

DOMESTIC

EAST AFR. PROT

14805

No. 14805

APR 3, APR 07



Individual

(Subject.)

1890

Report upon Survey Dept

1907

Feb 7

Previous Paper

1031

Submits a similar. Thanks order given to start topographical survey in South District was an error of judgement

(Minutes.)

PRINTED FOR PARLIAMENT

Mr. Read

I submit diff. despatch agreed - Committee. The O.A.S. has a copy, but it will be convenient to send out other copies for use by Col. Montgomery & Capt. Smith. Papers showed return for diff. to Treasury when the print of the revised Survey instructions ready.

W.C.S.

13/4

1890

1890

1890

I think that it is desirable to publish this report in the series of Col. Reports. This is an old volume of South West of England.

There are many things in
it - eg as to rapid surveys
under "Cadastral work" - which
will reassure settlers. This
is a point on which Lord
Salisbury laid great stress
when speaking to me yester-
day.

Wm H R
at once

Mr Rockett

I am in receipt of a copy
of the Report. Please
write me if you
intend to see

W H R
125

Mr Rockett

Dear Sir

I have the pleasure



1803

ENTEBBEE, Uganda,

21st. February 1907



Hills
No. 2

Sir,

(1) In continuation of my despatch NO.1 of Feb. 5th. I now have the honour to forward a full report upon the Survey Department of British East Africa.

(2) In submitting this I should explain that there is one important point connected with the survey that I have not specifically dealt with in the report, the orders given to Capt. Smith to start the trigonometrical work in the Sotik district.

(3) The reasons for this step were set forth in Col. Sandler's despatch to the Colonial Office NO.564 of Oct. 19th. 1906.

(4) I cannot but think that the decision was an error of judgement. There is, as far as I can ascertain, no likelihood of any rush of settlers to such a remote district so long as land much more favourably situated remains unoccupied, and the net result of sending the survey parties there has been to postpone, by nine months, the starting of the work in the centre of the country where maps are urgently required. The work is however now finished, with the exception that a small cadastral party will be engaged for a few weeks in laying out farms. This they should complete before the coming rains. It will then not be necessary for the survey to revisit that region until its turn comes for topographical mapping in the ordinary course.

(5) The recommendations in my report have been explained to the Director of Surveys and, in cases where they concern his department, to the Land Officer. All such as lie within the province of these officers will be adopted forthwith.

(6) I am of opinion that Capt. Smith has started the organization of the whole department upon sound lines, but there is still a large amount of attention and industry required before

before the cadastral branch is reduced to the requisite degree
of system and efficiency. 449

The other members of the survey staff, as far as they
have come under my observation, are fully qualified for their
posts and I can see no reason why the survey should not become a
thoroughly efficient department fully equal to all reasonable re-
quirements of the country.

(7) A copy of the report and of this despatch has been
furnished to the Acting Commissioner.

I have the honour to be,

Sir,

Your Obedient servant

C. H. Stiles

The Under Secretary of State,
Colonial Office.

REPORT

on the Survey Department of British East

Africa.

PRINTED FOR PARLIAMENT

HISTORY. For the purpose of this report it is not necessary to enter at any length, into the past history of survey work in the Protectorate. The position of affairs, as they stood previous to the spring of 1905 when the present Director of Surveys was appointed, is set forth in the fullest manner in the report by Captain G.E. Smith, R.E., dated July 30th, 1905.

It is there clearly shown that the survey had been allowed to fall into grave arrears with the result that the arrangements for transferring land to new settlers were burdened with long delays in the delivery of the deeds, causing serious financial loss both to the Government and to the land owner and hence, not unnaturally, much grumbling and dissatisfaction.

To say that land settlement is the paramount question in this country is a statement partaking of the nature of a truism, but as it must be kept steadily in mind throughout all discussion of the survey question it seems well to emphasize it at the outset.

The best and probably the only way for this country to become permanently prosperous is by the building up of a profitable agriculture and hence no effort should be spared to encourage the occupation of new land by white settlers. Should the idea get ^{abroad} ~~spread~~ that the Government does not treat the farmer well and that the sale or lease of crown lands is accompanied by irksome delays, costly both in time and capital to the intending holder, the opening up of the country may receive a serious check.

Money

Money spent upon survey work of this nature must be regarded largely as capital expenditure, laid out for the developement of a great national estate, and as such is quite trifling in amount compared with the sums spent on the railway, public works and general administration.

Every white man holding land and cultivating it at a profit is both a valuable asset in the present and a pledge of prosperity for the future. Without men of this class the country must eventually degrade into a mere "plantation" colony, as such inferior in productiveness to others and quite unable to compete with the abundant fertility of the true tropics.

Primarily therefore the object of carrying out a precise survey of the land is to facilitate the sale, lease and transfer of estates, farms and building plots. In the second place we require topographical maps for military and administrative purposes and for the hundred other uses for which maps of a country are wanted, too familiar to call for detailed enumeration here.

The fact that the survey of British East Africa was falling behind the requirements of the country obtained practical recognition in the spring of last year when the Survey Department was enlarged and reconstituted, with Captain G.E. Smith, R.E., as Director of Surveys. This Officer took up his duties in July 1906.

STAFF. The present strength of the department is as follows:-

Superintending Staff.

- Director of Surveys.
- 1 Clerk.

Trigonometrical Branch.

- Deputy Director of Surveys (Capt. R.E.)
- Assistant do do (Lieut. R.E.)

2 Surveyors (N.C.Os R.E.)
Native Artizans

Cadastral Branch.

Deputy Director of Surveys
Assistant do do
5 Surveyors
1 Plan Examiner
4 Draughtsmen & tracers
5 Indian surveyors

GENERAL ORGANISATION.

The Survey Department is one of several placed under the general direction of the Commissioner of Lands. The relations between the Director and the Commissioner were clearly laid down in C.O. Letter No. 564 of September 6th, 1906, and are maintained with perfect harmony. It would however help to ensure a continuance of smooth working were a Land Board formed with the Commissioner of Lands as President and the Director of Surveys as a member.

This Board should see all papers connected with the survey and one of its duties would be to lay down general lines of policy for the survey work and to settle the sequence of districts for mapping, a procedure which would give the best possible guarantee that a change of policy is not entered upon without due consideration nor without the arguments, pro and con, being recorded.

In survey work continuity of policy spells economy while sudden alternations, such as shifting parties from one side of the country to the other or removing them from one district before their work is completed to begin in a different district where there has been a sudden and perhaps temporary demand for maps, spell increased cost

and

and diminished output.

A proposal to constitute such a Board has been already sent to the Secretary of State and from the point of view of the survey alone it may be strongly urged that it be called together at the earliest practicable date.

ICE BUILDINGS.

The head quarter offices of the Survey Department are at present housed at Nairobi in a set of buildings constructed of galvanised iron upon wooden frames which, when those now actually in erection are completed, will give sufficient space for the present staff with moderate additions. The risk of loss by fire is serious. It is presumed that the provision of permanent offices must wait until the whole question of public buildings in Nairobi has been considered with special reference to Mr. Williams' report to the Colonial Office of Sept. 1905, but should there be likely to be any long delay it is most desirable that a fireproof plan-room should be provided.

TRIGONOMETRICAL WORK.

The existing strength of the trigonometrical section viz: two Royal Engineer Officers, two non-commissioned officers and native artisans is sufficient for all present requirements.

The general scheme of triangulation, drawn up by Captain Smith, seems perfectly suited to the needs of the country. It comprises a main "back bone" of triangulation along the railway from Mombasa to Lake Victoria, connected with the triangulation of the Anglo-German Boundary Commission at three points; a chain running north east from Nairobi to Mount Kenia and thence west-ward along the equator joining with the chain along the railway at two points, Kisumu and Nakuru; and, eventually, a chain eastwards from Kenia running down the valley of the Tana river to the coast and thence round to Mombasa. The work will begin at a base measured on the Athi plains, near Nairobi, and

thence

thence the triangulation will be extended, first, in the north easterly direction to Fort Hall and Kenia, and north west along the railway. The connexion with the Boundary survey will be made at an early date and by this, combined with the German Usambara triangulation, the longitude of the base can be brought up from Zanzibar. A small correction must be applied to the Boundary survey points, computed by the Indian tables, to bring them into conformity with Clarke's figure of the earth.

Another base must be measured near Mombasa and the triangulation started along the coast belt as soon as practicable. The main chains of triangles will be observed with 8 inch micrometer theodolites with which an average triangular error of about two seconds of arc can be obtained. This may appear, at first sight, a rather high standard of accuracy but it has actually been reached by the present staff in the triangulation work carried out in the Setik district last year. The excellence of this result is attributable in a very large measure to the care exercised in the erection of the signals. Up to the present very good, but rather heavy and expensive, iron signals have been used. This is an unnecessary extravagance in a country where timber is plentiful and their use should be discontinued except possibly for a few of the more important points; e.g. the large triangle connecting with the Boundary survey.

The employment of wooden signals will not materially diminish the accuracy of the work.

The technical details of the triangulation work may be thus summarised:-

Bases. about two miles along, measured with 400 foot steel tapes, standardised with 100 foot invar tapes.

Base extensions of well conditional triangles
- observed at night only to lamp signals.

Main triangulation chains Instrument 8" micro-
meter theodolite.

Triangular errors mean, 2 secs. of arc

" " maximum, 6 do

Lengths of sides; 10- 30 miles.

Topographical triangulation. Instruments 6 inch
or 5 inch micrometer theodolites.

Triangular errors mean; 6 secs. of arc

" " Maximum; 24 do

Lengths of sides; 6-10 miles.

All points should be computed in geographical coordinates,
but no 'least square' adjustment need be made.

At present the topographical triangulation is done by the
Trigonometrical branch. When the topographical section is
constituted the officers of that branch should take over
this work. In districts where cadastral maps are required
the necessary tertiary triangulation should be done by the
cadastral branch.

The computation forms and angle books used should
be those issued by the School of Military Engineering, as
printed in the 'Text Book of Topographical Surveying'.
Complaint has been made that the angle books are not large
enough of allow of the convenient insertion of the figures.
As it is of considerable importance that all African sur-
veys should use the same forms it is recommended that these
angle books should be continued in use notwithstanding this
objection to them. When they are reprinted any criticisms,
based upon the experience of the East African Survey depart-
ment, can be given due weight.

TOPOGRAPHICAL WORK.

No topographical section yet having been consti-
tuted the only work of this class that has been accomplished

is a preliminary map of the Setik district, on a scale of 250,000, done by the non-commissioned officers of the trigonometrical section. This map will be printed and will meet all requirements for many years.

It is however impossible to carry on systematic topography in this way, especially of the more settled parts of the country where maps on a larger scale are called for.

The early formation of a full topographical section, of two officers and six or eight surveyors, is imperative.

The measurement of the base near Nairobi will probably be completed before the rains, due at the end of March, so that the triangulation can begin immediately after them, say in June.

By September the work will have advanced far enough to enable the topographers to start, so that if a topographical section could be employed for half the financial year 1907-8 good progress could be made.

Failing this the section must be appointed for 1908-9. In this case they could not begin mapping until June 1908 and it is quite improbable that the first sheet of the map would be issued before January 1909.

There is no advantage to be gained by drawing up an elaborate programme of the order in which the districts should be mapped. Any such scheme is liable to be totally falsified by the development of the colony upon unexpected lines and by the opening up of fresh areas to settlement.

The only general principles to lay down are that the mapping should be strictly completed by sheets and that it should be started in the more closely populated parts of the country, i.e.:-

Nairobi

Nairobi to Fort Hall

Round Nairobi, Nakuru and Kisumu

The Coast belt at Mombasa.

The general scale for the settled parts, should be $125,000$ ($\frac{1}{4}$ inch to 1 mile, nearly) with possibly a few areas of special importance mapped upon the $52,500$ scale (1 inch to 1 mile nearly) and with a reduction of scale to $250,000$ ($\frac{1}{4}$ inch to 1 mile, nearly) for forest, uncultivated and sparsely populated tracts.

The $125,000$ sheets can be either 45 minutes of longitude by 30 minutes of latitude or 30 minutes square ($17\frac{1}{2}$ inches on the paper) as may be preferred. For the $250,000$ sheets it would be better to adhere to the War Office Index and make them $1\frac{1}{2}$ degrees of longitude by 1 degree of latitude. The general style of the finished maps should follow the standard form i.e.

Sheets bounded by meridians and parallels.

Projection: Rectangular polyconic.

Contours: at 100 feet vertical intervals

(for $125,000$ scale)

Colours: Black for lettering and detail.

Blue for water.

Brown for contours and heights.

Green for forests.

Scales of both miles and kilometers.

The annual output of work that should be expected from a topographical section of six plane-tables may be put at 4800 square miles or 4 sheets of map each 30 minutes ($35\frac{1}{2}$ miles) square. If all the topographers are provided with ponies or mules these figures will be increased by 30 to 50 per cent.

It must be noted that the general scheme now put forward

for the organization of the Survey Department, namely one trigonometrical and one topographical section, cannot be taken as a permanent one for the reason that the relative strength of the two branches is disproportionate and if this disproportion is continued the triangulation will run ahead of the topography. This disparity is of no importance at first but after a few years it will lead to the disadvantage that the topographers will be so far behind the triangulators that the signals may have been blown down, decayed or otherwise destroyed, thus causing extra work and expense in replacing them.

The composition of the Survey Department should therefore be recast at the end of four or five years from the present date. At that time the option will lie between reducing the trigonometrical or increasing the topographical party, a choice which can only be decided in view of the material progress of the Protectorate. If prosperous and if land is being rapidly taken up and put under profitable cultivation the decision will naturally be for accelerating the production of maps. Should however the advance of the colony be less rapid than its well-wishers hope the first named alternative might have to be faced.

AL WORK.

Up to the spring of 1906 all the cadastral or revenue survey, required for the laying out of new estates and the preparation of the necessary deeds, devolved upon the Land and Survey Office.

This office was much understaffed and the work fell into serious arrear, for details and examples of which Capt. Smith's report may be consulted. Apart from the understaffing several other causes of delay may be noted. First and perhaps foremost among these must be put the fact that the unsound practice has been followed of selling blocks of land as containing a certain specified number of acres instead of as marked out upon the ground. Suppose a farmer

farmer wishes to acquire a farm of 640 acres. It is of no vital importance to him whether the area is 650 or 630 or even 610 acres, what is important is that he should have his ground plainly marked out by boundary posts and that the definitive deed, conveying the land to him, should be delivered with the minimum of delay. When this is done he is in a position to fence his land, should he so desire, or if he wishes to dispose of it he can cut it up or transfer it as a whole. Should the purchaser be of such an exacting nature that he wants precisely the 640 acres, neither more nor less, then it is clearly his business to get it surveyed on his own behalf and at his own expenses. To demand that a small establishment should undertake the survey of isolated patches of land, situated all over the country, executed with such a degree of precision that the plans show the exact acreage is nothing but an almost impossible task, and, in any case, one that could not be accomplished without a staff entirely out of the present question. Yet this is precisely the demand that has been made upon the Survey and Land Office in the past. To remedy this state of affairs is not difficult. The actual wording of the deeds contains no explicit or implied guarantee of the acreage and to prevent any misunderstanding it is only necessary that steps should be taken to bring home clearly to the intending purchaser that it is land included between certain boundary marks that he is buying, and that the acreage is only mentioned as a guide and not as a guarantee of the quantity of land lying inside the marks. It would further be well that a note should be either added to the deed or attached on a separate slip to the effect that the acreage is only provisional and that the rent or assessment will be revised when the final survey is carried over the ground. In the case of a sale of government land the price

must be fixed upon the basis of the approximate or provisional acreage; it would not be practicable to insist that the sale price should be subject to revision after an interval of time which may amount to several years.

It now remains to define what we mean by 'approximate' acreage in this connection, that is to say we must lay down the permissible limit of error. To fix upon this is naturally largely a matter of personal idiosyncrasy, but, as a compromise between extreme views, we may fairly take it at 5 per cent. To allow the surveyor this latitude will permit the use of quicker methods of survey with a resulting large increase in the output. At the same time the maximum error allowed, namely 32 acres per square mile, will in general be of quite trifling importance to the settler when weighed in the balance with the advantage of getting his title with the least delay in the other scale.

For the rapid survey of isolated estates and for the overtaking of the present arrears it is accordingly recommended that the method be adopted of plane table traverses, executed with compass bearings, the distances being measured either with the perambulator or by long tapes or chain, with a limit of error set at 5 per cent on the total area. To keep a proper check on the work a certain proportion, say 1 in 20, of such estates should be independently resurveyed upon rigorous methods, a task which should generally be undertaken by District Surveyor himself.

It will be observed firstly that this reduction of accuracy is more apparent than real in that it is very doubtful whether many of the plans now accepted from licensed surveyors do not contain errors quite as great as here contemplated and, secondly, that it is only temporary in that, when the systematic cadastral survey by sheets has been fairly started, the necessity for using approximate

methods will shrink away and finally vanish altogether.

In addition to this question of selling land by acreage there are other minor but still important causes of failure in the past. The department has been habitually expected to do, and has often done, work which is not its real business; thus it has been called upon by private owners to make special surveys of their land for the purpose of settling disputes as to boundaries, encroachments or acreage, and new settlers have often demanded that a representative of the survey should go over their ground with them and 'beat the bounds'. Other departments of Government have also given the survey tasks which result in taking members of the staff away from their legitimate work for more or less prolonged periods.

In general there has been a certain want of system and discipline largely due no doubt to the hand-to-mouth way in which the work has been taken up. Thus no records have been kept which would readily enable the cost of the work to be ascertained, other than by taking the total annual expenditure compared with the total area dealt with, and there is no ready means of checking the output of any individual surveyor.

Every employe of the survey, other than native labourers, should keep a diary which is seen by the superintending officer at regular intervals and promotion to higher grades or increases of pay, should depend entirely upon merit i.e. speed and accuracy of work.

As the small staff of the Land Office were thus quite unable to keep ^{up} with the demand for new land the custom arose of employing private, licensed surveyors. The work done by these men is of varying order of merit and, while fulfilling the immediate purpose for which required, presents the disadvantages that it is costly and that the resulting

plans cannot be combined into a cadastral or topographical map.

The use of licensed surveyors must be looked upon as a temporary expedient to meet a temporary difficulty and should be discontinued as soon as the cadastral branch can be worked up to a reasonable strength and efficiency.

A sudden break of policy is impossible as ^{it} would only result in throwing the work further into arrear so that the change must be spread over a few, say conveniently three, years.

The money saved by the discontinuance of the use of licensed surveyors should be added to the vote for the cadastral branch thus giving the Survey Department a natural growth without increasing, by a single penny, the total cost of revenue survey work in the country.

Upon the basis of the present years expenditure for fees to licensed surveyors, £5000, this gives an annual increment of £2000 to the survey estimates for each of the three next financial years.

The only positive increase of expenditure now recommended is a sum of £1500 to allow of the appointment of three District Surveyors to superintend the cadastral branches in the districts e. i. in the first instance, at Mombasa, Nairobi and Kisumu.

With these additions the department should gradually overtake the arrears and, unless the colony develops on an altogether unexpected scale, no further increase need be contemplated for many years.

It is essential that the survey staff should be divided into grades and the arrangement favoured by Mr. Waring, the Deputy Director (Cadastral Branch) seems to meet the case. He proposes that they shall be graded as District Surveyors at £360 by £20 to £400.

Senior staff surveyors at £300 by £20 to £340.

Junior
15

Junior staff surveyors at £250 by £15 to £250. The question of the pay and grading of the survey staff will be further dealt with in the report upon the survey of Uganda. It is obviously desirable that all the African survey departments should be assimilated as far as possible in this matter. Upon this basis the staff of this branch, omitting the Deputy and Assistant Director and also the clerks, draughtsmen and Indian subordinates, will stand as follows:-

	1907-8	1908-9	1909-10 and after
Chief Surveyors	3	3	4
Senior Staff	4	6	7
Junior Staff	5	7	9

with the precautionary note that any predictions of the necessary strength of the survey in future years must be subject to periodical review in light both of the experience gained and of the rate of growth of the colony.

The systematic cadastral survey in sheets should now be started at the earliest possible date.

The following general principles should be followed:-

Make a tertiary triangulation with sides 1½ to 2½ miles.

Traverse, with theodolite and chain or tape, between the trigonometrical points.

Plot traverses on plane table, on scale $\frac{1}{10,000}$.

Take plane table into field and fill in details.

In general these details which affect land questions i.e. estate boundaries, houses, roads, rivers and railway lines should be fixed by rigorous methods, chainage or intersection from three points, other details can be inserted by ordinary plane table methods.

It must be borne constantly in mind that the task of making a cadastral map, even the most closely settled parts of the country on such a large scale is a very heavy one and can only be achieved by taking care that the work is not delayed by ~~unnecessary~~ ^{striving for} an unnecessary degree of accuracy where unimportant. All superfluous topographical matter must be rigidly excluded from the cadastral sheets. The size of the sheets can conveniently be three minutes square (about 21 inches on the paper) Township areas must eventually be surveyed upon the 2500 scale. Nairobi and Mombasa are already in hand and will be completed shortly. As regards the sequence of areas there is a little to be said except what has been already stated with regard to the topographical work, namely that the more populous parts will naturally be under taken first. The question of the survey of the coast belt at Mombasa requires however special consideration.

In this case, the survey is urgently required not so much for the purpose of transferring land to British settlers as for distinguishing clearly between Government and private land. At the present time numbers of cases are occurring where 'squatters', with no claims of right, are occupying Government land and are purporting to transfer it to other owners. Unless this land is surveyed and the present occupiers are compelled to register and support their titles they will, by mere lapse of time, acquire good claims of right to land which should be Government property. Large areas of valuable estate will thus be lost permanently. Furthermore it is impossible at present for the bona-fide European purchaser to get a good title to land he may wish to buy. The development of the country is thus checked and the taking up of estates with the object of growing cotton,

cotton, rubber, coconuts etc. is seriously hampered. A proposal has lately been forwarded to the Secretary of State to constitute a Land Court with power to call for and examine existing titles and to issue to the approved claimants new and indefeasible Government titles.

The District Surveyor, as head of the cadastral survey work in the district, should be a member of this Court. In order that the Court may work efficiently, or even at all, it is imperative that the preparation of cadastral plans should be continuously ahead of the registration work.

The question of the erection of boundary marks or beacons requires attention. It is one of the duties of the surveyor to mark upon the ground, in a permanent manner, all points where the estate boundary changes direction, a service which is paid for by the land owner on a fixed scale. This duty has apparently been much neglected by licensed surveyors. No deed plan should be accepted unless the beaconed points are plainly indicated and the nature of each beacon described. At the same time it should be clearly understood that it is not the duty of the surveyor to cut the whole boundary line; they should in fact do no cutting except where absolutely necessary for their work.

EMPLOYMENT OF NATIVES A considerable amount of correspondence has lately passed between the Colonial Office and the officials of this, and presumably other African Colonies and Protectorates, on the question of the possibility of training natives for survey work and the Secretary of State is doubtless in possession of the opinion of experienced officers upon this somewhat difficult subject. It is naturally one upon which a stranger, both to the country and its inhabitants, is somewhat diffident in expressing any view. There seems to be a general recognition that the East African native is, at present, quite incapable of being trained

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to any really skilled work and that, if he were so trained, there is no guarantee that the individual will remain in constant employment for more than a few months at a time. A very short period spent in his native village is sufficient for him to unlearn all he has been taught and the labour of educating him is thus lost. To start a training school, even on the smallest scale, in this country would appear to be an enterprise of very doubtful utility.

There is some chance that boys who have been given the requisite rudiments of education and have been partially drilled into orderly habits might be obtained from the mission schools. The Director of Surveys is fully alive to the importance of this question and an effort will be made to find and give employment to such boys, watching the result with care.

It is probably not practicable to send natives from this country to a training establishment on the West Coast, say the proposed school at Accra. Firstly very few speak English; secondly, it would be difficult to get men with sufficient ambition or tenacity of purpose to concentrate their attention upon one subject for such lengths of time as to attain even moderate proficiency and, thirdly, as already stated, they would probably return to their homes and forget all they had learnt in the shortest possible time.

There remains the question as to whether West Coast natives trained at Accra, could be economically employed in East Africa. In this case the climate of the highlands would almost certainly be disastrous, but there is no reason why such men, assuming they can acquire the needful skill, should not be tried in the coast district where the climatic conditions are not materially different from those to which

which they are bred. A number of natives of India are already on the survey staff and the Director is in communication with the Surveyor General of India with a view of getting more. Some of these men obtained through the Protectorate Agent at Bombay have not proved entirely satisfactory.

YS UPON MILITARY TIONS. In the event of its being found necessary to send an expeditionary force to any little known part of the Protectorate advantage should be taken of the opportunity to secure reconnaissance surveys of the district.

To this end it would be most advantageous that a small survey section, say one officer and two non-commissioned officers, drawn from the survey department, should be attached to such an expedition.

By this means not only would the section itself be able to obtain valuable geographical information but also the presence and assistance of a trained survey officer would enormously help the military officers of the force in making the ordinary reconnaissance sketches. He would, for instance, be able in most cases to carry out a rapid triangulation, a task generally beyond the power of the regimental officer, and thus give a number of fixed points for the sketchers to work upon.

In many other ways he could aid and coordinate their work, so that what might in ordinary cases be a few disconnected sketches, of little or no geographical value, would be harmonised into a useful, preliminary map of the country.

It is unfortunately the case that when military operations have to be undertaken it is often found that there are no maps of the area available even though it has been traversed on a previous occasion by a British force.

The scandal of such a state of affairs is manifest. By a

rigid

rigid adherence to the practice of always attaching a survey section to a force moving through an unmapped country the recurrence of such a lamentable incident can be avoided.

E. H. Hills.

21st Feb. 1907

Handwritten scribbles and marks at the bottom of the page.



H. 1805

22



25 April 1906

Sir,

DRAFT.

A.P. (no: 228)

179

Drawn 2/1/50

MINUTE.

Mr. Bennett, 13/4

Mr. Read 13

Mr. Just.

Mr. Andrews 1/9

Mr. Cap.

Mr. Lucas.

Sir F. Hopwood.

Mr. Churchill.

The Earl of Ely.

for conia

I have the honour to inform you that a letter dated the 21st of February has been received from Major S.H. Hills, C.B., R.E. enclosing his report on the survey Department of the East Africa Protectorate. I understand that you have been furnished with a copy of the letter and report, but two further copies are enclosed for herewith for your convenience.

2. With regard to Major Hills's remarks as to the survey of the South country, I understand that the step was taken advisedly as the result of consultation between Mr. Hills and the

Hills 21 Feb (1805)
two printed copies

for conia

and the Government for
land, and the need of
expediting the measurement
and surveying
dealing with applications
for land in an organized

country, and although
perhaps that the
time would have been
more occupied with
more immediate business
in the execution of work
assigned in other districts,
the work done will

3. ~~It is~~ ~~to be~~ ~~understood~~
~~that~~ ~~the~~ ~~importance~~
~~of~~ ~~the~~ ~~work~~
done generally by Major
Helliwell's survey, being done
in particular by the drawing
attention to parts of
his
superiority in the matter
of emphasizing the importance
of bringing the cadastral
system up to a proper
standard of systematic
working and efficiency.

It seems desirable
to recommend that the
urgency of the land
470
Board should not be
~~the~~ ~~unduly~~ ~~recessing~~
deferred longer, as they
agree with Major Helliwell
in ~~the~~ ~~view~~ ~~that~~ ~~it~~ ~~is~~ ~~essential~~
for the satisfactory and
economical conduct of
the land settlement
work. The State are now
being taken of for the
appointment of Comptroller
of the Survey and Forest
Department, in difficulty
to the
by the Board
being formed
at an early date.
5. My attention has been
drawn to Major Helliwell's
suggestions - regard to
the size of the sheets of
maps issued by the
Survey Dept. It happens
that all War Office
maps on the scale of
1/250,000 are now issued
in sheets 6 one degree
square, and this size

3 should be adopted & East
Africa, with the corresponding
size (thirty minutes square)
in the case of maps on the
scale of 1/125,000.

6. I observe that Major Hillo
has not held out any hope
that it will be possible to
make much use of natives
of East Africa in survey work.
I shall be interested to learn
the result of any experiments
which Capt. Smith may
make with boys trained
in the various schools, but
I shall give
further consideration to the
question of employing
natives of East Africa in
the local districts when
the scheme for training
native managers in East
Africa is further more
advanced.

7. The Colonial Survey
Committee in our last
report Hillo in the
deniability of sending
a survey section to
accompany military
expeditions. The practice
is always followed in India

DRAFT.

I understand, as
stated with good
results, there is no
reason why it should
not be of equal value
in East Africa, especially
if the work now done
could be joined up with
the previous work of
the Dept. I recognize
that with a small staff
the temporary absence of
the section might seriously
inconvenience the
Survey Dept. in its
ordinary work, but I
shall be glad if you will
show the recommendation
in my
& I shall address you
in a separate despatch
on the subject of the
appointments necessary
to complete the staff
on the scale authorized
in the Survey
by the approved Estimates
for 1907-8.