regard to the organization of the branch the year saw the preparation for the transition from the construction to the operation of the scheme. The completion of work in the headworks area was attended by the closing down of the construction circle and divisions in the Mandi State, and during the year the recruitment of operating staff engaged the attention of Government. For the power-house a Resident and Assistant Resident Engineer were recruited from England together with a specialist sub-station engineer for the Lahore Receiving Station. The posts of Local Manager were filled by the careful selection of young Indian officers who had already shown promise in the Branch as Assistant or Apprentice Engineers.

In regard to personnel, the year was marked by the tragic death on the 16th May 1932 in a motor accident near Batala of Colonel Battye, D.S.O., A.M., who, while a Superintending Engineer engaged on hydro-electric surveys, had prepared the project, and who had been its Chief Engineer since the inception of construction. His boundless enthusiasm, energy and resource had been a predominant factor in the surmounting of the many difficulties with which the execution of the work had been attended, and his example had proved a continuous source of inspiration and encouragement to his staff. His death at a time when the successful completion of his work was in sight is deeply deplored by Government.

He was succeeded as Chief Engineer by Mr. H. P. Thomas, C.I.E., Mr. A. R. Astbury, C.S.I., C.I.E., continued throughout the year as Commercial Manager of the project.

The Ministry takes this opportunity of recording its appreciation of the services rendered by these officers and its gratitude to them and to all who shared with them the task of bringing to a successful conclusion the construction of the project and of paving the way for its successful operation.

Order.—Ordered that a copy of the foregoing review be forwarded to the Chief Engineer, Punjab, Public Works Department, Electricity Branch, for information.

Ordered also that the review be published in the *Punjab Gazette* and be circulated with the report.

By order of the Punjab Government
(Ministry of Local Self-Government),

B. M. STAIG,

Secretary to Government, Punjab,
(Electricity),

PUNJAB PUBLIC WORKS DEPARTMENT,

HYDRO-ELECTRIC BRANCH.

ADMINISTRATION REPORT FOR THE YEAR 1932-33.

CHAPTER I.—General Preface.

1. (i) This report deals with the closing stages of the construction of the works of which the project consists. Generally all the major works were completed and what remained to be done so far as the main scheme was concerned was the careful inspection and checking of all contractors' work, the installation of switchgear and transformers in all substations, the actual energising of the transmission lines and substations, the erection of the section from Jullundur to Ludhiana and the minor and petty works which are an inevitable concomitant of a project of this magnitude.

(ii) The outstanding events were the lamentable death of Colonel B. C. Battye, D. S. O., A.M., Chief Engineer, on 16th May 1932, to whose efforts and keenness the Uhl River Hydro-Electric Undertaking owes its existence and the formal opening of the project on the 10th March 1933 by His Excellency Lord Willingdon.

(iii) Generally the year may be said to mark the conclusion of the construction of a project which it is anticipated will have a far reaching effect in improving the economic conditions of the Province and generally increase its prosperity.

CHAPTER II.—Administration.

1. ORGANISATION AND ESTABLISHMENT.

2. The year 1932-33 being the closing year of construction several important changes took place in organisation. The more important of these were :—

(i) The following Divisions and Sub-Divisions were closed down in the Construction Circle which itself ceased to exist on the 31st March 1933—

(a) The Tunnel Division with its two Sub-Divisions T/N (Tunnel North) and T/S (Tunnel South) on 31st December 1932.

(b) The Mechanical Division with the M/M (Independent) Sub-Division on 31st March 1933.

(ii) The Transmission Circle was continued and the Pathankot Division and the Lyallpur Division with suitable Sub-Divisions were formed to cope with the increasing work of that Circle and also to provide a means of transition from the construction stage to that of operation. The charge of these Divisions was held as follows :—

Pathankot—by Major Wheeler from September 1932 to January 1933 and by Mr. Brickman from January to the end of the year.

Lyallpur—by Mr. Gadkary from December to the end of the year.

3. The Branch as a whole suffered a great loss in the death of Colonel B. C. Battye, D.S.O., A.M., Chief Engineer, as a result of a motor accident on the 16th May 1932. As a consequence of this catastrophe several changes took place in the personnel of various posts chief among them being :—

(1) Mr. Herbert P. Thomas assumed charge of the duties of Chief Engineer,

(2) Mr. A. T. Arnall assumed charge of the duties of Superintending Engineer, Transmission Circle.

(3) Captain A. Guthrie, R. E., assumed charge of the duties of Executive Engineer, Designs.

4. The following Officers left the branch permanently owing to the completion of the portion of the work of which they had charge :—

(1) Mr. A. Croad (Superintending Engineer, "T" Circle).

(2) Mr. C. E. Jefferis (Superintending Engineer, "C" Circle).

(3) Mr. G. H. Hunt (Executive Engineer, Tunnel Division).

(4) Captain A. Guthrie (Executive Engineer, Designs).

(5) Mr. N. V. Dorofeeff (Tunnel Engineer).

(6) Mr. A. Ghafoor (Assistant Engineer).

(7) Captain N. Boddington, R. E. (Assistant Executive Engineer).

(8) Mr. J. Arratoon (Personal Assistant).

5. To prepare for the operation of the scheme it was necessary to reorganise the branch as a whole and sanction was obtained to the following permanent posts with their respective subordinate establishments for the permanent operation of the scheme. The recruiting of these establishments had been practically completed before the end of the year :—

- | | | |
|--------------------------------------|---|--------------------------------|
| (1) Chief Engineer. | } | Headquarter office. |
| (2) Deputy Chief Engineer. | | |
| (3) Commercial Officer. | | |
| (4) Secretary to Chief Engineer. | | |
| (5) Test Engineer. | | |
| (6) Resident Engineer. | } | Power House. |
| (7) Assistant Resident Engineer. | | |
| (8) Three Shift Engineers. | | |
| (9) One Head Works Engineer. | | |
| (10) Four Executive Engineers. | } | Transmission and distribution. |
| (11) Twenty-five Local Managers. | | |
| (12) One Senior Substation Engineer. | | |

6. Certain purely construction posts had to be continued at the close of the year and the personnel of the branch in the gazetted staff at the close of the year was :—

Chief Engineer	Mr. H. P. Thomas.
Deputy Chief Engineer and Superintending Engineer, " T " Circle	Mr. A. T. Arnall.
Additional Commercial Officer	Mr. N. B. Macmillan.
Administration Officer	Mr. H. J. Pearson.
Test Engineer	Mr. Islamul Haq.
Resident Engineer	Mr. E. G. Mackie.
Assistant Resident Engineer	Mr. M. F. Thomson.
Shift Engineers	(1) Mr. H. S. Sidhu. (2) Mr. M.A. G. Chawdri. (3) S. Trilochan Singh.
Executive Engineers	(1) Mr. F. W. Brickman. (2) Mr. V. F. Critchley. (3) Mr. S. J. Bruford. (4) Mr. S. A. Gadkary.
Senior Substation Engineer	Mr. R. Heath.
Local Managers, Grade I	(1) Mr. Lachhman Singh. (2) Mr. K. C. Gandhi. (3) Mr. N. C. Gupta. (4) Mr. T. N. Idnani. (5) Mr. B. N. Channa. (6) Mr. H. S. Bedi. (7) Mr. B. K. Gopal Iyengar. (8) Mr. Shaukat Umar. (9) Mr. Sukh Bashi Ram Sahgal. (10) Mr. S. Manzur Hussain. (11) Mr. H. C. Chopra.
Local Managers, Grade II	(1) Mr. Abdul Hamid. (2) Mr. Rahmat Ellahi. (3) Mr. M. A. Qureshi. (4) Mr. D. R. Bedi. (5) Mr. H. B. Gupta. (6) Mr. H. S. Uppal. (7) Mr. A. W. Siraj-ud-Din. (8) Mr. A. Hamid. (9) Mr. R. K. Nair. (10) Mr. R. N. Chona. (11) Mr. S. A. Haque. (12) Mr. J. R. Handa. (13) Mr. H. R. Bhatia.
Head-works Engineer	Mr. Banshi Ram, Tandan.

The posts of Commercial Officer, Secretary to Chief Engineer and one post of Local Manager, grade I, remained unfilled.

GENERAL ADMINISTRATION.

7. The general health of the staff and labour was good. There was no outbreak of any epidemic disease in the works area.

Medical and sanitary arrangements.

8. The welfare work organisation continued to perform its various activities satisfactorily under the direction of Mr. E. P. Hillier, upto the 31st December 1932, when the welfare centre as such was closed down and Mr. Hillier left the branch. Temporary arrangements were made for carrying on the essential work up to 31st March 1933 when the Construction Circle at Jogindernagar finally closed down.

Welfare work.

9. Much work was done as regards the final assessment of compensation for tree cutting, etc., in the hill sections but this work was not completed by the end of the year.

10. (i) Relations with the Darbar were again all that could be desired.

Mandi Darbar.

(ii) The question of deciding the principles upon which compensation should be paid for land occupied both permanently and temporarily was taken up and referred to Government. The matter still awaits a decision by the Darbar.

Compensation for land in Mandi State.

11. The Government of India finally approved of the principles generally to be followed for the prevention or mitigation of inductive interference of inductive interference of telegraph, telephone and power lines.

Inductive interference of telegraph, telephone and power lines.

ACCOUNTS.

12. The method of stores accounts to be adopted during operation was considered but no final decision was come to.

Store accounts.

13. It was decided by Government that the accounts of the Uhl River Hydro-Electric undertaking should be subject to Chapter 17 of the Account Code and that the existing Public Works Department system of accounts should be adapted so as to meet the particular needs of the branch. The alterations which would be necessary were under the consideration of the Additional Commercial Officer and an Accounts Officer on special duty at the end of the year.

Accounting system.

COMMERCIAL.

14. During the course of the year tariffs and conditions of supply of hydro power for purposes of local distribution and abridged conditions and tariffs for bulk supply were framed and circulated. The street lighting tariffs were still under consideration at the end of the year.

Tariffs and conditions of supply.

15. (i) The branch was affiliated to the British Electric Development Association, London, with the object of securing advice and literature for publicity purposes.

Publicity.

(ii) A large number of photographs relating to the scheme were issued to leading newspapers and also to the Trade Commissioner and the Secretary of State.

(iii) Several pamphlets were also distributed.

16. The following are the more important instances of the activities of the branch in regard to finding a market for electric energy:—

Negotiations for the sale of power.

(i) The Amritsar Municipal Committee agreed to take additional power for their head water works and were negotiating for a further supply for industrial loads.

(ii) A supply of energy was given to the Modern Industries and the Upper India Metal Works at Chheharta.

(iii) Negotiations were carried on with the Lahore Electric Supply Company, Limited, but fell through as the firm decided not to give up their own generation in favour of hydro-electric supply.

(iv) A draft agreement was sent to the Jullundur Electric Supply Company and was still under consideration at the end of the year.

(v) The Negotiations with the North-Western Railway were pursued and it is hoped that an agreement will be concluded shortly.

(vi) Negotiations with the New Egerton Woollen Mills, Dhariwal, fell through as the firm wanted to be supplied with D. C. instead of A. C.

(vii) The Kapurthala State sanctioned an electric license during the year and a further agreement as between the Punjab Government and the State was being considered by the Darbar.

(viii) An electric survey of the Faridkot State was carried out.

(ix) Further investigations were carried out in regard to Kangra and Phillaur—Goraya-cum-Boparee local distribution scheme and both were recommended for the consideration of Government as being economically justifiable.

(x) The Amritsar and Lahore suburban area supply schemes were further examined as also the question of supply to Lahore Cantonment.

(xi) A project for the electrification of certain Irrigation Branch pumping stations including the town of Khanqah Dogran and the village of Khanpur was prepared.

(xii) The question of the sale of power to the North-Western Railway at places other than Lahore was raised with the North-Western Railway authorities.

(xiii) In 33 other cases enquiries were received, negotiations started, data collected and in some cases demand survey reports prepared.

18. The accounts of the construction of the system are contained in the report of the Chief Engineer, Lahore, for the year 1932-33, which is available to the public.

19. The Divisions in Construction Circle were employed on the following works during the year:—

M.M. (Independent) Sub-Division.

- (1) The handling of the Circle's own material, including the delivery of all consignments of the Circle. In addition all bills for supplies made for the Circle were passed and held in the Sub-Division, over which the responsibility for the material to which such bills were attached was being worked up in other Divisions.
- (2) The operation and maintenance of the haulways from Jalandhar to Jammu (Part I) included operations of full-ton haulways.

M.M. (Independent) Sub-Division.

- (1) Construction of main power house at Jalandhar.
- (2) Water-supply, sanitation and hospital arrangements in the Jalandhar area.
- (3) Working and maintenance of Jalandhar and Tarn Taran substations, including all transmission, insulator, and other work.
- (4) Working and maintenance of telephone exchange and lines.
- (5) Operation of permanent workshop at Jalandhar.

General Division.

- (1) Repair of tunnel.
- (2) Construction of Jullundur.
- (3) Disposal of all work connected with the tunnel work on the Jalandhar side of the line.
- (4) Repair of main tunnel from Jullundur to Jalandhar.
- (5) Construction of Jullundur.
- (6) Excavation of tunnel reservoir.
- (7) Construction of hydraulic works.

20. The statement A contains a list of the more important works completed and the works in progress during the year. Work completed or under way during the year is as follows:—

- (1) Transportation and communication:—The Jalandhar and Jullundur lines were electrified during the year. The total length of the lines electrified was 100 miles. The whole of the Jullundur line was electrified by the end of June 1933. The Jalandhar line was electrified by the end of September 1932 and the Jullundur line by the end of December 1932. The electrical apparatus in the Jullundur

CHAPTER III.—Hydro-Electric Construction.

1.—GENERAL FINANCE.

17. The revised project estimate as sanctioned by the Local Government in the year 1931-32 was again examined and it was found that it did not make adequate provision to cover the full cost of certain important major works such as the diurnal reservoir at headworks, excavation, lining and grouting of the tunnel, lining of the surge shaft, chamber and riser power station buildings, Shanan switchgear and transformer, branch transmission lines, transmission lines quarters and technical buildings. It was, therefore, considered necessary to make a further revision of the project, which was taken in hand during the year under review. This revision was not completed during the year.

18. The accounts of the construction of the scheme continued to be governed by the preaudit system up to 31st March 1933, when owing to the closure of the Construction Circle the post audit system was substituted for preaudit.

CONSTRUCTION CIRCLE.

19. The Divisions in Construction Circle were employed on the following works during the year :—

Distribution of works by Divisions.

M/M (Independent) Sub-Division.

- (i) The handling of the Circle stores organisation including taking delivery of all consignments of the Circle. In addition all bills for supplies made for the Circle were passed and paid in the Sub-Division, even though the expenditure against the estimates to which such stores were chargeable was being worked up in other Divisions.
- (ii) The operations and maintenance of the haulageways from Jogindernagar to zero point (Brot) including operations of hill top tramway.

Mechanical Division.

- (iii) Construction of main power house at Shanan.
- (iv) Water-supply, sanitation and hospital arrangements in the Jogindernagar area.
- (v) Working and maintenance of Dhelu and Thuji power schemes including all transmission lines and sub-stations.
- (vi) Working and maintenance of telephone exchanges and lines.
- (vii) Operations of permanent workshop at Shanan.

Tunnel Division.

- (viii) Lining of tunnel.
- (ix) Construction of Adit Portal.
- (x) Finishing off of all works connected with the tunnel work on the Jogindernagar side of the hill.
- (xi) Lining of main tunnel from North Portal to Midpoint.
- (xii) Construction of Adit Portal.
- (xiii) Excavation of diurnal reservoir.
- (xiv) Construction of hydraulic works.

20. The statement A contains a list of the more important estimates sanctioned and the works in progress during the year. Works completed or undertaken during the year include the following :—

Works carried out during the year.

- (i) *Transportation and communications.*—The haulageways have continued to give satisfactory service. The total maundage despatched from Shanan to various sites of works was 266,950.
- (ii) *Main power house.*—The whole of the civil works were completed by the end of June 1932. Turbines Nos. 3 and 4 were completely equipped by the end of September 1932 and Nos. 1 and 2 by December 1932. The electrical apparatus in the Shanan

transformer station was commissioned in January 1933. Machines 1, 3 and 4 were commissioned for normal working on the line in February 1933.

- (iii) *Power Generation*.—Due to an exceptionally heavy flood on 25th August 1932 the Thuji flume was damaged and as the Thuji generator was due to be dismantled at the end of August and removed to its final position in the main power house at Shanana, it was decided to shut down the Thuji power house finally. This did not, however, cause any interference in the work as the Dhelu plant was able to meet all the demands. Dhelu power house was shut down finally on 15th February 1933 when power became available from the main power house at Shanana.
- (iv) *Transmission Lines*.—The power distribution system at Jogindarnagar has continued to work satisfactorily and few breakages were experienced. The work of remodelling the lines between Shanana and Brot for permanent operation was started in September 1932 and was about half finished by the end of the year.
- (v) *Permanent workshops*.—The permanent workshops operated continually throughout the year and turned out work to the value of approximately Rs. 55,600 and consisted principally of works in the metal working section.
- (vi) *Pipe line*.—Alterations to drains and construction of bridges were completed early in the year. The eastern pipe line was tested at the end of September 1932 and the western pipe line at the end of October 1932 with very satisfactory results.
- (vii) *Tunnel lining*.—(a) The lining and high pressure grouting work was completed by the end of August. Intensive work on clearing the tunnel of all services and muck resulted in everything being in readiness for the admittance of water by 22nd September 1932 and after final inspection water was admitted to the tunnel at mid-day and the tunnel tests were satisfactorily completed by the end of the month.
- (b) The South Adit and Portal were completed in December 1932.
- (viii) *Reservoir, flume and headworks*.—All works were completed and gates, valves and scours fixed.
- A small portion of the slabbing of the reservoir was left to be finished when the frosty season was over.
- (ix) The following important works were on the abolition of the Tunnel Division transferred to the control of the Pathankot Division in January 1933 and were successfully completed during the year under review :—
- (a) Final lining of South Adit.
 - (b) Construction of South Adit, Portal.
 - (c) Demolition of quarters, offices and stores in South Adit area.
 - (d) Dismantling of Adit tramway.
 - (e) Flood protection works at Brot.
 - (f) Construction of motor control House at headworks.
 - (g) Dismantling all works, air, and electric services, for construction at Adit, surge shaft and in Brot.
 - (h) Fencing of area below Ghog.
 - (i) Diurnal reservoir.
 - (j) Scouring water-supply at headworks.
 - (k) Scouring pipes for forebay.
 - (l) Railing on decantation chamber.
 - (m) Gauging well at forebay.
 - (n) Fencing and Railing around upper main rapid flume and forebay.

21. In October 1932, Rai Sahib Lala Shiv Shankar, Civil Officer, left the service. The magisterial work done by him was transferred to the Mandi State Magistrate,

at Jogindarnagar and the work connected with land and crop compensation to the Additional Civil Officer employed in the Transmission Circle for that purpose.

TRANSMISSION CIRCLE.

22. Owing to the expansion of work in the Circle two new divisions were formed, one, the Pathankot Division, in September 1932 and the other the Lyallpur Division in December 1932.

23. Progress on the various works is as under but in this connection statement A may also be read :—

- (1) *Trunk and branch transmission lines.*—The portion of the line from Jogindarnagar to Lahore which remained unfinished during the last financial year was completed during the year under report. It was tested and energised and is giving splendid service.
- (2) *Branch lines.* (a) *Amritsar-Jullundur section.*—This section was almost completed up to Kartarpur but as it was decided to extend it up to Jullundur, work on the Kartarpur-Jullundur section was also commenced and nearly completed. Checking and testing of towers was in progress as also the work on the river crossing at Beas. The whole of the section between Amritsar and Jullundur is expected to be ready within a short time.
- (b) *Jullundur-Ludhiana section.*—This section also progressed satisfactorily. Stringing and sagging of conductors across the Sutlej river had been completed while the fixing of concrete muffs on the poles, augering of holes and putting up poles was being carried out.
- (c) *Amritsar-Tarn Taran section.*—The survey work was finished, the poles positions marked and the work of constructing the line taken in hand. With the exception of the railway crossings, the erection of the poles has been completed.
- (d) *Dhariwal-Dinanagar and Dhariwal-Batala sections.*—The survey work was taken in hand and completed. The poles have been erected but fittings and conductors have not yet been erected.
- (e) *Lahore-Ferozepore section.*—The erection work was completed.
- (f) *Lahore-Lyallpur section.*—The erection work was completed.
- (3) *Trunk and branch telephone lines.*—(i) The work on the trunk telephone line Jogindarnagar-Lahore was commenced during the year under report and has been completed but the line has not been giving satisfactory service. Defects, however, are being remedied and it is expected to have the installation in thoroughly good working order shortly.
- (ii) The work on the branch telephone lines (1) Amritsar to Ludhiana, (2) Lahore-Ferozepur and (3) Lahore-Lyallpur was completed but the equipment had not been installed.
- (4) *Substations.*—(i) The installation of the electrical equipment at Kangra and Pathankot was completed during the year under review. During the early part of the year the switchgear foundations and plinths at (1) Pathankot, (2) Dhariwal, (3) Amritsar and (4) Lahore were completed. The erection of the electrical equipment was also started at all these substations.
- (ii) The outdoor substation structures were put up. Circuit breakers were placed in position, fitted and connected; transformers were assembled, dried out, placed on the plinths and connected up—all ready for service.
- (iii) Inside substations work on the 132 kV. and 400 volt switchgear and batteries was commenced and almost finished except for minor details. All other works like cable connections, filtration plant, oil piping etc., were also finished.
- (iv) Switch-house lighting at Verka and Dhariwal was completed but the out door road and yard lighting had not been done. The substation equipment at Dhariwal and Verka were tested and brought into operation from 31st March 1933.

- (v) *Lahore receiving station*.—The building and its electrical equipment was completed in every respect. Roads, drainage, permanent quarters, fencing, water supply arrangements and arboriculture were also practically completed by the 10th of March 1933 when the opening ceremony of the Uhl River Hydro-Electric Undertaking was performed by His Excellency the Viceroy at Shalamar receiving station.
- (vi) *Kasur substation*.—The construction of the switch-house building, cable trenches, approach road, transformer bye-pass plinth, unclimbable fencing, bathing platforms, and latrines, Line Superintendent's office and store, the internal wiring of the permanent quarters G, A, B and D type and well boring were completed. The erection of the switchgear was complete except for painting. Cabling was partly completed.
- (vii) *Ferozepur substation*.—The construction of the switch-house building, cable trenches, approach road, Transformer bye-pass plinth, unclimbable fencing, bathing platforms and latrines and well boring were all completed as also the erection of the transformers, circuit breakers control switchgear, and 66 kV cable trenches. The 11 kV cable trenches were partly completed.
- (viii) *Shahdara substation*.—The construction of the A and D type quarters, the internal wiring of A type quarter and the well boring were completed.
- (ix) *Sheikhupura substation*.—(a) Of the civil works, the construction of the switch-house building, transformer and switchgear foundations and plinth, cable trenches, transformers bye-pass plinth, approach road, unclimbable fencing, bathing platforms and latrines, B and D type quarters and internal wiring therein, well boring and spreading shingle in the station yard within the fenced area were completed, (b) of the electrical work, the earthing of different switchgear and outgoing isolating switch erection were in hand.
- (x) *Chuharkana substation*.—(a) Of the Civil Works, the construction of the switch-house buildings, transformer and switchgear plinth, cable trenches (except top slab) B and D type quarters, bathing platforms, approach road, unclimbable fencing, spreading of shingle in the station yard within the unclimbable fencing, and well boring were completed, (b) of the electrical works, (i) all the steel stanchions in switchyard were put in position and concreted, (ii) all outdoor busbars were erected, (iii) the transformers were loaded on plinth and (iv) the tower isolating switches were erected.
- (xi) *Mohlan substation*.—The construction of switch-house building (except Chhaja) transformer and switchgear foundations and plinths, B and D type quarters and well boring were completed.
- (xii) *Jaranwala substation*.—The construction of the switch-house building, transformers and switchgear plinths B and D type quarters G type quarter (except Chhaja and parapet) Line Superintendent's office building and well boring were completed.
- (xiii) *Lyallpur substation*.—The construction of the switch-house building, transformer and switchgear foundations and plinths were completed.
- (xiv) The Civil and Electrical Works at the following substations were also completed :—
- (1) Waterworks substation (Amritsar Grid).
 - (2) Chheharta substation (Amritsar Grid).
- (xv) Work on the gantries was started but only the main frame works were completed at Dhariwal and Pathankot as additions are proposed.

Tube wells have been sunk at Lahore, Amritsar and Dhariwal. The tubes, pumps and tanks were erected at Lahore and Amritsar and nearly completed at Dhariwal.

(5) *Railway sidings.*—The work of putting in a railway siding at Julundur was commenced. The railway sidings at Lahore, Amritsar, Dhariwal and Pathankot were finished early in this year.

(6) *Railway crossings.*—The Railway crossings from Jogindernagar to Lahore, Lahore to Ferozepur and Lahore to Lyallpur were completed. The Railway crossings from Amritsar to Kartarpur were constructed.

(7) *Local distribution.*—The construction of the local distribution substations at Pathankot, Dinanagar and Gurdāspur was commenced. The cable runs in these towns were painted. Pole erection was in hand. A load survey was made by Messrs. Callender's Cable and Construction Company, Limited. The following local distribution work was commenced in the undermentioned towns:—

(a) *Batala.*—The routes of the feeders along different streets were surveyed and cable runs marked. The position of the poles was fixed. 70 per cent. of the poles between " B " Substation and " C " Substation were erected and grouted. Most of the poles outside the town proper were also erected and grouted. The work of marking special foundations for poles on the edges of drains banking round poles in low ground, tree cutting, etc., being done. About 140 agreement forms for general supply were signed by the end of March 1933.

(b) *Tarn Taran.*—The site for the substation building had been selected but the construction was not started. The routes of the feeders along different streets were surveyed and the position of poles and cable runs marked. Erection of lines and cables was about to be taken in hand. About 100 forms were signed up by the end of March 1933.

(c) Surveys for local distribution for both Sheikhpura and Chuharkana towns were carried out and the position of poles located. Final layout proposals were under consideration.

(d) Negotiations for land acquisition work for almost all substations were carried out.

(8) *Compensation for damages.*—One of the major works in the Pathankot Division accomplished during the year was the re-assessment and payment of damages done to property in the Kangra valley during the erection of the 132 kV trunk transmission line and trunk telephone line. The work in connection with the former was practically completed and the latter nearing completion.

24. (i) The supply to the Amritsar Municipality from the Lahore Electric Supply Company's power house at Shahdara was continued throughout the year. There was

no major shut-down in this period. Power was also supplied to 2 factories at Chheharta from Lahore up to 31st March 1933. From noon on 31st March 1933 power was supplied from the Uhl River Hydro Electric Undertaking.

(ii) The project estimate for this scheme was finally revised and now amounts to Rs. 7,28,000.

(iii) Investigations were started for putting up the 3rd 11 kV feeder from Verka substation along the northern route to the proposed ring main substation near Chheharta.

25. (i) The original project estimate for this scheme was found to require revision and was sanctioned for a sum of Rs. 3,61,500 in November 1932.

Lyallpur Electrification Scheme.

The scheme as a whole has worked satisfactorily during the year.

STATEMENT A.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33.

Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS.	
1	2	3	4	5	6	7	8
				Rs.			
	<i>H. P. A. (2).</i>						
B-258 of 1928-29	Additional Ventilating Duct for Tunnel Division.	Brot ..	33,235	March 1929 ..	Completed.		
B-42 of 1931-32	Manufacture, supply and delivery at site and erection of tunnel unwatering steel pipes.	Do. ..	{ 22,106 22,245	..	Do.		
	<i>H. P. D. 1.</i>						
B-18 of 1931-32	Construction of Uhl weir ..	Brot ..	2,87,916	October 1930 ..	Do.		
B-102 of 1931-32	Constructing Duct connecting the two weirs.	Do. ..	51,476	September 1931	Do.		
B-128 of 1930-31	Hydraulic gates for headworks.	Do. ..	64,909	November 1931	Do.		
B-12 of 1932-33 (revised).	Constructing scour channels from decantation chamber.	Do. ..	23,283	March 1931 ..	Do.		
B-57 of 1931-32	Lower pressure duct at works.	Do. ..	1,08,220	July 1930 ..	Do.		
B-80 of 1931-32	Constructing forebay at headworks.	Do. ..	1,15,123	March 1930 ..	Do.		
B-130 of 1930-31	Hydraulic gates and screen for forebay.	Do. ..	{ 42,552 44,150	November 1931	Do.		
B-80 of 1932-33	Excavation and lining of diurnal reservoir.	Do. ..	3,00,000	November 1928	In progress.		
B-148 of 1929-30	Scour and sump ..	Do. ..	10,628	June 1929 ..	Completed.		
B-85 of 1929-30	Diurnal reservoir offtake..	Do. ..	37,480	May 1929 ..	Do.		
B-7 of 1931-32	Flume lower filling channel (Rapid and gate).	Do. ..	33,616	April 1930 ..	Do.		
B-131 of 1930-31	Lower pressure hydraulic valves and screens for reservoir.	Do. ..	{ 72,722 74,791	December 1931	Do.		
B-105 of 1930-31	Blue pool rapid and stilling pond.	Do. ..	55,023	April 1930 ..	Do.		
B-54 of 1930-31	Upper main duct ..	Do. ..	1,58,000	April 1930 ..	Do.		
	<i>H. P. D. (2).</i>						
B-145 of 1930-31	Mantle for tunnel lining ..	Tunnel Adit ..	25,298	..	Do.		
B-103 of 1931-32	Tunnel lining North Adit to R. D. 4' 3" beyond F.N.A.S.	Brot ..	86,746	November 1929	Do.		
B-71 of 1931-32	Excavation of Main North Heading of Tunnel (North Adit Junction to mid-point).	Do. ..	10,12,748	January 1929 ..	Do.		
B-45 of 1932-33 (revised).	Lining of main tunnel from Adit Junction to mid-point.	Do. ..	7,57,311	October 1929 ..	Do.		
B-61 of 1931-32	Grouting of Main North Tunnel.	Do. ..	26,720	May 1931 ..	Do.		
B-109 of 1931-32	Lining tunnel through granite gneiss.	Do. ..	1,43,598	August 1931 ..	Do.		

STATEMENT A—CONTINUED.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33—CONTINUED.

Name of Division.	Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS
1	2	3	4	5	6	7	8
				Rs.			
Tunnel		<i>H. P. D. (2)—concl'd.</i>					
	B-69 of 1932-33 (Revised)	Lining of main tunnel from R. D. 196 Surge Shaft side to R. D. 139 midpoint side and Adit plug.	Tunnel Adit ..	1,05,654	..	Completed.	
	B-56 of 1931-32	Grouting of main tunnel lining from S. A. J. to midpoint.	Ditto ..	51,857	..	Do.	
	B-156 of 1929-30	Constructing permanent lining for Wyre Nallah Adit.	Ditto ..	82,126	August 1931 ..	Do.	
	B-144 of 1931-32	Lining of main tunnel from S. J. A. to midpoint.	Ditto ..	6,36,263	..	Do.	
	B-145 of 1930-31	Mantle for tunnel lining ..	Ditto ..	8,27,284	August 1931 ..	Do.	
	2-H of 1929-30	Supply and erection of tunnel pipes.	Ditto ..	{ 4,71,800 5,02,900 }	..	Do.	
	B-139 of 1931-32	Lining surge chamber ..	Surge Shaft ..	50,654	..	Do.	
	B-116 of 1931-32	Grouting surge shaft ..	Ditto ..	27,729	..	Do.	
	B-142 of 1932-33	Final lining works of Adit	Tunnel Adit ..	48,317	..	Do.	
	B-34 of 1932-33	High pressure grouting of main tunnel from surge shaft to Midpint.	Ditto ..	43,713	..	Do.	
	B-25 of 1931-32	Mantle in Surge Shaft ..	Surge Shaft ..	24,566	..	Do.	
	B-39 of 1932-33	High pressure hydraulic valves in Main tunnel.	..	{ 62,802 64,625 }	April 1932 ..	Do.	
		<i>H. P. D. (3).</i>					
Mechanical	B-90 of 1930-31	Branch Haulageway from M2, M4, B3 and Subsidiary Haulageway M4, B3, to X ₁ , X ₂ .	Works area ..	59,233	March 1931 ..	Do.	
	B-99 of 1930-31	Final surfacing of pipe track	Pipe Line ..	60,145	..	Do.	
	B-149 of 1932-33	Protection of Pipe Line haulageway and pipe track.	Works area ..	50,427	..	Do.	
	B-79 of 1930-31	Constructing Penstock Pipe supports along Shanani Pipe Line.	Pipe Line ..	79,462	..	Do.	
		<i>H. P. E. (1).</i>					
Mechanical	B-5 of 1931-32	Protection Works Shanani Nallah.	Works area ..	37,459	July 1930 ..	Do.	
	B-86 of 1930-31	Steelwork Shanani power house (Superstructure).	Jogindernagar ..	2,07,877	June 1931 ..	Do.	
	B-41 of 1931-32	Constructing sloping roof of Jogindernagar power house.	Do ..	54,997	September 1931	Do.	
	B-6 of 1932-33	Shanani power house superstructure.	Do ..	79,658	November 1931	Do.	
	B-143 of 1930-31	Power house substructure and tailrace.	Do ..	4,60,547	August 1930 ..	Do.	
	B-104 of 1931-32	Tailrace weir at Shanani power house.	Do ..	38,119	July 1931 ..	Do.	

STATEMENT A—CONTINUED.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33—CONTINUED.

Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS.
2	3	4	5	6	7	8
	<i>H. P. E. (2).</i>		Rs.			
B-11 of 1932-33 (Revised).	Supply, erection and testing of Shanau Generating Plant machinery and auxiliaries.	Jogindernagar	11,03,194	August 1931 ..	In progress.	
B-11 of 1932-33 (Revised).	Supply, erection and test of Shanau Generating Plant Cranes.	Do ..	47,358	August 1931 ..	Completed.	
	<i>H. P. E. (3).</i>					
B-101 of 1930-31	Generating Station switch-gear and cables.	Do ..	{ 5,64,279 5,83,279 }	March 1932 ..	In progress.	
	<i>H. P. E. (4).</i>					
B-13 of 1932-33	Constructing Cable Duct ..	Jogindernagar	39,641	March 1932 ..	Completed.	
B-10 of 1932-33	Constructing Transformer Station Works at Shanau.	Do.	42,387	..	Do.	
B-40 of 1932-33 (Revised)	Technical equipment for Shanau Transformer Station.	Do.	8,46,170	..	In progress.	
B-119 of 1931-32	Constructing Transformer Repair House at Shanau.	Do.	36,320	..	Completed.	
B-46 of 1932-33	Shanau Transformer Station Supplementary Works.	Do.	29,619	..	Do.	
	<i>H. P. C. (1) a & c.</i>					
B-119 of 1932-33	Remodelling 11 K.v. Line between Shanau and Brot and L. T. Line at Brot.	Works area ..	22,406	November 1932	In progress.	
	<i>H. T. A. (1) a.</i>					
	<i>Nil.</i>					
	<i>H. T. A. (1) b.</i>					
	<i>Nil.</i>					
	<i>H. T. B. (1) a.</i>					
B-58 of 1931-32	Supply and erection of 132,000 volt trunk transmission line between Shanau and Lahore.	Shanau-Lahore	59,49,995	August 1930 ..	Completed.	
	<i>H. T. B. (1) b.</i>					
B-48 of 1932-33	Acquisition of land under raised towers of the trunk transmission line from Shanau to Lahore.	Do.	20,000	August 1930 ..	In progress.	
	<i>H. T. E. (1) c.</i>					
B-9 of 1932-33	Compensation for damage to trees, crops and houses along the trunk transmission line.	Do.	2,24,660	August 1930 ..	Ditto.	
	<i>H. T. B. (2) a & b & c & d</i> <i>H. T. C. (2) a & b.</i>					
B-77 of 1931-32	Telephone system for main trunk and branch transmission lines.	Shanau to Lahore. Lahore to Ferozepore. Lahore to Lyallpur.	9,76,337	January 1932, Lahore and Lyallpur Divisions. March 1932 "A" Division. March 1932 "P" Division.	Ditto. Completed.	

STATEMENT A—CONTINUED.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33—CONTINUED.

Name of Division.	Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS
1	2	3	4	5	6	7	8
Transmission circle.	B-76 of 1932-33	<i>H. T. C. (1) a.</i> Supply and erection of 132 K. V. branch transmission line between Amritsar and Kartarpur.	Amritsar-Kartarpur.	Rs. 8,84,795	June 1931 ..	In progress.	
	B-85 of 1932-33	Supply, delivery and erection of the 132 K. V. branch transmission line from Kartarpur to Jullundur.	Kartarpur to Jullundur.	2,73,108	October 1932 ..	Ditto.	
	B-109 of 1932-33	Supply and erection of 60 K. V. Lahore-Lyallpur branch transmission line.	Lahore-Lyallpur	14,63,581	Prior to January 1933.	Ditto.	
	B-110 of 1932-33	Supply and erection of 60 K. V. Lahore-Lyallpur branch transmission line Lahore-Ferozepur.	Lahore-Ferozepur.	9,76,337	November 1929.	Ditto.	
	B-25 of 1932-33	<i>H. T. C. (1) b.</i> Supply, delivery and erection of 11 K. V. branch transmission line from Dhariwal 132-K. V. substation to Batala substation.	Dhariwal-Batala	62,370	September 1932	Ditto.	
	B-37 of 1932-33	Supply, delivery and erection of 11 K. V. branch transmission line from Dhariwal, 132-K. V. substation to Gurdaspur.	Dhariwal-Gurdaspur.	46,738	Ditto	Ditto.	
	B-43 of 1932-33	Supply, delivery and erection of 11 K. V. from Jullundur 132 K. V. substation to Kapurthala town substation.	Jullundur-Kapurthala.	89,935	..	Ditto.	
	B-50 of 1932-33	11 K. V. Grid System Central Section.	Amritsar ..	1,17,448	June 1931 ..	Ditto.	
	B-24 of 1932-33	<i>H. T. C. (1) g.</i> Supply, delivery and erection of 11 K. V. branch transmission line from Mohlan, 66 K. V. substation to Nankana Sahib substation.	Mohlan-Nankana Sahib.	47,363	..	Ditto.	
	B-29 of 1932-33	Supply, delivery and erection of 11 K. V. branch transmission line from Sultanwind Gate Substation, Amritsar to Tarn Taran.	Sultanwind Gate to Tarn Taran.	79,854	November 1932	Ditto.	
	B-123 of 1930-31	<i>H. T. D. (1) b, c, d, e & f.</i> Electrical equipment of substations on the 132-K. V. trunk line at Kangra, Pathankot, Dhariwal, Amritsar and Lahore.	Kangra-Pathankot, Dhariwal, Amritsar and Lahore.	42,78,000	May 1932 .. Lahore— March 1932.	In progress in case of Lahore Substation only.	
	B-82 of 1930-31	<i>H. T. D. (1) g, h, j, k, l, m & n.</i> Electrical equipment of substations on the 66 K. V. branch lines at Shahdara, Sheikhpura, Chuharkana, Mohlan, Jaranwala, Lyallpur, Kasur and Ferozepur.	Shahdara, Sheikhpura, Chuharkana, Mohlan, Jaranwala, Lyallpur, Kasur and Ferozepur.	10,69,000	October 1931 .. January 1932. September 1932. September 1932. September 1932. March 1932 supply. Ditto. Ditto.	All in progress.	

STATEMENT A—CONTINUED.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33—CONTINUED.

Name of Division.	Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS.
1	2	3	4	5	6	7	8
Transmission Circle.	B-57 of 1932-33	<i>H. T. D. (1) p.</i> Substation electrical plant at Jullundur. <i>H. T. D. (1) t.</i>	Jullundur ..	Rs. 3,05,334	April 1933 ..	In progress.	
	B-31 of 1931-32	Providing a siding to the Shalamar 132 K. V. substation at Lahore.	Lahore ..	2,38,663	July 1931 ..	In progress.	
	B-113 of 1931-32	Constructing transformer repair house at Kangra.	Kangra ..	32,060	..	Completed.	
	B-147 of 1931-32	Constructing outdoor switchgear foundations and plinths at Shalamar.	Shalamar ..	41,525	February 1932	Do.	
	B-5 of 1932-33	Constructing foundations and plinths for the outdoor switchgear at Pathankot substation.	Pathankot ..	25,320	..	Do.	
	B-20 of 1932-33	Constructing condenser and switch house at Lahore.	Lahore ..	1,64,752	July 1931 ..	Do.	
	B-23 of 1932-33	Providing internal railway sidings at the receiving station of Lahore and Amritsar.	Lahore and Amritsar.	57,438	Lahore— September 1932 Amritsar— November 1930	Ditto In respect of Amritsar Substation. Lahore in progress.	
	B-21 of 1932-33	Constructing switch and condenser house at Amritsar.	Amritsar ..	1,12,953	October 1931 ..	Completed.	
	B-148 of 1931-32	Unclimbable fencing for the branch transmission line Division substations at Sheikhpura, Chuharkana, Mohlan, Jaranwala, Lyallpur, Kasur, Ferozepur and Jullundur.	Sheikhpura to Jullundur.	20,534	Kasur and Ferozepore— November 1932 Lyallpur Jaranwala } Mohlan } Sheikhpura— Prior to January 1933.	In progress.	
	B-47 of 1932-33	Substation unclimbable fencing for the Trunk Transmission Line Division.	Pathankot, Dhariwal, Amritsar, Lahore.	20,768	April 1932 ..	Completed.	
	B-44 of 1932-33	Transformer station works at Kangra.	Kangra ..	35,205	..	Do.	
	U. S.	Constructing gantries in Transmission Circle. <i>H. T. D. (2) c—</i> <i>H. T. D. (3) b.</i>	All over Trunk and Branch Line System.	..	Dhariwal— May 1932. Jullundur— February 1933.	In progress.	
	B-87 of 1931-32	Constructing permanent quarters at the Pathankot substation in the Public Works Department Hydro Electric Branch. <i>H. T. D. (2) f—</i> <i>H. T. D. (3) b.</i>	Pathankot ..	29,977	..	Completed.	
	B-90 of 1931-32	Constructing permanent quarters at Lahore. <i>H. T. D. (2) k—</i> <i>H. T. D. (3) b.</i>	Lahore ..	47,482	December 1931	Completed.	
	B-93 of 1931-32	Constructing permanent quarters at Jaranwala. <i>H. T. D. (2) m—</i> <i>H. T. D. (3) b.</i>	Jaranwala ..	24,516	March 1932 ..	Do.	
	B-95 of 1931-32	Constructing permanent quarters at Kasur. <i>H. T. D. (3) b.</i>	Kasur ..	28,915	February 1932	Do.	
	B-98 of 1929-30	Constructing Line Superintendent's office and store in the Lahore District.	Jaranwala and Kasur.	41,826	March 1930 ..	Do.	

STATEMENT A.—CONCLUDED.

SHOWING PROGRESS ON MAJOR WORKS DURING THE YEAR 1932-33—CONCLUDED.

Name of Division.	Estimate No.	Name of work.	Locality.	Amount of sanctioned estimate.	Date of commencement of work.	Work completed or in progress.	REMARKS.
1	2	3	4	5	6	7	8
				Rs.			
		AMRITSAR TEMPORARY SUPPLY SCHEME.					
Transmission circle.	4H of 1929-30	Supply and erection of 6,600, 33,000 and 11,000 volt pole lines for Amritsar Temporary Supply Scheme.	Lahore-Amritsar	2,88,498	October 1929 ..	Completed.	
	5H of 1929-30	Supply and erection of 66,000 volt line for Amritsar Temporary Supply Scheme.	Ditto	1,74,160	October 1929 ..	Do.	
	A-4 of 1929-30	Constructing 11 K. V. grid Amritsar Grid Water Works (Southern Section).	Amritsar ..	38,341	March 1932 ..	Do.	
	A-5 of 1929-30	Supply and erection of transformers for Shahdara and Jullundur substations.	Shahdara and Amritsar.	28,515	December 1931	Do.	
	A-1 of 1929-30	Construction of a telephone line Amritsar to Shalamar and loops to Shahdara, Kapurthala House and Hakimawala Gate.	..	75,178	January 1930	Do.	
	6H of 1929-30	Supply and erection of transformers switchgear and auxiliary equipment from Shahdara to Amritsar Temporary substation.	Amritsar and Shahdara.	1,11,394	December 1929	Do.	
	A-2 of 1932-33	Maintenance of the Amritsar Temporary Supply Scheme for the year 1932-33.	Lahore-Amritsar.	2,49,305	April 1932 ..	Do.	
		LYALLPUR ELECTRIFICATION SCHEME.					
		L. W. (1) a.					
	L-5 of 1931-32	Supply and erection of an additional generating set for Lyallpur power station.	Lyallpur ..	43,408	March 1931 ..	In progress.	
		L. W. (3) a.					
	7 SH of 1929-30	Lyallpur distribution lines and street lighting.	Do ..	1,13,790	Prior to April 1929.	Ditto.	
		L. W. (3) b.					
	L-1 of 1930-31	Watt hour meters for consumers premises for Lyallpur distribution system.	Do ..	21,867	March 1930 ..	Ditto.	
	L-2 of 1929-30	Single phase service connection for fans and lighting at Lyallpur.	Do ..	39,218	Prior to April 1929.	Ditto.	
	L-3 of 1931-32	Supply of two 200 BHP engines by Messrs. Swiss Locomotive Machine Works in replacement of three 120 B.H.P engines at Lyallpur.	Do ..	31,749	November 1931	Ditto.	
		LOCAL DISTRIBUTION.					
	D-16 of 1933-34	Local distribution mains at Batala.	Batala ..	1,39,627	January 1933	Ditto.	
	U. S. ..	Local distribution at Tarn Taran.	Tarn Taran ..	..	Ditto	Ditto.	

STATEMENT B.
STATEMENT OF EXPENDITURE, DURING 1932-33.

Heads.	Expenditure.			Total.		
1	2			3		
	Rs.	A	P.	Rs.	A.	P.
58—HYDRO-ELECTRIC SCHEME—CAPITAL EXPENDITURE (TRANSFERRED).						
(B)—UHL RIVER PROJECT.						
B-1 (Production works)	23,35,070	8	8			
B-3 (Transmission works)	25,29,677	11	11			
B-5 (General Charges)	3,03,708	13	8			
B-6A (Local Distribution)	3,32,491	4	0			
				55,00,948	5	10
B-2 (Production Establishment)	2,82,928	11	1			
B-4 (Transmission Establishment)	2,32,673	15	1			
B-6 (General Establishment)	2,51,087	0	1			
				7,66,684	10	8
B-7 (Establishment charges in England)						
B-8 (Pensionary Charges)						
B-9 (Suspense)				10,06,147	12	5
B-10 (Deduct—Receipt on Capital Account)				72,031	5	7
Total Uhl River Project				72,01,749	6	11
(C)—LYALLPUR ELECTRIFICATION SCHEME.						
C-1 (Construction)				5,518	7	3
C-2 (Establishment)						
C-3 (Depreciation)						
Total Lyallpur Electrification Scheme				5,518	7	3
(D)—AMRITSAR ELECTRIC SUPPLY SCHEME.						
D-1 (Construction)				—76,476	13	9
D-2 (Establishment)						
D-3 (Depreciation)						
Total Amritsar Electric Supply Scheme				—76,476	13	9
TOTAL 58—HYDRO-ELECTRIC SCHEME				71,30,791	0	5
XXX-A—HYDRO-ELECTRIC WORKING EXPENSES.						
(D)—LYALLPUR ELECTRIFICATION SCHEME.						
D-1 General Charges				11,546	3	3
D-2 Maintenance and Operation of Generating System				46,531	12	9
D-3 Maintenance and Operation of Transmission System				21,977	12	0
Total Lyallpur Electrification Scheme				80,055	12	0
(E)—AMRITSAR ELECTRIC SUPPLY SCHEME.						
E-1 General Charges						
E-2 Maintenance and Operation of Generating System				2,72,567	11	0
E-3 Maintenance and Operation of Transmission System				14,796	0	7
Total Amritsar Electric Supply Scheme				2,87,363	11	7
TOTAL XXX-A—WORKING EXPENSES				3,67,419	7	7

NOTES—

(1) The expenditure of the Secretary to Government, Punjab (Electricity) and the Commercial Manager is not included in these figures.

(2) These figures are exclusive of March Supplementary accounts and are, therefore, liable to be changed.

(3) XXX-A. D-1, D-2, D-3, E-2 and E-3 include figures of expenditure on establishment.

STATEMENT C.

DETAILS OF ESTABLISHMENT CHARGES INCURRED DURING 1932-33.

Particulars.	Amount.	Total.
58—HYDRO-ELECTRIC SCHEME—CAPITAL EXPENDITURE (TRANSFERRED).	Rs.	Rs.
UHL RIVER PROJECT.		
B—2 (Production Establishment).		
Pay of Permanent Officers	{ Voted .. 4,606 4 0 Non-voted .. 50,637 14 0	
Pay of temporary officers, Voted	.. .. 56,340 13 0	
Leave salary of permanent officers, Non-voted	.. .. 2,000 0 0	
Leave salary of temporary officers	.. .. 4,509 4 0	
Pay of establishment, permanent	.. .. 15,673 2 0	
Pay of establishment, temporary	.. .. 1,05,094 9 0	
Leave salary of permanent establishment	.. .. 1,339 2 0	
Leave salary of temporary establishment	.. .. 6,295 13 0	
Travelling allowances	{ Voted .. 6,362 5 0 Non-voted .. 4,247 9 0	
Other Allowances and honoraria	{ Voted .. 21,538 14 0 Non-voted .. 429 1 0	
Supplies and Services	.. .. 20 10 0	
Contingencies	.. .. 10,884 14 10	
Percentage Establishment recoveries	.. .. —83 5 9	
Grant-in-aid, Voted	.. .. 5,750 0 0	
Grant-in-aid leave and pension contribution of officers deputed from other departments.	.. .. 384 3 0	
Emergency cut, permanent officers, Voted	.. .. 430 12 0	
Emergency cut, temporary officers, Non-voted	.. .. 5,984 13 0	
Emergency cut, permanent establishment	.. .. 4,034 3 0	
Emergency cut, temporary establishment	.. .. 1,664 11 0	
Deduct—Share of Electricity Secretariat debitable to 22-G.A.	.. .. 962 14 0	
		2,82,923 11 1
B—4 (Transmission Establishment).		
Pay of officers, permanent	{ Voted .. 5,612 6 0 Non-voted .. 4,508 1 0	
Pay of officers, temporary, Voted	.. .. 90,181 1 0	
Leave salary of temporary officers	.. .. 1,739 13 0	
Pay of establishment, permanent	.. .. 8,692 1 0	
Pay of establishment, temporary	.. .. 73,014 0 0	
Leave salary of temporary establishment	.. .. 6,268 7 0	
Travelling allowances	{ Voted .. 32,140 13 0 Non-voted .. 289 4 0	
Other allowances and honoraria	{ Voted .. 3,959 4 0 Non-voted .. 137 9 0	
Contingencies	.. .. 17,272 8 1	
Emergency cut, permanent officers, Voted	.. .. 596 14 0	
Emergency cut, temporary officers, Non-voted	.. .. 486 7 0	
Emergency cut, permanent establishment	.. .. 8,372 2 0	
Emergency cut, temporary establishment	.. .. 792 5 0	
Deduct—Share of Electricity Secretariat debitable to 22-G.A.	.. .. 888 8 0	
		2,32,673 15 1
B—6 (General Establishment).		
Pay of officers, permanent	{ Voted .. 26,610 11 0 Non-voted .. 61,861 6 0	
Pay of officers, temporary, Voted	.. .. 71,123 11 0	
Leave salary, permanent officers, Voted	.. .. 70 7 0	
Leave salary of Temporary officers	.. .. 173 3 0	
Pay of establishment, permanent	.. .. 9,192 4 0	
Pay of establishment, temporary	.. .. 60,248 14 0	

STATEMENT C—CONCLUDED.

DETAILS OF ESTABLISHMENT CHARGES INCURRED, DURING 1932-33—concl'd.

Particulars.	Amount.		Total.	
	Rs.	A. P.	Rs.	A. P.
58—HYDRO-ELECTRIC SCHEME—CAPITAL EXPENDITURE (TRANSFERRED)—concl'd.				
UHL RIVER PROJECT—concl'd.				
B—6 General Establishment—concl'd.				
Leave salary of permanent establishment ..	97	1 0		
Leave salary of temporary establishment ..	4,954	4 0		
Travelling allowances ..	6,520	11 0		
.. { Voted ..	1,711	3 0		
.. { Non-voted ..	5,237	4 0		
Other allowances and honoraria ..	725	13 0		
.. { Voted ..	695	1 0		
.. { Non-voted ..	19,299	10 1		
Supplies and Services ..	1,490	5 0		
Contingencies ..	2,484	7 0		
Grant-in-aid, Non-voted ..	6,832	15 0		
Emergency cut of permanent officers ..	6,634	9 0		
Emergency cut of temporary officers ..	711	1 0		
Emergency cut of permanent establishment ..	2,811	12 0		
Emergency cut of temporary establishment ..				
Deduct—Share of Electricity Secretariat debitable to 22-G.A.			2,51,087	0 1
XXX-A—HYDRO-ELECTRIC SCHEME WORKING EXPENSES.				
LYALLPUR ELECTRIFICATION SCHEME.				
Pay of temporary officers ..	3,940	15 0		
Pay of temporary establishment ..	8,588	14 0		
Travelling allowances ..	197	9 0		
Other allowances and honoraria ..	139	3 0		
Supplies and Services ..	..	..
Contingencies ..	3,958	11 3		
Grant-in-aid contribution and donations ..	..	..
Percentage establishment recoveries ..	450	6 0		
			16,675	10 3
AMRITSAR ELECTRIC SUPPLY SCHEME.				
Pay of temporary officers ..	..	..
.. { Non-voted ..	..	..
.. { Voted ..	5,803	5 0		
Pay of temporary establishment ..	482	4 0		
Travelling allowances, Voted ..	..	..
Other allowances and honoraria ..	..	..
Supplies and services ..	..	..
Contingencies ..	1,061	6 3		
Grant-in-aid contribution and donations ..	..	..
Percentage Establishment recoveries ..	3	14 0		
			7,850	13 3
TOTAL XXX-A—WORKING EXPENSES ESTABLISHMENT.			24,026	7 6

