# Contents

- **List of Maps** ix
- **Acknowledgments** xi

**Introduction: Masters and Mechanics** 1

## Part II  The Education and Management Gap: Schooling, Business, and Culture in Mid-Nineteenth-Century America

1. **Common School Reform and Science Education** 2

2. **Mechanics’ Institutes and Agricultural Fairs: Transmitting Knowledge and Information in Antebellum America** 3

3. **Building the Railroads: Early Development of the Modern Management System** 4

## Part II  Skills Go to War

4. **Wanted: Volunteer Engineers** 5

5. **Early Successes and Failures: Fort Henry and Fort Donelson, Island No. 10, and Middle Tennessee** 6

6. **McClellan Tests His Engineers: The Peninsula Campaign, 1862** 7

7. **The Birth of the United States Military Railroad: Thomas Scott, Daniel McCallum, and Herman Haupt** 8

8. **Summer–Fall 1862: Maryland, Kentucky, and Tennessee** 9
CONTENTS

PART III  APPLIED ENGINEERING  000

9  Vicksburg  000
10  Gettysburg  000
11  Chattanooga  000
12  The Red River and Petersburg  000
13  Atlanta and the Carolina Campaigns  000

Conclusion: Know-How Triumphant  000

Notes  000
Essay on Sources  000
Index  000
Maps

1. The Engineers Bypass Island No. 10
2. Union Bridging during the Peninsula Campaign, 1862
3. Vicksburg Operational Area, Spring 1863
4. Yazoo Pass, Steele’s Bayou, and Lake Providence Operations
5. Grant Crosses the Mississippi and the Engineers Open a Supply Line
6. Engineers, Pioneers, and Infantry Build Four Bridges over the Big Black River
7. Union and Confederate Troop Movements for the Chickamauga and Chattanooga Campaigns
8. The Cracker Line at Chattanooga
9. Crossing the James River, June 1864
10. Sherman’s Supply Line during the Atlanta Campaign