SURVEY OF INDIA



PROFESSIONAL PAPER NO. 21.

IRRIGATION AND SETTLEMENT SURVEYS 1926

BY

MAJOR J. D. CAMPBELL, D.S.O., R.E.

PUBLISHED BY ORDER OF COLONEL COMMANDANT E. A. TANDY, R.E. SURVEYOR GENERAL OF INDIA.

> PRINTED AT THE GEODETIC BRANCH OFFICE, SURVEY OF INDIA, DEHRA DUN, 1927.

Price One rupee eight annas or two shillings and six pence.

PROFESSIONAL PAPER NO. 21.

IRRIGATION AND SETTLEMENT SURVEYS 1926

BY

Major J. D. Campbell, D.S.O., R.E.

Survey of India

•

CONTENTS

.

List of Plates Introduction	• • •••		····	Page iii v
	SE	CTION I		1-4
ATTE	NDANT OPE OBY · OF W	CTANGULATIO RATIONS, WI OBK IN TH	TH A BRIEF HE PUNJAB	5-11
DECI	VEY OF IN	CONSIDERAT BEN THE DEPARTMEN DIA, BEFORE E SCHEME	IRRIGATION TS AND THE	
Rectangulation	•••	•••	•••	5
Levelling		•••	•••	7
Detail survey	•••		•••	8 9
Printing	•••	•••	•••	9 10
Programme	•••		•••	10
	SEC	TION II	Ľ	12-15
PRELIMIN	NARY WORK	PRIOR TO TA	AKING THE F	ELD
General			•••	12
Rectangulation	ı	•••	•••	12
Levelling		•••	•••	18
Detail survey		•••		14
	SEC	CTION IN	7	16-80
	Мет	HOD OF WOR	ĸ	
Rectangulation	n			. 16
Levelling	•••	•••	•••	21
Detail survey		•••	•••	25
Recess work		•••	· • • •	28
Fair drawing	and reprodu	iction	· •••	· 80

i

		,
		Page
SECTION	v	31-34

ORGANIZATION AND PERSONNEL

General				31
Rectangulation	party	•••		31
Levelling		·	•••	33
Detail survey		•••	•••	34
Fair drawing of	f level and	contour sheet	ts`	34
Map reproducti	on	•••		34
	SE(TION VI		85-36

OUTTURN AND COST RATES

<u>'_____</u>

LIST OF PLATES

Description			· ·	Plate No.
Block diagrams			• • •	I
Diagrams showing altern	native metho	ods of numb	ering	
stones		• •		IIa, IIb, IIc.
Index plan	• • •		•••	III
Diagram of triangulation	n		•••	IV
Partal and work khakas	•••		• • •	V .
Tables of corrections to l	be applied w	hen adjustin	g closin	
error			•••	- VI
Diagram showing ladder,	signal and	stone	• • •	VII
Diagram showing levelli	ng circuits i	n the Sutlej	Valley	VIII
Alternative block levellin	ng circuits	•••	•••	IXa, IXb.
Diagram showing positio	ons of levels	•••		X
Diagram showing grids			rts	XI
Specimen page of level b	ook	- •••	•••	XII
Form for adjustment of	block circuit	ts for tertiar	y double	3
levelling	•••	•••	• •	XIII
Form for recording tertia	ry levelling	5		XIV
Leveller's diary form		•••	•••	$\mathbf{X}\mathbf{V}$
Diagram showing interre	d bench ma	rk, type B	•••	XVI
Specimen contour & leve	l sheet with	out detail	•••	XVII
Combined sheets as appro	oved for the	Haveli Proje	et XV	III a, XVIII b.
Specimen combined deta	il & contour	sheet (Sutle	j Valley) XIX
Specimen of special surv				XX
Specimen 1 inch sheet, r	-	••••		XXI
Specimen 1 inch sheet, r		hotography	• • •	XXII
•	<i>•</i> 1	•		

INTRODUCTION

The object of this report is to place on record the survey work which has been carried out in recent years in connection with Irrigation Projects in the Punjab. It is intended to serve as a guide both to irrigation engineers and to survey officers, when initiating such work in the future. Section I & II deal with preliminary considerations and will be of interest to the Irrigation and Revenue Departments as well as to the Survey of India. Sections III to VI are devoted to methods of work, outturn to be expected and cost rates. Only new methods have been dealt with, which fall outside the normal work of the Survey of India Department, as everything pertaining to the latter is fully described in other professional publications.