

KG/500  
30

PAPERS LAID		No.
Speaker Senate	1	Clerk Asst. H.R.
Speaker H.R.	1	Reporters
Clerk Senate	1	Press
Clerk H.R.		Library
Clerk Asst. Senate	1	Binding



LIBRARY  
OF KENYA  
LIBRARY  
OF KENYA  
LIBRARY

REPUBLIC OF KENYA

---

**SURVEY OF KENYA  
ADMINISTRATION REPORT  
1965**

---

**Two Shillings - 1966**

---

060  
GOK

PARLIAMENT  
OF KENYA  
LIBRARY

**SURVEY OF KENYA  
ADMINISTRATION REPORT  
1965**

## CONTENTS

	PAGE
1. REVIEW OF THE YEAR .. .. .	1
2. ADMINISTRATION .. .. .	2
General .. .. .	2
Establishment .. .. .	2
Finance .. .. .	4
Buildings .. .. .	5
Labour .. .. .	5
Stores .. .. .	5
Transport.. .. .	5
3. LAND SURVEYORS BOARD .. .. .	5
4. CADASTRAL BRANCH .. .. .	6
General .. .. .	6
Cadastral Surveys .. .. .	6
Field Work .. .. .	6
Computing and Checking .. .. .	6
Boundaries and Cadastral Fair Drawing Office .. .. .	7
Records Drawing Office .. .. .	7
Survey Records Office .. .. .	8
5. MAPPING AND TECHNICAL BRANCH .. .. .	9
Triangulation and Traversing .. .. .	9
Geodetic Levelling .. .. .	9
Mapping .. .. .	9
Reproduction Section .. .. .	10
Map Sales and Issues .. .. .	11
Aerial Photography .. .. .	12
Air Survey .. .. .	12
Computing Office and Records .. .. .	13
6. SETTLEMENT AND CONSOLIDATION BRANCH .. .. .	13
Settlement Scheme Surveys .. .. .	13
Land Consolidation Surveys .. .. .	13
Settlement and Consolidation Records Office .. .. .	14
7. TRAINING .. .. .	15
General .. .. .	15
Departmental Training .. .. .	15
Professional and Overseas Training .. .. .	16

# SURVEY OF KENYA ADMINISTRATION REPORT, 1965

## 1. REVIEW OF THE YEAR

The main activities of the Department continued unchanged, i.e., the execution of accurate surveys and production of large-scale plans for registration of title to land, the production and revision of topographical maps in a full range of scales, for use in administration, development planning, tourism, etc., and activities ancillary to the above, e.g., aerial photography, training, etc.

The retirement of expatriates continued steadily and many new appointments and promotions of Kenya citizens were made (including the post of Director of Surveys). The acute shortage of fully qualified surveyors was partly met by four appointments from European countries other than Britain.

Internal and external training continued; there are now eight students at University College, Nairobi (which mounts a Land Survey Degree Course), five at S.W. Essex College (England) for R.I.C.S. Courses, one Makerere graduate at Cambridge University, and one at the School of Military Survey, and one student at the I.T.C. for Photogrammetry at Delft (Netherlands). Three students returned from Delft and three from Photolithography Courses at Twickenham College (England).

The East Africa Central Legislative Assembly passed a Bill to establish an East African Land Surveyors Certificate.

The Departmental budget increased by 2 per cent, which was due more to increased costs than to increased activities.

The first stage of the basic topographical mapping of Kenya at the scale of 1:50,000 (1:100,000 in undeveloped areas) is approaching completion; the last ten sheets are being drawn at the Directorate of Overseas Surveys in England. The next stage, contouring, continues to progress; fourteen contoured sheets were received, and forty-seven more are in hand at the Directorate of Overseas Surveys (D.O.S.).

Other D.O.S. aid comprised the fixing of Primary and Secondary Triangulation control in Narok District, and new airphoto coverage of the Coast.

The final sheets of the 47-sheet series of 1:250,000 scale maps covering Kenya were published and are in popular demand.

The last link in the 3,500-mile chain of precise levelling from Alexandria to Mombasa was observed between Kisumu, Tororo and Mau Summit, and a start was made on the Kenya-Tanzania connexion.

The last map of the new Kenya-Ethiopia boundary was printed, but publication of the series still awaits ratification of the Treaty.

Increasing use was made of electronic computing equipment available in Nairobi for photogrammetric and triangulation computations.

Large-scale contoured base-maps of 137,000 acres were prepared for the final stage of the one-million-acre settlement scheme (of Africans on former alienated land).

A high proportion of the Department's total effort continued to be devoted to base-mapping, and later preparation of title plans for registration of land in the Trust Lands. Much evidence was supplied to the Lawrance Mission which investigated proposals to speed up registration.

## 2. ADMINISTRATION

### General

The Department remained in the portfolio of the Minister for Lands and Settlement during 1965.

The four Provincial Survey Offices located at Mombasa, Nyeri, Nakuru and Kisumu, and ten District Survey Offices, were maintained throughout the year.

The heads of the Survey Departments of Kenya, Tanzania, and Uganda continued their regular meetings, at Kampala in June, and at Dar es Salaam in November.

Following a conference sponsored by E.C.A. at Addis Ababa in October 1965, attended by an Assistant Director and a Superintendent of Surveys from this Department, on the establishment of a Regional Training Centre in Photogrammetry for Africa, the possibility of obtaining a suitable building in Nairobi for the Centre was examined.

The many visitors to the Department during the year included:—

- Mr. J. C. D. Lawrance, Chairman of Land Consolidation Mission.
- Mr. G. J. Humphries, C.M.G., O.B.E., Member of Land Consolidation Mission.
- Mr. S. Rowton Simpson, Land Tenure Adviser, O.D.M.
- Mr. W. D. C. Wiggins, O.B.E., Director of Overseas Surveys.
- Col. W. N. Morris, M.C., D.D. Surveys, Middle East Command.
- Mr. W. Williams, Dept. of Geography, Cambridge University.
- Col. R. T. L. Rogers, Managing Director, Fairey Surveys.
- Dr. W. Harting, German Volunteer Service.
- Dr. L. W. Morley, Mines and Technical Surveys, Canada.
- A delegation, from Ministry of Lands, W. Nigeria.
- Mr. D. E. Taylor, U.S. Geological Survey (Saudi Arabia).
- Dr. Wetherall, U.S. Library of Congress.
- Prof. S. Chatterjee, President of the International Geographical Union.
- Mr. E. Jensen, Norwegian Agency for International Development.
- Dr. J. Zarzycki, Vice-President, Aero-Service Corporation of Canada.
- Prof. J. Schultze, Institute of Geography, Berlin University.
- Dr. von Stackelberg, Geologist, W. German Indian Ocean Expedition (m.v. *Meteor*).
- Dr. Brindotche, Land Survey Expert, Hanover.
- Dr. Samadeni, Managing Director of Wild Heerbrugg.
- Mr. R. D. Donaldson, U.N. Topographical Adviser, Somalia.
- Dr. Te Lou Tchang, U.N.E.C.A. Cartographic Adviser.
- Dr. P. O. Fagerholm, Director of Hydrographic Survey, Sweden.

### Establishment

The Kenyanization of the Department continued smoothly. Retirements of expatriate officers in 1963, 1964, and 1965 totalled respectively sixteen, fifteen, and fourteen, including the last expatriate officers to hold the posts of Director of Surveys, and of Survey Records Officer. The number of designated (O.S.A.S.) officers remaining declined to eighteen (pensionable) plus six serving on contracts.

Under other aid agreements which Kenya has signed with various countries, Staff Surveyors were appointed on contract from Norway (two), Denmark, and Yugoslavia.

There are now three African Staff Surveyors. One was posted as Provincial Surveyor, Kisumu. For details of other staff in training *see* section 7.

The post of Chief Photogrammetrist was abolished. The three Senior Photogrammetrists now work directly under the Superintendent (Technical).

The approved establishment, and vacancy position, at the end of the year is shown in Table E.1. Appointments, promotions and retirements are shown in Table E.2.

TABLE E.1

<i>Post</i>	<i>Establishment at 31st December Vacancies 1965</i>	
<b>ADMINISTRATIVE AND GENERAL</b>		
Director of Surveys .. .. .	1	—
Assistant Director of Surveys .. .. .	3	—
Superintendent of Surveys .. .. .	3	—
Executive Staff .. .. .	8	—
Clerical Typing and Analogous Staff .. .. .	21	—
Records Officer, Grade I .. .. .	1	—
Records Officer, Grade II .. .. .	2	1
Records Officer, Grade III/Junior Records Officer, Grades I and II .. .. .	13	—
Artisans .. .. .	3	—
<b>SURVEY FIELD STAFF</b>		
Staff Surveyors .. .. .	27	11
Assistant Surveyors/Survey Assistants, Grade I ..	30	17*
Survey Assistants, Grade II .. .. .	12	—
Survey Assistants, Grade III/Junior Survey Assistants .. .. .	75	19
Survey Plan Examiners .. .. .	3	3
Drivers .. .. .	71	—
Subordinate Staff .. .. .	350	—
<b>CARTOGRAPHIC AND REPRODUCTION STAFF</b>		
Chief Cartographer .. .. .	1	—
Superintendent (Reproduction) .. .. .	1	—
Senior Cartographer .. .. .	1	—
Cartographers, Grade I .. .. .	8	—
Cartographers, Grade II .. .. .	15	—
Cartographers, Grade III/Junior Cartographers ..	81	13
Photo-Lithographers, Grade I .. .. .	2	—
Photo-Lithographers, Grade II .. .. .	3	—
Photo-Lithographers, Grade III/Junior Photo- Lithographers .. .. .	18	—
<b>AIR SURVEY STAFF</b>		
Senior Photogrammetrist .. .. .	3	3†
Photogrammetrist, Grade I .. .. .	5	—
Photogrammetrist, Grade II .. .. .	10	3

\*Seventeen Survey Assistants, Grade II, held against these vacancies.

†Two Photogrammetrists, Grade I, held against these vacancies.

TABLE E.2

	<i>New Appointments</i>	<i>Promotions</i>	<i>Resignations, Retirements, Transfers</i>
Director of Surveys .. .. .	—	1	1
Assistant Director of Surveys .. .. .	—	1	1
Superintendent of Surveys .. .. .	—	1	—
Staff Surveyors .. .. .	4	1	6
Assistant Surveyors .. .. .	—	—	1
Survey Assistant, Grade I .. .. .	—	3	3
Survey Assistant, Grade II .. .. .	—	7	—
Survey Assistant, Grade III .. .. .	—	4	2
Junior Survey Assistant .. .. .	32	—	18
Cartographers, Grade I .. .. .	1	3	—
Cartographers, Grade II .. .. .	—	1	—
Cartographers, Grade III .. .. .	1	4	3
Junior Cartographers .. .. .	19	—	13
Superintendent (Repro.) .. .. .	—	1	1
Photo-Lithographers, Grade I .. .. .	—	2	—
Photo-Lithographers, Grade II .. .. .	—	1	—
Photo-Lithographers, Grade III .. .. .	—	1	1
Junior Photo-Lithographers .. .. .	3	—	—
Photogrammetrist, Grade I .. .. .	—	4	1
Photogrammetrist, Grade II .. .. .	—	1	1
Records Officer, Grade I .. .. .	—	1	1
Junior Records Officer, Grade I .. .. .	3	4	4
Junior Records Officer, Grade II .. .. .	2	—	—
Switchboard Attendant, Grade III .. .. .	1	—	—
Copy Typist .. .. .	1	—	—
Drivers, Grade II .. .. .	—	11	—

**Finance**

£200,000 was provided from Development Funds for Land Consolidation Surveys. Personal Emoluments expenditure rose as a result of implementation of the Pratt Report.

Comparative figures are shown in Table F.1:—

TABLE F.1

<b>Expenditure</b>	1964-65 <i>Approved Estimates</i> £	1964-65 <i>Actual Expenditure</i> £	1965-66 <i>Estimates</i> £
Personal Emoluments .. .. .	266,000	270,188	272,000
Other Charges .. .. .	111,600	107,205	112,100
<b>TOTAL .. .. .</b>	<b>377,600</b>	<b>377,393</b>	<b>384,100</b>
	1964-65 <i>Approved Estimates</i> £	1964-65 <i>Amount Realized</i> £	1965-66 <i>Estimates</i> £
<b>Appropriations in Aid</b>			
Development Grants .. .. .	232,850	235,035	238,000
Survey Fees, Sale of Maps, etc. .. .. .	22,000	28,825	25,500
<b>TOTAL .. .. .</b>	<b>254,850</b>	<b>263,860</b>	<b>263,500</b>

### **Buildings**

Two blocks of Grade 10 quarters were completed for subordinate staff at Kakamega. Arrangements were made to begin, before the end of the 1965/66 financial year, the building of flats costing £5,000 at Mombasa.

Building of the new Ministry of Works head office block in Nairobi, in which three floors will be occupied by Survey of Kenya, was begun and is due for completion in 1967. The present 63-year-old wooden offices will be demolished to make way for a new road and flyover.

### **Labour**

The total labour force serving the Department averaged 346 against an approved establishment of 350. In addition twenty-four casual labourers who were engaged under the Tripartite Agreement in 1964 were retained on permanent terms. Field labour employed averaged 112 throughout the year. One member of the subordinate service retired, and two died through illness, during the year.

### **Stores**

During the year 1965 the initial value of stores "Written-off" amounted to Sh. 6,085, with a recovery of Sh. 2,527 to Public Funds, as against figures of Sh. 3,651 and Sh. 1,272 for 1964-65.

### **Transport**

There has been a slight change in the composition of the vehicle fleet compared with 1964. Two Anglia vans were purchased for Air Survey and Post duties, this type of vehicle being found more suitable and economical than Land-Rovers for the duty performed. The total mileage approximated 850,000, a marked increase over the figure for 1964.

## **3. LAND SURVEYORS BOARD**

The Board continued to fulfil its statutory functions in control of the private land surveying profession in Kenya, including the examination of candidates for admission to the profession.

Membership comprises two Government surveyors, nominated by the Minister for Lands, and two in private practice, nominated by the Association of Land Surveyors, under the Chairmanship of the Director. The nominees were the same as in 1964.

Eight meetings were held and two licences were awarded.

In the 1964 (December) examinations one candidate sat the Intermediate and four the Final, and in 1965, two and one respectively. All obtained partial passes.

At the end of the year there were twenty registered licensed surveyors in Kenya, five in private practice, seven in Survey of Kenya, five in other organizations, one on the University staff, and two in retirement. The only change from the 1964 figure was a reduction of five on the Survey of Kenya staff.

Two external matters which might affect the future work of the Board were noted: the Bill for the establishment of an East African Land Survey Certificate (modelled on the Kenya Licence) was passed by the East Africa Central Legislative Assembly; and the East African B.Sc. (Survey) Degree Course entered its second year at the University College of Nairobi.



#### 4. CADASTRAL BRANCH

##### General

1965 was another busy year for the Branch, with no diminution in the number of requests for surveys.

It will be many years before the issue of title for the whole country will be governed by the Registered Land Act. Progress to that end is being maintained, and it is expected that by next year surveys carried out under the Registered Land Act will be in the majority.

##### Cadastral Surveys

Submissions by both Government and private licensed surveyors showed an increase of nearly 20 per cent over last year. A total of 485 surveys were presented for examination during the year. There are now five surveyors engaged in private practice, a significant increase over last year, when only two were in practice continuously. The reinforcing of the private sector has relieved the Department of the burden of private work—a commitment reluctantly accepted during the years of shortage of private licensed surveyors.

##### Field Work

There was survey activity in practically all parts of the country with field staff being increased in the Coast Province to deal with the increasing amount of Cadastral Survey work in that area. An average of five surveyors have been engaged throughout the year in laying out the new towns in the settlement areas, and the indications are that their services will be required to the same extent in 1966.

These demands, with others, keep fully employed field staff which, apart from supervisors, is wholly locally trained. The output of surveys for title is shown in Table C.1:—

TABLE C.1

Government or Private	Farms and Farm Subdivisions		Township and Residential		Miscellaneous		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Government	150	59,993	799	1,305	3	13	952	61,311
Private ..	119	33,075	127	18,241	3	2,112	249	53,428
Settlement Scheme Surveys ..					1,704		1,704	
TOTALS ..	269	93,068	926	19,546	1,710	2,125	2,905	114,739

##### Computing and Checking

TABLE C.2

	No.	Man-days
Survey jobs examined and approved .. .. .	378	1,630
Plans compiled .. .. .	181	410
Survey data issued (for field jobs) .. .. .	247	103
Comments on subdivisional schemes .. .. .	238	64
Sets of deed plans examined and signed .. .. .	1,055	140

The average number of staff employed in the Checking Section was:—

Staff Surveyors	.. .. .	4
Assistant Surveyors	.. .. .	1
Survey Assistants	.. .. .	4
Plan Examiners	.. .. .	2

### Boundaries and Cadastral Fair Drawing Office

This Drawing Office consists of two sections:—

- (a) Boundaries Section; and  
(b) Cadastral Fair Drawing Section.

#### (a) Boundaries Section

There are four cartographers in this section, and the work consists of preparation of boundary plans and schedules, checking of boundary plans and schedules from the Forest Department, checking of administrative boundaries on topographical maps for revision of 1:50,000 and 1:250,000 scale topographical maps, checking of road plans from M.O.W., colouring, and miscellaneous boundary jobs. The analysis of work in this section during 1965 is as follows:—

TABLE C.3

Boundary plans prepared	.. .. .	11
Schedules drafted	.. .. .	12
Forest boundary plans checked	.. .. .	14
M.O.W. road plans checked	.. .. .	4
Forest and M.O.W. road schedules checked	.. .. .	5
Administrative boundaries checked on topo. maps	.. .. .	85
Colouring (maps and prints)	.. .. .	213
Miscellaneous boundary jobs	.. .. .	138

#### (b) Cadastral Fair Drawing Section

There are six cartographers in this section, and the work consists of Registry Index Mapping at a scale of 1:50,000 (Series SK.49) of rural areas, 1:2,500 scale of urban areas, e.g. Nairobi and Mombasa, 1:2,500 scale of settlement towns and villages (Series SK.50), and 1:10,000 scale of settlement schemes (Series SK.21). This section, during the course of the year, carried out revision of ten original transparencies of "Nairobi and Environs", 1:25,000 Cadastral Series SK.20. The analysis of work in this section during 1965 is as follows:—

TABLE C.4—REGISTRY INDEX MAPPING, 1965

Scale		No. of Sheets
1:50,000	Series SK.49	21
1:10,000	Settlement schemes SK.20 (two)	4
1:2,500	Nairobi blocks	10
1:2,500	Villages and towns S.K.50 (twenty-one)	44
	Miscellaneous jobs, including revision of "Nairobi and Environs" SK.20	74

### Records Drawing Office

During the course of the year the Records Drawing Office has been staffed by an average of eleven cartographers. Transfers of staff to and from other drawing offices have been frequent, and they have enabled those affected to acquire wider appreciation of the Department's commitments, whilst at the same time the knowledge gained in the various drawing offices will undoubtedly play a greater part in helping them to improve their own status through the annual Occupational Tests.

The usual range of jobs was carried out during the year, and is analysed in Table C.5:—

TABLE C.5

Subdivisional plans prepared .. .. .	104
Special plans prepared .. .. .	45
Tracings prepared .. .. .	389
Deed plans compiled .. .. .	742
Plans checked .. .. .	1,307
Plans charted .. .. .	3,197
Miscellaneous jobs .. .. .	1,001

### Survey Records Office

This office is responsible for the custody, indexing, and referencing of original survey plans, tracings, deed plans, etc., relating to all surveys under the Registration of Titles Act, and an increasing number under the Registered Land Act. It also supplies dyeline prints of such plans.

TABLE C.6

<i>Transactions during:—</i>	1964	1965
Survey plans outstanding on 1st January .. .. .	5	8
Survey plans received .. .. .	352	430
Survey plans registered .. .. .	349	438
Survey plans awaiting registration on 31st December .. .. .	8	—
Miscellaneous surveys (without plans) received ..	49	71
Miscellaneous surveys (without plans) registered	49	71
Resubmissions received .. .. .	3	3
Resubmissions registered .. .. .	3	3
Deed plans numbered .. .. .	483	740
Deed plans received .. .. .	925	862
Deed plans signed .. .. .	919	858
Deed plans despatched .. .. .	1,038	961
Township layout plans registered .. .. .	66	76
Approved subdivisional schemes .. .. .	31	59
Prints issued .. .. .	14,603	14,385
Miscellaneous jobs .. .. .	167	114

TABLE C.7.—NEW CADASTRAL SURVEYS REGISTERED IN 1965

DESCRIPTION	BY GOVERNMENT		BY PRIVATE SURVEYORS		TOTAL	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
New Alienations—Farms	89	9,221	38	10,693	127	19,914
Farm Subdivisions ..	61	50,772	81	22,483	142	73,255
Township Plots—New ..	680	1,213	51	18,155	731	19,368
Township Plots—Subdivisions .. .. .	119	92	76	96	195	188
Resurveys and Revisions Trig. and Standard Traverse Charts ..	3	13	3	2,112	6	2,125
Settlement Scheme Surveys	(6)*	—	(1)*	—	(7)*	—
Conversions to 999 years or Freehold terms ..	1,704	—	1	—	1,705	—
Miscellaneous (Compiled Plans).	5	(24,210)*	—	—	5	(24,210)*
	29	—	2	—	31	—
TOTALS .. .. .	2,690	61,311	252	53,539	2,942	114,850

\*The area of 24,210 acres (Conversion compilations) has not been included in the total surveyed area of 114,850 acres. Triangulation and Standard Traverse Charts are excluded from the total number of surveys.

## 5. MAPPING AND TECHNICAL BRANCH

### Triangulation and Traversing

The Kenya party of the Directorate of Overseas Surveys completed the ground control required for plotting the remaining twelve sheets (known as the "Turkana Block") of the 1:100,000 map series. They then started work on fixing a secondary net covering the Masai districts, west and south of Nairobi, based on the primary chain along the Tanzania border.

Departmental surveyors completed a number of Tellurometer schemes for control of Settlement and Consolidation airphoto-mapping.

### Geodetic Levelling

A party comprising three S.K. and one D.O.S. surveyor completed the precise levelling line from Kisumu to Busia and Tororo in Uganda, and started the line back to Mau Summit: this circuit is expected to be closed early in 1966, and will provide the first connexion of full primary standard from sea-level (Mombasa) to the Uganda level network. A preliminary reduction of the observations suggests that the observed misclosure over the 3,500 miles from Alexandria to Mombasa is less than one foot.

Two Zeiss automatic levels were used for this work; compared with earlier types of instrument, progress was faster without apparent loss of accuracy.

A reconnaissance was made of the line from Mombasa towards Tanga to connect with the Tanzania network.

### Mapping

Contouring: The D.O.S. field party completed height control in seven districts of western Kenya; contours at 50 ft. V.I. will now be plotted by D.O.S. for twenty-eight sheets of the 1:50,000 series.

Basic Mapping: Seven sheets of the 1:50,000 series covering a part of the Tana basin east of Meru were received from D.O.S. The remaining seventeen sheets are expected in 1966. This will complete the mapping of the settled parts of Kenya at 1:50,000.

At 1:100,000, nine sheets were received out of the twelve required to fill the gap running from Garba Tula to the Galana River. Completion of this block will only leave the "Turkana Block" (*see above*) outstanding in the basic medium-scale topographic mapping of Kenya.

Revised Mapping: 1:50,000 scale (Series Y.731): new editions were published of twenty-two sheets, three of which were newly contoured.

At the end of the year a start was made with a new series (SK.61) which is the Y.731 series with a violet overprint showing administrative boundaries and names, i.e. provinces, districts, divisions, locations and sub-locations. When a new edition of a Y.731 sheet is published the S.K.61 overprint will be published at the same time.

1:100,000 scale (Series Y.633): a third edition of sheet 125, partially contoured (along the River Tana) was published.

Boundary Mapping: Copies of the Joint Report and Technical Reports of the Kenya-Ethiopia Boundary Commission, 1963-1964, were received, containing final positions for the revised boundary at Qadaduma. It was then possible to print sheet 19 and thus complete the thirty-sheet 1:50,000 map of the 1947 Agreement boundary. These maps will not be published until they have been accepted by the Ethiopian Government.

Popular Mapping: A special sheet (SK.58) at 1:100,000 scale entitled "Nairobi and Environs" was published, in seven colours plus altitude layer tints and relief shading. This is a compromise between the unwieldiness of six 1:50,000 sheets and the loss of detail at 1:250,000.

A photo-mosaic (SK.59) of Nairobi City Centre at approximately 1:5,000 was lithographed.

D.O.S. published "Kilimanjaro", a map of the whole mountain on one sheet (D.O.S.522) at 1:100,000.

A special overprint on the oblique map of East Africa was published to show the route of the 1965 East African Safari Rally.

Small-scale Mapping: 1:250,000 scale (Series Y.503); cover of Kenya by this series was completed by the publication of sheets Didinga, Maralal, and Amboseli by SK. and sheet Garsen by the Director of Military Surveys (London). Second editions of Kaabong and Moroto were published by Uganda and of Mandera, Narok, Kitui, and Nairobi (Edition 3) by SK.

Series SK.60, a violet overprint giving names and boundaries of provinces and districts, was started and six sheets were published. The series will be completed in 1966.

1:1,000,000 scale (Series SK.57): this replaces SK.41, the area covered by the north sheet of the map having been extended northwards to include the whole of the 1935 Kenya-Sudan boundary. The south sheet will be published in 1966.

Two maps based on SK.57 were published: SK.57A Route Map; the north and south sheets without layer tints are printed back-to-back and folded; SK.57B: Hunting Map, similar to SK.57A, showing game parks, reserves and controlled areas.

International World Map at scale 1:1,000,000 (Series 1301): Kenya is partly covered by the Uganda sheet (NA-36 and part SA-36) published 1963, the Dar es Salaam sheet SB-37 published 1964, and the Mwanza sheet SA-36 published 1966. Work on new editions of the two main Kenya sheets NA-37 and SA-37 has been started by D.O.S. by compilation from the 1:250,000 Series Y.503.

Map Catalogue: A 1965 edition was published.

### **Reproduction Section**

Staffing difficulties in other sections of the Department, and the resulting falls in output are once again reflected in the reduced volume of printing this year as the following table of Comparative Production illustrates. There was a further increase, from 33 to 37, in the number of Departmental aerial films processed but a decrease from 25 to 16 R.A.F. films dealt with.

The Rank/Cintel electronic contact-printer continued to require frequent repairs to keep it in service.

In November the Rotaprint machine was replaced by a Gestetner Offset Duplicator model 201. Two trainees from the section went to the local agent's office for a two-day course of instruction on the working of the machine. It is now possible for the section to undertake the printing of all departmental forms, etc.

TABLE R.1—COMPARATIVE PRODUCTION

	1963	1964	1965
<i>Studio :</i>			
Film negatives and contacts .. .. .	1,791	1,832	1,639
Bromide contacts .. .. .	27,561	25,634	27,789
Diapositives .. .. .	2,072	1,292	2,345
Bromide enlargements .. .. .	685	967	794
Photostat copies .. .. .	8,988	11,859	9,404
Hohlux type films .. .. .	314	184	243
Dyeline prints .. .. .	32,204	33,881	28,612
Autopositive .. .. .	—	1,567	448
<i>Printing Down :</i>			
Machine plates .. .. .	795	601	497
Astrafoils .. .. .	2,738	1,757	1,809
<i>Press Room :</i>			
Sheets of type .. .. .	596	335	432
Printing orders .. .. .	183	141	—
Colour impressions .. .. .	2,235,307	1,442,580	1,842,110
Rotaprint .. .. .	—	—	39,900
Gestetner .. .. .	—	—	6,500

**Map Sales and Issues**

During 1965 the sale of publications earned £8,112 as follows:—

	<i>Survey Headquarters</i>	<i>Field Headquarters</i>	<i>Public Map Office</i>
	£	£	£
Topographical maps .. .. .	—	—	4,207
Cadastral maps .. .. .	—	—	350
Atlases .. .. .	—	—	988
Dyeline prints .. .. .	231	203	16
Photostat copies .. .. .	—	40	—
Air photographs .. .. .	—	586	—
Enlargements .. .. .	—	30	—
Survey manuals .. .. .	—	402	—
Miscellaneous .. .. .	—	1,059	—
<b>TOTAL .. .. .</b>	<b>£231</b>	<b>£2,320</b>	<b>£5,561</b>

The value of documents issued free to Government Departments (including Survey of Kenya) was:—

	£
Topographical maps .. .. .	6,624
Cadastral maps .. .. .	309
Dyeline prints .. .. .	5,756
Photostat copies .. .. .	1,003
Air photographs .. .. .	8,295
Enlargements .. .. .	1,775
Miscellaneous .. .. .	8
<b>TOTAL .. .. .</b>	<b>£23,770</b>

The Map Exchange Agreements with Uganda, Tanzania and Britain (Ministry of Defence) continued to operate to the mutual benefit of all parties.

### **Aerial Photography**

The R.A.F. carried out a number of miscellaneous sorties on behalf of the Department. All the films were developed and printed departmentally.

The Directorate of Overseas Surveys placed a contract for photography of 1,750 sq. miles of the coastal strip and an area on the Tanzania border. This photography was completed in the January/March flying season.

During the year the Directorate of Civil Aviation acquired a D.C.3 aircraft which was adapted for aerial photography. The D.C.A. Heron was still in use during the first half of the year and the D.C.A. D.C.3 replaced it for the last half of the year. Large-scale photography for use by Survey of Kenya and other Kenya Government departments was obtained during fifty-three sorties, giving a total of 220 flying hours. The areas photographed were as follows:—

*For Settlement Schemes Title Survey*

Muhoroni (Tamu).

*For Trust Lands Land Consolidation, Base Mapping and First Flight*

Loitokitok, Bungoma (Bukusu/Kabras), Lamu and Manda Islands, Masongaleni/Darajani, Kakamega (Isukha/Maragoli), Nandi (Chepterwoi), Kisii District.

*For Trust Lands Title Survey*

South Tetu/Mathira/Ndia, Meru (Kibirichia/Kirua), Nandi (Mutwot), Esageri, Ndivisi, Marama/Kisa.

*For Ministry of Works (Roads)*

Kangondi/Embu, Athi River/Kajiado, Thika/Kitui, Kitui/Kibwezi, Nanyuki/Timau, Malindi/Garsen, Kakamega/Bungoma, Isiolo/Archers Post, Kijabe/Narok, Kisii/Ikonge, Sotik/Sotik Post, Homa Bay/Poponditi, Bungoma/Mumias.

*For Ministry of Natural Resources (Water Development)*

Turkwel River, Tana Irrigation (Bura).

*For Town Planning, etc.*

Nairobi City extension (Part).

*For Special Purposes*

Chemelil Sugar Scheme.

### **Air Survey**

The following mapping was carried out by the Air Survey Section during the year:—

*For Settlement Schemes, etc. (Topographical Mapping at 1:2,500)*

154,000 acres of mapping were completed covering Lugari, Thomson's Falls, Sotik and Koru.

*For Trust Lands (Consolidated) (Cadastral Mapping at 1:2,500)*

89,000 acres of mapping were completed covering Fort Hall (Locations 3 and 16), Ndivisi and South Tetu/Mathira/Ndia.

*For Land Consolidation and Coast Settlement (Topographical Mapping)*

77,000 acres of mapping were completed covering Sagala, Meru North, and Nyambeni Hills (1:5,000) and Mavueni (1:10,000).

*For Special Purposes (Topographical Mapping)*

98,000 acres of mapping were completed covering Yatta Irrigation and Chemelil Sugar Scheme (1:2,500), Olenguruone Settlement (1:5,000) and Tana Irrigation (Bura) (1:10,000).

**Computing Office and Records**

Increasing use of Nairobi electronic computer facilities was made during the year. Both aerial triangulation adjustment and triangulation transformations were carried out.

Calibration of measuring bands and geodetic levelling staves continued throughout the year.

**6. SETTLEMENT AND CONSOLIDATION BRANCH**

The branch is responsible for all land consolidation mapping, but only for basic topographical mapping in the settlement schemes, the Cadastral Branch being responsible for the cadastral (title) mapping of the latter.

The branch had a very heavy programme of work and was fully extended to meet its commitments. Experienced expatriate officers continued to retire and wastage amongst locally trained officers and trainees remains a problem.

**Settlement Scheme Surveys**

Production of topographical base maps at 1:2,500 and 1:5,000 scale with 10-ft. contours, covering repurchased alienated land to be incorporated in settlement schemes continued; the maps were supplied to the Department of Settlement for use in planning and laying out the new holdings. Base mapping, by air survey, supplied for this purpose during the year totalled 136,826 acres, the detailed areas surveyed being as follows:—

**Central Province:**

Ol Kalou South, Nyandarua District.

**Rift Valley Province:**

Sotik North, Kericho District.

**Nyanza Province:**

Koru, Central Nyanza District.

**Western Province:**

Lugari, Bungoma and Kakamega Districts.

**Land Consolidation Surveys**

(i) *Mapping*.—Maps for Land Consolidation purposes were produced at the scale of 1:2,500 for the following areas:—

*(a) Topographical Base Maps*

Rift Valley Province: South Nandi, 143 sheets, 30,462 acres.

Eastern Province: North Meru, 71 sheets, 19,659 acres. Nyambeni Area, 29 sheets, 7,406 acres.

Chemelil Sugar Scheme (a development scheme) 17,434 acres.

*(b) Demarcation Maps*

Fort Hall and Baringo Registries: 1:2,500, 333 sheets, 69,409 acres.



(c) *Cadastral Mapping*

After resolution of all "refly queries" final cadastral maps, produced by air survey, were delivered to the Land Registries set out below, where they replaced the demarcation maps:—

## CENTRAL PROVINCE

Nyeri (Mathira)—121 sheets, covering ten sublocations, 5,675 parcels and totalling 22,589 acres.

Fort Hall (Locations 3 and 16)—124 sheets, covering ten sublocations, 5,083 parcels and totalling 22,782 acres.

Embu-Kirinyaga (Mutira, Inoi, Kabare and Baragwe Locations)—131 sheets, covering eight sublocations, 3,996 parcels and totalling 24,469 acres.

Meru (Upper Abothuguchi)—65 sheets, covering three sublocations, 3,631 parcels and totalling 14,489 acres.

Kiambu—Final maps for 40 towns, 12,233 parcels and totalling 3,181 acres.

## NYANZA PROVINCE

Bungoma (Makuselwa)—25 sheets covering one sublocation, 711 parcels and totalling 7,175 acres.

(ii) *Preliminary Photography*.—Photography of this type is used by the Land Consolidation Department for preliminary field work (enclosure, record of existing rights, etc.) and for the preparation of Adjudication Registers. Some 1,200 sq. miles of "preliminary" photography were flown.

(iii) *Field Work*.—The main tasks of officers in the field have continued to be triangulation, the provision and premarking of ground control for air photography, and dealing with queries brought to light by the refly. Field parties also carried out the following work within the Trust Lands:—

(a) Cadastral surveys of townships and villages.

(b) Mutations in those areas where final cadastral maps have been published.

(c) Boundary surveys: Sublocation boundary surveys, Taita; forest excision boundary survey, Lembus Forest; Kindaruma compensation surveys.

At the end of the year lengthy memoranda were prepared for, and many discussions were held with, the Lawrance Mission which was appointed to inquire into the practicability, etc., of accelerating the registration of title in the Trust Lands.

**Settlement and Consolidation Records Office**

TABLE SC.1

The following new items were received into records:—

Sublocation topographical sheets	.. ..	371
Sublocation demarcation sheets	.. ..	601
Sublocation cadastral sheets	.. ..	453
Negatives	.. ..	166
Machine plots	.. ..	148
Diapositives	.. ..	1,455
Tracings	.. ..	Nil
Plane table sheets	.. ..	Nil
Aerial photographs	.. ..	43,236
Photo enlargements	.. ..	Nil
R.A.F. films	.. ..	Nil
Other aerial films	.. ..	99
Settlement scheme topographical sheets	.. ..	274
Miscellaneous	.. ..	978

Over-counter transactions (issues and returns) during the year:—

Aerial photographs .. .. .	27,034
Diapositives .. .. .	4,384
Machine plots .. .. .	1,339
Machine plots revision prints .. ..	65
Sublocation sheets .. .. .	7,300
Negatives .. .. .	12
Miscellaneous .. .. .	1,204

Reproduction orders placed by this office and copies distributed:—

Dyeline prints .. .. .	} 1,450 orders involving—	
Photostats .. .. .		16,992 prints.
Diapositives .. .. .	} 45 orders involving—	
		2,122 diapositives.
Photograph enlargements .. .. .	} 375 orders involving—	
Photograph contact prints .. .. .		759 enlargements.
Miscellaneous .. .. .		23,951 prints.
		7,100 copies.

## 7. TRAINING

### General

The technician programme was considerably hampered by the high resignation rate. Of the fifty-one recruits at the beginning of the year, twenty-five resigned. Thus the Basic Course, which commenced in April, had to be reorganized in July and the course extended into 1966. The Cartography Course, similarly, had to be extended into 1966. In order to avoid a recurrence of this situation, the new students have been required to sign a Deed of Indentured Learnership.

Two African Survey Technicians, who have themselves been trained at the school, undertook instructional duties at basic and advanced level.

Other problems of training included the difficulty of finding instructors owing to the retirement of senior staff, and the shortage of accommodation for those attending the courses. No "Further Advanced" Course was, therefore, held during the year.

### Departmental Training

(a) *Survey*.—The training programme consisted of the following courses:—

Basic Course No. 37: Thirteen students completed the course (including two from other departments).

Advanced Course No. 14: Eleven students (including two from other departments).

(b) *Cartography*.—Basic Course No. 19: Nine students completed the course (including two from other departments).

(c) *Examinations*.—As a result of the Occupational Tests held in 1965:—

Three Survey Assistants, Grade II, became eligible for promotion to Survey Assistant, Grade I.

Seven Assistants, Grade III, became eligible for promotion to Survey Assistant, Grade II.

Four Junior Survey Assistants became eligible for promotion to Survey Assistant, Grade III.

Three Cartographers, Grade II, became eligible for promotion to Cartographer, Grade I.

One Cartographer, Grade III, became eligible for promotion to Cartographer, Grade II.

Four Junior Cartographers became eligible for promotion to Cartographer, Grade III.

#### **Professional and Overseas Training**

Five students were sent to University College to join the B.Sc. (Land Survey) Course, and one was accepted for the B.A. (Geography plus Mathematics) Degree Course.

Seven students from the Department are now at University College, Nairobi.

Three students were accepted by the S.W. Essex College (England), so that, in all, five students are now studying at this college for R.I.C.S. examinations.

One Makerere graduate is studying at the School of Military Survey, Newbury, and one was accepted for a post-graduate course in computation at Cambridge University.

One additional student has been sent to the International Training Centre for Photogrammetry at Delft (Netherlands), and three returned therefrom during the year, after having completed their studies.

Three students returned from a three-year course in Photo-Lithography at the Twickenham College of Technology. One of them won the City and Guilds Institute Silver Medal for the best result in the final examination.

2nd April 1966.

P. P. ANYUMBA,  
*Director of Surveys.*

