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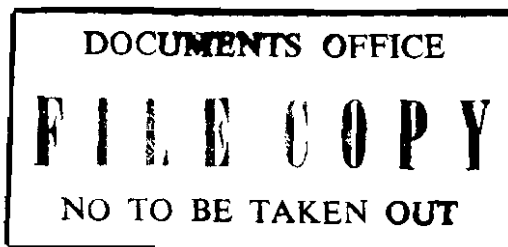
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TERRITORIAL ATLASES

The production problem facing Survey Departments with  
limited resources

(Submitted by the Government of Kenya)

TERRITORIAL ATLASES

The Production problem facing Survey Departments with limited resources

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Introduction

The rapidity with which the first Edition of the Kenya Atlas sold out and the flood of advance orders for the 2nd Edition from Kenya and overseas, indicates that there is a very considerable demand for this type of publication. Nevertheless, the decision of a Government Survey Department to undertake the production of a territorial atlas is not one which can be lightly made.

Much of the work involved is fascinating and of excellent training value for cartographers, but it is also rather expensive and time-consuming. In the notes which follow, I have attempted to outline the production problem, from the point of view of a Government Survey Department with limited resources, and to describe briefly the methods adopted by the Survey of Kenya in our attempts to produce an acceptable atlas with the facilities available to us.

General Planning

Although the Oxford dictionary defines an atlas merely as 'a volume of maps', a modern atlas is not a hotch-potch of un-co-ordinated individual maps but a homogeneous collection, demonstrating throughout the results of skilful guidance and choice. The individual maps must be on a projection, and at a scale, suitable to the subject they illustrate. They must, as far as possible, be in conformity with other maps, and must express their purpose simply and clearly.

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By careful selection and presentation of material, by judicious choosing of colours acknowledged to be suitable, and by maintaining a uniform standard throughout, it is possible to produce an atlas which gives pleasure and is artistically satisfying.

This statement which is freely adapted from a report on a proposed atlas for Primary and Intermediate Schools in Kenya by the Kenya Education Department's Inspector of Geography, aptly sums up the aims of every conscientious atlas compiler; nevertheless, in the initial planning stages, attention always turns to 'how have other people done it?' and 'how successful have they been?'

Before embarking on detailed planning therefore, it is well worth while to examine critically as many examples as possible of existing published atlases. Such an appraisal was made by the Survey of Kenya in 1956 and thereafter, a committee of senior departmental officers was set up to make recommendations on general policy, for the production of an Atlas of Kenya.

The committee's terms of reference were to draw up detailed proposals on contents, map scales, format, style, quality of paper, type of binding, selling price, etc., in such a manner that maximum use could be made of source material and reproduction facilities already existing within the Department. It was generally agreed that, if the project were ever to reach fruition, expenditure of public funds must be kept to a minimum and costs must be largely recoverable from sales of 2-3,000 copies of the Atlas.

After due consideration, the committee reached the following conclusions:

1. Contents

The contents decided upon were:

1. Kenya in relation to Africa.
2. Kenya Physical & General.
3. Provincial maps - (set of six maps).
4. Kenya Administrative divisions.

5. Kenya meteorology - (set of three maps).
6. Drainage and Water Board areas.
7. Geology.
8. Soil.
9. Vegetation.
10. Agriculture.
11. Forests.
12. Malaria incidence.
13. Tsetse fly infestation.
14. Tribal and Ethnographic.
15. Population.
16. Land divisions.
17. Game reserves.
18. Mineral deposits.
19. Communications.
20. Medical facilities.
21. Postal facilities.
22. Educational facilities.
23. Police organization.
24. Water supplies.
25. Location of Industry and Power.
26. Exploration.
27. Nairobi.
28. Mombasa.
29. Smaller towns.
30. Administrative divisions of Old E.A. Protectorate.
31. Historical maps - (set of five maps).
32. Gazetteer.

In all, 44 maps and 10 pages of text were planned.

## 2. Map Scales and Format

A sheet size of 19" x 18" was chosen to allow the use of a 1/3m. base map to illustrate, with reasonable clarity, the various biographical and human geographical distributions. This size also proved most convenient in allowing the use of a standard scale of 1/m. for the Provincial maps.

In deciding on a suitable sheet size, consideration must also be given to the convenience of users of the Atlas. Although it is felt that the Atlas of Kenya, in common with several other territorial atlases, is far too large for convenient handling and storage, the difficulties which would be introduced by the use of a divided format to reduce page size tend to preclude this expedient.

All of the proposed contents were accepted for inclusion in the 1st edition of the Atlas, and with a few additions have been repeated in the 2nd edition.

## 3. Style

A 'conventional' atlas style of cartography employing layer tints was chosen, it being argued that it is better to do the conventional really well than to experiment with more advanced techniques which might not prove entirely successful. However, as a concession to newer cartographic techniques, it was decided to include one relief map of Africa on which the relief was illustrated by hill shading produced photographically from a plastic model.

## 4. Quality of Paper

In view of the number of colour impressions and the necessity to back up some sheets, it was decided that the paper used should be 150 G.S.M. offset cartridge.

### 5. Type of binding

As the Survey of Kenya has no machine binding facilities, a loose-leaf type of binding was chosen. This it was hoped would serve a dual purpose, in that it would make possible the collation and binding of the atlases within the Department, and would also allow for the addition of further maps which could be published as loose sheets from time to time. In any event, the secondary purpose has not been realized.

### 6. Selling Price

To enable the capital outlay in time and materials to be recovered from a relatively short run of approximately 2,000 copies, it was recommended that if the distribution of complimentary copies was severely restricted, the estimated costs could be recovered at a selling price of Sh.50/- per bound copy, and Sh.2/- for individual map sheets. These recommendations were accepted by the Ministry of Education, Labour and Lands. In general, the estimates have proved satisfactory from a costing point of view but, with no profit margin and our lack of experience of the book trade, we soon received complaints from booksellers that the Atlases were not economical for them to handle. Accordingly, the retail price of the 2nd edition has been increased to Sh.60/+ to allow for the normal discount on wholesale orders, without loss of revenue.

### 7. Compilation

Having decided to proceed with the project, a senior cartographer was appointed to collect and edit the information required for the maps, and to supervise the drawings. The Provincial and Physical maps presented no particular problem, as suitable material already existed, and required only re-compilation into Atlas sheets. For the various distribution maps however, it was necessary to enlist the aid of specialists in other Government Departments and Organizations, to obtain or verify information on the subjects to be illustrated. This stage can be most frustrating for the Atlas compiler,

particularly when working on 1st editions. Whilst we found an almost universal willingness to co-operate, not everyone had information immediately available in suitable form for direct compilation. Several specialist had very decided views on how their information should be presented. Where these did not accord with the views of the Editor, some compromise was necessary. The views of individual contributors must always be considered, but it is important to the success of the whole to prevent such individuals from usurping the Editor's functions entirely. Satisfactory progress was made through the preparation of rough mock-up Atlas sheets, with coloured crayons on prints of the standard base map, which for the 3/m. sheets was drawn at 1/2m. scale. These drafts were amended as necessary until agreement was reached.

For the 2nd edition of our Atlas, the procedure was much simplified, since the contributors knew the required layout and could use 1st edition sheets as their basis of revision. Moreover, considerable benefit was derived from some of the detailed criticisms and reviews of the first edition plates. Considering the difficulties encountered by Editors in collecting material for Atlas maps, it is always surprising how much useful information is gratuitously supplied immediately when the maps are published.

When producing an Atlas on a show-string budget and in addition to the normal production of a Survey Department, maps must be completed and printed over a considerable period of time. It is inevitable, therefore, that on publication of the complete Atlas, some maps will be more up-to-date than other. It is as well to advise contributors of this fact in advance. By giving firm 'cut-off' dates for each map after which no further amendments can be contemplated, it is possible to simplify the fair drawing and printing through the elimination of last minute corrections. In spite of well laid plans, however, last minute amendments will still arrive and it is often very difficult to decide whether they are of sufficient importance to warrant a set-back in production.

## 8. Fair Drawing

Fair drawing techniques tend first to be decided by the availability of materials and the training background of the draughtsmen, but can be modified later with experience. We started initially with two draughtsmen using the conventional technique of drawing in ink on Astrafoil to produce the line plates at a drawing scale of 1/2m. for the 1/3m. base maps, and 1/750,000 for the 1/4m. Provincial maps. The number of draughtsmen was increased to five as the work progressed.

Overlay material for use on the base maps, and the colour masks for layer tints were produced directly at publication scale, using the same technique. We have now had more experience in the use of peel-coat film for colour masking, and will no doubt change over to this method on future projects.

The type used, with a few exceptions, was Gills Sans in various point sizes, set up and printed on 'clarafoil' on a Littlejohn press, then waxed prior to issue to the draughtsmen. Here again the recent acquisition of a Hohlux photo-typesetting machine has increased the flexibility of map design by increasing the range of available type faces and point sizes. For the 1st edition the letter-press required for the pages of text had to be contracted out to the Government Printer, who supplied art-pulls for subsequent reproduction by offset lithography. Letter-press for the 2nd edition was set up within the Department.

## 9. Proving

All the completed maps were proved photo-mechanically on opaque astrafoil.

As this process is rapid, effective and relatively cheap, it is to be recommended for all maps except those in which final colours are obtained by tint combinations. For these, for example Geological and Soil maps, no substitute was found for machine proving.



## 10. Printing

All our printing was carried out by offset lithography on Crabtree rotary presses, which are capable of maintaining fine register. In the 2nd edition the quality of the printing has been considerably improved through the use of more refined ready-mixed plate coatings than were available to us for printing the first edition.

### 11. Gazetteer

The usefulness of an Atlas is much enhanced by the inclusion of a comprehensive gazetteer. The compilation of a gazetteer is, however, a tedious business which can only be really simplified if one has access to a suitable card sorting machine. As this is usually out of the question, some other means must be devised. Our solution was adapted from the card-sorting technique and proceeded as follows:

First, to obviate the need for constant repetition of generics such as town, river, mountain, etc., the gazetteer was divided into sections under these various categories.

Next, a quantity of paper slips were cut to equal size (approx. 7" x 1 1/2"). Then, working through the topographical section of the Atlas, map by map, every name was transferred to a separate slip of paper, quoting also the map number and map square reference, thus:

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keeping the various categories in separate bundles.

Once all names had been transferred, each bundle was sorted alphabetically, initially under the first letter of the name, and subsequently into proper alphabetical sequence.

The information was at this stage compiled into manuscript lists (in block capitals) and set up in type. Proofs made from the type pulls were re-compared with the maps. All that was then necessary was the preparation of a 'stick-up' of the columns of letter-press to suit the required layout ready for photography and plate-making.

12. Collation and Assembly

The collation and assembly of atlases into the type of loose-leaf binder chosen for the Atlas of Kenya, presents no great problem to the average Survey Department, provided that at the printing stage care is taken to see that all printing plates are laid to a standard position and machine 'lays' are adjusted to ensure that each map is printed in the same relative position on the paper. If these conditions are met, the contents of each assembled atlas can be trimmed as a book and drilled as a unit.

The only requirements are sufficient space to lay out the stacks of printed maps in proper sequence in such a manner that each collator can collate one complete Atlas at each tour of the room. We have found that six collators, one guillotine operator, one paper driller and two binders can assemble atlases at the rate of 60-70 per hour.

Considerable trouble was experienced in assembling the 1st edition Atlas owing to faulty manufacture of many of the binders. Although the manufacturers eventually rectified the matter, we learnt a valuable lesson that the acceptance of the lowest tender is not always economical in the long run.

Conclusion

In conclusion, I should like to emphasize that in the foregoing factual account of the production of the Atlas of Kenya, no claim is intended that our solutions of the various production problems are the best possible. My object is merely to record for general interest how a Government Survey Department concerned with and equipped solely for the production of title surveys and basic mapping, can produce a territorial Atlas largely from within its own resources.