



SATURDAY, MARCH 27, 1926.

CONTENTS.

	PAGE
The Electricity Supply Bill	441
Climate and Man in the United States. By L. C. W. Bonacina	442
The Psychology of Selecting Men. By Miss W. Spielman	444
Astronomical Physics	445
Conduction in Nerves	445
Our Bookshelf	446
Letters to the Editor :	
Light Quanta and Photo-electric Emission.—Prof. C. G. Barkla, F.R.S.	448
Eka-cæsium and a Suggestion about Radiation and the Elements.—F. H. Loring	448
The Magnetic Moment of the Orbit of the Valency Electron of the Solid Alkali Metals.—Dr. L. C. Jackson	449
Chemical Effects produced by Resonance Radiation.—Dr. Eric K. Rideal and Herbert S. Hirst	449
The Subjective Analysis of Musical Tone.—Prof. C. V. Raman, F.R.S.	450
Intensification of the Metallic Image in Gerlach and Stern's Magnetic Experiments.—Dr. J. H. J. Poole	451
Greenland or Polar Front?—L. C. W. Bonacina	451
Parasitism of the Dodder.—Mrs. Thoday	452
Ozone and the Upper Atmosphere.—Prof. Henry E. Armstrong, F.R.S.	452
Weather Prediction from Observation of Cloudlets. Sir G. Archdall Reid, K.B.E.	453
Ancient Coins from Pondoland.—J. F. Schofield	453
Uncertainty.—Sir Oliver Lodge, F.R.S.	453
The Constitution of Glauconite.—A. F. Hallimond	453
The Electrical State of the Upper Atmosphere. By Prof. S. Chapman, F.R.S.; Sir Henry Jackson, G.C.B., F.R.S.; Dr. W. H. Eccles, F.R.S.	454
The Glaciers of Savoy. By Dr. A. E. H. Tutton, F.R.S.	456
Obituary :—	
Sir Philip Watts, K.C.B., F.R.S.	457
Prof. Ernst Ehlers. By Prof. W. C. M'Intosh, F.R.S.	458
Dr. C. V. Piper	459
News and Views	460
Our Astronomical Column	463
Research Items	464
The Geographical Distribution of Fresh-water Eels. By J. T. C.	466
The Construction of Regular Polygons. By W. E. H. B.	466
The Malthusian Principle and Sociology	467
University and Educational Intelligence	468
Contemporary Birthdays	469
Societies and Academies	469
Official Publications Received	471
Diary of Societies and Public Lectures	472
Recent Scientific and Technical Books	Supp. v

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The Electricity Supply Bill.

THE Electricity Supply Bill, the text of which has now been published, contains no surprises. The framers of the Bill have kept two eminently desirable objects in view, namely, the utilisation to the best advantage of the heat generated by the combustion of coal and the cheapening of the supply of electrical energy in Great Britain for lighting and power to the consumer. The project if carried out will increase the value of coal and will prevent its waste. A cheap supply of electrical power ought to enable many of our export industries to compete successfully in the world's markets. The project, therefore, is of national importance and ought to be discussed from a national point of view. In all problems of this nature, however, the 'human factor' has to be considered.

In the Bill, provision is made for the establishment of a Central Electricity Board which will consist of a chairman and seven other members. The main duty of this Board will be to supply electricity to authorised undertakers, but it will only generate electricity in exceptional cases. One of the first duties of this Board will be to submit to the Electricity Commissioners a scheme which will state what generating stations, existing or to be built, will be 'selected stations' for supplying electricity for the purposes of the Board. The Board is to provide for interconnexion of selected stations and authorised undertakings by means of main transmission lines which it will purchase or construct. It will also take means to standardise the frequency of the alternating current supply.

When the scheme is completed it will be published, and all persons interested in it can then be heard. The owners of supply stations affected have the right of appeal to the Electricity Commissioners, who have won golden opinions from every one in the past by the fairness and judicial calmness they have displayed when adjudicating on contentious matters. In the event of the owners and the Board failing to agree, the Board will have the right to acquire the undertaking. If no suitable authority be found willing to operate it, then the Board itself can make arrangements for carrying on the work.

The owners of selected stations are to operate as the Board may direct and are to sell to the Board on specified terms. The Board has to construct and lay down the mains and transmission lines which are requisite for purposes of interconnexion. It has also to supply the authorised undertakings at a price fixed so that the receipts may cover the expenditure when taken over a number of years. The tariff will be a 'John Hopkinson' tariff, consisting of two parts, a fixed charge and a charge depending on the load. If

any authorised undertaking refuses to accept the Board's terms, then the Board has power to compel the undertaking to supply the consumer at the same rate as if it purchased its supply from the Board.

Roughly speaking, the Government has in view the selection of several highly efficient large power stations which will supply over transmission lines, belonging to the Electricity Board, to industrial centres. The small generating stations in these centres which now convert the heat obtained from the combustion of coal into electricity with a low efficiency will cease to be generating stations and will become merely distributing centres.

In order that the distribution may be done economically, it is certain that very high voltage must be used. The fixing of this voltage will be one of the first duties of the Board. Probably 110,000 volts will be chosen for the pressure of transmission, and the system adopted will almost certainly be the three-phase system. Except in the proximity of towns, the three large copper or aluminium conductors will be suspended from lattice steel towers at a considerable height from the ground. These steel towers, with wires suspended between them, are not beautiful, but they will not spoil the landscape so much as railway lines do. They will take many months to complete, and so perhaps it is necessary to state that the public should not expect any immediate reduction in the price of electricity.

The success of the scheme depends largely on the constitution of the first Board. We hope that some of the members will be young electrical engineers who have had experience of high-tension work in other countries. One also should be an expert in underground cable work, with first-hand knowledge of the maximum electric pressures that can be used in underground work. The questions of the maximum economy of transmission which are essential to the success of the scheme can only be solved by advanced mathematics and engineering intuition. The latter is necessary, as unfortunately we cannot foretell what will be the best distributing points ten years hence. In engineering it is sometimes necessary to make rapid decisions on insufficient data and to move forward warily, always being ready to amend the scheme when unforeseen developments arise.

Luckily, most of our leading engineers are almost wholly engrossed by their work. They take pride not only in its excellence but also in the amount of work they can do. In this respect they are unlike their humbler brethren, who are sometimes dominated by their fellow-workmen so that they are afraid to do their best or work their hardest.

Difficulties common to every great scheme for improving industry will doubtless arise. Certain

engineers will have their stations 'selected,' others equally capable will be left in the humbler ranks of the distributors. There are many capable electrical engineers who have been working for the last ten or twenty years converting unprofitable supply undertakings into profitable ones. They have laboured well and hard and have exercised thrift in every possible direction. Plant laid down twenty years ago is still in excellent working order, although naturally it is not nearly so efficient as large modern plant. Other stations are burdens either on the shareholders or the ratepayers. Engineers have scrapped plant from which they were unable to get the maximum output or make work economically. New plant has been purchased, the thermal efficiency of which may meet the approval of the Board. Our sympathies are, however, with the hardworking and thrifty engineer, who, although he has made a commercial success of his undertaking, will doubtless in the future be merely a 'distributor.' It is sometimes truer economy to buy a set of cheap engines to help carry the 'peak' load than to buy a large turbine, with all its auxiliary plant, before it is really needed.

The new era, however, will give rise to new problems. Although we sympathise with those capable engineers, the importance of whose positions will be injuriously affected by the Bill, yet this is the way of progress. The Ministry of Transport has a heavy responsibility in appointing the new Board. Engineers who are familiar with the much less important problems arising in town distribution may not be the right men to handle the much graver problems which this scheme proposes. It is certain that, whatever system is adopted, it will in time become antiquated. It is necessary, therefore, to keep an open mind and to modify the system whenever by any means, present or future, economies can be effected by so doing.

Climate and Man in the United States.

The Climates of the United States. By Prof. Robert DeCourcy Ward. Pp. xvi + 518. (Boston, New York and London: Ginn and Co., 1925.) 4 dollars.

IN this work, Prof. Ward, the well-known climatologist of Harvard, gives us not merely a compilation of statistics relating to the distribution of the meteorological elements over his country, but to a very considerable extent, also, he exercises the true function of the climatologist in presenting vivid descriptions of climate, and its effects upon economic status and national life. The twenty-three chapters of the book, abundantly illustrated with charts and curves, including a handsome map of mean annual rainfall, discuss historical matter, the geographical controls of climate,