

P(640)
Su86m

Index
A

SURVEY OF INDIA
MAP PUBLICATION
AND OFFICE WORK

1928 TO 1929



U. S. GEOLOGICAL SURVEY

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From 1st April 1928
To 31st March 1929

PUBLISHED BY ORDER OF
BRIGADIER R. H. THOMAS
SURVEYOR GENERAL OF INDIA

P(640)
Su86m
1929

Printed at the Photo.-Litho. Office
Survey of India
CALCUTTA
1929

Price One Rupee, or One Shilling and Nine Pence.



Surveyor General's Office,

No. 13, Wood Street,

Calcutta, 15th January 1930.

Brigadier P. H. Thomas, D.S.O., R.E., Surveyor General
of India, has the honour to present the Director of the United
States Geological Survey, Washington D.C.

with 1 copy of the Map Publication and Office Work Report
of the Survey of India for 1928-29 and requests the favour of an
acknowledgment of the receipt of the same on the accompanying
Card.

SURVEY OF INDIA
MAP PUBLICATION
AND OFFICE WORK

1928 To 1929



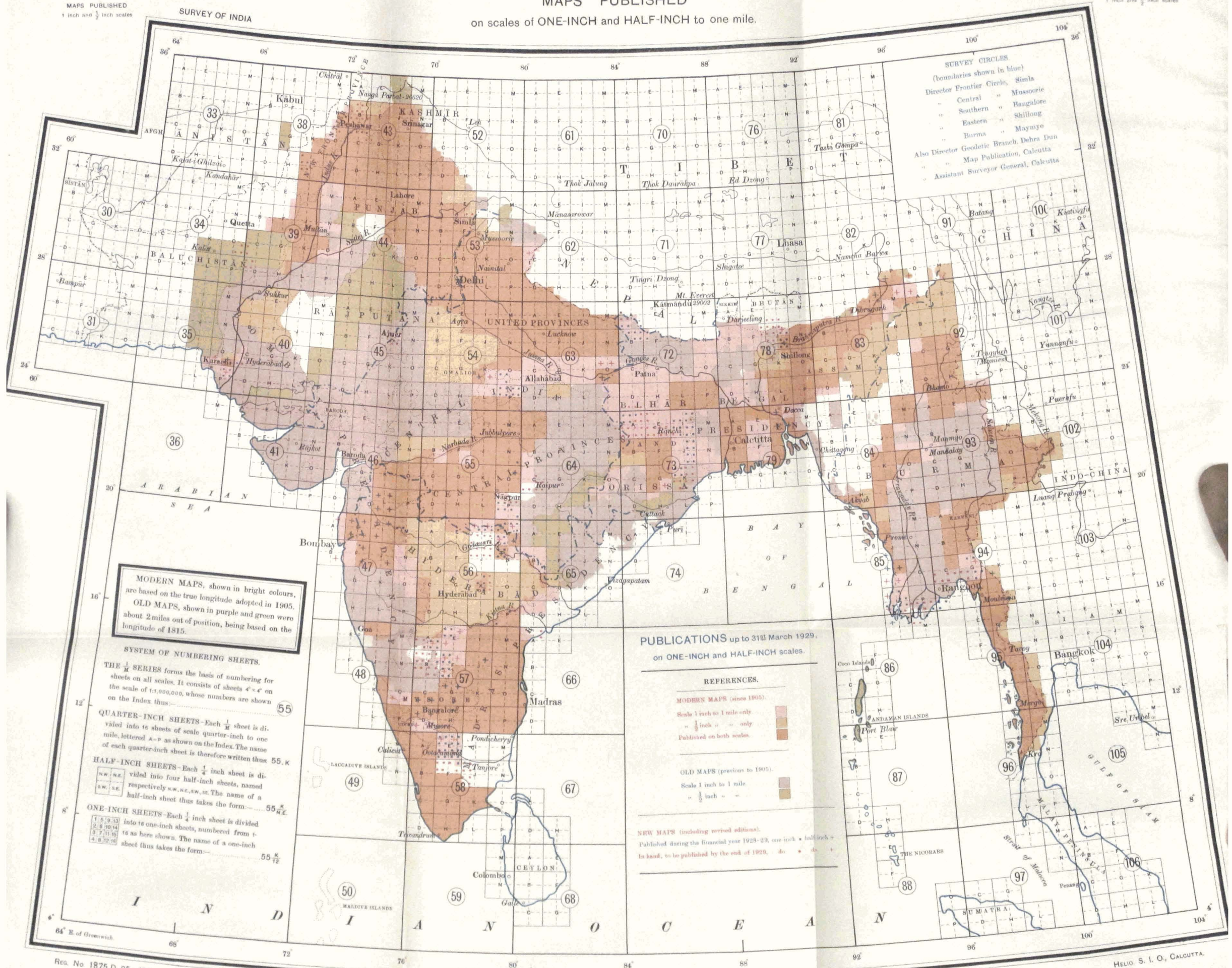
From 1st April 1928
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SURVEYOR GENERAL OF INDIA

Printed at the Photo.-Litho. Office
Survey of India
CALCUTTA
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on scales of ONE-INCH and HALF-INCH to one mile.

SURVEY OF INDIA



SURVEY CIRCLES
(boundaries shown in blue)

- Director Frontier Circle, Simla
- Central " Mussoorie
- Southern " Bangalore
- Eastern " Shillong
- Burma " Maymyo

Also Director Geodetic Branch, Dehra Dun
Map Publication, Calcutta
Assistant Surveyor General, Calcutta

MODERN MAPS, shown in bright colours, are based on the true longitude adopted in 1905. **OLD MAPS**, shown in purple and green were about 2 miles out of position, being based on the longitude of 1815.

SYSTEM OF NUMBERING SHEETS.

THE $\frac{1}{4}$ SERIES forms the basis of numbering for sheets on all scales. It consists of sheets $\epsilon \times \epsilon$ on the scale of 1:1,000,000, whose numbers are shown on the Index thus: 55

QUARTER-INCH SHEETS—Each $\frac{1}{4}$ sheet is divided into 16 sheets of scale quarter-inch to one mile, lettered A-F as shown on the Index. The name of each quarter-inch sheet is therefore written thus: 55.K

HALF-INCH SHEETS—Each $\frac{1}{4}$ inch sheet is divided into four half-inch sheets, named respectively N.W., N.E., S.W., S.E. The name of a half-inch sheet thus takes the form: 55.K

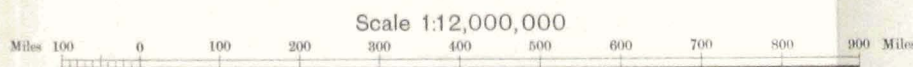
ONE-INCH SHEETS—Each $\frac{1}{4}$ inch sheet is divided into 16 one-inch sheets, numbered from 1-16 as here shown. The name of a one-inch sheet thus takes the form: 55.K

PUBLICATIONS up to 31st March 1929.
on ONE-INCH and HALF-INCH scales.

REFERENCES.

MODERN MAPS (since 1905).	
Scale 1 inch to 1 mile only	
" 1/2 inch " " only	
Published on both scales.	
OLD MAPS (previous to 1905).	
Scale 1 inch to 1 mile	
" 1/2 inch " "	

NEW MAPS (including revised editions).
Published during the financial year 1928-29, one inch + half-inch +
In hand, to be published by the end of 1929, do + do +



SURVEY OF INDIA
MAP PUBLICATION
AND OFFICE WORK

1928 to 1929



NOTICES OF THE
SURVEY OF INDIA

- I. How we can help you.
- II. How to obtain maps
and other publications.
- III. List of Agents for the
sale of maps, etc.

I. HOW WE CAN HELP YOU

SURVEYS of every kind can be carried out for private firms as well as for all Government Departments, on application to the following Survey Directors :—

The Director, Frontier Circle,* Survey of India, Simla. (Tel. "Surfrontier").
 " " Central Circle,* " " Mussoorie. (Tel. "Surcent").
 " " Southern Circle,* " " Bangalore. (Tel. "Sursouth").
 " " Eastern Circle,* " " Shillong. (Tel. "Suresst").
 " " Burma Circle,* " " Maymyo. (Tel. "Surburma").

FOREST AND CANTONMENT SURVEYS, LEVELLING, TRIANGULATION, TIDE TABLES. Advice in regard to these, and on scientific questions, is obtainable from the Director, *Geodetic Branch, Survey of India, Dehra Dūn*, who undertakes a good deal of levelling and similar work for municipalities and engineering projects, on payment. (Telegrams "Surtrig").

MAPS AND ILLUSTRATIONS can be printed by the Director, *Map Publication, Survey of India, 18, Wood Street, Calcutta*, for Government Departments only, and special maps can also sometimes be prepared, on payment. (Telegrams "Surpub").

THE MATHEMATICAL INSTRUMENT OFFICE, Survey of India, 15, Wood Street, Calcutta, supplies and repairs all kinds of optical and surveying instruments, and takes back surplus instruments, on valuation, from all Government Departments, whether Imperial or Provincial. (Telegrams "Surinst").

GENERAL ENQUIRIES should be addressed to the Assistant Surveyor General, 13, Wood Street, Calcutta, (Telegrams "Suoffice"), as the Surveyor General of India (Telegrams "Surveys") is on tour during most of the year.

* Provinces and States in each Survey Circle.

- | | | | |
|--|---|--|--|
| <p>1. FRONTIER Circle
 Kashmir and Jammu
 N. W. P. Province
 Baluchistan
 Punjab and Delhi
 Punjab States
 Bikaner and States of
 W. Rajputana.
 Part of Bombay†
 Cutch</p> | <p>2. CENTRAL Circle
 United Provinces
 Central Provinces
 (including Berar).
 Central India
 Gwalior
 Ajmer-Merwara
 E. Rajputana States
 Haroda
 Part of Bombay†
 States of Western
 India (less Cutch).</p> | <p>3. SOUTHERN Circle
 Madras Presidency
 Madras States
 Hyderabad
 Mysore and Coorg
 Part of Bombay†</p> | <p>4. EASTERN Circle
 Bihar and Orissa
 Bengal Presidency
 Assam and Sikkim</p> |
| <p>5. BURMA Circle
 Burma, Andaman and Nicobar Islands.</p> | | | |

† *Bombay Presidency*—Bard is in the Frontier Circle.

Northern Div. in Central Circle. Remainder in S. Circle.

II. HOW TO OBTAIN MAPS AND OTHER SURVEY PUBLICATIONS

SURVEY OF INDIA MAPS are obtainable from the Map office, 13, Wood Street, Calcutta (*Tel. "Swmaps"*). Also to some extent from the Agents detailed overleaf and from the Directors of Survey Circles. A **MAP CATALOGUE**, which itself forms a useful atlas of India and surrounding countries, can be obtained for *Re. 1/- (Rs. 1/8 post paid)*.

FOREST AND CANTONMENT MAPS are obtainable from the Map Office, Survey of India, Dehra Dūn. (*Tel. "Surforest"*).

GEOLOGICAL MAPS are prepared by and can be obtained from the Director, Geological Survey, Calcutta.

SURVEY PUBLICATIONS OTHER THAN MAPS are obtainable through the Director, Geodetic Branch, Survey of India, Dehra Dūn, who will supply *gratis* a full *Catalogue* of the following :—

- (a) *Trigonometrical data.* Triangulation pamphlets, each covering one square degree, giving descriptions, positions, and heights of triangulated points and other data, with chart. Levelling pamphlets, each covering $4^{\circ} \times 4^{\circ}$, giving descriptions and heights of Bench-marks, with chart.
 - (b) *Tidal Predictions*, published annually in advance as Tide Tables, for Suez and about forty ports from Aden to Burma, including Persian Gulf and Ceylon.
 - (c) *Geodetic works of Reference*—Everest's Great Arc Books, the G.T.S. series of twenty-one large quarto volumes describing in detail the geodetic operations of the Great Trigonometrical Survey from 1800. Detailed accounts are given of the Baseline measurements, of the reduction of the Geodetic Triangulation treated in five portions, of the early Pendulum observations, of Telegraphic Longitude and Astronomical Latitude operations, of Tidal observations, and of Levelling of high precision.
 - (d) *Historical, and General Reports*, including the "Memoirs on Indian Surveys" by Sir Clements Markham and C.E.D. Black: also Annual Reports, Narrative Reports, Record Volumes, etc.
 - (e) *Miscellaneous.* Papers on Geodesy, Exploration, etc.
- (The Catalogue is also included in the Annual Geodetic Report.)

III. AGENTS FOR THE SALE OF INDIAN OFFICIAL PUBLICATIONS FOR BOOKS AND MAPS

EUROPE.

- London.*— Office of the High Commissioner for India. (General Department), 42, Grosvenor Gardens. S. W. 1, either direct or through any bookseller.

FOR MAPS ONLY

OUT OF INDIA.

- England.*— 1. Secretary to the High Commissioner for India (General Department), 42, Grosvenor Gardens, London, S. W. 1.
2. Edward Stanford, Ltd., 12-14, Long Acre, London, W. C.
America.— 3. C. S. Hammond & Co., 30, Church Street, Hudson Terminal, New York, and 75, State Street, Boston, Mass.
Germany.— 4. Dietrich Reimer, Berlin, S. W. 48.

INDIA.

- Bangalore.*— 5. Higginbothams Ltd.
Bombay.— 6. Thacker & Co.
7. D. B. Taraporevala Sons & Co.
Calcutta.— 8. Thacker Spink & Co., 3, Esplanade East.
9. Newman & Co., 3, Old Court House Street.
10. Automobile Association of Bengal, 87 A, Park St.
11. Oxford Book & Stationery Co., 37/39 Park St.
12. City Map Agency, Government Book Depot, 8 Hastings Street.
Cawnpore.— 13. The Indian Army Book Depot, Jubb.
Dacca.— 14. Provincial Library.
Delhi.— 15. Oxford Book and Stationery Co., Kashmir Gate.
16. The Standard Book Depot.
Kashmir.— 17. Cockburns Agency, Srinagar.
18. Beckett & Co., Srinagar.
Lahore.— 19. The Punjab Religious Book Society.
20. The Standard Book Depot.
21. J. Ray & Sons, The Mall.
Madras.— 22. Higginbothams Ltd.
Meerut.— 23. Oxford Book & Stationery Co.
Mussoorie.— 24. The Mussoorie Book Society.
Murree.— 25. J. Ray & Sons, The Mall.
Muzaffarpur.— 26. Burman & Co.
Nagpur.— 27. Superintendent, Government Printing, Book Depot, C. P.
Peshāwar.— 28. Northern Indian Book Depot.
Quetta.— 29. Standard Book Stall, Club Corner.
Rangoon.— 30. The Curator, Government Book Depot, Burma.
Rāwalpindi.— 31. J. Ray & Sons, 45 K & L Edwardes Road.
Simla.— 32. The Standard Book Depot.
33. Thacker Spink & Co.
34. Oxford Book & Stationery Co.

CONTENTS

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INDEX MAPS

1. Maps published on scales 1 inch and $\frac{1}{2}$ inch to 1 mile	...	<i>Frontispiece.</i>
2. The Southern Asia Series, scale 1/2 M, (about 32 miles to 1 inch)		At end
3. The India and Adjacent Countries Series, scale 1/M (about 16 miles to 1 inch).		.. ..
4. Carte Internationale du Monde on the scale of 1/M	...	.. ..
5. Maps published on scales $\frac{1}{4}$ inch and $\frac{1}{2}$ inch to 1 mile	...	.. ..

MAP PUBLICATION AND OFFICE WORK

From 1st April 1928
to 31st March 1929

I.—INTRODUCTION AND PERSONNEL

1. **Annual Reports.**—Are arranged in three separate volumes as follows:—

General Report,
Geodetic Report,
Map Publication and Office Work Report.

The *General Report* gives a full description of all ordinary survey operations, and only includes bare abstracts of the Geodetic and Map Publication Reports. The *General Report* and the *Geodetic Report* are for the survey year ending 30th of September, whereas the *Map Publication Report* corresponds with the financial year, which is more suitable for these office reports.

2. **The present report.**—*The index maps* form the most important part of this report, as they show the progress of publication to date for all standard series of modern maps, excluding trans-frontier work.

Letterpress. Apart from (I), the introduction, and (V), the annual report of the Mathematical Instrument Office at the end of the volume, the present report is divided into three main parts:—

- (II) Shows all publications and map issues for the year.
- (III) Shows all the fair-drawing, whether completed for publication or still in hand, carried out by the various drawing offices and field parties.
- (IV) Describes the work of the printing and miscellaneous offices, excluding that of the Computing and Tidal Office whose work is of a geodetic character and published in full in the annual Geodetic Report.

3. Personnel.

Calcutta. Director, Map Publication. —

Lt.-Col. F. F. Hunter, D.S.O., I.A.,

Chief Draftsman—Mr. E. B. West, to 16-12-28.**O.C., Map Publication Office**—Mr. E. B. West, from 17-12-28.*No. 1 Drawing Office.*

- O.C. Mr. Pramsadranjan Ray, I. B.,
 II .. Priya Nath Sur, from 18-9-28.
 .. Amar Krishna Mitra.
 .. F. H. Grant, from 26-9-28.
 .. Munshi Lal, to 1-10-28.
 .. Prafulla Chandra Mitra.
 .. Lieut. C. S. McInnes, from 14-4-28.
 .. Captain C. B. Sexton, to 31-8-28.
 .. Mr. J. C. St. Clair Pollett.
 .. Dhirendra Nath Banerjee.
 .. Dhirendra Nath Saha.
 U.S. .. Charu Chandra Biswas.
 .. B. B. Kuttappa, from 1-8-28.

Engraving Office.

- Mr. H. H. Green, Hd. Engraver.
 .. H. V. Rodger, Asstt. Head Engraver.

Photo-Litho. Office.

- O.C. Major W. E. Perry, to 5-12-28.
 .. F. J. M. King, from 6-12-28.
Managers & Assistant Managers.
 Mr. S. Colquhoun,
 .. C. F. Oddy,
 .. F. R. Vandyke, Asstt. Manager, from 26-2-29.
 .. J. Chorlton, Asstt. Manager, from 9-1-29.

Map Record and Issue Office

- O.C. Mr. W. M. Gorman, to 4-11-28.
 .. Capt. G. Leunox, from 5-11-28.

Mathematical Instrument Office.

- Mr. S. Woodhouse, Superintendent in charge.
 .. R. C. Malcolm, Asst. Supdt.
 .. A. Lacamp, Asst. Supdt.
 .. S. B. Mitra, Extra-Asstt. Supdt.

Dehra Dūn. Director, Geodetic Branch.—

Lt.-Col. R. H. Phillimore, D.S.O., R.E., to 28-6-28.

Dr. J. deGraaff Hunter, Sc.D., M.A., from 29-6-28 to 14-10-28.

Lt.-Col. R. H. Thomas, D.S.O., R.E., from 15-10-28 to 13-12-28.

Dr. J. deGraaff Hunter, Sc.D., M.A., from 14-12-28.

No. 2 Drawing Office.

- O.C. Mr. C. E. C. French, to 16-4-28.
 .. Lt.-Col. H. T. Morshhead, from 17-4-28.
 II Mr. A. B. Hunter, from 6-6-28 to 30-9-28.
 .. T. F. Kitchen.
 .. Munshi Lal, from 9-10-28.

Forest and Cantonments Office

FOREST SECTION.

- O.C. Mr. C. E. C. French, to 15-4-28 and from 5-11-28.
 .. Lt.-Col. H. T. Morshhead, from 16-4-28 to 4-11-28.
 II Mr. C. West, from 13-4-29 to 31-7-28.
 .. E. J. Biggie, from 26-7-28.
 .. A. E. Hunter, to 5-6-28.
 U.S. .. K. K. Das, to 28-2-29.
 .. J. M. Mukerji, to 14-5-28.

U.S. Mr. Latif Khan I, to 3-4-28.

.. Jit Singh Rawat, from 1-6-28.

CANTONMENT SECTION.

- O.C. Mr. M. C. Petters, to 17-4-28.
 .. C. E. C. French, from 18-4-28.
 II .. O. D. Jackson.
 U.S. .. Jamma Prasad, from 25-8-28.
 .. Muhammad Hussain.

No. 16 Party (Publication and Stores).

- O.C. Capt. G. W. Gemmill, to 18-4-28.
 .. Mr. M. C. Petters, from 19-4-28 to 31-10-28.
 .. H. P. D. Morton, from 1-11-28.
 II .. Rama Prasad Ray, to 22-9-29.
 U.S. .. Karuna Kumar Das, from 1-3-29.

Letterpress Printing Section.

Mr. Shyam Narayan.

Photo-Zinco Section.

Mr. A. Francis.

Stores and Workshops Section.

Computer F. Kerr.

Simla. Director, Frontier Circle. —

- Lt.-Col. S. W. Sackville Hamilton,
D.S.O., R.E., to 21-10-28.
" R. H. Phillimore, D.S.O., R.E.,
from 22-10-28.

No. 6 Drawing Office.

- O.C. Lieut. J. B. P. Angwin, to 30-6-28.
" Lt.-Col. J. D. Campbell, from 1-7-28 to
31-10-28.
" Lieut. H. W. Wright, from 1-11-28

SURVEY SECTION.

- I Lieut. H. W. Wright, from 20-8-28 to
31-10-28.
II Mr. W. H. Strong, from 23-9-28.
" " M. Anvari, to 21-1-29.
U.S. " Inam Din.
" " Vidya Dhar Chopra.
" " Daulat Ram Vohra, to 31-8-28.
" " Mohabbat Lall Kohli, from 6-4-28.

ARMY SECTION.

- Major W. Smith.
Lieut. R. M. Batt.

Mussoorie. Director, Central Circle. —

- Lt.-Col. L. O. Thuillier, I.A., to
13-10-28.
" R. Foster, I.A., from
14-10-28 to 31-10-28.
" S. W. S. Hamilton, D.S.O.,
R.E., from 1-11-28.

No. 3 Drawing Office.

- O.C. Mr. L. Williams, to 30-4-28.
" " J. C. C. Leary, from 1-5-28 to 12-11-28.
" " P. A. T. Kenny, from 13-11-28.
II " J. C. C. Leary, from 13-11-28 to
22-3-29.
" " H. H. P. Butterfield, from 1-4-28 to
30-9-28.
" " S. M. Murtaza, from 12-9-28.
U.S. " J. M. Mukerji, from 16-5-28 to
16-9-28.
" " Jit Singh Rawal, from 1-4-28 to
31-5-28.

Bangalore. Director, Southern Circle. —

- Lt.-Col. L. G. Crosthwait, I.A., to
23-10-28.
Major R. S. Wauchope, O.B.E., I.A.,
from 24-10-28 to 14-11-28.
Lt.-Col. C. M. Browne, C.M.G., D.S.O.
R.E., from 15-11-28.

No. 4 Drawing Office.

- O.C. Mr. S. S. McA. Fee Fielding, to 30-9-28.
" " E. A. Meyer, from 1-10-28.
II " M. Mahadeva Mudaliar.
U.S. " V. R. Ethirajulu Nayadu.
" " R. Mariadus.
" " I. K. Ponuappa, to 31-10-28.

Shillong. Director, Eastern Circle. —

- Colonel A. A. McHarg, D.S.O., R.E.,
to 2-2-29.
Lt.-Col. J. D. Campbell, D.S.O., R.E.,
from 3-2-29.

No. 5 Drawing Office.

- O.C. Mr. E. J. Biggie, to 25-7-28.
" " P. Simpson, from 26-7-28 to 31-7-28.
" " B. M. Berrill, from 1-8-28.
II " P. Simpson.
U.S. " Muhammad Muzaffar Shah.

Maymyo. Director, Burma Circle. —

- Colonel E. T. Rich, C.I.E., R.E.

No. 7 Drawing Office.

- O.C. Mr. W. G. Jarbo.
U.S. " P. C. Sen Gupta.
" " Bansi Ram.
" " U. Po Kye, to 2-5-28.

II.—PUBLICATIONS AND ISSUES

4. **Publications.**—The publications of the Department for the year are shown in the following three Tables, of which Table I shows map publications, Table III letterpress publications, while Table II is merely an abstract of the publication of modern topographical maps to date.

Table I (a)—Maps published at Calcutta, during the year 1928-29.

Class of maps.	Scale.	New publications.	Revised editions, new editions and reprints.	Number of sheets printed.	Value Rs.
GENERAL MAPS.			<i>Departmental.</i>		
Maps of India	Various	2	8	25,403	27,578
GEOGRAPHICAL SERIES.					
Southern Asia	1:2,000,000	...	2	545	1,390
India and Adjacent Countries ...	1:1,000,000	1	41	24,422	44,994
La Carte Internationale du Monde.	1:1,000,000	5	2	8,350	10,060
TOPOGRAPHICAL MAPS.					
Quarter-inch, Modern	1" = 4 miles	17	19	16,975	25,884
" (Prel.)	Ditto	13	15	13,697	20,853
" (Provl.)	Ditto	...	22	6,676	9,866
Half-inch, Modern	1" = 2 miles	39	18	29,574	63,792
" (Prel.)	Ditto	6	3	4,224	6,524
One-inch, Modern	1" = 1 mile	144	108	151,009	228,382
" (Prel.)	Ditto	12	17	18,234	28,984
" (Provl.)	Ditto	...	1	308	308
Old-style sheets	Various	...	58	9,975	14,531
SPECIAL MAPS.					
Administration Report Maps ...	1" = 8 miles	...	1	50	19
Provincial Maps	Various	...	5	3,588	7,561
Plans of Cities and Cantonments	Ditto	11	5	4,018	7,346
Index Maps	Ditto	5	11	15,282	5,664
Miscellaneous Maps	Ditto	24	53	62,570	22,506
Manceuvre Maps ... ..	.....	1	5	8,110	7,508
Total ... ..	.....	280	394	393,010	530,237
			<i>Extra-departmental.</i>		
Maps	Various	261	60	137,989	29,621
Plans and diagrams	Ditto	358	11	122,625	18,657
Illustrations ... ..	.....	200	15	164,283	15,241
Miscellaneous ... ..	.....	21	39	107,280	8,741
Total ... ..	.....	840	125	532,127	67,260
Grand Total ... ..	.....	1,120	519	925,137	597,497

Table I (b)—Maps published at Dehra Dun.

Class of maps.	Scale.	New publications.	Reprints and new editions.	Number of sheets printed.	Value Rs.
<i>Departmental.</i>					
Cantonment maps ...	Various	...	184	13,267	26,548
Forest maps ...	"	121	74	10,988	10,656
Miscellaneous ...	"	5	17	1,448	758
Total ...	...	126	275	25,653	37,957
<i>Extra-departmental.</i>					
Maps ...	Various	87	10	110,423	11,548
Plans and diagrams ...	"	53	10	65,026	3,047
Charts ...	"	277	...	11,151	7,262
Total ...	...	417	20	186,600	21,852
Grand Total ...	...	543	295	212,253	59,809

Table I (c)—Maps published at Bangalore.

Class of maps.	Scale.	New publications.	Reprints and new editions.	Number of sheets printed.	Value Rs.
<i>Departmental.</i>					
Cantonment maps ...	16"=1 mile	...	16	3,180	6,860
Total ...	...	...	16	3,180	6,360
<i>Extra-departmental.</i>					
Forest maps, Hyderābād and Mysore.	Various	2	4	353	233
Private Estates ...	"	33	2	304	1,633
Plans and diagrams ...	"	2	1	2,049	234
Total ...	...	37	7	2,706	2,100
Grand Total ...	...	37	23	5,886	8,460

Table I (d)—Maps published at Quetta.

Class of maps.	Scale.	New publications.	Reprints and new editions.	Number of sheets printed.	Value Rs.
<i>Departmental.</i>					
Maps	Various	...	...	...	.....
Plans and diagrams	"	36	...	1,455	418
Charts ... ..	"		...	...	.....
Forms ... ..	"		...	...	.....
Total ... ..	...	36	...	1,455	418
<i>Extra-departmental.</i>					
Maps	Various	23	20	3,524	972
Plans and diagrams	"	310	...	8,745	2,194
Charts	"	5	...	2,057	512
Forms ... ..	"	...	...	...	.....
Total ... ..	...	338	20	14,326	3,678
Grand Total ... ..	...	374	20	16,781	4,096

Table I (e)—Maps published at Murree and Peshawar.

Class of Maps.	Scale.	New publications.	Reprints and new editions.	Number of sheets printed.	Value Rs.
<i>Extra-departmental.</i>					
Maps	Various	65	...	18,023	3,447
Plans and diagrams ... ..	"	...	...	...	.....
Charts ... ..	"	...	...	...	.....
Forms ... ..	"	...	...	...	.....
Total ... ..	...	65	...	13,023	3,447
Grand Total ... ..	...	65	...	13,023	3,447

TABLE II.—ABSTRACT OF MODERN TOPOGRAPHICAL MAPS.	One-inch sheets.	Half-inch sheets.	Quarter-inch Degree sheets.
Topographical maps published in 1928-29	156	45	30
Do. do. published in previous years.	2,575	702	205
Total published ...	2,731	747	235
Number of sheets in India ...	6,218	1,630	450

5. Notes.—*Calcutta.*—In addition to the work shown in Table I(a) material for the original mapping of the Eastern and Burma Circles, and for the compiled mapping of all Circles, and for numerous extra-departmental maps, was supplied. Nine indexes, in colours, for the General and Map Publication Reports and Supplement, were printed.

The work of surprinting the minute mesh on stock copies for the Army Department, which during the year involved several thousand sheets, is nearing completion.

An index divided into 100,000 yards squares showing the sheets on the 1 millionth, $\frac{1}{4}$ -inch, $\frac{1}{2}$ -inch and 1-inch scales lying in part of the area covered by the new N. W. Frontier Grid Belt was published and a final Grid Guide for the preparation of grid originals throughout India is in hand.

6. Dehra Dūn.—In addition to the work shown in Table I(b) above, 58,304 prints of 977 originals, consisting of plane-table sections, triangulation charts and pamphlets, and forest maps were printed.

7. Bangalore.—In addition to the work shown in Table I(c), the Photo-Zinco Section of No. 4 Drawing Office, Bangalore, reproduced 381 plane-table sections for parties. It also prepared 488 vandyke plates. The total number of pulls in the hand presses was 17,517.

Table III.—Letterpress publications.

(a) PUBLISHED AT CALCUTTA.

1. General Report of the Survey of India. 1927-28.—(475).*
2. Do. Confidential Supplement &c., 1927-28.—(160).
3. Map Publication and Office Work Report, 1927-28.—(300).
4. Handbook of Topography. Ch. IV. Field Traverse Table only.—(500).
5. Do. do. Ch. X, Third Edition.—(800).
6. Do. do. Ch. VI, Sixth Edition.—(1,000).
7. Survey of India Catalogue of maps.—(2,000).
8. Do. do. (F. O. U. O.)—(400).
9. Addenda & Corrigenda for the new map Catalogue.—(4,450).
10. Booklet of Conventional Signs.—(2,500).
11. Correction slips, to Handbooks, Type Table, Border Specimen, etc.—(28,000).
12. List of maps published, issued monthly.—(800).
13. Do. do. (F. O. U. O.), issued quarterly.—(175).
14. Survey Notes, issued monthly.—(350).
15. Government of India and Circular Orders and Circular Memos. etc.—(4,070).

* Numbers in brackets after each item denote the number of copies printed.

Table III (a)—(Contd.).

16. Instructions and Application forms for candidates, Class II Service.—(2,100).
17. Annual Indents for European Stores.—Various.
18. Calendar for 1929.—(8,500).
19. Price List of Survey of India maps.—(800).
20. Himālayān Library List for Simla.—(500).
21. Do. do. Debra Dūn.—(500).
22. Price List of General maps and Provincial maps.—(1,000).

(b) In hand at Calcutta.

1. Correction slips to Handbooks, Type Table, Border Specimen, etc.
2. Government of India and Circular Orders, etc.
3. Miscellaneous departmental forms.

(c) PUBLISHED AT DEHRA DŪN.

1. Geodetic Report Vol. II, 1925-26.—(450)*
2. Records of the Survey of India Vol. XXII., Exploration of the Shaksgam Valley and Aghil Ranges, 1926.—(500).
3. Accounts Pamphlet.—(800).
4. Auxiliary Tables-Part III.—(500).
5. Handbook of Levelling.—(310).
6. Tide Tables for Indian Ports, 1929.—(6,840).
7. Investigation Regarding Gravity and Isostasy (Revised and completed by Major C. M. Thompson).—(105).
8. 8 Levelling Pamphlet Addenda No. 34.—(75 of each).
9. Secondary Levelling Lines.—(200 of each).
10. 8 Secondary Levelling Lines.—(100 of each).
11. 5 Triangulation Pamphlets.—(100 of each).
12. 3 Do. do. Addenda.—(100 of each).
13. Qualification Report Form for Lower Subordinates.—(300).
14. 8 Captions for Museum exhibits—(10 of each).
15. Annual Indent for European Stores.—(25).
16. Periodical returns for Central Circle 28 pp.—(50 of each).
17. Distribution list of Geodetic Report.—(25).
18. Do. do. Publications.—(60).
19. List of publications (letterpress) Survey of India.—(150).
20. Notes on Air Survey in Egypt.—(15).
21. Minutes of the 4th meeting of the Indian Air Survey Committee.—(40).
22. Correction slip to Accounts Pamphlet.—(800).
23. 8 Additional pages of Auxiliary Tables Part III.—(50).
24. 14 Correction slips to Handbook of Levelling.—(310).
25. 3 Correction slips to Topography, Chapter III.—(800 of each).
26. Correction slips to Irrigation Surveys and Settlement Project.—(410).
27. Do. to G. T. S. Volume XVIII.—(800).
28. 10 Do. to Forest Map Office Catalogue.—(600 of each).
29. 5 List of Bench-marks.—(3 of each).
30. Lists for the Mussoorie Guide map.—(8).
31. 128 Professional forms.—(11,6,442).
32. 509 Miscellaneous jobs.—(17,3,235).
33. Hunter Short Base.—(100).

In addition to the work shown above P. (1). Binding Section has bound library books and registers (8,300) 44 photostereographic Triangulation pamphlets (4,400) pasted correction slips (1,587) maps folded (5,377) and forms ruled (17,033).

* Numbers in brackets after each item denote the number of copies printed.

Table III—(Concl'd.).

(d) In hand at Dehra Dūn.

1. *Geodetic Report, Vol. III, 1926-27.*
2. *Do. Vol. IV, 1927-28.*
3. *Tide Tables, for Indian Ports for 1930.*
4. *Professional Paper 22 (Three sources of error in Precise Levelling).*
5. *Do. do. 23 (Air Survey in Waziristān, 1923 to 28).*
6. *Levelling Pamphlet No. 53.*
7. *5 Levelling Pamphlets Addenda.*
8. *4 Triangulation Pamphlets.*
9. *9 Secondary Levelling Lines.*
10. *Reference for U. P. Road Maps.*

8. **Map issues.**—The following Table shows the number of maps issued during the year.

Table IV.—Maps issued by Survey units.

D = Departmental X = Extra-departmental.		ON BOOK TRANSFER (TO GOVERNMENT OFFICIALS).		ON CASH PAYMENT.		FREE ISSUES.		TOTAL.	
		Number of copies.	Sale Value. Rs.	Number of copies.	Sale Value. Rs.	Number of copies.	Face Value. Rs.	Number of copies.	Sale Value. Rs.
Calcutta	D	50,672	71,012	72,083	79,083	74,323	1,07,227	197,078	1,50,095*
	X	383,893	50,951	141,100	20,797	15,014	3,409	540,007	71,748*
Dehra Dūn	D	23,175	20,151	2,505	3,678	24,208	38,512	49,886	23,829
	X	146,069	33,397	5,862	5,794	50	150	151,981	39,191*
Simla	D	11	16	34	89	.....	.....	45	105
Rawalpindi ("A" Company)	D	.....	.....	1	2	.....	.....	1	2
Quetta ("E" Company)	D	.....	.....	44	71	6	9	50	80
	X	10,006	2,712	4,320	966	.....	.....	14,326	3,678
Peshāwar (No. 18 Party)	D	.....	.....	7	11	.....	.....	7	11
	X	2,211	309	10,792	3,183	20	5	13,023	3,447
Mussoorie	D	.....	.....	185	407	.....	.....	185	407
Bangalore	D	1,848	3,084	† 5,620	11,713	.....	.....	† 7,468	14,797
	X	.....	.....	2,693	493	.....	.....	2,693	493
Shillong	D	.....	.....	602	1,138	.....	.....	602	1,138
Maymyo	D	560	880	487	880	.....	.....	1,047	1,760
Totals	...	618,445	1,82,512	246,333	1,28,255	113,621	1,49,342	978,399	3,10,781

* These figures do not include the value of free issues.

† Includes 17 Map Catalogues and 1 Imperial Atlas.

9. **Map Record and Issue Office:**—The total number of departmental maps issued increased by 4,874, but the proceeds decreased by Rs. 25,427. The figures for extra-departmental maps decreased by 50,051 in issues and Rs. 12,677 in proceeds.

Two of the main contributory causes for the apparent decreases are the much smaller sums now at the disposal of the military authorities for the purchase of maps and the reduction in price from July 1928 of $\frac{1}{2}$ inch maps and the 1/2 M Layered and Political editions. The much more important reason is, however, the introduction of a new and more accurate method of calculating the results of the year's working. Hitherto the figures included large numbers of maps which had been ordered but not actually issued at the close of the financial year.

By the system now adopted the figures show only actual issues. If the calculations were based on the old method the number of copies of departmental maps issued would show an increase on book debit of 1,284, and on cash payment of no less than 16,174.

It may be noted that owing to the general reorganisation of the office, which is now being carried out, so far there has been little opportunity to concentrate upon up-to-date methods of increasing sales. In spite of this, figures for the last quarter are satisfactory.

124 new steel almirahs with a capacity of 1,736 shelves were erected during the year. With the erection of 41 more steel almirahs, in the immediate future, the modern storage accommodation for published maps will be completed. The provision of similar storage accommodation for originals and records will then be taken in hand and it is hoped to finish this work within the next two years.

A map mounting machine, of the type in use at the Ordnance Survey Office in Southampton, has been ordered from England. This machine ought to materially reduce the cost of mounting and greatly speed up the work. One of the probable results to be expected from it will be the adoption of the policy of stocking mounted maps, instead of only paper copies, as at present.

10. Stock of Maps. Calcutta. Probably for the first time, a proper and systematic stock-taking has been carried out of all published maps stored in the Map Record and Issue Office, except for certain old-style miscellaneous maps which are still being counted. With this exception the stock, as it stood on the 31st March 1929, is given in the table below.

With the introduction of a new form of ledger, the figures of the stocks in hand will be available in future at any time.

Maps.	Number of copies in stock.	Present Face Value Rs.
1/2 M Southern Asia Series	6,737	17,580
1/2 M India and Adjacent Countries	45,113	89,134
1/2 M Carte Internationale du Monde	5,656	10,866
One-inch sheets	1,063,285	16,11,212
Half inch sheets	292,043	5,90,119
Quarter inch sheets	246,574	3,82,276
General Maps of India	15,031	24,028
Provincial Maps of India	5,611	19,880
Cantonment and Town Maps	46,790	1,95,610
Miscellaneous Maps	36,891	75,142

11. Dehra Dūn.—A comparison of Table I (b) with Table IV shows that, during the year, 212,253 sheets were published, and 201,867 sheets issued. Stocks in hand have increased by 10,386 (543 new maps). The total stocks in hand in Dehra Dūn are estimated at 347,283 (including 3,820 sheets received from Calcutta).

12. Bangalore.—The stock of maps on 31st March 1929 was as follows.—

1-inch, $\frac{1}{2}$ -inch, $\frac{1}{4}$ -inch and 1/M scales 36,348 sheets, value.	Bs.	58,150
Miscellaneous maps 4,313 sheets value	... ..	7,773
Total 40,661 sheets, value	... ..	<u>65,923</u>

All have been now arranged and card indexed.

III.—WORK OF DRAWING OFFICES.

13. Tables V to VII give an abstract of new maps, reprints and new editions completed for publication and also those in hand during the year, for the whole department.

GENERAL REMARKS.

No. 1 Drawing Office.—The Engraving Office has been amalgamated with No. 1 Drawing Office and is now known as the Engraving Section of No. 1 Drawing Office. The Copper Plate Printing Section of the Engraving Office has been transferred to the Photo-Litho. Office.

All work had to be temporarily stopped in the Imperial Standard Mapping Section, and the section is employed on the preparation of 1-inch mosaics, by pentagraphic reduction from 16-inch cadastral material, for the Eastern Circle.

No. 4 Drawing Office.—The 16 sheets of Bangalore Civil and Military station, scale 16 inches to one mile, were brought up to date by No. 6 Party and the new edition of 3,180 copies printed and published in the Photo Ziucco section.

No. 5 Drawing Office.—During the latter half of July 1928, this office moved into the new survey offices on the "Bonnie Brae" estate, purchased by the Government of India.

No. 6 Drawing Office.—*Survey Section.*—The following work was carried out in addition to that shown in Table III.

Much miscellaneous Index mapping was carried out in addition to the preparation of a Krab Index Volume of all original plane-tables of the Circle. A guide for the preparation of the proposed Modified British Grid was prepared and specimen sheets on various scale with the modified grid were submitted.

Army Section—was employed in the preparation of maps and plans for the Army and various Government Departments. Details of this work will be found in the confidential supplement 1928-29.

III.—WORK OF DRAWING OFFICES, (1928-29)

Table VII.—Re-issues

Reprints,—No changes in map. New editions,—Slight alterations. Revised editions,—Considerable changes.

	MODERN MAPS INCLUDING PRELIMINARY EDITIONS.								OLD-STYLE INCLUDING PROVINCIAL ISSUES.			GENERAL AND SPECIAL.								
	TOPOGRAPHICAL.				GEOGRAPHICAL.				1-inch.	3-inch.	4-inch.	Dis-TRICT.	RAIL-WAY.	INDIA.	FOREST.	MISCELLANEOUS.				
	2-inch.	1-inch.	3/4-inch.	4-inch.	1/M. Heliog.	1/M. En-graved.	1 M. Carte Internationale.	1/2 M.								4-inch.	67-mile.	Variou.	2-inch and 4-inch.	Province Maps.	Cannt. 8 inch, 12 inch, 16 inch, 24 inch.	Guide Map.	Variou.
No. 1 Drawing Office																				
Reprints	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
New editions	67	18	27	4	16	...	...	73	...	28	1	1	5(a)	...	...	3	...	2	1(b)
Revised	1	...	...	...	...	...	...	...	...	1	...	...	...
No. 2 Drawing Office																				
New editions	8(c)	...	...	...	1(c)	1(c)	...	1	...	...	...	...	...	...	...	...	...	...
Revised	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 3 Drawing Office																				
New editions
Revised	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 4 Drawing Office																				
New editions
Revised	5	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	...	...
No. 6 Drawing Office																				
New editions	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Revised	1	1	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 7 Drawing Office																				
New editions	2	...	...	...	...	...
Revised
Frontier Circle Parties																				
New editions	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Revised
Forest & Cantonment Office																				
Reprints	27	...	101	...	...	...
New editions	17	...	12	...	...	...
Revised	21	...	16	...	...	...
Totals	89	30	37	8	19	1	3	73	1	28	1	1	5	67	4	145	2	1	

Remarks.

<p>Scales: 2-inch means 2 inches to 1 mile.</p> <p>2-mile ... 1 inch to 2 miles.</p> <p>1/M means 1:1,000,000 or 1/314 inches to 16 miles.</p> <p>1/2M ... 1:2,000,000 or 1/614 ... 32 ...</p>	<p>(a) 32 mile India in 12 sections.</p> <p>64 .. India in 4 sections.</p> <p>128 .. India with hills.</p> <p>128 .. India without hills.</p> <p>196 .. India.</p> <p>(b) Plane-tables' booklet of Conventional Signs.</p> <p>(c) Originals corrected against office copies for transfer to War Office, London.</p>
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IV.—PRINTING AND MISCELLANEOUS

14. **The Photo.-Litho. Office, Calcutta.**—The following Tables show the cost and out-turn of the Photo.-Litho. Office and the independent out-turn of the Process Engraving Section and of the Type Section in letter-press work.

The figure which gives the truest idea of the amount of work carried out is the number of impressions pulled in the Litho. Branch. This stands at 4,408,171 for the year under report, a figure which has only once been surpassed in the history of the office: this was during the war in 1917-18 when it rose to 4,796,813.

Though the number of departmental maps printed is less than that of last year, this is more than made up by the number of extra-departmental maps, the combined total being 3,161 as against 2,486 last year.

A new platen type-printing machine was received and erected during the year in the place of an old one which was condemned and sold.

A small stereotyping plant has been received and taken into use during the year. This will enable the type locked up in the shape of office forms etc. to be distributed and used on other jobs and will effect a considerable saving in storage space. Full use cannot yet be made of this plant as only one bed-plate for use with these stereo-plates has been received. More are now being indented for.

The new building for the Stores Section was completed during the year and fitted with steel shelving. Most of the stores have now been moved into the new building.

A notable economy in the use of collodion has been effected by Mr. C. F. Oddy, Manager, Photo., in "rationing" the amount of collodion to be used in coating according to the size of the glass. This has had the effect of equalising the cost rate for chemicals from month to month, and has effected a saving to Government estimated at Rs. 2,600 per annum, for which Mr. Oddy received the thanks of the Surveyor General.

COST AND OUT-TURN OF PHOTO.-LITHO. OFFICE.

Expenditure.	Value of out-turn at office rates.	Negatives prepared.	Zinc plates prepared.	MAPS PRINTED.		Impressions pulled.
				Departmental.	Extra-departmental.	
Rs. 4,60,338	Rs. 5,68,207	Collodion 4,841 Powder 2,599 <hr/> 7,440	7,728	787	2,394	4,408,171

**INDEPENDENT OUT-TURN OF THE PROCESS ENGRAVING AND
TYPE PRINTING SECTIONS.**

PROCESS ENGRAVING SECTION.					TYPE PRINTING SECTION.		
HALF-TONE WORK.		LINE WORK.		PHOTO- GRAVURES.	Items or pages published.	Copies printed.	Impressions pulled.
Blocks prepared.	Impres- sions pulled.	Blocks prepared.	Impres- sions pulled.	Plates prepared.			
432	140,496	57	181,553	8	2,660	991,910	1,844,766

Copper-plate printing.—

The out-turn of this section was 17,649 impressions consisting of 60 of scales, 15 miscellaneous and 25 photogravure impressions, the out-turn of the section being thus more than double that of last year.

15. The Printing and Photo-Zinco Sections, Dehra Dūn.—The following machines have been received and all of them, excepting the last two named, have been installed.

- (a) A Ruling Machine by Messrs. Harrild & Sons, London, 24 inches wide.
- (b) An Automatic Wire Stitching Machine—No. 4 A (New Style) for foot and power.
- (c) A Litho Hand Press by Ratcliff & Sons, Leeds, capable of taking a zinc plate 45" x 38".
- (d) A Rotary Offset Machine by Messrs. George Mann & Co., Leeds.
- (e) A Rotary Offset Machine by Messrs. George Mann & Co., Leeds. No room available at present in which to erect this machine.
- (f) A Double Demy Offset Duplicating and Reversing Press by Messrs. George Mann & Co., Leeds—fitted for hand and power. Has been partially erected.

The oil engine, which was installed early in 1907 to supply power for the litho printing machinery, has been replaced by a 15 h.p. motor. The running costs of the oil engine averaged Rs. 125 per mensem, whereas those of the motor are about Rs. 20 per mensem. The oil engine was sold by public auction for Rs. 700.

16. No. 16 (Publication and Stores) Party, Dehra Dūn.—No 16 Party continued to function as reorganized; there was no departure from the normal programme of work carried out by various sections.

Photo-Zinco Office.—Details of work given in Table I (b).

Letterpress Printing Section.—Details of work given in Table III(c) & (d). Binding of all records for library and Geodetic Branch, Parties and Offices was carried out.

Stores and Workshop Sections.—Petty construction and repairs of buildings and furniture, maintenance of technical and camp stores for all Parties and Offices of the Geodetic Branch, cases of maps and publications despatched, and all stores received for the Geodetic Branch Offices distributed.

17. Bangalore.—In addition to the work shown in Table I (c), the Photo-Zinco section of No. 4 Drawing office, Bangalore, reproduced 381 plane-table sections for parties. It also prepared 488 vandyke plates. The total number of pulls in the hand presses was 17,517.

18. No. 18 (Air Survey) Party.—The imperial size hand press was taken to Murree for the recess of 1928.

A double elephant hand press was received from Dehra Dūn in October and both this and the imperial press were set up in Peshāwar for the cold weather 1928-29.

Sufficient work has been received to keep the section fully employed all the year.

It has been proved that the Chase's pattern portable press is totally unsuitable for any continual use.

A new portable press for this party arrived in India in 1928 but it is still in M. I. O. where the work of packing the press, in suitable loads for pack transport, is being carried out.

The section attended Northern Command Manœuvres in November 1928, where it was employed in printing situation maps. Valuable experience was gained as the section had to work against time.

The majority of the work of the section has been the reproduction of maps and diagrams for the local military head-quarters.

Various forms have also been printed for Survey units in Frontier Circle.

The following is a summary of the work of the section:—

Reproductions of originals received	...	...	80
Vandyke plates prepared	...	...	114
Prints pulled	...	...	22,198

19. "E" Company, Quetta.—The reproduction section has been fully occupied throughout the year, almost entirely on payment work. The majority of the work has been reproduction in black only, but several maps to illustrate lectures etc., have been printed in 3 or 4 colours. By drawing each successive colour original on a blue print or combined blue print from the plate or plates already made, very good registration has been obtained. Bank-post and rag-litho paper have been found most suitable for originals where several colours are required.

Reproductions of original received:—

In one colour	...	...	829
In two colours	...	...	28
In three colours	...	...	17
In four colours	...	...	1
		TOTAL	878

Vandyke plates prepared	...	...	278
Prints pulled	...	...	14,084

V.—MATHEMATICAL INSTRUMENT OFFICE

20. At the request of the Director of Artillery, A.H.Q., India, Simla, the Surveyor General of India directed Mr. R. C. Malcolm, the Senior Assistant Superintendent, Mathematical Instrument Office in October 1928 to inspect and report on the Kirkee Arsenal Workshop as to its equipment, efficiency of the personnel &c. &c.

(b) At the request of the Chief Ordnance Officer, Allahābād and the Superintendent Cordite Factory, Aruvankadu, Nilgiris, the Staff Sergt. F. L. Greenaway, R.A.O.C., and Mr. A. Y. Krishna Iyer were given training—the former in the methods of repairing the instruments used by the Army in India and the latter in the rudiments of glass-blowing.

(c) Discussions on matters relative to the supply, repair, inspection and improvements of instruments used by the Army in India, were held in August 1928 with Brigadier W. R. Paul, C.B.E., Director of Artillery and Lt.-Col. J. Morrison, and in February 1929 with Lt.-Col. G. M. Routh, C.B.E., Chief Ordnance Officer, Rāwalpindi and Lt.-Col. W. S. Beamish, Assistant Director of Equipment and Ordnance Stores (P).

(d) Mr. A. B. Reid, the Joint Secretary, Department of Education, Health & Lands, Government of India, visited the Mathematical Instrument Office on the 29th December 1928.

(e) The Director of Contracts, M. G. S. Branch, A.H.Q. India offered his thanks for the great assistance rendered by the Mathematical Instrument Office in disposing of, at very favourable prices, a large number of unserviceable and condemned binoculars, telescopes &c. on behalf of the "Disposal Organization".

(f) The stock-taking of the serviceable and repairable instrument stores, as well as of the material store, was carried out twice during the year as usual and the accounts for the year 1927-28 were audited by the staff of the Examiner, Outside Audit, as well as by the Commercial Audit Branch of the Government of India.

(g) The old electrical installation in the Mathematical Instrument Office was replaced by an up-to-date system under the supervision of the P.W.D. Bengal Electrical Branch.

(h) Repairs of optical instruments for the Army have been very satisfactory; the approximate quantity of out-turn of the principle instruments is given below:—

2,700 binoculars of sorts, 150 telescopes of sorts, 220 sight dials,
320 range-finders, 70 directors, 870 watches of sorts, &c.

Besides the ordinary manufacture and repairs the following works were specially undertaken—

The manufacture of:—11 radial line rulers, special glass and metal protractors, an instrument for the determination of angles, a special design of roller pen and 1 co-ordinatograph for the Air Survey work; 2 glass straight edges 18" for the East Indian Railway; centrifugal apparatus for the Calcutta School of Tropical Medicine and Hygiene; 12 compressometer mirrors for the Forest Research Institute, Dehra Dūn; a special attachment for Raux Syringe Spleen puncture

for the Lawrance Royal Military School, Sanāwar; an Ampoule filler and a vacuum chamber for the Public Health Laboratory, Bengal; special vernier scales for the Executive Engineers 1st and 2nd Calcutta Divisions, P.W.D.; hygrometers for Indian Cotton Mills; special traverse staves for the Geodetic Branch of the Survey of India, an apparatus for the forcible feeding of mosquitoes in connection with the kala-azar research. Successful experiments have been made in glass etching, which has facilitated the graticuling of military binoculars and greatly increased the output; and repairs of:—110 microscopes both for the military and civil medical departments.

(i) Experiments are being carried out with a book-keeping machine for ledger entries, which has been kindly lent by the Remington Typewriter Co.

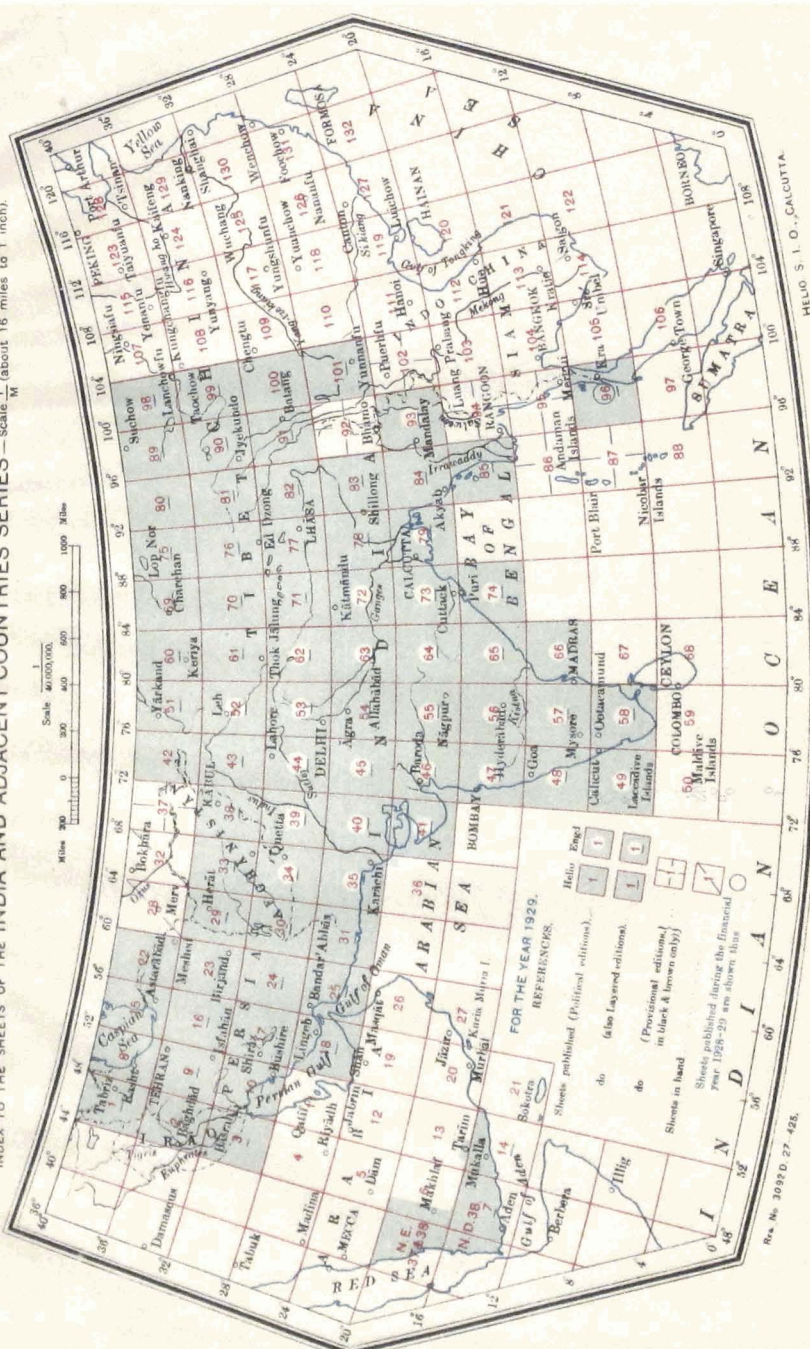
(ii) The following comparative table shows a slight decrease in the demands on this office for the supply of instruments but an appreciable increase of about 58 and 43 per cent in the repair work and the total workshop out-turn respectively. *vide* items (1), (2) and (6).

	1926-27.	1927-28.	1928-29.
	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
1. Total value of stores issued ...	5,17,410	5,60,829	5,39,308
2. " " " repairs carried out to orders ...	1,40,144	1,54,092	2,44,069
3. " " " instruments &c. returned to store ...	99,369	65,786	32,356
4. <i>Book value of stock in—</i>			
(a) Serviceable store ...	2,48,669	2,87,839	3,09,675
(b) Repairable " ...	80,559	97,799	96,260
(c) Material " ...	1,94,132	2,01,072	2,02,647
5. <i>Value of new instruments—</i>			
(a) Manufactured in workshops ...	2,40,642	2,88,260	1,90,821
(b) Purchased locally ...	88,016	98,979	46,893
(c) Imported through the Stores Department, London ...	1,82,919	2,47,877	2,20,878
6. Total Value of work done in the workshop ...	4,71,518	4,08,665	5,76,546
7. Value obtained by sale of obsolescent and condemned stores ...	474	367	1,980
8. <i>Employees—</i>			
(a) Average number ...	458	461	480
(b) Cost of employees including pension contribution ...	1,70,980	1,78,572	1,93,538

INDEX MAPS

1. Maps published on scales 1 inch and $\frac{1}{2}$ inch to 1 mile ... *Frontispiece.*
2. The Southern Asia Series, scale 1/2 M. (about 82 miles to 1 inch). At End.
3. The India and Adjacent Countries Series, scale 1/M (about 16 miles to 1 inch).
4. Carte Internationale du Monde on the scale of 1/M
5. Maps published on scales $\frac{1}{4}$ inch and $\frac{1}{8}$ inch to 1 mile

INDEX TO THE SHEETS OF THE INDIA AND ADJACENT COUNTRIES SERIES — Scale $\frac{1}{M}$ (about 16 miles to 1 inch).



FOR THE YEAR 1929.
REFERENCES.

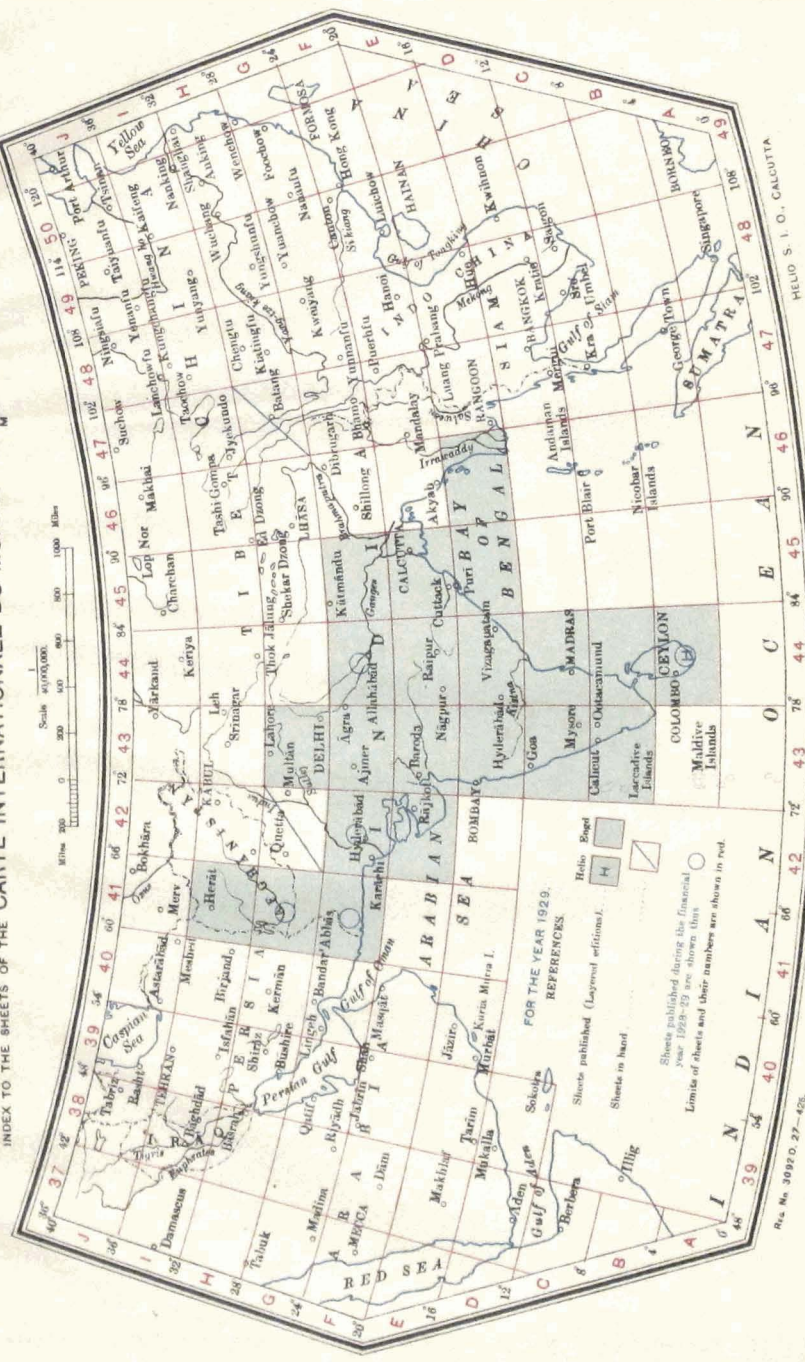
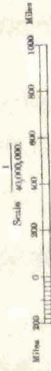
Sheets published (Political editions).	Holly, Engl	1	1
do	(see Layard editions).	1	1
do	(Provisional editions, in black & brown only).	1	1
Sheets in hand		1	1

Sheets published during the financial year 1928-29 are shown thus

REV. No. 3097 D 27 425.

HELIO S. I. O., CALCUTTA

INDEX TO THE SHEETS OF THE CARTE INTERNATIONALE DU MONDE — Scale 1 about 16 miles to 1 inch



FOR THE YEAR 1929.
REFERENCES

- Shets published (Layout editions).
- Shets in hand
- Shets published during the financial year 1928-29 are shown thus
- Limits of sheets and their numbers are shown in red.

Scale 1:12,000,000

Miles 100 0 100 200 300 400 500 600 700 800 900 Miles

THE 1/4 SERIES forms the basis of numbering for sheets on all scales. It consists of sheets 4-4 on the scale of 1:1,000,000, whose numbers are shown on the Index thus:—

QUARTER-INCH SHEETS—Each 1/4 sheet is divided into 16 sheets of scale quarter-inch to one mile, lettered A-Z as shown on the Index. The name of each quarter-inch sheet is therefore written thus—55.K

PUBLICATIONS up to 31st March 1929, on QUARTER-INCH and 1/8 INCH scales.

REFERENCES

- In modern style based on modern surveys.
- Data also available in hybrid editions.
- Preliminary editions, in modern style, but based partly on old or sketchy materials.
- Provisional, in black only, old and inferior.

SCALE 1/8 INCH TO ONE MILE

NEW MAPS (including revised editions).

Published during the financial year 1928-29, 1/8 inch 1/4 inch, do. do. do.

N A O

SURVEY CIRCLES
(boundaries shown in blue)

Director Frontier Circle, Simla
Central " Bangalore
Southern " Shillong
Eastern " Mayayo
Burma " Branch Dehra Dun
Map Publication, Calcutta
Assistant Surveyor General, Calcutta

MAPS PUBLISHED

on scales of 1/4 inch and 1/8 inch to one mile.

SURVEY OF INDIA

MAPS PUBLISHED

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