

THE TRANSACTIONS OF
THE FIRST WORLD POWER CONFERENCE

**THE TRANSACTIONS OF
THE FIRST WORLD POWER
CONFERENCE**

LONDON

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1924

VOL. I

**POWER RESOURCES OF THE WORLD . . .
AVAILABLE AND UTILISED**

LONDON

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FOREWORD

THE Chinese sage, Lao-Tze said: "To perceive things in the germ is intelligence." The "germ" around which the WORLD POWER CONFERENCE was conceived was very simple. A vision of the nations of the world after the great war revealed the need for a conference of practical men, scientists, engineers, manufacturers, financiers and politicians, to consider the utilisation of the forces of nature, in the light of a new internationalism, and to attempt to discover a means by which the nations of the world might be preserved from the constant actions and reactions of past history, and might all advance together. International organisations were already in existence, having specific objects and dealing with special aspects of technical development, but they did not provide the wide platform required for a study of all aspects of the programme under consideration. Above all, it seemed desirable that the engineers of the world should take counsel together, for

"It is their care, in all the ages, to take the buffet and cushion the shock.

It is their care that the gear engages—it is their care that the switches lock.

It is their care that the wheels run truly"

The problem, beginning with each single man, ends only with the vast issues of international life. The progress of even the most advanced nations is clearly seen to be limited by the conditions of the whole. The more highly developed a community or nation, the greater its knowledge and use of the resources of nature. This knowledge had resulted in the creation of a machine driven by destructive energies. One good custom—the harnessing of the powers of nature to human needs—appeared to have corrupted the world. Even the winds and the seas were used for purposes of destruction. Many models of beauty built out of the soul of man through years of peace were ruthlessly crashed and broken. Empires built by human genius fell one after another. Boundary lines of nations were crossed and recrossed in a day.

Still man's heart pulsated with hope. His clenched fists must again become open palms to cover the continents. His latest achievements in science and engineering must

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proffer a torch to light up the hitherto obscure chambers of his ascending pathway through nature. In every country men took their notebooks in hand and began to inquire what steps could be taken to prevent a repetition of such conditions. As the appearance of the earliest forms foretold the advent of the human form, so the knowledge of the forces of nature, used to satisfy primitive instincts, seemed to foretell the advent of a new day when the marvellous resources of nature would be used for the creation of a new world order. Every advance in the lengthened chain of progress had been only a base from which the next step could be taken. Practical men of affairs, discussing the situation, acknowledged to each other that true human progress was founded, not on what was taken from others, but on what was contributed towards the development of humanity.

What programme could be outlined for the realisation of such an ideal! An international morality seemed necessary. The fact must be realised that it does not pay in the long run to deal unfairly with any nation, and that the ultimate position of the victor may be worse than that of the vanquished. In true human freedom, there is a refreshing sense of proportion and perspective, and no past models serve for the future.

It was in this spirit that the **WORLD POWER CONFERENCE** was called into being, and it was in this spirit that the participating countries responded to the invitation.

The work of organising the Conference was carried out on lines calculated to attract the interest of those in all countries connected with Power and Power Problems in any form, and a comprehensive programme was arranged in full knowledge of the difficulties attendant upon its execution, but in the assurance that only a wide programme would meet the needs of existing conditions.

If, without making invidious distinctions, definite stages may be cited in the order of events, the following are perhaps by the nature of things entitled to positions of prominence. The first, when the Council of the British Electrical & Allied Manufacturers' Association made a **WORLD POWER CONFERENCE** possible by ensuring the necessary financial support. The second, when a number of distinguished scientists, engineers, and leaders of industry

in Great Britain consented to associate their names with the work, and were closely followed by the great Departments of State, who nominated their official representatives, and by the representatives in London of the Dominions overseas. It was thus made possible, in the name of the British Empire, to invite the nations of the world to meet in London to survey the power resources of each participating country and the extent to which they had been utilized; to consider the technical problems involved and what steps, if any, could be taken to provide adequate opportunities for the co-operation of all nations in the development of power resources and the economic, political and educational issues involved. The third, when the United States, France, Italy, Japan and other great nations of the world gave the Conference their whole-hearted co-operation and support, thereby ensuring its success. The last, and in many ways the most significant of all, in that it placed the WORLD POWER CONFERENCE in a unique position among post-war conferences, and afforded perhaps a vindication of its somewhat ambitious title, when the way became clear to invite Germany to participate, which she did in a manner calculated to seal the spirit of complete goodwill in which the Conference assembled.

On June 30, 1924, the FIRST WORLD POWER CONFERENCE was opened by H.R.H. THE PRINCE OF WALES, under the Chairmanship of the RT. HON. THE EARL OF DERBY, in the presence of about 1,000 delegates representing over forty countries.

Such success as was achieved was a measure of the support which the Conference received from all parts of the world, and the reader may judge of the value of that support from the words of MR. O. C. MERRILL (U.S.A.), the Chairman of the Closing Meeting: "What we have accomplished here I consider too great, both in its amount and in its value, to be encompassed within the terms of any resolution that we would be prepared to discuss to-day. We have brought together here the leading technical experts from all over the world, and we have brought together in the papers presented to this Conference the greatest contribution, in my judgment, on the subject of Power that has ever been brought together; a series of contributions that will serve as text-books for engineers for many years to come. Each country has brought its

contributions and we have brought them in the open. Seldom before, so far as I am aware, has there been such freedom in presenting, from all sources, information about the topics with which this Conference has been concerned. . . . Above all, however, I count the greatest value of the Conference the fact that individuals from so many nations have met together and, irrespective of the position that was taken by any group in the years just behind us, we have been able to meet round a common council table in friendly co-operation. The more that we are able to do that in the future, the more we learn, as we have learned at this Conference, the views and the purposes of other peoples, the more we create these personal relations and acquaintanceships, the less likely will it be that other considerations will disrupt the peace between us in the future. This I count as the outstanding feature of this Conference."

The names of those from all parts of the world who supported and attended the Conference are given in the Appendix to Volume I, and the papers presented and the discussions thereon are set out without comment. These papers were contributed at the request of the National Committees in the various countries; and as these Committees were composed of men capable of securing the contributions of their greatest national experts, it is with confidence that the reader is left to form his own estimate of their value, and it only remains for me to offer my sincere thanks to those who made the compilation of these volumes possible.

D. N. DUNLOP.

CONTENTS OF VOLUMES

VOL I POWER RESOURCES OF THE WORLD, AVAILABLE AND UTILISED

VOL II WATER POWER PRODUCTION; PREPARATION OF FUELS; STEAM POWER PRODUCTION

VOL III INTERNAL COMBUSTION ENGINES; GAS AND FUEL SECTION; POWER FROM OTHER SOURCES; POWER TRANSMISSION AND DISTRIBUTION; STANDARDISATION AND RESEARCH; ILLUMINATION

VOL IV POWER IN INDUSTRY AND DOMESTIC USE; POWER IN ELECTRO-CHEMISTRY AND ELECTRO-METALLURGY; POWER FOR TRANSPORT; ECONOMIC ASPECTS OF POWER RESOURCES; EDUCATION, HEALTH, PUBLICITY

VOL V INDEX

THE TRANSACTIONS OF
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CONFERENCE

CONTENTS

VOL I
POWER RESOURCES OF THE WORLD
AVAILABLE AND UTILISED

CONTENTS

VOL I

ADMINISTRATION—Canadian Water Powers (also their Nature and Extent)	165-255
AFRICAN RESOURCES (BRITISH)—	
Gold Coast	325-37
Southern Rhodesia—Coal	482-5
—Water Power	486-96
ALCOHOL, POWER—Australian Resources (<i>For more detailed reference, see first page 4</i>)	106-8
AMERICAN CONTINENT—	
Northern Power Resources—Canada	157-324
—Discussion	667-76
—United States	497-666
Southern Power Resources—British Guiana	146-56
—Discussion	1417-23
—Peru	1093-8
ASIATIC RESOURCES—China	739-47
—Discussion	1417-23
—Dutch East Indies—Fuel	789-807
—Water Power	775-88
—Japan—Water Power Survey	1003-7
—Russia	1213-88
—Siberia—Water Power... ..	1298-307
A AUSTRALIA AND NEW GUINEA (MANDATED TERRITORY)	
—Report on Power Resources, compiled by The Institution of Engineers, Australia (<i>For more detailed contents, see pages 4 and 5</i>)	1-145
—Bibliography	140-3
—Coal Resources	40-91
—Electric Power Supplies Existing	108-45
—Liquid Fuel Resources	92-108
—Water Power Resources	8-39
AUSTRIAN RESOURCES—Coal	679-83
—Water Power	684-705
BALAKSHIN, S., <i>Eng.</i> : Water Power Resources of Siberia ...	1298-307
BARRE, H. A., <i>A.M.A.I.E.E., M.A.S.M.E.</i> (<i>Collaborator with MARKWART, q.v.</i>)	
BEAR ISLAND, SCANDINAVIA—Coalfields—(also Spitzbergen)	1008-40
BEILBY, SIR GEORGE, <i>D.Sc., LL.D., F.R.S.</i> : Oil Production in its Relation to the Resources and Needs of the British Empire	338-48
BELGIUM—Water Power Resources (<i>In French, with English résumé</i>)	706-38
BERGSTROM, ERIC M. (<i>Collaborator with CROWLEY, q.v.</i>) ...	
BIBLIOGRAPHY—Australian and New Guinea Power Resources	140-3
BIRKS, LAWRENCE, <i>B.Sc., M.Inst.C.E.</i> : The Water Power Resources of New Zealand	460-81
BLUM-PICARD, M.: The Electrical and Mining Industries of Northern France (<i>In French, with English résumé</i>) ...	842-72

NOTE—Only titles of the Papers and Authors' names are indexed here. For complete references and cross-references to all subject matter, and geographical, personal, and trade names, the Index Volume should be consulted. French résumés follow all papers in English, and will be found on or immediately preceding the last pages of the respective papers. Likewise, papers in French are provided with résumés in English. For references to Italian papers of which English translations in full are provided, see index heading Italian Papers.

BRITISH EMPIRE POWER RESOURCES—	
Africa	325-37, 482-96
Alcohol, Power	106-8
Australia	1-145
British Guiana, South America	146-56
British West Africa... ..	325-37
Canada	157-324
Coal	40-91, 256-324, 392-406, 482-5
Discussion	667-76
Gold Coast	325-37
Great Britain	349-406
India	449-59
Ireland	372-91
Metals	407-19
New Guinea	1-145
New Zealand	460-81
Oil	92-108, 338-48
Power Alcohol	106-8
Rhodesia, Southern	482-96
Scotland (<i>see Great Britain</i>)	
Water Power... ..	8-39, 146-56, 165-255, 343-91, 449-81
BUCHI, J., EGGENBERGER, H., HARRY, A., STRICKLER, Dr. A., and ZANGGER, H.F.: The Power Resources of Switzerland (<i>In French, with English résumé</i>)... ..	1351-80
BUNDESMINISTERIUM FÜR HANDEL UND VERKEHR: The Coal Resources of Austria	679-83
—Water Power Development in Austria	684-705
CAMPBELL, M. R., <i>M.A.I.M.M.E.</i> : (<i>Collaborator with others, see MERRILL</i>).	
CANADIAN RESOURCES	157-324
—Fuels	256-324
—Water Power	165-255
CARSTENSEN, A.: Water Power Resources of Denmark	765-74
CENTRAL STATES OF U.S.—Regional Power Review... ..	497-518
CHALLIES, J. B., <i>C.E., M.E.I.C., M.Am.Soc.C.E.</i> : Water Powers of Canada: their Nature, Extent and Adminis- tration	165-255
CHEMICAL AND PHYSICAL SURVEY OF THE NATIONAL COAL RESOURCES OF GREAT BRITAIN... ..	392-406
CHINA—Outline of Power Resources	739-47
COAL RESOURCES*—Australia (<i>See detailed contents on page 4</i>)	40-91
—Austria	679-83
—Bear Island, Scandinavia	1008-40
—France	882-98
—Great Britain	392-406
—Rhodesia, Southern	482-5
—Russia	1185-288
—Spitzbergen	1008-40
—World	420-48
COBBE, H. N. G., <i>M.Inst.M.M.</i> : Notes on the recent Preliminary Examinations of Water Power Sites in British Guiana, South America	146-56
CROWLEY, J. F., <i>D.Sc.</i> , and BERGSTROM, ERIC M.: The Development of National Water Power Resources: Illustrated by a study of Scottish Water Powers... ..	349-71
CZECHOSLOVAKIAN POWER RESOURCES	748-64
DE LA BROSSE, M.: Report on Water Power Resources in France (<i>In French, with English résumé</i>)... ..	873-81
DE MARCHI, Prof. G.: General Report on the Power Resources of Italy, Developed and Undeveloped.	944-53
—The Italian Organisation for the Survey of Rivers: Their Standard Levels and Exploitation	963-71

* For coal-producing countries not indexed under this heading, look under name of country for paper on Fuel or Power Resources. All detailed information on coal and other subject matter is fully co-ordinated in the separate Index Volume.

DENMARK—Water Power Resources	765-774
de VEREBÉLY, L.: General Survey of Hungary's Power Resources and their Future Development, with Special Reference to Electrification	919-43
DISCUSSIONS (World Power Conference, 1924)—	
—British Empire and U.S.A. Power Resources	667-76
—European, Asiatic and South American Resources	1417-23
DISTRIBUTION OF POWER—In Pacific Coast States, U.S.A.	564-613
DUTCH EAST INDIES—Fuel Resources	789-807
—Water Power Resources	775-88
ECONOMIC IMPORTANCE OF NORWEGIAN WATER POWER	1041-67
EGGENBERGER, H. (<i>Collaborator with others, see BUCHI</i>).	
ELECTRICAL AND MINING INDUSTRIES OF NORTHERN FRANCE	842-72
ELECTRIC POWER SUPPLY SYSTEMS IN AUSTRALIA AND NEW GUINEA	108-45
ELECTRIFICATION—In Relation to Hungarian Power Resources and Development	919-43
—Russian National Scheme	1171-84
ESTHONIA—Oil Shale Resources	808-16
—Water Power Resources	817-25
(<i>Both papers by the Esthonian Ministry of Trade and Industry</i>).	
EUROPEAN POWER RESOURCES—Austria	679-705
—Belgium	706-38
—Coal	679-83, 882-98, 1008-40, 1185-1212
—Czech-Slovakia	748-64
—Denmark	765-74
—Discussion	1417-23
—Eathonia	808-25
—Finland	826-41
—France	842-98
—Great Britain	349-406
—Holland	899-918
—Hungary	919-43
—Ireland	372-81
—Italy	944-1002
—Norway	1041-82
—Oil and Shale	808-16, 1185-1288
—Peat	1185-1297
—Poland	1099-158
—Russia	1159-297
—Scotland (<i>see Great Britain</i>).	
—Spain	1308-20
—Svalbard (Heer Island and Spitzbergen)	1008-40
—Sweden	1321-50
—Switzerland	1351-80
—Water Power	372-91, 684-738, 817-25, 873-81, 944-1002, 1041-62, 1159-70
—Yugo-Slavia	1381-416
FINLAND—Power Resources (<i>In French, with English résumé</i>)	826-41
FONTAINE, AM.: The Water Power Resources of Belgium (<i>In French, with English résumé</i>)	706-38
FRANCE—Coal and Lignite Resources	882-98
—Mining and Electrical Industries in North	842-72
—Water Power Resources	873-81
(<i>All in French, with English résumés</i>).	
FRENCH (<i>Language</i>)—Papers in, with English résumés—See PRIGOROWSKY, FINLAND, FONTAINE, GUILAUME, BLUM-PICARD, DE LA BROSSÉ, GLOUCKOW, BUCHI, KOGAN and WICHLIAJEW.	
FUEL RESOURCES—(<i>See COAL, OIL, PEAT, etc., and use of names of countries</i>).	

GIBSON, Prof. A. H., D.Sc., M.Inst.C.E., M.I.Mech.E.: A Review of the Water Power Problem in Great Britain and Ireland	372-91
GLOUCHKOW, Prof.: Water Power Resources of Russia (<i>In French, with English résumé</i>)	1159-70
GOLD COAST, BRITISH WEST AFRICA—Power Resources...	325-37
GREAT BRITAIN—Coal Resources Surveyed Chemically and Physically	392-406
—Review of Water Power Problem	372-91
—Water Power Development	349-71
GROOTHOFF, A., A.M.Am.Soc.Civ.Eng.: The Water Power Resources of the Dutch East Indies	775-88
GROVER, N. C., M.A.S.C.E. (<i>Collaborator with others, see MERRILL</i>).	
GUILLAUME, M.: The Coal and Lignite Resources of France (<i>In French, with English résumé</i>)... ..	882-98
HAANEL, B. F., B.Sc., M.E.I.C.: The Fuel Resources of Canada and their Utilisation for the Production of Power and other Purposes	256-324
HANSEN, F. V.: The Power Resources of Sweden	1321-50
HARRY, A. (<i>Collaborator with others, see BUCHI</i>).	
HOEL, ADOLF.: The Coalfields of Svalbard (Spitzbergen and Bear Island)	1008-40
HOLLAND—Power Resources	899-918
HUNGARY—General Survey of Power Resources and their Future Development, with Special Reference to Electrification	919-43
HYDRO-ELECTRIC SYSTEMS—Italian Plants and their Contribution to National Economy	981-1002
—U.S.A.—Plants and Transmission Systems of South Eastern Power Zone	519-23
HYDROGRAPHIC SURVEYS—Italy	963-80
—Japan	1003-7
—Norway	1081-92
—Peru	1093-8
INDIAN EMPIRE—National Review of Water Power Resources	449-59
INSTITUTION OF ENGINEERS, AUSTRALIA—The Power Resources of The Commonwealth of Australia and the Mandated Territory of New Guinea (<i>For detailed contents, see first pages 4 and 5</i>)	1-145
INSULL, SAMUEL: Regional Power Review of the Central States of the United States of America	497-518
IRELAND—Review of Water Power Problem	372-91
ITALIAN PAPERS—Of which complete Translations in English are provided— <i>See DE MARCHI</i> .	
ITALY—Hydro-Electric Plants and their Contribution to National Economy	981-1002
—Hydrographic Survey, Organisation	963-80
—Power Resources, Developed and Undeveloped	944-62
JAPAN—Water Power Survey of	1003-7
KITSON, A. E., C.M.G., C.B.E., F.G.S., M.I.M.M.: The Possible Sources of Power for Industrial Purposes in the Gold Coast, British West Africa	325-37
KLOUMANN, S.: An Economic Survey of Norway's Water Power with a view to its National Economic Importance and Possible Future Importance to European Industry	1041-67
KOGAN, ALEX., Ing.: Scheme for National Electrification in Russia (<i>In French, with English résumé</i>)... ..	1171-84
KRISTENSEN, I.: Water Power Resources of Norway	1068-80
KÜRSCHNER, EDUARD, Dipl. Ing., and PRIKRIL, BOZIDAR Dipl. Ing.: General Review of the Power Resources of Yugo-Slavia, their Present Exploitation and the Possibilities of their Development in the Future	1381-416
LANDER, C.H., D.Sc.: The Physical and Chemical Survey of the National Coal Resources of Great Britain	392-406

LEE, W. S., M.A.S.C.E., F.A.I.E.E., M.A.S.M.E.: Hydro-Electric and Transmission Systems of the South Eastern Power Zone, United States of America	519-23
LIEB, JOHN W., Eng. D., M.A.S.C.E., M.A.S.M.E., F.A.I.E.E.: Review of Power Resources and their Development in the North Eastern States of the United States	524-63
LIGNITE—(See COAL RESOURCES).	
LIQUID FUEL RESOURCES—Oil Production in its Relation to the Resources and Needs of the British Empire	338-48
—Australia and New Guinea	92-108
—Esthonian Oil Shale	808-16
LOUIS, Prof. HENRY, M.A., D.Sc.: Resources of the British Empire in Metals Employed in Power Machinery	407-19
MACHINERY—(See LOUIS, above).	
MARKWART, A. H., M.A.S.C.E., and BARRE, H. A., A.M.A.I.E.E., M.A.S.M.E.: Regional Review of Power Resources, Distribution, and Utilisation for Pacific Coast States, U.S.A.	564-613
MASARYKOVA AKADEMIE PRÁCE: Review of the Natural Sources of Energy and their Use in Czecho-Slovakia	748-64
MAUFE, H. B., B.A., F.G.S.: The Coal Resources of Southern Rhodesia	482-5
MEARES, J. WILLOUGHBY, C. I. E., M.Inst.C.E., M.I.E.E., M.I.E. (Ind.): National Review of the Water Power Resources of the Indian Empire	440-59
MERRILL, O. C., M.A.S.C.E., M.A.I.E.E., M.A.S.M.E., GROVER, N. C., M.A.S.C.E., and CAMPBELL, M. R., M.A.I.M.M.E.: National Review of Power Resources of U.S.A.	614-66
METALS EMPLOYED IN POWER MACHINERY—British Empire Resources	407-19
MINERAL OIL DEPOSITS OF AUSTRALIA AND THE MANDATED TERRITORY OF NEW GUINEA (See first page 4)	99-106
MINING AND ELECTRICAL INDUSTRIES OF NORTHERN FRANCE (In French, with English résumé)	842-72
NETHERLANDS—See HOLLAND.	
NEW GUINEA (MANDATED TERRITORY)—See AUSTRALIA.	
NEW ZEALAND—Water Power Resources	460-81
NORTH EASTERN STATES OF U.S.—Review of Power Resources	524-63
NORWAY—Hydrography	1081-92
—Water Power Resources	1041-80
OIL RESOURCES—Australia and New Guinea (See first page 4)	92-108
—British Empire	338-48
OIL SHALES—Australia	95-9
—Esthonia	808-16
PACIFIC COAST STATES, U.S.—Regional Review of Power Resources, Distribution and Utilisation	564-613
PEAT RESOURCES—Russia (In French, with English résumé)	1289-97
PERU—Hydrographic Systems	1003-8
PHYSICAL AND CHEMICAL SURVEY OF THE NATIONAL COAL RESOURCES OF GREAT BRITAIN	302-406
POLISH NATIONAL COMMITTEE: Polish Power Resources and their Development	1099-156
POWER ALCOHOL—Australia	106-8
PRIGOROVSKY, Prof. M.: Fuel Resources of Russia (In French, with English résumé)	1185-212
PRIKRIL, BOZIDAR, Dipl. Ing. (Collaborator with KURSCHNER, q.v.).	
QUIJANO, PEDRO GONZALEZ: National Review of Water Power in Spain	1308-20
RAMSN, Prof. L. K.: The Power Resources of Russia	1213-68
REDMAYNE, SIR RICHARD, K.C.B., M.Sc., M.Inst.C.E., F.G.S. The Coal Resources of the World	420-48

RHODESIA—(See <i>SOUTHERN RHODESIA</i>).	
RIVERS—Italian Organisation for Survey of	963-80
ROBERTSON, C. L., <i>B.Sc. (Eng.)</i> : Review of the Water Power Resources of Southern Rhodesia	486-96
ROGSTAD, OLAF: Hydrography of Norway	1081-92
RUSSIA—Fuel Resources (<i>In French, with English résumé</i>)	1185-212
—National Electrification Scheme (<i>In French, with English résumé</i>)	1171-84
—Peat Resources and Production (<i>In French, with English résumé</i>)	1287-97
—Power Resources (<i>General paper in English</i>)	1213-88
—Water Power Resources (<i>In French, with English résumé</i>)	1159-70
SALOMÓN, OSCAR V.: The Hydrographic Systems of Peru	1093-8
SCOTLAND—(See <i>GREAT BRITAIN</i>).	
SHALE—(See <i>OIL SHALES</i>).	
SHIBUSAWA, M.: The Water Power Survey of Japan	1003-7
SHING, T., and WONG, W. H.: An Outline of the Power Resources of China	739-47
SIBERIA—Water Power Resources	1298-307
SOUTH AMERICA—(See <i>AMERICAN CONTINENT</i>).	
SOUTH EASTERN POWER ZONE OF U.S.—Hydro-Electric and Transmission Systems	519-23
SOUTHERN RHODESIA—Coal Resources	482-5
—Water Power Resources	486-96
SPAIN—National Review of Water Power Resources	1308-20
STRICKLER, Dr. A.: (<i>Collaborator with others—see BUCHI</i>).	
SURVEYS—(See <i>HYDROGRAPHIC SURVEYS</i>).	
SWEDEN—Power Resources	1321-50
SWITZERLAND—Power Resources (<i>In French, with English résumé</i>)	1351-80
TRANSMISSION SYSTEMS—South Eastern Power Zone, U.S.	519-23
UNITED STATES POWER RESOURCES—Central States	497-518
—Discussion	667-76
—National Review	614-66
—North Eastern States	524-63
—Pacific Coast States	564-613
—South Eastern States	519-23
VAN ITERSON, Prof. Ir. F. K. TH.: Power Resources of the Netherlands	899-918
VEREBÉLY—(See <i>de VEREBÉLY</i>).	
VISMARA, EMIRICO: Hydro-Electric Plants in Italy and their Contribution to National Economy	981-1002
WATER POWER RESOURCES*—Australia and New Guinea	8-39
—Austria	684-705
—Belgium	706-38
—British Guiana	146-56
—Canada	165-255
—Denmark	765-74
—Dutch East Indies	775-88
—Estonia	817-25
—France	873-81
—Great Britain	349-91
—Hungary	919-43
—India	449-59
—Ireland	372-91
—Italy	944-1002
—Japan	1003-7
—New Guinea (See <i>Australia</i>).	
—New Zealand	460-81
—Norway	1041-92
—Peru	1093-8
—Rhodesia, Southern	486-96
—Russia	1159-70

* For countries not indexed under this heading, look under name of country for paper on Power Resources.

WATER POWER RESOURCES—contd.

—Scotland (<i>See Great Britain</i>).	
—Siberia	1298-307
—Spain	1308-20
—Sweden	1321-50
—Switzerland	1351-80
WESTENBERG, D. J. L. CONINCK, <i>A.M. Inst. C.E., A.M. I.E.E.</i> :	
Fuel Power in the Dutch East Indies	789-807
WICHLIAJEW, I. : Peat Resources and Production in Russia (<i>In French, with English résumé</i>)	1289-97
WONG, W. H.—(<i>Collaborator with SHING, q.v.</i>).	
WORLD'S COAL RESOURCES	420-48
YUGO-SLAVIA—Power Resources and Development	1381-416
ZANGGER, H. F.—(<i>Collaborator with others—see BUCHI</i>).	

APPENDIX

For details of the Opening Ceremony, Committees, List of Delegates and Members, and General Information pertaining to the Organisation and Administration of the Conference, see separate Contents—page 1425.

**BRITISH EMPIRE AND
U.S.A. RESOURCES**

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THE POWER RESOURCES OF THE COMMONWEALTH OF AUSTRALIA AND THE MANDATED TERRITORY OF NEW GUINEA.

Compiled by
THE INSTITUTION OF ENGINEERS, AUSTRALIA. •

Issued under the authority of The Hon. Dr. Earle Page, Acting Prime
Minister of the Commonwealth.

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RESOURCES—BRITISH EMPIRE AND U.S.A.

CONTENTS.

Preface 6

PART I. POWER RESOURCES.

A—WATER POWER.

I.	Water Power in Australia	8
II.	Electric Power in New South Wales with special reference to Water Power development	9
III.	Water Power in Victoria	16
IV.	Water Power in Queensland	22
	(a) General Review	22
	(b) Possibilities of Power from the Tides on the Central Queensland Coast	23
V.	Water Power in Western Australia	26
	(a) Development of Water Power for the Generation of Electricity, Kimberley Division	26
	(b) Possibility of Power from large Tides on the Western Australian Coast	27
VI.	The Water Powers of Tasmania	28
VII.	Water Power Resources of New Guinea	34

B—COAL.

I.	The Coal Resources of Australia	40
II.	The Coal Resources of New South Wales—Coal Reserves— Analysis of New South Wales Coals, The Coke Industry—	46
III.	The Coal Resources of Victoria	59
IV.	The Coal Resources of Queensland	67
V.	The Coal Deposits of Western Australia	81
VI.	The Coal Resources of South Australia	87
VII.	The Coal Resources of Tasmania	90
VIII.	The Coal Resources of New Guinea	91

C—LIQUID FUELS.

I.	Liquid Fuels in Australia... ..	92
II.	Oil Shale :	
	(a) The Oil Shale Resources of New South Wales	95
	(b) The Oil Shale Deposits of Queensland	98
	(c) The Oil Shale Deposits of Western Australia	98
	(d) The Oil Shale Deposits of Tasmania	98
III.	Mineral Oil :	
	(a) Prospects in Australia	99
	(b) Petroleum in New South Wales	100
	(c) Occurrence of Petroleum in Queensland	101
	(d) Reported Oil Strike in Queensland	102
	(e) Occurrence of Mineral Oil in Western Australia	102
	(f) Occurrence of Mineral Oil in South Australia	103
	(g) Occurrence of Petroleum in New Guinea	104
IV.	Power Alcohol :	
	(a) Position in Australia	106
	(b) Manufacture of Power Alcohol by the Commonwealth Government	107

I.E., AUSTRALIA: POWER RESOURCES

PART 2. EXISTING POWER SUPPLIES.

I.	Some Features of Power Supply in Australia	108
II.	Power Supply in New South Wales :	
	(a) The Electric Power Plant and Distribution Systems of the N.S.W. Government Railways and Tramways...	110
	(b) Supply of Electrical Energy by the City Council of Sydney	112
	(c) Supply of Electrical Energy by the Electric Light and Power Supply Corporation, Limited, Sydney...	113
	(d) Supply of Electrical Energy in the Metropolitan Area of Sydney in the future	14
III.	Power Supply in Victoria :	
	Notes upon the Power Supply in Victoria, particularly the Electrical Features thereof	115
IV.	Power Supply in Queensland :	
	A Summary of the Power Supply Stations of the Cities and Country Towns of Queensland	124
V.	Power Supply in Western Australia :	
	(a) Supply of Electrical Energy by the Western Australian Government Tramways and Electricity Supply Department	126
	(b) Power Supply and Transport, Western Australia	128
VI.	Power Supply in South Australia :	
	(a) Supply of Electrical Energy by The Municipal Tramways Trust, Adelaide	130
	(b) Supply of Electrical Energy by The Adelaide Electric Supply Co., Ltd.	132
VII.	Hydro-Electric Power Development and Application in Tasmania	134
	Bibliography	134

RESOURCES—BRITISH EMPIRE AND U.S.A.

PREFACE.

Whatever the future may hold for Australia, there is no question but that the country has the material prospects of a great development. A study of this report will show that ample natural resources are available for the production of the necessary energy for the development of her pastoral and mineral resources, which are well known and need no special reference here. Abundant supplies of black coal, the full extent of which it is at present impossible to estimate accurately; vast deposits of brown coal, of remarkable thickness and readily accessible by open-cut working; upwards of ten million horse power available from the streams and rivers within the Commonwealth, and an equal amount in the territories administered under mandate; the possibility of discovery of natural oil in commercial quantities, the prospects of which, from latest reports, are considered by some of the leading geologists of this country to be distinctly favourable: with such reserves it will be long before Australia is handicapped in the development of her industries for lack of natural sources of power.

Australia's isolation, ever-diminishing with the advancement of systems of communication is, however, still somewhat of an obstacle to her progress, and even in the preparation of this report has militated against an adequate presentation of her potential and developed resources. The difficulty of keeping in touch with the progress of the organisation for the World Power Conference has made it inadvisable to deal with other than the general aspects of the subject. With a fuller understanding of the nature of the Conference, and with opportunities for more comprehensive investigations into the undetermined resources of portions of the country, a more detailed presentation for subsequent conferences will be possible.

The official records, and, in many cases, the control of the resources of the Commonwealth, are mainly in the hands of Federal and State Departments and special Commissions. The information for this report has been supplied almost entirely by such bodies, and may, therefore, be accepted as authoritative within the limits of the respective investigations; but in many instances these investigations are far from complete. The summary of power resources contained herein can only be taken, therefore, as a general statement of the country's partially investigated reserves of power. It will remain for further geological and hydraulic surveys to make a more complete summary possible.