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REPORT  
ON THE  
ADMINISTRATION OF THE INDIAN  
ELECTRICITY ACT, 1910,  
IN THE  
PUNJAB  
*for the year 1936.*

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**Proceedings of the Government of the Punjab, Industries and Labour (Electricity) Department, No. 1926-El.-37/10426-S., dated Simla, the 28th September, 1937.**

READ—

Report on the Administration of the Indian Electricity Act, in the Punjab for the year 1936.

ELECTRIFICATION in the Punjab proceeds apace. Eight fresh licenses for the supply of electrical energy were granted during 1936, bringing the number of licenses granted up to 54. Twenty-one applications were received for the grant of licenses at 13 places. Thirty-five electric supply undertakings were in actual productive operation at the end of the year. In addition to these, the Public Works Department, Electricity Branch, is now supplying electricity at 29 places of which 9 were connected to the supply during the year. This means that, when the places at which the Public Works Department, Electricity Branch, is giving a bulk supply to a licensee are omitted, there are 62 local centres for the distribution of electricity. Many of these are very small places, as, naturally, applications for licenses for the bigger places were received first. The total number of units sold to the public was 68,212,611, and of these, 38,091,552 were generated by the Electricity Branch of the Public Works Department. The corresponding figures for the last year were respectively, 52,633,180 and 30,039,013. A substantial increase from 2,226 to 2,541 in the number of medium pressure installations appears to indicate the installation of electricity in new industrial establishments and a conversion to electricity of the older establishments. A survey of new motors installed shows that the best users of electricity are, in this order, rice and flour mills, workshops for general purposes, cotton and oil mills and wood working establishments. Electric pumping sets of a total of 539 horse power were put into operation during the year.

2. There were 20 applications for the grant of sanction to engage in the business of supplying electricity under section 28 of the Indian Electricity Act. They were under consideration at the end of the year; but it may be said here that, being for the supply of energy to small towns, they were refused as Government considered that sanction under section 28 is not intended to be used as a substitute for licence, and should be used only in cases in which a license is clearly not suitable.



3. Accepting the recommendations of the Advisory Board, Government ordered a reduction of the maxima rates laid down under the Ráwalpindi Electric License. The question of the revision of the maxima rates under the Gujránwála Electric License was referred to an Advisory Board towards the close of the year. The report was received after the close of the year and is now under consideration.

4. Accidents increased from 66 to 91—a number 11 higher than that of 1934. Unfortunately the number of fatal accidents rose from 5 to 15, but this number is 2 less than that of 1934. It should, however, be noted that of the 15 fatal accidents only 12 occurred to human beings, and that of the 76 accidents which were not fatal, only 46 resulted in injury to persons, the remaining 30 being damage caused to licensees' works by the falling of trees and other objects. Of the 12 accidents fatal to human beings, 9 were due to members of the public, unconnected with electric supply undertakings, interfering with or trespassing upon the works of electric supply undertakings or handling unsafe electrical apparatus. It is satisfactory to note that none of the fatal accidents was due to any breach of the Act or rules committed by any licensee or person authorised to generate or transmit energy. Eleven of the cases of injury occurred to persons who had no connection with the trade, and 35 to those employed in it, these being mainly due to the use of inadequate appliances and to carelessness on the part of the injured persons.

5. The Electric Inspector and his Assistants carried out 1,745 inspections (about double the number of the previous year), and of these 460 were of works of the Public Works Department, Electricity Branch. The Inspector inspected the entire works of the licensee at Pánipat because of trouble existing between the licensee and the public of the town. In 22 towns earth tests of distribution equipment were carried out in the interests of public safety. Five disputes were referred to the Electric Inspector for decision under the Act; but there seems to be also a tendency to send him miscellaneous complaints, for a large number were received, on which no action was considered necessary as the complainants had powers to represent their cases to other authorities. There seems to be a need for greater care on the part of licensees in the preparation of general designs and methods of construction; for the shortcomings of the designs, etc., of 8 licensees involved the Inspector in an



expense of time that ought not to have been necessary. Another irregularity that ought not to occur is that of drops in the voltage—owing to a large number of complaints on this point the Inspector had to carry out tests at 21 places and bring defects to the notice of the licensees concerned.

6. The work of the Electric Inspector and his staff is increasing in volume and in importance every year with the spread of the use of electricity. Mr. C. W. Stowers was Inspector throughout the year. Government are pleased to record their appreciation of the quantity and quality of his and his staff's work.

*Order.*—Ordered that the above review be published in the *Punjab Gazette* and be circulated with the report.

Ordered also that a copy be forwarded to the Director of Industries, Punjab, for information and that copies be forwarded to the Government of India, Department of Industries and Labour.

By order of the Government of the Punjab,

R. J. S. DODD,

*Secretary to Government, Punjab,*

*Electricity and Industries Departments.*

expense of time that might not have been necessary. Another university that might not be so in that of other in the university in a large number of complaints at this point the Inspector had to carry out tests at all places and bring details to the notice of the Director concerned.

6. The work of the Director, Inspector and his staff is interesting in volume and in importance every year with the spread of the use of electricity. Mr. G. W. Stewart was Inspector throughout the year. Government are pleased to record their appreciation of the quantity and quality of his work and his staff's work.

Order—Ordered that the above review be published in the Punjab Gazette and be circulated with the report.

Ordered also that a copy be forwarded to the Director of Industries, Punjab, for information and that copies be forwarded to the Government of India, Department of Industries and Labour.

By order of the Government of the Punjab

A. J. S. DODD

Secretary to Government, Punjab  
Electricity and Industries Department



## Report on the administration of the Indian Electricity Act, 1910, in the Punjab for the year 1936.

THE total number of licences granted under the Indian Electricity Act, 1910, for the supply of electrical energy, in force at the end of the year 1936 was 54\*. Eight fresh licences were granted during the year. Thirty-five electric supply undertakings were in actual productive operation at the end of the year, while the others were either in the constructional stage or were awaiting completion of certain formalities under the Act. Energy was made available in five new towns during the year, *viz.*, Gojra, Muzaffargarh, Muktsar, Fazilka and Ambala Cantonment. The use and business of supplying electrical energy are growing increasingly popular. As the majority of the bigger towns in the province have already been licensed, applications for the grant of licences for smaller towns are coming in. And twenty applications for the grant of sanction under section 28 of the Indian Electricity Act to engage in the business of supplying energy were received during the year. These applications were under consideration when the year closed. A statement showing the names of places for which licences have been granted for the supply of electrical energy is attached to the report as appendix I. A map showing the location of the various supply companies and the Public Works Department, Electricity Branch, is appended in the end of the report.

The Punjab Public Works Department, Electricity Branch, is supplying electricity at 29 places shown in appendix II.

2. The total generating capacity of the plants installed by the licensed undertakings (other than the Public Works Department, Electricity Branch) was 26,293 KW. as against 25,156KW in the previous year. Of these installations generating sets of 1747-KW capacity were driven hydraulically, those of 17,948KW. capacity by steam and the remainder by internal combustion engines. The total number of units sold by the licensed undertakings was 34,483,413 (including 4,365,354 units sold by the Municipal Committee, Amritsar, by purchase from the Electricity Branch) as compared with 26,697,019 during the previous year.

The generating capacity of the Public Works Department, Electricity Branch (including the Renala Khurd Power Station) remained the same as last year, *viz.*, 49,100 KW. The total number of units sold by the Electricity Branch (including those sold to the Municipal Committee, Amritsar and the Model Town Society, Lahore) was 38,094,552 as against 30,039,013 last year. The total number of units sold by the Renala Khurd Station was 3,738,421 which is included in the figure of the

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\*The total number of licences in force at the end of 1935, was 46 and not 47 as one licence was revoked in the year 1935.



Electricity Branch. The total number of medium pressure installations connected during the year was 186 as against 171 last year.

The total number of medium pressure installations, both connected to the licensees' works and to the system of the Public Works Department, Electricity Branch, at the close of the year 1936 was 2,541 as against 2,226 at the close of 1935. There were 15 such installations, as against 9 last year, in the Model Town where energy is being supplied under section 28 of the Indian Electricity Act. The increase in the number of medium pressure installations is an index of the increased use of electricity for industrial purposes, and for this result the following causes appear to be in the main responsible:—

- (a) increase in the number of electric supply undertakings ;
- (b) expansion in the activities of the Public works Department, Electricity Branch, both in urban and rural areas ;
- (c) replacement of oil engines by electric motors due to decrease in cost ; and
- (d) industrial development.

A survey of the new motors installed during the year carried out by the Electric Inspector showed that rice and flour mills and workshops for general purposes were the best users of electricity. Cotton and oil mills and woodworking establishments came next. The total capacity of motors installed during the year under report for various industrial purposes was 5,822H.P. In addition, electric pumping sets aggregating 539H.P. were put in operation.

A graph showing the increase in the number of units is attached as appendix III at the end of the report.

3. *Applications for the grant of licences.*—Twenty-one applications were received during the year for the grant of licences for the supply of electrical energy at the undermentioned 13 places:—

*Names of places.*

1. Toba Tek Singh
2. Arifwala

*Names of applicants.*

- Messrs. Sehgal and Company, Toba Tek Singh,
- (1) Messrs. Capur and Company, Lahore.
  - (2) The Okara Electric Supply Company, Ltd.



<i>Names of places.</i>	...	<i>Names of applicants.</i>
3. Mian Channu	...	(1) The Mian Channu Electric Power Company, Lahore. (2) Messrs. Sujan Singh-Ujjal Singh, Factory Owners, Mian Channu.
4. Mandi Burewala	...	Mehta Brothers and Company, Lyallpur.
5. Kamalia	...	The Kamalia Electric Supply Company, Limited, Lahore.
6. Lala Musa	...	Lala Leikh Raj and others, Jhelum.
7. Jalalpur Jattan	...	The Punjab Electric Power Company, Limited, Lahore.
8. Rupar	...	Messrs. Varma and Company, Lahore.
9. Campbellpur	...	(1) The (proposed) Campbellpur Electric Supply Company, Limited, Lahore. (2) The (proposed) Campbellpur Electric Power Company, Limited, Lahore (through Messrs. Dhody and Company). (3) The Campbellpur Electric, Power Supply Company, Limited (proposed), (through Mr. Y. R. Puri). (4) The Campbellpur Electric Company, Lahore.
10. Dalhousie	...	(1) The (proposed) Dalhousie Electric Supply Company, Limited, Lahore (2) The Jullundur Electric Supply Company, Limited, Jullundur. (3) The (proposed) Dalhousie Electric Power Company Limited, Lahore (through Mr. Dhody). (4) The Dalhousie Electric Company, Lahore. Promoted by Rai Bahadur Dr. Maharaj Kishan Kapur and others.
11. Pindigheb	...	Messrs. M. R. Kohli and Company, Lahore.
12. Phullerwan	...	The Phullerwan Electric Trading Company, Jhelum.
13. Khushab	...	Messrs. M. R. Kholi and Company, Lahore.



The undermentioned applications for the grant of licences were pending from the previous year :—

<i>Names of places.</i>	...	<i>Names of applicants.</i>
1. Jhang-Maghiana	...	(1) Messrs. Manohar Lal-Shanti Sarup Jalota, Jhang. (2) The Sargodha Electric Supply Company, Limited, Lahore. (3) The Northern India Electric Supply Company, Limited, Lahore.
2. Pakpattan	...	(1) The Pakpattan Electric Supply Company, Lahore. (2) The Pakpattan Electric Supply Company, Limited, Lyallpur. (3) The Pakpattan Electric Power Company, Pakpattan.
3. Bhera	...	(1) The Bhera Electric Supply Company, Lahore. (2) The Bhera Electric Power Company, Lahore.
4. Kalka	...	(1) The Kalka Electric Supply Company, Lahore. (2) Messrs. Nanda and Company, Limited, Lahore. (3) The Kalka and Simla Hills Electric Supply Company, Lahore.
5. Tandlianwala	...	Messrs. Varma Kalra and Company, Lahore
6. Jagraon	...	Messrs. Seengal Jain and Company, Lahore.
7. Lala Musa	...	Messrs. Malak Chand Suri and Sons, Lahore.
8. Kaithal	...	(1) The (proposed) Kaithal Electric Supply Company, Limited, Lahore. (2) The Kaithal Electric Supply Company, Model Town, Lahore.

Eight licences, as noted below, were granted during the year :—

<i>Description of licences.</i>	<i>Names of concerns to whom granted.</i>
1. The Jhang-Maghiana Electric Licence, 1936.	The Northern India Electric Supply Company, Limited, Lahore.



*Description of licences**Names of concerns to whom granted.*

- |   |   |
|---|---|
| 2. The Pakpattan Electric Licence, 1936.      | The Pakpattan Electric Power Company, Pakpattan.            |
| 3. The Kaithal Electric Licence, 1936.        | The Punjab Electric Company, Lahore.                        |
| 4. The Bhera Electric Licence, 1936.          | The Bhera Electric Supply Company, Lahore.                  |
| 5. The Kalka Electric Licence, 1936.          | The Kalka and Simla Hills Electric Supply, Company, Lahore. |
| 6. The Tandlianwala Electric Licence, 1936.   | Messrs. Varma Kalra and Company, Lahore.                    |
| 7. The Toba Tek Singh Electric Licence, 1936. | Messrs. Sehgal and Company, Toba Tek Singh.                 |
| 8. The Mandi Burewala Electric Licence, 1936. | Messrs. Mehta Brothers and Company, Lyallpur.               |

Applications for the grant of licences for Arifwala, Mian Channu, Kamalia, Jalalpur Jattan, Rugar, Campbellpur, Dalhousie, Pindigheb, Phullerwan, Khushab, Jagraon and Lala Musa were still under consideration when the year under report closed. The Electricity Branch have it under their consideration whether they should supply energy at Lala Musa and Jagraon.

4. Applications for the amendment of the undermentioned licences were received during the year :—

- |   |                           |
|---|---------------------------|
| 1. The Jagadhri Electric Licence, 1935                            | ... Clause 4              |
| 2. The Muktsar Electric Licence, 1935                             | ... Clause 4              |
| 3. The Pakpattan Electric Licence, 1936                           | ... Clause 4              |
| 4. The Abohar Electric Licence, 1934                              | ... Clause 4              |
| 5. The Ambala Cantonment Electric Licence, 1935.                  | Clause 10                 |
| 6. The Okara Electric Licence, 1934                               | ... Clause 4              |
| 7. The Mianwali Electric Licence, 1935                            | Clauses 4 and 10          |
| 8. The Karnal Electric Licence, 1934                              | ... Clause 9 (1).         |
| 9. The Hissar, Hansi, Bhiwani, and Rothak Electric Licence, 1932. | Clauses 5, 7 and annexure |
| 10. The Sargodha Electric Licence, 1931                           | Clause 4.                 |



Applications for the amendment of the following licences were pending from the previous year :—

1. The Panipat Electric licence, 1934 ... Clause 9 (1)
2. The Fazilka Electric Licence, 1934 ... Clause 9 (1).

Applications for the amendment of Jagadhri, Muktsar, Pakpattan, Ambala Cantonment, Okara and Mianwali licences were sanctioned during the year. The Punjab Government did not sanction the amendment of the Karnal and Fazilka licences. The application for the amendment of the Panipat Electric Licence, 1934, was kept pending till the company placed its work on a more satisfactory footing. The remaining 3 applications were under consideration when the year closed.

5. *Applications under section 27 of the Indian Electricity Act, 1910.*—The Kasauli Electric Supply Company, Limited, were allowed to supply energy to the residents of Baghat State upto a maximum of 25 K.W. subject to the condition that in the event of the partial failure of supply, the consumers within the licensed area shall have prior claim to the generating capacity of the power station, and that the supply to Baghat State consumers shall not be restored unless and until the full demand of the consumers within the licensed area has been met. Permission was granted on almost similar terms to the Municipal Committee, Simla, to supply electrical energy at Tara Devi to the North-Western Railway and to Messrs. Keventer Farm upto 50 K W. after the additional 800 K W. Diesel set had come into operation.

The Okara Electric Supply Company, Limited, were allowed to supply energy to the Sutlej Cotton Mills, Limited, Okara, for a period of 10 months for use during the constructional period of the mills.

Permission was granted to the Hoshiarpur Electricity Supply Company to supply energy to the house of Mr. Faiz Mohammad Khan in village Fatehgarh.

The Application of the Ambala Electric Supply Company, Limited, to supply energy to the North-Western Railway, Ambala Cantonment Railway Station, was rejected by Government as the Railway authorities ultimately decided not to take energy from the Ambala City undertaking.

6. *Applications under section 28 of the Act.*—The Punjab Textile Mills, Limited, Montgomery, applied for the grant of sanc-



tion under section 28 to engage in the business of supplying energy to the public within the Municipal limits of Montgomery. They offered to supply at rates 25 per cent. lower than those charged by the licensee for that area. The application was rejected by the Punjab Government. Twenty fresh applications noted below were received for the grant of sanction under section 28 of the Act during the year. These applications were pending when the year closed.

<i>Names of places.</i>	<i>Names of applicants.</i>
1. Malakwal	... (1) The Electric Supply Syndicate, Lahore.
	... (2) The Sargodha Electric Supply Company, Limited, Lahore.
2. Khushab	... (1) The Electric Supply Syndicate, Lahore.
	... (2) The Sargodha Electric Supply Company, Limited, Lahore.
3. Phullerwan	... (1) The Electric Supply Syndicate, Lahore.
	... (2) The Sargodha Electric Supply Company, Limited, Lahore.
	... (3) The (proposed) "The Traders Electric Supply Company Limited", Phullerwan and Bhalwal.
4. Bhalwal	... (1) The Electric Supply Syndicate, Lahore.
	... (2) The Sargodha Electric Supply Company, Limited, Lahore.
	... (3) The Bhalwal Electric Supply and Industrial Corporation, Bhalwal.
	... (4) The (proposed) "The Traders Electric Supply Company, Limited", Bhalwal and Phullerwan.



- |                    |     |   |
|--------------------|-----|---|
| 5. Chiniot         | ... | Messrs. Y.R. Puri and Company, Lahore.                |
| 6. Miani           | ... | The Bhera Electric Supply Company, Limited, Lahore.   |
| 7. Pind Dadan Khan | ... | The Bhera Electric Supply Company, Limited, Lahore.   |
| 8. Budhlada        | ... | Messrs. Y.R. Puri and Company, Lahore.                |
| 9. Shujabad        | ... | Messrs. Y.R. Puri and Company, Lahore.                |
| 10. Chichawatni    | ... | Messrs. R.L. Oberoi and Company, Lahore.              |
| 11. Shahpur City   | ... | The Shahpur Electric Supply and Industries, Sargodha. |
| 12. Shahpur Sadar  | ... | The Shahpur Electric Supply and Industries, Sargodha. |
| 13. Sillanwali     | ... | Messrs. Y. R. Puri and Company, Lahore.               |

7. *Applications under section 51 of the Act for the grant of powers of Telegraph authority.*—The application of the Lahore Electric Supply Company, Limited, for the grant of powers of Telegraph Authority within the scarcely populated portion of their area of supply was under consideration when the year closed, as the matter was still under correspondence.

8. *Conditions of supply.*—The draft conditions of supply in respect of the undermentioned places were under consideration at the end of the year :—

Gujranwala.

Simla.

Hoshiarpur.

Abohar.

The Punjab Government approved of the scale of miscellaneous charges and the form of written contract in respect of the Muzaffargarh Electric Licence, 1935. The question of according similar approval to certain other licensees was under consideration.

In response to a representation received from a number of licensees the question of the reduction of the rate of interest payable by licensees on consumers' security deposits was under the consideration of the Punjab Government.



9. *Statements of accounts.*—Statements of accounts were generally received within time. The licensees for Muktsar and Fazilka were exempted from the submission of accounts relating to the constructional periods of the undertakings. The statements of accounts in respect of Campbellpur were received from the Municipal Committee, Campbellpur, towards the end of the year for the years 1933-34, 1934-35 and 1935-36.

10. *Revision of maxima rates.*—Accepting the recommendations of the Electricity Advisory Board, the Punjab Government ordered a revision of the rates under the Rawalpindi Electric Licence, 1923.

The question of the revision of maxima rates under the Gujranwala Electric Licence, 1925, was referred to the Electricity Advisory Board towards the close of the year.

The question of the revision of maxima rates for the Multan Electric Licence, 1922, is still under consideration.

11. *Accidents.*—Ninety-one accidents occurred as against 66 in the previous year. Of these 15 (12 to human beings and 3 to animals) proved fatal as against 5 in the previous year. Forty-six accidents resulted in injuries to persons and 30 related to licensees' works caused through falling of trees and other objects. A statement showing details of the accidents during the past six years is attached as appendix IV.

Nine deaths of human beings were due to members of the public, unconnected with electric supply undertakings (*i.e.* unauthorised persons) interfering with or trespassing upon the works of electric supply undertakings or in handling unsafe electrical apparatus. Three persons employed on electrical works met with death in the course of their duties. Investigations into the causes of fatal accidents showed that none of these cases was the direct result of any breach of the provisions of the Indian Electricity Act or of any rules framed thereunder, by any licensee or person authorised to generate or transmit energy.

There were 46 cases of injuries. Thirty-five accidents occurred to persons employed in the electrical engineering trade, and the rest to persons who had no connection with the trade (*viz.* unauthorised persons). The injuries to persons connected with the trade were mainly due to inadequate appliances and carelessness on the part of the injured persons.

As stated last year, no importance should be attached to the increase in the number of accidents, due to the falling of



trees and other objects as such accidents are seldom of a serious nature and are included in the statement merely to comply with the statutory obligations imposed in this behalf.

The increase in the number of accidents over last year has followed the spread of electricity and should cause no alarm.

A graph showing the number of fatal accidents to human beings and animals as well as non-fatal accidents is printed as appendix V.

12. *Prosecutions.*—No fresh prosecutions were lodged during the year. The prosecution instituted against the Delhi Cloth and General Mills, Limited, Delhi, was withdrawn. The prosecution against the Lahore Electric Supply Company, Limited, was pending when the year closed.

13. *Electric Inspector's activities*—(a) *Inspections.*—The number of inspections carried out by the Electric Inspector and his Assistants increased from 861 to 1,745. Of the total number of inspections, 460 were carried out in connection with the works of the Public Works Department, Electricity Branch: 55·5 per cent. of such inspections represent inspections of medium pressure installations, 6·3 per cent. of high pressure works and the remainder of low pressure installations. The inspection work was undertaken regularly and systematically and every possible facility was given to licensees to energize their high tension apparatus within the minimum period after erection.

The Electric inspector inspected the entire works of the licensee at Panipat in response to the request from the District Magistrate, Karnal, because the public of Panipat continued to agitate against the local electric supply company and urged the removal of brackets from their walls and the grant of compensation for damage done by the erection of aerial lines.

(b) *Earth tests.*—The extent of electrical development throughout the province both in rural and urban areas has created many additional potential sources of danger, particularly in view of the extensive use of bare copper aerial lines and the accessibility of a large number of steel support carrying wires at dangerous voltages. A large number of earth tests were therefore carried out in the interests of public safety and many steel supports and other apparatus were tested with a view to ascertaining whether they were free from danger at all times. Such tests were carried out in no less than twenty-two towns.



(c) *Meter tests.*—The additional equipment which was under erection at the close of last year could not be completely erected as the Punjab Government were considering the question of the transfer of the laboratory to the Maclagan Engineering College. A number of tests were, however, carried out by the Electric Inspector.

(d) *Disputes.*—Five disputes were referred to the Electric Inspector for decision under the Indian Electricity Act.

A large number of miscellaneous complaints were received by the Electric Inspector, but in the majority of cases no action was deemed necessary, as the complainants had powers under the provisions of the Indian Electricity Act to represent their cases to other authorities.

(e) *Appeals.*—The Lahore Electric Supply Company, Limited, submitted five appeals to the Electric Inspector under section 13 (1) (b) of the Indian Electricity Act, 1910, against the orders of the Municipal Committee, Lahore, disapproving of the plans of the company for erecting substations, etc. All these cases were settled amicably between the parties, and consequently the necessity for a decision by the Electric Inspector disappeared.

(f) *Approval of methods of construction.*—Eight licensees submitted their general designs and methods of construction for the approval by the Electric Inspector. As these designs lacked many essential details, the Electric Inspector has had to spend a considerable time in the disposal of these cases.

Permission was accorded by the Electric Inspector to the Lahore Electric Supply Company, Limited, to adopt a method of construction for aerial lines at Rohtak involving the use of wooden poles. These poles had been treated with a solution of copper and arsenic, known under the trade name of "Ascu", invented by an officer of the Forest Research Institute, Dehra Dun. These poles are said to be free from attack by termites and are expected to have a life of about 20 years.

(g) *Inspection of testing stations (Clause XIII of the schedule to the Act).*—Owing to a large number of complaints by consumers regarding low voltage of supply the Electric Inspector carried out voltage tests at twenty-one places and the defects observed by him were brought to the notice of the licensees concerned for rectification.

(h) *Street lighting agreements.*—Fifteen street lighting agreements were submitted to the Electric Inspector, under rule 9-A of the Municipal Works Rules. As these agree-



ments necessitated extensive modifications, only three were approved by the Electric Inspector during the year.

14. *Development of electrical undertakings in the Punjab.—Campbellpur.*—The Municipal Committee having found it impossible to manage the electric supply undertaking decided to hand it over to a private party. Consequently four applications were received for the grant of a licence for this town.

*Gujranwala.*—Several defects of serious nature were noticed in the works of the licensees which necessitated the issue of an order under rule 4 (4) of the Indian Electricity Rules, 1922, requiring them to put their installation in order within a period of three months. The defects were removed and an additional generating set of 440 K. V. A. capacity was installed by the licensees.

*Jullundur.*—As a result of complaints by the Cantonment authorities of heavy drops in the voltage, the licensees decided to put up three more sub-stations in the Cantonment area. The scheme and the methods of construction were approved by the Electric Inspector and the actual construction work was in hand when the year closed.

*Karnal.*—In connection with application by the licensees for the compulsory acquisition of land for their power house and subsidiary buildings, an enquiry was held by the Electric Inspector under section 40 of the Land Acquisition Act, 1894. The matter was under the consideration of Government when the year closed.

*Lahore.*—The demand for the supply of energy continued to increase as a result of vast development of new *abadis* and the reduction in rates. Consequently the licensees had to augment many of their transmission lines and to put up new sub-stations. Four such stations were constructed in Prem Nagar, Nawankot, near Bharat Buildings and in the vicinity of Bhati Gate. The licensees had also under consideration the construction of similar stations at Misri Shah and Faiz Bagh. The normal peak load of the licensees reached 5,250 K W.

*Mianwali.*—The licensees had difficulty in obtaining land for their power house. An amendment of the licence both in respect of the area of supply and the period for the execution of compulsory works was accordingly applied for and sanctioned.

*Moga.*—Owing to disputes between the share-holders and directors of the licensee company, several complaints were received against the company. The matters are still not settled.



*Electricity Branch.*—The Electricity Branch supplied energy to 29 towns at the close of the year. The supply was made available in 9 fresh towns during the year under report.

15. Rules for the licensing of electrical contractors and the issue of certificates of competency to supervisors were published by Government for inviting public criticism and suggestions. The matter is still under the consideration of Government.

16. The Electric Inspector and his Assistants had a busy year of useful work.

RAM LAL,

LAHORE:

*The 21st July, 1937.*

*Director of Industries, Punjab.*



The first part of the paper is devoted to a  
 general survey of the literature on the  
 subject. It is found that the majority of  
 the authors have concentrated on the  
 study of the effects of the various  
 factors on the rate of reaction.

In the second part of the paper, the  
 results of the present investigation are  
 presented. It is shown that the rate of  
 reaction is affected by the concentration  
 of the reactants and the temperature.

The third part of the paper is devoted to  
 a discussion of the results. It is found  
 that the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The fourth part of the paper is devoted to  
 a summary of the results. It is found  
 that the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The fifth part of the paper is devoted to  
 a conclusion. It is found that the rate  
 of reaction is affected by the  
 concentration of the reactants and  
 the temperature.

The sixth part of the paper is devoted to  
 a list of references. It is found that  
 the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The seventh part of the paper is devoted  
 to an appendix. It is found that the  
 rate of reaction is affected by the  
 concentration of the reactants and  
 the temperature.

The eighth part of the paper is devoted  
 to a list of symbols. It is found that  
 the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The ninth part of the paper is devoted  
 to a list of abbreviations. It is found  
 that the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The tenth part of the paper is devoted  
 to a list of figures. It is found that  
 the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The eleventh part of the paper is devoted  
 to a list of tables. It is found that  
 the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The twelfth part of the paper is devoted  
 to a list of footnotes. It is found that  
 the rate of reaction is affected by  
 the concentration of the reactants and  
 the temperature.

The thirteenth part of the paper is  
 devoted to a list of references. It is  
 found that the rate of reaction is  
 affected by the concentration of the  
 reactants and the temperature.



## APPENDIX I.

*Towns for which licences have been granted to companies or local authorities for the supply of electricity.*

<i>Name of Town.</i>	<i>Population according to the census of 1931.</i>		
1. Ambala Cantonement	..	..	36,338
2. Ambala City	..	..	35,193
3. Amritsar	..	..	263,210
4. Abohar	..	..	14,035
5. Bhiwani	..	..	35,866
6. Bhera	..	..	19,741
7. Campbellpur	..	..	7,997
8. Chakwal	..	..	9,542
9. Dera Ghazi Khan	..	..	23,468
10. Fazilka	..	..	18,463
11. Gujranwala	..	..	58,716
12. Gujrat	..	..	25,604
13. Gojra	..	..	9,779
14. Gujar Khan	..	..	15,155
15. Hoshiarpur	..	..	25,925
16. Hissar	..	..	25,179
17. Hansi	..	..	18,356
18. Hafizabad	..	..	14,431
19. Jullundur City	..	..	74,925
20. Jullundur Cantt.	..	..	11,933
21. Jhelum	..	..	17,666
22. Jagadhri	..	..	13,268
23. Jhang-Maghiana	..	..	36,035
24. Kasauli	..	..	3,212
25. Karnal	..	..	25,371
26. Khanewal	..	..	11,205
27. Kaithal	..	..	18,709
28. Kalka	..	..	7,937



## APPENDIX I—CONCLD.

<i>Name of Town.</i>				<i>Population according to the census of 1931.</i>
29. Lahore	..	..	..	400,075
30. Muzaffargarh	..	..	..	5,853
31. Multan	..	..	..	108,351
32. Montgomery	..	..	..	26,164
33. Moga	..	..	..	17,581
34. Muktsar	..	..	..	14,845
35. Mirawali	..	..	..	14,107
36. Mandi Baha-ud-Din	..	..	..	3,668
37. Murree	..	..	..	1,530
38. Mandi Burewala	..	..	..	3,271
39. Okara	..	..	..	10,712
40. Panipat	..	..	..	32,915
41. Pattoki	..	..	..	8,016
42. Pakpattan	..	..	..	11,311
43. Rawalpindi	..	..	..	75,767
44. Rohtak	..	..	..	35,235
45. Rewari	..	..	..	26,279
46. Sialkot	..	..	..	85,093
47. Sargodha	..	..	..	26,761
48. Shahdara	..	..	..	5,249
49. Sirsa	..	..	..	18,909
50. Sonipat	..	..	..	15,050
51. Simla	..	..	..	18,144
52. Tandlianwala	..	..	..	6,105
53. Toba Tek Singh	..	..	..	5,903



(iii)

## APPENDIX II.

*List of towns served by the Electricity Branch.*

- 
- |                   |  |
|-------------------|--|
| 1. Batala.        | 17. Ludhiana.  |
| 2. Gurdaspur.     | 18. Pathankot.   |
| 3. Dinanagar.     | 19. Phillaur.  |
| 4. Ichhra.        | 20. Dharmsala.   |
| 5. Qadian.        | 21. Baghbanpura.   |
| 6. Kartarpur.     | 22. Sadar Bazar (Lahore Cantonment).   |
| 7. Sura Nussie.   | 23. Amritsar Suburban (including Chheharta).                                   |
| 8. Chak Hussaina. | 24. Nankana Sahib.   |
| 9. Dhariwal.      | 25. Ferozepore Cantonment.   |
| 10. Lyallpur.     | 26. Goraya.  |
| 11. Ferozepore.   | 27. Tankanwali Basti (Ferozepore).   |
| 12. Jaranwala.    | 28. Kapurthala.  |
| 13. Tarn Taran.   | 29. Jullundur—(Bulk Supply to the Jullundur Electric Supply Company, Limited). |
| 14. Kasur.        |  |
| 15. Sheikhpura.   |  |
| 16. Chuharkana.   |  |
-



## APPENDIX II

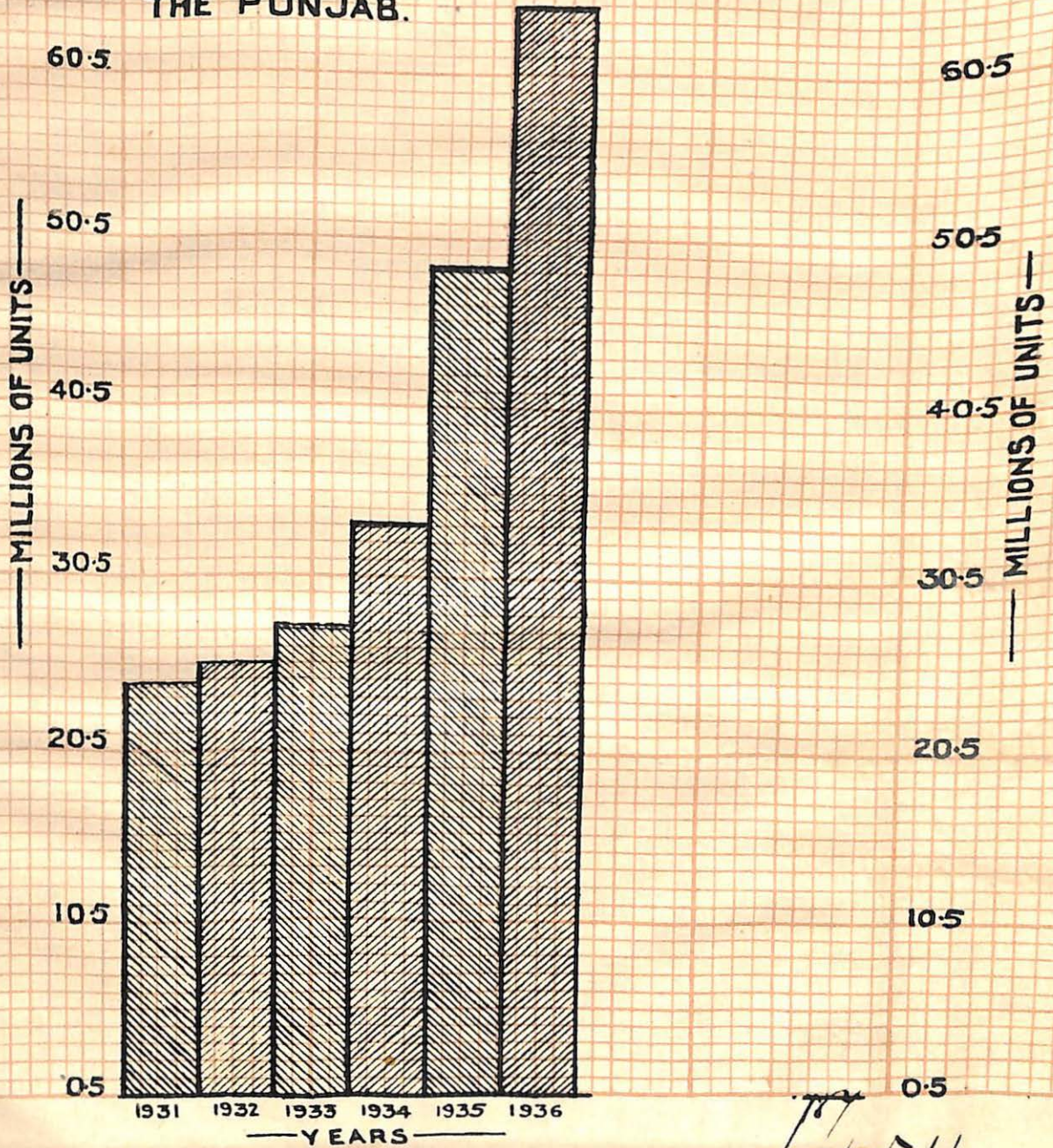
List of loans secured by the Electricity Board.

17. Indians	1. Botola
18. Patankar	2. Changan
19. Pillai	3. Changan
20. Dhanu	4. Changan
21. Changan	5. Changan
22. Changan (Laloo Changan)	6. Changan
23. Changan	7. Changan
24. Changan	8. Changan
25. Changan	9. Changan
26. Changan	10. Changan
27. Changan	11. Changan
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81. Changan	65. Changan
82. Changan	66. Changan
83. Changan	67. Changan
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86. Changan	70. Changan
87. Changan	71. Changan
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89. Changan	73. Changan
90. Changan	74. Changan
91. Changan	75. Changan
92. Changan	76. Changan
93. Changan	77. Changan
94. Changan	78. Changan
95. Changan	79. Changan
96. Changan	80. Changan
97. Changan	81. Changan
98. Changan	82. Changan
99. Changan	83. Changan
100. Changan	84. Changan



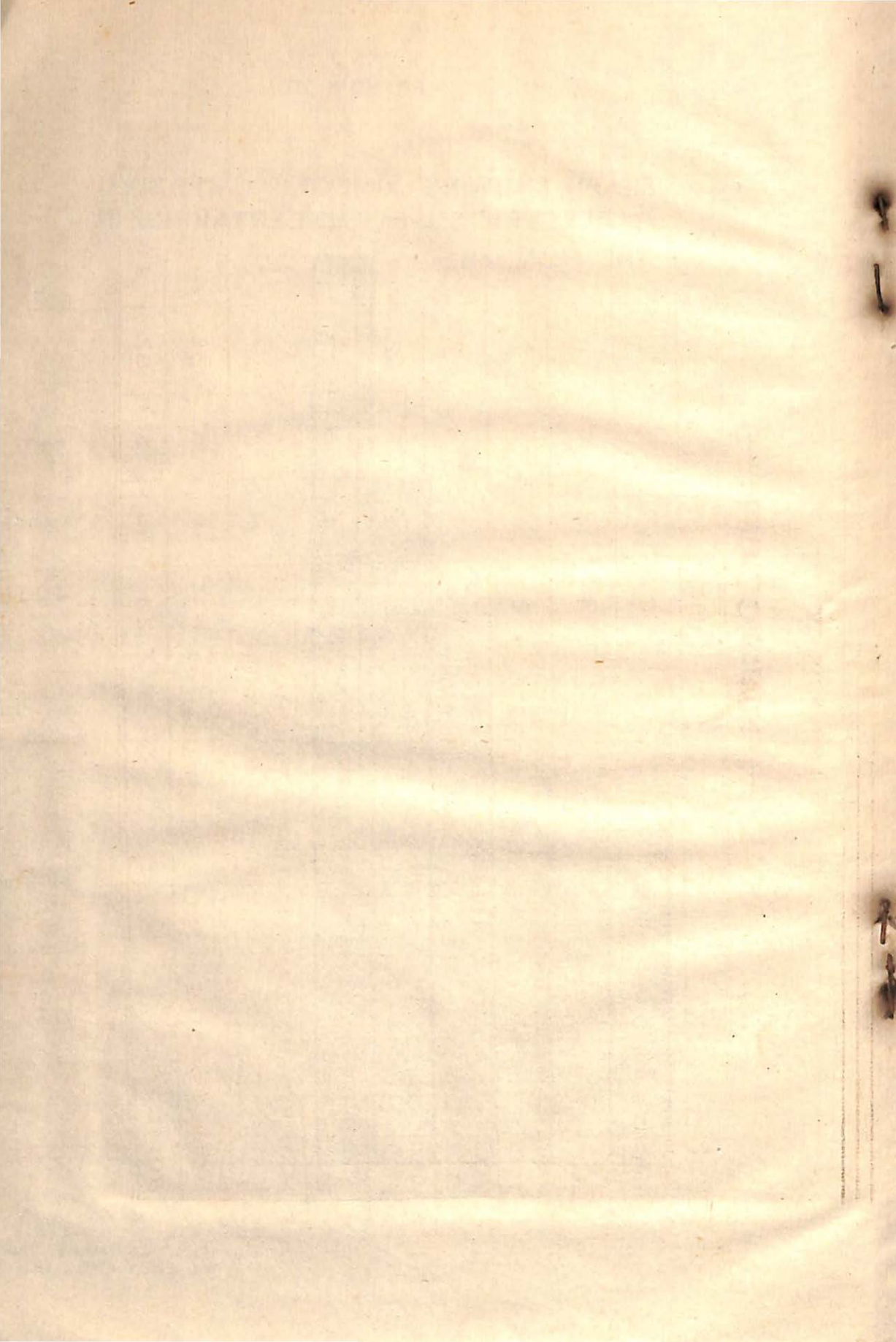
APPENDIX III

GRAPH SHOWING NUMBER OF UNITS SOLD BY ELECTRIC SUPPLY UNDERTAKINGS IN THE PUNJAB.



*W. S. S. S.*  
27/4/37  
OFFG. ELECTRIC INSPECTOR  
TO GOVT. PUNJAB







APPENDIX IV

ANALYSIS OF ACCIDENTS

S.No	YEARS	1931.	1932.	1933.	1934.	1935.	1936.
1.	ACCIDENTS RESULTING IN DEATH TO HUMAN BEINGS (UNAUTHORISED PERSONS)	NIL	2	2	1	NIL	5
2.	ACCIDENTS RESULTING IN DEATH TO HUMAN BEINGS (AUTHORISED PERSONS)	4	4	11	11	4	1
3.	ACCIDENTS RESULTING IN DEATH TO HUMAN BEINGS FROM FALLS FROM POLES(AUTHORISED PERSONS)	2	NIL	1	1	NIL	2
4.	ACCIDENTS RESULTING IN DEATH TO HUMAN BEINGS FROM FALLS FROM POLES(UNAUTHORISED PERSONS)	NIL	1	1	2	NIL	4
5.	ACCIDENTS RESULTING IN DEATH TO ANIMALS FROM ELECTRIC SHOCK	5	NIL	2	2	1	3
6.	ACCIDENTS RESULTING IN INJURIES TO HUMAN BEINGS. (AUTHORISED PERSONS)	8	4	7	23	15	35
7.	ACCIDENTS RESULTING IN INJURIES TO HUMAN BEINGS. (UNAUTHORISED PERSONS)	4	3	7	6	6	11
8.	ACCIDENTS TO LICENSEES' WORKS CAUSED THROUGH FALLING OF TREES & OTHER OBJECTS	NIL	1	20	36	40	30
	TOTAL	23	15	51	82	66	91

*W. Stowers*  
 6/11/37.  
 ELECTRIC INSPECTOR  
 TO GOVT. BUILDINGS

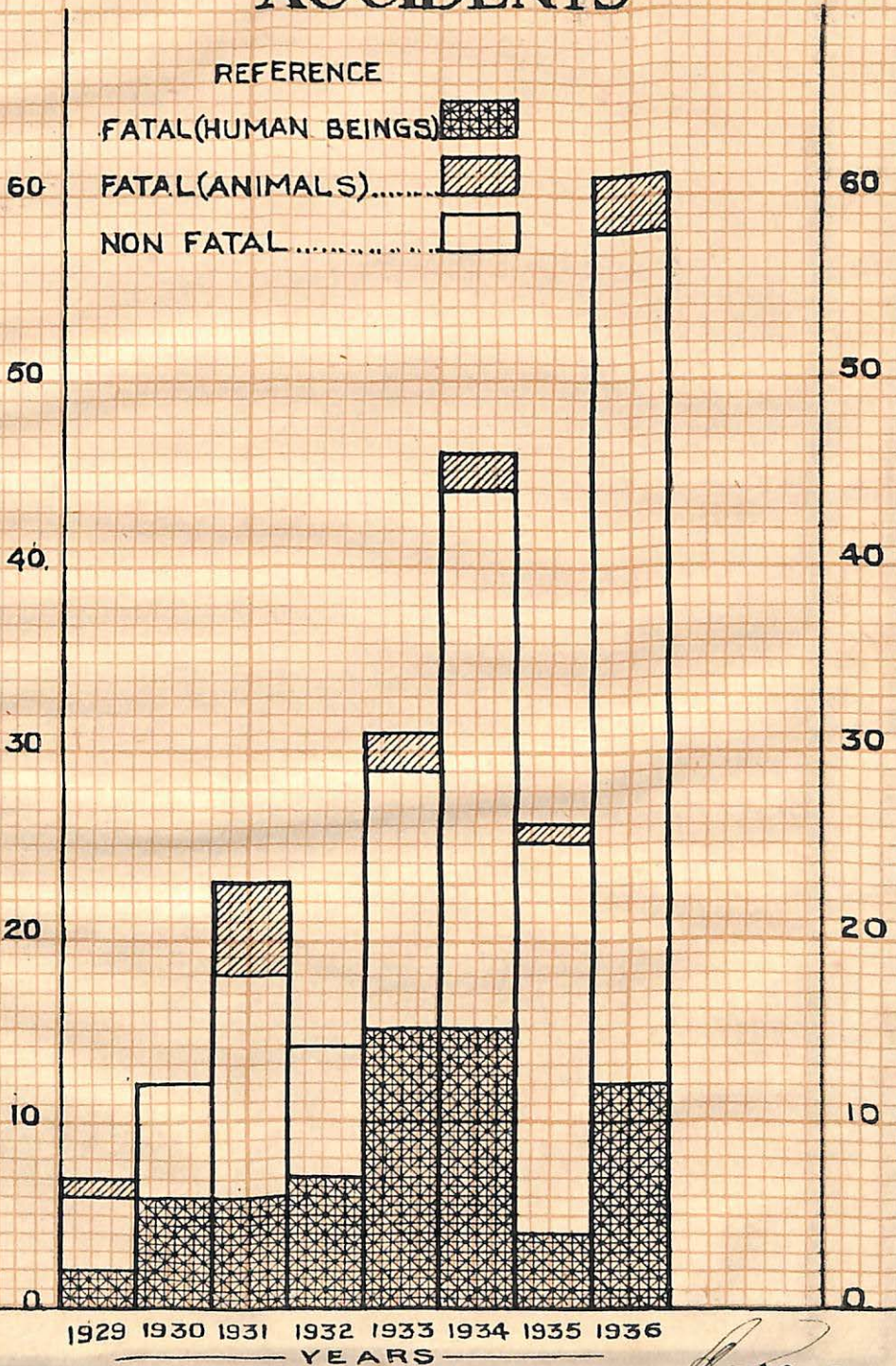






APPENDIX V

# NUMBER OF ACCIDENTS



*Stowers*  
 5/4/37  
 ELECTRIC INSPECTOR  
 TO GOVT. RUNJAB



