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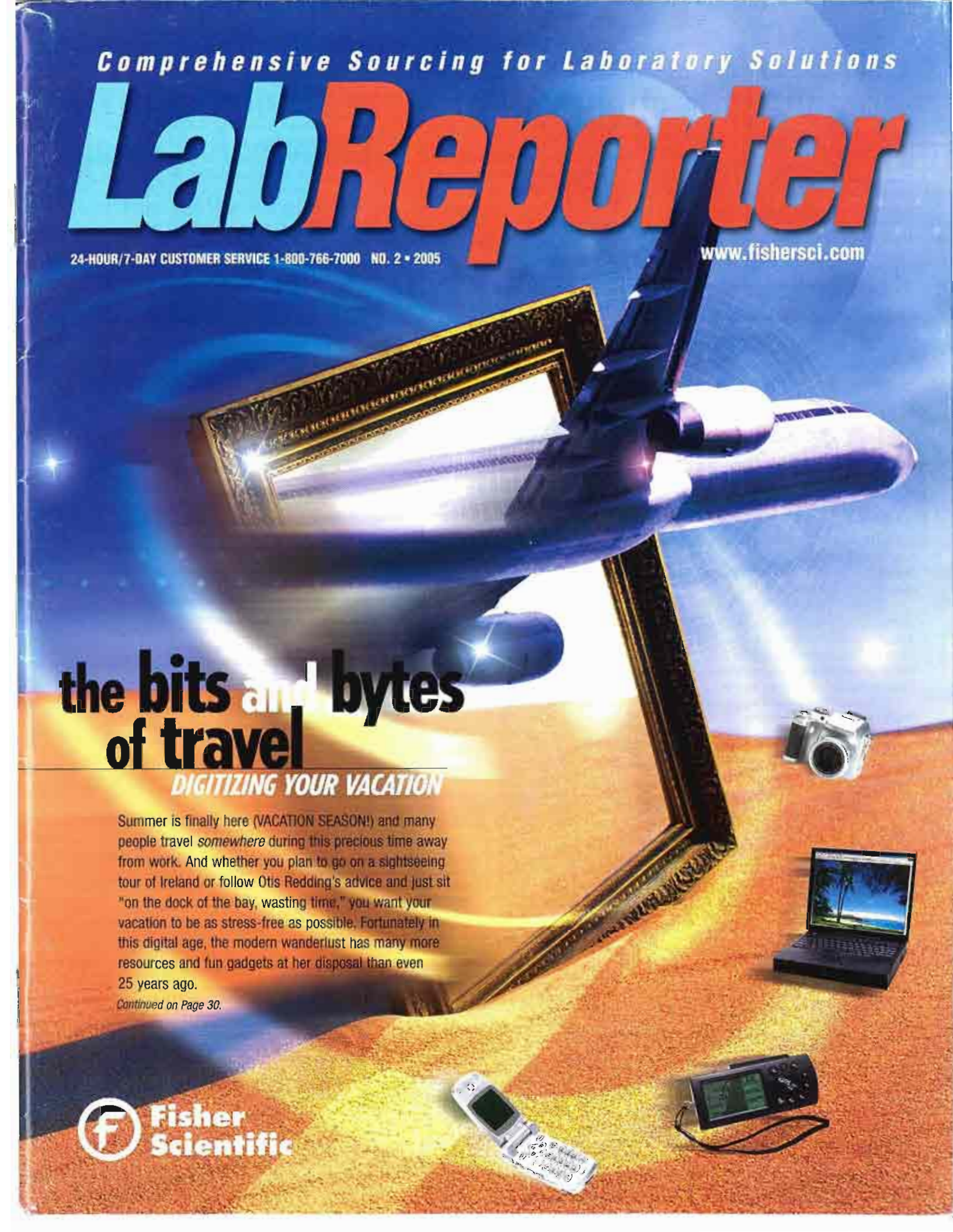

the bits and bytes of travel

DIGITIZING YOUR VACATION

Summer is finally here (VACATION SEASON!) and many people travel *somewhere* during this precious time away from work. And whether you plan to go on a sightseeing tour of Ireland or follow Otis Redding's advice and just sit "on the dock of the bay, wasting time," you want your vacation to be as stress-free as possible. Fortunately in this digital age, the modern wanderlust has many more resources and fun gadgets at her disposal than even 25 years ago.

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the bits and bytes of travel

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Pack Up Your Steamer Trunk

If an early traveler ventured out of her community, it was usually for trade, exploration, or missionary work. "Leisure tourism" was for only the very rich—aristocracy who had the time and disposable income. But any journey a person undertook would be long and arduous.

Mass travel developed when communication, train, and ocean liner technology advanced. Thomas Cook invented group trips in 1841 when he organized one to take teetotalers by train to a temperance rally in Loughborough, England. In 1866, he was taking fellow Britons to America on a tour of Civil War battlefields.

Travel took flight in the 1920s and 1930s when people hitched rides on Post Office airplanes. These brave souls—usually businessmen—endured uncomfortable conditions, but their time was worth more than the five cents per mile it cost for the flight (compared to the 1.3 cents per mile cost of train travel). Before long, airplane manufacturers built faster airplanes with pressurized and heated cabins, thus ushering in formal commercial aviation.

These days, travel is a multibillion-dollar industry. The Travel Industry Association of America reports that in 2003, Americans spent more than $77 billion on travel outside the country. Travel also earned the U.S. more than $80 billion from international visitors!

Your Personal Travel Agent

If a person wished to revisit a destination in the inaugural days of leisure travel, she would have no way of knowing if the hotel or inn at which she stayed a year ago would still be open. A person who planned a vacation during the 1900s would look to posters advertising locations or hotels, the travel section of the local paper, or a travel agent for ideas.

With the introduction of the Internet and World Wide Web, anyone can now plan a vacation and make her own plane, hotel, and car reservations. Type in "travel," "hotels," or "airfare," and you'll receive millions of hits. Research is easy: online guides are available to educate travelers on their destination. Many of the popular mega-travel Web sites are "virtual travel agencies" where you can book your flight, hotel, and car all at once—and within a matter of moments. These mega sites offer many choices to the travel consumer through contracts or affiliations with various vendors.

Navigating Unfamiliar Territory

The early explorer relied heavily on landmarks to find their destination. Useful maps did not come into existence until the Exploration Age of the 15th and 16th centuries, when mapmakers began to rely more on accuracy and information rather than depicting religious concepts. Still, even in these modern times, most paper maps are out of date as soon as they are published due to a constantly changing highway system. Luckily, online maps and GPS receivers are now available, so stopping to ask for directions can be avoided.

The **Global Positioning System (GPS)** is comprised of 24 orbiting solar-powered satellites. Initially used by the military, anyone with a GPS receiver can now access it. How does it work? Imagine that you are lost and need to find your way to a certain city or tourist attraction. Simply put, the GPS receiver will first locate the closest four satellites. It calculates its distance from each by analyzing high-frequency low-power radio signals. The receiver will then figure its own location on Earth by using the trilateration principle—you can be found at the point where all four spheres of the satellites intersect. The receiver combines this data with other information, corrects any calculations to allow for delay errors caused by the atmosphere and skyscrapers, and gives you your latitude, longitude, and altitude data. Most receivers take this data and apply it to map files stored in memory. Leave the receiver on, type in the necessary coordinates, and the GPS unit will guide you directly to your desired destination!

Staying Connected

Educated travelers of yore kept in contact with family and friends back home through the art of letter writing. But mail service was slow and unreliable, and the recipient was fortunate to receive your letter within a reasonable time—or at all. These days instant communication is paramount—anywhere and everywhere. Laptop computers with wireless Internet access are now a necessity on business trips, and many people feel lost if their **cell phone** isn't with them at all times. But did you know that a cell phone is, in actuality, a radio?

More sophisticated than the CB radios of the 1970s, a cell phone enables instant dialogue. Cell phone carriers are given about 800 radio frequencies to use across a region, then divide this area into 10 square mile "cells" with centrally located towers. Cell phones are "full duplex," which means that one cellular call uses two frequencies: one for talking, another for listening. Because of the high amount of frequencies available to any one carrier, many people can use their cell phone at the same time, as well as over many miles due to the "switchability" of the phones to the different cells.

For Your Listening Pleasure

Travelers in the days of coach or train would have to entertain themselves by conversing with their fellow companions or—if they weren't inclined to motion sickness—reading a novel or poetry book. Abject music lovers who were particular on what songs they listened to had no choice but to hum their favorite song to themselves. Portable professionally recorded music began in the 20th century, when those lucky to own a portable 8-track player, cassette player, or CD player (depending on the decade) could take them on their vacation. Even so, you had to have an extra piece of luggage to cart the portable device, as well as its batteries and type of media it played. For the music lover going on vacation in the 21st century, however, **MP3 players** or **satellite radios** are great gadgets to have.

Using an algorithm developed by German company Fraunhofer Gesellschaft in 1987, MP3 (MPEG [Moving Pictures Experts Group] Audio Layer-3) takes advantage of human ear limitations to achieve the highest level of compression possible. The human ear cannot perceive certain sounds, can discern some sounds better than others, and cannot pick up the softer of two sounds when played simultaneously. MP3 compresses the number of bytes in an audio-to-digital file by removing any "unnecessary" information—or those sounds the human ear can't discern—while achieving near CD-quality sound. Thus a three-minute song that uses 32MB of CD space can be compressed to around 3MB. Enough songs can be stored in an MP3 player for at least a short plane ride, if not longer, depending upon how much memory capacity the model has.

Satellite radios are ideal for those vacationers who are traveling by open road but hate listening to static while in the mountains. Also called digital radios, these services consist of satellites, ground repeaters, and receivers with antennas and proprietary chipsets. Programs are transmitted to the satellites from the ground; the satellites beam these signals back down to the radio receivers that then convert the digital data into audio. Currently, there are two satellite companies for the U.S.; and one that transmits to Eastern Europe, Africa, the Middle East, and most of Asia, with plans to add South America and Western Europe.

Say Cheese!

No vacation is complete without pictures. But only those early leisure travelers with artistic ability and a sketchbook could bring back a visual representation of their vacation spot to friends and family. Illustrated postcards weren't offered until the late 1800s, and cameras weren't available to the general public until around 1900.

But these days, who wants to lug around lots of film cases or disposable cameras? **Digital cameras** are the answer! Digital cameras use an image sensor that has many light-sensitive diodes or "photosites." These photosites convert the light from an image into electrical charges. An analog-to-digital converter saves the electrical charges in a digital format; data compression helps to store a high-resolution image until you are ready to e-mail or print it.

Relax—You've Earned It!

Summer is a great time to cure yourself of the cabin fever you've been nursing over the winter months. So reserve your vacation days and hop on the Web to plan that Cancun, European, or Brazilian trip this year! You won't regret it.

Resources

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