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PUNJAB PUBLIC WORKS DEPARTMENT

ELECTRICITY BRANCH

ADMINISTRATION REPORT

FOR THE

YEAR 1938-39.

13667



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ADMINISTRATION REPORT, 1938-39.

CONTENTS.

	PAGES.
Chapter I.—General Preface	1-2
Chapter II.—Organization and Establishment	2-6
Chapter III.—Construction, Operation and Maintenance	6-17
Chapter IV.—Commercial	17-25
Chapter V.—Closing down the Uhl River Hydro-Electric Accounts	25

APPENDICES.

Appendix 'A'.—Graph of units generated and transmitted to the Grid during 1938-39	i
Appendix 'B'.—Financial forecast accompanying the completion report of the Uhl River Hydro-Electric Scheme	i-ii
Appendix 'C'.—Profit and Loss Account, Net Revenue Account, Capital Account and Balance Sheet	iv-ix
Appendix 'D'.—Statement showing the average cost of generation for the year 1935-36, 1936-37 and 1937-38	x-xi
Appendix 'E'.—Statement showing the financial results for the year 1935-36, 1936-37 and 1937-38	xiv-xv
Appendix 'F'.—Commercial Statistics of the Local Distribution System for the years 1935-36, 1936-37 and 1937-38	xvi
Appendix 'G'.—Analysis of units sold and revenue obtained through Local Distribution Schemes and special consumers	xvii
Appendix 'H'.—Application and Connection Return (Consolidated)	xviii-xix
Appendix 'I'.—Load Growth diagram for the year 1938-39	xx-xxvii
Appendix 'J'.—Statement of Revenue Assessed during the year 1938-39	
Appendix 'K'.—Statement showing payments outstanding on 31st March, 1938	xxviii
Appendix 'L'.—Statement showing payments outstanding on 31st March, 1939	xxviii

ADMINISTRATION REPORT 1932-33

CHAPTER I - General Review

CHAPTER II - The Department of Education

CHAPTER III - The Department of Health

CHAPTER IV - The Department of Agriculture

CHAPTER V - The Department of Labor

CHAPTER VI - The Department of Social Welfare

CHAPTER VII - The Department of Public Health

CHAPTER VIII - The Department of Public Safety

CHAPTER IX - The Department of Public Works

CHAPTER X - The Department of Public Health

CHAPTER XI - The Department of Public Safety

CHAPTER XII - The Department of Public Works

CHAPTER XIII - The Department of Public Health

CHAPTER XIV - The Department of Public Safety

CHAPTER XV - The Department of Public Works

CHAPTER XVI - The Department of Public Health

CHAPTER XVII - The Department of Public Safety

CHAPTER XVIII - The Department of Public Works

CHAPTER XIX - The Department of Public Health

CHAPTER XX - The Department of Public Safety

CHAPTER XXI - The Department of Public Works

CHAPTER XXII - The Department of Public Health

CHAPTER XXIII - The Department of Public Safety

CHAPTER XXIV - The Department of Public Works

CHAPTER XXV - The Department of Public Health

CHAPTER XXVI - The Department of Public Safety

CHAPTER XXVII - The Department of Public Works

CHAPTER XXVIII - The Department of Public Health

CHAPTER XXIX - The Department of Public Safety

CHAPTER XXX - The Department of Public Works

**Proceedings of the Punjab Government in the Industries and Labour
(Electricity) Department, No. 2086-El.-39/37572, dated 11th
November, 1939.**

READ—

The Administration Report of the Punjab Public Works Department, Electricity Branch, for the year 1938-39.

1938-39 was the sixth year of the commercial operation of the Electricity Branch. The improvement in load conditions, though not so marked as in the previous year, is yet substantial. The connected load increased by 8·7 per cent from 30,386 kW to 33,056 kW while the peak load increased by 9·8 per cent from 12,200 kW to 13,400 kW. The number of units transmitted increased by 13·1 per cent from 59,741,151 to 67,572,998 and the total revenue assessed (including the revenue from the Renala Hydro Electric Installation) rose by 21·4 per cent from Rs. 24,69,313 to Rs. 29,99,355. The number of consumers increased by 15·4 per cent from 15,042 to 17,369. Notable improvement took place in Ludhiana where the connected load and revenue increased by 665 kW and Rs. 83,192; in Lyallpur by 227 kW and Rs. 70,350; in Lahore suburban area by 482 kW and Rs. 54,846, and in Amritsar suburban area by 76 kW and Rs. 46,176.

2. The load curve of units generated has followed practically the same course as in the last year. There was a steady rise from April to August (5,955,000 units) followed by a gradual fall till November (56,40,000 units) just above the level of May. Then there was a steady rise until the peak was reached in January (62,30,000 units). February registered a sharp decline (52,60,000 units) which was the lowest record of the year. March again witnessed an improvement (57,30,000 units).

3. The administrative accounts for the year show a net revenue of Rs. 15,16,110 being only 57·7 per cent of the simple interest charges of Rs. 26,26,629 on capital. Last year the net revenue of Rs. 17,27,769 represented 67·7 per cent of the simple interest charges amounting to Rs. 25,64,479. This apparent deterioration of the financial position is due to the debit of depreciation charges of about Rs. 7·4 lakhs for the first time. If this item is ignored the net revenue amounting to Rs. 22,57,110 represents 85·9 per cent of the interest charges on capital.

4. The Development Report dealing with the question of augmenting of power and prospective load in the Province was received during the year. Four proposals have been examined :—

- (a) Construction of dams in the Uhl Valley to increase the present winter discharge of that river;
- (b) exploitation of canal falls;
- (c) exploitation of the waters of one or more of the main rivers of the Province; and
- (d) construction of one or more large Steam Power Stations to supplement the power available from the Uhl River Hydro Electric Scheme during the winter months only.

It was expected that with the gradual loading up of the system during the first stage, the load factor would gradually fall. This expectation has not materialised and the load factor curve is almost a straight line at 73 per cent. With a minimum discharge of 100 cusecs during the winter months, the output of power from the Shanan Power House at 73 per cent load factor is limited to 16,500 kW against the previous estimate of 24,000 kW at 50 per cent load factor. The unusually low discharges in the Uhl River at Brot, during the winter months of 1938-39, caused grave anxiety and the augmenting of power became a problem of urgency. Therefore, pending a fuller examination of the alternative proposals suggested in the Development Report, it was decided to establish a Steam Power Station raising the output of primary power, in the first instance, by 12,000 kW and ultimately by 24,000 kW or a total of over 40,000 kW. The reduced output of the Shanan Power House must necessarily affect adversely the profit and loss account of the first stage of the Uhl River Hydro Electric Scheme. It is now expected that the operations of the Branch will show a small net profit after paying all expenses, including interest, when the maximum demand on the system exceeds 40,000 kW. This prospect is not capable of achievement

until the Thermal Station has been erected and put in commission. Designs and working plans for the Thermal Station are being drawn up but the outbreak of war has rendered it impossible to obtain the necessary plant at an early date. With normal development, the system, as operating at present, will be loaded to capacity in the winter of 1940-41. Accordingly, it has become necessary to discontinue the bulk supply of over 3,000 kW to the North-Western Railway, and under the terms of the agreement with that Administration two years' notice for the discontinuance of the supply has now been given.

5. The plant and equipment of the Branch worked entirely satisfactorily throughout the year and the supply to the 132 kV system was continuous. There were three stoppages on the 22 kV line to Mandi, for two minutes on each occasion, due to overloading.

6. Measures for maintenance and test functioned successfully. The inspection of tower foundations referred to in the last Report has now been completed. It appears that extensive work will have to be undertaken without delay on all tower foundations, at least in the plains to arrest serious damage by corrosion. Inspection has also revealed extensive damage to wood poles on local distribution lines, by white ants. It will probably be necessary to replace all wood poles by steel poles.

7. During the year the Construction Division was re-named as the 1st Construction Division and a second Division was created for the construction of the Sialkot-Gujranwala-Lyallpur Project. Owing to the circumstances explained in paragraph 4, this Division is now being abolished.

Expansion of the operations of the Branch has necessitated re-organization of the administration of stores. A Central Stores Purchase Agency has been created and the post of Stores Officer has been made permanent. This Agency will also carry out the scheme for central price fixing of stores. In the short time that the new scheme has been in operation, it has been found possible to reduce the stock limit of stores from 21 lakhs to 20 lakhs. The position is being carefully watched and a further reduction may be possible.

8. Work on many local distribution schemes has had to be suspended and the programme of future development will have to be restricted until it is possible to proceed with the construction of the Thermal Station. Meanwhile with steady development of available power the cost of generation per unit was reduced to 3.85 pies per unit in 1937-38 as compared with 5.44 pies in 1936-37 and as much as 12.80 pies in 1934-35.

9. The commercial side of the Branch continues to receive close attention. Reductions have been approved in the rental of service lines both in the case of general and industrial consumers and certain changes have been sanctioned in the schedules of Service and General charges. These reductions are expected to help considerably in augmenting the sales of energy. The amount outstanding against the construction contracts of the main scheme has been further reduced from Rs. 7,617 to Rs. 5,772.

10. Mr. H. P. Thomas, C.I.E., was in charge of the Branch until October, 1938, when he proceeded on leave preparatory to termination of his contract. Mr. Critchley held charge of the post of the Chief Engineer for the rest of the year. Government thank Mr. Critchley for an interesting report and record their appreciation of the good work done by all the officers of the Branch.

Order.—Ordered that a copy of the foregoing review be forwarded to the Chief Engineer, Punjab, and the officers of the Branch.

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 Governor of the Punjab,

S. K. KIRPALANI,

Secretary to Government, Punjab,
Electricity Industries Department.

PUNJAB PUBLIC WORKS DEPARTMENT.

ELECTRICITY BRANCH.

ADMINISTRATION REPORT FOR THE YEAR 1938-39.

CHAPTER I.—General Preface.

THE year under review witnessed a notable improvement in load conditions on the local distribution systems of the Branch as a whole. The increased demand for energy necessitated the construction of numerous new extensions and the building of several additional sub-stations. The towns of Lyallpur and Ludhiana provided great scope for extension of industrial load and arrangements were consequently made to meet the local requirements at these places. Hydro-electric power was also made available for working tube-wells for agricultural purposes in the neighbourhood of Nankana Sahib in the Sheikhpura District and the public concerned benefitted a good deal, in so far as the considerable areas of land, that had hitherto been lying barren, were brought under cultivation. Several schemes for supplying rural loads in the districts of Lahore, Amritsar and Sheikhpura were sanctioned by Government and the construction of some of them was actually started during the year under review. The reductions in the rentals of the service lines both in the case of general and industrial consumers as well as the changes in the Schedule of Service and General charges, recently sanctioned by Government have given further inducement to the prospective consumers, and it is anticipated that they will now readily come forward to benefit from the proffered concessions and thus augment considerably the sale of energy by the Branch.

The electrical plant and equipment in the production area at Shanan rendered very satisfactory service. The supply to the 132 kV. system was continuous throughout the year and there was no interruption or shut-down of a serious nature. In the case of the 22 kV. line to Mandi there were no failures of supply except on 3 occasions, when the associated oil circuit breaker at Shanan tripped off due to overload. The supply was, however, restored after about 2 minutes on each occasion. The total number of units generated during the year was 68,616,700 as against 60,846,240 in the year 1937-38, thus representing an increase of approximately 13 per cent. The total revenue assessed during the year amounted to Rs. 29,99,355 as compared with Rs. 24,69,313 for the last year. The load connected and the load applied for went up by 2,670 kW. and 2,022 kW., respectively. The total number of consumers at the end of the year stood at 17,369 as against 15,042 at the end of the preceding year. The above particulars are enough to establish the efficiency and the reliability of the system and further to show that the 6th year of operation of the Uhl River Hydro-Electric Scheme was one of continued growth and steady improvement in all directions.

The Construction Division (now named 1st Construction Division) which was opened last year for the execution of important extension works and new projects, was supplemented by another Construction Division, called the 2nd Construction Division about the middle of January, 1939. The latter Division has been formed mainly to carry out the construction of the various works in connection with the Sialkot-Gujranwala-Lyallpur Project. Works to the extent of Rs. 6½ lacs were executed under the 1st Construction Division during the year under report.

The administration of stores is a matter of vital importance as the cost of stores alone represents approximately 90 per cent of the expenditure on works in the Branch. In all large scale commercial undertakings such as electric supply corporations including big combines, Railways, Madras Public Works Department, and Madras Government Hydro-Electric Department, etc., the control and purchase of stores is entrusted to a central agency. In view of these and other considerations two new schemes, *viz.*, central purchase of stores and central price

fixing were sanctioned by Government. The post of Stores Officer was made permanent and additional staff for the operation of the two schemes was sanctioned. A closer control of central stores has been made possible and has enabled the stock limit to be brought down from 21 lacs to 20 lacs. It is believed that a further reduction may yet be possible and the position is being closely watched.

The data collected by the Development Division in connection with the augmentation of power was further examined and the conclusion arrived at was that the figures relating to the prospective load that could be developed in the Punjab were extremely conservative. Considerable anxiety was aroused during the winter of 1938-39 by the very low discharges which occurred in the Uhl River at Brot. All previous low records were broken. Partly on account of this it has been necessary to revise previous estimates of the amount of primary power that can be depended upon for generation by the Shanan Hydro-Electric Power Station while operating on stream flow assisted only by the existing diurnal storage. There is now only a relatively small margin in hand with which to meet increases in the maximum demand on the system. It is, therefore, urgently necessary that the supply of primary power should be augmented without delay so as to avoid having to check the rapid development of the use of electricity in the Province.

The Projects Engineer accordingly made a study of various schemes which have been suggested at various times for extending the primary power resources of the Branch. Such schemes fall into one or other of the four main groups mentioned below :—

- (i) The construction of storage reservoirs in the Uhl Valley by means of which water could be supplied to the Uhl River to supplement its winter discharge.
- (ii) The construction of Hydro-Electric Power Stations on certain canal falls.
- (iii) The construction of Hydro-Electric Power Stations on one or other of the main rivers of the Punjab.
- (iv) The construction of one or more large steam power stations designed to operate only when required during each winter.

The results of this study were embodied in a memorandum which was submitted to Government in February, 1939. It was shown in this memorandum that there was no scheme in any of the first three groups which could be completed within the time available. This desideratum is only possessed by schemes falling in the fourth group. Accordingly preliminary estimates of the capital cost of a suitable steam-electric reserve power station were framed to cover both the initial installation and the first extension thereof. In addition, estimates were also prepared to show the cost of operating this plant in both stages on the basis that it was only to be used in the winter to assist the Shanan Power House.

Finally an estimate was prepared to show the probable effect on the Electricity Branch's finances. The estimate shows that when the extended steam plant is fully loaded, that is to say when the maximum demand on the system exceeds 40,000 kW. there will be a small net profit after paying all expenses and charges, including interest. The preparation of necessary designs, project estimates, plant specifications, etc., for the thermal station was accordingly taken up, in anticipation of Government approval to installation of the reserve power station, towards the end of the year under report.

CHAPTER II.

I.—ORGANISATION AND ESTABLISHMENT.

No important change in the organisation of this Branch took place up to the end of July, 1938, but early in August, 1938, a proposal was submitted to Government for :—

- (a) Re-naming the then temporary Construction Division as the 1st Construction Division and the creation of six new Construction Sub-Divisions under it.
- (b) Creation of an additional temporary Division called the 2nd Construction Division with seven new Construction Sub-Divisions under it.

Originally the temporary Construction Division was formed to undertake the construction of Sialkot-Gujranwala-Lyallpur Electric Project as well as the preparation of estimates and departmental construction of important extensions within the area of supply of the Branch, the cost of which exceeded Rs. 2,500 each. Subsequently it was found impossible for that Division to deal with the construction of the Sialkot-Gujranwala-Lyallpur Project in addition to the other duties. The creation of an additional temporary Division was, therefore, considered necessary. The proposal in question was approved by Government and accordingly the then Construction Division was renamed as the "1st Construction Division" from 1st December, 1938 and the 2nd Construction Division was formed on 16th January, 1939.

No new Sub-Divisions were, however, formed under these Divisions during the year under review. On the other hand the Jullundur (Construction) Sub-Division which already existed, was abolished on 1st December, 1938.

2. The following new operating Sub-Divisions were sanctioned on 14th January, 1939, to be formed some time during the year 1939-40 :—

- (1) Lahore East Rural Sub-Division.
- (2) Jullundur Suburban Sub-Division.

The following new Sub-Divisions were, however, actually formed with effect from the date noted against each :—

- (1) Dharamsala Sub-Division from 11th September, 1938, under the Pathankote Division.
- (2) Stores Sub-Division from 13th January, 1939, under the Lahore Division and subsequently placed under the 1st Construction Division from 16th January, 1939.
- (3) Substation and Transmission Line Sub-Division from 13th January, 1939, under the Lahore Division.

3. Some non-gazetted staff was sanctioned for the Head Office in order to assist the Stores Officer in the work of Central Purchase and Central Price Fixing of Stores in the Branch.

4. The Sales Sub-Section of the Commercial Section in the Head Office was transferred from the control of the Commercial Officer to that of the Deputy Chief Engineer with effect from 4th February, 1939.

5. The following important changes occurred amongst the gazetted staff of this Branch :—

- (a) The services of Mr. Shaukat Umar, Assistant Engineer (Senior Scale) were permanently placed at the disposal of the Government of the United Provinces with effect from 10th April, 1938.
- (b) Mr. S. M. Blagg, Line Construction Engineer, was appointed as officiating Executive Engineer, Construction Division, in addition to his own duties from 5th May, 1938, *vice* Mr. N. Thornton granted leave *ex-India*.
- (c) On the expiry of his leave *ex-India* Mr. E. G. Mackie resumed charge of the duties of Resident Engineer, Electricity Branch, Joginder-nagar, on 8th August, 1938.
- (d) Mr. N. Thornton, Executive Engineer, on return from leave was posted as officiating Deputy Chief Engineer, from 5th September, 1938.
- (e) Mr. V. F. Critchley, Deputy Chief Engineer, was appointed as Officer on Special Duty from 5th September, 1938.
- (f) Mr. Lachhman Singh, Assistant Engineer (Senior Scale), was appointed as officiating Executive Engineer, and posted to the Ludhiana Division from 6th September, 1938.
- (g) Mr. B. K. Sibou, Executive Engineer, Ludhiana Division, was transferred to the Amritsar Division from 15th September, 1938.
- (h) Mr. D. H. Robinson, Executive Engineer, Amritsar Division, was posted to the Construction Division from 23rd September, 1938 reverting Mr. Blagg, as Line Construction Engineer.

- (i) Mr. H. P. Thomas, C.I.E., Chief Engineer, proceeded on five months and seventeen days' leave from 28th October, 1938, afternoon, preparatory to the termination of his agreement, and Mr. V. F. Critchley was appointed as officiating Chief Engineer from the same date.
- (j) Mr. B. Sawney, Shift Engineer, was granted six months' leave without pay from 1st November, 1938, and was permitted to take up employment under the North-West Frontier Province Government.
- (k) On return from leave *ex-India* Mr. R. Heath resumed charge of his duties as Senior Substation Engineer on 1st December, 1938.
- (l) Mian Abdul Hamid, Assistant Engineer (Senior Scale) was appointed as officiating Executive Engineer and posted to the Pathankot Division from 31st December, 1938.
- (m) Mr. N. C. Gupta was transferred from the Pathankot Division and posted to the Lahore Division from 8th January, 1939.
- (n) Mr. S. A. Gadkary, Executive Engineer, Lahore Division, was posted to the 1st Construction Division from 16th January, 1939.
- (o) Mr. D. H. Robinson, Executive Engineer, 1st Construction Division, was posted to the 2nd Construction Division on its formation from 16th January, 1939.
- (p) Mr. S. M. Blagg, Line Construction Engineer, was placed under the 2nd Construction Division from 16th January, 1939.

6. Mr. Abdul Wahid was appointed as Assistant Engineer (Junior Scale) on 24th May, 1938.

7. The post of the Executive Engineer, Maintenance and Test, was made permanent and Mr. J. Turner was admitted to the Punjab Service of Engineers (Electricity Branch) on a permanent basis with effect from 25th August, 1938.

8. Mr. Gulab Singh, officiating Shift Engineer, reverted as Control Room Operator from 8th August, 1938, and was re-appointed as officiating Shift Engineer from 25th August, 1938.

9. Lala Sohan Lal was appointed as a Superintendent in the Head Office on 4th October, 1938, with a view to his ultimate appointment as Assistant Accounts Officer.

10. The personnel of the Gazetted Staff of the Branch at the close of the year was :—

Chief Engineer	..	..	Mr. V. F. Critchley.
Deputy Chief Engineer	..	..	Mr. N. Thornton.
Secretary to the Chief Engineer	..	..	Mr. S. A. Shah.
Commercial Officer	..	..	Mr. K. M. Subramaniam.
Sales Engineer	..	..	Mr. S. M. Hassan.
Projects Engineer	..	..	Mr. R. W. Thick.
Stores Officer	..	..	Mr. P. N. Mukerjee.
Line Construction Engineer	..	..	Mr. S. M. Blagg.
Executive Engineers		1.	Mr. S. A. Gadkary.
		2.	Mr. D. H. Robinson.
		3.	Mr. J. Turner.
		4.	Mr. B. K. Sibou.
		5.	Mr. N. C. Gupta.
		6.	Mr. K. C. Gandhi.
		7.	Mr. Lachhman Singh.
		8.	Mian Abdul Hamid
Resident Engineer	..	..	Mr. E. G. Mackie
Assistant Resident Engineer	..	..	Mr. M. F. Thomson.
Senior sub-Station Engineer	..	..	Mr. R. Heath.

Shift Engineers	1. Mr. T. S. Sodhi.
	2. Mr. H. C. Charters.
	3. Mr. G. C. Puri.
	4. Mr. Gulab Singh.
Head Works Engineer	S. Sant Singh.
Assistant Engineers (Senior Scale) ..	1. Mr. B. N. Channa.
	2. Mr. S. S. Kumar.
	3. Mr. L. H. Advani.
	4. Mr. Rahmat Elahi.
	5. Mr. A. Hamid.
	6. Mr. R. K. Nair.
	7. Mr. H. R. Bhatia.
	8. Mr. Nazir Ali.
	9. Mr. V. S. Mittal.
	10. Mr. D. R. Bedi.
	11. Mr. H. S. Uppal.
	12. Mr. H. B. Gupta.
	13. Mr. J. R. Handa.
	14. Mr. R. N. Chona.
	15. Mr. A. W. Siraj-ud-Din.
Assistant Engineers (Junior Scale) ..	1. Mr. S. A. Haq.
	2. Mr. Sadhu Singh.
	3. Mr. A. E. Teal.
	4. Mr. Iqbal Singh.
	5. Mr. Kehr Singh.
	6. Mr. M. A. G. Chaudhry.
	7. Mr. H. T. Johnstone.
	8. Mr. Mazhar-ul-Haq.
	9. Mr. Yashpal Sagar.
	10. Mr. D. C. Bhagat.
	11. Mr. O. P. Sethi.
	12. Mr. H. G. Dewan.
	13. Mr. A. S. Sud.
	14. Mian Muhammad Rafi.
	15. Mr. H. C. Sahgal.
	16. Mr. Harparshad.
	17. Mr. R. C. Talwar.
	18. Mr. Ram Parshad.
	19. Mr. Baldev Raj Nandrajog.
	20. Mr. L. D. Arora.
	21. Mr. R. N. Batra.
	22. Mr. Gurbachan Singh.
	23. Mr. Muhammad Hafiz-ur-Rahman.
	24. Mr. Abdul Wahid.
Resident Engineer (Renala Hydro-Electric Installation).	Mr. H. S. Sidhu.
Electrical and Mechanical Superintendent (Renala Hydro-Electric Installation).	Chaudhri Amolak Ram.

II.—GENERAL ADMINISTRATION.

1. Relations with the Mandi Durbar continued to be harmonious and cordial.

Relations with Mandi Durbar.

The area of land permanently acquired in the Mandi State for the purpose of the Uhl River Project was finally determined and a draft Supplementary Agreement covering the additional land permanently acquired over and above the limits laid down in the Agreement of 1925, was submitted to Government for approval. All the bills in respect of compensation for crops and lands were verified by the Deputy Commissioner, Kangra, except the one for compensation for 8 water mills, which is still pending with that Officer. The disputed points regarding the payment of the cost of trees on land permanently acquired having been settled, the pending bills of the Forest Department Mandi State were paid. The question of payment of interest on the amount of compensation payable to the Durbar in respect of the land taken up in the Mandi State is still under consideration with the Government and it is expected that the matter will be finally decided in the course of the next financial year.

Compensation for land and trees in Mandi State.

2. The acquisition proceedings in respect of the land under the towers in the Kangra District were finally completed. The notifications for acquisition of land under the raised and non-raised towers in the Amritsar District had to be revised with the help of Tahsildars and Kanungos concerned, as the previous notifications were found to be incorrect.

Land acquisition under towers of trunk and branch transmission lines.

The Standardization of Designs Committee continued to function throughout the year and a number of new designs instructions were issued. These designs and instructions have produced beneficial results.

Designs.

The control of expenditure has been satisfactory and a further elimination of irregularities in expenditure has been effected. With a view to economy in the acquisition and utilisation of stores, an improved system of control was adopted in the Head Office with very satisfactory results. In view of this although the area supplied by the Uhl River Scheme had been rapidly expanding since the commencement of operation and a large number of major construction works were in progress in the year 1938-39, it was found possible to reduce the reserve stock limit from 21 to 20 lakhs.

Control of expenditure.

III.—COMMERCIAL.

The Branch continued to be a member of the British Electrical Development Association, London, from whom a number of illustrated pamphlets on the use of electricity in factories were received and distributed among the leading factory owners in the towns served by the Scheme.

Membership of the Branch in the British Electrical Development Association.

CHAPTER III.—Construction, Operation and Maintenance.

I.—PRODUCTION.

The year opened with an output of 170,753 units per day which rose to 224,600 units per day, the maximum peak load being 13,400 kW. on 5th December, 1938, between 14-30 and 15-30 and on 22nd February, 1939, between 10-30 and 11-0 hours. The total number of units generated during the year was 68,616,700 out of which 1,043,702 units were consumed on works and locally, leaving a balance of 67,572,998 units transmitted through the 132 kV. system. The growth of load can be seen from the curve at Appendix "A".

The Plant and Equipment in this area continued to give every satisfaction during the year under report. It responded to all demands splendidly, thus further establishing its soundness and reliability. There was no shut-down and supply to the 132 kV. Mesh was continuous during the whole of the year. The 22 kV. Line from Jogindernagar to Mandi was maintained in an efficient manner. The only interruptions of supply of power to Mandi Town were three in number and in each of the three cases the Mandi Feeder tripped off due to overload, supply being restored after about 2 minutes.

The works carried out during the year comprised the maintenance of buildings, hydraulic works, and the operation of the powerhouse, workshops, Haulage-ways and Telephones. The work of exploration of the rock formation at the Ghog Dam Site started last year was completed successfully during the year.

II.—TRANSMISSION.

The 132 kV. Trunk Transmission Lines and Telephone Lines were maintained in a very satisfactory manner and gave no trouble. The fitting of vibration dampers to the whole of the 132 kV. Transmission System was completed. Both the 132 kV. circuits were thoroughly checked right from Shanan to Gurdaspur and the foundations of the retaining walls of the towers were maintained in good order.

The earthing system on the Trunk Transmission Lines was improved by fixing earth bonds in the standard way adopted by the Branch. Special mention may be made of the tower foundations in difficult mountainous positions where masonry works were constructed and cement slabs laid to prevent shifting of soil under the towers. The rain water under severe weather conditions had caused the earth under the foundations to wash away, whereby the slabs sunk in. The hollow spaces underneath these slabs were filled in with cement concrete and the slabs were thoroughly repaired to prevent further deterioration. Having found a satisfactory solution last year, after a good deal of experimenting with regard to the improvement of earth wire and earth pipe bonding, the remaining portion of the works pertaining to the earth wire bonding was completed during the year under review. Repairs were carried out to earth pipe bonds of Trunk and Branch Transmission Lines in cases where the clamps by means of which tower earthing strips were attached to earth pipes had become loose and were not forming good contact. The arrangement gave satisfactory results.

(a) The investigations made into the corrosion of transmission line tower legs due to the salts present in the ground have led to the conclusion that the best method of protection to adopt is to encase in concrete the portions of towers legs which are in the ground, and an estimate for the work on this basis is under preparation.

(b) The work of providing boundary pillars to demarcate the land underneath the towers belonging to the Branch so as to guard against encroachments, is in progress.

The 66 kV. Branch Transmission Lines gave efficient service throughout the year. Earth wire bonds and earth pipe bonds were fitted on the lines between Shahdara and Lyallpur. The operation of the 33 kV. line between Jullundur and Ludhiana improved considerably during the year and the number of interruptions due to bird trouble and other causes was far less than that in the previous year.

Two cases of theft of telephone conductors occurred on the Shalamar-Kasur and Shalamar-Shahdara Sections. The cases were reported to the police for investigation and it is satisfactory to note that the culprits have been located and a part of the stolen property has also been recovered.

The 11 kV. lines gave satisfactory service during the year and continuity of supply was maintained on the network except for a few occasional trippings on account of birdage. In the 11 kV. lines from Jullundur 132 kV. Substation to Kapurthala, Kartarpur and Dakoha, the poles were originally provided with individual earthing. As most of these poles are erected in dry sandy soil, their earth-resistance was found to be too high. To lower the earth resistance so as to reduce the possibility of accidents, it was decided to run continuous earth wire on these lines and this work was completed during the year. The 11 kV. line from Kangra to Dharamsala was thoroughly overhauled and the trippings were consequently greatly reduced. The bird vision guards were provided at places where the trouble due to birdage was encountered.

III.—GRID SUBSTATIONS.

The electrical equipment at both the 132 kV. sectionalising substations behaved satisfactorily. The meter equipment to measure the energy consumed on works has been installed both at Kangra and Pathankot.

(a) The switchgear at this substation was maintained in a good order. Oil in the tanks of two of the 132 kV. O.C.B.s was changed and the contacts were examined. Except for slight pitting

on the auxiliary contacts everything was found in order. Oil in the O. C. B. bushings was also changed. The other 132 kV. O. C. B.s are also being examined and their oil will be changed next year. In spite of as many as 15 trippings on one of the 11 kV. O. C. B.s the oil when tested was found to be in good condition. The contacts of all 11 kV. switchgear were examined and found to be satisfactory. Painting of 132/11 kV. Transformers was also completed. No important works were carried out except a small Foundry building added to the Divisional Workshop and some additions and alterations in the Store Building for extension of the workshop.

(b) The building of the Divisional Workshop has been extended and additional machinery installed. A foundry has been added in which small castings are made. Experimental work was carried out for galvanizing small fittings for services. In addition to repair work from the various Sub-Divisions, the manufacture of the following articles was carried out:—

- (1) Lead Tape.
- (2) G. I. Wire Eye Pieces.
- (3) Ebonite bushes.
- (4) Connectors for link boxes.
- (5) Copper tape.
- (6) 36" Bonds with big thimbles.
- (7) Multiple stay rods.
- (8) Gang Operating Switch.
- (9) Bird Sight Labels.

The electrical plant gave satisfactory service except that a fault on the Lahore Grid was not cleared by the Associated 11 kV. O. C. B. owing to a defect in the tripping mechanism of the breaker which resulted in failure of 11 kV. reactor connected in that circuit at Shalamar. During the year an extension has been made to the control room to accommodate a new 11 kV. switch board for controlling the following 11 kV. lines from Shalamar:—

- (a) Steel and General Mills duplicate feeder.
- (b) Broadcasting Station and Transmitter.

The electrical equipment remained in good order throughout the year. Additions were made to the 132 kV. Transformer truck so as to suit the 11/3.3 kV. transformer units installed for supply to Jullundur Electric Supply Co., so that these could also be transported on the same truck. A metering equipment was installed on the 400-Volt side of the station transformer so as to have a record of the energy supplied and used at the substation premises. The existing F. G. type relay on the 33 kV. control panel was replaced by a PBA type relay as the former was not giving proper discriminative operation.

Only one of the two 11 kV. feeders supplying the Jullundur Electric Supply Co.'s Substation, was provided, originally with a metering equipment. A meter was installed on the second feeder also so as to have a more complete record of the energy sent out to the Jullundur Electric Supply Co.'s Substation.

The electrical equipment in this substation was maintained in good condition and no trouble was experienced with any of the equipment during the year. The 11 kV. feeders Nos. 1 and 2 feeding the 11 kV. Ringmain to Ludhiana town are provided with current transformers of ratio 50/5 amperes. Due to the growth of load in Ludhiana it was found necessary to replace these by current transformers of higher ratio and two sets of current transformers of ratio 150/5 amperes were ordered. These have been received and are being installed.

The PBA type relay on the 33 kV. control panel has all the three elements suitable for overload protection. The middle element is being replaced by an earth fault relay.

IV.—LOCAL DISTRIBUTION.

The operation of the system was satisfactory and there was no breakdown.

Pathankot. The revenue from the local distribution rose from Rs. 26,191 to Rs. 28,080, thereby showing an increase of over 7 per cent on the receipts of the previous year for sale of power, with a corresponding increase in the number of consumers and connected load.

Gurdaspur and Dinanagar. The system worked efficiently and the supply remained continuous throughout the year. There was an appreciable increase in revenue assessed during the year as compared with the last year in respect of Gurdaspur Town.

Dharamsala. The maintenance work was quite satisfactory with the result that there was no major breakdown during the year under review. The revenue realized during the year under report has increased from Rs. 7,141 to Rs. 11,972 with a simultaneous increase in consumers from 268 general and 2 industrial to 347 general and 3 industrial, respectively.

Kangra. The construction work of the electrification of Kangra town was finished early in the year and the town was energised on 24th June, 1938. The number of consumers in this town is steadily increasing.

Sarna-Sujanpur-Madhopur Extension. This project was nearing completion when the year closed. The lines will be energised in the near future.

Dhariwal. The switchgear and the local distribution lines were maintained in a satisfactory manner. The following works of importance were carried out in the Sub-Division during the year under review :—

(i) *Khunda village.*—The undermentioned three Industrial Consumers were connected on to the Khunda Village Pole mounted sub-station :—

- (1) 15 B. H. P. Motor to drive flour mill of S. Amrik Singh.
- (2) 7 B. H. P. Motor to drive tube-well of S. Amrik Singh.
- (3) 2 B. H. P. tube-well for Gurdwara Burj Sahib with a general load of 920 watts.

(ii) *Local Distribution on the South of Upper Bari Doab Canal.*—Since the completion of Mains and Submains in this area 24 general consumers and 2 industrial consumers have been connected.

(iii) *Village Sohal.*—Running of mains and submains and erection of Pole mounted substation were completed and four general services were given. It is expected that in the year 1939-40 about 50 general consumers including a flour mill and a tube-well will be connected.

Batala. The local distribution net-work was maintained in good condition and the work of this Sub-Division as a whole progressed satisfactorily. The following new works were executed in this Sub-Division during the year under report :—

- (1) Islamabad substation and local distribution.
- (2) 3 Phase L. T. Overhead line from Starch Factory Substation to Shamsheer Khan tank.
- (3) 3 Phase L. T. Overhead line from Achli Gate to Mr. Khurshid Ahmed, Industrial Consumer.
- (4) Extension of Local Distribution towards Umarpura.
- (5) The 'G' type quarter along with 2 'D' type quarters.

The revenue for the year stood at Rs. 83,076 as against Rs. 77,608 for the previous year.

Amritsar Suburban Sub-Division. The substations and local distribution lines in charge of this Sub-Division were well maintained and there was no case of serious outage. The following important works were undertaken during the year under review :—

(i) Erection of an 11 kV. pole mounted substation for supply to Messrs. Attar Singh-Sunder Singh on Tarn Taran Line.

- (ii) Resagging of 11 kV. Northern Feeder of the Ringmain and installation of bird guards thereon.
- (iii) Resagging of Verka-Tarn Taran 11 kV. line except Verka Water Works Section and fixing bird guards on a portion thereof.
- (iv) Installation of a duplicate underground feeder between Power House Ring Main Substation and Municipal Committee's Power House.
- (v) Modification of the Relay panel of the above feeder and of the metering panel of the existing feeder to the Municipal Committee.
- (vi) Augmentation of the service line to Messrs. The Artificial Silk and Rayon Mills, Chheharta.

In addition to the above connections were given to 71 general and 21 industrial consumers during the year. The load connected during the year was 28 kW. general and 185 kW. industrial. The following additional lines were constructed :—

- (i) 11 kV. line and substation for supply to Khalsa College, Amritsar.
- (ii) 11 kV. line and substation for supply to Messrs. The Modern Textile Mills, Verka.
- (iii) 11 kV. line to Majitha.
- (iv) Work on the 11 kV. line to Khasa and augmentation of conductor of the Chhehrata feeder is being undertaken.

The total revenue assessed during the year was Rs. 5,14,234 as against Rs. 4,68,058 for the year 1937-38 showing an increase of Rs. 46,176.

At the close of the financial year there were 474 general and 34 industrial consumers and as compared with the previous year there has been an increase of 38 general consumers and 7 industrial with a corresponding increase of 7.76 kW. and 67.10 kW. of connected load, respectively. The load for bulk supply and street lighting remains the same.

During the year under review no important work of construction was carried out. Thirty-nine general and 1 industrial and 1 bulk consumer were connected up. The total revenue increased from Rs. 16,051 to Rs. 18,494.

The grid substation worked satisfactorily throughout the year. The maintenance work of the distribution lines and the street lighting was carried out efficiently. The total connected load at the end of the year was 754 kW. as against 718 kW. in 1937-38. The total number of general consumers rose from 1,040 to 1,104. The industrial consumers increased from 48 to 59. The revenue assessed during the year amounted to Rs. 75,581 which shows an increase of Rs. 9,732 over the last year figure. An extension from civil area substation to the premises of M. Abdul Khaliq was carried out.

The distribution lines including Hussainiwala Headworks, 11 kV. feeder were properly maintained during the year. The number of general consumers rose from 1,180 to 1,291 thereby showing an increase of 111 consumers. The industrial consumers went down from 64 to 63 but the connected load increased appreciably, i.e., from 549 kW. to 618.5 kW. The total connected load, however, rose from 999 kW. to 1,036 kW.

The work of maintenance was carried out efficiently and there was no interruption in the supply of energy. The No. of general consumers at the end of the year 1938-39 was 867 with a connected load of 328 kW. This means an increase of 143 consumers and 34 kW. of connected load, respectively, during the year. There has been no appreciable change either in the number of industrial consumers or their connected load. The Notified Area Committee, Tankanwali Basti, applied for an extension of street lighting for 50 lamps which was still under sanction when the year closed. The work of supplying power to Memorial Talkies and Club View Hotel could not be taken in hand owing to the fact that the land for erecting the proposed substation could not be acquired in time. It is expected that the arrangements

will be complete in the year 1939-40. This will secure an additional revenue of Rs. 500 per month.

The construction works for the supply of power to Military Engineering Supply Area, Arsenal and North-Western Railway is in hand. When completed it will result in an increase of Rs. 5,000 per mensem in the revenue of this Sub-Division.

The maintenance works proceeded normally. Trouble was experienced due to the bursting of cable joints on Moghalpura Power House 11 kV. feeder No. 1. There was, however, no interruption of supply since the load was taken on the feeder No. 2. All joints on feeders Nos. 1 and 2 were, however, re-made to guard against any future trouble. This area has developed a lot since the last year and is still developing. The Sub-Division serves an area of nearly 20 sq. miles and there are some big factories of connected load varying from 25 kVA. to 1,650 kVA. Supply line to Lakhodehr village was maintained in addition to the existing L. T. Lines. The extensions to Har Charan-Pura Dairy Farm and Lakhodehr village were carried out. The agreement for street lighting at Baghbanpura has been executed and the work was in progress, when the year closed.

The number of general consumers rose from 1,001 to 1,119 and the connected load from 512.34 to 546.328 kW. The industrial load increased from 1,866 kW. to 2,059 kW. as a result of increase in the number of industrial consumers by 23.

The revenue assessed during the year under report worked out to Rs. 31,841 per mensem as compared with Rs. 26,963 per mensem during 1937-38.

The main works carried out in this Sub-Division were as follows :—

- (a) Supply of power to F. C. College near Canal Bank, Ferozepore Road.
- (b) Supply of power to Daya Nand Technical Institute and Jivnana village.

Augmentation of Model Town Substation was taken in hand, completed and energised; similarly augmentation of L. T. Mains in Bhabra village were taken in hand and completed. The substation equipment worked quite satisfactorily.

The general consumers increased from 261 to 357. There was also an increase in the number of industrial consumers from 47 to 69. The total connected load increased from 1,407 kW. to 1,662 kW.

The total hours run of the generating Plant at Renala during the year 1938-39 was almost the same as during the previous year, but the pumps could not work all the time due to too many "Wara Bandies" (turns) on account of shortage of water in the canal. There were no major breakdowns during this year except the following :—

- (1) Damage to a 130 B. H. P. motor at H plot.
- (2) Breaking of two turbine gates in the Power House.
- (3) Bending of a lot of poles and breaking of wires on about 40 spans of 3.3 kV. line going from Renala to F plot pump house.

The cause of items Nos. 1 and 2 was long wear and tear and that of No. 3 heavy dust storms which uprooted several trees, which fell on the poles and lines.

The following special repairs were executed during this year :—

- (i) Rewinding of a 130 B. H. P. rotor in the local workshop at Renala.
- (ii) Replacement of 11 kV. single core V. I. R. cable at E, H and K substations.
- (iii) Repair of F plot, 3.3 kV. line and fixing of new stays.

The following repairs and other works were executed in our local workshop mostly during the closures of the canal :—

Power House.

- (i) Repair of two turbine gates.
- (ii) Repair of six neck bushes of Gunmetal.
- (iii) Overhauling of all the governors.
- (iv) Overhauling of 15 gates and spindles of the turbines.

Substations.

- (i) Overhauling of two 50 cusec pumps at E and two at H substations.
- (ii) Overhauling of two 10 cusec pumps at K, 2 at L and one at F substations.
- (iii) Repair of 2 impellers at E and H plots.

In addition to the above the bushes of No. 2 pump at K plot have been replaced by roller bearings as an experimental measure with a view to reduce the cost of grease consumption. The operation of this pump is being closely observed.

The total units generated during the year were 3,980,110 out of which 3,496,281 units were sold. The slight fall as compared with the last year's figures is due to shortage of water in the canal.

The distribution system was maintained in an efficient condition and there was no trouble either in the street lighting system or substation equipment. Major augmentations and additions in the local distribution system carried out during the year were as follows :—

- (a) The Central Substation at Miller Ganj and the 11 kV. lines outgoing therefrom to the Mill of Messrs. Krishna Flour Mills and the Miller Ganj Distribution Substation were completed and brought into use.
- (b) Supply to Messrs. Ghaki Mall-Hukam Chand's Mill was changed over from the old substation to the new Central Substation and the old substation at the premises of Messrs. Ghaki Mall-Hukam Chand, was dismantled.
- (c) Duplicate underground cable feeder from 'E' Substation to the Central Substation at Miller Ganj was completed and brought into use.
- (d) An 11 kV. underground cable feeder was laid from 'B' Substation to the Rama Roller Flour Mills and an 11/4 kV. Substation was built there for supply to the Mill, which has a connected load of 71 B. H. P.
- (e) An 11 kV. overhead line was run from 'A' Substation to the Ice Factory of Messrs. Sheo Parshad-Srikrishan Dass and an 11/4 kV. Substation was erected there for supply to the Ice Factory which has a connected load of 70 B. H. P. This substation, however, could not be energised before the close of the year as the consumer's installation was not yet ready.

The work of the new industrial and general service connections progressed satisfactorily during the year. Two hundred and seventy-two general and 56 industrial consumers were added during the year. The revenue increased from Rs. 2,21,266 to Rs. 3,04,458.

The number of general consumers rose from 237 to 326 during the year and that of industrial consumers from 25 to 26. The connected load including that of bulk supply to Phagwara increased from 526.8 kW. to 837.4 kW. and the total revenue of this Sub-Division, including bulk supply to Phagwara town rose from Rs. 32,329 to Rs. 42,568.

The street lighting and the local distribution system remained in good order and gave no trouble. At the close of the year, the number of consumers connected to the system at Jullundur including Jullundur-Suburban East and West and Kartarpur (excluding Bulk Supply to the Jullundur Electric Supply Company, and Kapurthala) were as below:—

	Jullundur (including Dakoha).	Kartarpur.
General consumers	28	298
Industrial consumers	8	9

The increase over the figures of the previous year was—

- (a) in case of general consumers:—9 consumers at Jullundur and 47 consumers at Kartarpur.
- (b) in case of industrial consumers:—2 consumers at Jullundur and 6 consumers at Kartarpur.

A new pole type substation and 11 kV. and 400 volt lines were constructed for supply to Byrang village near Jullundur Cantonment, and supply was switched on towards the close of the year.

1. This year is noted for the completion of the Lyallpur local distribution development scheme, designed to improve the voltage conditions and the continuity of supply to consumers. The 11 kV. line from 66 kV. substation to 'B' substation *via* Abdullapur *i.e.*, feeder No. 1 was completed, forming a second ring to the factory area. The conductors of feeders Nos. 3 and 4 were also changed, besides other modifications to the old Electrification System. This has improved the whole system thereby considerably minimising the chances of failure of supply. With the completion of the development scheme the load has increased and the working conditions have considerably improved. The ring main feeders are separated into two rings; feeders Nos. 1 and 2 forming the Factory area ring and feeders Nos. 3 and 4 the town supply ring. This arrangement has worked quite satisfactorily.

2. The Guru-Nanakpura substation was also energised during the year. The local distribution net work was extended to distant suburbs of this town such as Abdullapur, Gurdipsinghpura, Ranjitnagar, etc., where a large number of consumers are being connected.

3. The additional industrial loads of Messrs. Delhi Cloth Mills and Colony Flour Mills each of which necessitated the augmentation of their transformer capacities from 2,250 and 400 kVA. to 3,000 and 750 kVA. respectively, could not be connected during the year under report. Some of the equipment required had to be imported from abroad, and could not arrive in time to admit of the work being started during the year. The fourth 750 kVA. transformer for the Delhi Cloth Mills has since been installed and energised, while the work for giving augmented supply to Messrs. Colony Flour Mills is in hand.

4. There were a few failures of supply. Interruptions to the Delhi Cloth Mills about the close of the year were due to defects in the consumer's own installations. After these defects were rectified and the load conditions improved, the trippings also ceased to occur. The construction of 1 'G' type, 2 'B' type, 2 'C' type and 2 'D' type quarters was completed during the year besides converting the old Power House building into Stores.

5. The year under report is notable for an increase of Rs. 70,350 in revenue of this town bringing the total for the year to Rs. 4,49,248 as against Rs. 3,78,898 for the last year. Three hundred and one consumers (including industrial consumers) were connected during the year, which brought about an increase of 227 kW. in the connected load, thus making the total connected load 4,546 kW. at the end of the year.

Although this town is small and the financial condition of the residents in general is not very good, it has steadily grown in load. During the year under report 42 consumers were connected, with a corresponding increase of 20 kW. in connected load. Proposals with regard to extension of 11 kV. line for rural distribution for Irrigation Pumps and lighting load to canal quarters and Sub-Divisional Officer's office are being scrutinized with due consideration to revenue return expected, and if found justifiable, will be taken in hand. The position of the water supply to the 66 kV. substation in this town has not improved since the last year. The matter is under correspondence with the Irrigation Branch authorities who have not yet informed us if the irrigation water could be made available to us, and if so, on what conditions.

Considerable progress has been made in the way of securing more load and revenue. The following tube-wells were connected during the year near this town representing an increase in load of 25 kW. :—

1. Dhurkot on 11th May, 1938	6 kW.
2. Kot Labh Dass on 5th June, 1938	8 kW.
3. Bal-Lila on 7th September, 1938	11 kW.

With these tube-wells a large area of land extending over hundreds of acres, which before the advent of electric supply was barren, is now being irrigated to the advantage of the landowners.

The number of connections in this town has decreased and also the revenue due partly to the Irrigation Pumping Sets having ceased to function. The mains have been extended in the new abadi of Guru-Nanakpura and the prospective consumers are signing up for connections.

Being the District Headquarters, this town promises a good deal of extension of load. During the year there has been an increase in load of 81 kW. over the figures of the year 1937-38. During the year three more 11 kV. substations, viz., Old town, Mohalla Ramgarh and Factory area were completed and put into commission. The existing office not being commodious enough for our requirements land for a local office building has since been acquired.

V.—OTHER PROJECTS.

1. Government orders on this project were awaited at the close of the previous year. They were received at the beginning of the year under report. It was considered that if the prospective irrigation pumping loads that were originally included in the project were to be omitted, the project would not be justified. Accordingly the scheme was re-examined from this point of view and revised where necessary. On re-submission Government approved the revised project which will be put into construction in due course.

2. Like the foregoing this project was also considered by Government to be unjustified if the prospective Irrigation pumping loads were omitted from consideration. On re-examination, however, it is found that this would not be the case. Government subsequently approved this project for construction.

3. The reports and estimates relating to the marginally-noted subsidiaries of this main project were completed in the course of the year under report. Of these subsidiaries, the Khangah Dogran project was submitted to Government in advance since this place can be supplied from the existing Chuharkana Substation. Government approved of the Khangah Dogran project, and its construction is to be taken up shortly. The projects relating to the remaining subsidiaries were completed before the end of the year under report; but they had not been submitted to Government.

The Phillaur West Rural Project.

The Jullundur North Rural Project.

The Sialkot-Gujranwala-Lyallpur Project.

1. Wazirabad-cum-Nizamabad.
2. Sangla Hill.
3. Chak Jhumra.
4. Khangah Dogran.
5. Daska.
6. Chiniot.
7. Marh Balochan.
8. Khurrianwala.
9. Kamoke.

4. The main project and the group of ten marginally-noted subsidiary

Jullundur-Ludhiana-Ferozepore 66 kV. Link Project and subsidiary projects.

1. Ludhiana-Khanna-33 kV. Branch Transmission Line.
2. Samrala Tahsil.
3. Ludhiana East Rural.
4. Ludhiana South Rural.
5. Ludhiana West Rural.
6. Jagraon-cum-Jagraon South Rural.
7. Jagraon West Rural.
8. Moga East Rural.
9. Moga North Rural.
10. Moga West Rural.

projects were entirely completed during the course of the year under report. However, it was decided to delay their submission owing to the power situation. The main project provides for the construction of a 66 kV. transmission line extending from Jullundur *via* Ludhiana to Ferozepore. The existing substations at Jullundur, Goraya, Ludhiana and Ferozepore are to be modified to suit the ring main conditions that this project introduces. Moreover Jullundur and Ludhiana Substations will both be enlarged to suit the new conditions. Three new Grid Substations are being provided at Moga, Jagraon and Khanna, respectively. The ten marginally-noted subsidiary projects cater for seven towns and over seventy villages located exclusively in the districts of Ludhiana and Ferozepore, respectively. The following are the new towns that are included :—

- | | |
|-------------|--------------|
| 1. Moga. | 4. Dharmkot. |
| 2. Jagraon. | 5. Raikot. |
| 3. Zira. | 6. Khanna. |
| 7. Samrala. | |

5. This scheme was prepared for the purpose of extending the Amritsar

The Khasa Electric Supply Project.

Suburban 11 kV. net work from Chheharta to Khasa to cater for new industrial loads that are appearing in this locality. The project was approved by Government in

October, 1938, and construction was commenced before the close of the year.

6. The estimates and draft report for this project were prepared during

The Shahdara Tehsil Electric Supply Project.

the course of the year under report. The project is intended to cater for the area that is now served by the Lahore Electric Supply Company, Limited, under the terms of

the Shahdara Electric License, 1930. In addition energy will also be made available at Sharakpur and Muridke, respectively, as well as at several villages on the way to both of these places. However, this project has not been submitted to Government because since the date of its completion various new factors have arisen that affect the issues involved. Consequently, it may be necessary to revise the whole of this project.

7. The preparation of designs and estimates was started for this scheme

The Manjha Electric Project.

which provides *inter alia* for a 33 kV. Transmission line originating at Verka (Amritsar) to supply new 33/11 kV. Substations at Jandiala Guru and Naushehra Panwan,

respectively. From these two new Grid Substations 11 kV. lines will radiate to supply Patti, Kairon, Fatehabad, Khadur Sahib, Jandiala Guru town, Tarsikka, Udho Nangal, Butari and Beas together with many villages *en route*. By the close of the year under report the estimates relating to these projects were considerably advanced. Further progress, however, must necessarily depend on the progress made with the thermal scheme.

VI.—SURVEYS AND LOAD CANVASSING.

The following topographical surveys were completed during the year under report :—

(a) *Route Surveys*—

1. For 33 kV. line from Ludhiana to Khanna *via* Samrala.
2. An additional survey for the Sialkot-Gujranwala-Lyallpur Project from Chuharkana direct to Sangla Hill.
3. For the 66 kV. line from Lyallpur to Sargodha *via* Chiniot.

(b) *Town Surveys for—*

Zira, Raja Sansi, Samrala, Jagraon, Raipur, Raikot, Gujranwala, Dhelon, Shahdara, Sharakpur, Chiniot, Lallian, Marh Balochan, Khurrianwala, Jalalpur Jattan, Kunjah, Shadiwal and Lalamusa, respectively.

(c) Surveys near Dhariwal Grid Substation.

(d) Surveys near Shalamar and Verka Substations for alternative sites for the above-mentioned Thermal Reserve Power Station.

The following topographical surveys were in progress at the end of the year under report :—

(a) Survey from Wazirabad extending to Gujrat, Jalalpur Jattan, Lalamusa, and other places in Gujrat District.

(b) Surveys near Shahdara in connection with the Shahdara Tehsil electrification project.

The following places were canvassed for load :—

Load Surveys.

(a) About 87 villages situated in Ferozepore District within a radius of 12 miles of Ferozepore.

(b) Dhamke, Burj Attari, Rana Bhati, Faizpur Khurd, Bucheke, Faizabad, Faizpur Kalan and several other villages near Sharakpur.

(c) The industrial load of existing power plants situated in about 40 villages in Tehsils Pasrur, Sialkot, Narowal and Daska were recorded together with other particulars.

(d) Khurrianwala and two other villages nearby.

(e) Raja Sansi and villages *en route* from Amritsar.

(f) About 80 villages in Tehsils Hoshiarpur and Garh Shankar.

(g) Conditions in about 30 villages lying round Wazirabad, Daska and Sialkot were investigated with a view to preparing supplementary projects for supply from the Sialkot-Gujranwala-Lyallpur Project.

(h) Conditions in 117 villages situated in Shahpur District and the western part of Gujrat were also investigated. This work was still in hand when the year under report closed.

VII.—MAINTENANCE AND TEST.

During the year 3,191 meters were tested and despatched to the Sub-Divisions throughout the Branch. This number includes 2,471 single phase and three phase stock meters and 720 single phase and three phase T. & P. meters returned from the Sub-Divisions for repairs and calibration. The relays in all the Main and Branch Line Substations were tested periodically as well as those in the ring main distribution substations at Ludhiana, Lyallpur, Kasur, Ferozepore and Amritsar. These relays were also cleaned and adjusted whenever found necessary. Numerous new relays were also erected throughout the Branch owing to modifications or extensions to the system.

Tests on the insulating oils, earth connections, batteries and station metering equipments in the 132 kV., 66 kV. and 33 kV. substations were made periodically 108—11 kV. type R. D. fuses were rewired in the Laboratory. Before despatch these fuses are tested on the Wheatstone bridge to check their resistance and the figures obtained are compared with those supplied by the manufacturers. Any rewired fuse, the resistance of which is above or below the manufacturers' rejection limits, is again rewired.

Thirty-eight Silica Gel Breathers passed through the Laboratory for re-conditioning and repair. A 25 kVa. 11,000/400 Volts transformer damaged through a fall was renovated, the renovation involving complete dismantling of the core and replacing the winding on the centre limb by a new winding received from the

Insulating Oils, Earths,
Fuses, etc.

Silica Gel Breathers and
Miscellaneous.

manufacturers. Inspection of windings and testing of insulating oils in all new transformers received from suppliers at Central Stores, Shalamar, was carried out. The new supply of insulating oil as well as oil for issue with switchgear were tested in the Laboratory.

VIII.—STORES ORGANIZATIONS.

Central Purchasing of Stores. The proposals for introducing in this Branch the scheme of central purchasing of stores which had been submitted to the Punjab Government in November, 1937, were accepted by Government during the year under review. The scheme will be put into operation in the ensuing year, as soon as the staff sanctioned for the purpose is recruited, and the necessary instructions formulated. It is anticipated that with the operation of the central purchasing system it will be possible to effect much greater economy in the acquisition of stores and reduce the reserve stock limit still further.

Standardization of Stores Issue Rates for all Divisions of the Branch. The working details of the system which were forwarded to the Accountant-General, Punjab, in March, 1938, were approved by him in November, 1938. The staff for this work was appointed in March, 1939. Detailed instructions to the subordinate offices to work the system were issued and the work was actually taken in hand in March, 1939. The first *Stores Price List* is expected to be published in the early part of the ensuing financial year.

Physical Verification of Stores of the Branch. It had been observed during the last few years that the work of physical verification of stores in the various Depôts of the Branch by the Store-keepers and the officers in charge was not being performed in a satisfactory manner as required under the rules. The main reason for this was the large magnitude and complex nature of the stores consumed by the Branch. To overcome this difficulty, it was proposed to appoint Stock Verifiers working under the control of the Head Office and the Punjab Government was requested to sanction the post of one Stock Verifier as an experimental measure. The post was sanctioned and the Stock Verifier was appointed by the end of August, 1938. The stores of the Central Depôt at Shalamar which is the largest in the Branch, were verified by him during the year under report. The verification of stores in the Verka Depôt which is the second largest, was in progress when the year closed.

Detailed rules for conducting the physical verification of stores were drafted on the basis of the procedure obtaining in the North-Western Railway and were just ready for submission to the Accountant-General, Punjab, for his approval, when the year closed.

Disposal of surplus stores. Steady progress was maintained in the disposal of surplus stores which had accumulated in the course of construction of the Uhl River Hydro-Electric Project. A public auction was held at Jogindernagar in the month of March, 1939.

CHAPTER IV.—Commercial.

I.—FINANCE.

(A) *Completion Report of the Uhl River Hydro-Electric Scheme (including the Local Distribution Schemes).*

The comments of the Accountant-General, Punjab, on the report which was submitted to him towards the end of the previous year, were received in April, 1938. The discrepancies pointed out by the Accountant-General were reconciled and the revised report re-submitted to him in December, 1938, for recording the necessary certificate. A copy of the financial forecast accompanying

the revised Completion Report is attached as Appendix 'B.' The salient features of the forecast are recapitulated below:—

(a) Estimated Capital on 31st March, 1946.

				Rs.
(i) Works	..	..	..	5,99,36,752
(ii) Establishment	..	..	..	1,25,19,704
(iii) Tools and Plant	..	..	..	30,16,530
(iv) Suspense	..	..	..	7,00,000
(v) Total of items (i) to (iv)				7,61,72,986
(vi) Depreciation Reserve Fund	..	..	80,54,717	
(vii) Receipts on Capital Account	..	..	6,92,940	
Total (items vi + vii)				87,47,657
(viii) Net cost (excluding indirect charges)	..	..	..	6,74,25,329
(ix) Indirect charges	..	..	..	7,64,052
(x) Total Capital Outlay				6,81,89,381

(b) Gross and Net Revenue for the year 1945-46 and up to the end of the year 1945-46.

Item No.	Particulars.	For the year 1945-46.		From 1st April, 1933, to 31st March, 1946.	
		Rs.	Rs.	Rs.	Rs.
I	Gross Revenue .. ..	..	76,00,000	..	5,10,25,091
II	Annual charges:—				
	Maintenance and Petty Expenses ..	4,47,109		44,44,728	
	Tools and Plant	13,413		1,29,568	
	Share of Establishment	11,00,000		76,24,709	
	Audit and Accounts Charges	4,471		44,445	
	Depreciation	11,68,624		88,84,717	
			27,33,617		2,11,28,167
III	Net Revenue .. ..	..	48,66,383	..	2,98,96,924
IV	Interest .. ..	..	27,07,911	..	4,31,57,006
V	Net gain or loss after meeting interest	..	(Gain) 21,58,472	..	1,32,60,082
VI	Capital outlay on 31st March, 1946 (Item (a) (x) above).	..	..	..	(Loss) 6,81,89,381
VII	Capital invested to end of the year 1945-46. (Item (V) plus Item (VI).)	..	..	..	8,14,49,463
VIII	Net revenue for the year 1945-46 ..	..	..	..	48,66,383
IX	Percentage of net revenue to the Capital invested.	..	..	..	5·9,747, say 6 %
X	Prescribed rate of interest as test of productivity.	..	..	..	5·75
XI	Classification of Project .. ..	..	..	..	Productive.

After the revised Completion Report had been submitted to the Accountant-General, Punjab, it was considered necessary to augment the generating capacity of the Uhl River Project by thermal generation. The Accountant-General, Punjab, was accordingly asked towards the end of January, 1939, to hold in abeyance the verification of the report which required revision.

Further revision of the report was awaiting the decision of the Punjab Government on the question of the proposed thermal plant, when the year closed.

(B) Interest (Rs. 5,39,325) on interest capitalized during the first few years of the construction of the Uhl River Project.

It has not been possible for the Punjab Government to write off during the year the interest charged to the Branch on account of capitalized interest to the Provincial Revenues on account of financial stringency. It is, however, expected that when the financial position of the Province improves, this interest will be charged off to the Provincial Revenues.

II.—ACCOUNTS.

1. The draft of the revised accounts classification proposed by this Branch (which had generally been approved by the Accountant-General, Punjab, towards the end of the previous year) was with slight modifications submitted to the Punjab Government as well as to the Accountant-General, Punjab, during November, 1938, for obtaining the approval of the competent authority. Some minor points were, however, again raised by the Accountant-General, Punjab, which were receiving attention when the year closed.

Revision of the Accounts Classification applicable to the Electricity Branch.

2. Based on the proposals made by one of the officers of the Accountant-General's office in consultation with this Branch (which had generally been approved by the Accountant-General, Punjab, towards the end of the previous year) a comprehensive draft of the revised rules for the distribution of Establishment and Tools & Plant charges applicable to the Electricity Branch was prepared, but it was not possible to submit the same to Government during the year under review.

Rules for the distribution of establishment and Tools & Plant Charges applicable to the Electricity Branch.

3. The question of preparing the annual accounts of the Branch in a commercial form including a Balance Sheet has been under the consideration of the Punjab Government for a long time. The form of the commercial accounts was drawn up last year in consultation with a representative of the Accountant-General's Office and generally approved by the Accountant-General. The office copies of the monthly accounts and other information required for maintaining control accounts were obtained from the various Divisions. Regular journals and ledgers were maintained and the first set of accounts on a commercial form for the year 1973-38 was prepared during the year under review and submitted to the Punjab Government and the Accountant-General, Punjab, in October, 1938. Copies of the Capital Account, Revenue Account, Net Revenue Account, and Balance Sheet for the Branch as a whole is attached as Appendix 'C.' Government orders on certain points raised by this Branch in connection with these accounts were awaited.

Maintenance of Control Accounts and preparation of annual accounts in commercial form.

4. The unsuitability of the present and proposed methods of distributing the annual costs of the main scheme equally over all classes of consumers (Local Distribution and Bulk) was further explained to the Accountant-General, Punjab. The Accountant-General, Punjab, however, suggested that it would be better to distribute the total cost of the main scheme *pro rata* on the basis of units consumed by each scheme instead of adopting any arbitrary or artificial method of distribution, as after all the Uhl River Project (including the various local distribution and Bulk Supply Schemes) was only one project and the accounts of the different parts had to be kept separately simply for the sake of administrative control. It has accordingly been agreed that the method of *pro rata* distribution of these costs would be adopted in the Administrative Accounts prepared by the Accountant-General (after the revised accounts classification has been approved). The method of exhibiting these costs in the commercial accounts suitable for the purpose of administrative control is still under consideration.

Basis for distributing the annual costs of the Main Scheme (Working Expenses Establishment, Indirect Charges, Depreciation and Interest) of each year over Local Distribution and Bulk Supply Schemes.

5. The proposals regarding the abolition of the existing abstracts of receipts and issues and substituting therefor a value ledger submitted by the Branch to the Accountant-General, Punjab, towards the close of the last year were again discussed during May, 1938, by the Commercial Officer of the Branch with a

Stores Accounting System.

representative of the Accountant-General's Office. The latter was of the opinion that there would be no audit objection to the priced stores ledger being introduced provided the Bin Cards (*i.e.*, Stock Cards) were continued in addition to the ledger. The Assistant Accounts Officer of the Branch was, therefore, deputed to examine this proposal in consultation with the Executive Engineers, Amritsar and Lahore Divisions, in July, 1938. As a result of his discussions it was decided to give a trial to the proposal of the Audit Department. The system was modified accordingly and re-submitted to the Accountant-General, Punjab, for his approval before trial in one of the Divisions for a period of 6 to 12 months as an experimental measure. Further particulars were called for by the Accountant-General, Punjab, which were duly furnished in February, 1939. The final views of the Accountant-General were still awaited when the year closed.

6. In October, 1938, the Punjab Government finally approved the introduction of the Report on the Branch, subject to some of the modifications, which had already been made to the Report from time to time and also subject to the following reservations :—

The Sukh Dyal-Macmillan Report.

- (a) The total revenue figure in the Government accounts should be a cash one as opposed to the system prescribed in the Report whereby all assessments were treated as revenue and the recoveries controlled through suspense head, and
- (b) Interest should not be allowed to the Branch by the Punjab Government on the amount of Depreciation reserve, although recommended in the Report.

The defects in the practical working of the items noted at (a) and the hardship involved in the decision noted in item (b) were duly pointed out to the Punjab Government in February, 1939. In connection with item (b) it was also brought to the notice of the Punjab Government that their decision was not in accordance with the practice followed in the Hydro-Electric Department, Madras, where the interest earned by the depreciation reserve fund was credited to revenue. Final orders of Government on these issues were not received before the close of the year.

7. The proposal of the Branch to introduce a Card Ledger for the consumers' accounts instead of the existing consumers' ledger in the form of a register was approved by the Punjab Government. The question of the actual introduction is under further examination.

Consumers' Accounting System.

8. The four audit parties continued the work of perpetual audit of the consumers' accounts. Opportunity was also taken to examine the discrepancies in the central stores at Shalamar.

Perpetual Audit of Consumers' Accounts.

A serious case of embezzlement in the Pathankot Sub-Division came to light, which was investigated thoroughly on the spot by the Assistant Accounts Officer of the Branch and a detailed report submitted to Government. With a view to minimising the chances of the type of embezzlement committed at Pathankot, the form of the consumer's bill (which also provided for a receipt) was amended, separating the receipt portion therefrom.

III.—GENERAL.

1. At a meeting held on the 10th January, 1936, at which the then Accountant-General, Punjab (Mr. Bhandari), Deputy Accountant-General (Mr. Vaneswar), Secretary, Finance Department (Mr. Oglivie), Chief Engineer (Mr. Thomas) and the Commercial Officer (Mr. Macmillan) were present.

Compilation of the Manual of Orders for the Electricity Branch.

It was *inter alia* decided that the various instructions and orders issued by the Branch from time to time should be incorporated in a Manual to be compiled by the Branch. The Punjab Government sanctioned the post of an Assistant for this duty and the work was duly started in September, 1938. Although considerable progress was made in drafting the Manual, it was not possible to complete the compilation due to the heavy amount of work involved. The duration of the post had, therefore, to be extended for a further period of four months.

2. The revision of the Punjab Public Works Department Code was undertaken in the Irrigation Branch who referred the proposed draft of the paragraphs in the Code, from time to time, for the comments of this Branch. These drafts were duly examined and scrutinized and the views of this Branch together with amendments required from the Electricity Branch point of view were communicated to the Irrigation Branch.

3. The rules were approved by the Punjab Government in March, 1939. The question of the application of these rules to the Officers employed in the Branch before 1st May, 1938, *i.e.*, the date from which the rules came into force is still under consideration.

Revision of the Punjab Public Works Department Code.

Rules for the Departmental Accounts Examination prescribed for Engineering Officers employed in the Branch.

IV.—STATISTICS.

1. The following statements are attached to the Report:—

- A statement showing the average cost of generation for the years 1935-36, 1936-37 and 1937-38. (Appendix D).
- A statement showing the salient financial results of the Branch for the years 1935-36, 1936-37 and 1937-38. (Appendix E).
- Commercial statistics of the Local Distribution System for the years 1936-37, 1937-38 and 1938-39. (Appendix F).
- Analysis of units sold and revenue obtained through Local Distribution Schemes and special consumers. (Appendix G).

2. The following table gives the average cost of generation only, overall costs per unit generated and sold and average return of gross revenue per unit generated and sold for the years 1935-36, 1936-37 and 1937-38.

Item No.	Particulars.	1937-38.	1936-37.	1935-36.
I	Units generated	60,846,240	51,526,070	41,274,070
II	Units sold—			
	(a) Bulk supplies	20,905,913	19,321,560	16,376,002
	(b) Local Distribution Systems	20,896,291	17,042,671	10,888,425
	(c) Total	41,802,204	36,364,231	27,264,427
III	Generation costs—	Rs.	Rs.	Rs.
	(a) Working expenses including local establishment and share of direction establishment.	1,95,596	1,78,029	1,53,563
	(b) Interest	9,93,520	12,39,158	12,86,916
	(c) Total	11,89,116	14,17,187	14,40,479
IV	Overall costs—			
	(a) Working expenses (including share of establishment) and audit charges	5,90,605	5,09,989	4,75,070
	(b) Interest	25,64,479	28,48,117	29,14,047
	(c) Total	31,55,084	33,58,106	33,89,117
V	Gross Revenue—			
	(a) Bulk supplies	8,03,164	6,71,291	5,66,348
	(b) Local Distribution Schemes	15,15,210	12,85,387	8,62,357
	(c) Total	23,18,374	19,56,678	14,28,705
		Pies.	Pies.	Pies.
VI	Average cost of generation per unit generated.	3.753	5.281	6.747
VII	Average cost of generation per unit delivered to 132 kV. Grid.	3.854	5.440	6.923
VIII	Overall cost per unit generated	9.956	12.513	15.617
IX	Overall cost per unit sold	14.491	17.731	23.643
X	Average return of gross revenue per unit generated.	7.320	7.290	6.518
XI	Average return of gross revenue per unit sold.	10.649	10.331	9.867
XII	Deficit per unit generated	2.636	5.223	9.099
XIII	Deficit per unit sold	3.842	7.400	13.776

3. It will be seen at a glance from the above table that—

- (a) Units generated and units sold are increasing from year to year,
- (b) generation costs and overall costs are decreasing gradually,
- (c) gross revenue is improving steadily,
- (d) average cost of generation per unit generated and sold is coming down,
- (e) overall cost per unit generated and sold is also coming down,
- (f) average return of gross revenue is getting better and better, and
- (g) deficit per unit generated and sold has appreciably decreased.

4. The decrease in the generation costs and overall costs is due to the decrease in the interest charges as a result of reduction in the rate of interest.

5. The decrease in the average cost of generation and overall cost per unit generated and sold is due to the decrease in the amount of interest and increase in the output of units generated and sold.

6. The percentage increase in the number of units generated, sold and gross revenue for the year 1937-38 over the year 1936-37 is 18, 15 and 18, respectively.

7. The following are the inferences from the analysis of the commercial statistics of the Local Distribution Schemes, for the previous 3 years (1936-37, 1937-38 and 1938-39) (Appendix F) :—

- (a) Average connected load for general supply is half a kW. per consumer.
- (b) Average number of units consumed by a general consumer is 130 per annum.
- (c) Average revenue yielded by a general consumer is Rs. 34 per annum.
- (d) Average revenue per unit sold for general supply is 52 pies. The return for the year 1938-39 is 46 pies.
- (e) The approximate percentages of $\frac{\text{units sold}}{\text{revenue}}$ for general, industrial,

public lighting and bulk supply to the $\frac{\text{total units}}{\text{total revenue}}$ for local distribution schemes only (*i.e.*, excluding special consumers fed direct from the grid) are $\frac{8, 89, 2 \text{ and } 1}{32, 63, 4 \text{ and } 1}$ respectively.

8. Analysis of units sold and revenue obtained through Local Distribution Schemes and special consumers (Appendix G) shows :—

Item No.	Particulars.	1938-39.	1937-38.	1936-37.
I	Percentage of units sold in local distribution schemes to total units sold.	53	50	47
II	Percentage of units sold to special consumers to total units sold.	47	50	53
III	Percentage of revenue for local distribution schemes to total revenue.	69	66	66
IV	Percentage of revenue from special consumers to total revenue.	31	34	34
		PIES.	PIES.	PIES.
V	Average return of revenue per unit sold from local distribution schemes.	12.7	13.9	14.5
VI	Average return of revenue per unit sold to special consumers.	6.4	7.2	6.4
VII	Overall average return of revenue per unit sold.	9.7	10.5	10.2

9. The percentage of total establishment charges to the gross revenue of the Branch for the previous few years compares as under :—

Item No.	Year.	Gross revenue.	Total establishment charges.	Percentage of establishment to revenue.
1	1934-35	Rs. (Lakhs.) 9.22	Rs. (Lakhs.) 7.35	79.71
2	1935-36	14.28	8.48	59.38
3	1936-37	19.56	9.18	46.93
4	1937-38	23.18	10.23	44.15
5	1938-39	28.00	10.99 (figure of final modified grant.)	39.00

V.—SALES.

A.—New Business.

(i) The Branch has been making steady progress in connecting up new towns and villages. In addition to the towns mentioned in the last year's report supply was commenced to the following towns and villages on the dates noted against each :—

1. Kangra 24th June, 1938.
2. Khunda village near Dhariwal .. 13th May, 1938.
3. Sohal village near Dhariwal .. 18th January, 1939.
4. Karol Tube-well Scheme near Mahmud buti 8th February, 1939.
(Lahore).

(ii) Agreements for the supply of electrical energy for public lighting were executed with the following Local Bodies on the dates noted against each :—

Supply of power to
Local Bodies for Street
Lighting.

- Kangra Small Town Committee .. 16th November, 1938.
Baghbanpura-cum-Bhogiwal .. 24th February, 1939.

In addition to the above, supplementary agreements for public lighting were executed with the Municipal Committees of Tarn Taran, Sheikhpura and Gurdaspur.

(iii) The supplementary agreement under correspondence last year was completed and executed on the 17th of November, 1938.

Supply to Kapurthala
State at Kapurthala.

(iv) A supplementary agreement for raising the maximum demand at Phagwara from 200 kW. to 500 kW. was completed and executed on the 14th day of September, 1938. Supply to industrial consumers, each with demands exceeding 70 kW. was commenced in anticipation of the necessary supplementary agreement which could not, however, be completed and executed during the year under report.

Supply to Kapurthala
State at Phagwara.

(v) A supplementary agreement for an additional load of 500 kW. which was under correspondence last year was completed and executed on 22nd March, 1939, thus raising the maximum demand of the Mill from 1,500 kW. to 2,000 kW.

Supply to the Delhi
Cloth and General Mills,
Lyallpur.

(vi) It was decided by Government that the Irrigation Branch of the Public Works Department should be charged at Tariff D-1 for the electrical energy to be supplied to them in their Madhopur Colony for street lighting purposes. The memorandum of terms between the Irrigation and this Branch could not, however, be executed before the close of the year under report.

Supply of power to the
Irrigation Branch for Street
Lighting at Madhopur.

(vii) The terms on which supply of power to the North-Western Railway at Moghalpura could be continued after expiry of the first five years, have been under negotiations between the Railway and the Branch. A supplementary Memorandum of Terms was prepared by the Branch and submitted to the Railway during February, 1939, for their formal approval. The final acceptance of the Railway was awaited when the year closed.

Supply of power to the
North-Western Railway at
Moghalpura.

(viii) The question of supplying electric energy up to the extent of about 2,000 kW. to the proposed Cotton Mill at Pattoki was considered. No final decision could, however, be reached during the year under report.

Supply of power to the proposed Cotton Mill at Pattoki.

(ix) A number of connections were given during the year for pumps required for irrigation purposes. Schemes were also sanctioned for supplying rural load in the Tahsils of Julundur, Nakodar, Phillaur, Lahore and in areas adjacent to Tam Taran, Ajnala and Sheikhpura. The construction of some of these schemes has now been started and the others will be undertaken in due course.

Supply of power for Agricultural purposes.

Supply to the Karol Tube-well Scheme near Shalamar (Lahore) was commenced in February, 1939.

(x) Power was also supplied to certain industrial consumers for the industries noted below :—

Supply of power to special industries.

1. ASCU treatment of Wood Poles, Amritsar.
2. Dry Ice Factory, Shalamar (Lahore).
3. The Paper Products Factory, Shalamar (Lahore).
4. The Indian Celluloid Works, Model Town (Lahore).

B.—Sales, Organization and Statistics.

(i) A consolidated statement showing particulars of the load applied for, approved and connected in each Local Distribution Scheme was submitted to Government monthly together with the relevant load growth diagrams. A copy of this statement up to the end of 31st March, 1939, together with the chart for the whole scheme is attached hereto (Appendices "H" and "I"). The chart shows the steady progress from month to month of the load applied for and connected for the whole scheme. Salient features of the load are stated below :—

Item No.	Particulars.	As on 31st March, 1938.	As on 31st March, 1939.
1	<i>Number of applications received—</i>		
	General	15,271	17,203
	Industrial	1,025	1,191
	Bulk	18	17
	Public Lighting	19	20
	Total	16,333	18,431
2	<i>Connected load applied for in kW.—</i>		
	General	8,524	8,751
	Industrial	16,052	17,573
	Bulk	9,483	9,758
	Public Lighting	219	219
	Total	34,278	36,301
3	<i>Number of consumers connected—</i>		
	General	14,153	16,289
	Industrial	857	1,046
	Bulk	13	15
	Public Lighting	19	19
	Total	15,042	17,369
4	<i>Load connected (kW).—</i>		
	General	7,409	8,180
	Industrial	13,373	15,029
	Bulk	9,391	9,635
	Public Lighting	213	212
	Total	30,386	33,056

The above comparative statement shows that during the year under report the number of consumers increased by 2,327. The total load applied for stood at 36,301 kW. on 31st March, 1939.

(ii) The revenue assessed during the year under report amounted to Rs. 27,99,837 and Rs. 1,99,518 (total Rs. 29,99,355), for the Uhl River Project and the Renala Hydro-Electric Installation, respectively, against Rs. 22,62,702 and Rs. 2,06,611 (total Rs. 24,59,313) for the year ending 31st March, 1938. A statement showing details by each town is attached hereto (Appendix "J").

Revenue.

A.—Tariffs and Conditions of Supply.

(a) The Punjab Government approved the following reductions in the service rental in respect of general and industrial consumers during the year under report :—

- (i) No service rental to be charged from general consumers whose service line is 100 feet or less in length.
- (ii) One hundred feet of service line to be allowed free in the case of industrial supply.

This concession removes a long-felt difficulty that has prevented many would-be consumers from making use of electricity and it is hoped that many persons and concerns will take advantage of the facilities afforded by this concession.

(b) Government's sanction was also received to—

- (i) the limitation of Tariffs B-1, B-2, B-3, B-4, B-5, B-6, B-7 and B-8, to the consumers who take the whole of their energy requirements from the Branch,
- (ii) the addition of a new clause 9 to the special conditions for Industrial supply, stating that Tariffs B-1, B-2, B-3, B-4, B-5, B-6, B-7 and B-8 do not supply to a consumer who has a separate supply of energy in his premises. The conditions on which such a consumer may get a connection will be the subject of a special agreement in each case.

(c) In addition to the above, amendments in the Schedules of Service and General Charges appended to the application forms for general and industrial supply, dealing with recovery of service rental and meter hire for part of a month, were sanctioned by Government together with the substitution of Rupee one for Annas thirty in column "Rate 3" against item 2 (a) (v) of the Schedule of Service Charges.

B.—Applications for Electric Licenses.

Many new draft electric licenses for the supply of power in various towns of the Province were received from the Director of Industries, Punjab, and the comments of the Branch as to the conditions and circumstances under which licenses to private undertakings should be given, were communicated to the Director of Industries, and the Secretary to Government, Punjab, Electricity and Industries Departments.

C.—A statement of Electrical Undertakings in existence and in prospect was received from the Director of Industries, Punjab, and was amended so as to show the correct position up to 31st July, 1938.

CHAPTER V.—Closing down the accounts of the Uhl River Hydro-Electric Scheme.

The statements of the amounts of payments outstanding at the close of the year 1937-38 and the year ending 31st March, 1939, are given in Appendices 'K' and 'L' respectively. It was not possible to clear the amounts outstanding last year against Specifications Nos. 567 and 573 but the amounts against Specifications Nos. 511 and 526 were totally cleared up. The total amount of the payments outstanding, however, was reduced from Rs. 7,617 to Rs. 5,722 in the course of the year under review. The necessary steps are being taken to adjust the balance of the amount finally as quickly as possible.

V. F. CRITCHLEY,

Chief Engineer, Punjab, Public Works Department,
Electricity Branch.

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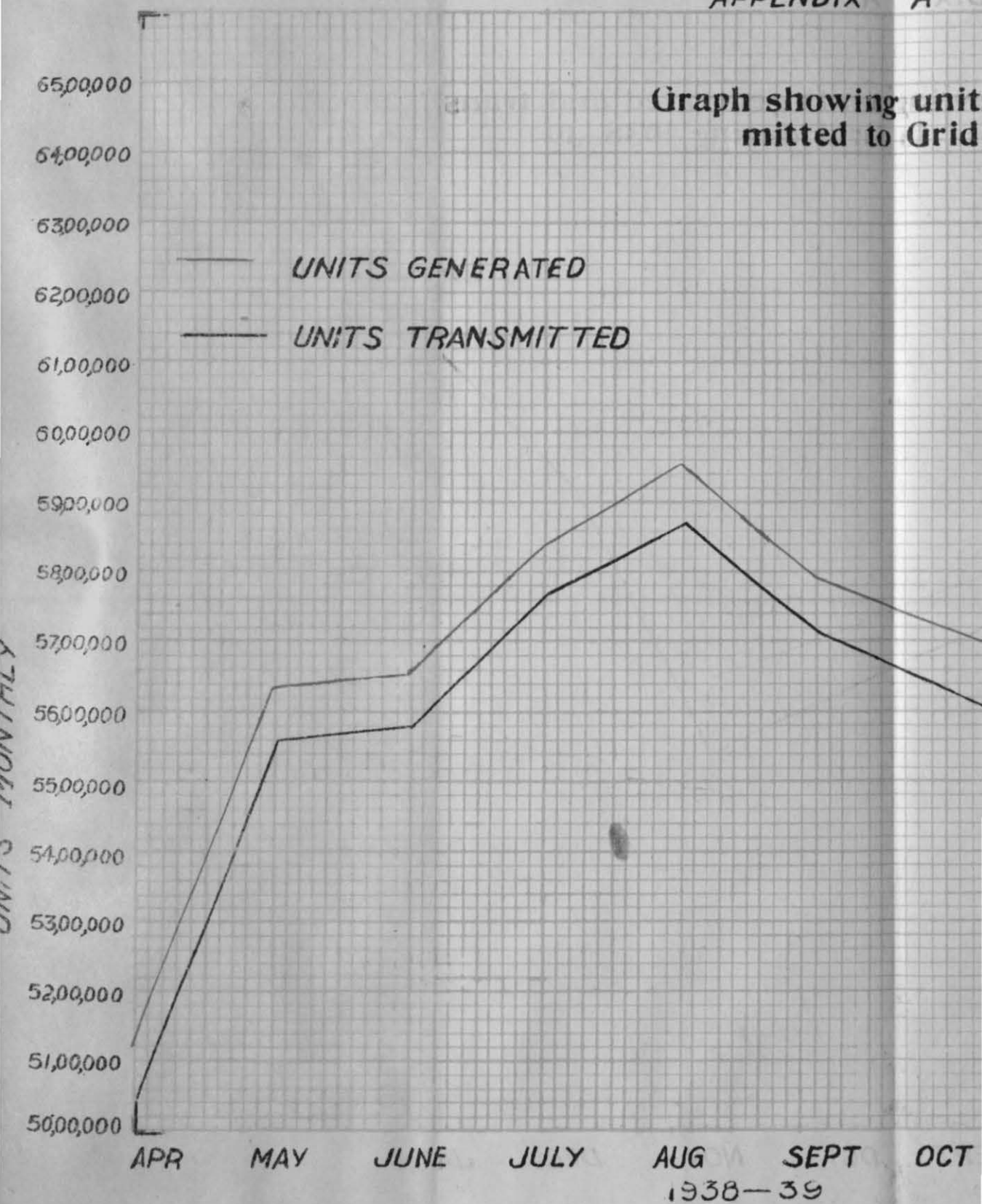
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APPENDIX 'A'

Graph showing unit
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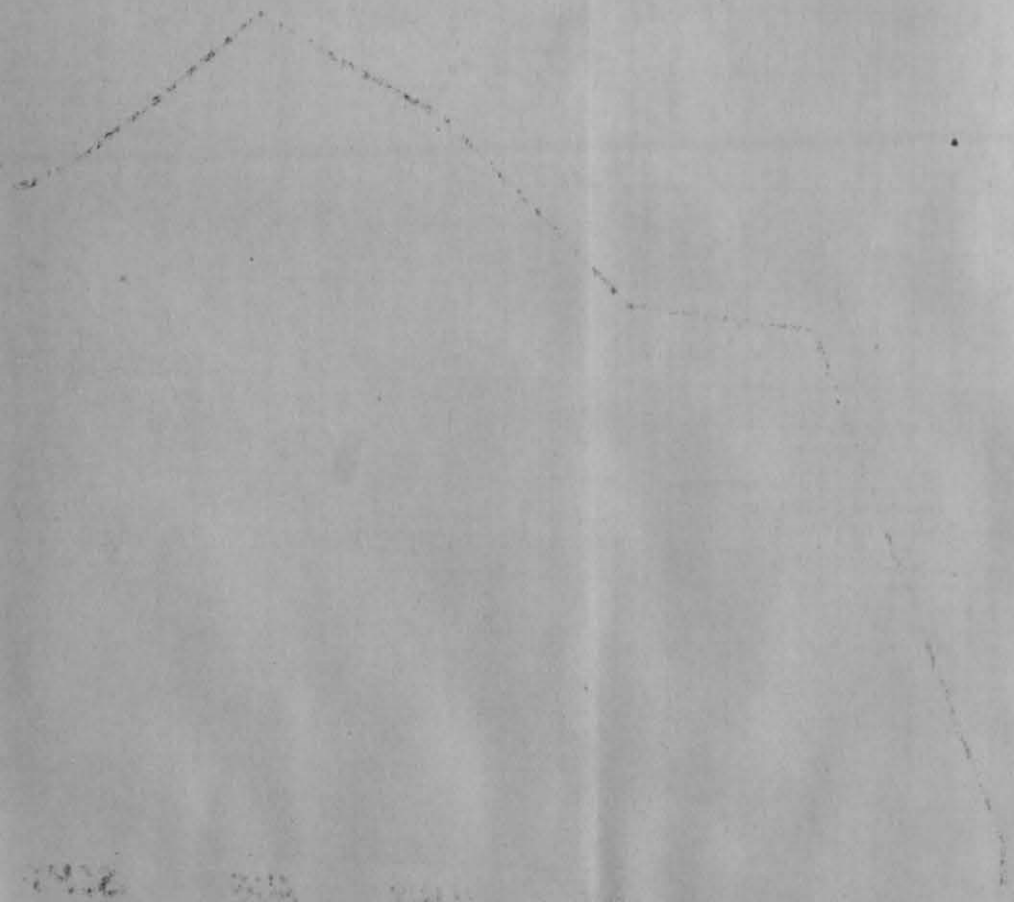
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UNITED STATES
DEPARTMENT OF AGRICULTURE



APPENDIX B.

Sheet No. 1.

FINANCIAL STATEMENT.

ESTIMATE OF FINANCIAL RESULTS OF 10TH YEAR AFTER THE DATE OF THE CLOSURE OF CONSTRUCTION ESTIMATE.

Year of operation.	Year.	CAPITAL OUTLAY DURING THE YEAR.			CUMULATIVE CAPITAL OUTLAY TO END OF THE YEAR.			Simple interest during the year.	Cumulative simple interest to the end of the year.	Net revenue during the year as per column 7 of Financial Statement Sheet 2.	Cumulative net revenue to the end of the year.	Capital invested to the end of the year (Column 8+ Column 10—Column 12).	Percentage of net revenue of the year to capital invested.
		Direct.	Indirect.	Total.	Direct.	Indirect.	Total.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1st	1936-37 ..	3,36,606	9,379	3,45,985	6,33,95,218	6,57,774	6,40,52,992	47,98,890	1,81,55,793	14,46,689	32,61,240	7,89,47,545	..
2nd	1937-38 ..	14,33,559	8,021	14,41,580	6,48,28,777	6,65,795	6,54,94,572	{ 25,64,479 *5,66,068 }	2,12,86,340	17,27,769	49,89,009	8,17,91,903	..
3rd	1938-39 ..	23,04,597	31,297	23,35,894	6,71,33,374	6,97,092	6,78,30,466	26,39,243	2,39,25,583	9,62,034	59,51,043	8,58,05,006	..
4th	1939-40 ..	30,35,390	35,412	30,70,802	7,01,68,764	7,32,504	7,09,01,268	27,46,043	2,66,71,626	11,77,284	71,28,327	9,04,44,567	..
5th	1940-41 ..	-6,24,080	4,258	-6,19,822	6,95,44,684	7,36,762	7,02,81,446	27,94,269	2,94,65,895	22,14,770	93,43,097	9,04,04,244	..
6th	1941-42 ..	-6,04,027	4,258	-5,99,769	6,89,40,657	7,41,020	6,96,81,677	27,69,707	3,22,35,602	29,94,590	1,23,37,687	8,95,79,592	..
7th	1942-43 ..	-5,83,974	4,258	-5,79,716	6,83,56,683	7,45,278	6,91,01,961	27,45,947	3,49,81,549	35,66,791	1,59,04,478	8,81,79,032	..
8th	1943-44 ..	1,68,529	10,258	1,78,787	6,85,25,212	7,55,536	6,92,80,748	27,37,637	3,77,19,186	43,31,075	2,02,35,553	8,67,64,381	..
9th	1944-45 ..	-5,54,968	4,258	-5,50,710	6,79,70,244	7,59,794	6,87,30,038	27,29,909	4,04,49,095	47,94,988	2,50,30,541	8,41,48,592	..
10th	1945-46 ..	-5,44,915	4,258	-5,40,657	6,74,25,329	7,64,052	6,81,89,381	27,07,911	4,31,57,006	48,66,383	2,98,96,924	8,14,49,463	5.9747
	TOTAL ..	43,66,717	1,15,657	44,82,374	67,62,88,942	72,55,607	68,35,44,549	..	30,80,47,675	..	13,40,77,899	85,75,14,325	..

(a) Col. 10 This figure includes a sum of Rs. 14,81,601 on account of the Capitalized interest written back to revenue, and also a sum of Rs. 4,69,172 on account of arrears of interest 1936-37 on capitalized interest from 1926-27 to 1934-35.

*Col. 9 The amount of Rs. 5,66,068 during 1937-38 is on account of losses on the working of the Lyallpur and Amritsar Schemes (Rs. 1,57,443+4,08,625=5,66,068).

FINANCIAL STATEMENT.

STATEMENT SHOWING DETAILS OF NET REVENUE.

Year of operation.	Year.	Gross revenue.	WORKING EXPENSES.					DEPRECIATION.			Working Expenses plus depreciation.	Net Revenue.
			Maintenance and petty expenses.	Tools and plant.	Share of Establishment.	Indirect.	Total.	Total provision.	Amount to be spent on renewals and replacement.	Amount transferred to depreciation Reserve Fund.		
1	2	3	4	5	6	7	8	9	9(a)	9 (b)	10	11
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1st	1936-37	19,56,678	2,90,790	10,284	2,06,008	2,907	5,09,989	..	..	..	5,09,989	14,46,689
2nd	1937-38	23,18,374	3,10,427	6,365	2,70,799	3,104	5,90,605	..	..	..	5,90,605	17,27,769
3rd	1938-39	25,93,500	3,15,000	13,200	3,04,450	3,150	6,35,800	9,95,666	..	9,95,666	16,31,466	9,62,034
4th	1939-40	34,00,000	3,43,610	10,308	8,00,000	3,436	11,57,354	10,65,362	30,000	10,35,362	22,22,716	11,77,284
5th	1940-41	46,00,000	3,62,924	10,888	9,00,000	3,629	12,77,441	11,07,789	60,000	10,47,789	23,85,230	22,14,770
6th	1941-42	54,00,000	3,72,764	11,182	9,00,000	3,728	12,87,674	11,17,736	90,000	10,27,736	24,05,410	29,94,590
7th	1942-43	60,00,000	3,89,929	11,698	9,00,000	3,899	13,05,526	11,27,683	1,20,000	10,07,683	24,33,209	35,66,791
8th	1943-44	69,00,000	4,09,370	12,281	10,00,000	4,094	14,25,745	11,43,180	1,50,000	9,93,180	25,68,925	43,31,075
9th	1944-45	74,00,000	4,29,168	12,875	10,00,000	4,292	14,46,335	11,58,677	1,80,000	9,78,677	26,05,012	47,94,988
10th	1945-46	76,00,000	4,47,109	13,413	11,00,000	4,471	15,64,993	11,68,624	2,00,000	9,68,624	27,33,617	48,66,383
	TOTAL	4,81,68,552	36,71,091	1,12,494	73,81,167	36,710	1,12,01,462	88,84,717	..	..	2,00,86,179	2,80,82,373

APPENDIX C.

Sheet No. 1.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

Name of Scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).

CAPITAL ACCOUNT FOR THE YEAR ENDED 31st MARCH, 1938.

Item No.	Description of Assets.	Expenditure to end of this year.
1	2	3
	PRODUCTION.	Rs.
1	Temporary Power Plant at Dhelu H. P. A. (1)	10,47,754
2	Temporary quarters H. P. A. (3)	4,09,291
3	Temporary transportation arrangement H. P. A. (4)	1,12,841
4	Sanitation H. P. A. (5)	1,35,864
5	Permanent Workshop and Siding H. P. B. (1)	2,64,863
6	Permanent quarters H. P. B. (2)	3,36,758
7	Permanent tramway and roads from Power Station to Headworks H. P. B. (3)	20,44,532
8	Transmission and Telephone Line H. P. C. (1)	2,38,507
9	Local Telephone and Power Distribution H. P. C. (2)	99,269
10	Local Telephone and Power Instruments H. P. C. (3)	13,571
11	Headworks Dam or Flame H. P. D. (1)	20,55,702
12	Tunnel H. P. D. (2)	77,94,729
13	Pipe Line H. P. D. (3)	31,16,157
14	Power Station Building H. P. E. (1)	11,05,285
15	Generating Plant H. P. E. (2)	12,68,230
16	Switchgear and Cable H. P. E. (3)	5,20,317
17	Transformer Station H. P. E. (4)	7,67,094
18	Branch Line for Mandi H. T. C. (1)	2,07,007
19	Substation Equipment for Mandi H. T. D. (2)	15,013
20	Losses in Stock H. P. G. (1)	2,95,408
21	Provision for headquarters and residence for headquarters administration H. G. B. (1)	1,375
22	Inspection and agency in Europe H. G. B. (2)	4,028
23	Land Compensation H. G. B. (3)	34,604
24	General Contingencies H. G. B. (4)	2,304
25	Preliminary Expenditure H. G. C. (2)	3,899
26	Custom duty H. G. D. (1)	3,73,305
27	Custom duty H. G. D. (2)	5,436
28	Tools and Plant	12,91,082
29	Establishment Charges Capitalized	32,28,530
30	Indirect Charges (Audit and Accounts)	2,99,030
31	Indirect Charges (Capitalized Abatement of Land Revenue)	523
32	Total Direct and Indirect Charges	2,70,92,308
33	Deduct Receipts and Recoveries on Capital Account	3,23,066
34	Net Outlay excluding Suspense	2,67,69,242
35	Interest during construction	35,62,150
36	Total	3,03,31,392

v

APPENDIX C—CONTD.

Sheet No. 2.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

Name of Scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).

CAPITAL ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1938.

Item No.	Description of Assets.	Expenditure to end of this year.
1	2	3
		Rs.
	TRANSMISSION.	
37	Trunk Transmission Line H. T. B. (1)	59,96,962
38	Trunk Telephone System H. T. B. (2)	5,17,529
39	Branch Transmission Line H. T. C. (1)	48,57,042
40	Branch Telephone System H. T. C. (2)	4,87,315
41	Substation Electric Equipment H. T. D. (1)	60,87,462
42	Quarters, Lands and Approaches H. T. D. (2)	4,59,791
43	Transmission Line Quarters and Depôts H. T. D. (3)	7,07,124
44	Technical Buildings H. T. D. (4)	12,49,813
45	Losses on Stock H. T. G. (1)	72,065
46	Provision for Headquarters Office and residence for Headquarters Administration H. G. B. (1)	1,40,230
47	Inspection and Agency in Europe H. G. B. (2)	3,71,749
48	Land Compensation H. G. B. (3)	..
49	General Contingencies H. G. B. (4)	2,35,008
50	Preliminary Expenses H. G. C. (2)	3,97,659
51	Customs Duty H. G. D. (2)	6,05,941
52	11 kV. Subsidiary Line—	
	(i) 11 kV. Dharamsala Feeder	31,896
	(ii) 11 kV. Feeder for Islamabad near Batala	1,597
	(iii) 11 kV. Line and constructing a substation in connection with the electrification of Rural Area towards North of Shalamar and Baghbanpura (T-12)	6,284
	(iv) Erection of 11 kV. line from Jaranwala 66 kV. Substation to Factory Area (T-11)	6,698
	(v) Phillaur-Goraya-Phagwara Electric Supply Project 2 W.A.	91,855
	(iv) Qadian Electric Supply Project (11 kV. Feeder) (T-3)	60,270
	(vi) 11 kV Line Jullundur to Maksudpur (T-6)	62,272
	(viii) 11 kV. Line Maksudpur to Kartarpur (T-7)	34,263
	(ix) 11 kV. Line Maksudpur to Kapurthala (T-8)	57,894
	(x) 11 kV. Line Jullundur Substation to Jullundur Cantonment (T-9)	13,481
53	Purchasing Austin delivery van for M. and T. (B-3)	2,325
54	Losses of stock under Production H. P. G. (1)	13,031
55	Tools and Plant	13,42,637
56	Establishment Charges Capitalized	52,73,603
57	Indirect Charges (Audit and Accounts)	3,10,778
	Carried over	2,94,94,574

APPENDIX C—CONTD.

Sheet No. 3.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH

Name of Scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).
CAPITAL ACCOUNT FOR THE YEAR ENDED 31st MARCH, 1938.

Item No.	Description of Assets.	Expenditure to end of this year.
1	2	3
	Brought forward ..	2,94,94,574
	TRANSMISSION—concl.	Rs.
58	Indirect Charges (Capitalized Abatement of Land Revenue)	680
59	Total Direct and Indirect Charges	2,94,95,254
60	Deduct—Receipts and Recoveries on Capital Account	3,54,862
61	Net Outlay (excluding Suspense)	2,91,40,392
62	Interest during construction	43,85,283
63	Total Transmission ..	3,35,25,675
	DISTRIBUTION.	
64	Preliminary Expenses W. (1)	34,079
65	Land W. (2)	52,499
66	Telephone System W. (3)	24,725
67	Residential Quarters W. (4)	1
68	Buildings other than quarters W. (5)	1,11,269
69	Sub and Transformer Station Equipment W. (6)	10,80,436
70	Mains—feeders W. (7)	23,60,421
71	General Service Connections W. (8) (i)	8,71,093
72	General Service Meters W. (8) (ii)	1,92,635
73	Industrial Service Connections W. (9) (i)	2,87,569
74	Industrial Service Meters W. (9) (ii)	49,892
75	Public Lighting W. (10)	1,70,488
76	Lift Irrigation Wells W. (11) (i)	8,239
77	General Charges O. (3)	20,675
78	Total Works	52,64,021
79	Tools and Plant O. (2)	1,05,856
80	Establishment Capitalized	19,23,149
81	Indirect Charges (Audit and Accounts)	54,700
82	Indirect Charges (Capitalized Abatement of Land Revenue)	84
83	Total Works and Overhead Charges	73,47,810
84	Deduct—Receipts and Recoveries on Capital Account	1,997
85	Net Outlay	73,45,813
86	Interest during construction	9,008
87	Total	73,54,821
	GRAND TOTAL	7,12,11,888

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

Name of scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).

REVENUE ACCOUNT FOR THE YEAR ENDED 31st MARCH, 1938.

DR.				CR.					
Serial No.	Expenditure.	Main Scheme.	Local Distribution Schemes.	Total.	Serial No.	Income.	Main Scheme.	Local Distribution Schemes.	Total.
		Rs.	Rs.	Rs.			Rs.	Rs.	Rs.
1	To petty works	13,462	5,423	18,885	1	By sale of power	17,60,439	13,73,624	31,34,063
2	To maintenance proper	2,14,654	76,889	2,91,543	2	By other items	65,250	1,41,707	2,06,957
3	To cost of power creditable to main scheme .. .. .	..	10,22,206	10,22,206					
4	To tools and plant	10,433	5,414	15,847					
5	Total Works and Tools and Plant	2,38,549	11,09,932	13,48,481					
6	To Establishment Charges—								
	(a) Local—								
	(i) Carriage charges	1,507	408	1,915					
	(ii) Pay of menials	3,010	4,126	7,136					
	(iii) Postal charges	6,467	2,512	9,979					
	(iv) Office rent	1,240	6,568	7,808					
	(v) Telephone charges	2,368	4,106	6,474					
	(vi) Printing charges	5,887	39	5,926					
	(vii) Cost of Stationery	6,591	349	6,940					
	(viii) Chemicals for ferro printing	96	..	96					
	(ix) Cost of forms	715	..	715					
	(x) Law charges	533	..	533					
	(xi) Medical charges	1,170	..	1,170					
	(xii) Miscellaneous office expenditure	16,252	6,761	23,013					
	(b) Pro-rata share of Local, Executive and Direction.	1,47,342	54,224	2,01,566					
		1,93,178	80,093	2,73,271					
7	Deduct—percentage recoveries	2,550	14	2,564					
8	Total Establishment, Local, Executive and Direction.	1,90,628	80,079	2,70,707					
9	Total Works, Tools and Plant and Establishment	4,29,177	11,90,011	16,19,188					
10	Deduct—Cost of power creditable to main scheme .. .. .	..	10,22,206	10,22,206					
		4,29,177	1,67,805	5,96,982					
11	To balance transferred to Net Revenue Account	13,96,192	3,25,200	17,21,392					
	GRAND TOTAL	18,25,369	4,93,005	23,18,374			18,25,369	4,93,005	23,18,374
						GRAND TOTAL			

APPENDIX C—CONTD.

Sheet No. 5.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

Name of scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).

NET REVENUE ACCOUNTS FOR THE YEAR ENDED 31st MARCH, 1938.

Cr.

Dr.

Serial No.	Expenditure.	Amount.	Serial No.	Income.	Amount.
		Rs.			Rs.
1	To interest charges—		1	By balance transferred from Revenue Account—	
	Main Scheme	22,97,164		Main Scheme	13,96,192
	Local Distribution Scheme	2,62,275		Local Distribution Schemes	3,25,200
		25,59,439			17,21,392
2	To audit and accounts charges—		2	By balance carried down—	
	Main Scheme	2,281		Main Scheme (Loss)	9,03,253
	Local Distribution Scheme	823		Local Distribution Schemes (Profit)	62,102
		3,104			8,41,151
3	To capitalized abatement of land revenue				
	Total	25,62,543			
1	To balance on 31st March, 1937—				
	Main Scheme (Loss)	71,82,114		Total	25,62,543
	Less Local Distribution Schemes (Profit)	2,38,959			
		69,43,155	1	By balance carried to balance sheet—	
2	To balance brought down—			Main Scheme (Loss)	80,85,367
	Main Scheme (Loss)	9,03,253		Loss on the working of Temporary Amritsar & Lyallpur Electrification Scheme	5,66,068
	Less Local Distribution Schemes (Profit)	62,102		Local Distribution Schemes (Profit)	86,51,435
		8,41,151			3,01,061
3	To loss on the working of the Temporary Amritsar Electri- fication Scheme	1,57,443			83,50,374
4	To loss on the working of the Temporary Lyallpur Electri- fication Scheme	4,08,625			
		5,66,068			
	Total	83,50,374		Total	83,50,374

11A

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

Name of scheme :—BRANCH AS A WHOLE (EXCLUDING RENALA).

BALANCE SHEET AS AT 31st MARCH, 1938.

Serial No.	Liabilities.	Amount.	Serial No.	Assets.	Amount.
	Rs.	Rs.		Rs.	Rs.
1	Government Investment Account—		1	Capital Works—	
	(a) Capital Expenditure as per Capital Account ..	7,12,11,888		As per Capital Account	7,12,11,888
	(b) Accumulative loss as per Net Revenue Account	83,50,374	2	Stock in hand	18,40,093
	(c) Floating Capital	21,18,616	3	(a) Amounts due from consumers and other sundry Debtors	4,15,131
		8,16,80,878		(b) Amounts debited to London Stores awaiting adjustment	75,373
2	Amounts due to suppliers for purchases made	98,701	4	Cash in hand	4,90,504
3	Deposits (consumers and others)	1,21,602	5	Accumulative loss—	8,322
				(a) Main Scheme (Loss)	86,51,435
				(b) Local Distribution Scheme (Profit)	3,01,061
					83,50,374
	Total	8,19,01,181		Total	8,19,01,181

APPENDIX D.

Sheet No. 1.

STATEMENT SHOWING AVERAGE COST OF GENERATION PER UNIT GENERATED FOR THE YEAR 1937-38.

Item No.	Particulars.	Gross amount.	Receipts.	Net amount.	Figures for 1936-37 corresponding to column 4.	Figures for 1935-36 corresponding to column 4.
Col.	1	2	3	4	5	6
		Rs.	Rs.	Rs.	Rs.	Rs.
1	Working Expenses	1,03,366	..	..	..	..
2	Local Establishment	71,202	..	..	..	..
3	Total working expenses and local establishment.	1,74,568	7,625	1,66,943	1,58,210	1,55,604
4	Share of direction establishment ..	28,653	..	28,653	19,819	7,959
5	Total working expenses, local establishment and share of direction establishment.	2,03,221	7,625	1,95,596	1,78,029	1,53,563
6	Capital charges—					
	(a) Depreciation .. ..	..	..	..	..	..
	(b) Interest	9,93,520	..	9,93,520	12,39,158	12,86,916
7	Total of working expenses, local establishment, share of direction establishment and capital charges.	11,96,741	7,625	11,89,116	14,17,187	14,50,479
		Number.	Number.	Number.	Number.	Number.
8	Units generated	60,846,240	..	..	51,526,070	41,274,070
9	Units transmitted (including supply to Mandi and sold to local consumers).	59,743,375	..	..	50,402,884	40,439,592
10	Units transmitted at 132 kV. busbars ..	59,262,472	..	..	50,021,040	40,225,500
		Pies.	Pies.	Pies.	Pies.	Pies.
11	Average cost of generation per unit generated—					
	(a) Working expenses and local establishment—					
	Item 3 } .. ..	..	..	..	..	..
	Item 8 } .. ..	..551	..	..527	..590	..724
	(b) Working expenses and local establishment and share of direction establishment—					
	Item 5 } .. ..	..	..	..	..	..
	Item 8 } .. ..	..642	..	..618	..663	..761
	(c) Working expenses and local establishment and share of direction establishment and capital charges—					
	Item 7 } .. ..	..	..	..	..	..
	Item 8 }	3.777	..	3.753	5.281	6.747

APPENDIX D—CONCLUDED.

STATEMENT SHOWING AVERAGE COST OF GENERATION PER UNIT GENERATED FOR THE YEAR 1937-38.

Item No.	Particulars.	Gross amount.	Net amount.	Figures for 1936-37 (Net).	Figures for 1935-36 (Net).
Col.	1	2	3	4	5
		Pies.	Pies.	Pies.	Pies.
12	Average cost of generated units sent out from Power House (including supply to Mandi State and local consumers)—				
	(a) Working expenses and local establishment—				
	Item 3 } Item 9 } .. ..	.561	.537	.603	.739
	(b) Working expenses and local establishment and share of direction establishment—				
	Item 5 } Item 9 } .. ..	.654	.629	.678	.777
	(c) Working expenses and local establishment and share of direction establishment and capital charges—				
	Item 7 } Item 9 }	3.847	3.823	5.398	6.887
13	Average cost of generation per unit delivered to 132 kV. grid—				
	(a) Working expenses and local establishment—				
	Item 3 } Item 10 } .. ..	.566	.541	.607	.743
	(b) Working expenses and local establishment and share of direction establishment—				
	Item 5 } Item 10 } .. ..	.659	.635	.683	.781
	(c) Working expenses and local establishment and share of direction establishment and capital charges—				
	Item 7 } Item 10 }	3.878	3.854	5.440	6.923

APPENDIX E.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

STATEMENT SHOWING THE SALIENT FINANCIAL RESULTS FOR THE YEAR 1937-38.

APPENDIX E.

PUNJAB PUBLIC WORKS DEPARTMENT, ELECTRICITY BRANCH.

STATEMENT SHOWING THE SALIENT FINANCIAL RESULTS FOR THE YEAR 1937-38.

				CORRESPONDING FIGURES FOR THE YEAR.		
				1937-38.	1936-37.	1935-36.
1	Year		5th.	4th.	3rd.	
2	Year of operation		Rs.	Rs.	Rs.	
3	Capital outlay to end of the year (including indirect charges and excluding interest)		6,54,95,812	6,40,52,992	6,22,25,406	
4	Accumulated arrears of simple interest:—	Rs.				
	A.—Main Scheme (Loss)	1,65,92,830				
	B.—Local Distribution Scheme (Profit)	2,95,499	1,62,97,331	1,48,94,533	1,30,23,953	
5	Capital invested to end of the year (3+4)		8,17,93,143	7,89,47,525	7,52,49,359	
6	Gross Revenue for the year		23,18,374	19,56,678	14,28,705	
7	Working expenses for the year:—					
	Maintenance and Repairs	3,16,792				
	Operating expenses, i.e., <i>pro rata</i> share of regular establishment	2,70,709				
	Audit and Accounts Charges	3,104	5,90,605	5,09,989	4,75,070	
8	Simple interest for the year:—					
	A.—Main Scheme	22,98,258				
	B.—Local Distribution Schemes	2,66,221	25,64,479	28,48,117	29,14,047	
9	Depreciation. (Not to be charged for the first 5 years of operations)		—	—	—	
10	Net Revenue. (Item 6—Item 7)		17,27,769	14,46,689	9,53,635	
11	Net Revenue after allowing depreciation		17,27,769	14,46,689	9,53,635	
12	Deficit after allowing interest. (Item 11—Item 8)		— 8,36,710	—14,01,428	—19,60,412	
13	Percentage of Net Revenue to Capital Outlay	Item 10 × 100	2·638	2·26	1·54	
14	Percentage of Net Revenue to Capital invested	Item 3 Item 10 × 100	2·112	1·83	1·227	
15	Percentage of Net Revenue to Gross Revenue	Item 5 Item 10 × 100	74·53	73·9	66·5	
16	Percentage of deficit to capital outlay	Item 6 Item 12 × 100	1·28	2·19	3·5	
17	Percentage of deficit to capital invested	Item 3 Item 12 × 100	1·02	1·77	2·62	
		Item 5				

19	Percentage of Working Expenses to Capital invested	Item 7 × 100	..	..	..	..	..	..	72	65	632
20	Percentage of working Expenses to Gross Revenue	Item 5 Item 7 × 100	..	..	..	..	..	..	25.47 Units.	26.06 Units.	33.3 Units.
21	Units generated	Item 6	..	..	..	..	..	..	60,846,240	51,526,070	41,274,070
22	Units sold:—										
	(a) Direct supply from the Grid:—										
	Amritsar Municipal Committee		..	..	..	..	..	..	6,806,636		
	North-Western Railway, Moghalpura		..	..	..	..	..	..	12,188,923		
	Jullundur Electric Supply Co., Ltd.		..	..	..	..	..	..	1,394,594		
	Kapurthala State		..	..	..	..	..	..	515,760		
		Total	..	..	..	..	..	..	20,905,913		
	(b) Through Local Distribution Schemes:—										
	General		..	..	..	..	..	..	1,669,509		
	Industrial		..	..	..	..	..	..	18,516,244		
	Public Lights		..	..	..	..	..	..	496,577		
	Bulk		..	..	..	..	..	..	213,961		
		Total	..	..	..	..	..	..	20,896,291		
		(a) + (b)	..	..	..	..	..	..	41,802,204	36,364,231	27,264,427
23	Units lost (including used on works) (Item 21—22)		..	..	..	..	..	..	19,044,036	15,161,839	14,009,643
24	Percentage of loss and units used on works to Units generated	Item 23 × 100	..	..	..	..	..	..	31.29%	29.4%	33.8%
25	Cost per unit generated (excluding interest and depreciation)	Item 21 Item 7	..	..	..	..	..	..	Pies. 1.86	Pies. 1.9	Pies. 2.21
26	Cost per unit generated (including interest)	Item 21 Item 7 + Item 8	..	..	..	..	..	..	9.956	12.513	15.517
27	Cost per unit sold excluding interest and depreciation	Item 21 Item 7	..	..	..	..	..	..	2.712	2.693	3.335
28	Cost per unit sold including interest	Item 22 Item 7 + Item 8	..	..	..	..	..	..	14.491	17.731	23.643
29	Average return of gross revenue per unit sold	Item 22 Item 6	..	..	..	..	..	..	10.649	10.331	9.867
30	Average return of gross revenue per unit generated	Item 22 Item 6	..	..	..	..	..	..	7.32	7.29	6.518
31	Net Revenue Per unit sold. (Item 29 — Item 27)	Item 21	..	..	..	..	..	..	7.937	7.638	6.532
32	Net Revenue per unit generated (Item 30 — Item 25)	..	..	..	..	..	..	..	5.460	5.39	4.308
33	Deficit per unit sold (Item 28 — Item 29)	..	..	..	..	..	..	..	3.842	7.4	13.776
34	Deficit per unit generated (Item 26 — Item 30)	..	..	..	..	..	..	..	2.636	5.223	9.099

ΔX

APPENDIX F.

COMMERCIAL STATISTICS OF THE LOCAL DISTRIBUTION SCHEMES FOR THE YEARS 1936-37 TO 1938-39.

Item No.	Particulars.	1938-39.					1937-38.					1936-37.				
		General.	Industrial.	Public Lighting.	Bulk.	Total.	General.	Industrial.	Public Lighting.	Bulk.	Total.	General.	Industrial.	Public Lighting.	Bulk.	Total.
1	Number of consumers (or number of lamps in case of Public Lighting) (Average over the year).	15,311	967	4,899	8	(a) 16,286	13,086	771	4,790	8	(b) 13,865	10,704	581	4,383	6	(c) 11,291
2	Connected load in kW. (average over the year).	7,759	14,058	213	172	22,202	7,010	11,510	212	144	18,876	5,703	8,605	196	131	14,635
3	Units sold	2,002,017	24,391,927	501,346	308,664	27,203,954	1,669,509	18,516,244	496,577	213,961	20,896,291	1,351,809	15,066,644	462,997	161,221	17,042,671
4	Revenue assessed (Rs.)	4,82,385	10,49,118	63,087	21,641	16,16,231	4,51,684	8,31,714	68,188	16,622	13,63,208	4,03,566	7,95,089	65,623	12,911	12,77,189
5	Connected load per consumer in kW. (per lamp in the case of Public Lighting in kW).	·51	14·54	·04	21·5	..	·53	14·93	·04	18·0	..	·53	14·8	·045	21·8	..
6	Units sold per annum per consumer (per lamp in the case of Public Lights).	131	25,224	102	38,583	Does not arise.	123	24,016	104	26,745	Does not arise.	126	25,932	106	26,870	Does not arise.
7	Revenue per unit sold in pies	46·26	8·26	24·16	13·46	11·41	51·94	8·62	26·36	14·9	12·57	57·3	10·1	27·2	15·4	14·4
8	Revenue per consumer per annum (per lamp in the case of Public Lighting) (Rs.).	31·51	1,084·92	12·88	2,705·12	..	34·51	1,078·74	14·23	2,077·75	..	37·7	1,368·4	15·0	2,151·8	..
9	Revenue per kW. connected load (Rs.).	62·17	74·6	296·17	125·8	72·8	64·43	72·26	321·64	115·43	73·01	70·8	92·4	334·8	98·6	87·3
10	Units sold per annum per average kW. connected.	258·02	1,735·1	2,353·7	1,794·6	1,225·3	238·16	1,603·7	2,342·3	1,485·8	1,107·03	237·03	1,750·9	2,362·2	1,230·7	1,164·5
11	Percentage increase in revenue over previous year.	6·8	26·1	-7·5	30·2	18·1	11·9	24·9	3·9	28·74	19·19	31	62·1	22	8·2	43·2
12	Percentage increase in units sold over previous year.	19·9	31·73	·96	44·3	30·18	23·5	87·13	7·25	32·71	76·03	30·2	60·5	40·7	19·1	56·5
13	Percentage of units sold under each head with total units sold.	7·4	89·7	1·8	1·1	Does not arise.	7·98	88·6	2·37	1·02	Does not arise.	7·91	88·4	2·7	·9	Does not arise.
14	Percentage of the revenue under each head with the total revenue.	29·8	64·9	3·9	1·4	Ditto	33·01	60·8	4·98	1·21	Ditto.	31·6	62·2	5·1	1·0	Ditto.
15	Average Load Factor (on connected load) — Item 3 × 100 Item 2 × 8,760.	2·9	19·8	26·8	20·5	13·98	2·7	18·3	26·7	16·9	12·6	2·7	19·9	26·9	30·2	13·3

LAX

Uhl River Hydro-Electric Scheme.

ANALYSIS OF UNITS SOLD AND REVENUE OBTAINED THROUGH LOCAL DISTRIBUTION SCHEME AND SPECIAL CONSUMERS.

(REVENUE FIGURES FOR THE YEARS 1936-37 AND 1937-38 HAVE BEEN TAKEN FROM THE ADMINISTRATIVE ACCOUNTS AND FOR THE YEAR 1938-39 FROM THE CONSOLIDATED REVENUE STATEMENT MAINTAINED IN THE BRANCH).

Serial No.	Particulars.	1938-39.			1937-38.			1936-37.		
		Unit sold.	Revenue.	Revenue per unit sold.	Units sold.	Revenue.	Revenue per unit sold.	Units sold.	Revenue.	Revenue per unit sold.
			Rs.	Pies.		Rs.	Pies.		Rs.	Pies.
1	Local Distribution Schemes	27,203,954	(a) 16,16,231 (b) 17,99,627	(a) 11·4 (b) 12·7	20,896,291	(a) 13,33,229 (b) 15,15,210	(a) 12·3 (b) 13·9	17,042,670	(a) 10,89,885 (b) 12,85,387	(a) 12·3 (b) 14·5
	Percentage of units and revenue to Total Units and revenue.	53	(b) 69	..	50	(b) 66·04	..	47	(b) 66	..
2	Bulk Supply Schemes	24,019,459	(a) 7,92,947 (b) 7,93,888	(a) 6·3 (b) 6·4	20,905,913	(a) 7,38,233 (b) 7,78,806	(a) 6·8 (b) 7·2	19,321,561	(a) 6,30,706 (b) 6,47,679	(a) 6·3 (b) 6·4
	Percentage of units and revenue to Total Units and revenue.	47	(b) 31	..	50	(b) 34	..	53	(b) 34	..
3	Total	51,223,413	(a) 24,09,178 (b) 25,93,515	(a) 9·0 (b) 9·7	41,802,204	(a) 20,71,462 (b) 22,94,016	(a) 9·5 (b) 10·5	36,364,231	(a) 17,20,591 (b) 19,33,066	(a) 9·1 (b) 10·2

Figures against (a) represent Sale of Power only.

.. .. (b) represent Sale of Power and Service and Meter rentals.

(These do not include rent of buildings and other sundry receipts, e.g., profits on stock, etc.)

XVII

APPENDIX H.

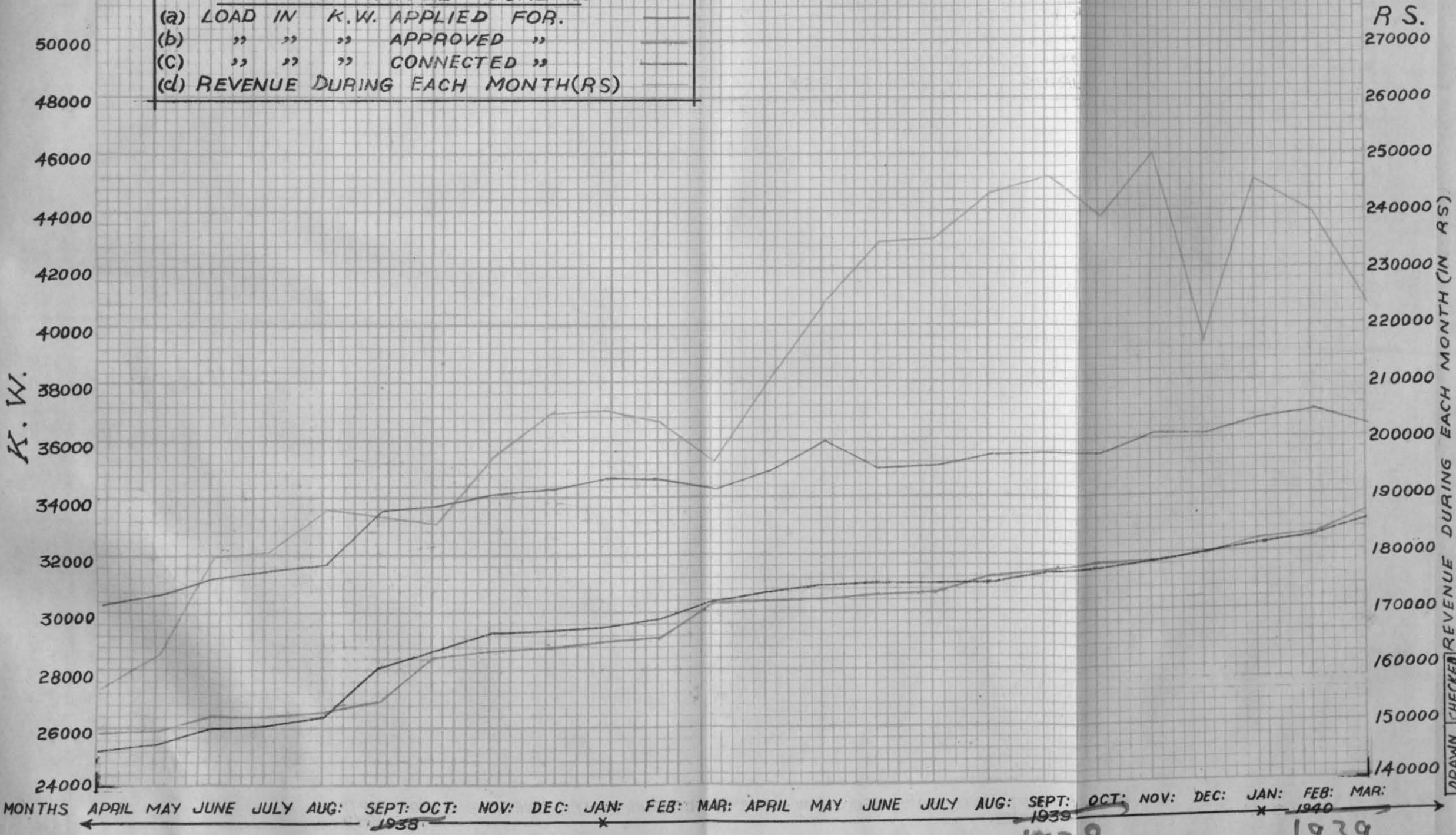
APPLICATION AND CONNECTION RETURN (CONSOLIDATED), LOCAL DISTRIBUTION SCHEME (UP TO THE MONTH ENDING 31ST MARCH, 1939).

Serial No.	Name of town or Area.	NUMBER OF APPLICATIONS RECEIVED.				CONNECTED LOAD APPLIED FOR IN kW.				Total Columns 6 to 9.	CLASS OF CONSUMERS CONNECTED.				TOTAL LOAD CONNECTED IN kW.				Total columns 15 to 18.	
		General.	Industrial.	Bulk.	Public Light-ing.	General.	Industrial.	Bulk.	Public Light-ing.		General.	Industrial.	Bulk.	Public Light-ing.	General.	Industrial.	Bulk.	Public Light-ing.		
Col.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1	Pathankot ..	{ (x)	392	26	..	199	139	186	..	8	333	378	19	..	199	135	174	..	8	317
		{ (y)	461	23	..	199	149	201	..	8	358	437	23	..	199	142	201	..	8	351
2	Dinanagar ..	{ (x)	173	6	..	110	58	42	..	5	105	168	5	..	110	56	39	..	4	99
		{ (y)	185	7	..	110	56	33	..	4	93	178	6	..	110	56	31	..	4	91
3	Gurdaspur ..	{ (x)	553	26	..	318	322	300	..	15	637	517	21	..	284	297	234	..	12	543
		{ (y)	603	26	..	415	299	292	..	16	607	573	24	..	284	288	271	..	12	571
4	Dharamsala ..	{ (x)	307	4	..	64	173	58	..	3	234	268	2	..	64	122	8	..	3	133
		{ (y)	397	4	..	80	229	71	..	4	304	347	3	..	70	176	15	..	3	194
5	Kangra ..	{ (x)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		{ (y)	168	1	..	31	61	11	..	2	74	136	51
6	Batala ..	{ (x)	835	101	..	625	450	1,286	..	25	1,761	804	93	..	625	438	1,027	..	25	1,490
		{ (y)	1,005	107	..	625	509	1,324	..	22	1,855	931	96	..	625	454	1,064	..	23	1,541
7	Tarn Taran ..	{ (x)	474	36	1	154	169	263	17	6	455	436	27	1	154	165	205	16	6	392
		{ (y)	488	37	1	154	179	294	16	6	495	474	34	1	154	174	272	16	6	468
8	Amritsar Suburban ..	{ (x)	153	74	3	..	100	1,831	34	..	1,965	122	53	1	..	87	1,629	11	..	1,727
		{ (y)	247	105	2	..	164	2,249	121	..	2,534	193	74	1	..	115	1,814	11	..	1,940
9	Qadian ..	{ (x)	406	47	1	18	233	146	14	1	394	389	30	..	18	211	78	..	1	290
		{ (y)	447	38	1	18	230	118	14	1	363	428	31	1	18	208	92	12	1	313
10	Dhariwal ..	{ (x)	134	14	..	..	47	161	..	..	208	98	11	..	..	34	122	..	..	156
		{ (y)	182	18	..	..	57	189	..	..	246	132	13	..	..	38	127	..	..	165
11	Lahore Suburban East ..	{ (x)	1,188	49	..	173	590	1,940	..	7	2,537	1,001	33	..	173	512	1,866	..	7	2,385
		{ (y)	1,353	81	..	173	621	2,195	..	7	2,823	1,119	56	..	173	546	2,059	..	7	2,612
12	Lahore Suburban West ..	{ (x)	269	51	4	..	309	1,076	118	..	1,503	261	47	3	..	289	1,013	105	..	1,407
		{ (y)	396	90	5	..	392	1,314	130	..	1,836	357	69	4	..	346	1,197	119	..	1,662
13	Kasur ..	{ (x)	1,050	51	..	423	349	375	..	17	741	1,040	48	..	423	347	354	..	17	718
		{ (y)	1,114	60	..	423	364	386	..	17	767	1,104	59	..	425	355	383	..	17	755
14	Ferozepore City ..	{ (x)	1,190	65	..	243	456	556	..	11	1,023	1,180	64	..	243	439	549	..	11	999
		{ (y)	1,307	65	..	243	422	625	..	11	1,058	1,291	63	..	243	406	619	..	11	1,036
15	Ferozepore Cantonment ..	{ (x)	744	39	..	260	322	241	..	10	573	724	36	..	260	294	208	..	10	512
		{ (y)	894	44	..	260	369	449	..	10	828	867	39	..	260	328	205	..	10	548
16	Ludhiana ..	{ (x)	3,071	223	4	1,029	2,307	2,169	75	40	4,591	2,735	182	3	998	1,593	1,403	34	39	3,069
		{ (y)	3,025	241	3	1,029	1,863	1,963	46	40	3,912	3,007	238	3	998	1,857	1,792	46	39	3,734

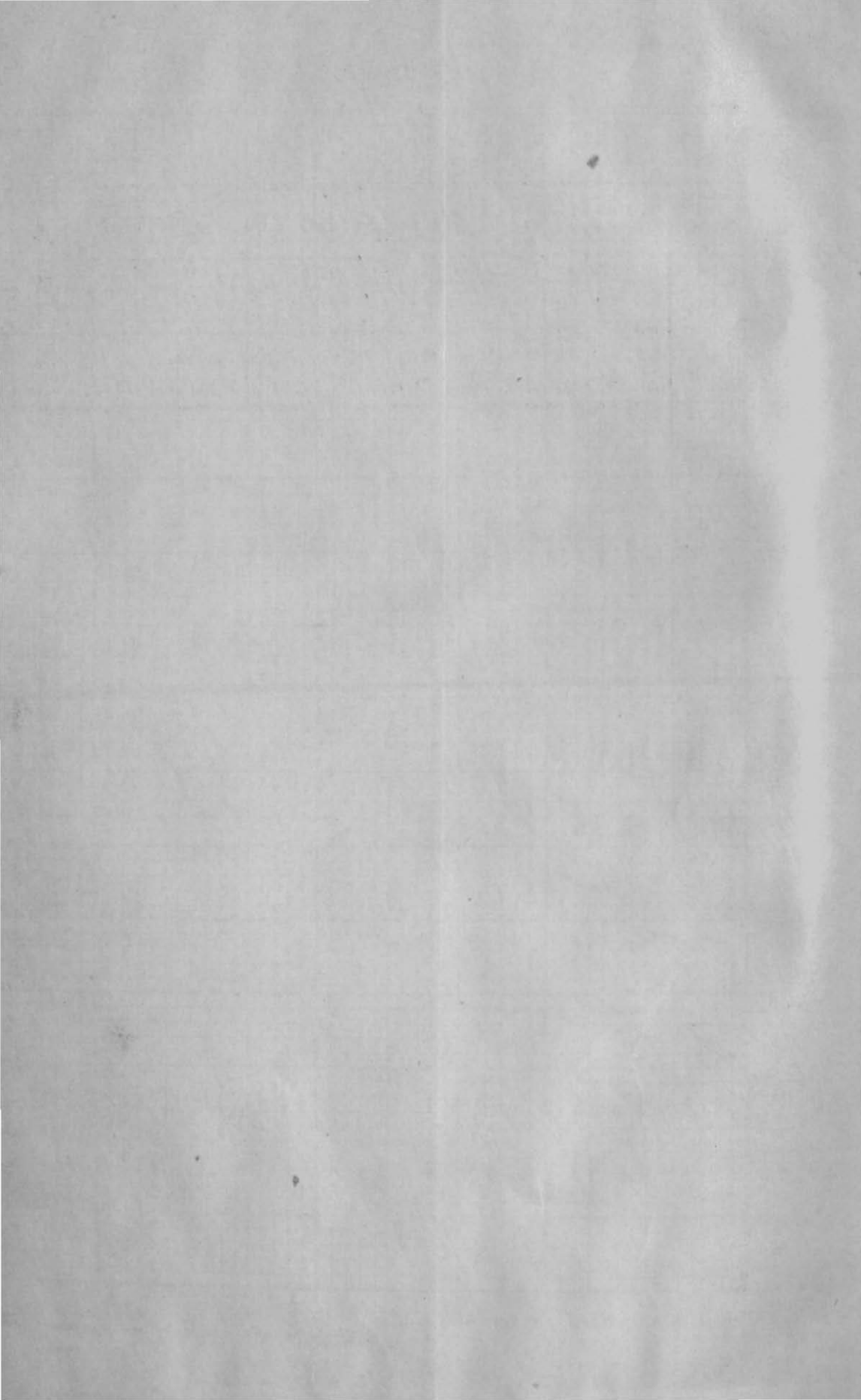
APPENDIX "I"

TOTAL LOAD GROWTH DIAGRAM
FOR THE WHOLE SCHEME

- (a) LOAD IN K.W. APPLIED FOR. _____
- (b) " " " APPROVED " _____
- (c) " " " CONNECTED " _____
- (d) REVENUE DURING EACH MONTH (RS) _____



DRAWN CHECKED
Shreed 19.8.39
Robin 22.8.39



17	Phillaur-Goraya	{ (x) (y)	288 339	35 26	..	60 60	219 143	263 198	..	3 3	485 344	237 326	25 26	..	60 60	100 137	100 198	..	3 3	338
18	Kartarpur	{ (x) (y)	277 312	4 9	..	55 55	102 108	33 71	..	2 2	137 181	251 298	3 9	..	55 55	91 103	31 71	..	2 2	124 176
19	Jullundur Suburban East	{ (x) (y)	23 27	3 1	..	..	11 10	33 21	..	..	44 31	17 26	1 1	..	..	7 9	21 21	..	..	28 30
20	Jullundur Suburban West	{ (x) (y)	2 2	6 7	..	..	1 1	64 83	..	..	65 84	2 2	5 7	..	..	1 1	62 83	..	..	63 84
21	Chuharkana	{ (x) (y)	196 189	16 17	..	77 77	74 70	400 385	..	4 4	478 459	193 186	14 15	..	77 77	73 68	312 329	..	4 4	389 401
22	Sheikhupura	{ (x) (y)	544 594	34 38	..	318 328	255 267	563 589	..	15 15	833 861	542 568	31 33	..	294 326	253 254	456 535	..	14 15	723 804
23	Jaranwala	{ (x) (y)	357 407	25 27	..	173 173	148 163	479 507	..	9 9	636 679	342 384	24 24	..	173 173	141 148	427 439	..	9 9	577 596
24	Nankana Sahib	{ (x) (y)	285 354	26 36	..	140 140	119 153	270 442	..	7 7	396 602	277 331	23 31	..	140 140	119 145	247 334	..	7 7	373 486
25	Lyallpur	{ (x) (y)	2,360 2,575	64 81	..	528 528	1,571 1,764	3,318 3,544	..	31 31	4,920 5,339	2,171 2,462	60 70	..	528 528	1,549 1,657	2,739 2,858	..	31 31	4,319 4,546
26	North-Western Railway, Moghalpura.	{ (x) (y)	..	..	1 1	..	..	5,000 5,000	..	5,000 5,000	..	..	..	1 1	..	..	..	5,000 5,000	..	5,000 5,000
27	Municipal Committee, Am- ritsar.	{ (x) (y)	..	..	1 1	..	..	2,025 1,931	..	2,025 1,931	..	..	..	1 1	..	..	..	2,025 1,931	..	2,025 1,931
28	Jullundur Electric Supply Company, Limited.	{ (x) (y)	..	..	1 1	..	..	1,500 1,500	..	1,500 1,500	..	..	..	1 1	..	..	..	1,500 1,500	..	1,500 1,500
29	Kapurthala State	{ (x) (y)	..	..	1 1	..	..	500 500	..	500 500	..	..	..	1 1	..	..	..	500 500	..	500 500
30	Phagwara	{ (x) (y)	..	..	1 1	..	..	200 500	..	200 500	..	..	..	1 1	..	..	..	200 500	..	200 500
31	Jogindernagar	{ (x) (y)	.. 132	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	Gurdaspur Lift Irrigation Project.	{ (x) (y)	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	{ (x) (y)	15,271 17,203	1,025 1,191	18 17	4,967 5,121	8,524 8,751	16,053 17,573	9,483 9,758	219 219	34,279 36,301	14,153 16,289	857 1,046	13 15	4,878 4,918	7,409 8,180	13,373 15,029	9,391 9,635	213 212	30,386 33,056

NOTE.—Figures against { (x) represent the position on 31st March, 1938.
(y) represent the position on 31st March, 1939.

Number of applications received (Columns 2 to 4) .. { (x) 16,314
(y) 18,411

Number of consumers connected (Columns 11 to 13) .. { (x) 15,023
(y) 17,350

Number of Public Lamps applied for (Column 5) .. { (x) 4,967
(y) 5,121

Number of Public Lamps connected (Column 14) .. { (x) 4,878
(y) 4,918

Total connected load applied for in kW. (Columns 6 to 8) .. { (x) 34,060 kW.
(y) 36,082 kW.

Total load connected (Columns 15 to 17) .. { (x) 30,173 kW.
(y) 32,844 kW.

Total connected load applied for Public Lamps (Column 9) .. { (x) 219 kW.
(y) 219 kW.

Total load connected Public Lamps (Column 18) .. { (x) 213 kW.
(y) 212 kW.

APPEN
STATEMENT OF REVENUE]

Serial No.	Name of Local Distribution Scheme, Bulk Supply consumers or Divisions.	SALE OF POWER.			
		General.	Industrial.	Public Lighting	Bulk.
		3	4	5	6
1	2	Rs. A.	Rs. A.	Rs. A.	Rs. A.
PART I.—LOCAL					
1	Pathankote	9,038 14	11,214 1	1,977 2	..
2	Dinanagar	2,365 2	2,182 14	1,057 4	..
3	Gurdaspur	17,531 0	22,954 5	3,512 3	..
4	Dharamsala	6,706 11	1,064 5	724 0	..
5	Kangra	1,114 4	..	..	..
6	Batala	19,001 12	42,223 14	7,415 0	..
7	Tarn Taran	9,652 5	11,770 9	2,181 14	1,787 7
8	Dhariwal	2,265 3	6,601 0	..	..
9	Gurdaspur Lift Irrigation Project ..	..	2,465 9	..	..
10	Amritsar Suburban	14,126 15	1,30,027 4	..	164 13
11	Qadian	10,250 9	4,340 11	184 7	54 4
12	Baghbanpura	9,897 15	6,271 7	..	..
13	Rural Area towards North of Shalamar	818 15	7,912 9	..	..
14	Lahore Suburban	31,838 10	76,085 5	2,314 6	15,773 11
15	Kasur	25,252 10	32,494 1	5,411 4	..
16	Ferozepore City	37,134 6	37,048 11	3,673 4	..
17	Ferozepore Cantonment	26,681 14	18,706 10	3,029 12	..
18	Messrs. Steel General Mills, Ltd. ..	..	33,220 0	..	..
19	Sheikhupura	19,485 0	29,861 0	4,188 0	..
20	Chuharkana	4,463 0	26,499 0	1,180 0	..
21	Nankana Sahib	8,122 0	29,031 0	2,357 0	..
22	Jaranwala	9,411 0	23,981 0	2,516 0	..
23	Lyallpur	1,02,338 0	3,26,182 0	7,786 0	..
24	Ludhiana	1,03,019 8	1,47,292 0	12,250 5	3,860 14
25	Kartarpur	3,790 12	2,284 5	594 8	..
26	Phillaur-Goraya	7,543 9	9,036 1	734 5	..
27	Jullundur Sub-West Maksoodpur Soora Nusie, etc.	81 6	5,398 15	..	..
28	Jullundur Sub-East and North-Western Railway.	453 10	2,969 11	..	..
Total Part I ..		4,82,384 14	10,49,118 3	63,086 10	21,641 1

DIX J.

ASSESSED DURING THE YEAR 1938-39.

Total Columns 3 to 6.	RENTALS.							
	General.		Industrial		Public Lighting.			
	Service.	Meter.	Service.	Meter.	Line Charge.	Meter.	Lamp Charge.	
	7	8	9	10	11	12	13	14
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.

DISTRIBUTION SCHEMES.

22,230	1	1,365	14	1,264	4	476	7	187	14	936	0	42	0	1,492	5
5,605	4	515	11	500	1	135	14	73	15	567	0	12	0	825	0
43,997	8	1,788	4	1,621	15	304	12	230	9	1,285	8	54	0	2,178	0
8,495	0	1,060	5	931	13	237	4	31	13	703	0	12	0	501	3
1,114	4	209	8	224	5	..	..	..	..	..	..	..	..	..	..
68,640	10	2,621	8	2,821	4	1,368	15	810	8	2,034	0	42	0	4,687	8
25,392	3	1,294	3	1,397	11	345	2	250	0	783	0	6	0	1,155	0
8,866	3	412	15	379	12	206	12	113	0	..	..	..	..	..	..
2,465	9	..	..	6	0	16	8	18	0	..	..	..	..	..	..
1,44,319	0	523	6	615	13	4,223	8	468	6	..	..	..	..	..	..
14,829	15	1,272	2	1,262	9	583	15	245	10	119	4	6	0	123	12
16,169	6	1,123	11	1,166	13	167	13	131	4	..	..	..	..	..	..
8,731	8	36	4	41	4	285	3	51	4	..	..	..	..	..	..
1,26,012	0	3,115	13	3,056	0	3,007	5	624	9	910	8	15	12	1,297	8
63,157	15	3,270	1	3,253	15	716	0	575	10	1,704	5	54	0	3,180	13
77,856	5	3,807	14	3,880	6	3,705	8	565	9	1,731	8	42	0	1,864	8
48,418	4	2,439	9	2,535	1	721	4	316	3	1,733	4	18	0	1,950	0
33,220	0	..	..	..	..	4	8	23	7	..	..	..	..	..	..
53,534	0	1,794	0	1,733	0	708	0	382	0	1,830	0	15	0	2,343	0
32,142	0	604	0	572	0	393	0	155	0	312	0	19	0	586	0
39,510	0	974	0	945	0	1,207	0	329	0	1,091	0	37	0	1,050	0
35,908	0	1,148	0	1,132	0	467	0	290	0	924	0	24	0	1,307	0
4,36,306	0	4,118	0	6,942	0	1,848	0	565	0	3,185	0	63	0	4,164	0
2,66,422	11	10,004	8	9,850	5	4,306	9	2,135	13	4,780	4	43	0	7,471	1
6,669	9	794	12	833	8	138	15	44	6	459	0	6	0	414	0
17,313	15	904	0	966	1	366	4	257	6	651	0	12	0	375	0
5,480	5	6	14	19	9	168	6	63	12	..	..	..	..	..	..
3,423	5	70	0	78	8	96	11	18	12	..	..	..	..	..	..
16,16,230	12	45,275	2	48,030	13	26,206	7	8,959	10	25,739	9	522	12	36,065	10

APPENDIX

STATEMENT OF REVENUE ASSES

Serial No.	Name of Local Distribution Scheme, Bulk Supply consumers or Divisions.	BULK.		Total Columns 8 to 16.	RENT OF Cash or Adjustment.
		Service.	Meter.		
		15	16			17	18
		Rs. A.	Rs. A.	Rs. A.	Rs. A.
PART I.—LOCAL DISTRI-					
1	Pathankote .. .. .	..	..	5,764 12	..
2	Dinanagar .. .. .	..	..	2,629 9	..
3	Gurdaspur .. .. .	..	..	7,463 0	..
4	Dharamsala .. .. .	..	..	3,477 6	..
5	Kangra .. .. .	..	..	433 13	..
6	Batala .. .. .	..	..	14,385 11	..
7	Tarn Taran	53 13	21 13	5,306 9	..
8	Dhariwal .. .. .	..	..	1,112 7	..
9	Gurdaspur Lift Irrigation Project ..	..	..	40 8	..
10	Amritsar Suburban	150 9	9 0	5,990 10	..
11	Qadian	3 12	2 8	3,619 8	..
12	Beghbanpura .. .. .	..	..	2,589 9	..
13	Rural Area towards North of Shalamar	..	..	413 15	..
14	Lahore Suburban	85 8	57 0	12,169 15	18 7
15	Kasur .. .. .	..	..	12,754 12	..
16	Ferozepore City .. .. .	..	..	15,597 5	..
17	Ferozepore Cantonment .. .. .	..	..	9,713 5	..
18	Messrs. Steel General Mills, Ltd. ..	..	..	27 15	..
19	Sheikhupura .. .. .	..	..	8,805 0	4 0
20	Chuharkana .. .. .	..	..	2,641 0	..
21	Nankana Sahib .. .. .	..	..	5,633 0	..
22	Jaranwala .. .. .	..	..	5,292 0	..
23	Lyalpur .. .. .	..	..	20,885 0	12 0
24	Ludhiana	56 14	43 14	38,692 4	..
25	Kartarpur .. .. .	..	..	2,690 9	..
26	Phillaur-Goraya .. .. .	..	..	3,531 11	..
27	Jullundur Sub-West Maksoodpur Soora Nusie, etc. ..	..	..	258 9	..
28	Jullundur Sub-East and North-Western Railway. ..	..	..	263 15	..
	Total Part I. ..	350 8	134 2	1,92,183 9	34 7

J—CONTINUED.

SED DURING THE YEAR 1938-39.

BUILDINGS.			7 + 17 Total Receipts Columns to 21.	DEDUCTIONS.			25 Total Columns 23 + 24.	26 Net receipts Column 22—25.
Through Salary Bills.	Sundry Receipts.	Recovery of Expenditure.		Refunds.	Bad Debts written off.			
19	20	21	22	23	24	25	26	
Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	
..	94 2	..	28,088 15	9 2	..	9 2	28,079 13	
..	..	..	8,234 13	..	..	..	8,234 13
..	..	..	51,460 8	..	17 0	17 0	51,443 8
..	..	..	11,972 6	..	..	..	11,972 6
..	3 14	..	1,551 15	..	..	..	1,551 15
..	177 1	..	83,263 6	127 3	..	127 3	83,076 3	
..	61 11	..	30,760 7	145 4	15 14	161 2	30,599 5	
..	17 13	..	9,996 7	9 5	..	9 5	9,987 2	
..	0 8	..	2,506 9	..	..	..	2,506 9
..	197 4	..	1,50,506 14	502 5	..	502 5	1,50,004 9	
..	51 9	..	18,501 0	7 0	..	7 0	18,494 0	
..	13 5	..	18,772 4	140 1	308 5	448 6	18,323 14	
..	128 8	..	9,273 15	105 6	..	105 6	9,168 9	
..	-667 8	162 8	1,37,695 6	-1,059 9	56 3	1,003 6	1,38,698 12	
..	30 5	..	75,943 0	484 10	2 4	486 14	75,456 2	
..	..	..	93,453 10	..	..	..	93,453 10
..	193 1	..	58,324 10	20 1	..	20 1	58,304 9	
..	203 0	..	33,450 15	196 2	..	196 2	33,254 13	
..	422 0	..	62,765 0	..	..	..	62,765 0
..	40 0	..	34,823 0	31 0	..	31 0	34,792 0	
..	79 0	..	45,222 0	408 0	..	408 0	44,814 0	
..	37 0	..	41,237 0	..	..	..	41,237 0
..	-7,955 0	..	4,49,248 0	..	..	..	4,49,248 0
..	467 4	..	3,05,582 3	923 12	..	923 12	3,04,658 7	
..	0 2	..	9,360 4	0 1	..	0 1	9,360 3	
..	39 14	..	20,885 8	92 5	21 8	113 13	20,771 11	
..	..	..	5,738 14	55 15	..	55 15	5,682 15
..	..	..	3,687 4	..	..	..	3,687 4
..	-6,365 3	162 8	18,02,246 1	2,197 15	421 2	2,619 1	17,99,627 0	

APPENDIX

STATEMENT OF REVENUE ASSESSED

Serial No.	Name of Local Distribution Scheme, Bulk Supply, Consumers of Division.	SALE OF POWER.			
		General.	Industrial.	Public Lighting.	Bulk.
1	2	3	4	5	6
PART II.—SUBSI					
		Rs. A.	Rs. A.	Rs. A.	Rs. A.
1	Renala Hydro-Electric Installation ..	1,231 11	..	..	2,43,647 1
2	Total Part II ..	1,231 11	..	..	2,43,647 1
PART III.—BULK					
1	North-Western Railway, Moghalpura ..	..	..	..	2,88,471 2
2	Amritsar Municipal Committee ..	..	..	..	3,69,898 13
3	Kapurthala State ..	..	..	..	22,649 0
4	Jullundur Electric Supply Company ..	..	..	..	95,333 10
5	Phagwara ..	..	..	..	21,608 6
6	Total Part III ..	..	..	..	7,97,960 15
PART IV.—GENERAL					
1	Resident Engineer ..	660 8	..	..	..
2	Pathankot Division ..	..	..	..	..
3	Amritsar Division ..	..	..	..	..
4	Lahore Division ..	..	..	..	..
5	Lyallpur Division ..	..	..	..	..
6	Ludhiana Division ..	..	..	..	..
7	Construction Divisions ..	..	..	..	..
8	Total Part IV ..	660 8	..	..	..
GRAND TOTALS PARTS I, II, III AND IV).		4,84,277 1	10,49,118 3	63,086 10	10,63,249 1

J—CONTINUED.

DURING THE YEAR 1938-39.—CONTINUED.

Total Columns 3 to 6,	RENTALS.						
	General.		Industrial.		Public Lighting.		
	Service.	Meter.	Service.	Meter.	Line Charge.	Meter.	Lamp Charge.
7	8	9	10	11	12	13	14

DIARY SCHEMES.

Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.
2,44,878	12	27	7	26	9	..	..	..	..	..	..	..	..
2,44,878	12	27	7	26	9	..	..	..	..	..	..	..	..

SUPPLY CONSUMERS.

2,88,471	2	..	..	..	..	..	..	..	..	..	..	..	..
3,69,898	13	..	..	..	..	..	..	..	..	..	..	..	..
22,649	0	..	..	..	..	..	..	..	..	..	..	..	..
95,333	10	..	..	..	..	..	..	..	..	..	..	..	..
21,608	6	..	..	..	..	..	..	..	..	..	..	..	..
7,97,960	15	..	..	..	..	..	..	..	..	..	..	..	..

REVENUE FROM THE DIVISIONS.

660	8	63	0	292	0	..	..	..	..	..	..	..	..
660	8	63	0	292	0	..	..	..	..	..	..	..	..
26,59,730	15	45,365	9	48,349	6	26,206	7	8,958	10	25,739	9	522	12
													36,965
													10

APPENDIX

STATEMENT OF REVENUE ASSESSED

Serial No.	Name of Local Distribution Scheme, Bulk Supply, Consumers or Division.	BULK.		Total Columns 8 to 16.	RENT OF
		Service.	Meter.		Cash or adjustment.
1	2	15	16	17	18
PART II.—SUBSIDY					
		Rs. A.	Rs. A.	Rs. A.	Rs. A.
1	Renala Hydro-Electric Installation ..	..	..	54 0	2,133 2
2	Total Part II ..	..	..	54 0	2,133 2
PART III.—BULK					
1	North-Western Railway, Moghalpura ..	..	..	..	..
2	Amritsar Municipal Committee ..	..	..	..	..
3	Kapurthala State ..	..	204 0	204 0	..
4	Jullundur Electric Supply Company ..	..	194 3	194 3	..
5	Phagwara ..	..	187 8	187 8	..
6	Total Part III ..	..	585 11	585 11	..
PART IV.—GENERAL REVENUE					
1	Resident Engineer ..	..	..	355 0	779 8
2	Pathankot Division ..	..	..	..	1,140 14
3	Amritsar Division ..	..	..	..	217 12
4	Lahore Division ..	..	..	..	-476 8
5	Lyallpur Division ..	..	..	..	56 0
6	Ludhiana Division ..	..	..	..	-21 0
7	Construction Divisions ..	..	..	..	..
8	Total Part IV ..	..	..	355 0	1,696 10
GRAND TOTAL (PARTS I, II, III AND IV)		350 8	719 13	1,93,178 4	3,864 3

J—CONCLUDED.

DURING THE YEAR 1938-39.—CONCLUDED.

BUILDINGS.				DEDUCTIONS.			
Through salary bills.	Sundry Receipts.	Recovery of expenditure.	Total Receipts (Columns 7 + 17 to 21).	Refunds.	Bad debts written off.	Total Columns 23 + 24.	Net Receipts (Columns 22 + 25).
19	20	21	22	23	24	25	26

ARY SCHEMES—concl.

Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
2,070 14	379 5	1 11	2,49,517 12	50,000 1	..	50,000 1	1,99,517 11
2,070 14	379 5	1 11	2,49,517 12	50,000 1	..	50,000 1	1,99,517 11

SUPPLY CONSUMERS—concl.

..	..	..	2,88,471 2	0 1	..	0 1	2,88,471 1
..	..	..	3,69,898 13	5,669 8	..	5,669 8	3,64,229 3
..	..	..	22,853 0	..	..	..	22,853 0
..	..	..	95,527 13	4 13	..	4 13	95,523 0
..	..	..	21,795 14	..	..	..	21,795 14
..	..	..	7,98,546 10	5,674 6	..	5,674 6	7,92,872 4

FROM THE DIVISIONS—concl.

6,044 12	459 7	..	8,299 3	8 6	0 12	9 2	8,290 1
1,647 5	9,634 7	..	12,422 10	0 8	..	0 8	12,422 2
2,686 9	1,49,051 6	3 8	1,51,959 3	..	..	..	1,51,959 3
3,694 12	5,545 6	886 3	9,649 13	2,853 15	..	2,853 15	6,795 14
2,880 0	1,940 0	1 0	4,677 0	49 0	..	49 0	4,628 0
1,916 13	21,440 2	2 9	23,338 8	19 14	..	19 14	23,318 10
-77 4	1 0	..	-76 4	..	..	..	-76 4
18,592 15	1,88,071 12	893 4	2,10,270 1	2,931 11	0 12	2,932 7	2,07,337 10
20,663 13	1,82,085 14	1,057 7	30,60,580 8	60,804 1	421 14	61,225 15	29,99,354 9

APPENDIX K.

STATEMENT SHOWING AMOUNT OF PAYMENTS OUTSTANDING ON 31st MARCH, 1938.

Serial No.	Contract to Specification No.	Particulars.	Outstanding on C. I. F. Karachi.	Erection Charges.	Total amount.
			£.	Rs.	Rs.
1	511	132 kV. and 66 kV. Trunk and Branch Transmission Lines.	168	126	2,366
2	553/554	Trunk and Branch Telephone System and Instruments.	22	..	293
3	525	Sub-station Equipment on 33 kV. Branch Lines.	21	142	422
4	573	Hydraulic level and pressure indicating Equipment.	64	2,589	3,442
5	567	Local Distribution Lines for different towns in the Punjab.	..	524	524
6	526	Cranes	43	..	570
Total			318	3,381	7,617

APPENDIX L.

STATEMENT SHOWING THE AMOUNT OF PAYMENT OUTSTANDING ON 31st MARCH, 1939.

Serial No.	Contract to Specification No.	Particulars.	Outstanding on C. I. F. Karachi.	Erection Charges.	Total amount.
			£.	Rs.	Rs.
1	525	Sub-station Equipment for Ludhiana and Jullundur 33/11 kV. Sub-station.	21	107	387
		Less over payment by Lahore Division	..	-125	-125
2	573	Hydraulic level and Pressure Indicating Equipment.	64	2,589	3,442
3	567	Local Distribution Lines for different towns in the Punjab.	..	524	524
4	570	11 kV. and 33 kV. Branch Lines ..	..	1,494	1,494
Total			85	4,589	5,722

