INTRODUCTION

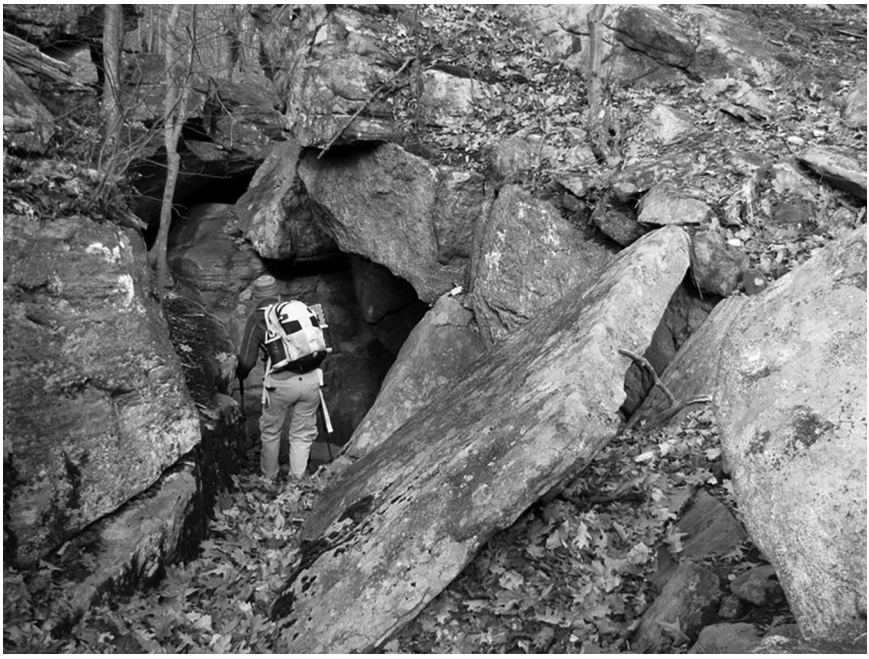
Downstate New York Rock Walks is a hiking guidebook that also doubles as a historical record of downstate New York's amazing boulders and rock formations.

If we had wanted to, we could have simply recounted the unique geological and cultural history of these incredible boulders and rock formations and left it at that. But in doing so we would have ignored one crucial element: People not only want to read about amazing boulders and rock formations, they want to get out and see them firsthand; hence, the reason for directions being included, where possible.

What you have before you is the culmination of untold hours of extensive library and online research in combination with technological advances available through Google Earth, MapQuest, and Topo software, all of which have allowed us to travel downstate, and into densely populated areas, without actually leaving our house in Albany (although, truth be told, we did get to actually visit a significant number of these sites).

Here, then, is an opportunity to hike to historic rocks, balanced rocks, perched rocks, rock monuments, talus caves, rock-shelters, tiny caves, massive glacial erratics, glacial potholes, and rock profiles—destinations other than your typical mountain summit, waterfall, and lake.

Although the directions given are pretty accurate thanks to MapQuest and Google Earth, there is always the chance we may have erred through misinformation or misunderstanding. For this reason, be prepared to make some allowances (but hopefully not many) where needed.



I2. Approaching the entrance to Elbow Brush. Photograph by Dan Balogh.

Why Rocks?

We began thinking about writing a book on boulders and unusual rock formations of Downstate New York over ten years ago. That project, however, was momentarily set aside when a Massachusetts photographer named Christy Butler decided that we should do a rock-oriented hiking guidebook of Massachusetts, and so was born *Rockachusetts: An Explorer's Guide to Boulders and Rock Formations of Massachusetts* (2016).

It was while working on *Rockachusetts* that we both came to realize that we were doing something special, perhaps something that had never been done before. Despite many books having been published on rock climbing and bouldering, ours, we believed, was the first to feature boulders and rock formations as hiking destinations, each one unique in its own right. Since then, Christy has gone on to publish *Erratic Wandering: An Explorer's Hiking Guide to Vermont, New Hampshire & Maine* (an incredible undertaking by anyone's standards). Meanwhile, we have been busy at work on *Rambles to Remarkable Rocks: An Explorer's Guide to Amazing Boulders and Rock Formations of the Greater Capital Region, Catskills & Shawangunks*; *Boulders Beyond Belief: An Explorer's Hiking Guide to Boulders*

and Natural Rock Formations of the Adirondacks, and *Rocks That Rock: An Explorer's Hiking Guide to Amazing Boulders and Rock Formations of Central & Western New York*.

The obvious question that inevitably comes to mind is: "Why write a book about rocks when everything around us is rock?" Truth be told, can there be anything more ordinary and commonplace than rock?

This argument would be unassailable if Earth was simply a mantle of unbroken, unvarying rock. It isn't—not by a long shot. The landscape before us has been immensely shaped and reshaped by plate tectonics, erosion, and repeating periods of glaciation. Enormous boulders have been picked up and moved incredible distances. Talus slopes have formed where sections of rock have been ripped off from cliff faces by glaciers or collapsed on their own accord. Rivers have created enormous chasms that continue to deepen. Swirling whirlpools, seizing stones and spinning them endlessly around, have augered their way into streambeds to create potholes. Enterable fissures have formed where the bedrock has literally split asunder like the shell of an egg cracking under pressure. Softer rock has been eroded out from under more durable rock to leave behind rock-shelters.

Yes, nature has been at work, and, as an artist, has sculpted some pretty amazing natural rock formations.

When it comes to downstate New York, we have been particularly impressed by just how many of the countless number of rocks are historically significant. Hundreds have been known about for centuries, many going back to the days when Native Americans used boulders and rock formations for meeting places and as refuges from the elements.

Until the last few centuries, large rocks served as natural points of navigation through wildernesses that were otherwise featureless. They also served as boundary markers for European settlers when lines of demarcation needed to be established for land ownership.

Many downstate rocks were widely publicized during the late nineteenth century and early twentieth century, their images reproduced through hundreds of thousands of postcards. You will see a number of these postcard reproductions scattered through the book.

Erratic Behavior

Downstate New York possesses a great many small-to-large erratics. Erratics, by definition, are rocks that are not native or indigenous to their

surroundings. They have traveled from other regional areas, often over great distances. Early scientists were perplexed by the presence of erratics, confounded over what kind of force was powerful enough to move rocks the size of houses and as massive as freight cars over tens to hundreds of miles.

Native Americans, of course, had their own theory about erratics. Out-of-place rocks simply fell from the sky, perhaps dropped by the Great Spirit himself. As it turns out, the notion of rocks falling from the sky is not as fanciful as it may have once sounded. Earth, as we now know, is constantly being bombarded by meteorites, with some making it to the ground as meteors. Fortunately, most are burned up and disintegrate before reaching terra firma, which is why you are unlikely to ever come across a meteor in your travels. For this reason, we can safely rule out meteors for being the source of the thousands upon thousands of erratics that lay about. Are there any other theories?

The first scientific-sounding theory to explain the existence of erratics was called the Diluvial Theory. It drew inspiration from the Bible and postulated that it was the torrential deluge of waters from Noah's Great Flood that pushed and tumbled these huge rocks across the landscape. In this respect, the Diluvial Theory did make sense, for we all know the power of moving water and the tremendous force it can exert on objects encountered. The theory, however, only worked if you believed in a biblical, worldwide, Great Flood. It blithely ignored the fact that millions of huge erratics were inexplicably not present in the southern hemisphere as you would expect if a worldwide flood once raged. It also failed to answer how such enormous rocks managed to get up to the top of high mountains given the fact that fast-moving waters would push boulders around obstacles, such as hills and mountains, as opposed to carrying them up to the top.

In 1833, the Diluvial Theory was made slightly more palatable by bringing into play the role of icebergs. It was called the Ice-Rafted Theory. Now, in addition to Noah's Great Flood, it was postulated that huge icebergs broke loose from the arctic ice circle and, like rafts, transported boulders south over great distances, dropping them as the ice slowly melted. This theory both explained how boulders ended up on top of mountains (the mountains were under water), and why few large boulders are found in the southern hemisphere (the melting icebergs dropped their load before they could get there). The problem with this theory, however, was that it

couldn't explain how boulders began their journey on top of the icebergs. That went against the natural order that ice forms on rocks—not vice versa.

It was up to Swiss-born Louis Agassiz to come up with a satisfactory theory, which he advanced in 1837. It was called the Glaciation Theory, and asserted that erratics, or what we now call glacial erratics, were swept up by stupendous glaciers. These mile-high glaciers bulldozed the landscape, moving rocks and earth southward, and, in the process, depositing millions of large rocks in their wake as the Earth warmed and the glaciers began to retreat northward. Since glaciers never reached the southern hemisphere, that explained why erratics were present only in the northern hemisphere.

Since Agassiz's time, there has never been any further debate about the matter (except for Creationists who believe that the Earth is only 6,000 years old and that there has been insufficient time for such momentous events to have happened).

We find it somewhat ironic, however, that in the end, it *was* water after all that moved rocks across the landscape—only, in this case, water in its solid form as ice.

Downstate New York 10,000 Years Ago

It's important to understand that during the last Ice Age, North America looked a great deal different than it does today. At that time, a huge portion of the ocean was locked up as ice, causing sea levels to drop over 200 feet and exposing vast tracts of land. Long Island was about twice as wide then as it is now. The Hudson River ran through a canyon whose walls were over 200 feet in height.

When the last Ice Age ended as glaciers retreated northward, a freshwater body of water called Lake Hudson momentarily formed. Its waters were temporarily dammed up by an earthen barrier that stretched between Brooklyn and Staten Island.

As far as Manhattan goes, there was little of it to see, just a portion of what we today call Midtown. Queens and the Bronx were essentially buried under Lake Flushing (where Flushing Meadow in Queens is now), and the East River (really just an arm of the Atlantic Ocean) that separated Manhattan from Brooklyn and Queens, had yet to come into existence.

It really was a different world back then as glaciers made their northward retreat!

How Big Is Big?

You might wonder how big a boulder can get. As it turns out, you don't have to look very far. The largest freestanding boulder on the planet is reputedly located right here in the United States. It is the seven-story high Giant Rock (34°19.970′N, 116°23.325′W) resting in the Mojave Desert near Landers, California. This is truly a humongous boulder. But large boulders aren't big just because of their size. They are massive—incredibly so. Double the size of a four-foot boulder to eight feet and its mass (weight) hasn't just changed by a factor of two. It has increased cubically, meaning that what started off at ten tons now weighs one thousand tons (10 x 10 x 10).

Largeness, then, really does matter when we talk about big boulders.

Balanced Rocks and Earthquakes

Large balanced rocks are astonishing when encountered, and serve to inspire one's imagination about the wonders of nature. But can they also serve a utilitarian function and be used to study past earthquakes? The answer to this very intriguing question is "yes." Paleoseismologists (scientists who study past earthquakes) are now hiking to large balanced and perched rocks to take pictures from multiple angles to create, through photogrammetry, a three-dimensional representation that can then be fed into a computer to calculate not only the mass, weight distribution, and balanced points of the rock, but what magnitude earthquake it would take to destabilize the rock.

William Menke, a geologist and seismologist with Columbia Climate School's Lamont-Doherty Earth Observatory in Palisades, New York, has made a number of trips into the nearby 47,500-acre Black Rock Forest to locate and take such measurements on large balanced rocks. Scientists are hopeful that the data generated will prove helpful in understanding our seismic past as well as creating future hazard models.

GPS Coordinates

Virtually all GPS coordinates listed in the book have been taken directly from Google Earth.

This means, then, that you may encounter minor discrepancies between your hand-held GPS unit and the Google Earth GPS coordinates, this being the result of Google Earth having to stitch together thousands of individual maps to create one world-encompassing map.

On the plus side, you can feed all the GPS coordinates for each chapter into your Google Earth program if you wish to reconnoiter the area in advance.

Delorme *New York State Atlas & Gazetteer* Coordinates

You will find that Delorme coordinates are ideal for providing an overview of the area that you are traveling through to reach the parking area or trailhead.

Be aware, however, that Delorme recently updated their *New York State Atlas & Gazetteer*, completely reversing the numerical order of their maps. For this reason, two sets of Delorme coordinates are provided to ensure that regardless of which edition you are using, you will be able to find your way with maximum efficiency.

Directions

Most of the directions have been created using various combinations of Google Earth, MapQuest, and Topo Mapware.

In one or two instances where navigating by MapQuest through a quagmire of streets and expressways was too complicated for a simple set of directions, sufficient information has been provided to get you to the general area, leaving you to figure out the rest using local maps.

In almost all instances, the directions start from a major intersection, such as "junction of Routes 9 & 311," and from there proceed to the trailhead parking.

In areas of high population density, like Manhattan, there are times when you may have to follow through on your own to find a parking space.

WOW Factor

A somewhat arbitrary "WOW Factor" number, ranging from 1 to 10, is given for each rock formation. The higher the number, the bigger the wow.

Photographing Rocks

The ideal always is to include a person in the photograph where possible. Doing so not only humanizes the photograph but provides important information regarding the size of the rock formation.

Secondly, most rocks tend to be in woodlands surrounded by trees. If possible, try to take as unobstructed a photograph of the boulder as

possible. Trees and branches can get in the way and obscure the boulder or, minimally, act as a source of visual distraction.

Proper lighting also is a factor that cannot be disregarded. Since many boulders are located in deep woods, the light coming in can be severely restricted by trees, brush, and leaves. This fact needs to be taken into account when adjusting the setting on your camera.

On the other hand, if there is too much sunlight, the bright rays poking through branches and bushes can create a checkerboard pattern, once again making the image visually distracting. In this case, there may be little you can do to compensate except to wait for a momentary cloud to diffuse the sunlight.

This Is an Explorer's Guidebook

Once again, this is not just a hiker's guidebook, but also an explorer's guidebook. At times, you may need to rely upon your own ingenuity to locate a particular boulder or rock formation. However, what you are guaranteed to have is an adventure, and isn't half the fun just getting out into the great outdoors?

Regrettably, not all of the rocks described are necessarily accessible. In some cases, the boulder or rock formation may be on private land where visitors are not welcomed or where, minimally, permission from the landowner is required. We've included these rocks, not only for the sake of historical record (which is extremely important), but because there's always the possibility that the land may one day return to the public domain through the acquisition of lands from conservation-minded public and private agencies.

In other cases, the rock may simply no longer exist, destroyed either by man or by nature. This is particularly regretful when it is humans who are to blame.

Rocks that are nonexistent or currently inaccessible are listed as "historic."

CAUTION: SAFETY TIPS

Nature is inherently wild, unpredictable, and uncompromising. Outdoor recreational activities are by their very nature potentially hazardous and involve risk. All participants in such activities must assume the responsibility for their own actions and safety. No book can replace good judgment.

The outdoors is forever changing. The author and the publisher cannot be held responsible for inaccuracies, errors, or omissions; for any changes in the details of this publication; for the consequences of any reliance on the information contained herein; or for people's disregard for safety in the outdoors.

Remember: the destination is not the boulder, rock formation, or the mountain summit. The destination is home, and the goal is getting back there safely.

1. Always hike with two or more companions whenever possible. That way, if one person becomes incapacitated, one companion can go for help while the second stays close at hand to administer comfort and support.
2. Make it a practice of bringing along a day pack complete with emergency supplies, compass, whistle, flashlight, dry matches, rain gear, energy bars, extra layers, gorp, duct tape, lots of water (at least twenty-four ounces per person), mosquito repellent, emergency medical kit, sunblock, and a device for removing ticks.
3. Use sunblock when exposed to sunlight for extended periods of time and apply insect repellents as needed.
4. Hike with ankle-high boots—always!
5. Be cognizant of hypothermia (overcooling) and hyperthermia (overheating). Bring along extra layers when the temperature is cold, and drink plenty of water when the weather is hot and muggy.
6. Stay out of the woods during hunting season in areas where hunters are present.
7. Stay on trails unless you are proficient in orienteering.
8. Be aware that trails described in this book can become altered by blowdown, beaver dams, avalanches, mudslides, forest fires, and other natural disasters. Stay alert.
9. Always let someone know where you are going, when you will return, and what to do if you have not shown up by the designated time.
10. Leave early in the morning if you are undertaking a long hike, especially during the winter when daylight is at a premium.

11. Be mindful of ticks, which have become increasingly prevalent and virulent as their range expands. Check yourself thoroughly after every hike and remove any attached tick immediately.

So let's begin . . .

Downstate New York is huge, with many counties, boroughs, and islands. For this reason, particularly as a matter of convenience, we will use the Hudson River as a handy line of demarcation and divide the book into two sections: rocks on the east side of the Hudson River and rocks on the west side of the Hudson River.

With this said, we began our adventure, somewhat arbitrarily, starting with the east side of the Hudson River.