

Chuck Stevens

Tempting Adirondack Stream — Buck Mountain

Hydrophobia in the Adirondacks

By Thomas R. Welch, M.D. and Michael J. Parker, M.D.

Item: An information leaflet posted on the bulletin board at a High Peaks entrance warns of a wilderness illness that may be severe enough to require "evacuation" from the backcountry.

Tom Welch and Mike Parker are, respectively, wilderness guide and camp physician at Camp Russell, Woodgate, New York. In the off season, Tom is associate professor of pediatrics at Children's Hospital Medical Center, Cincinnati, Ohio, and Mike is a staff otolaryngologist, SUNY Health Science Center, Syracuse, New York. Readers can communicate with Dr. Welch at Children's Hospital Research Foundation, Division of Nephrology, Elland and Bethesda Avenues, Cincinnati, Ohio 45229.

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Item: While hiking a trail near Skylight, a party stops to drink from a spring, the source of which is within a large area of dense blowdown. A ranger meets the group and warns that this is dangerous, and that such spring water should always be treated.

Item: The Adirondack Mountain Club distributes an eight-page leaflet (in French and English) describing the health hazards of untreated high-peaks water.

Item: A DEC ranger meets a party headed for a week in the High Peaks. Instead of the usual admonition to be careful with fire and to carry out trash, the group is lectured on the dangers of water and is instructed to "double the contact time" of the iodine purification system they are using.

The casual observer might think that a wilderness equivalent of the black death has descended upon the Adirondacks. The cause of this furor is a usually trivial intestinal ailment called giardiasis. A few

people, it appears, may have acquired this condition after camping in the High Peaks. **How big of a problem is giardiasis in the High Peaks?** When one sets aside the hype of the past few years and tries to establish factually how great this problem is, a number of difficulties are evident. First of all, we must realize that there is no practical, direct way of establishing that a particular backcountry water source is contaminated with *Giardia*. In studying outbreaks of infection from community water supplies, sanitarians draw hundreds of gallons of water from the suspected source through filters. These filters, in turn, are then studied microscopically for evidence of typical cysts. This time-consuming, labor-intensive method, even under ideal conditions, is imperfect. In last summer's outbreak of giardiasis in Long Lake, for example, overwhelming evidence clearly implicated the community drinking water.

The real problem raging in the Adirondacks, however, is *hydrophobia*. With the near-disappearance of rabies, for which it was originally coined, hydrophobia would seem to be an excellent term for a

form of mass hysteria characterized by an abnormal fear of drinking unboiled water.

As backpacking physicians with many years of experience in the High Peaks, we have viewed with amusement the spread of the hydrophobia epidemic. Until recently, we considered this relatively harmless, and simply sat back and enjoyed a good chuckle over a drink of (untreated) mountain water. Lately, though, we have become concerned that the hydrophobia

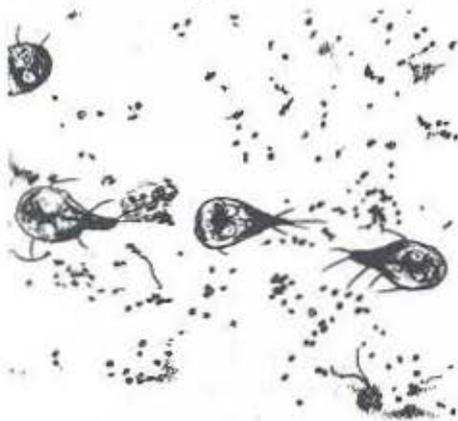
readily infected that those taking less, then the evidence is even more convincing. Such an approach was used in the recent outbreaks in Long Lake and Fort Plain, New York, and Pittsfield, Massachusetts. Nonetheless, it was very difficult to demonstrate unequivocally that *Giardia* cysts were actually present in the water.

Given the infinite number of ponds, lakes, springs, streams, and rivulets dotting the High Peaks, it is obvious that a

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epidemic is having some serious consequences. In particular, misplaced concern about the safety of Adirondack water may be distracting attention from a much more likely culprit as a cause of the "post-trek runs."

In this article, we hope to bring some perspective to the Adirondack giardiasis situation, advance some alternative ideas, and outline an approach to water for the



Trophozoites of Giardia Lamblia. Note the characteristic shape, paired nuclei and multiple flagella.

backpacker which we consider medically and environmentally sound. We will not review the basic biology of *Giardia lamblia*, the organism responsible for giardiasis. Readers desiring more background information are referred to such recent reviews as the excellent one by Michael Ferris (*Adirondack*, August, 1986).

This is not to suggest, however, that cysts must be identified in water to implicate a particular source. Indeed, very careful study of patients during an outbreak can provide powerful evidence of contamination. If the disease occurs in those drinking from a common source and not in otherwise similar individuals obtaining water elsewhere, then water-borne disease is likely. If it is evident that individuals drinking large amounts of water are more

systematic survey of each for the presence of *Giardia* cysts would be impossible. Nonetheless, we have often been told by the seemingly knowledgeable that such-and-such a spot "has giardiasis in it"! The fact is simply that *Giardia* cysts have never been identified in any High Peaks water source. Without a quantum leap in technology, this approach will never be applied to the wilderness.

For this approach to be useful, however, there must be some way of knowing that patients actually have giardiasis. This disease is diagnosed reliably only by the identification of organisms or cysts in stool or fluid taken from the upper intestine, procedures requiring experienced laboratory personnel. A physician cannot diagnose giardiasis simply on the basis of an office physical exam; a host of bacteria, viruses, and even toxins cause symptoms indistinguishable from giardiasis. In fact, the vast majority of people with diarrhea and abdominal cramps have viral gastroenteritis ("stomach flu") or a diet-induced distress, not giardiasis.

An unfortunate by-product of the recent hysteria is the tendency of those with any intestinal problems after a trip in the High Peaks to assume they have giardiasis. This problem may be unwittingly compounded by physicians. Since it is becoming "com-

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mon knowledge" that this infection is "rampant" in the High Peaks, a physician may consider it reasonable to make the diagnosis in a hiker with diarrhea without obtaining the necessary tests. The patient may then be given one of the potentially dangerous drugs used to treat giardiasis. If he actually has a viral "stomach flu," of

course, the problem will go away on its own in a few days. Since he is taking medication for giardiasis, however, the improvement will be credited to the medicine. Both patient and physician will then believe that they have seen another case of "beaver fever" from Adirondack water!

What is needed, then, is evidence of properly diagnosed giardiasis in hikers, with extensive information about their routes and water drinking habits. Such data are unavailable. The closest statistics speaking directly to this problem are the annual New York State Department of Health Summaries of Communicable Diseases. In 1986, the last year for which complete data are available, there were no reported cases of giardiasis in Essex County and only a handful in adjoining counties (Franklin 1, Hamilton 0, Herkimer 5, Warren 8). These figures, it must be noted, refer to the county in which the diagnosis was made, not necessarily in which the disease was acquired. Nonetheless, it is rather curious that a major epidemic is allegedly going on in the absence of firm evidence that anybody has the disease!

How else may giardiasis be spread? Assume for a moment that there are some bona fide cases of giardiasis in hikers returning from the High Peaks. This in no way proves that drinking water is the source of the ailment. Herein, in our estimation, lies the major myth about this disease and the major lesson for the camper.

Giardiasis is extremely common among certain seemingly unrelated population groups. For example, toddlers in day-care centers, their parents, severely retarded institutionalized individuals, and promiscuous male homosexuals may have rates of infection approaching 30 to 40 percent. Most of these, it should be noted, carry the parasite but are completely free of symptoms. The common denominator in these seemingly disparate groups is one of hygiene: all are at risk of ingesting contaminated feces by such mechanisms as unusual sexual activity or poor handwash-

ing after diaper changing. In developed countries such as the United States, fecal-oral spread, not contaminated water, accounts for most cases of this disease.

The implications of this for the backpacker should be obvious. As we encourage each other to go farther and farther from trails and water to heed the call of

nature, the chances of neglecting thorough handwashing increase. Ironically, in a desire to protect the environment, soap has become *verboten* to many campers, worsening this state of affairs. When one considers communal food preparation, shared trail snacks, and shared water bottles, a few days of backpacking present ample opportunities for contact with fecal organisms. Since many individuals carry *Giardia* asymptomatically, it is not difficult to construct a scenario by which such a person could infect several fellow campers. Such a mechanism could also lead to the spread of viral or bacterial diarrhea throughout a group. In any of these cases,

this is common sense advice, relied upon by campers for decades until the recent hysteria. As the individuals responsible for the health policies of the Camp Russell Adirondack High Adventure program, we have developed the water use procedures followed by our guides and campers. Over the past decade, none of the hundreds of scouts and guides on our Adirondack trips has acquired symptomatic giardiasis.

1. Consider the source of any potential drinking water. It makes no sense to worry about the quality of Adirondack spring or stream water that emerges from an area not used for camping. On the other hand,



more serious and commonly encountered threat than *Giardia*. We use a saturated iodine purification system that costs about fifty cents to make and lasts for several trips (details available on request).

4. Pay careful attention to personal hygiene. To minimize contamination of water, go at least 150 feet from any water supply to defecate. Immediately following this, wash hands thoroughly with soap or foil-wrapped antibacterial towelettes. This, also, should be done away from any water supply. The environmental impact of such small amounts of soap is inconsequential compared to the public health importance of handwashing. Soap is not usually necessary for cleaning eating and cooking utensils. We suggest a soapless cleanup, followed by a sterilizing immersion in boiling water for all shared utensils at least once daily.

Finally, for your own health, as well as

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victims might well place inappropriate blame on drinking water. In situations where several members of a group acquire giardiasis after a High Peaks trip, this type of spread rather than contaminated water is almost surely at fault.

How bad a health problem is giardiasis? An intriguing aspect of the hydrophobia epidemic is that the disease which is the object of so much concern, giardiasis, is an unlikely candidate for so much attention. Although some patients with *Giardia* infection may be quite ill, the vast majority is either completely asymptomatic or suffers only a mild intestinal upset. A number of drug therapies are available for those with symptomatic infection, and rapid recovery is the rule.

In contrast, there are scores of other water-borne ailments. Bacterial contamination, for example, can produce such severe intestinal infections as salmonellosis. Viruses are responsible for such conditions as hepatitis A, a serious and occasionally even fatal liver disturbance. Whenever fecal contamination of drinking water occurs, these diseases are a threat. As with giardiasis, however, all of these conditions may also be spread directly from person to person by sub-optimal hygiene.

In short, contaminated water is a great potential public health threat. Giardiasis, however, is one of the least severe of these threats. Publicity and "common knowledge" to the contrary, there is no evidence that any of these conditions is currently a serious threat to the High Peaks camper. **How should we approach water in the High Peaks?** We believe that a few simple steps will go a long way toward averting hydrophobia, while also avoiding intestinal infections in the wilderness. Much of

water draining a site used regularly for camping should be viewed with suspicion and purified before use. Our concern here is not so much giardiasis as it is the scores of more serious infections associated with fecal contamination. Although the link between beaver and giardiasis is still controversial, we also avoid untreated water in areas exhibiting beaver activity.

2. Consider the amount of water to be consumed. Water-borne organisms such

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as *Giardia* may be present in trace amounts. The risk of infection, thus, is proportionate to the amount of water consumed. A few sips from a questionable source is, thus, much less of a threat than regular consumption over several days. When an itinerary calls for several days' camping in the same location, we recommend purification if there is even the slightest concern about the water's "recent travels."

3. When purification is employed, use cheap, effective methods. Boiling and iodination, when properly performed, eliminate the risks posed by all water-borne organisms. The heavily promoted filtration systems making their way into packs, in our opinion, are silly. Besides being expensive, slow and cumbersome, none can remove viruses, which are a much

everyone else's information, seek medical attention for any prolonged (over one-week) episode of abdominal cramps or diarrhea following a High Peaks trip. Insist on a laboratory-confirmed diagnosis before accepting any medication for a condition such as giardiasis. The authors would very much appreciate hearing from campers who develop properly diagnosed giardiasis after visiting the High Peaks.

We believe that scrupulous attention to these details will allow the camper or hiker to enjoy the High Peaks in safety. We hope they will help to minimize the impact of hydrophobia as well. One of the great pleasures of mountain travel is slurping clear water straight from a cool stream. With all the *real* dangers life presents daily, we find it incredible that such a big point has been made of this one.

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