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G.O., No. 465

Dated 13th April 1896

INDEXED.

[Despatch Abstract.]

THE MAPPING OF AFRICA.

Recording copy of a letter from Lieutenant-General E.F. Chapman making certain proposals for the formation of an International Committee for the purpose of mapping the whole continent of Africa.

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CURRENT No. 1182

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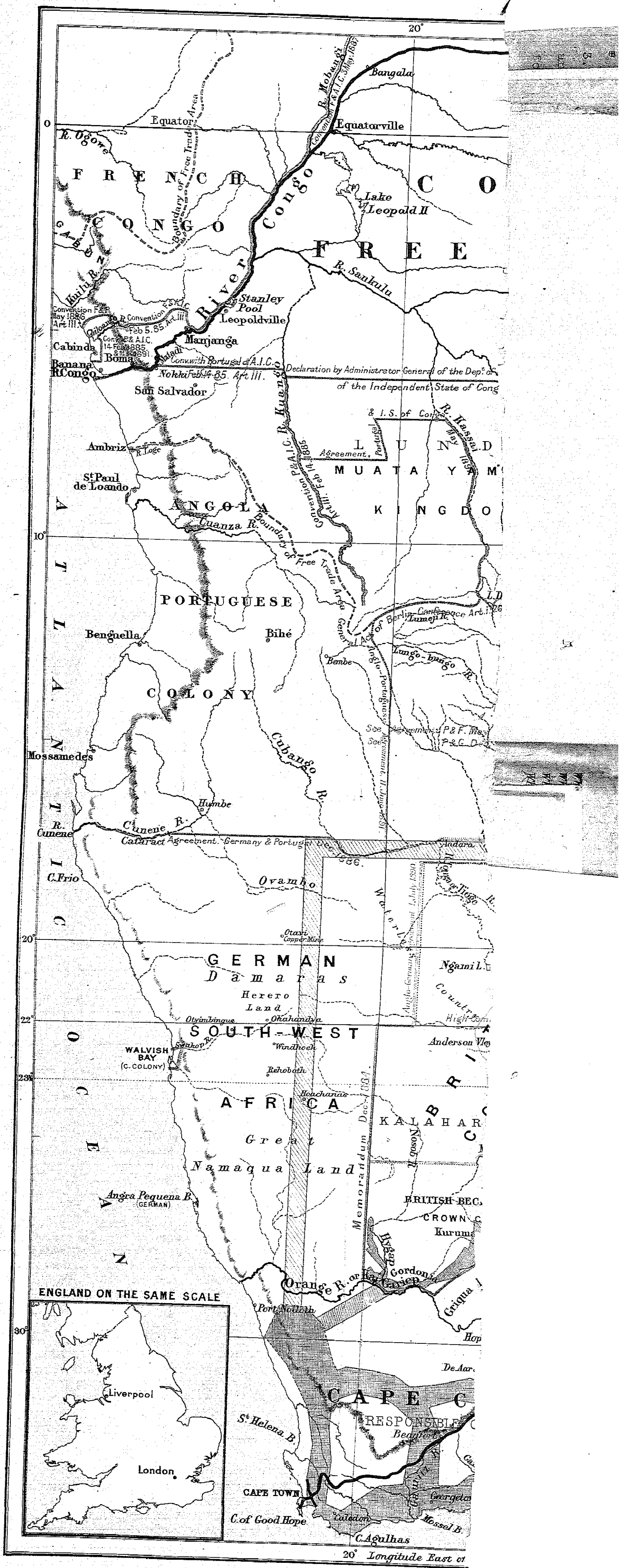
Encl. (2)

Subject

Forwarding, for favor of
opinion and suggestions
Copy of a report on extracts
from a report prepared by
the Surveyor General in
connection with the proposals
on the subject of the
Mapping of Africa

9/11/96

18/4 '96



EXTRACTS FROM A REPORT ON GENERAL CHAPMAN'S PROPOSALS REGARDING THE MAPPING OF AFRICA, FURNISHED TO THE CAPE GOVERNMENT BY THE SURVEYOR-GENERAL OF THE CAPE.

In expressing my views on the letter addressed by Lieut.-General Chapman to the President of the Royal Geographical Society, in which he advocates that the Governments interested in the development of Africa should co-operate in order to secure a systematic mapping of the continent of Africa, I shall principally deal with the group of South African States which are in many ways connected with one another.

* * * it would be interesting to ascertain what the Governments who control the development of the numerous African states have done in the cause of African geography and whether the, comparatively speaking, young South African Colonies have done their part. I feel convinced that, considering all circumstances, we have no reason to be ashamed. Since 1840 two large geodetic surveys have been made at the expense of the Cape Colony, and a third, more comprehensive and costly than the preceding two, was undertaken and recently completed by the Governments of the Cape Colony and Natal combined.

The outcome of these and of a large number of smaller surveys from time to time carried out in the various South African States is the new map of the Colony and neighbouring territories on the scale of 1:800,000 recently completed in this office, and now being printed by Mr. E. Stanford in London. This map will probably be ready for publication in September next.

The details of the geodetic surveys carried out in South Africa since 1840 have been given in an elaborate paper prepared by Her Majesty's astronomer at the Cape, Dr. D. Gill, for the purpose of being read at the International Geographical Congress in London by the Colonial delegate, Mr. A. de Smidt, appointed by the Government to represent the Colony at the Congress. I shall therefore refrain from repeating these details here. Suffice it to say that the surveys of Sir Thomas Maclear (1840-1847), Captain W. Bailey (1859-1863), and Colonel W. G. Morris, R.E. (1882-1893), the recent surveys of Messrs. J. J. Bosman, A. Moorrees, and E. V. Melvill, and the many smaller surveys by various other Colonial surveyors, have all been used in producing the new map about to be published, and that this map is therefore entitled to every reasonable confidence.

Only the first steps have as yet been taken towards providing the means of combining all future surveys in one consistent system, and much remains to be done to bring points of reference within reach of every detailed survey. The absence of secondary and tertiary triangulations is, however, not absolutely fatal to the production of topographical maps on a small scale. The inaccuracies introduced in the new map by compiling disconnected surveys and fitting them into the framework of the main triangulation are hardly perceptible on the scale of 1:800,000 on which the map is constructed. In plans on a large scale prepared for the purpose of defining landed properties these inaccuracies are naturally more apparent.

Existing discrepancies in the old property-surveys are, of course, not remedied by the mere existence of secondary and tertiary triangulations. Re-surveys for purposes of amended titles under the Land Beacons Acts are, however, gradually removing inaccuracies where faulty registration exists. The process is slow, but it is satisfactory to note that the desire on the part of landed proprietors for amended titles is daily increasing. For the systematic connection of these re-surveys and of all future property surveys the supplementary triangulations are absolutely necessary if the full advantages of the main triangulation are not to be lost to the Colony. The operations connected with this necessary work will naturally cover a long period, and when once begun there should be no risk of breaking the continuity of the work, and to secure this I should like to see, if possible, some guarantee given of a continuous annual vote when once the work is commenced. Operations might be first set on foot in the most densely populated districts and proceeded with in sections where the work appears to be most necessary. As the main triangulation has been completed, except as shown further on, there is little fear that this mode of procedure will disturb the harmony of the whole when, in years to come, the great work will be completed.

The maps of the Orange Free State and of the South African Republic are based on triangulations made from time to time for purposes of property and topographical surveys, such as have furnished the details of the new map of the Colony and neighbouring territories of which mention has already been made. Although these surveys are disconnected, and will probably offer some difficulty to the compiler, they will

nevertheless be of great use for mapping purposes when the general triangulation has been extended over these countries.

In British Bechuanaland, surveying operations were commenced in 1886 when Lieut. Laffan, R.E., measured a base line in the valley of the Hart River with a view to the trigonometrical survey of Bechuanaland. The measurements of Lieut. Laffan were completed in 1887 and the first section of the survey was entrusted to Mr. E. V. Melvill, Colonial Surveyor, who carried a network of triangles from Banks Drift northward to Letlayoli. The further extension of the triangulation was made by Messrs. J. J. Bosman and A. Moorrees, Colonial Surveyors, who carried a system of triangles westwards to the 20th meridian in four sections. Although the country is very unfavourable to triangulation, the probable errors in a single observed angle in these four sections are as follows :—

Section	I. $\pm 1''\cdot 41$.
"	II. $\pm 0''\cdot 92$.
"	III. $\pm 0''\cdot 66$.
"	IV. $\pm 0''\cdot 42$.

Secondary extensions of the triangulation were made for the purpose of farm and topographical surveys. These furnished the means of constructing a map of British Bechuanaland, which need only be connected with the main triangulation of the Colony in order to incorporate it in the systematic survey of South Africa.

The question next to be considered is what should be done to complete and extend the work already done towards mapping South Africa, so that it may, at any time, find its place, in the system of African surveys General Chapman has in view, and be joined into this system as a well-defined and, in itself, consistent part of the whole. In the first place there are three triangulations which are urgently required to render the Colonial network of primary triangles complete; these are :—

1. A chain of triangles joining the north end of the Natal chain to the north end of the Kimberley chain across the Orange Free State. (*See annexed sketch of the Colonial triangulation.*)

2. A chain of triangles, about 70 miles long, to join the eastern part of the Bechuanaland survey to the north end of the Kimberley chain.

3. A chain of triangles, about 150 miles long, to join the western part of the Bechuanaland survey to the north end of Sir Thomas Maclear's triangulation.

These three geodetic operations will complete the Colonial main triangulation.

The further extension of geodetic operations northwards may be taken in hand at any time on the following lines, but the success of the scheme which appears to me to be the best will depend on the co-operation of the Governments of Germany, Rhodesia, and the South African Republic.

In my opinion, three chains of triangles should be pushed northwards. The one from the north end of Sir Thomas Maclear's triangulation due north through the German Protectorate up to its northern boundary, a second from the north end of Mr. E. V. Melvill's triangulation northwards to the Victoria falls of the Zambesi river, and a third from the north end of the Natal chain in a northerly direction through the South African Republic and Rhodesia to the Zambesi River. These three chains should then be joined by a chain of triangles following more or less the parallel of 18° south latitude.

The two eastern meridional chains may, of course, be joined by as many cross-chains as the Governments of the countries through which they pass may deem desirable, and the western chain would become the back-bone on which all further triangulations that the German Government may carry out in the Protectorate could be based.

There is a large gap between the proposed middle chain and the western chain, but, as the tracts of country situated in this gap are reported to be mostly waterless, sandy deserts, there seems to be little or no need for pushing cross-chains of triangles through the gap, seeing that the proposed cross-chain in latitude 18° south will furnish the critical connection necessary for the reduction of the whole system by the theory of "Least Squares."

In order to render the results of the proposed primary triangulation at once useful for mapping purposes, the survey parties might each be accompanied by a staff of trained observers whose task it would be to make rapid topographical surveys with small theodolites as the survey parties move on.

The proposed scheme and its extension over the entire continent of Africa would, if carried out, be a truly international work in which all interested civilized nations might be invited to co-operate. The combination in one large system of all geodetic surveys

in Africa would have to be placed into the hands of an international Commission that may be formed on lines similar to the "Geodactische Institut" which has for many years directed geodetic operations in Europe.

If the appointment of such a Commission could be carried, much would be gained in the cause of a systematic mapping of Africa.

J. TEMPLER HORNE,
Surveyor-General.

Surveyor-General's Office, Capetown,
July 25th, 1895.

Publ.
Copy
CURRENT No. 1182 *Publ.*

18, Queen Anne's Gate, London, S.W.,

March 9, 1896.

Sir,

I HAVE much pleasure in forwarding you, by permission of Her Majesty's Government, and with the approval of the Surveyor-General of the British Colony of the Cape of Good Hope, the accompanying copy of an extract from a report which, together with a map, also enclosed, was prepared by the Surveyor-General last autumn in connection with the proposals made by me at the International Geographical Congress held in London last year, on the subject of the Mapping of Africa, and was forwarded by him to the Cape Government.

The report has been prepared in order to show what has been accomplished by the Colony in the past to further the object in view, and also to invite attention to the measures which, should the necessary funds be forthcoming, are contemplated in the future. I venture to think that these proposals will not fail to interest you.

It will be observed that for the completion of the present system of triangulation the co-operation of the Orange Free State will be required; whilst in order to run the three meridional series, and the transverse series of triangles along the 18th parallel of South Latitude, it will be necessary to apply for assistance both to Germany and to the Transvaal Republic.

In this necessity for the assistance of others lie the germs of that united action which it is my earnest desire to see extended over the whole continent of Africa.

How this may be ultimately attained is a question which requires much consideration; but it would seem to me that the principal element of success is to be found in the formation of an International Committee. The formation of such a committee, whose members could correspond freely with each other, and meet at stated periods to report progress and exchange ideas respecting future extension, would be invaluable, and, indeed, would appear to be almost a necessity in order to secure harmonious and systematic work.

It further occurs to me that, if reports something similar to that of the Surveyor-General of the Cape could be furnished by those intrusted with the survey work in the various African Colonies, and if these reports could be submitted to this Committee for general consideration, no inconsiderable advantage would be derived therefrom. Possibly, too, the work already done by each country might be plotted on a skeleton map of the continent. This, and the publication by the Committee of an annual report, would, I think, be of undoubted value, enabling each country to take note of the progress which had been made by the others, and affording a valuable record on which to build new schemes for extending the work into the interior.

These are but crude ideas, put forward with the utmost diffidence, for your kind consideration. I should be glad to hear from you whether you think them feasible, and at the same time I should be exceedingly grateful for any other suggestions which may occur to you.

I am,

Sir,

Yours very truly,

Edw. F. Chapman, Lt. Genl.

*This Excellency
The Governor of Madras.*

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