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Novelties

# The North Star, on Your Wrist

By ANNE EISENBERG

MARK L. WITTEN studies the possible link between airborne metals and clusters of childhood leukemia cases in certain areas. Last year, as part of his research, he hung bits of lichen on about 60 mesquite trees in a mountainous area of Sierra Vista, Ariz., to trap airborne tungsten and arsenic.

This July, when he went back to collect and analyze the lichen, one mesquite tree looked much like the next. But he knew just where the lichen packets were.

“All the information to find them was right on my wrist,” he said.

On his wrist, Dr. Witten, a professor in the pediatrics department at the [University of Arizona](#) College of Medicine in Tucson, wears an unusual object. It looks like a slightly oversized wristwatch and it keeps time with great accuracy — but it is much more than a watch. It is a wrist computer that includes among its many functions a global positioning system receiver.

He can check his watch to see if he’s near the right tree: he recorded the coordinates the year before. And his hands, meanwhile, are free to carry other things like notebooks and pens.

The watch, which costs about \$500, is made by the Finnish company Suunto. Inside its highly engineered 2.7 ounces are a multitude of functions for the thoughtful navigator, including an altimeter, electronic compass, thermometer and barometer, all meant for people who want to know not only their exact place in the world, but also the prospects of any sudden change in the weather.

First Lt. Nick E. Thomas of the Wisconsin Army National Guard, who is on active duty in Iraq, uses the watch, called an X9i, on missions and daily operations, marking all the locations he visits, as well as his home base. He can get a G.P.S. fix “within 30 seconds,” he said in an e-mail message, “and find my way home at any given minute.”

He uses the watch’s electronic compass to orient himself every time he gets out of his vehicle. “Knowing my cardinal direction is always important,” he wrote. The G.P.S. receiver will also give him his bearing if he is moving, as it tracks coordinates from one spot to the next.

He uses the thermometer and barometer to help him anticipate changes in the weather; the barometer has an alarm, among other features. As for the watch features, he particularly likes the one that gives him the time until sunrise and sunset.

“This is good to know when in a war zone,” he wrote. “The darkness of the night can be your friend.”

The watch, it seems, can do everything but make coffee. “However, with its three alarm clocks,” he wrote, “I can program the X9i to wake me up early enough in the morning to make my own coffee.”

Many people use digital maps as an adjunct to the watch when, say, they are at their computers plotting a route for a wilderness hike. When a path is drawn with the computer’s mouse, the map knows the coordinates of any spot on that line.

For example, by using National Geographic’s TOPO mapping software, which is coordinated with the X9i, users can mark and then store in their watches important waypoints, like the coordinates of park ranger stations. Then, if trouble comes, they can check their watch to see how far they are from help. Individualized trail maps can be printed and carried along on the trip.

Tyler Smith of Sylvan Lake, Mich., who sells X9i watches at his Web site, [Suuntowatches.com](http://Suuntowatches.com), uses both the X9i and digital maps for “geocaching,” most recently near Wasilla, Alaska. Geocaching is the sport of seeking hidden objects whose location is marked by G.P.S. coordinates and posted on the Internet. The coordinates, he said, put the seeker within 15 to 20 feet of the cache.

“The TOPO maps are a road map when there are no roads,” he said.

But does the X9i and its accompanying software sacrifice G.P.S. performance to deliver its many other functions? A hardy group of G.P.S. users assembled in late July at Sam’s Point Preserve, in the Shawangunk Mountains, near Ellenville, N.Y., to answer that question, carrying their own hand-held units for comparison.

G.P.S. comes in handy in the mountains, said Heidi Wagner, a group member and manager of Sam’s Point, which is owned by the Open Space Institute and managed by the [Nature Conservancy](http://Nature Conservancy). John Thompson, another member, uses his hand-held G.P.S., for instance, to map the location of plants, animals and sites like carriage trails at the nearby Mohonk Preserve.

Both Ms. Wagner and Bob Posner, also a member of the group, use G.P.S. in their work as emergency medical technicians in Ellenville. “We have to know the G.P.S. to tell the county where to send the helicopter,” Mr. Posner said.

Members of the group tried out the Suunto wrist computer and found that some functions were similar to those in their own hand-held units. The barometer, though, which is used in the X9i to calculate altitude,

was different.

The barometer is there not as a frill, said Terho Lahtinen, a product manager at Suunto headquarters in Vantaa, but in part because altitude measurements by G.P.S. satellite signal are less sensitive to small changes than barometric measurement. Altitude readings by G.P.S. are good when averaged over time, but in the short run they include jumps of dozens of feet when the satellite constellation changes. In fast-changing circumstances like mountain biking, he said, barometric sensing can follow the real profile more accurately.

In the X9i, both the electronic compass and the altimeter-barometer are synchronized with the G.P.S. For instance, the Suunto “automatically switches to electronic compass when a person stops moving and shows direction by compass if G.P.S. direction is not available,” he said.

The Shawangunk G.P.S. experts agreed that the great advantage of the Suunto is that it is worn on the wrist. “You don’t have to worry about putting it down and leaving it behind,” Mr. Thompson, a group member, said, “or having it spill out of your pack.”

Other companies are developing versatile G.P.S. wrist computers designed, for instance, as workout companions. The [Garmin](#) Forerunner 305 (suggested price, \$349.99) includes a wireless heart monitor, said Jessica Myers, a spokeswoman at the company in Olathe, Kan. The Forerunner monitors heart rate, speed, distance, pace and calories burned, among other things. It can display a graphic virtual partner to run at a set pace, so the user can try to keep up.

ALTHOUGH G.P.S. devices have caused little controversy among runners, their use among trekkers has stirred some criticism.

Darran Wells, a senior field instructor at the National Outdoor Leadership School in Lander, Wyo., and the author of a book on wilderness navigation, said that while G.P.S.-based devices could be useful as backups, people venturing into the wilderness need to know how to read a topographic map and to use an analog compass.

“The G.P.S. watches are nice to double-check your location after you’ve determined it looking at a topographic map,” he said, and he admired the barometer-altimeter feature. “An instrument like that can be remarkably accurate for telling your elevation.”

But the operation of a wrist unit is complex, he noted. Its manual must be studied, its controls mastered — chores that require more discipline than some people have.

And Mr. Wells sees another problem that he says is insurmountable: the device requires batteries. “You don’t want to put your life in the hands of a battery-operated anything,” he said.

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