

APPENDIX.

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DESIGNS
FOR THE SOUTH AFRICA MEDAL.
By FRANK BOWCHER.

APPENDIX.

SOUTH AFRICA: 1905.

I.

Narrative and Itinerary of the Meeting of the British Association in South Africa.

[WITH TWO MAPS.]

The Seventy-fifth Annual Meeting of the British Association for the Advancement of Science was held in South Africa, on the invitation of the Governments of the several Colonies and of Rhodesia.

The work of organisation at home was entrusted to a special Committee of the Council, comprised of the following gentlemen: Professor Armstrong, the Right Hon. A. J. Balfour (President), Dr. Horace Brown, Sir William Crookes, Professor G. H. Darwin (President Elect), Sir James Dewar, Sir Archibald Geikie, Professor Herdman (General Secretary), Major P. A. MacMahon (General Secretary), Professor H. A. Miers, Professor Perry (General Treasurer), Sir Henry Roscoe, and Dr. P. L. Selater. This Committee, in addition to other important duties, was charged with the selection, for the approval of the Council, of the members who were invited to join the Official Party as guests of the South African Colonies. With this Committee rested also the nomination of the pioneers who were chosen to proceed to South Africa in advance of the Official Party for the purpose of making those special investigations which had been indicated by the South African Local Committees.

In South Africa, the elaborate details of organisation and co-ordination were carried out by the Local Officers, under the general supervision and direction of Sir David Gill, as Chairman of the Central Organising Committee for South Africa, with Dr. J. D. F. Gilchrist and Mr. W. Cullen as Honorary Secretaries. Local Committees were established at Cape Town, Durban, Pietermaritzburg, Ladysmith, Johannesburg, Pretoria, Bloemfontein, Kimberley, and Bulawayo, with a Sub-Committee for Salisbury and the Victoria Falls.

A sum of 6,000*l.*, subscribed by the undermentioned Governments, was contributed as a subvention towards the ocean passages of members of the official party of invited guests:—

	£
Cape Colony	3,000
Transvaal and Orange River Colony	2,000
Natal	1,000
	6,000

A Special Fund, amounting to 3,100*l.*, was privately subscribed at home, in order to meet extraordinary expenditure in connection with the Meeting.

The number of over-sea members visiting South Africa was 380. By a special arrangement with the South African Association for the Advancement of

Science, their members were enrolled as Associates of the British Association. Following is an analysis of the tickets issued at the Meeting:—

Old Life Members	115
New Life Members	40
Old Annual Members	89
New Annual Members	411
Associates	430
Ladies	181
Foreign Representatives	16
South African Association	848
Total	<u>2,130</u>

The Union Castle Steamship Company granted a reduction of 30 per cent. on ocean fares to the members constituting the official party of invited guests, and a reduction of 25 per cent. to all other members of the Association.

Of the 380 over-sea members attending the Meeting, 52 sailed from Southampton in the 'Kildonan Castle' on July 22; 106 sailed in the 'Durham Castle' on July 22; and 157 sailed in the 'Saxon' on July 29.

Cape Town: August 15 to August 19, inclusive.—The 'Kildonan Castle' arrived at Cape Town on August 8, the 'Durham Castle' on August 13, and the 'Saxon' on August 15. The Harbour Board authorities collected and delivered free of charge the baggage of members; and representatives of the Local Reception Committee met each steamer, in order to facilitate the disembarkation of members and to introduce their hosts.

The Inaugural Meeting was held on the evening of Tuesday, August 15, at the City Hall, when Professor G. H. Darwin delivered the first part of his Presidential Address.

Sectional Meetings were held on the mornings of Wednesday, Thursday, and Friday following. Sections A, B, E, F, G, and L met at the City Hall; Sections C, D, H, I, and K met at the South African College. Presidential Addresses were delivered on Wednesday morning to Sections A, D, E, F, H, and L.

On Wednesday afternoon, his Excellency the Hon. Sir Walter Hely-Hutchinson, Governor of the Cape Colony, received members and others at Government House. In the evening, his Worship the Mayor (Mr. H. Liberman) held a Reception at the City Hall.

On Thursday afternoon, members undertook short excursions in the Cape Peninsula; and in the evening Professor Poulton lectured on 'W. J. Burchell's Discoveries in South Africa' (*vide p. 629*).

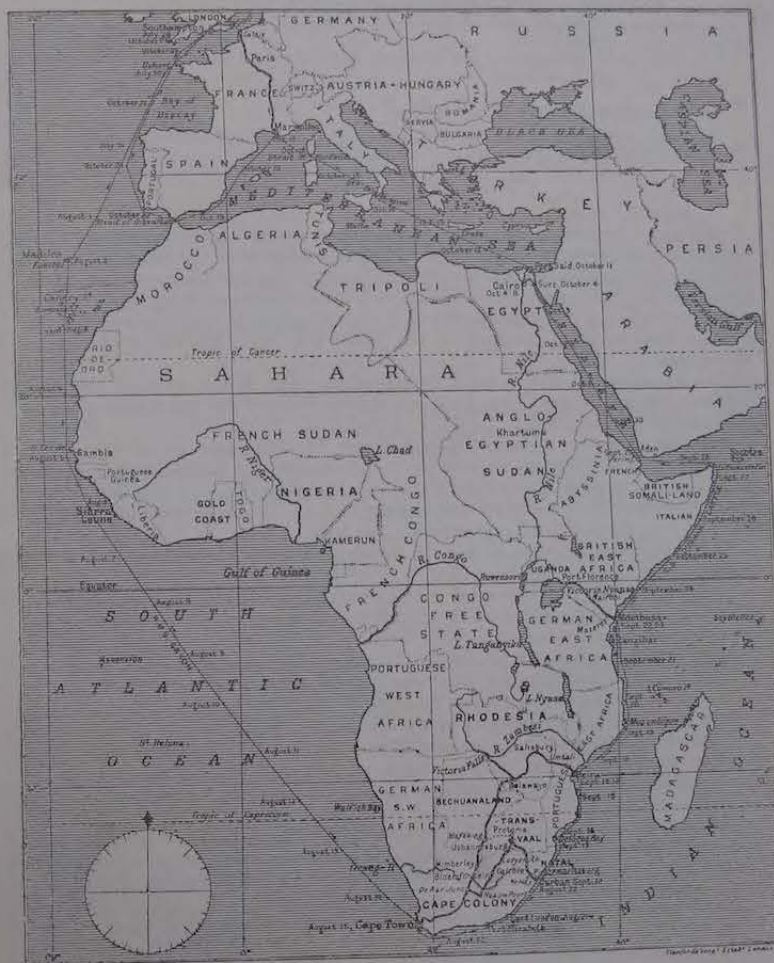
The University of the Cape of Good Hope conferred honorary degrees on the following representative members of the British Association:—*Doctors of Science*: Professor George Darwin, President of the Association; Sir William Crookes, Past President of the Association; Sir David Gill, Astronomer-Royal; Professor Porter, McGill University, Montreal; Professor Davis, Harvard University; Dr. Backlund, Director of the Nicholas Observatory, Pulkowa; Professor Bohr, Copenhagen; Professor Engler, Berlin; Professor Kapteyn, Groningen University; Professor Penck, Vienna; and Dr. Sjögren, Stockholm. *Doctors of Literature*: Sir Richard Jebb; Dr. Murray, editor of the Oxford Dictionary; and Professor Cordier, Paris.

On Friday afternoon, Sir David and Lady Gill received members at the Royal Observatory. In the evening, Mr. Vernon Boys delivered a lecture on 'Some Surface Actions of Fluids.' Votes of thanks to the Government and municipal authorities and to the Local Committees were cordially adopted.

Owing to the requirements of the mail service, the 'Saxon,' conveying a large number of members of the Association, left on Friday evening for Durban, calling at Port Elizabeth and East London. The two special trains provided by the Cape Government Railways also left on Friday evening for Durban.

Saturday, August 19, was devoted to whole-day excursions, the remaining members leaving in the evening on the 'Durham Castle' for Durban direct. The Union Castle Steamship Company was represented throughout by Mr. Robertson F. Gibb, whose delegated powers greatly facilitated the arrangements at various stages. A baggage-master, provided by Messrs. Pickford, who initiated

FIG. 1.—Track Chart.



the baggage and laundry arrangements, accompanied the party from Cape Town; and each train carried representatives of the respective railways.

Special Trains.—In addition to the two special trains provided by the Cape Government Railways, to which reference has been made, the Natal Government Railways also provided two special trains for the return journey to the Victoria

The Union... Robertson F. Gibb, whose delegated powers greatly facilitated the arrangements at various stages. A baggage-master, provided by Messrs. Pickford, who initiated

FIG. 1.—Track Chart.



the baggage and laundry arrangements, accompanied the party from Cape Town; and each train carried representatives of the respective railways.

Special Trains.—In addition to the two special trains provided by the Cape Government Railways, to which reference has been made, the Natal Government

the evening, Professor Darwin delivered the evening Address. Mr. Lamplugh's report on his expedition to the Batoka Gorge was given as an afternoon Address to the Geological Section (*vide* p. 292).

FIG. 2.—Route Map.



Thursday was entirely occupied with the visit to **Pretoria**. Lunches were given at the three principal hotels; and a large party visited the Premier Diamond Mine. Sir Arthur Lawley, Lieutenant-Governor of the Transvaal, gave a garden party at Government House; and in the evening Mr. Shipley lectured on 'Fly-borne Diseases' (*vide* p. 631). On the same evening in Johannesburg, Mr. Arnold lectured on the 'Fly-borne Diseases'.

The final meetings of the Sections were held at **Johannesburg** on Friday morning. The General Committee and the Committee of Recommendations met in the afternoon.

At the Concluding General Meeting, the following Resolutions were passed:—
1. Thanks to the High Commissioner and to the Lieutenant-Governor of the Transvaal, and to the Mayor and Corporation of Johannesburg, for their reception of the British Association, and for the facilities which they placed at the disposal of the Meeting.

2. Thanks to the President and officials of the South African Association for the Advancement of Science, and to the Local Committees at Johannesburg and Pretoria, for the admirable arrangements made in connection with the visit of the British Association.

3. Thanks to the gentlemen and public bodies who hospitably entertained the members of the British Association, to firms and companies, and to the committees of clubs and other institutions who opened their premises to members, and also to the Press for their admirable reports of the proceedings.

The special trains left in the evening for Bloemfontein.
Bloemfontein: *September 2 and September 3.*—On the arrival of members at Bloemfontein, an official Reception was held in the Town Hall.¹ In the afternoon, Chief Justice Fawkes, on behalf of his Excellency Sir H. J. Goold-Adams, Lieutenant-Governor of the Orange River Colony, held a Reception at the Residency. In the evening, Mr. Arthur R. Hinks lectured on 'The Milky Way and the Clouds of Magellan' (*vide p. 631*).

On Sunday morning, a visit was paid to the Government Experimental and Stud Farm at Tweespruit.

Treks and Excursions.—Between the meetings of the Association at Cape Town and Kimberley, extended excursions were undertaken, chiefly by the geologists, in Cape Colony, Natal, and the Transvaal. Parties of trekkers also left Bloemfontein for Kimberley, and Pretoria for Mafeking. The latter party was welcomed at Zeerust.²

Kimberley: *September 5 to September 7.*—Members spent the whole of Monday, September 4, in the special trains, arriving at Kimberley early on the morning of September 5. After being welcomed by the Reception Committee, they paid visits to the mines. In the afternoon, a garden party was given by his Worship the Mayor (Mr. Tyson); and in the evening Sir William Crookes lectured in the Town Hall on 'Diamonds'. Sir William Crookes' lecture was re-delivered on the following afternoon.

Wednesday was occupied with excursions; and in the evening Professor Porter lectured on 'The Bearing of Engineering on Mining.'

The special trains left Kimberley on Thursday afternoon for Bulawayo.

Bulawayo: *September 9 and September 10.*—Bulawayo was reached on Saturday morning, after a journey of thirty-eight hours. Visits were paid to the Rhodesian Museum, which was formally opened by the President; and a Reception was held at Government House by Mr. Frank Newton, Treasurer of Rhodesia, as representing Sir William Milton, Administrator of Southern Rhodesia, who was absent in Europe.

In the evening, after a Reception in the Grand Hotel Hall, Mr. Randall-MacIver lectured on 'Rhodesian Ruins' (*vide page 301*).

An excursion to the Matopo Hills was made on Sunday, when a service was held at the grave of the late Cecil Rhodes. The special trains, carrying 330 members, left for the Victoria Falls on Monday morning, *September 11*.

Victoria Falls: *September 12 and September 13.*—Arriving early in the morning of Tuesday, members spent the whole of the day in visiting various points of interest at the Victoria Falls. The railway bridge over the Zambesi was formally opened by the President. The British South Africa Company, represented by Sir

¹ See pages 625, 626 for the texts of Address of Welcome and the President's reply.

² See pages 626–628 for the texts of Addresses of Welcome and the President's replies.

Charles Metcalfe, Mr. Newton, and other officials, entertained a number of the official party. A special series of postage stamps was issued to commemorate the event.

The following telegrams of congratulation were received by Sir Charles Metcalfe:—

From the British South Africa Company, London, September 12: 'President and directors congratulate you, also distinguished President British Association, bridge contractors, and people of Rhodesia, on opening bridge to-day, fifteenth anniversary occupation Mashonaland. Very fitting that foremost representatives of science should be associated with inauguration of triumph of modern engineering. Regret founder of country is not alive to witness realisation of part of his great ideal.'

From H.E. Earl Grey, G.C.M.G., Governor-General of Canada, Ottawa, September 11: 'Envy your privilege receiving British Association Victoria Falls. Tell Professor Darwin hope permanent fertilisation in form of stimulated scientific activity in Zambesi Valley may result from picnic.'

The visitors left for Bulawayo in the afternoon of Wednesday.

Bulawayo: *September 14.*—Members, on their return to Bulawayo, early in the morning of Thursday, September 14, were entertained at a complimentary gymkhana on the racecourse.

In the afternoon, the trains were re-arranged, and started in sections for Beira and Cape Town.

Salisbury: *September 15.*—The Beira party, numbering 206 members, were received at Salisbury by the Mayor, the Acting Administrator, and the Resident Commissioner. They were entertained at a banquet in the Drill Hall. The trains resumed their journey in the evening.

Umtali: *September 16.*—The day was spent at Umtali, between the arrival and departure of the special trains. Members were entertained at luncheon by the Local Committee.

Portuguese officials, representing the Governor of Mozambique, met the party at Umtali, and, with others who joined at the frontier, accompanied the party to Beira.

Beira: *September 17.*—The party reached Beira early on Sunday morning, September 17, and were received by the Portuguese authorities, the Consular Corps, representatives of the Companhia de Moçambique, and representatives of the Chamber of Commerce.

A Reception was held at the Residency; and subsequently, members were entertained at luncheon by H.E. the Governor (Senhor Pinto Basto).

The 'Durham Castle,' carrying 206 members, sailed in the afternoon, homeward bound *via* the Suez Canal.

The following farewell telegram, addressed to all South African newspapers, was despatched by the President: 'British Association thanks people of South Africa for splendid reception from Capetown to Beira. Impossible adequately to repay hospitality shown, but the remembrance will remain indelible in minds of visitors from oversea. Facts observed will furnish material for many scientific memoirs, and it is likely that South Africa will be repaid by stimulated scientific activity.—DARWIN.'

The President also sent letters of thanks to the leading officers and officials.

The West Coast party arrived at **Cape Town** in the afternoon of the same day, and sailed in the 'Armada Castle' on September 20 for Southampton.

London: The Council, at its sitting on November 3, 1905, passed the following Resolutions, which were despatched to Sir David Gill, Chairman of the Central Organising Committee for South Africa, for transmission to those concerned:—

(i) 'That the Council of the British Association for the Advancement of Science desires to place on record its high appreciation of the cordial reception given to its officers and members throughout the sub-continent by the representatives of the several Colonies and Administrations, and to convey, through the Central Organising Committee, its grateful thanks for the generous hospitalities, privileges, and

concessions extended to them on the occasion of the visit of the Association to South Africa in 1905.

(ii) That the Council of the British Association for the Advancement of Science desires to convey, through the Central Organising Committee for South Africa, its cordial appreciation of the generous reception by the Portuguese representatives and authorities at Beira of the officers and members of the Association on the day of their embarkation for Europe.

The General Committee, adjourned from Johannesburg, met in London on October 31, and the Conference of Delegates held Meetings on October 30 and 31. In commemoration of the visit of the Association to South Africa, a fund was raised for the endowment of a Medal and Scholarship or Studentship for South African Students (see p. 631); and, with the consent of the Council, the South African Association for the Advancement of Science have prepared for publication, in four volumes, all the papers of South African interest read at the Sectional meetings.

II.

Addresses of Welcome.

PIETERMARITZBURG.

TO PROFESSOR HOWARD DARWIN, M.A., LL.D., F.R.S., F.R.A.S., PRESIDENT, AND THE MEMBERS OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

We, the Mayor and Town Council of the City and Borough of Pietermaritzburg, the capital of the Colony of Natal, and as such representing the burghesses and inhabitants thereof, desire to tender you a most cordial welcome to our city on the occasion of your visit to South Africa.

We esteem it a high honour to have so many distinguished and scientific men in our midst, and we desire to express the hope that your visit will be one of great importance to South Africa, in the advancement of science and its attendant results upon commercial aspirations.

We feel confident that members of the British Association will find that this portion of His Majesty's Empire has not been slow to take advantage of the results of science, and we earnestly hope that the present visit will bring about an interchange of intercourse which will be of immense benefit, not only to South Africa, but to the British Empire.

We trust that your stay amongst us will be a very pleasant one, and that your sojourn in South Africa will be fraught with good results in the interests of scientific research.

Signed, on behalf of the Town Council and inhabitants of Pietermaritzburg, this 24th day of August, 1905.

D. A. V. WALKER, Town Clerk.

A. W. KERSHAW, Mayor.

Reply.

TO HIS WORSHIP THE MAYOR AND TO THE MEMBERS OF THE TOWN COUNCIL OF THE CITY AND BOROUGH OF PIETERMARITZBURG IN NATAL.

SIR GEORGE HOWARD DARWIN, Knight Commander of the Bath, President of the British Association for the Advancement of Science, has the honour of acknowledging the receipt of a copy of the Address which the Mayor and Town Council of Pietermaritzburg presented to the Association on the 24th day of August

last. The beautifully illuminated parchment in which the copy is embodied will be treasured amongst the most valued archives of the Association.

The President desires to avail himself of the present opportunity of renewing his previous expressions of gratitude to the burghesses and inhabitants of Pietermaritzburg for the magnificent reception and for the generous hospitality accorded to the members of the Association on the occasion of their memorable visit to the beautiful and prosperous Colony of Natal.

The Council of the British Association cordially reciprocate the eloquent words of friendship contained in the Address; and they express the hope that the visit may afford an incentive to study and research, not only in the realms of pure knowledge, but also in those applications of science which have such diverse and supreme importance in the development of commerce.

The members of the British Association, during their long and varied journey through South Africa, have reaped a rich harvest of observation in many departments of science. The Council confidently expect that these observations will be the starting-point of many investigations on subjects having a special bearing on South Africa; and they hope that in this manner the members of the Association may be enabled in some degree to repay the deep debt of gratitude under which they lie to their fellow-subjects of the King beyond the seas.

Signed, on behalf of the Council of the British Association, this 30th day of November, 1905.

G. H. DARWIN,
*President of the British Association
for the Advancement of Science.*

Burlington House, London, W.

BLOEMFONTEIN.

TO THE PRESIDENT AND MEMBERS OF THE BRITISH ASSOCIATION.

LADIES AND GENTLEMEN,—On behalf of the members of the Philosophical Society of the Orange River Colony, we desire to join in welcoming you to our Colony and to the city of Bloemfontein. Our Society is as yet so young that we should hardly have ventured to do so, were it not that at present it is the only Society in this Colony whose aims and objects are akin to those of your great Association.

Formed only since the declaration of peace, and seeking to develop amidst all the difficulties of the work of reconstruction which has occupied the last four years, you will easily understand that it has not been possible for us to do much, or to do what we have done very thoroughly, but if we refer to what has been done or what we are proposing to do in the near future, we feel sure you will consider we are proceeding on right lines, and give promise of really useful work in the time to come.

Papers, followed by interesting discussions, have been read by Dr. Brill, Rector of Grey College, on Social Life in Bloemfontein in early days; by Mr. Lyle, Science Lecturer of the Grey College, on the Discovery and Nature of Radium; by Miss Steedman, Principal of the Girls' High School, on Adaptations in Plants in the Orange River Colony, and in June last year we were fortunate in having a lecture from Professor Hele Shaw on Aerial Navigation.

Mr. Glenday, of the Government Works Department, read a paper on Irrigation, which we have been able to publish; the Rev. Z. Lawrence lectured on Tolstoi and Modern Russia; and the Right Rev. Dr. Chandler, Bishop of Bloemfontein, gave an address on Plato and the Greek Ideals of Education: this was largely attended by the teachers of the Colony.

We have promises of papers from Dr. Targett-Adams, Mr. Stead, and Mr. Weall, the Government analysts; Dr. Pratt Yule, medical officer of health for the Colony; Major Gray, head of the Municipal Police; Dr. Mossop, Mr. H. B.

Austin, the Rev. C. S. Franklin on Native Folklore, Mr. Dewar on Entomology, Dr. Potts on Agricultural Natural History, and Mr. Ivan H. Haarburger on the work of Professor Max Müller.

The increasing number of corresponding and country members, from whom we may hope to receive notes and observations of matters of interest in their respective neighbourhoods, is distinctly encouraging.

Assuring you of the pleasure it gives us to join in welcoming you to our Colony, and hoping that you will carry home many pleasant recollections of your visit,

We have the honour to be,
Ladies and Gentlemen,
Very faithfully yours,

HORACE W. ORFORD, *Acting Vice-President.*
J. BRILL, *Past Vice-President.*
O. HATCH, *Hon. Treasurer.*
W. S. JOHNSON, *Hon. Secretary.*

Bloemfontein,
September 2, 1905.

Reply.

TO THE PRESIDENT AND MEMBERS OF THE PHILOSOPHICAL SOCIETY OF
THE ORANGE RIVER COLONY, BLOEMFONTEIN, SOUTH AFRICA.

Burlington House, London, W.
November 30, 1905.

GENTLEMEN,—On behalf of the Council of the British Association, I beg leave to give you a formal acknowledgment of the receipt of a copy of the Address of Welcome presented on the second day of September last by the Philosophical Society of the Orange River Colony to the members of the Association.

The foundation of your Philosophical Society affords a proof that intellectual interests are firmly implanted in the minds of the inhabitants of the Colony; and we are convinced that conditions of economic and political prosperity will lead your Society onward from the fair promise of its youth to a flourishing maturity.

Although our visit to Bloemfontein was necessarily brief, yet it has left an impression which will not easily be effaced from the recollection of those whose privilege it was to receive such a cordial welcome and such hospitable entertainment.

I beg leave, Gentlemen, to remain,
Yours faithfully,
G. H. DARWIN,
*President of the British Association
for the Advancement of Science.*

ZEEERUST (TRANSVAAL).

THE MEMBERS OF THE BRITISH ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE.

Zeerust, Transvaal.
September 1905.

GENTLEMEN,—We, the undersigned Chairman and members of the Zeerust Municipal Council, as representing the citizens of the town of Zeerust, tender you our most hearty welcome. While regretting the brevity of your stay in our midst, we feel honoured in being accorded the opportunity of meeting some of the greatest men produced by the British nation.

We are convinced that your visit to these shores has been made at considerable personal sacrifice by some of you, but the benefit derived therefrom by this sub-continent in particular, and the whole scientific world in general, cannot be over-estimated. We trust your tour has been both pleasant and interesting to yourselves, and hope that your future progress will be accompanied with the same good fortune, so that when you return to your homes you will feel satisfied that you have been fully compensated for the time, trouble, and expense offered up by you.

S. J. FAUDUSSUNG, *Chairman.*
T. G. SEEPTON,
W. DICTRIA,
J. THOMSON, jun.,
ERNEST W. SWESLEY, } *Members.*
J. C. TRUSCOTT,
EDWARD SEEPTON,
DURELL W. BISHOP,

Reply.

TO THE CHAIRMAN AND MEMBERS OF THE MUNICIPAL COUNCIL,
ZEEERUST, TRANSVAAL, SOUTH AFRICA.

Burlington House, London, W.
November 30, 1905.

GENTLEMEN,—On behalf of the Council of the British Association, I beg leave to give you a formal acknowledgment of the receipt of the Address of Welcome presented to the members of the Association who visited Zeerust; and I desire further to thank the Municipal Council for the generous reception accorded to them.

We feel sure that both for hosts and guests the visit to South Africa will prove a fruitful stimulus to the advancement of science, and to the cordial relationships established throughout our memorable tour in South Africa.

I beg leave, Gentlemen, to remain,
Yours faithfully,
G. H. DARWIN,
*President of the British Association
for the Advancement of Science.*

FROM THE MARICO AGRICULTURAL SOCIETY TO THE CHAIRMAN AND
MEMBERS OF THE BRITISH ASSOCIATION.

Zeerust,
September 5, 1905.

GENTLEMEN,—It gives us, the *farming community*, great pleasure in presenting this Address of Welcome to you to the shores of South Africa in general, more particularly to our little village, Zeerust. We are not in a position to receive you with the great pomp of the big places; but, nevertheless, we can assure you that we welcome you with a cordial welcome. Taking the object of your visit to be manifold, trusting on coming to the end of your tour, you will always be able to look back to this your visit as profitable in the advancement of science, as well as pleasurable to yourselves.

We are glad to have such a strong representative body of highly cultured members of the British Empire here, thanking you at the same time by considering this our remote part, and to have planned it so that we could meet a section of the Society face to face, hoping it will tend to strengthen the link between the people of Great Britain and her Colonies in general, and this country in particular, by getting to know each other better; the same will then be true if a representative body from South Africa should visit Great Britain.

We further trust when the time comes for you to return to your homes, from whence, no doubt, your every movement is closely watched with the greatest interest, you will be able to say that a great and permanent step has been taken in the matter of drawing together the bonds of brotherhood of science, as well as the promotion of a better feeling between His Majesty's subjects in the Colonies and Great Britain to follow.

We therefore wish you a prosperous journey and a safe return home, loaded with fresh problems to be solved, so as to add on to make life more worth living for.

We are, Gentlemen,

Yours very faithfully,

J. L. VAN KEERDEY, *President*.
D. L. BOTHE, *Vice-President*.
G. E. BELLEVILLESTERN, *Secretary*.
O. J. VORHINGEN.
P. C. SNYMAN.
J. D. L. BOTHA.
F. A. JACOBS.
G. RABIE.

Reply.

TO THE PRESIDENT OF THE MARICO AGRICULTURAL SOCIETY, ZEERUST,
TRANSVAAL, SOUTH AFRICA.

Burlington House, London, W.
November 30, 1905.

SIR,—On behalf of the Council and members of the British Association, I beg leave to give a formal acknowledgment of the receipt of the Address of Welcome handed by you to the members of the Association who visited Zeerust. It was very gratifying to the whole British Association that the reception accorded to those of our number who passed through the important agricultural centre of Zeerust should have been so cordial.

In every part of South Africa we were met with demonstrations of friendship which never can be effaced from our memory. The relationship of science to the industries pursued in the larger towns is somewhat more obvious, although not more real, than its bearing on agriculture. The cities of South Africa vied with one another in a generous rivalry as to which should accord to us the most magnificent welcome. It was a far more difficult task for a scattered agricultural population to prove to us its kindly feeling; but you, Sir, by the hospitality shown to our members have overcome this difficulty, and I venture to assure you that we regard the Address presented to us as amongst the most interesting of the records of our journey in South Africa.

I beg leave to remain, Sir,

Yours faithfully,

G. H. DARWIN,
*President of the British Association
for the Advancement of Science.*

III.

Lectures.

Date and Place	Lecturer	Subject
Aug. 17. Cape Town	Professor Poulton	W. J. Burchell's Discoveries in South Africa.
Aug. 18. Cape Town	Mr. C. V. Boys	Some Surface Actions of Fluids.
Aug. 22. Durban	Mr. D. Freshfield	The Mountains of the Old World.
Aug. 23. Durban	Professor Herdman	Marine Biology.
Aug. 24. Pietermaritzburg	Colonel D. Bruce	Sleeping-sickness.
Aug. 25. Pietermaritzburg	Mr. H. T. Ferrar	The Cruise of the 'Discovery.'
Aug. 28. Johannesburg	Professor Ayrton	Distribution of Power.
Aug. 31. Johannesburg	Professor Arnold	Steel as an Igneous Rock.
Aug. 31. Pretoria	Mr. A. E. Shipley	Fly-borne Diseases, Malaria, &c.
Sept. 2. Bloemfontein	Mr. A. R. Hinks	The Milky Way and the Clouds of Magellan.
Sept. 5. Kimberley	Sir William Crookes	Diamonds.
Sept. 6. Kimberley	Professor Porter	Bearing of Engineering on Mining.
Sept. 9. Bulawayo	Mr. Randall-MacIver	The Ruins of Rhodesia.

BRIEF NOTICES.

Professor EDWARD B. POULTON, D.Sc., F.R.S.: *W. J. Burchell's Discoveries in South Africa.*

The lecturer gave a brief account of Burchell's life, dwelling especially upon his African travels (1810-1815) from Cape Town to Litakun, near the borders of the Kalahari Desert; thence south-east to the mouth of the Great Fish River, and back along the south coast to the starting-point. The lecture was illustrated by lantern slides representing the woodcuts and plates of Burchell's classical work¹ and of his memoirs, together with specimens of his collection now at Oxford. His unrivalled skill and care as an observer and collector were shown by many examples, and it was proved by extracts from his African and Brazilian (1825-1830) manuscript note-books at Oxford that he had observed and recorded many striking examples of protective resemblance and mimicry—an astonishing anticipation of modern research.

The lecturer pointed out that the great majority of Burchell's invaluable journals were unpublished and unknown, viz., the African journal beyond August 3, 1812, and the whole of the Brazilian journal.

DOUGLAS W. FRESHFIELD, F.R.G.S.: *The Mountains of the Old World.*

Mr. Freshfield's lecture was illustrated by numerous lantern views of the Caucasus and Himalaya. He sketched in outline the advance made in the practical exploration and scientific appreciation of the more famous of the mountains of the old world during the preceding century, taking as his starting-point the ascent of Mont Blanc by de Saussure in 1787. Incidentally, he showed to how large an

¹ *Travels in the Interior of South Africa*, vol. i. 1822; vol. ii. 1824.

extent this advance was due to the growth of mountaineering in the technical sense of that term and to the means of communication and publication afforded by the spread throughout Europe of Alpine clubs. His survey was limited to the greater ranges—the Alps, the Caucasus, and the Himalaya—with a few words on the snows of Africa.

Professor W. A. HERDMAN, D.Sc., F.R.S.: *Marine Biology.*

The full title of the lecture was 'Marine Biology; especially in its practical applications to Fishing Industries,' and the series of facts and principles involved were illustrated as far as possible by lantern slides. The lecturer first explained the importance of 'plankton' and other minute organisms in the sea in relation to the food of man. He then passed to the competition amongst organisms in the sea, illustrated by complicated life-histories and by the protective and other devices that are resorted to. A few fishing industries were then examined, such as flat-fish trawling, oyster culture in France and Holland, and the pearl fisheries of Ceylon; and the bearing of scientific observations upon all of these was demonstrated. Finally the lecturer alluded to the excellent work which was carried on for the Cape Government by Dr. Gilchrist, the official marine biologist, and recommended co-operation between all the South African Colonies in exploring their coastal waters and exploiting the fishing industries.

Colonel DAVID BRUCE, C.B., F.R.S.: *Sleeping Sickness.*

The lecturer described the disease, showing that the incubation period might be as long as two or three years. It is caused by a blood parasite—*Trypanosoma gambiense*—which is always found in the cerebro-spinal fluid and blood of sleeping-sickness cases. One hundred natives in the sleeping-sickness area were examined, and 25 per cent. of them found to be infected; while in the non-sleeping-sickness area not a single native was affected. A tsetse-fly (*Glossina palpalis*) was found to be the carrier of the disease. The distribution of this fly in Uganda was worked out and found to correspond exactly with the area of sleeping-sickness. Wild flies caught in the sleeping-sickness area were found to be able to infect monkeys—in fact, that sleeping-sickness is a human tsetse-fly disease.

H. T. FERRAR, M.A.: *The Cruise of the 'Discovery.'*

The lecture was illustrated by lantern slides. The equipment of this Antarctic expedition included all instruments required for surveying, complete sets of meteorological apparatus, the latest pattern of pendulums *in vacuo* for determining the force of gravity, Eschenhagen self-recording magnetometers, sounding machines, electrometers, a balloon, and a great quantity of dredging tackle. The object of the expedition was 'the advancement of science.' Mr. Ferrar explained the scheme of international co-operation whereby simultaneous magnetic and meteorological observations were made by (1) the three expeditions wintering on opposite sides of the South Pole; (2) by the sub-stations at Cape Town, Kerguelen, and Christchurch; and (3) by the observations at Kew and Berlin.

Professor J. O. ARNOLD: *Steel as an Igneous Rock.*

The lecturer described a recent discovery he had made in a broken bolt, viz., that a crystal obtained under exceptionally fortunate optical conditions exhibited perfect mineral cleavage exactly parallel to the faces of the cube, thus proving iron to be a veritable mineral. It was impossible, as a rule, to obtain the microscopical conditions under which such cleavage could be recognised. The lecturer therefore suggested that, beyond the range of ordinary opaque microscopy, there existed the

clue to the sudden and mysterious fractures of steel in connection with a development of perfect cleavage. He trusted that what he had said might convey to his hearers the fact that steel metallurgy was not, as often supposed, a matter of boiling pig iron and slinging ingots, because its scientific consideration involved the highest flights of chemistry, physics, and opaque microscopy. In fact, it might well be that the answer to the question, 'What is steel?' would be involved in the answer to the question, 'What is crystalline matter?'

A. E. SHIPLEY, F.R.S.: *Fly-borne Diseases, Malaria, &c.*

The popular title of the lecture delivered by Mr. A. E. Shipley at Pretoria was 'The Infinite Torment of Flies.' The lecturer began by referring to certain diseases, such as plague, cholera, &c., which are mechanically conveyed by flies from the sick to the healthy, and then passed on to consider those pathogenic organisms which pass some part of their life-history within the body of flies, gnats, &c. He discussed the habits of the disease-carrying Diptera, and described the various phases the parasites pass through both in man and in the insects; and he dwelt upon the biting apparatus which enables the flies, &c., to pierce the integument. Filariasis, malaria, yellow fever, sleeping sickness, and nagana were separately described, and hints were given as to the best way to combat these. In conclusion Mr. Shipley described the various tick-borne diseases—piroplasmiasis—the etiology of which has been so largely worked out in South Africa.

ARTHUR R. HINKS, M.A.: *The Milky Way and the Clouds of Magellan.*

The stars in general, and the coarse clusters, the gaseous nebulae, and fifth-type stars, are strongly condensed on the Milky Way and in the greater Cloud of Magellan. The spiral nebulae avoid the Milky Way, but crowd into the greater Magellanic Cloud to meet the Milky Way constituents with which they are associated nowhere else. This striking distribution has suggested that the key to the structure of the universe will be found in the Magellanic Cloud. If we adopt this view, we must suppose that the universe is an organic whole, and that separative forces have kept the stars and spiral nebulae apart except in one place. But the distributions are not so symmetrical about the poles of the Milky Way as to preclude the alternative hypothesis, that stars and spiral nebulae are in independent clouds, more or less in one plane, but not organised in one system.

* * * The lectures by Professor Ayrton at Johannesburg and Sir William Crookes at Kimberley were privately printed in extenso. Mr. Randall-MacIver's lecture is published as a Report to the Association (vide page 301).

IV.

South Africa Medal Fund.

EXECUTIVE COMMITTEE.

Sir George Darwin, K.C.B. (Chairman).
Professor J. Perry, F.R.S. (Honorary Treasurer).
A. Silva White, Esq. (Honorary Secretary).
Colonel A. C. Bigg-Wither.

Dr. Horace T. Brown, F.R.S.
Professor W. A. Herdman, F.R.S.
Major P. A. MacMahon, F.R.S.
H. R. Mill, Esq., D.Sc.
F. W. Pavy, Esq., M.D., F.R.S.
Professor E. B. Poulton, F.R.S.

In commemoration of the visit of the British Association to South Africa, a fund was raised, on the initiation of the President, for the endowment of a Medal and Scholarship or Studentship for South African Students.

The first Meeting of the subscribers was held in London on December 1, 1905, when the following Resolution was adopted:—

'That it be remitted to the Executive Committee to draw up definite recommendations in regard to the disposal of the Fund and the special conditions attaching to the award (including the design of a Medal), and to report at a future meeting of the Subscribers.'

The Executive Committee met on January 19, 1906, when it was resolved to entrust the design for the Medal to Mr. Frank Bowcher; and again on February 2, to inspect the designs submitted by the artist.

At the Meeting of the Subscribers held on March 2, the following Report by the Executive Committee was formally adopted; and the Council, at its sitting on the same day, in accepting the proposal made by the contributors to the Fund, authorised the issue of a circular-letter inviting additional subscriptions from the general membership of the Association.

Report of the Executive Committee.

I. The Executive Committee of the South Africa Medal Fund have the honour to lay before the Subscribers, for their approval, finished sketches by Mr. F. Bowcher of obverse and reverse designs for the proposed Medal, and to submit the following recommendations in regard to its award:—

(i) That the Fund, together with a Die for the Medal, be offered to the President and Council of the British Association for transmission to South Africa, subject to the conditions that follow:

(a) That the Fund be devoted to the preparation of a Die for a Medal to be struck in bronze, 2½ inches in diameter; and that the balance be invested and the annual income held in trust.

(b) That the Medal and income of the Fund be awarded by the South African Association for the Advancement of Science for achievement and promise in scientific research in South Africa.

(ii) That, as far as circumstances admit, the award be made annually.

II. The Council of the British Association have resolved to add the balance (about 800*l.*) of the special South Africa Fund to the South Africa Medal Fund.

Signed, on behalf of the Committee,

G. H. DARWIN, *Chairman.*

SOUTH AFRICA MEDAL FUND.

(Contributions, promised or received, up to April 30.)

	£	s.	d.		£	s.	d.
Acland, H. D.	1	1	0	Barstow, Miss F. A.	4	0	0
Alexander, P. Y.	10	0	0	Beare, Prof. T. Hudson	5	5	0
Anderson, Miss Mary K.	1	1	0	Beilby, George	10	10	0
Anderson, Dr. Tempest.	5	5	0	Benson, Dr. and Mrs. Arthur	5	5	0
Armstrong, Dr. E. F.	1	0	0	Bentley, F. W.	10	10	0
Atkinson, Wm.	1	1	0	Bevan, Rev. J. O.	1	1	0
Backhouse, W. A.	5	5	0	Bigg-Wither, Colonel A. C.	1	0	0
Backlund, Dr. O.	6	6	0	Bigg-Wither, Mrs.	1	0	0
Baker, Sir Benjamin	52	10	0	Birley, Miss C.	2	2	0
Balfour, Arthur James (President 1904)	5	0	0	Black, Surg.-Major W. G.	2	2	0
Barcroft, J.	2	2	0	Blamires, Joseph	10	10	0
Barnard, Dr. Annie T.	1	1	0	Bohr, Prof. Christian	3	3	0
Barnard, William	2	2	0	Bolton, John	1	1	0
				Borns, Dr. H.	1	1	0

	£	s.	d.		£	s.	d.
Bottomley, Dr. J. T.	5	5	0	Gardiner, J. H.	1	1	0
Bottomley, Mrs.	2	2	0	Gaskell, Dr. W. H.	5	0	0
Boulenger, G. A.	2	2	0	Gray, Robert Kay	5	0	0
Bowley, A. L.	2	2	0	Green, Prof. J. Reynolds	2	2	0
Bowman, H. L.	2	2	0	Gregory, Prof. J. W.	3	3	0
Boys, C. Vernon	10	10	0	Gregory, R. P.	1	1	0
Bremner, R. S. and Stanley	1	11	6	Haddon, Dr. A. C.	5	5	0
Briggs, Dr. W.	5	5	0	Hall, A. D.	2	2	0
Brown, A. R.	1	1	0	Halliburton, Prof. W. D.	3	3	0
Brown, Prof. Ernest W.	5	5	0	Hammond, Robert	1	1	0
Brown, Dr. Horace T.	5	5	0	Harmer, Dr. S. F.	5	5	0
Browne, J. Stark	2	2	0	Harrison, Rev. S. N.	1	1	0
Bruce, Colonel David	2	2	0	Hartland, E. Sidney	3	3	0
Brunton, Sir Lauder	10	10	0	Harzer, Prof. Paul	5	5	0
Brunton, Lady	10	10	0	Henderson, Prof. G. G.	1	1	0
Bryan, Prof. G. H.	1	0	0	Herbertson, Dr. A. J.	2	2	0
Burbury, S. H.	10	10	0	Herdman, Prof. W. A. (Gen. Sec.)	5	5	0
Buxton, Francis	20	0	0	Hervey, Miss Mary F. S.	5	5	0
Campbell, Prof. D. H.	2	2	0	Hicks, Prof. W. M.	5	0	0
Cannan, Gilbert	1	1	0	Hindle, J. H.	1	1	0
Carhart, Prof. H. S.	2	2	0	Hinks, A. R.	2	2	0
Challoner, Bromley, jun.	1	1	0	Hobson, Bernard	1	1	0
Cheesman, W. N.	2	2	0	Hopkins, C. Hadley	5	5	0
Cleland, Prof. John	5	5	0	Hopkinson, Mrs.	10	10	0
Cleland, Mrs.	1	1	0	Hudson, Prof. W. H. H.	3	3	0
Cleland, J. R.	1	1	0	Hutchinson, Arthur	2	2	0
Cole, Prof. Grenville A. J.	3	3	0	Jacobson, N.	2	2	0
Coleman, Dr. A. P.	2	2	0	Jaffé, Arthur	1	1	0
Cordier, Prof. Henri	2	3	0	Jeanes, J. H.	2	2	0
Creak, Captain Etrick, R.N.	5	5	0	Jeyes, Miss G.	2	2	0
Croft, Miss Mary L.	1	1	0	Joly, Prof. C. J.	5	5	0
Crookes, Sir William (President 1898)	10	10	0	Jones, Evan	2	2	0
Crookes, Lady	5	5	0	Jones, Miss Parnell	1	0	0
Cunliffe, Peter G.	5	5	0	Judd, Miss Hilda M.	2	2	0
Cunningham, Rev. Dr. W.	5	5	0	Kapteyn, Prof. J. C.	2	2	0
Daniel, Miss A. M.	1	1	0	Kelvin, Lord and Lady	5	0	0
Darwin, Erasmus	2	0	0	Kincaid, Major-General and Mrs.	1	1	0
Darwin, Sir George (President)	10	10	0	Knightley, Lady, of Fawsley	2	2	0
Darwin, Lady	2	2	0	Lamplugh, G. W.	2	2	0
Davis, Prof. W. M.	2	0	0	Leech, Sir Bosdin	2	2	0
Divers, Dr. Edward	2	2	0	Lees, Mrs. A. P.	3	3	0
Dixon, Prof. A. C.	3	3	0	Lees, Dr. Charles H.	1	1	0
Dixon, Captain George	5	5	0	Lister, Lord	10	0	0
Dixon, Prof. Harold B.	5	5	0	Lomas, J.	1	1	0
Donner, Prof. Anders	5	5	0	Longstaff, Dr. G. B.	20	0	0
Drew, H. W.	1	1	0	Luschan, Prof. von	3	3	0
Engler, Prof. A.	2	2	0	Macallum, Prof. A. B.	2	0	0
Evans, A. H.	2	0	0	Macaulay, W. H.	10	0	0
Faulkner, J. M.	3	3	0	Maccall, W. T.	1	1	0
Feilden, Colonel H. W.	2	2	0	McCulloch, Principal J. D.	3	3	0
Ferrar, H. T.	1	1	0	McKendrick, Prof. J. G.	2	0	0
Findlay, Alex.	1	1	0	MacMahon, Major P. A. (Gen. Sec.)	5	5	0
Fleming, James	3	3	0	Magenis, Lady Louisa	5	0	0
Fletcher, G.	2	2	0	Marshall, Dr. Hugh	2	2	0
Forster, Dr. M. O.	1	1	0	Marshall, W. Bayley	2	2	0
Forsyth, Prof. A. R.	5	5	0	Massy, Miss M.	1	0	0
Fowlds, H.	1	1	0	Maylard, A. Ernest	2	2	0
Fox, F. Douglas and Mrs.	10	10	0	Mellor, G. H.	2	2	0
Freshfield, Douglas	10	10	0	Meredith, H. O.	2	2	0
Fry, W., jun.	5	5	0				

	£	s.	d.		£	s.	d.
Miers, Prof. H. A.	5	5	0	Seward, A. C.	5	5	0
Mill, Dr. H. R.	3	3	0	Shenstone, Frederick S.	2	2	0
Milne, John	2	2	0	Shickle, Rev. C. W.	1	1	0
Moncrieff, Sir Colin and Lady Scott	15	15	0	Shipley, A. E.	5	5	0
Moore, Brian	1	1	0	Siemens, Alexander	10	10	0
Moore, T. H.	2	2	0	Simpson, Dr. J. Y.	3	3	0
Morgan, Miss A.	1	1	0	Simpson, Thomas	5	5	0
Murray, Dr. J. A. H.	3	3	0	Sitter, Dr. W. de	2	2	0
Neild, Charles	5	5	0	Sjögren, Prof. H.	3	3	0
Oldham, H. Yule	2	2	0	Smedley, Miss I.	1	1	0
Orpen, Lieut.-Colonel R. T.	3	3	0	Sollas, Prof. W. J.	5	5	0
Orpen, Rev. T. H.	3	3	0	Stephens, W. Hudson	5	0	0
Page, Miss E. I.	1	0	0	Swan, Sir J. Wilson and Miss	5	5	0
Parkin, John	5	5	0	Tanner, Miss Ellen G.	3	3	0
Parkin, Thomas	5	5	0	Thomson, W. J.	1	1	0
Parsons, Hon. G. L.	5	5	0	Thorneley, Miss Laura R.	3	3	0
Pavy, Dr. F. W.	10	10	0	Tilden, Prof. W. A.	1	1	0
Penck, Prof. A.	2	2	0	Tims, Dr. H. W. Marett	1	1	0
Perry, Prof. John (Gen. Treas.)	5	5	0	Trall, Dr. A.	1	0	0
Phillips, T. Wishart	1	1	0	Turmeau, Charles	1	1	0
Phillimore, Miss C. M.	3	3	0	Turner, Rev. T.	2	2	0
Phillips, Prof. Reginald W.	1	1	0	Wager, Harold	2	2	0
Phillp, Miss M. E. de R.	1	1	0	Wakefield, Captain E. W.	10	10	0
Pim, Miss Gertrude	3	3	0	Waller, Dr. A. D.	5	5	0
Porter, Prof. J. B.	2	2	0	Watson, Joseph	2	2	0
Porter, Mrs.	1	1	0	Weiss, Prof. F. E.	3	3	0
Poulton, Prof. E. B.	10	10	0	White, A. Silva (Assist. Sec.)	2	2	0
Preece, Sir W. H.	5	0	0	Williams, Miss Mary E.	3	3	0
Pullen-Burry, Miss	1	1	0	Willson, George	2	2	0
Rambaut, Dr. A. A.	5	5	0	Wilson, Dr. D.	1	1	0
Roberts, Evan	5	5	0	Wiseman, J. Greaves	2	2	0
Rosse, Earl of	25	0	0	Wood, Alex.	1	1	0
Ruffer, Dr. Armand	5	5	0	Woodhead, Prof. G. Sims	5	5	0
Scott, Prof. A. W.	1	1	0	Yapp, Prof. R. H.	1	1	0
Scott, Prof. W. B.	2	2	0				
				Total	£858	19	6