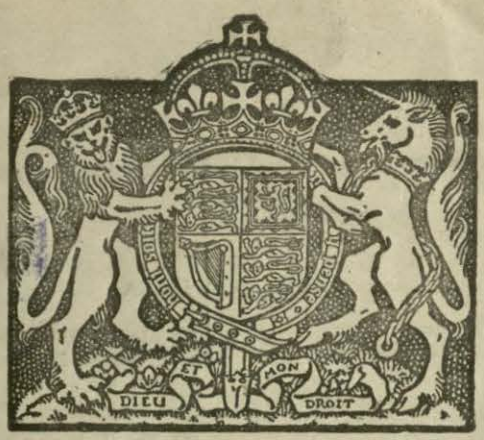

Annual Report on the Administration of the Indian Electricity Act, 1910 for the year 1940

SHILLONG

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1941

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OFFICE OF THE CHIEF ELECTRICAL INSPECTOR AND ELECTRICAL ADVISER TO THE GOVERNMENT OF ASSAM

No.3199-E.

FROM

W. ALLSUP, ESQ., M.I.MECH.E., M.I.E.I.,
CHIEF ELECTRICAL INSPECTOR AND ELECTRICAL ADVISER
TO THE GOVERNMENT OF ASSAM,

TO

THE CHIEF SECRETARY TO THE GOVERNMENT OF ASSAM.

Dated Shillong, the 10th October 1941.

SIR,

I HAVE the honour to submit herewith the Annual Report on the Administration of the Indian Electricity Act, 1910, in Assam, for the year ending 31st December 1940.

Your obedient servant,

W. ALLSUP,

Chief Electrical Inspector
and Electrical Adviser to the Government of Assam.

Report on the Working of the Indian Electricity Act in Assam for the year 1940

1.—GENERAL WORKING OF THE INSPECTORATE

Major Electrical Contracts.—The electrification of Government premises in the town of Dhubri was given out to contract well on in the year. The work is still proceeding and has necessitated numerous visits by the Electrical Inspector and the Testers.

2.—SPECIAL APPLICATION OF THE ACT OR RULES

The Annual General Meeting of the Central Electricity Board at New Delhi in January was attended. Previous Annual Reports have called the attention of users to the desirability of watching for the numerous notifications of proposed new Rules or amendments to existing Rules so that the desired criticism can be received in time for proper consideration. It might help if such matters were taken up informally with the writer in the first place if time permits. Any suggestions for amendments initiated by industry would also be welcomed.

Rule 7.—A revised Scale of Fees for the services of the Inspectorate came into force in July. Notwithstanding this no demand was made during the year for the said services. This is commented upon later when dealing with maintenance and safety.

Rule 48.—It is regrettable that nothing seems likely to mature in the form of an Electrical Contractors' Association for Assam. Rule 48 is not yet applied in Assam.

3.—GENERAL WORK

Testing.—The attempt to test more regularly and frequently all the Government premises possessing electrical installations continued with some success. Towards the close of the year a proposal for an additional Tester was approved and included in the Budget for the Session of the Legislature in 1941 and it is pleasing to be able to say that this was approved and the extra man appointed. Unfortunately the Senior Tester was away due to bad health for a great part of the year and, although a temporary man was appointed (since selected by the Public Service Commission as the third Tester) the nett available staff was still only two men.

It is hoped that with an extra man factory owners in particular will avail themselves of the special instruments and experience of the Inspectorate in calling us in for periodical tests of the installation at the extremely reasonable fees which would be possible were such " private calls " arranged to be made when the Testers were in the area for Government work. It is now very difficult to obtain new or even good second-hand electrical equipment and a " stitch in time" would be doubly valuable.

Test Room.—Owing to the difficulties in obtaining instruments very little was added to this equipment during the year. The remark made above applies equally here, meters are not easily obtainable and it is essential that those which are held are maintained in the maximum state of efficiency.

ELECTRICAL INSTRUCTION FACILITIES

The new electrical side of the Classes in the Jorhat Technical School continued to prove attractive and the work done by the National Service Labour Tribunal (Assam) in selecting young men and placing them in the selected training establishments for training on stipend for admission to the munition factories will in time not only help in providing the skilled men now so badly needed but will strengthen the amount of technically-skilled labour which is so necessary in Assam and will be still more so under the post-war conditions.

Parents will never have such an opportunity for their sons to be trained whilst being maintained as is now offered by this scheme and by the Bevin Scheme for sending particularly suitable youths to Great Britain for specialist training. An

intermediate class of youth can also train whilst being paid under the Ordnance Factories] Supervisor Training Scheme with the expectation of a still better paid post on completion of his training.

As Honorary Assistant Technical Recruiting Officer and Member of the National Service Labour Tribunal the writer has been privileged to assist in this work.

Although our two Government Technical Schools are still entering students for the normal long peace-time courses, possibly on account of this new development nothing has been done towards the formation of the Advisory Board for Vocational Education (Abbott-Wood Report) which was approved by Government two years ago.

There has recently been a Conference of the Principals of Technical Training Institutions with the idea of forming an all-India Body for the controlling of examinations and recognition of Technical Institutions of approved character. Developments must be awaited.

4.—ELECTRIC LICENSEES

The following licenses were in operation during the year under review, *viz.* :—

The Shillong Hydro-Electric, Limited ;

The Gauhati Electric Supply Corporation (1927), Limited ;

The Jorhat Electric Supply, Limited ;

The Tezpur Electric Supply Company, Limited ;

The Silchar Electric Supply, Limited ;

The Dibrugarh Electric Supply Company, Limited ;

The Sylhet Electric Supply, Limited ;

The Dhubri Electric Supply Company, Limited ;

i.e., there was no change.

Licenses granted.—Licenses for the towns of Karimganj and Habiganj in the Surma Valley were issued in November.

Licenses revoked, transferred or applied for but refused.—The Tinsukia License, issued in January 1939, was revoked in May 1940 for failure to comply with the terms of the License—no security deposit having made been within the period laid down in the License or even within an extension of this period. The Licensee appealed to Government twice and on the second occasion secured the annulment of the revocation contingent on his depositing his Security Deposit, which he did. No progress with the work was made during the year under review nor, it is necessary to state, has progress been made three quarters of the way through 1941.

Licenses under consideration.—No further applications for other areas have been received so none is under consideration.

PROGRESS MADE IN LICENSES NOW IN FORCE

The Tinsukia position has been remarked upon. No progress could well be made in the little time remaining before the year end in the case of Karimganj and Habiganj but here again the position in October 1941 is very unsatisfactory though no doubt the war has caused great difficulties in obtaining equipment. In all cases however wooden pole lines could have been erected at least and Power House sites prepared and the Power House structure erected.

The Nowgong License has done all this and now only awaits arrival from England of the main generating plant—an oil engine, but no generator, having been waiting on site for many months.

The Tezpur License has had similar plant difficulties and has not been able to change over from 220 two wire supply to 220/440 three wire supply as required by the terms of the license granted in replacement of the previous "Sanction to Supply" under which this Company has operated for many years.

The other Licenses in actual operation have continued to make minor improvements and in some cases have since the close of the year under review succeeded in purchasing second-hand equipment to reinforce existing plant. Full details of Tariffs, etc., were given in the last two Reports so are not repeated

here. One or two attempts were made to reduce the rebates without due process, the cause put forward being the rise in fuel and lubricating oils and materials and wages generally. These were squashed. The war situation also affected the further provision of electrical amenities for travellers on the railways, full particulars of which were given in earlier Reports.

The figure of consumers, units sold, etc., are given in Appendix I. In previous Reports this section has been used for urging consideration of matters thought desirable as well as merely commenting upon actual happenings. This year little can usefully be said in view of the difficulty in obtaining equipment of practically all kinds except that of wooden distribution-line poles. Wooden poles may be technically a retrograde step but their use is unavoidable owing to steel shortage for all steel or reinforced concrete poles. Those licensees which did not obtain replacement equipment when it was possible to do so at pre-war prices are now facing the position their own parsimony has caused. Even were the electrification of town water supplies pushed on with the local authorities, as constantly urged by the writer before the war, licensees would be unable to guarantee supply of energy in many cases for lack of prime mover and generating capacity, even if the existing waterworks equipment sufficed and merely required equipping with motors.

As regards the two hydro-electric schemes in operation, Shillong and Imphal (Manipur State), the cold season of 1940-41 was exceptionally dry and prolonged. In the case of Shillong, the extensive deforestation and in particular that in the upper areas of the Umkhrah Catchment Area due to the new Cantonment commenced some time prior to the war seems likely to have something to do with water shortage due to more rapid run-off. There exists in the McCabe Road area a suitable reservoir site which would not only provide a reserve but would afford a long-lacked amenity and improvement to the scenery, a lake, boating, etc. Such a reservoir would also do away with the extensive rice-land and wandering drainage and accompanying malaria risk.

In Imphal the water shortage was such that the numerous rice-mills had to have their supply of energy curtailed to the late hours of the night and early hours of the morning.

As regards Street Lighting, a constant topic of criticism in previous Reports, the likely imposition of A. R. P. measures obviously makes it undesirable to improve illumination.

Annual Accounts.—The old criticism still remains, that it is essential to build up adequate Depreciation and Reserve Funds.

ELECTRICAL INSPECTION OF CINEMAS

This continued as touring for other duties permitted. The licensing procedure has recently been enquired into by Government and in consequence all Projector Equipment Operators have now to take out an Assam Operators' License thereby remedying the loss in revenue to Government previously caused by their working on Bengal licenses.

It is quite obvious that regular inspection is essential in the public safety and owners or occupiers seeking to delay making a proper installation have only themselves to blame if every such repeat visit is made on the prescribed fee.

5.—ELECTRICAL INSPECTION IN FACTORIES

This is combined with touring for inspections under the Factories Act and other Labour Enactments as the Assam Inspectorate is a joint Electrical and Factories one. Consequently, fees have not been charged for such. The matter was discussed with representatives of industry and the view was expressed that the low pressure factory installations generally in use in Assam did not justify inspection on fee, the risk to worker-personnel being small.

The principal development during the year was the practical completion of considerable Generating Station of the Assam-Bengal Cement Company's Works at Chatak in the Sylhet District. This is far the largest individual installation in Assam and was visited by the writer early in the year before running and again shortly after the close of the year when the sets were "run-up". In this case the Company admit the necessity for inspection on fee as it is a 6,600 volt plant.

In the factories generally the defects continued to be the same, *viz*., neglect of small details, original poor workmanship particularly in the wiring, dirt and dust accumulations.

Despite the war some factories managed to obtain and instal generating equipment and numerous premises at least had their wiring renewed. Full mention of individual cases is given in the Welfare Section of the Annual Factories Report which it is unnecessary to repeat here.

During the year the enhanced requirements for workers to know how to give Artificial Respiration for Electric Shock, consequent on the amendment of the relevant Rules by the Central Electricity Board, were emphasised when inspecting and when attending and addressing by invitation the Annual General Meetings of the Indian Tea Association and the Indian Tea Planters' Association.

Special attention was also given to protection to the operators' and assistants' eyes when doing electric-welding. During the last couple of years before the war there was a relatively considerable increase in the number of these welding-sets. The cases of "accident" reported are shewn in the Accidents Tables in the Annual Factories Report under "Hot Substances", being cases of inflamation caused by exposure to the arc rather than to a sudden onset properly classifiable as an "accident", and it has been proposed that such should rather be industrial diseases than accidents and should be considered at the next Chief Inspectors of Factories Conference, and also the desirability of making Electric-welding a Hazardous Occupation.

6.—ELECTRICAL ACCIDENTS

A fatal accident occurred on the Keane Bridge in Sylhet Town. A man climbed up onto the top girder of the Bridge in the dark and either climbed over the downstream side of the structure or fell off it and made contact with the 3 phase 230/400 volt aerial line which is carried on brackets some little distance below and to one side of the girder. The autopsy showed that he was suffering from a serious internal trouble.

There was a slight accident on the Gauhati Electric Supply Distribution System, a mistri by mistake touching a wire he thought he had made "dead" and receiving a shock which caused him to fall off the ladder and injure himself.

There was a slight accident due to mechanical causes when starting up a small oil-engine set driving a dynamo at the Assam Bengal Railway Power House at Mariani Railway Station.

Accidents in factories—At the Assam Oil Company a worker left his work and climbed up a stanchion carrying an electric wire to a crane and caught hold of it, causing burns and a fall with resulting injuries. He had lost several members of his family.

At the Margherita Colliery Workshop a worker received burns from a failure in the flexible cable supplying a hand-lamp.

Mention has been made elsewhere of injuries to the eyes from electric-welding, caused by looking at the arc when not wearing the protective handscreen or goggles and also to the need for numerous workers knowing how to give the proper treatment for electrical shock. The skilled electrician himself is perhaps the worker most likely to receive a shock and, unless his mates know how to treat him, *immediately* and continuously, a life may be lost.

It is an offence punishable with penalty for neglect under the Rules not to see that workers are properly instructed and that persons do not work alone in places where a shock is possible. There is far too much slackness.

It should be noted that all elecrical accidents have to be reported to the inspectorate irrespective of the place of their occurrence, *e.g.*, an accident in a private house is reportable. Also that Schedule II of the Workmen's Compensation Act covers electical accidents to employees irrespective of whether factory or non-factory workers.

7.—TOURING

The Chief Inspector visited every licensed area in the Province except Dhubri at least once. Dhubri was visited by the Electrical Inspector and several times by the Testers. He and they also visited every other licensed area at least once.

The writer with the calls upon him for office work, attendance at Delhi in January, and the Honorary Technical Recruiting and Tribunal duties, chiefly confined himself perforce to special visits and to discussions with the Superintendents

of the larger Factory Companies, but three long car-tours were done by him two factories in the Assam Valley in August-September and again in November-December and the Surma Valley in February-March, with short special tours in between.

The Inspector paid special attention to the Rice, Flour and Oil Mills, where the conditions electrically as well as generally in the Factories Act sense are less satisfactory than in the other types of factory. He toured for 150 days in the year and apart from solely electrical work inspected 344 factories.

The District Magistrates also inspected a proportion of the factories in their areas as part-time Factory Inspectors. Their comments upon obviously faulty electrical matters are of considerable assistance to the electrical side of the Inspectorate as they enable them to be followed up at the earliest opportunity by the technical Inspector.

8.—PROSECUTIONS

There were none ; the general policy of previous years was maintained, to obtain compliance by pressure where persuation fails rather than to prosecute.

HYDRO-ELECTRIC POSSIBILITIES

A fairly full review of some of these was given in the previous Report. In March 1941 advantage was taken of a holiday-period to visit the Gorge of the Um Ngi, an easy two days' march from the motor-road-end at Mawphlang, which was described in the previous Report. The object was to check the stream flow at the end of an exceptionally dry cold-weather. The stream-flow was checked by stop watch and such methods as limited means permitted by the writer and his companion of the previous October tour. Prolonged wading in March is trying but it was found on the 9th of March that the stream flow with the conservative available head (neglecting extra height possible with a dam) of 500 feet would give 7,000 Horse Power at that time of year from stream flow alone. Next day the left bank of the Gorge was turned and a descent forced to the junction of the main stream with the Phud Symper falling many hundred feet down into the broad portion of the Gorge where the bed is almost level for some hundreds of yards and is very wide, where sites for a power house were prospected and a colour film taken. Unfortunately the film was not very successful but some of it, used at the same place as in October 500 feet above, did show the considerable amount of water coming down at that date for comparison with the much greater amount shewn in the non-colour film taken in mid-October of 1940 after a fortnight of dry October weather, when our stream-flow measurements (neglecting dam height) gave a figure of 26,000 K.W. or 34,000 Horse Power.

On the return the drainage area of the Phud Symper was crossed and Symper ascended for the view over the left or the eastern bank of the drainage area below the possible power-site. The slopes of the upper basis of the Um Ngi, some dozen miles above the proposed damsite, were also seen from the last camp on the homeward journey and it is obvious that upper (subsidiary) reservoirs are feasible in addition to the main reservoir immediately above the Gorge Head where, as described in the previous Report, the stream-bed rises only some 35 feet in no less than three miles and where there is a solid rock foundation for any dam and a natural dam already largely spanning the gorge.

It is remarkable that this scheme, so obvious from the map, was not considered in the Hydro-Electric Surveys of twenty years ago, lying as it does some 25 miles as the crow flies from Chhatak, as an alternative to or in reinforcement of the complicated artificial reservoir scheme in the Cherrapunji area. A large cement factory utilising some 3,000 K. W. has recently been built at Chhatak. It derives its power from thermal (coal) plant.

This is mentioned as there is an impression that every possibility was considered twenty years ago whereas with the time and means at its disposal the Hydro-Electric Survey was perforce limited and in fact was shut down under the

retrenchment measures of the 1920s. The later issues of the Reports of the Geological Survey of India cover the extensive coal measures in the Garo Hills. It should not be thought that development hinges solely upon water power.

The Planting and Commerce Group in the Legislature kindly circularised the industrial constituents concerning the writer's request in the last Report that anyone knowing of hydro-electric possibilities, particularly those in the neighbourhood of factories, would inform him of them. Only one has been mentioned as a result, in the N. W. Cachar Tea District, and this was already known though time has not permitted any investigation on the spot.

Readers may not have seen President Roosevelt's June message to the U. S. Legislature urging the vital need to develop every possible source of power and for the development of the St. Lawrence Hydro-Electric Project and pointing out how the Axis powers, despite their other war-preoccupations, are hastening every possible power development. Among other things he said "Electric power and transportation are the limiting factors in production", and "The enemies of democracy are developing every hydro-electric resource and every waterway from Norway to the Dardanelles. Are we to allow this continent to be outmatched because short-sighted interests oppose the development of one of our greatest resources ?" (hydroelectricity).

Had Assam developed its resources before the present war, our combined coal and hydro-potential would now have been available for making the essential munition derivatives from our immense coal resources. Mr. Blenkinsop particularly advocated in his Report of 1923 the making of artificial fertilisers from the nitrogen of the atmosphere by the use of hydro-electric power as an essential peace-time need for India and as being an ideal hydro-load, and, as is well known, the German synthetic nitrogen plants largely kept Germany supplied with the essentials for high-explosives and propellants in the last (Great) War, and are presumably doing the same now in addition to providing vital petroleum products from coal.

SHILLONG :

The 9th October 1941.

W. ALLSUP,
Chief Electrical Inspector and Electrical Adviser to Government.

APPENDIX I

Particulars of licensed electrical undertakings in Assam

Name of undertaking	Nature of supply	Units sold	Number of consumers at—			Total connected load with K. Ws.	Plant capacity in K. Ws.	For the year	Remarks
			Low pressure	Medium pressure	High pressure				
1	2	3	4	5	6	7	8	9	10
1. The Shillong Hydro-Electric, Limited.	A. C. 3 phase/single phase 2200/400/230 volts.	945,803	1,063	53	2	834	550	1940	
		903,313	810	48	2	808	550	1939	
2. Jorhat Electric Supply Company, Limited.	D. C. 440/220 volts.	189,967	409	8	..	400	150	1940	
		155,291	377	6	..	368	150	1939	
3. Gauhati Electric Supply Corporation (1927), Limited.	A. C. 3 phase/single phase 3300/400/230 volts.	371,187	623	37	..	418	288	1940	
		312,181	546	28	..	402	288	1939	
4. Silchar Electric Supply, Limited.	D. C. 440/220 volts.	244,499	428	4	..	281	206	1940	
		227,085	393	4	..	272	206	1939	
5. Dibrugarh Electric Supply Company, Limited.	D. C. 400/220 volts.	357,336	508	30	..	511·5	325	1940	
		327,913	457	30	..	458·8	325	1939	
6. Tezpur Electric Supply Company, Limited.	D. C. 220 volts	74,128	190	..	..	117	94	1940	
		75,666	187	..	..	104	94	1939	
7. Sylhet Electric Supply, Limited.	A. C. 3300/400/230 volts.	219,758	534	26	..	343·5	190	1940	
		188,647	479	25	..	322·5	190	1939	
8. Dhubri Electric Supply Company, Limited.	A. C. 3300/400/230 volts.	55,485	200	3	..	78	108	1940	
		54,236	130	2	..	61·5	108	1939	

Owing to differing "financial years" of the Licenses the figures in column 3 are not in all cases "Calendar Year" figures. They do, however, show the figures over a period of 12 months.

APPENDIX II

Generators and Motors Installed in Registered Factories and unregistered industrial establishments, excluding petty plants

Voltage	Number of generators	Generators K. Ws.	Number of Motors	Motors K. Ws.	Remarks
1	2	3	4	5	6
3300 A. C.	3	800 K.V.A.	23	400	
600 A. C.	2	314 „	11	406	
400 A. C.	2	80 „	15	64	
440 D. C.	4	170 „	11	396	
250 D. C.	1	9·5 „	...	...	
220 D. C.	59	771·9 „	16	110	
110 D. C.	277	1,995 „	31	111	
Below 110 D. C. ...	56	35 „	6	10	

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