

**THE ROAD-MASTER'S ASSISTANT AND  
SECTION-MASTER'S GUIDE: A  
MANUAL OF REFERENCE FOR ALL  
HAVING TO DO WITH THE PERMANENT  
WAY OF AMERICAN RAILROADS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649694303

The Road-Master's Assistant and Section-Master's Guide: A Manual of Reference for All Having to Do with the Permanent Way of American Railroads by William S. Huntington

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.  
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

[www.triestepublishing.com](http://www.triestepublishing.com)

**WILLIAM S. HUNTINGTON**

**THE ROAD-MASTER'S ASSISTANT AND  
SECTION-MASTER'S GUIDE: A  
MANUAL OF REFERENCE FOR ALL  
HAVING TO DO WITH THE PERMANENT  
WAY OF AMERICAN RAILROADS**



---

THE  
ROAD-MASTER'S ASSISTANT

AND

*Section-Master's Guide,*

A MANUAL OF REFERENCE FOR ALL HAVING TO DO WITH  
THE PERMANENT WAY OF

AMERICAN RAILROADS,

Containing the Best Results of Experience and Minute  
Directions for Track-Laying, Ballasting and  
Keeping the Track in Good Repair.

BY

WILLIAM S. HUNTINGTON.

---

*Second Edition.*

---

NEW YORK:  
A. N. KELLOGG & CO., 72 BROADWAY.  
1872.

Eng 838.72

JUN 20 1917  
TRANSFERRED TO  
MONTANA COLLEGE LIBRARY

17.11

---

Entered according to Act of Congress, in the year 1872, by  
A. N. KELLOGG & CO.,  
In the Office of the Librarian of Congress at Washington.

---

---

CLARK W. BRYAN & CO., PRINTERS,  
SPRINGFIELD, MASS.

## PREFACE.

---

THE object in offering this little volume to the railroad public is to correct, as far as possible, certain erroneous practices into which track-layers and section-men have fallen, which practices are fatal to the life of track and rolling stock.

With the introduction of the "T" rail in this country a certain method of laying track was adopted, and, with few exceptions, has been adhered to until the present day, and so with track repairs. It may be said that track-men "fell into a groove" thirty years ago, and are still following it, to the great detriment of railroad shareholders and of the public at large.

The enormous expense of track repairs and the liability to accident may be greatly reduced by a reform in the every-day practice of the track-layer and section-master; and the manner in which this may be accomplished is set forth in this work as clearly and briefly as possible. It would not be a difficult matter to fill a volume of several times the size of this on the subjects herein embraced, but the author believes

that the information here given will be more acceptable in its present form—"in a nut-shell"—than if occupying unnecessary space for the purpose of making a *big book*. It is not forgotten that several books have been published, bearing on the same topics; but they are mainly of a technical nature, and not adapted to the wants or capacities of the average *track-man*, and are of little value to other than professional engineers.

The author has undertaken to make this a *practical book for practical men*, and the ideas herein presented are the result of upward of a quarter of a century's experience and extended observation in various capacities, on some of the *best* as well as some of the *worst* managed railroads in the country.

It is not designed to "upset" any *well established theory*, nor is it expected to introduce ideas entirely new to every one who may read these pages; but it is confidently hoped that the great mass of *track-men* will here find suggestions that will be valuable to them, and far more so to their employers.

The author has, in the course of his experience, demonstrated the truth of all the statements made herein by actual experiment and practice, and may, therefore, commend them to his readers as more valuable than conclusions which are only "jumped at," or opinions formed without mature consideration.

W. S. H.

BYRON, MICH., *April*, 1871.



## CONTENTS.

---

### CHAPTER I.—TRACK-LAYING.

	PAGE.
Careless Work . . . . .	11
Cross-Ties . . . . .	12
Laying Ties . . . . .	14
“Sighting in Ties” . . . . .	15
Measuring off for Joint-Ties . . . . .	18
Laying Ties on Bridges, Trestle Work, etc. . . . .	20
The Selection of Ties . . . . .	21

### CHAPTER II.—LAYING THE RAILS.

Careless Handling . . . . .	23
Curving Iron . . . . .	23
Laying Iron on Curves . . . . .	24
Expansion of Iron . . . . .	25
Care in Replacing Repaired Iron . . . . .	27
Shims between Rails . . . . .	27
Suspension Joints . . . . .	29
Creeping Track . . . . .	29
The “Plug Chair” . . . . .	29
An Invention Wanted . . . . .	30

### CHAPTER III.—ABOUT SPIKES.

Hasty and Careless Spiking . . . . .	31
Spiking Joints . . . . .	33
Preservation of the Gauge . . . . .	33

	PAGE.
The Inner Rail "running ahead" on Curves . . . . .	33
Oscillation of Carriages . . . . .	34
Gauge Concussion . . . . .	35
Spiking on Bridges, Culverts, etc. . . . .	37
Waste of Rail-Plates . . . . .	38

#### CHAPTER IV.—CATTLE-GUARDS, CULVERTS AND TURN-OUTS.

Cattle-Guards often Mere Traps . . . . .	39
Their Proper Construction . . . . .	40
Laying Iron on Cattle-Guards, Culverts and Road- Crossings. . . . .	40
Laying Turn-Outs . . . . .	42
Locating Frogs . . . . .	42
Double Turn-Outs . . . . .	43
Curving Iron among Frogs . . . . .	46
Curving and Placing Guard-Rails . . . . .	47
The "Hammer Rule" and the Correct Rule . . . . .	48
Tie-Rods . . . . .	49
A Few Words on Home and Foreign Roads . . . . .	50

#### CHAPTER V.—ON BALLASTING TRACK.

Waste of Gravel . . . . .	51
Saving Property before Ballasting . . . . .	53
Good Ballast . . . . .	53
Raising Track for Ballasting . . . . .	54
Tamping . . . . .	54
Filling up and Dressing off Track . . . . .	55
Economical Ballasting . . . . .	58
Insufficient Ballast—Sags . . . . .	59
The Elevation at Curves . . . . .	60

#### CHAPTER VI.—TRACK REPAIRS.

Methods Unchanged for a Quarter of a Century . . . . .	62
Cheap Section-Masters . . . . .	63

## CONTENTS.

vii

	PAGE.
Surfacing Track . . . . .	65
Lining Track . . . . .	66
Lining Track in Frosty Localities . . . . .	67
Clearing out Ditches, Culverts, etc. . . . .	68
Dimensions of Culverts . . . . .	70
"Kinks" in Rails . . . . .	71
Preserving True Gauge . . . . .	72
Caring for Bridges and Trestle Work . . . . .	72
Bridges Should be Planked for Foot Passengers . . . . .	73

## CHAPTER VII.—DRAWING SPIKES—SHIMMING.

Waste in Spike-Drawing . . . . .	75
Claw-Bars . . . . .	76
Spike-Drawing in Winter . . . . .	76
Shimming the Track . . . . .	78
Shims often ill-made and of bad material . . . . .	79
When Shimming should be done . . . . .	80
When Shims should be removed . . . . .	80
The Manufacture of Shims . . . . .	82
Shimming under Ties on Open Culverts, Trestle Work, etc. . . . .	83
The Action of Frost . . . . .	85
Danger from Planks at Road-Crossings . . . . .	85
Wood-Files . . . . .	86

CHAPTER VIII.—REPAIRING SWITCHES,  
FROGS, ETC.

Bent Switch-Rods . . . . .	87
Adjusting the Throw of Switches . . . . .	87
Connecting Rods . . . . .	88
Cast-Steel Plate and Rail Frogs . . . . .	88
Fastening Guard-Rails . . . . .	89
Short Guard-Rails . . . . .	90
Useless Tinkering . . . . .	91