The WHAT'S NEW magazine

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Popular science

RADON EXCLUSIVE...
- How to check your home
- What to do about it

CAN TECHNOLOGY STOP TERROR IN THE AIR?

SPECIAL ELECTRONICS SECTION

The WHAT'S NEW magazine
Popular Science
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Cover painting by Jeff Mangiat

Readers Talk Back

Address letters for this column to: Readers Talk Back, POPULAR SCIENCE, 380 Madison Ave., New York, N.Y. 10017. Because of the large volume of mail, we are unable to acknowledge unpublished letters.

Shelter underground

The fine article, "Earth-Sheltered Houses—Bolt-and-Glue Arched Wooden Panels Cut Costs" [Aug.], is misleading on one point: the use of the term "thermal mass" to describe the earth that surrounds (and sometimes covers) passive-solar homes. It is true that the soil acts to modify the exterior temperature and to smooth out daily and seasonal temperature fluctuations. However, in the solar-home business thermal mass usually refers to mass *inside* the house, insulated from the surrounding earth. The solar heating of this mass can be controlled so that it can store and then radiate the heat into the house's interior. By this definition, the Loveless home has minimal thermal mass.

John F. Strickler Jr.
Camano Island, Wash.

V. Elaine Smay replies: "Reader Strickler is right: Passive-solar buildings that are not earth-bermed or -sheltered have the entire thermal mass inside *the insulation. But, as he also says, the mass of earth around and above an earth-sheltered house smooths out daily and seasonal temperature variations. Thus those in the earth-sheltered-house business refer to it, properly, as thermal mass. The IBS earth-sheltered houses have some internal thermal mass as well, mostly in the form of a poured-concrete slab that forms the ground floor. The slab does store solar heat in houses that have been built following passive-solar design principles."*

Byte counts

In August's "Bits & Bytes" you report that an optical cartridge from Maxell can store 2.6 gigabytes, equal to 40,000 letter-sized sheets of paper. By my calculation this comes out to 65,000 bytes per sheet. On the other hand, "Goodbye, Floppies? Make Way for Low-Cost Hard-Disk Drives" [Aug.] has Xebec's Owl holding 10 megabytes, equal to 5,000 pages of text. This figures out to 2,000 bytes per page. Why the difference?

refers to a typewritten page of standard characters, each requiring one byte. The Maxell specification refers to an optically scanned page that converts text and graphics into a digital code. Scanning requires about 500,000 bytes per page, but a data-compression technique reduces the memory requirement to an average of 65,000 bytes per page."

Bumper cars

In August's "Detroit Report" you comment on the move by auto makers back to a five-mph bumper from a 2½-mph bumper. One major difference between the bumpers was the removal in the 2½-mph bumper of the shock absorbers—an important requirement of the initial five-mph standard. Rumor has it that there are now two five-mph bumpers. Could this mean that some of the manufacturers who are switching back to stronger bumpers forgot to replace the shock absorbers?

C. R. Blydenburgh,
Saunderstown, R.I.

Jim Dunne replies: "Reader Blydenburgh has heard some half-right rumors. There are two types of five-mph bumpers—some have shock absorbers, some don't. That doesn't mean one type of bumper is stronger than the other—they've both passed the same five-mph test. Nor does it mean that some manufacturers have decided to cut corners and save money by eliminating shock absorbers from their cars. It's just that now there are other techniques, such as use of plastics, that can be used in a bumper to meet the five-mph requirement."

Save it with lasers

I've just read Robert Ciaciuch's letter ["RTB," Aug.] about transferring rare old recordings onto laser disc, thereby keeping them from aging. There is a solution to recording all the hisses, pops, and clicks. DAK markets two devices—the Click and Pop Assassin and the Hiss Assassin—to eliminate these problems. You can use these devices to record onto tape or compact disc.

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Readers Talk Back

Continued

a good suggestion for curing LP noise. But noise-eliminating hardware—and there is a variety available from many manufacturers—should not be used when you're recording because you will permanently capture the deficiencies of the devices. For example, if you have a tick on the original LP, it may come out as a thud on the recording. That's how some of the consumer-model noise eliminators erase unwanted sounds. Firms making noise-reduction devices suggest using them during playback so that you can vary the noise-reduction settings without introducing new noises to the recording."

Punching out taillights

Steve Mercaldo obviously has no idea how much it costs to replace a taillight lens on some late-model cars ["Taking Care of Your Car," Aug.]. If he did, he would not have recommended storing an extra ignition or trunk key inside a taillight assembly. It may be cheaper to call a locksmith than to break a lens.

Kevin Rickens, Hanahan, S.C.

If you plan on storing an extra key in the taillight, every time you leave the car you've got to take a screwdriver with you in case you have to remove the lens. Why not just put a key in your wallet and leave the screwdriver home?

Martin H. Styles, Rochester, N.Y.

Quad-coil throwback

I'm sure many readers have noted that a four-coil system with switched low voltage going to the coils—similar to the Saab ignition ["Quad-Coil Ignition Eliminates the Distributor," July]—was a feature of the Ford Model T from 1908 through 1927. Actually, the Saab system more closely resembles that of the Fordson tractor, the Model T's agricultural cousin. On the Fordson, a four-coil box was mounted on the engine block with heavy copper conductors making a short run to each spark plug.

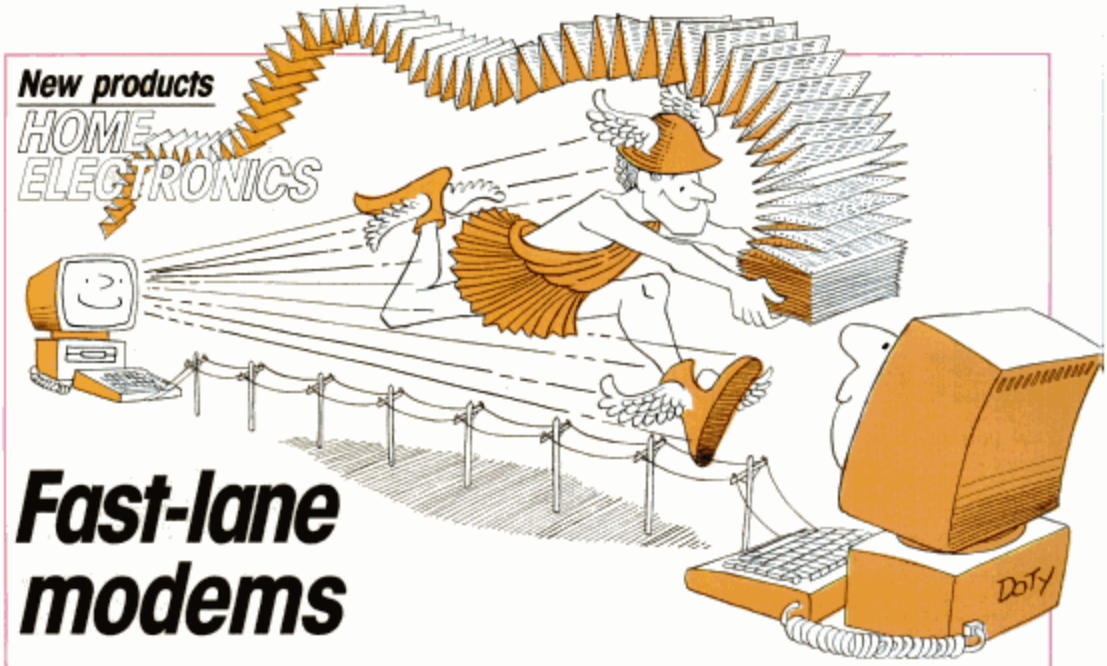
S. J. Saunders, Severna Park, Md.

Corrections: In "Buildings That Keep Their Balance" [Aug.], an incorrect height estimate was given for a 500-story Chicago building. The structure would be approximately one mile high.

"Install One of These Problem-Wall Cover-Ups" [Sept.] neglected to mention the name of the manu-

New products

HOME ELECTRONICS



Fast-lane modems

Now your personal computer can speed information over standard phone lines nine times faster than the swiftest ordinary modems. Using an innovative coding technique, Telebit's new TrailBlazer modems can move data at more than 21,000 bits per second without producing errors.

By JIM SCHEFTER
Drawing by Roy Doty

The words raced across the IBM PC's screen in a blur. Line after line of the 20,000-word document scrolled rapidly from the bottom to the top of the display in a gray haze.

Barely two minutes after an amazing new modem had automatically dialed a number using standard telephone lines, it finished transmitting the document with no errors. A message popped up on the PC's screen: 14,323 BPS. The transmission speed for the test document was 48 times faster than that of the 300-bps (bit-per-second) modems most often used for personal-computer communications.

Another example of TrailBlazer's mercurial speed: When I transmitted this article from my Los Angeles offices to the PS editorial offices in New York using my old 1,200-bps modem, it took a minute and a half, ending up at the receiving end with a dozen errors because of line noise. With the

After witnessing a demonstration at Telebit's headquarters, in Cupertino, Calif., I feel certain that the company's new scheme for transferring data over normal phone lines will spark a trend in computer communications. The patented technology, which is capable of transmitting at more than 21,000 bps, puts existing modems—including the new 2,400-bps units—into the same category as a Ford Model T on a freeway. You'll pay a premium for the high performance: $1,995 for a circuit-board version that plugs into IBM PCs and similar machines, and $2,395 for a stand-alone unit compatible with most other personal computers. The modems are also marketed by Digital Communications Associates (Alpharetta, Ga.) under the name Fastlink.

The innovative modem will make a variety of new microcomputer applications possible:

- Fast transfer of entire screens of data between computers, particularly useful for transmitting complete
- Transmission of high-quality photographs, charts, and graphs in either monochrome or color.
- Micro-to-main-frame-computer communications at speeds fast enough to make efficient use of the larger computer's time.
- Sending software in minutes from commercial data bases to remote buyers.
- Transmitting extremely long documents such as lawyer's briefs, trial records, and manuscripts.
- Permitting, eventually, both voice and data to share a single phone line, opening high-speed commercial data networks to individual users.

Telebit's modem achieves ultra-high-speed error-free transmission by treating data differently than standard modems do. And TrailBlazer requires a good deal of on-board computing power—a Motorola 68000 microprocessor and a Texas Instruments TMS 320 signal processor—to do so. The processing enables the modem to ignore crackles, pops, static, dial-clicks, call-waiting tones, and any other telephone-line interference.

"High speed is important," says Telebit chairman Paul Baran, who conceived and developed the new-style communications. "But the most important element in this modem is that it always works, no matter how bad the telephone line is."

That's critical. Since telephone de-

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