THE ADVANCED STRATEGY GUIDE TO

MINECRAFT™

que

STEPHEN O'BRIEN

FREE SAMPLE CHAPTER

SHARE WITH OTHERS

THE ADVANCED STRATEGY GUIDE TO MINECRAFT

Stephen O'Brien

que®

800 East 96th Street,
Indianapolis, Indiana 46240 USA

The Advanced Strategy Guide to Minecraft

Copyright © 2015 by Que Publishing

All rights reserved. No part of this book shall be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission from the publisher. No patent liability is assumed with respect to the use of the information contained herein. Although every precaution has been taken in the preparation of this book, the publisher and author assume no responsibility for errors or omissions. Nor is any liability assumed for damages resulting from the use of the information contained herein.

ISBN-13: 978-0-7897-5356-4

ISBN-10: 0-7897-5356-1

Library of Congress Control Number: 2014952295

Printed in the United States of America

First Printing October 2014

Trademarks

All terms mentioned in this book that are known to be trademarks or service marks have been appropriately capitalized. Que Publishing cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark or service mark.

Minecraft is a trademark of Notch Development AB.

Warning and Disclaimer

Every effort has been made to make this book as complete and as accurate as possible, but no warranty or fitness is implied. The information provided is on an "as is" basis. The author and the publisher shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this book.

Special Sales

For information about buying this title in bulk quantities, or for special sales opportunities (which may include electronic versions; custom cover designs; and content particular to your business, training goals, marketing focus, or branding interests), please contact our corporate sales department at corpsales@pearsoned.com or (800) 382-3419.

For government sales inquiries, please contact governmentsales@pearsoned.com.

For questions about sales outside the U.S., please contact international@pearsoned.com.

Editor-in-Chief
Greg Wiegand

Executive Editor
Rick Kughen

Development Editor
Rick Kughen

Managing Editor
Sandra Schroeder

Project Editor
Seth Kerney

Copy Editor
Bart Reed

Indexer
Cheryl Lenser

Proofreader
Jess DeGabriele

Technical Editor
Timothy L. Warner

Publishing Coordinator
Kristen Watterson

Book Designer
Mark Shirar

Compositor
Jake McFarland

Contents At a Glance

Introduction 1

CHAPTER 1 Getting Started 5

CHAPTER 2 Automated Produce Farms 23

CHAPTER 3 Mining and Ore Generators 53

CHAPTER 4 Mob Farms, Traps, and Defense 67

CHAPTER 5 Advanced Construction 95

CHAPTER 6 More Power to You 131

CHAPTER 7 Empire Building with BuildCraft 155

CHAPTER 8 Titans of IndustrialCraft 181

CHAPTER 9 Rolling Stock with Railcraft 205

CHAPTER 10 Recording and Sharing 219

CHAPTER 11 Building Your Own Adventure 237

Index 257

Table of Contents

Introduction 1

Become a *Minecraft* Expert! 2

What's in This Book 2

How to Use This Book 3

Chapter 1 Getting Started 5

Managing *Minecraft* 5

Launch Control 6

Mod Management 10

Custom Launchers 11

Adding Mods to MultiMC 15

Modpack Installers 20

The Bottom Line 22

Chapter 2 Automated Produce Farms 23

Make Mine a BUD 24

Automated Cane Farms 27

Automated Collection and Transport 32

Automated Pumpkin and Melon Farms 36

Automated Wheat, Potato, and Carrot Farms 44

Automated Sorting 47

The Bottom Line 51

Chapter 3 Mining and Ore Generators 53

Creating Cobblestone 53

Creating Stone 59

Obsidian Generator 61

The Bottom Line 65

Chapter 4 Mob Farms, Traps, and Defense 67

Evil Mob Farms 67

Spawning Mob Mayhem 68

Building a Water-Based Mob Farm 70

Grinding Mobs and Collecting Drops 73

Dastardly Mob Traps 82
Treacherous Trenches 82
Killer Cactus 84
Indispensible Dispensers 87
Pulverizing Pistons 91
The Bottom Line 93
Chapter 5 Advanced Construction 95
Choosing a Building Style 96
Medieval Style 96
Up Go the Walls! 98
If You Like It, Put a Roof on It! 100
Victorian Style 101
Pitched Roof 102
Complex Roof 104
Japanese Style Building 106
Modern and Suburban Styles 108
Residential Roads 110
Viking Style 111
Egyptian/Desert Style 113
Steampunk Style 114
Elven/Fairy Style 115
Build an Igloo 116
Advanced Decoration Techniques 118
Creating Natural Terrain and Trees 122
Drawing 2D Pixel Art 123
Sculpting a 3D Statue 124
Creating Spheres, Circles, and Arches 127
Building in the Nether and End Regions 129
The Bottom Line 130
Chapter 6 More Power to You 131
Combination Lock 131
Minecart Switches 140
Project:Red 142

Automating a Pumpkin Farm 144
What Else Can Project:Red Do? 148
Core 148
Integration 148
Transmission 150
Transportation 152
The Bottom Line 152
Chapter 7 Empire Building with BuildCraft 155
BuildCraft Core Concepts 155
Pipe Dreams 157
Engines 162
Creating a Power Station 163
Mining Wells 165
Managing Combustion Engines 167
Refining Oil 171
Automated Quarries 172
Blueprints, Building, and Templates 175
More BuildCraft 178
The Bottom Line 179
Chapter 8 Titans of IndustrialCraft 181
IC2E Core Concepts 181
Agricultural Pursuits 183
Crossbreeding Guide 185
Strip Farming for Profit 186
Square Farm Dancing 189
Using the Cropnalyzer 190
Improving Growth with a Crop-Matron 192
IC2E Armor, Weapons, and Tools 193
Generating Energy Units (EU) 195
Mining, Macerating, and More 197
Automated Mining 197
Macerators and More 198
Going Thermonuclear 199
The Bottom Line 202

Chapter 9 Rolling with Railcraft 205

Getting Started 206

Creating Standard Track 208

Reinforced Tracks 212

Boring, Not So 213

Undercutting the Competition 216

More Mods 216

Galacticraft 216

Forestry 217

ComputerCraft 217

The Bottom Line 217

Chapter 10 Recording and Sharing 219

Choosing the Right Software 220

FRAPS for Windows (License Approximately $40) 221

Bandicam for Windows (License Approx. $39) 221

QuickTime Player for Mac (Free with OS X) 222

Hardware Recording Devices 224

AVerMedia's Live Gamer Portable (RRP $169) 224

Elgato Game Capture HD Recorder (RRP $199) 224

Plotting Camera Paths and Animation 224

Recording Using Camera Studio 227

Overlaying Audio and Titles 227

Editing with iMovie—OS X (RRP $18.99) 227

Titles 228

Adding Audio to Your Movie 229

Exporting Your Completed Movie 230

Editing with Windows Movie Maker—Windows (Free Download) 230

Titling 230

Adding Audio to Your Video 231

Exporting Your Completed Video 231

Publishing to YouTube and Vimeo 231

Uploading Your Video 232

Basic Info 233

The Bottom Line 235

Chapter 11 Building Your Own Adventure 237

Adventure Mode 238

Initial Planning and Implementation 239

So, What's Your Story? 239

Mastering Command Blocks 240

Breaking Down the Command String 241

Selectors 242

Commands 242

Specifiers 245

Teleporting to a Central Point 245

Using `effect` *Commands 246*

Rewarding Players 248

The Comparator 248

The `tellraw` Command 249

World-Editing Tools and Helpers (Map the Middle Kingdom) 253

Publishing Your Own Adventure (Terrifying Noobs) 254

The Bottom Line 255

Index 257

About the Author

Stephen O'Brien is an Australian-born writer and entrepreneur currently residing in Sydney after too many years in Silicon Valley. He has previously written over 30 titles across multiple editions with publishers such as Prentice-Hall and Que, including several best-selling titles. He also founded Typefi, the world's leading automated publishing system, and invented a new type of espresso machine called mypressi. He has been using Minecraft since its early days and remains astounded at the unparalleled creativity it engenders. Stephen is also the author of the internationally bestselling *The Ultimate Player's Guide to Minecraft*, published by Que.

Dedication

To Mika, who has been ever patient while I worked through endless weekends. Thank you, darling son. Your dad could not love you more.

Acknowledgments

This has been an interesting project. Having had a very varied career that has also included some 30 books, I don't think there was ever one more challenging. The mod market for Minecraft involves an astonishing cavalcade of creativity that is somewhat wild westish. So west it's somewhere over the Pacific, probably beyond any cardinal point.

Bringing some sense to the chaos has been a bit of a challenge.

It has also been a challenge for my ever-patient publisher. Thank you, Rick Kughen, for your endless patience. You can cajole the best out of anyone. Also to Tim Warner who has become my partner in crime. Seth Kerney, you didn't freak out even as things went down to the wire. Not sure if I'd ever be able to exude such control.

But, finally, I want to thank a team that it has been my privilege to know for many years: Alex and Hayley Smith. They took on multiple chapters, made numerous contributions, and are truly delightful in every way. Thank you so much to you both. This book wouldn't exist without you.

One last person, but not the least by any stretch. Preeti Davidson. You have given me everything one could want. You are God's gift. (That last is for your mother.)

Thank you everyone. Reader, I truly hope you enjoy this work and find much delight herein.

We Want to Hear from You!

As the reader of this book, *you* are our most important critic and commentator. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way.

We welcome your comments. You can email or write to let us know what you did or didn't like about this book—as well as what we can do to make our books better.

Please note that we cannot help you with technical problems related to the topic of this book.

When you write, please be sure to include this book's title and author as well as your name and email address. We will carefully review your comments and share them with the author and editors who worked on the book.

Email: feedback@quepublishing.com

Mail: Que Publishing
ATTN: Reader Feedback
800 East 96th Street
Indianapolis, IN 46240 USA

Reader Services

Visit our website and register this book at quepublishing.com/register for convenient access to any updates, downloads, or errata that might be available for this book.

This page intentionally left blank

Introduction

Minecraft has become one of the most talked about gaming titles in recent years. It has, quite remarkably, reached across all walks of life. In a surprisingly short time, it has gained footholds in educational institutions (K–12 and beyond), in rehabilitation centers, and in many other markets where a traditional game would never dare tread.

But what do you do after you've gained your own foothold in the *Minecraft* world? You've survived, plundered, and mined your way through the hills, dungeons, and temples; fought a tough but successful battle with the Ender Dragon; and taken home the prized Dragon Egg. What next?

Well, that's where the fun really begins... and is precisely the source of so much of *Minecraft*'s enduring appeal.

Many of the features included in the standard *Minecraft* installation—redstone wiring, the ability to create complex automated mob farms, and the ability to use standard features in very creative, unexpected ways—makes *Minecraft* the ultimate sandbox game. Add to that downloadable custom-crafted adventure maps, the massive multiplayer servers whose customizations add trading systems, mini-games, and arguably entire societies, and the game becomes a whole other world.

But even that isn't the end of the story. Incredible add-ons provide *Minecraft* with goals and creative capabilities that are far more numerous than those built in to the standard game. These include taking *Minecraft* into the industrial age, all the way to nuclear power, high-speed rail, signaling systems, pipes that automate crafting and shift supplies across the landscape, and so much more. These alone, which are free to download, give the game an enduring playability that goes far beyond the original premise.

However, as with everything *Minecraft*, the discovery of these things is by no means easy. Their documentation is scattered across the Internet in a mish-mash of YouTube videos and enthusiastic wiki sites that, as a result, lack cogency. Although this is certainly no fault of the sites, among this turgid churning of possibility, there has been no single guide or site that can lead *Minecraft* players with surety—and a set of clear tutorials—through the extraordinary, awe-inspiring age of wonder that is *Minecraft* beyond the basics.

Thus, this book, is written to delight you in a process of discovery, quickly help you on your way, and leave you amazed at how much further you can go in a game that you may well have thought you'd already completed.

Become a *Minecraft* Expert!

Go far beyond *Minecraft*'s initial game with this ultimate guide by your side. You'll learn to use the standard features in amazing, new ways, and a whole lot more:

- Easily install mods and manage *Minecraft* versions, games, and profiles.
- Automate all aspects of your mining, harvesting, and building tasks.
- Generate infinite ores on demand.
- Build mob spawners and traps for fast experience gains and a wealth of item drops.
- Create gorgeous 2D and 3D art.
- Add beautiful aesthetics to any building or construction.
- Run redstone as it should be run, with timed circuits, combination locks, and other exciting creations.
- Take *Minecraft* into the industrial and nuclear ages, and gain numerous new goals, tools, and capabilities.
- Run connected trains and bore tunnels.
- Share your creation with the world and learn how the professionals capture their videos and overlay audio.

What's in This Book

Go far beyond the basics with a whole new set of tips, tricks, and strategies. Each chapter in this book focuses on a key aspect of the game, from initial survival to building an empire. Make the most of your *Minecraft* world today:

- Chapter 1, "Getting Started," goes beyond the *Minecraft* launcher to help you install mod packs and access all kinds of advanced functionality.
- Chapter 2, "Automated Produce Farms," contains the best techniques I've found (in too many gameplay hours) to create self-sustaining systems that deliver constant results, hands off. You can then sort and stock chests with the results using rails, minecarts, and some very neat tricks.
- Chapter 3, "Mining and Ore Generators," removes the need for mining. Build an endless supply of cobblestone, and create portals to The Nether without searching for diamonds.

- Chapter 4, "Mob Farms, Traps, and Defense," creates an endless supply of items and experience points. Mob grinders remove the grind and give you endless drops.
- Chapter 5, "Advanced Construction," moves into awesome building tips that focus on aesthetics. Create 2D and 3D art, decorate with style, and create trees and natural-looking terrain. Use terraforming tools to make huge changes to your world.
- Chapter 6, "More Power to You," takes *Minecraft*'s redstone and delivers a jolt of creativity. Build a combination lock to protect your fortress, learn rail switch designs, and take power to a new level.
- Chapter 7, "Empire Building with BuildCraft," takes on one of the most complex mods. You'll learn how to sort with simplicity, dig huge quarries, shift oil with pumps, refine fuel, and power massive engines.
- Chapter 8, "Titans of IndustrialCraft," will help you create new plant species, build powerful new weapons and tools, and even create a nuclear power station.
- Chapter 9, "Rolling with Railcraft," brings a bevy of enhancements to the minecart system. Let's just say that it will keep you on track.
- Chapter 10, "Recording and Sharing," will help you publish to the world. Three of the Top 10 YouTube channels are run by regular Minecrafters. You'll learn about the right hardware and software, how to plot camera paths, overlay audio, and publish like a professional.
- Chapter 11, "Building Your Own Adventure," is your game within the game. Learn to create a map you can share with others and then fill it with hidden extras (including teleportation). It's the perfect, fun way to terrify noobs.

There's a lot herein—a cornucopia of tips, tricks, and very cool stuff that extends *Minecraft* in surprising and very fun ways.

How to Use This Book

Throughout this book, you'll see that I have called out some items as Notes, Tips, and Cautions—all of which are explained here.

NOTE

Notes point out ancillary bits of information that are helpful but not crucial. They often make for an interesting meander.

TIP

Tips point out a useful bit of information to help you solve a problem. They're useful in a tight spot.

CAUTION

Cautions alert you to potential disasters and pitfalls. Don't ignore these!

3

Mining and Ore Generators

In This Chapter

- Create an endless expanse of self-healing cobblestone.
- Generate all the stone you need for massive constructions.
- Save on diamonds and create a portal on the spot without mining obsidian.

Ores are the building blocks of *Minecraft*. You can use them to create creeper-proof buildings, dwellings, and rail bridges across the sky. Actually, unless you plan to live in a mud hut, you really can't beat cold, hard stone. But why grub about in dark tunnels when you can create all the building ore you could ever possibly need, and then top it off with an overdose of some of the toughest stuff in *Minecraft*—obsidian—and do so without putting so much as a scratch on your new diamond pickaxe. It's all surprisingly easy.

Creating Cobblestone

Cobblestone is one of the most prevalent and useful blocks in *Minecraft*. As a building material it provides the same blast resistance as any other, with the exception of obsidian, which is about 200 times tougher, and the essentially indestructible bedrock. Even a wall of diamond blocks won't provide any greater protection than cobblestone against a creeper waiting outside your door.

The venerable cobbled stone is also exceptionally versatile. Cobblestone is used in the crafting of furnaces, dispensers, droppers, levers, and pistons, among other things. It can also be turned into stairs, slabs, moss stone (for that *Temple of Doom* appeal), and the usual tools.

Although cobblestone is found just about everywhere underground, it's also one of the easiest ores to automatically produce. I'll show you how to create an endless supply, and also how to turn it into an endlessly healing platform. Doing so requires a few pistons and a simple redstone clock circuit.

Cobblestone is formed when flowing water meets flowing lava at the same level, as shown in Figure 3.1. (Flowing water meeting a lava source block produces obsidian, and flowing water dropping on top of flowing lava creates stone.)

Creating a supply of cobblestone therefore requires just a bucket each of lava and water.

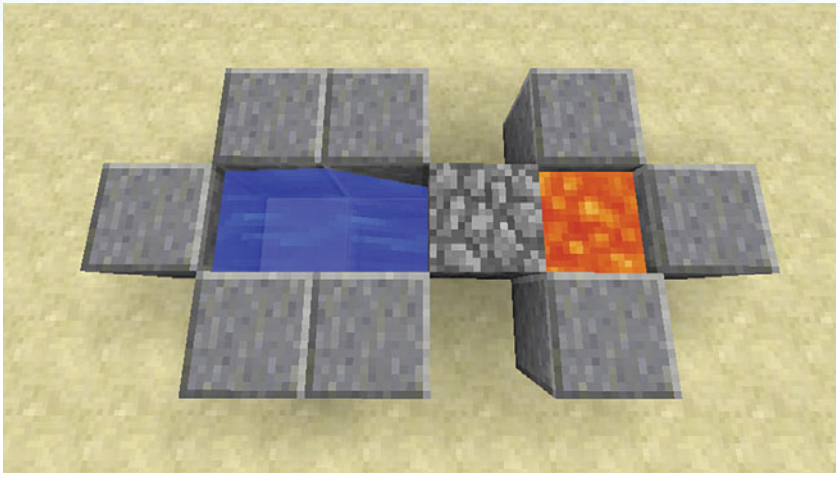

FIGURE 3.1 Cobblestone forms at the junction point of flowing water and flowing lava.

There are many ways to arrange such a junction, but the simplest is shown in Figure 3.2. You could sink this arrangement one block further into the ground and avoid having to place the bordering blocks, but we're going to use this layout because it lifts the cobblestone above ground level where it can be pushed with pistons.

Spill a bucket of water on the far left. It will flow down over the lip into the two-block-deep hole and, due to the mechanics of the water flow model, will actually, and rather conveniently, stop right there.

Then spill a bucket of lava on the far right, forming the cobblestone that was shown in Figure 3.1.

Try mining the cobblestone, and you'll see it pop out and another block form within moments. Infinite cobblestone. Pretty easy, right?

Let's ramp this up a bit.

Place a standard piston so that it's facing the cobblestone. (You may need to scoop the lava into a bucket and then remove the formed cobblestone before placing the piston because it can be quite tricky to obtain the right angle for the piston with the cobblestone block in front.) Figure 3.3 shows the intended layout.

It's possible to build a BUD switch, as described in Chapter 2, "Automated Produce Farms," to detect the creation of the cobblestone block and then activate the piston to push it out. However, an easier way is available that introduces a new type of circuit we haven't looked at before: the repeater clock.

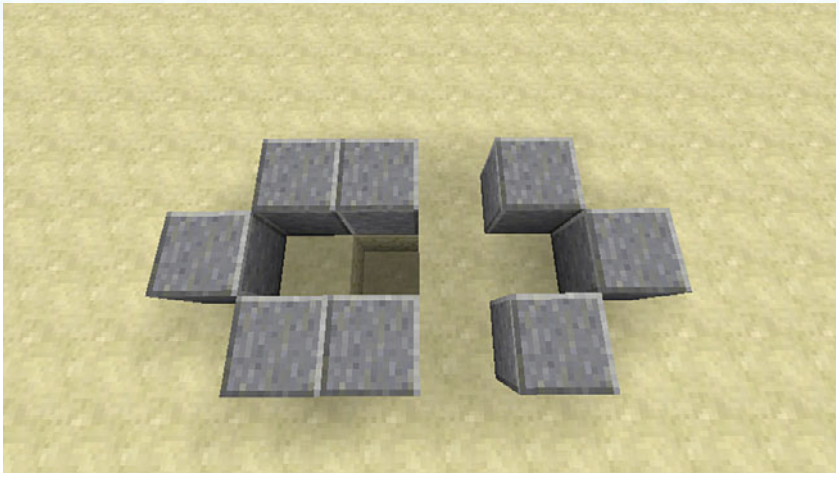

FIGURE 3.2 Cobbling together some cobblestone.

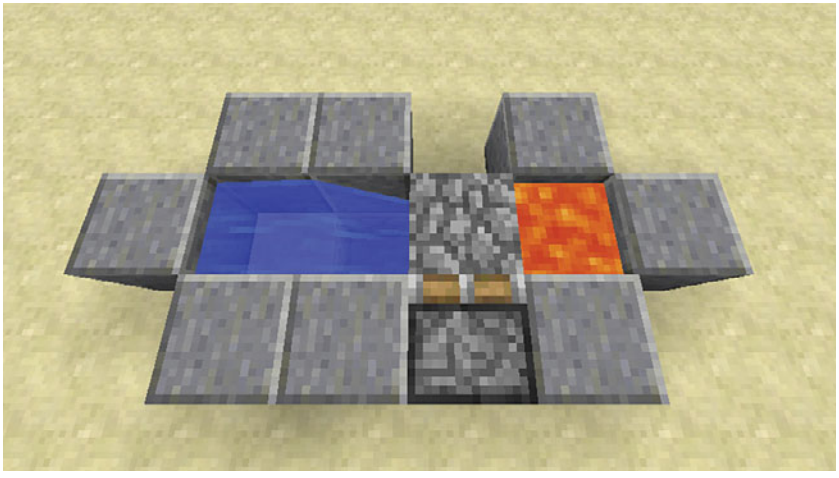

FIGURE 3.3 Pistons provide an easy way to push out a string up of up to 12 cobblestone blocks.

Clocks constantly repeat a redstone pulse. There are many ways to achieve this, including with the use of pistons, items moving between hoppers, and by just using a string of torch inverters. However, the easiest method for fine-tuning the interval between pulses is with a string of redstone repeaters arranged in a loop. In its default configuration, each repeater adds a 0.1 second delay to the circuit, with the slider on top of each repeater allowing this to be lengthened to as much as 0.4 seconds.

Figure 3.4 shows the circuit we'll use here. The pulse originates with the button attached to the plank block. A trail of redstone leads directly to the base of the piston, but also splits off into the repeater loop. As it travels through each repeater, it is ever so slightly delayed, eventually traveling around the entire loop in a clockwise direction, back through the plank block and toward the piston once more, and also restarting its endless circuit of the loop.

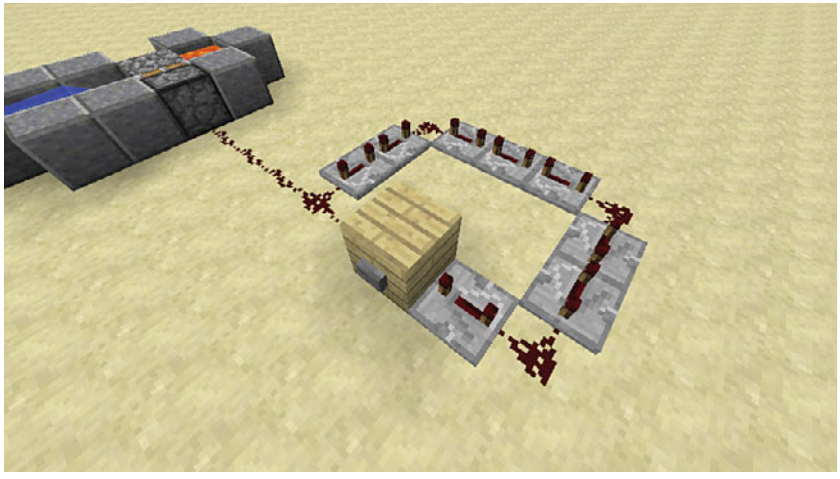

FIGURE 3.4 Clocking on and off with a repeater loop.

Create the circuit by laying the repeaters, ensuring they all run clockwise. Run the redstone to the piston and also to connect the repeaters; then press the button.

Now take a look at the piston. You'll see it start to push out the cobblestone, but there's a slight problem. The piston flies back and forth so fast that it spends most of its time blocking the flow of lava, preventing the cobblestone from forming. There's an easy way to fix this. Start right-clicking the repeaters, shifting their sliders back to the last available position. As you do so, the pulses will slow down. Keep going until you have the piston synchronized with the cobblestone production. I've found this requires setting six of the repeaters to their slowest position.

This is all well and good. You should see a row of cobblestone form, as shown in Figure 3.5, spanning out 12 blocks—the maximum a piston can push at any time. Try digging out any of those blocks, and the piston will quickly "heal" the gap with a new block of cobblestone. This is quite commonly used to create self-healing bridges, but why stop there? Let's create an entire self-healing platform—perfect for that game of Spleef (see the note "Playing Spleef") or just developing an expanse of easily minable cobblestone.

Start by laying down a line of pistons and blocks behind, as shown in Figure 3.6. Connect them up to the timing loop with some redstone. You'll also need to place one more repeater before the pistons to boost the current so they all fire off. Otherwise, the redstone trail will

be a little long and will lose its punch before it reaches the end of the pistons. Other than that, that's all there is to it. If you need the platform created in a more specific shape, use other blocks that pistons can't shift to form the outline. This includes growing trees, other extended pistons, and most block-sized items such as dispensers, hoppers, furnaces, and the like.

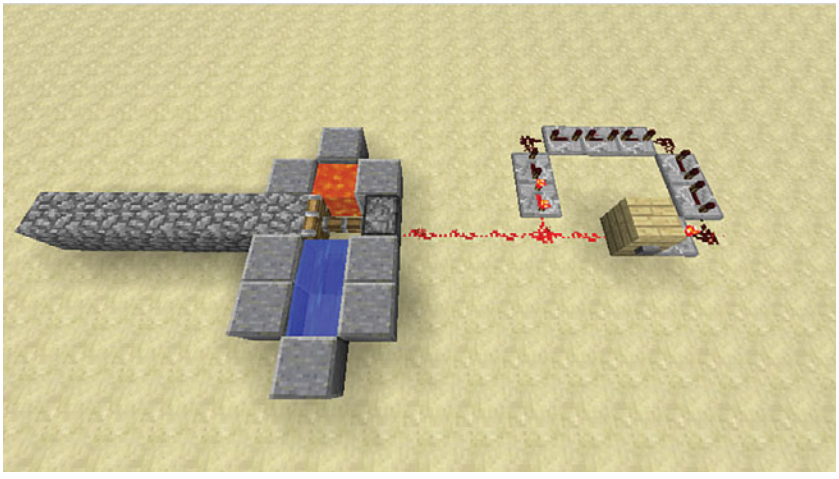

FIGURE 3.5 Periodic pistons provide an easy way to push up to 12 cobblestone blocks out of the generator.

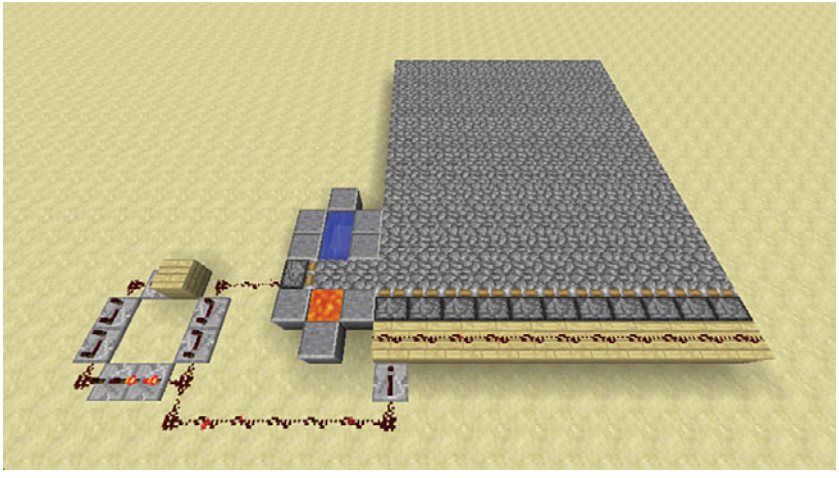

FIGURE 3.6 Creating a full self-generating platform—perfect for that game of Spleef.

NOTE

Playing Spleef

Spleef is one of the older arena games played in *Minecraft*. It can be played in a "vanilla" (or standard) *Minecraft* world without requiring a special server configuration. Spleef is played on a one-block-thick suspended platform. The idea is simple enough: Try to knock out the block under your opponent so they tumble into a deadly pit, lava pool, or other dastardly trap. The last man standing takes home the prize. There are numerous variations on the theme. As the game continues, the platform gradually turns into Swiss cheese, making just moving around something of a challenge. Arm the players with a bow and arrows, and the rapid movement required to dodge those fletched missiles turns the game into a rather joyful combination of parkour and abject hilarity. Playing with more than two people also adds to the frantic nature of the battle, and you can then become a little more creative, perhaps adding further platforms below so the battle can take place over multiple rounds, and throwing in some hostile mobs, protective barriers, and so on, to make things a little more interesting. Use a self-generating platform with a lever before the piston range to turn off the pistons while a match is in progress. The first line of blocks will still update, but another lever can solve that, or even a more sophisticated circuit that can switch them both off at once. Figure 3.7 shows a design that works off an AND circuit that is mirrored to accept two inputs from each end of the repeater loop, and a lever in the middle that acts as the master toggle. Remember to place the two redstone torches on the back end against the faces of their blocks.

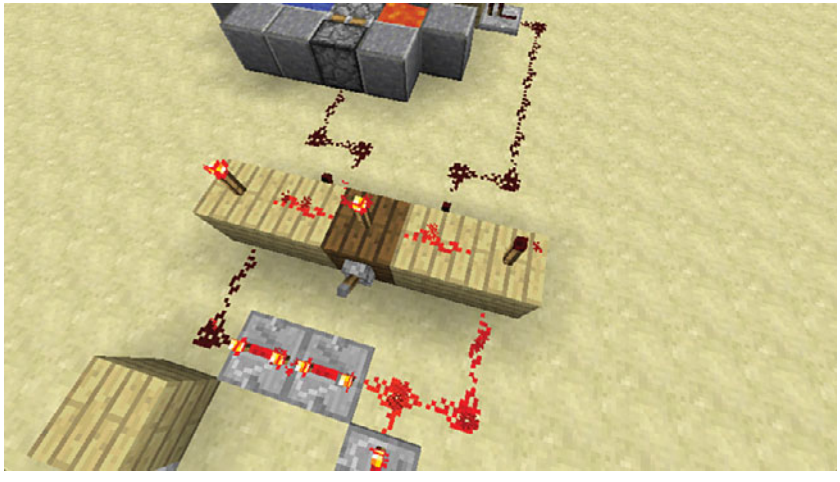

FIGURE 3.7 This double AND gate controls two circuits with one lever.

Creating Stone

Stone appears abundantly in the Overworld and is also formed ad hoc when lava flows on top of still or moving water. When mined with a normal pickaxe, it turns into cobblestone. Because this takes less time to mine than cobblestone, stone generators are a slightly more efficient method of obtaining cobblestone than through an actual cobblestone generator. Stone mined with a pickaxe enchanted with Silk Touch will drop a stone block instead of cobblestone, but all is not lost if you're lacking one of these. Smelting cobblestone in a furnace also delivers a smooth, elegant stone block. Although using stone for construction, rather than the comparatively knobbly cobbles, is just a matter of aesthetics, it's nice to have the choice of either that a stone generator delivers.

Start by creating the layout shown in Figure 3.8. This is similar to the cobblestone generator with some subtle differences; in particular, take note of the position of the hole in the ground and the slightly different geometry of the border blocks.

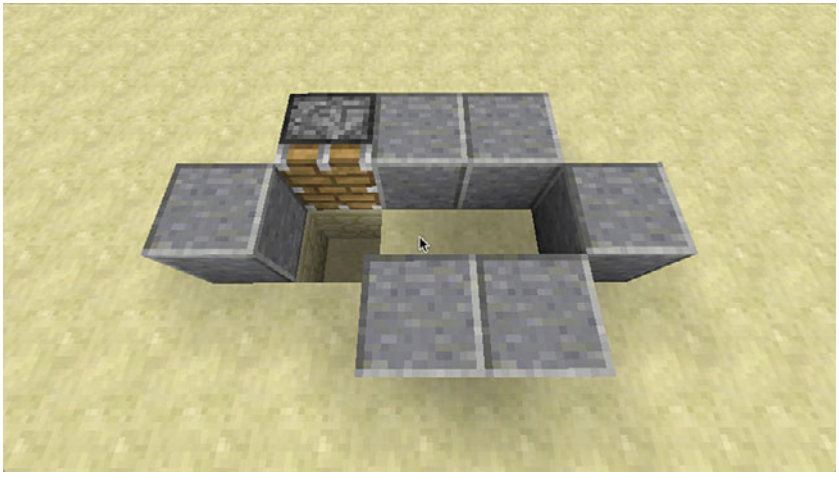

FIGURE 3.8 The foundation of a stone generator.

Now place a set of four glass blocks on top (see Figure 3.9). These act as the tower well for the lava, allowing it to drop down onto the flowing water. You'll need to add some temporary blocks to attach the two floating blocks in the correct position and then remove them. Alternatively, just create a square using eight glass blocks. Either way will work, and you can use any solid block material you prefer, except wood, which has the habit of bursting into flames when in close proximity to lava.

Finally, in this order, spill water into the far end of the trench and pour lava against the inside of one of the blocks at the top of the tower well. This positions the lava source block at the top of the tower so that it continually flows down. Assuming all has gone to plan, you'll see a block of stone form almost immediately under the lava (see Figure 3.10).

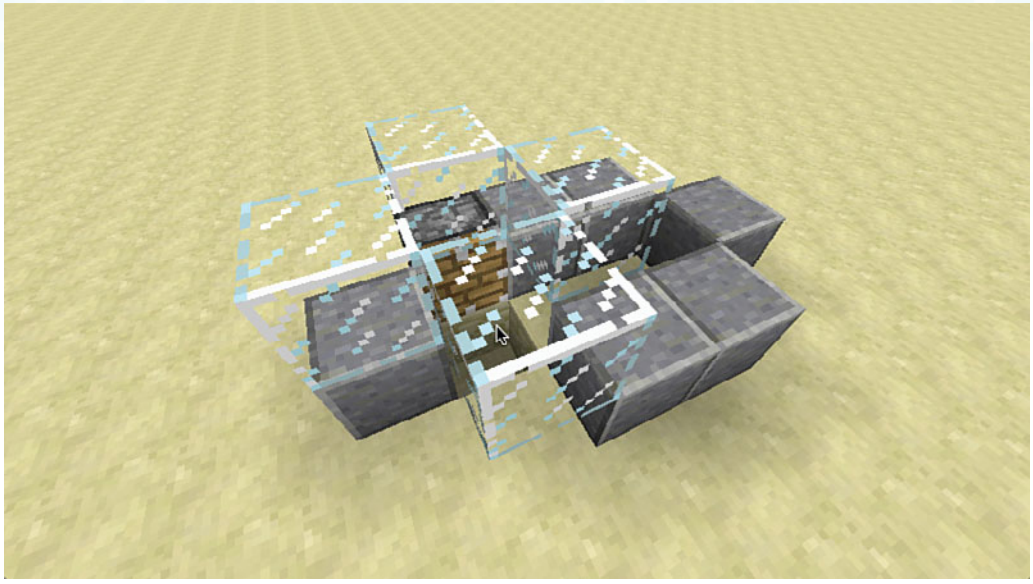

FIGURE 3.9 Creating a tower well for the lava.

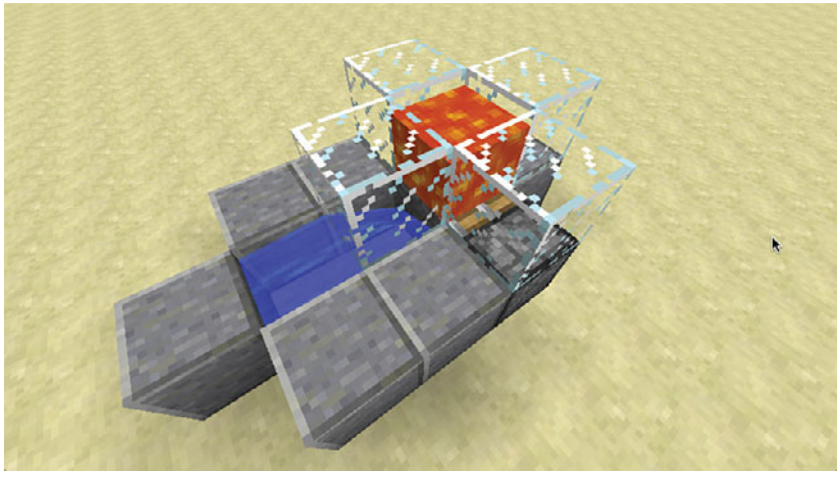

FIGURE 3.10 Place the water source first, and then the lava to ensure they meet in the correct order, forming stone.

All that remains is to set up the same circuit to control the piston as you used in the cobblestone generator. Just make sure you use a stone button on the circuit's starting block because stone buttons produce a 1-second pulse of power. A wooden button will push the piston forward for 1.5 seconds and not leave enough time while retracted for the lava to flow down once more into the water.

Extend the design further, if you like, by adding the same string of pistons shown in Figure 3.6 that created the self-healing cobblestone platform.

Obsidian Generator

Besides building portals, obsidian is primarily useful as an incredibly effective blast-resistant building material. I mentioned earlier that it is some 200 times tougher than any other, excluding the unmineable bedrock, and it is therefore also immune to the attacks of any naturally spawned hostile mob, including exploding creepers. Indeed, the only mob that can break obsidian is the player-created Wither.

Unlike the previous two generators, there is a core problem with automatic obsidian generation: the requirement of lava source blocks. Although it's possible to build an infinite water source by emptying two buckets of water into the diagonally opposite ends of a 2×2 hole, the same cannot be said for lava. In essence, lava source blocks are a finite resource within any particular chunk, although given the practically infinite size of each *Minecraft* world (approximately 64,000,000×64,000,000 blocks in surface area), not to mention the enormous lava pools found in the Nether, lava, like any other resource, can be considered essentially infinite.

At this stage there are several ways to obtain obsidian:

- Pour water on top of the still lava that fills lava lakes. These are most commonly found below level 10 in the Overworld, and everywhere in the Nether, although they do appear on the surface, especially when you're playing a customized world using the "Good Luck" preset (see Figure 3.11).
- Pour lava into a mold, as shown in Figure 3.12, and then place water on top to form obsidian in the final desired shape. This has the advantage that you don't need to mine the obsidian with a diamond pickaxe, saving wear on your tools. Figures 3.13 to 3.16 show how to mold a Nether portal frame without mining any obsidian. It doesn't take long at all and therefore is actually a more efficient construction method than having to tunnel down to layer 12 to find diamonds.
- Obtain enough obsidian to build a portal (including molding a frame, as described earlier), craft a chest (or a couple of ender chests for even easier content transfers), and pack a diamond pickaxe and a couple of stacks of stone or cobblestone. Place a bed and take a nap at night to reset your spawn point, and then clamber through the portal to travel to the Nether. This creates a portal at your destination, automatically spawning the obsidian blocks required for the frame. Create some protection around the frame using the cobblestone so that you can take the time to knock the obsidian out of the destination frame, piece by piece, without worrying about ghasts flinging fireballs your way. When you've finished, place the chest and store everything you have therein—every last skerrick. Then jump into some lava, fall off a cliff, or die in some other

convenient way. You'll respawn next to your bed. Head into the frame again. A new one will appear either at the same place as the original Nether frame or nearby. Take some care before you step out because they can appear over lava, or very close to cliff edges. Then hoist your pickaxe from the chest, take apart the obsidian frame, and repeat. When you have enough, collect everything from the chest and travel back through the frame to the Overworld.

TIP

Bringing Back Disappearing Chunks

Chunks are columns of blocks, 16×16 in surface area, and 256 rows high. Each *Minecraft* world is divided into these chunks. Each spawns and is loaded in its totality as you travel around the different regions. If you find chunks not rendering correctly, leaving odd gaps in the ground through which you can see tunnels, dungeons, and so on in other chunks, try changing your video settings so that the Render Distance is set to 16 chunks. You may find this too much of a slow-down for a low-powered computer, but if you have a recent model with an equivalent of an Intel i5 or i7 CPU, there's a good chance your chunk gaps will become a thing of the past.

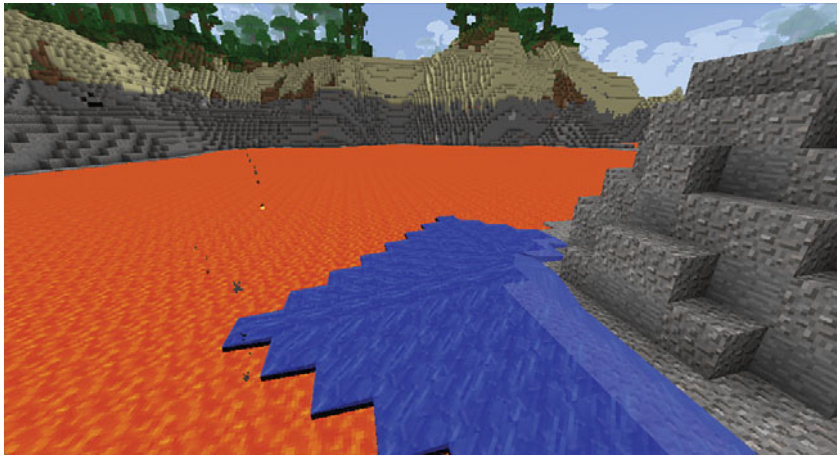

FIGURE 3.11 Convert a portion of a lava lake into obsidian by pouring water on a non-lava block nearby so that it has the chance to flow over the lava.

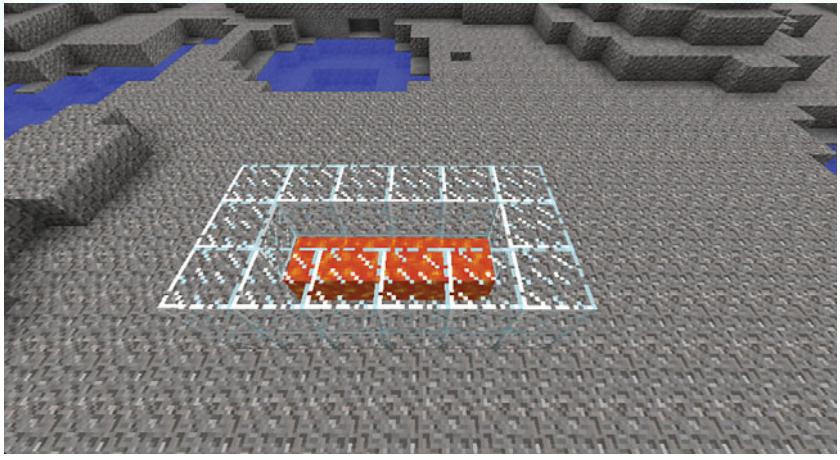

FIGURE 3.12 Mold obsidian with the placement of surrounding blocks, then pour a bucket of lava into the gap in the middle.

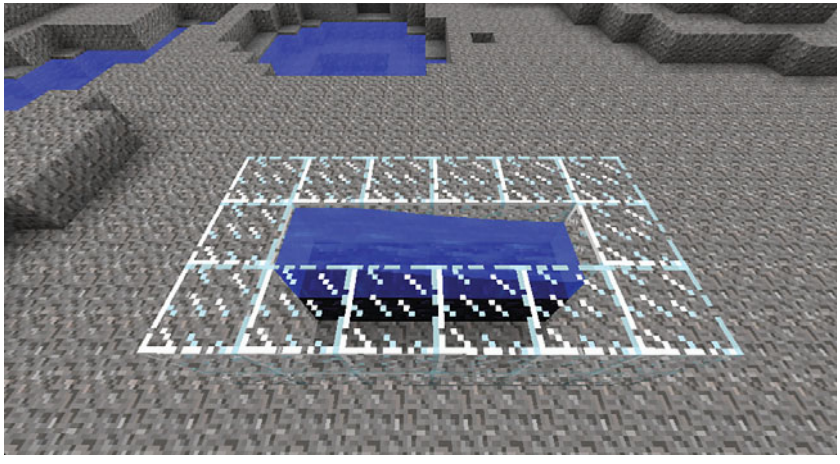

FIGURE 3.13 You can convert a row of lava with one bucket of water, but building a vertical tower requires a layered approach.

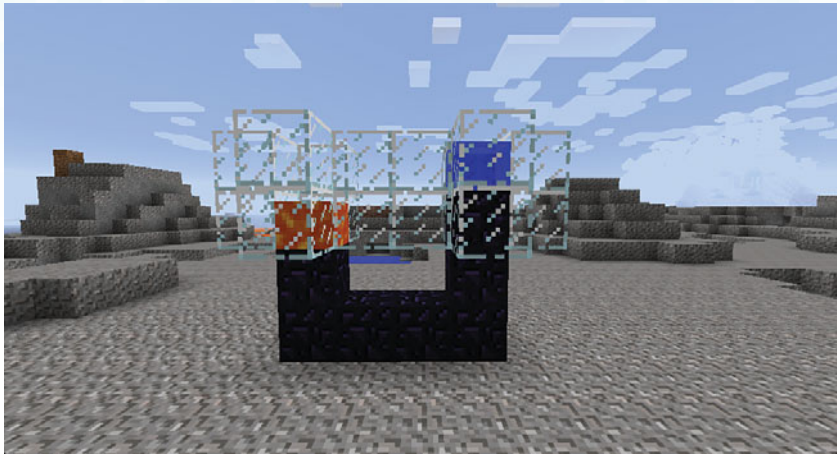

FIGURE 3.14 Build the frame one layer at a time, placing the lava and then water on top to control the conversion of the blocks. The left side of the frame is ready for the water, whereas the right side shows it already converted.

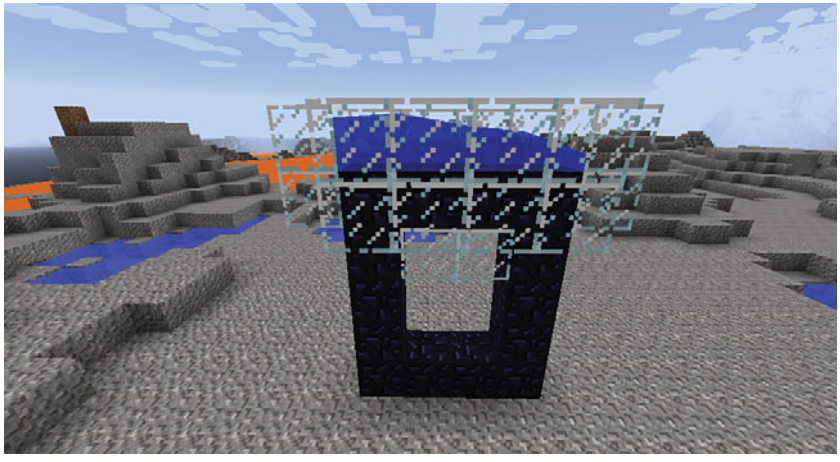

FIGURE 3.15 A final spill along a channel at the top completes the frame.

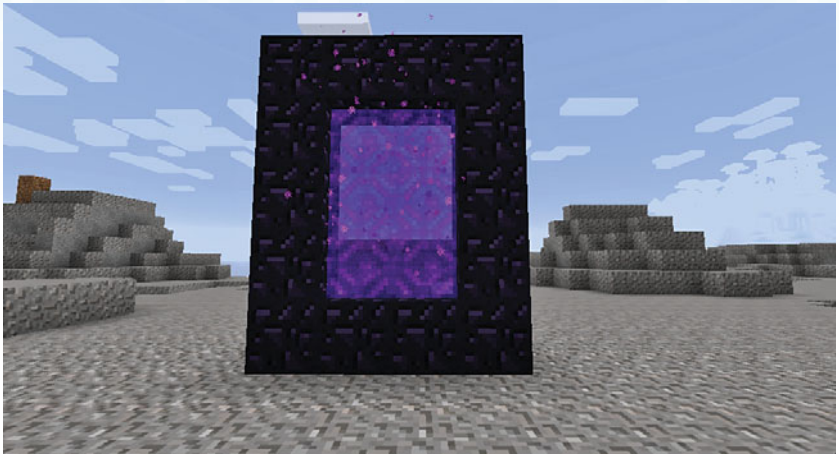

FIGURE 3.16 The frame is now ready for action and requires just 10 lava source blocks nearby if you leave out the corners.

The Bottom Line

Although you can't generate a huge number of the different ores in *Minecraft*, being able to create the basics, such as stone and cobblestone, can be a boon, saving you from having to tunnel through the countryside or mar the landscape with strip mines. Indeed, ever wonder how players create enormous structures while playing a game that is strictly Survival? Well, they don't do so by digging up all that ore. Generators take up very little space, and pistons are easy to create. Plant some saplings to provide wood for the handles, and you'll have all you need to build any number of pickaxes so you can keep pulling in the output from the generator and use it wherever you require. Build an enormous castle and turn the pistons so they face up and create towering walls. You may even want to use a generator to create huge platforms such as the one required for the mob farm described in the next chapter. Read on to gain a huge amount of other useful resources from mob drops.

This page intentionally left blank

INDEX

Symbols

< > (angled-brackets) in commands, 242
[ ] (square brackets) in commands, 242
2D pixel art, drawing, 123-124
3D statues, building, 124-129

A

accounts, managing in MultiMC custom launcher, 12-13
adding mods to MultiMC custom launcher, 16
adventure maps, 239
Adventure mode, 237-238
  command blocks, 240-241
    commands in, 242-245
    command string, 241
    creating, 241
    list of, 241
    messages to players, 249-253
    output to comparators, 248-249
    selectors in, 242
    specifiers in, 245- 248
  griefers, 255
  invisible wall maze, 238
  maps
    editing tools for, 253-254
    publishing, 254-255
    types of, 239
  story planning, 239-240
agriculture. *See* farming
air quality in farming, 185
AND gates, 41, 149
angled-brackets (< >) in commands, 242
animation, planning, 224-227
anti-griefer plug-ins, 255
API (application programming interface), mod management, 16
arches, building, 127-129
architectural styles, 96
  Egyptian/desert, 113-114
  elven/fairy, 115-116
  igloo, 116-118
  Japanese, 106-108
  medieval, 96-101
  modern/suburban, 108-111
  Nether and End regions, 129-130
  steampunk, 114-115
  Victorian, 101-106
  Viking, 111-113
armor in IC2E, 193-195
arrows in dispensers, 87-88
artwork, drawing, 123-124
ATLauncher, 21
audio, overlaying in captured video, 227
  iMovie, 227-230
  Windows Movie Maker, 230-231
aurelia, 183

automation
BUD switches, 24
cane farm automation, 27-32
creating, 25-27
pumpkin/melon farm automation, 36-43
cobblestone creation, 53-58
collection
of drops, 73-82
of produce, 32-36
of string, 87
combination locks, creating, 133-139
construction (BuildCraft), 156
crafting tables (BuildCraft), 178
dimmer switches, creating, 131-132
dispensers as mob traps, 87-90
minecart switches, 140-142
mining (IC2E), 197-198
pistons as mob traps, 91-92
planting produce, 44-47
Project:Red, 142
Core component category, 148
installing, 143
Integration component category, 148-150
pumpkin/melon farm automation, 144-148
Transmission component category, 150-151
Transportation component category, 152
quarries, 172-175
sorting produce, 47-51
with BuildCraft pipes, 157-162
stone creation, 59-61
AVerMedia's Live Gamer Portable, 224

B

Bandicam for Windows, 221-222
bathrooms, 119
BatPacks, 194
Binvox, 125
blast furnaces, building, 212
Blender, 125
blocks
cobblestone, creating, 53-58
command blocks, 240-241
commands in, 242-245
command string, 241
creating, 241
list of, 241
messages to players, 249-253
output to comparators, 248-249
selectors in, 242
specifiers in, 245-248
obsidian, creating, 61-65
protecting, 140
redstone blocks. *See* redstone blocks
slime blocks, 30
stone, creating, 59-61
Block Update Detector (BUD) switches. *See* BUD (Block Update Detector) switches
blueprints (BuildCraft)
building with, 175-177
defined, 175
downloading, 178
storing, 178
bore head, creating, 213-215
bronze armor (IC2E), 193
BUD (Block Update Detector) switches, 24
cane farm automation, 27-32
creating, 25-27
pumpkin/melon farm automation, 36-43
BuildCraft, 20, 155-156
automatic crafting tables, 178
blueprints and templates, 175-177
libraries for, 178
downloading, 155

engines
combustion engines, 167-170
mining wells, building, 165-167
oil refineries, 171-172
power stations, building, 163-165
types of, 162-163
filler machines, 179
informational resources, 179
kinesis pipes, power management, 167
logic gates, 178
pipe facades, 178
pipe wire, 178
pipes, plugging, 170
quarries, automation, 172-175
sections, 155-156
transportation pipes, sorting produce, 157-162
building. *See also* construction
automated quarries, 172-175
blast furnaces, 212
with blueprint and templates (BuildCraft), 175-177
coke ovens, 206-207
generators (IC2E), 195-197
iron rails, 209-210
mining wells, 165-167
nuclear reactors (IC2E), 199-202
power stations, 163-165
reinforced track, 212-213
spheres/circles/arches, 127-129
standard track, 208-211
statues, 124-129
styles of, 96
Egyptian/desert, 113-114
elven/fairy, 115-116
igloo, 116-118
Japanese, 106-108
medieval, 96-101
modern/suburban, 108-111
Nether and End regions, 129-130
steampunk, 114-115
Victorian, 101-106
Viking, 111-113
trees, 122-123
tunnel borers, 213-215
wooden track, 208
Bukkit, 255
buttons, levers versus, 39

C

cables, overloading, 199
cactus
as mob traps, 84-86
spider spawners and, 87
camera paths, planning, 224-227
Camera Studio, 224
keyframes, 225-226
recording with, 227
shortcuts, 226-227
cane farms, automation, 27-32
carrot farms, automation, 44-47
ceiling, building, 98
chests
connecting to hoppers, 30
trapped chests, 90
Chicken Chunks, 93
Chicken Jockeys, 81
ChromaHills, 18
chunks, rendering, 62
circles, building, 127-129
clear command, 242

clocks, redstone repeater, 55-56
cobblestone
  creating, 53-58
  pipes (BuildCraft), 158
coffee, 184
coke ovens, building, 206-207
collecting
  drops, 73-82
  experience points, 80
  produce, 185
    in chest-connected hoppers, 30
    minecart automation, 32-36
    minecart switches, 140-142
    pumpkin/melon farm automation, 36-43
  stacks, 157
  string, 87
combination locks, creating, 133-139
combustion engines (BuildCraft), 162, 167-170
commandBlockOutput gamerule command, 244
command blocks, 240-241
  commands in, 242-245
  command string, 241
  creating, 241
  list of, 241
  messages to players, 249-253
  output to comparators, 248-249
  selectors in, 242
  specifiers in, 245-248
commands in command string, 242-245
comparators, 133
  automation, collecting produce, 32-36
  in combination locks, 136-137
  in command string, 248-249
complex roofs, 104-106
compressors (IC2E), 199
ComputerCraft, 217
configuration files, MultiMC custom launcher, 15
connecting hoppers to chests, 30
construction. *See also* building
  2D pixel art, 123-124
  3D statues, 124-129
  with blueprints and templates (BuildCraft), 175-177
  with BuildCraft. *See* BuildCraft
  building styles, 96
    Egyptian/desert, 113-114
    elven/fairy, 115-116
    igloo, 116-118
    Japanese, 106-108
    medieval, 96-101
    modern/suburban, 108-111
    Nether and End regions, 129-130
    steampunk, 114-115
    Victorian, 101-106
    Viking, 111-113
  decoration techniques, 118-122
  exterior depth, 111
  planning, 96
  residential roads, 110-111
  roofing, 100-101
    complex roofs, 104-106
    double-layered roofs, 107-108
    pitched roofs, 102-104
    steep pitched roofs, 112
  spheres/circles/arches, 127-129
  survival mode versus creative mode, 95
  trees and natural terrain, 122-123
    for tree houses, 115
  walls/flooring, 98-99

copying
resource packs into folders, 9
saved worlds, 9
Core component category (Project:Red), 148
coupler tracks, 211
crafting tables (BuildCraft), automation, 178
Creative Engines (BuildCraft), 158
creative maps, 239
Creative mode
Survival mode versus, in construction, 95
toggling with Survival mode, 143
credits for videos, 234
creosote, creating, 208
Crop-Matron (IC2E), 192-193
Cropnalyzer (IC2E), 190-192
crops
crossbreeding, 185
Cropnalyzer, 190-192
square farming, 189-190
strip farming, 186-188
harvesting, 185
in chest-connected hoppers, 30
minecart automation, 32-36
minecart switches, 140-142
pumpkin/melon farm automation, 36-43
improving with Crop-Matron, 192-193
crossbreeding crops, 185
Cropnalyzer, 190-192
square farming, 189-190
strip farming, 186-188
crowbars, 211
custom launchers, 10-19

D

decoration techniques, 118-122
defenses. *See* mob traps
delays in redstone circuits, 40-41
desert building style, 113-114
detector rails, 141
diamond pipes (BuildCraft), 158
difficulty command, 243
dimmer switches, creating, 131-132
dispensers
as mob traps, 87-90
refilling, 90
for water, 38-40, 44-45
doFireTick gamerule command, 244
doMobLoot gamerule command, 244
doMobSpawning gamerule command, 244
doTileDrops gamerule command, 245
double crops, avoiding weeds, 187
double-layer pistons in BUD switches, 31-32
double-layered roofs, 107-108
downloading
blueprints and templates, 178
BuildCraft, 155
Minecraft Rome, 130
mods, 19
MultiMC custom launcher, 11
Railcraft, 206
snapshots, creating profiles for, 7-9
texture packs, 119
drawing 2D pixel art, 123-124
Dropbox, 235
droppers, usage, 87
drops, collecting, 73-82

E

editing
  captured video, 227
    iMovie, 227-230
    Windows Movie Maker, 230-231
  instances in MultiMC custom launcher, 14
  profiles, 10
  tools for adventure maps, 253-254
effect command, 246-247
eggs. *See* spawn eggs
Egyptian building style, 113-114
electrical tools (IC2E), 194
Electric Drills, 194
Electric Jetpacks, 194
elevator tracks, 211-212
Elgato Game Capture HD Recorder, 224
elven building style, 115-116
embarking tracks, 211
embed settings in Vimeo, 234
emerald pipes (BuildCraft), 160
Emzuli pipes (BuildCraft), 162
End region, building in, 129-130
energy
  automated quarries, building, 172-175
  combustion engines (BuildCraft), 167-170
  generators (IC2E), building, 195-197
  measurements, 162
  mining wells, building, 165-167
  nuclear reactors (IC2E), building, 199-202
  OD and OV Scanner requirements, 197
  oil refineries (BuildCraft), 171-172
  power stations, building, 163-165
energy units (EU), 182
  generating, 195-197
  overloading cables/machines, 199
engines (BuildCraft), 156
  combustion engines, 167-170
  mining wells, building, 165-167
  oil refineries, 171-172
  power stations, building, 163-165
  types of, 162-163
EU (energy units), 182
  generating, 195-197
  overloading cables/machines, 199
experience points, collecting, 80
explosive templates (BuildCraft), 176
exporting
  iMovie videos, 230
  Windows Movie Maker videos, 231
exterior decoration techniques, 122
exterior depth in construction, 111
extracting sticky resin, 183
extractors (IC2E), 199

F

facades for pipe (BuildCraft), 178
factories (BuildCraft), 156
fairy building style, 115-116
fall damage of mobs, 72
farming, 23
  cane farms, automation, 27-32
  collecting produce
    in chest-connected hoppers, 30
    minecart automation, 32-36
    minecart switches, 140-142
    pumpkin/melon farm automation, 36-43
  in IC2E
    Crop-Matron, 192-193
    Cropnalyzer, 190-192
    crossbreeding, 185
    plant species, 183-184

square farming, 189-190
strip farming, 186-188
mob farms, 67-68
grinding mobs, 73-82
rate of spawn, 93
spawning mobs, 68-70
water-based, 70-72
planting produce by villagers, 44-47
pumpkin/melon farms
automation, 36-43
Project:Red, 144-148
sorting produce, automation, 47-51
with BuildCraft pipes, 157-162
Feed the Beast, 21
ferru, 183
filler machines (BuildCraft), 179
finding saved worlds, 9
fireballs in dispensers, 88
flaming arrows, 88
flaming wall, 89
flooring
building, 98-99
decoration techniques, 119
flowing lava, stone creation, 59-61
flowing water, 44-45
cobblestone creation, 53-55
obsidian creation, 61-65
fluid transport pipes
gold, 168
plugging, 170
stone, 168
wooden, 168
flying, mods for, 224
folders, copying resource packs into, 9
Forestry, 179, 217
Forge
installing, 16
mod API, 16
Forge Multipart, 143
frame rate, 220
frames, rotating items
combination lock creation, 133-139
dimmer switch creation, 131-132
FRAPS for Windows, 221
fuel
creating in oil refineries, 171-172
sources for stirling engines, 164-165
furniture, 121

G

Galacticraft, 20, 216-217
game maps, 239
gamemode command, 243
gameplay window, resizing, 8
gamerule command, 244-245
games, Spleef, 58
gates
AND gates, 41, 149
logic gates (BuildCraft), 178
NOR gates, 136
XOR gates, 149
generators (IC2E), building, 195-197
give command, 242, 248
gold, growing, 183
gold fluid transport pipes, 168
GregTech, 181
griefers, 255
grinding mobs, 73-82

H

hardware screen-recording, 220, 224
  AVerMedia's Live Gamer Portable, 224
  Elgato Game Capture HD Recorder, 224
harvesting crops. *See* collecting produce
hazmat suits, 200
health, fall damage of mobs, 72
high-speed tracks, 212
hoppers
  automation, sorting produce, 47-51
    with BuildCraft pipes, 157-162
  collecting drops, 74
  connecting to chests, 30
  stacking, 49
hops, 184
hydration in farming, 185

I

IC2 (IndustrialCraft2), 181
IC2E (IndustrialCraft2 Experimental)
  armor/weapons/tools, 193-195
  automated mining, 197-198
  compressors, 199
  elements in, 181-183
  extractors, 199
  farming
    Crop-Matron, 192-193
    Cropnalyzer, 190-192
    crossbreeding, 185
    plant species, 183-184
    square farming, 189-190
    strip farming, 186-188
  generators, building, 195-197
  macerators, 199
  nuclear reactors, building, 199-202
  recycling in, 202
ice, molding, 116-118
igloo building style, 116-118
iMovie, 227-230
importing .schematic files, 125-127
IndustrialCraft2. *See* IC2
IndustrialCraft2 Experimental. *See* IC2E
infinite water sources, 61
installing
  Forge, 16
  modpacks, 20-22
  MultiMC custom launcher, 15-19
  Project:Red, 143
  resource packs, 18
instances, 10
  editing in MultiMC custom launcher, 14
Integration component category (Project:Red), 148-150
interior lighting, 121
interior walls, 119
invisible wall maze, 238
iron, growing, 183
iron rails, building, 209-210
item IDs, list of, 242
item loaders, 216

J–K

Japanese building style, 106-108
Java settings, 9
junctions for tracks, 212

keepInventory gamerule command, 245
keyframes, 225-226
killing players in Adventure mode, 246-247

kinesis pipes (BuildCraft)
power management, 167
quartz, 169
kitchens, 120

L

landmark tool (BuildCraft), 173
LapPacks, 194
launchers, custom. *See* custom launchers
Launcher. *See* Minecraft Launcher
launch tracks, 211
lava
cobblestone creation, 53-55
in dispensers, 88
flaming arrows, 88
flowing lava, stone creation, 59-61
in trenches as mob traps, 82-84
lava blades, grinding mobs, 75-80
lava source blocks, obsidian creation, 61-65
levers, buttons versus, 39
LGP (Live Gamer Portable), 224
libraries (BuildCraft), blueprints and templates storage, 178
lights
dimmer switches, creating, 131-132
interior, 121
LiteLoader, 16
Live Gamer Portable (LGP), 224
locking tracks, 211
locks, creating combination locks, 133-139
logic gates (BuildCraft), 178
logs, viewing server/client message log, 10
LUA language, 217

M

macerators (IC2E), 199
machines, overloading, 199
managing
accounts in MultiMC custom launcher, 12-13
mods
custom launchers, 11-19
methods of, 10-11
modpack installers, 20-22
reasons for, 5-6
screenshots in MultiMC custom launcher, 14
manual mod management, 10
maps in Adventure mode
editing tools for, 253-254
publishing, 254-255
types of, 239
mazes, invisible wall maze, 238
MCEdit, 122, 125-126
medieval building style, 96-101
melon farms, automation, 36-43
Project:Red, 144-148
messages to players in command string, 249-253
minecarts
automation
collecting produce, 32-36
sorting produce, 47-51, 157-162
collecting drops, 74-75
switches, 140-142
Minecraft Launcher, 6-10
profiles, creating, 7-9
Minecraft Rome, downloading, 130
Minecraft updates, 217

Minecraft Wiki, BUD switch documentation, 24
mining
cobblestone, 53-58
in IC2E, automated mining, 197-198
obsidian, 61-65
stone, 59-61
Mining Laser, 193-195
mining wells, building, 165-167. *See also* quarries
mob farms, 67-68
grinding mobs, 73-82
spawning mobs, 68-70
rate of spawn, 93
water-based mob farms, 70-72
mob traps, 82
cactus, 84-86
dispensers, 87-90
pistons, 91-92
trenches, 82-84
mobGriefing gamerule command, 245
mobs, fall damage, 72
modern building style, 108-111
modifications. *See* mods
modpacks, 11
installers, 20-22
mods
adding to MultiMC custom launcher, 16
for adventure maps, 253-254
BuildCraft. *See* BuildCraft
ComputerCraft, 217
defined, 6
downloading, 19
for flying, 224
Forestry, 217
Galacticraft, 216-217
IC2. *See* IC2
installing, MultiMC custom launcher, 15-19
managing
custom launchers, 11-19
methods of, 10-11
modpack installers, 20-22
reasons for, 5-6
for natural terrain and trees, 122-123
NEI (Not Enough Items), 143-144
Permissions Mod, 140
Project:Red, 142
Core component category, 148
installing, 143
Integration component category, 148-150
pumpkin/melon farm automation, 144-148
Transmission component category, 150-151
Transportation component category, 152
Railcraft. *See* Railcraft
Mojang, 5
molding ice, 116-118
monument completion maps, 239
Movie Maker. *See* Windows Movie Maker
MultiMC custom launcher, 11-15
account management, 12-13
adding mods, 16
downloading, 11
editing instances, 14
installing mods, 15-19
screenshot management, 14
Multipart, 143
multiple mining wells, building, 166

N

nano armor (IC2E), 193
NanoSaber, 193-194
NanoSuit, 193

natural terrain, building, 122-123
NEI (Not Enough Items) mod, 17, 143-144
Nether
  building in, 129-130
  portal frames, 61
NOR gates, 136
Not Enough Items (NEI) mod, 17, 143-144
nuclear reactors (IC2E), building, 199-202

O

obsidian, creating, 61-65
obsidian pipes (BuildCraft), 161
OD Scanners, 194
  energy requirements, 197
oil
  deposits, creating, 167
  extraction (BuildCraft), 156
  pumping, 170
  refining, 171-172
Optifine, 17
ores
  cobblestone, creating, 53-58
  obsidian, creating, 61-65
  stone, creating, 59-61
oscillators, creating, 25-26
overloading cables and machines, 199
OV Scanners, 194
  energy requirements, 197

P

parkour maps, 239
Permissions Mod, 140
pipe facades (BuildCraft), 178
pipe wire (BuildCraft), 178
pipes (BuildCraft)
  fluid transport
    gold pipes, 168
    stone pipes, 168
    wooden pipes, 168
  kinesis pipes
    power management, 167
    quartz, 169
  plugging, 170
  transportation pipes, sorting produce, 157-162
piston-based mob farms, 70
pistons
  in BUD switches. *See* BUD (Block Update Detector) switches
  cobblestone creation, 54
  as mob traps, 91-92
  oscillators, creating, 25-26
  synchronizing, 56-57
pitched roofs, 102-104
pixel art, drawing, 123-124
planning
  camera paths and animation, 224-227
  construction, 96
  story in Adventure mode, 239-240
plant species in IC2E, 183-184
  crossbreeding, 185
planting
  produce by villagers, 44-47
  trees for tree houses, 115
platforms, self-generating, 56-58
player versus player maps, 239
plugging pipes (BuildCraft), 170
portals, Nether portal frames, 61
potato farms, automation, 44-47

power
  generators (IC2E)
    building, 195-197
    nuclear reactors (IC2E), 199-202
  management, kinesis pipes (BuildCraft), 167
  measurements, 162
  sources for redstone torches, 25
  stations, building, 163-165
pressure plates, as traps, 248
privacy settings in Vimeo, 234
produce
  collecting, 185
    in chest-connected hoppers, 30
    minecart automation, 32-36
    minecart switches, 140-142
    pumpkin/melon farm automation, 36-43
  planting by villagers, 44-47
  sorting, automation, 47-51
    with BuildCraft pipes, 157-162
Profile Editor, 10
profiles
  creating, 7-9
  Profile Editor, 10
Project:Red, 142
  Core component category, 148
  installing, 143
  Integration component category, 148-150
  pumpkin/melon farm automation, 144-148
  Transmission component category, 150-151
  Transportation component category, 152
protecting blocks, 140
publishing
  adventure maps, 254-255
  video to YouTube and Vimeo, 231-235
pulse formers, 145
pumping oil, 170
pumpkin farms, automation, 36-43
  Project:Red, 144-148
puzzle maps, 239

Q

Qblock, 125
quantum armor (IC2E), 193
quarries, automation, 172-175
quartz kinesis pipes, 169
QuickTime Player for Mac, 222-223

R

Railcraft, 20
  coke ovens, building, 206-207
  creosote, creating, 208
  crowbars, 211
  downloading, 206
  elements in, 205-206
  reinforced track, building, 212-213
  standard track, building, 208-211
  track relayers, 216
  tunnel borers, building, 213-215
  types of tracks, 211-212
  undercutters, 216
  wooden track, building, 208
rails
  automation, collecting produce, 32-36
  detector rails, 141
  minecart switches, 140-142
RAM availability, 9
randomizers, 149
rebar, creating, 213
RE-Battery, 196

recording video, 219
camera paths and animation, 224-227
frame rate, 220
hardware, 224
AVerMedia's Live Gamer Portable, 224
Elgato Game Capture HD Recorder, 224
overlaying audio/titles, 227
iMovie, 227-230
Windows Movie Maker, 230-231
resolution, 223
resource capacity in Windows, 223
software
Bandicam for Windows, 221-222
FRAPS for Windows, 221
QuickTime Player for Mac, 222-223
selecting, 220-221
uploading to YouTube and Vimeo, 231-235
recycling in IC2E, 202
red alloy wiring, 145
redstone blocks. *See also* automation
in BUD switches. *See* BUD (Block Update Detector) switches
comparators, 133
in combination locks, 136-137
engines (BuildCraft), 158
oscillators, creating, 25-26
Project:Red, 142
Core component category, 148
installing, 143
Integration component category, 148-150
pumpkin/melon farm automation, 144-148
Transmission component category, 150-151
Transportation component category, 152
repeater clocks, 55-56
repeaters, 40-41
torches, as inverters, 25
redwheat, 184
reeds, 183
refilling dispensers, 90
refining oil, 171-172
reinforced track, building, 212-213
removing weeds, 188
rendering chunks, 62
repeater clocks, 55-56
repeaters
Project:Red, 145
redstone repeaters, 40-41
residential roads, 110-111
resizing gameplay window, 8
resolution
of gameplay window, 8
recording video, 223
resource packs
copying into folders, 9
installing, 18
rewarding players in Adventure mode, 248
road construction, residential roads, 110-111
roofs, building, 100-101
complex roofs, 104-106
double-layered roofs, 107-108
pitched roofs, 102-104
steep pitched roofs, 112
rotating items in frames
combination lock creation, 133-139
dimmer switch creation, 131-132
rubber, creating, 183

S

saved worlds
copying, 9
finding, 9

saving blueprints and templates, 178
say command, 243
.schematic files, importing, 125-127
screen recording. *See* recording video
screenshots, managing in MultiMC custom launcher, 14
screwdrivers, 145
seeds, analyzing with Cropnalyzer (IC2E), 190-192
selecting software for recording video, 220-221
selectors in command string, 242
self-generating platforms, 56-58
sequencers, 145
server/client message log, viewing, 10
sharing
  with BuildCraft libraries, 178
  adventure maps, 254-255
shortcuts in Camera Studio, 226-227
single-layer pistons in BUD switches, 32
slime, spawning, 68
slime blocks, 30
snapshots, 6
  downloading, creating profiles for, 7-9
software
  Bandicam for Windows, 221-222
  FRAPS for Windows, 221
  QuickTime Player for Mac, 222-223
  selecting for recording video, 220-221
software screen-recording, 220
Solar Helmets, 194
sorting produce, automation, 47-51
  with BuildCraft pipes, 157-162
sowing. *See* planting
spawn eggs in dispensers, 89
spawning
  mob farms, 68-70
    rate of spawn, 93
    water-based, 70-72
  slime, 68
  spiders, cactus and, 87
spawnpoint command, 243
specifiers in command string, 245-248
spheres, building, 127-129
spiders, cactus-based traps, 85
spider spawners, cactus and, 87
Spleef, 58
square brackets ([ ]) in commands, 242
square farming (IC2E), 189-190
stacked hoppers, 49
stacks, collecting, 157
standard track, building, 208-211
state cells, 145
statues, building, 124-129
steam engines, 210
steampunk building style, 114-115
steep pitched roofs, 112
stickreeds, 183
sticky pistons. *See* pistons
sticky resin, extracting, 183
stirling engines (BuildCraft), 162
  building power stations, 163-164
stone, creating, 59-61
stone fluid transport pipes, 168
story planning in Adventure mode, 239-240
string, collecting, 87
stripes pipes (BuildCraft), 161
strip farming (IC2E), 186-188
suburban building style, 108-111
suffocation of mobs, 91-92

sugar cane. *See* cane farms
superflat worlds
  creating, 24
  mob farms in, 69
survival maps, 239
Survival mode
  Creative mode versus, in construction, 95
  toggling with Creative mode, 143
switches
  BUD (Block Update Detector) switches, 24
    cane farm automation, 27-32
    creating, 25-27
    pumpkin/melon farm automation, 36-43
  minecart switches, 140-142
synchronizing pistons, 56-57

T

T-junctions for pipes, 159
tags for videos, 234
Technic Launcher, 20
Tekkit, 20
teleporting in Adventure mode, 243-246
tell command, 243
tellraw command, 249-253
templates (BuildCraft)
  building with, 175-177
  defined, 175
  downloading, 178
  storing, 178
terra wart, 184
testfor command, 248
texture packs, 119
thumbnails for videos, 234
time add command, 243
time set command, 243
titles, overlaying in captured video, 227
  iMovie, 227-230
  Windows Movie Maker, 230-231
toggling Creative and Survival modes, 143
tools in IC2E, 193-195
torches, redstone torches as inverters, 25
tp command, 243-246
track relayers, 216
tracks
  junctions, 212
  reinforced track, building, 212-213
  standard track, building, 208-211
  types of, 211-212
  undercutters, 216
  wooden track, building, 208
train stations, 209
Transmission component category (Project:Red), 150-151
transport in BuildCraft, 156
Transportation component category (Project:Red), 152
transportation pipes (BuildCraft), sorting produce, 157-162
transporting produce, automation, 32-36
trapped chests, 90
traps
  mob traps, 82
    cactus, 84-86
    dispensers, 87-90
    pistons, 91-92
    trenches, 82-84
  setting correctly, 248
treasure hunt maps, 239
tree houses, 115
trees
  building, 122-123
  planting for tree houses, 115

trenches, as mob traps, 82-84
Trimble SketchUp, 125
tripwire, triggering pistons, 92
troubleshooting rendering chunks, 62
tunnel borers, building, 213-215
turtles, 217
Twitch, 232

U–V

undercutters, 216
updates to Minecraft, 217. *See also* automation
uploading
  adventure maps, 254-255
  video to YouTube and Vimeo, 231-235
vanilla, defined, 10
Victorian building style, 101-106
video recording, 219
  camera paths and animation, 224-227
  frame rate, 220
  hardware, 224
    AVerMedia's Live Gamer Portable, 224
    Elgato Game Capture HD Recorder, 224
  overlaying audio/titles, 227
    iMovie, 227-230
    Windows Movie Maker, 230-231
  resolution, 223
  resource capacity in Windows, 223
  software
    Bandicam for Windows, 221-222
    FRAPS for Windows, 221
    QuickTime Player for Mac, 222-223
    selecting, 220-221
  uploading to YouTube and Vimeo, 231-235
viewing server/client message log, 10
Viking building style, 111-113
villagers, planting produce, 44-47
Vimeo, uploading to, 231-235
void pipes (BuildCraft), 160
voxelization, 125
VoxelMap, 17
VoxelModPack, 16
VoxelSniper, 122

W

wall of flame, 89
walls
  building, 98-99
  interior, 119
water
  dispensers, 38-40, 44-45, 88
  flowing, 44-45
    cobblestone creation, 53-55
    obsidian creation, 61-65
  infinite sources, 61
  stone creation, 59-61
  in trenches, as mob traps, 82-84
water-based mob farms, 69-72
water sources, creating, 167
weapons in IC2E, 193-195
weather command, 244
weeds
  avoiding, 185-187
  removing, 188
wheat farms, automation, 44-47
windows, 119
  resizing, 8
Windows Movie Maker, 230-231
wiring in Project:Red, 150-151

wooden crops, 185
wooden engines (BuildCraft), 162
wooden fluid transport pipes, 168
wooden pipes (BuildCraft), 157
wooden track, building, 208
WorldEdit, 122
WorldGuard, 140
worlds
  flat worlds, creating, 24
  saved worlds
    copying, 9
    finding, 9

X–Y–Z

XOR gates, 149
xp command, 244
XRay, 225

YouTube, uploading to, 231-235

Zombe, 225
zombies in invisible wall maze, 238