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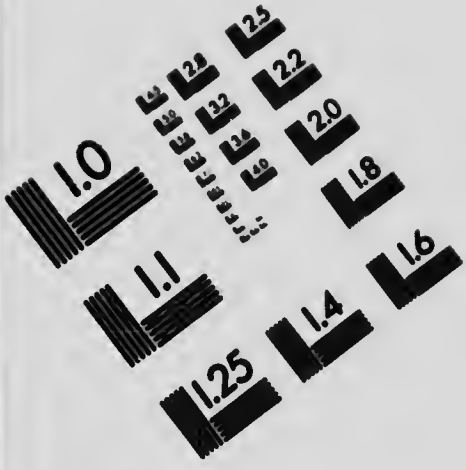

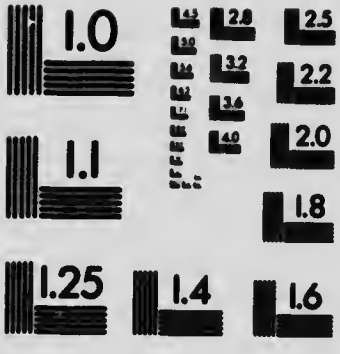

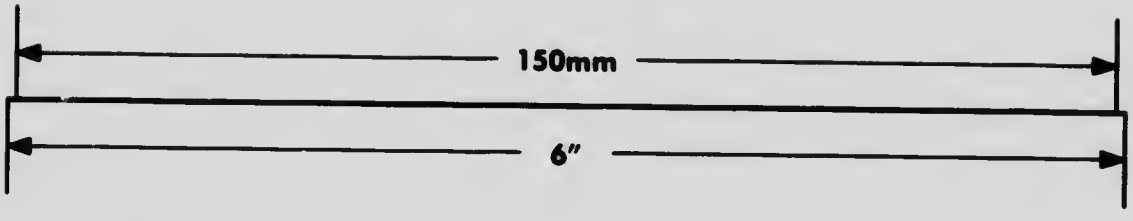

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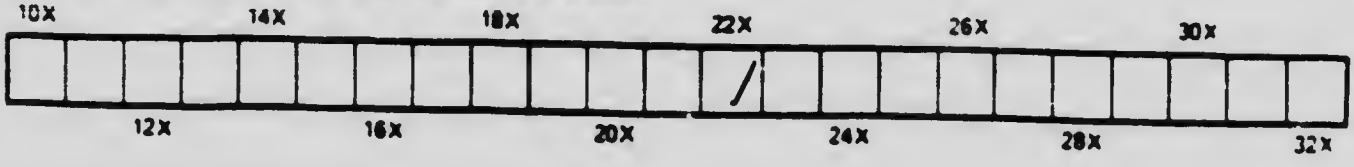

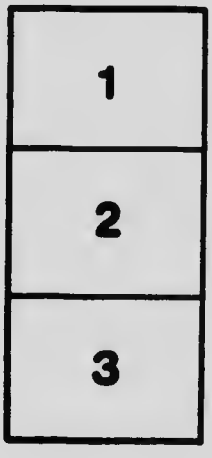

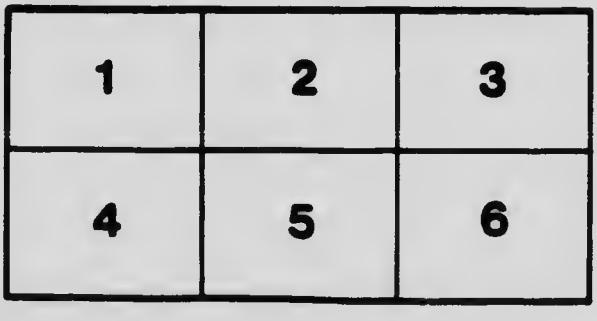

THE HISTORICAL AND SCIENTIFIC SOCIETY
OF MANITOBA

A SKETCH OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

PROF. GEORGE BRYCE [illegible]

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THE HISTORICAL AND SCIENTIFIC SOCIETY OF MANITOBA

A Sketch of the British Association for the Advancement of Science

BY

PROF. GEORGE BRYCE, D.D., LL.D., F.R.S.C.

President of the Society.

A Life Member and Permanent Member of the General Committee of the B.A.S

WINNIPEG:

MANITOBA FREE PRESS COMPANY

1906

The British Association for the Advancement of Science.

At its first meeting for the year 1906-7 of the Historical and Scientific Society of Manitoba, the following paper was read by Rev. Dr. Bryce, the President of the Society:—

"Few buildings in Great Britain are better known to learned men than Burlington House, Piccadilly, London. Here is a very extensive public building in the heart of busiest London, entirely devoted to Science and Art.

Entering by a fine stone-supported gate, a visitor meets a spacious paved court. Crowds of people may be seeen pressing into the Art Exhibition opposite the gate, but to a scholar much more interesting are the abodes of the great societies. On the northeast side of the stone-laid square is the famous Royal Society, dating from the time of Charles II., its great patron, and possessing a magnificent library of 45,000 volumes of Scientific literature. It has, too, the picture of one of its great founders, the brilliant Robert Boyle, as noted for practical talent and skill as a hundred years before, the great Lord Bacon had been for his scientific philosophizing. This great Society has had a wonderful career as a kind patron of Science, and after many wanderings was nearly fifty years ago quartered in comfort in Burlington House. Here, too, is the Royal Astronomical Society, which for a hundred years has by study and publication advanced the Science of the Heavens. Of the same ripe age is the Geological Society of London, followed as it was, a third of a century later by the Chemical Society of London. Now three-quarters of a century old is the Royal Geographical Society of London.

These are a brilliant congeries of Associations receiving the royal bounty, and worthily indeed have they repaid the patronage of monarchs and governments during the wonderful growth of British Science.

One of the latest to arrive in this Pantheon of Science, though born seventy-five years ago, was the British Association for the advancement of Science. This Society has an airy resting place, some three or four storeys high, directly above the gate of entrance of Burlington House. It is the most informal and democratic of the learned Societies, and from its fashion of perambulating to different parts of Great Britain and the Empire has done far more for the advance of Science than any of the others. It is the story of this Society that we propose to tell to-night, the more so since we expect to have the British Association hold its great annual meeting in our city of Winnipeg in 1909.

THE BRITISH ASSOCIATION.

The origin of this Society in 1831 carries us away to another ancient city of the British Isles, which the writer had the pleasure of visiting also during the past summer. This is the old Scottish city of St. Andrews. Here a friendly professor who acted as cicerone descanted on the doings, including the scientific fervor, and the somewhat radical tendencies of Sir David Brewster, Principal sixty years ago of the United Colleges of St. Salvator and St. Leonard in that oldest of Scottish Universities, whose founding five centuries ago will be celebrated in 1911.

Brewster was a born scientist. Educated in Edinburgh, he had thrown aside the study of theology and devoted himself with great enthusiasm to the great department of Physical Optics. He discovered many of the chief facts as to the refraction, polarization, and absorption of light, and his value was immediately recognized by the Royal Society. On the continent in 1822, led by Dr. Oken of Munich, there had been formed the Association of Physicians and Naturalists in Munich. In 1830 also the German Congress of Scientists had met in Hamburg, and much interest was caused, which spread to the British Isles. Thus inspired to see the value of conferences between men of kindred scientific tastes, Brewster, in an article in the "Quarterly Review," made the important suggestion of "an Association of our nobility, clergy, gentry, and philosophers" for the active pursuit of scientific studies and discoveries. He spoke at the right moment. Ardent sympathizers took hold of his suggestion, and in 1831 the first meeting of the British Association for the advancement of Science was held in the city of York—a common meeting ground for North and South Britain. The promoters were warmly welcomed by the Yorkshire Philosophical Society, leading lights of which were the Rev. Vernon Harcourt and Dr. Goldie. In his enterprise kindred spirits were found by Sir David Brewster in Professor Babbage of Cambridge, the inventor of the famous calculating machine; in Sir J. F. W. Herschel—the son of the great astronomer—and himself an astronomer and physicist of note; and in Sir Roderick Murchison, Professor Johnstone, and Professor Phillips. These moulding minds gave shape to the Association.

The first President of the Association was Viscount Milton, afterward Earl Fitzwilliam, a Yorkshire nobleman. He has a special interest to us as Canadians, on account of his son, Lord Milton, being one of the adventurous spirits who, with Dr. Cheadle, crossed through our part of Canada in 1862-3, and succeeded after the greatest hardships in reaching the Pacific Coast in rags, after having well nigh perished from starvation in the mountains of British Columbia. We have a picture of his lordship in his buckskin suit.

GREAT GATHERINGS.

The great value of science to all classes of the community has during the last fifty years been thoroughly recognized, and the effort of the Association, while not lowering its high standard and character, yet to take hold of all portions of the community, has resulted in vast gatherings at its annual meetings. The plan followed is not to visit any city until a formal invitation from the Mayor and Council of the city has been sent to the Association. The pre-

LORD MILTON
Western Explorer (1862-3), Son of Earl Fitzwilliam, First President B. A. S. (1831).

sent City Council of Winnipeg, at the request of the Royal Society of Canada, sent its formal invitation this year asking the Association to visit Winnipeg

in 1909. The largest of the seventy-five annual gatherings which the Association has held, was that of the year 1861, in Manchester, when 753 life and annual members, reached, with local associate and lady members, the large total of 2,385.

On the visit of the Association to Montreal in 1884 there were in attendance 572 British members, 219 new annual members, and the associate and lady members numbered 900, giving a total of 1691.

In Toronto in 1897 there were 414 British members, 125 new members, 782 associate and lady members, and 41 foreign scientists, chiefly guests, making a total of 1362.

The great event of the annual meeting is the opening address by the President, recounting the discoveries and scientific advances of the year. The writer was present at the meeting of 1896 in Liverpool, when Lord Lister was President. On that occasion the largest hall in the city, containing several thousands, was filled to overflowing, and many were unable to gain admission. It was an ovation to the great physician and man of science, and his address was worthy of the occasion. His recital of the discoveries of the few preceding years almost raised his hearers into the realm of fairyland or romance. He said, "By the aid of the Röntgen rays (then newly discovered) a photograph had been taken in which the bone of the upper arm of a patient was clearly seen displaced forward over that of the forearm, and the physician given a clue for his successful operation. The common metals, such as lead, iron and copper, being still denser than the osseous structure, these rays show the bullet embedded in a bone and a needle lodged about a joint. A half-penny was also revealed low down in a boy's gullet." The lecturer referred to the great service rendered to humanity by the discovery and use of chloroform and ether. The distinguished physician's account of his adaptation of science to surgery in carrying out the antiseptic principle was most interesting. He stated that in 1890 he had fully proved "the harmlessness of atmospheric dust in surgical operations." An account was given of Koch's great discovery, "that each poisonous microbe appears to form its own peculiar toxine." Out of this discovery grew the cure of very bad purulent ulcers, and the hope was raised of science being able to banish tuberculosis—"the whiteman's scourge." There was hushed and breathless attention when Lord Lister gave an account of the researches of Metchnikoff, the great Russian pathologist, of how the white corpuscles of the blood in their weird, greedy seizure of hurtful microbes and decaying substances envelope them with snaky readiness and render these hurtful enemies harmless by devouring and destroying them. Said the great lecturer in closing: "If ever there was a romantic chapter in pathology it has surely been that of the story of phagocytosis.

A COMPREHENSIVE SOCIETY.

The greatest feature of the British Association is its breadth. It is divided up into eleven different sections, and each of these receives its own share of time and opportunity. We all know that even among scientific men jealousies arise. The mathematician with his severe methods thinks little of the anthropologist

SIR DAVID BREWSTER
Originator (1831) and President B. A. S. (1850).

with his guesses and his plausible theories. The biologist looks askance at the geologist, with his hammer, breaking senseless rocks, while the former is dealing with the problems of sensation and intelligence; and so also the physicist with his knowledge in practical demand for the Brodwissen-schaften looks with sublime pity upon the archaeologist occupied with dry-as-dust investigations. But this is all wrong. Every department in education, every department of knowledge contributes something to the uplift of society and the world. In 1855 the Duke of Argyll was President of the Society. The Duke brought not only distinction from a long line of ancestral achievements in war, diplomacy, religion, society and letters, but was himself a scientist and a publicist. No doubt his

views as given in "Reign of Law" and "Primeval Man," or "The Unity of Nature," were far from squaring with those of Charles Darwin or Professor Tyndall, but then it is the glory of the Society that men of every intelligent view have a fair hearing and full respect shown to their views.

THE SUB-DIVISIONS.

The breadth of the conception of the Association is shown in its different sections. These are:

A. Mathematical and Physical Sciences.
B. Chemistry.
C. Geology.
D. Zoology.
E. Geography.
F. Economic Science and Statistics.
G. Engineering.
H. Anthropology.
I. Physiology.
K. Botany.
L. Educational Science.

The large share given to Biology is perfectly natural. In a world, where the question of life is so intensely important it is well to subject it to the closest scrutiny. While Lord Lister, as President, added vastly to the means for the preservation of life, one of the greatest Presidents who occupied the chair was Professor Huxley. This was in 1870. While he was a controversialist who "loved the rigor of the game," yet he was a vastly sympathetic and wholesome man in his output. The presidential address of Huxley was a splendid vindication of the doctrine of Biogenesis or the Germ theory against that of Abiogenesis or Spontaneous Generation. Huxley maintained the principle that lies at the basis of modern medicine, and the knowledge of which enabled Lord Lister to make practical applications, which have revolutionized the old methods into really effective and life-saving processes. If anyone doubts the value of Science to man let him read the peroration of Huxley's Presidential address when he refers to the idea of Redi, worked out so completely by Pasteur, by which fifty million pounds sterling was saved to the wine growers, and his statement that the saving of this one scientist to France would go far to meet the total expense to his country of the Franco-Prussian war.

SURPRISES OF SCIENCE.

In the British Association there is the freest expression of opinion. The most treasured notion is attacked without remorse. In this liberty lies the hope of succeeding in the search for truth. Never has this been more clearly seen

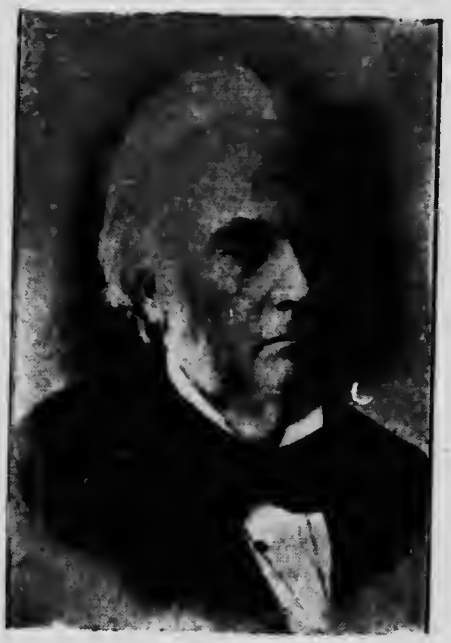
SIR WILLIAM DAWSON
President B. A. S. (1886).

than in the Presidential address this year (1906) in York of Dr. Ray Lankester. There is no attempt to form a dogmatic science. If a thing is false, if credence has been given to an ill-considered judgment or opinion, it is without the slightest regret abandoned. This is the true spirit of research. Dr. Lankester discusses with evident delight the discoveries made of radium and the radio-activity of a number of other metals. He announces that "after a year and six weeks a grain of radium has emitted enough heat to raise the temperature of

a thousand kilograms of water one degree. And this is always going on. Even a small quantity of radium diffused through the earth will suffice to keep up its temperature against all loss by radiation! If the sun consists of a fraction of one per cent. of radium, this will account for and make good the heat that is annually lost by it."

"This is a tremendous fact, upsetting all the calculations of physicists as to the duration in past and future of the sun's heat and the temperature of the earth's surface."

Again, with almost childlike glee, he says: "The kind of conceptions to which these and like discoveries have led the modern physicist in regard to the



THE DUKE OF ARGYLL
President B. A. S. (1855).

character of that supposed unbreakable body—the chemical atom, the simple and unaffected friend of our youth—are truly astounding."

With the utmost frankness the President announces that the accepted botanical theories have been upset by the discovery of true spermatozoa in a certain Gymnosperm, and that higher as well as lower plants are fertilized by spermatozoa. With joyous candor, Dr. Lankester supports the Metschnikoff school in further treatment of stimulating the phagocytes in the blood to enable them to resist the germs of infection; and the startling fact that "alcohol, opium, and even quinine, hinder the phagocytic action, and that

they should therefore be entirely eschewed or used only with great caution when their other and valuable properties are urgently needed."

All must sympathize with Dr. Lankester when he speaks so decidedly against the apathy and ignorance of governments—in their neglect of science and their questionable treatment of scientific men by the administrative depart-

LORD LISTER
President B. A. S. (1896).

ments of the government. He looked upon the British Association as one of the greatest means of spreading a knowledge of the results of science and a love for it amongst all members of the community.

THE ENCOURAGEMENT OF RESEARCH.

The large number of members and the comparative inexpensiveness of its management has always enabled the British Association to have at its command considerable sums of money for the encouragement of research. One of its best acts was the taking over the Observatory at Kew, which did valuable service by its investigations in magnetism, meteorology, and physics. For a number of years £600 was annually granted until, in 1871, the Observatory was handed over to the Royal Society, which had received large sums for its maintenance. During the first ten years of its existence the Association gave no less than £1,400 for the study of tides and waves on the sea. Recognizing the need

of scientific knowledge to the British people as a nation of sailors, the Association voted in all in its earlier years upwards of £1,600 for the study and improvement of the forms of vessels for successful navigation. £2,135 was spent in thirteen years for the study of problems of weather so important to a seafaring population. Grants were made for investigating earthquakes, and the land and sea level. No less than £1,500 was voted for mapping the stars, and for assistance to electrical and magnetic research. No one can forget the valuable service rendered by the British Association in gaining consent to the system of measuring known as the C.G.S. (i.e., Centimeter—Gramme—Second) units.

The publications of the Association have gone all over the world and have carried information by the papers being printed in full, in so far as they proved valuable. The scientist needs stimulation in the line of the direction of his investigation, in the appliances and devices that can be used, in the accounts of the failures or achievements of others, and in the thought of co-operation from his knowing that others like himself are following certain lines of search.

THE COMMITTEE SYSTEM.

Sometimes with grants, but oftener without them, committees of kindred spirits are appointed in the several departmnts for investigating and reporting on certain questions of interest. By this method a definite direction is given to the specialists in their work, and many reports really remarkable have been given in during the three-quarters of a century of the existence of the Association.

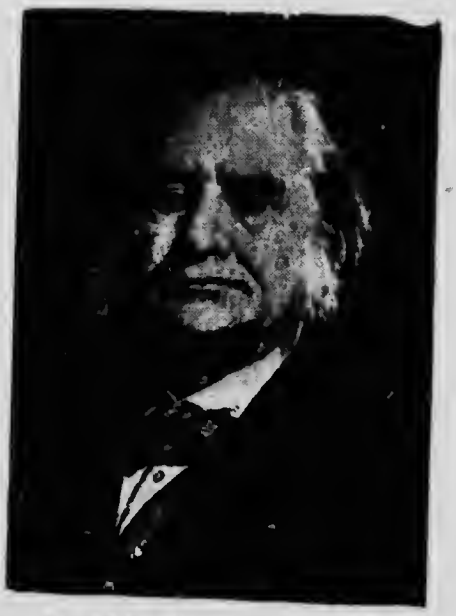
The subjects worked out by committees may be seen by a selection from the year in which the Association met in Montreal. Some of the subjects considered were: (1) Meteoric dust; (2) Chemical Nomenclature; (3) Movement of Underground Waters; (4) National Geological Surveys of Europe; (5) Rate of Erosion on Sea Coasts; (6) Earthquake Phenomena; (7) Migratory Birds at Light-Houses and Light-Vessels; (8) Promoting Survey of Eastern Palestine; (9) Science in Elementary Schools; (10) Facial Characters of Races of the British Isles; (11) Spectrum Analysis; (12) Archaean Rocks of Great Britain; (13) Theory of the Steam Engine; (14) Coast Signals.

From these few examples, taken from a single year, may be seen the exceeding important character of the work of the Association.

COMING TO CANADA.

At its May meeting at Ottawa in 1895 the Royal Society in Canada, which had been instrumental in inducing the British Association to visit Canada in 1884 and 1897, the meeting in the former year having been in Montreal and

in the latter year in Toronto, took up the question of inviting the Association to visit Canada again. By unanimous consent it was agreed that Winnipeg would be the suitable place for a meeting should the Association decide to come to Canada. A large committee was appointed, of which the writer is chairman, to take steps in the matter. The Committee decided to wait upon the Hon. the Premier of Canada, Sir Wilfred Laurier, to ask for a grant for the purpose of bringing the British Association to Winnipeg. The Premier took a few days to consider it with his colleagues, and then wrote to the chairman, promising a grant of $25,000 to the Committee should their invitation be accepted by the British Association. By the direction of the Committee the chairman then ap-



PROFESSOR T. H. HUXLEY
President B. A. S. (1870).

plied to the Mayor and Council of the city of Winnipeg, asking that they should invite the British Association to hold its annual meeting here in 1909 and also requesting a grant of $5,000 for the expenses of the Association. The Mayor and Council cordially extended the invitation, and recommended to their successors to spend a suitable sum for the purpose proposed. The Historical and Scientific Society of Manitoba co-operated in supporting the request of Winnipeg. In May 1906 the University of Manitoba also agreed to support the city's invitation and appointed Professors Parker and Vincent to co-operate with the writer in bringing the matter before the officials of the Association. In July the writer met the two leading secretaries of the Association in London, dis-

cussed with them the matter fully, and left his views in writing, to be presented to the General Committee of the Association. Professors Parker and Vincent were present at the meeting in York in August and supported the invitation of the city. After discussing the matter fully the Association agreed to accept the invitation to Winnipeg for 1909, and the result was at once cabled by the Associated Press to Winnipeg and published in the Winnipeg papers of the next morning.

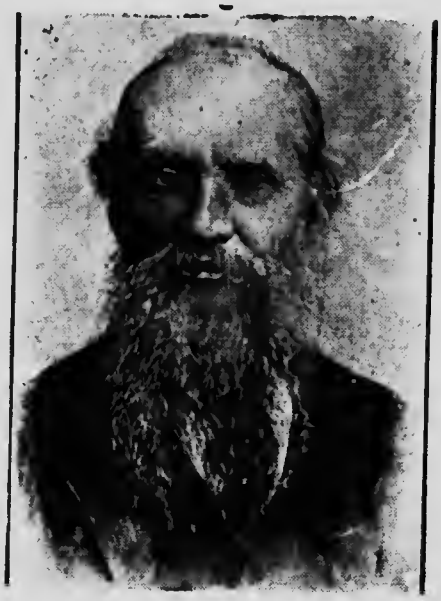
ACCOMMODATION.

As soon as the Committee of the Royal Society takes action steps will be taken to form a large representative Committee, chosen by such bodies as the City Council, School Board, Board of Trade, University, University Faculty, Colleges, Learned Societies and other important bodies, to undertake the large work of accommodating the visitors from Great Britain, arranging for the rate of fares, providing suitable meeting places for the large gatherings, evening lectures, and section meetings of the Association, as well as for securing general offices for the officials of the Society and Sections. As the Association meeting will probably be in August, 1909, it is likely that the work of preparation will be begun in 1907, giving ample time for making complete arrangements.

THE WESTERN TRIP.

A most important matter connected with the Winnipeg meeting will be the question of whether arrangements can be made for taking a selected body of the Association to visit the Pacific Coast and intermediate points of interest in the Western Provinces. Probably six or seven hundred members from Great Britain, the Continent and the United States may be expected at the Winnipeg meeting. It has been suggested that say two hundred of the most prominent of the scientists, who may be able, should go to the West and see Western Canada. A railway train could be placed at their disposal, as in the case of the manufacturers' expedition, when different places in the West were visited. There is a desire in the Western Provinces to see the world's leaders of science, and it would be of great value if at a number of leading places in these Provinces meetings could be held and addresses given by men of note. A suggestion has been made that the Western Canadian Provinces should contribute a sum sufficient, with grants from the leading cities for entertainment, to meet the expenses of this expedition. The cost of the whole, from Winnipeg west and return, would be probably from twelve to fourteen thousand dollars. A few weeks ago the writer had the opportunity of meeting Governor Dunsmuir and Premier McBride of British Columbia, and Messrs. Morley and Buscombe, Mayors of

Victoria and Vancouver, and all these gentlemen were heartily in favor of the project and will hail enthusiastically a visit of this the greatest scientific body in the world. Premier Rutherford of Alberta and the Mayors of Edmonton and Calgary were also decidedly favorable to the plan of bringing the visitors. In the case of the cities it is of course too soon to bring the matter formally before them as municipal promises cannot be made so long as three years ahead. This subject will be brought before the Provincial authorities of Manitoba and Saskatchewan, and the cities outside of Winnipeg in these two provinces. The sentiment of everybody thus far approached has been completely with the plan



LORD KELVIN
President B. A. S. (1871).

of inducing the men able to judge of our resources to see for themselves the greatness of promise of our prairie and mountain domain.

OUR DUTY.

Perhaps no greater means of influencing our kinsfolk across the sea could be placed at our disposal than a successful meeting within our borders of the British Association for the advancement of science. The idea is novel. To have the convocation of hundreds of the world's greatest minds in a city, which though now a University city, and having a population of upwards of 100,000, had yet when the writer first saw it only two hundred and forty people, is certainly unique. These men going back will tell in Great Britain and Ireland of

the spread of British civilization under the meteor flag, of the marvellous natural resources awaiting development, and of the vast areas unoccupied capable of affording comfortable homes for the world's needy millions. Their visit, too, will supply them with knowledge which, in their places as public teachers, lecturers, and men of influence among the intellectual and moneyed classes of the old world, will awaken wider interest in our commercial condition and political relations. Their coming will lead to the firmer establishment of our wide Empire.