

# TOP OF THE NEWS

◆ **By Anush Yeghazarian**

THOSE SNAPSOTS of your daughter's birthday party or your tropical vacation look good the day you print them. But without the right combination of printer and paper, chances are they will have

faded significantly when you check them out in just a year.

Your photo album doesn't have to end up looking as if you printed it with disappearing ink, however. A study of photo paper longevity conducted by one of the foremost authorities in the field shows

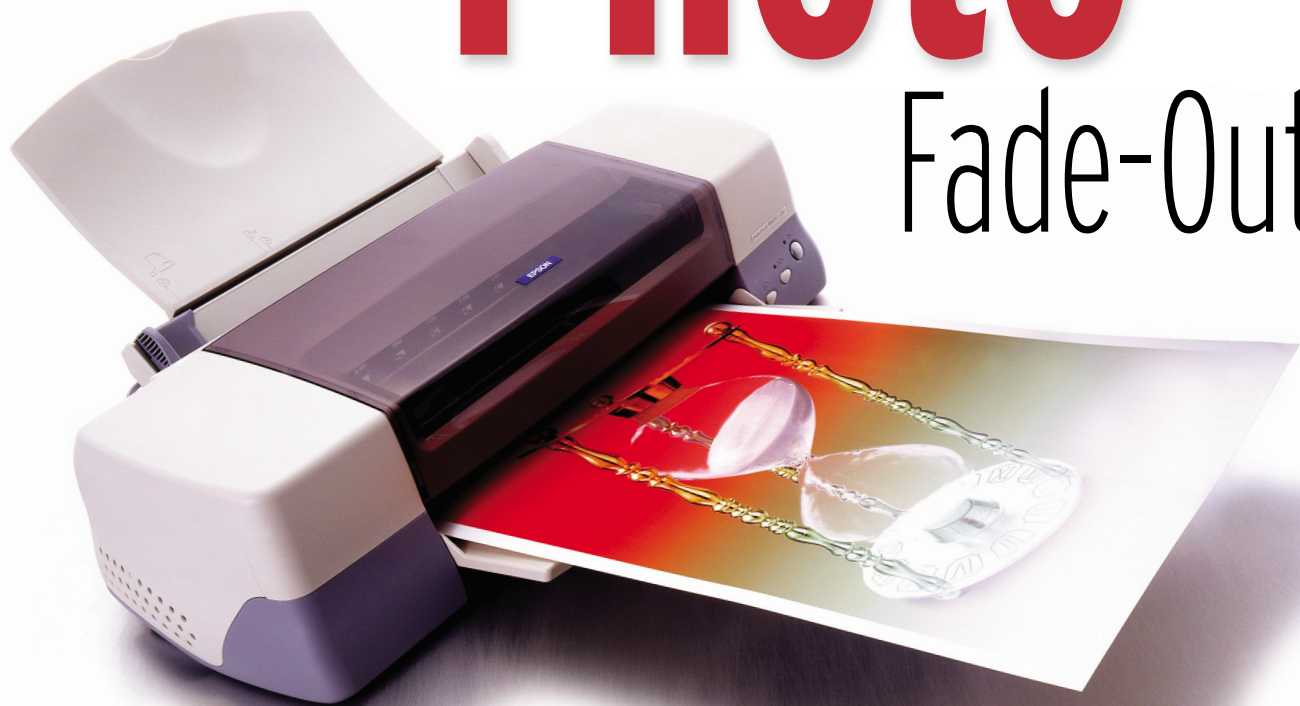
that your digital photos can last as long as—or even longer than—conventional prints that come from the drugstore.

In putting this report together, *PC World* worked with Wilhelm Imaging Research ([www.wilhelm-research.com](http://www.wilhelm-research.com)), an Iowa company whose found-

er, Henry Wilhelm, has been researching photo print longevity for more than 30 years and is considered a leading expert on the subject.

The Wilhelm study included test data on recent photo ink jet printers from four major vendors—Canon, Epson,

## Fight Photo Fade-Out



PHOTOGRAPH, LEFT: JOHN KUCZALA; ICONS: JEFFREY PELO

Hewlett-Packard, and Lexmark.

Our conclusions: You don't have to break the bank to keep your photos vivid. But you do need to choose your printer—and its paper—carefully. (See our chart, "The Prints and the Paper," on page 50.) You must also give your prints the kid glove treatment (see "Make 'Em Last," page 51). And once you've assembled the proper gear, you'll want to set it all up for optimum performance—we offer a number of tips on how to simplify a variety of

consultant Larry Jamieson.

But many digital-photo buffs have seen their homemade digital prints fade.

Usually, that's because the photos are made using standard papers and inks in general-purpose ink jet printers, products not designed for color permanence. Impermanence is fine if you're printing flyers or brochures that will be outdated before long, but it becomes a serious problem when you are printing memories.

Enter photo printers, spe-

More and more of us are **investing in photo printers** for quick access to our pix. But if you **want fade-proof pictures**, you'll need to choose your printer **and its paper carefully**.

digital photography tasks such as editing your pictures and transferring them into and out of your computer (see "Desktop Darkroom," page 131).

### NOT FADE AWAY

WITH THE growth in digital photography, the increased availability of scanners, and the advent of Internet print sharing, more people are printing photos at home. Lyra Research, a firm that covers the imaging industry, reports that 50 percent of consumers surveyed who have PCs and printers now print photos at home, up from 30 percent three years ago. And about 79 percent of those who own digital cameras do so. Those figures will only increase, says Lyra senior

cially designed ink jets, and accompanying papers and inks, all promising both longevity and affordability. Ink jets have long delivered the affordability, but only in the past two years—and with the recent release of inks and papers by Canon, Epson, and HP—have vendors seriously tackled longevity. The new inks are carefully created and matched to papers with special coatings and absorption properties to ensure certain levels of damage resistance from air, light, and water. That's one reason vendors recommend you use your photo printer only with certain papers. But not all photo ink jets are created equal.

Ink jets from three of the four vendors in the Wilhelm

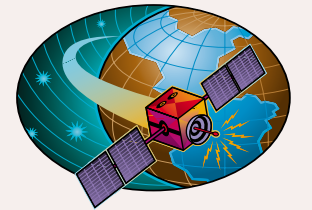
study deliver some prints that should last for quite a while: from about 15 to more than 100 years. (All results are for framed prints under glass, in a fairly bright room. See the chart's "How We Test" explanation for more details.) Lexmark, the fourth vendor, was the only one in this study with a printer whose photos faded noticeably in less than a year.

Unlike the other vendors, Lexmark does not currently match its inks to its own paper, recommending instead that users buy Kodak Premium Picture paper. It is also the only vendor of the four that has not released inks specifically designed for longevity, Henry Wilhelm says.

A Lexmark spokesperson says that ink fading is an area of focus for the company, and that Lexmark will continue to research, test, and develop standard governs archivability, and while Lexmark does not make claims about the archivability of documents or photos printed with its inks, the company spokesperson says that its inks are competitive with others in the industry.

Lexmark's \$140 Z52 Color Jetprinter is the least expensive of those tested and has been a *PC World* Best Buy. Its six-color ink cartridge is also the cheapest at \$37. *PC World* tests published last year (see "The Fine Print on Ink Jets," [www.pcworld.com/reviews/nov2000/ink\\_jets](http://www.pcworld.com/reviews/nov2000/ink_jets)), however, indicate that the Z52 has a fairly high cost per page. Nevertheless, print ▶

## IN BRIEF



### Product Pipeline

▶ **ZoneAlarm Update:** Version 2.6 of Zone Labs' free PC firewall software caters to Net novices, offering large buttons and on-screen tips and suggestions for dealing with possible hacker attacks. Go to [www.zonelabs.com](http://www.zonelabs.com).

▶ **Natural Light Notebook:** The 3.3-pound Versa DayLite is NEC's first ultraportable to use Transmeta's energy-efficient Crusoe chip. The reflective LCD screen uses natural light; a lithium polymer battery promises 8 hours of operation on a single charge. Price range: \$2299 to \$2499.

▶ **Color Screen Palm Phone:** Samsung Telecommunications America's 6-ounce SPH-I300, a dual-band CDMA/analog wireless Web-enabled telephone, doubles as a Palm PDA. The device, due in August, has a 256-color screen—the first Palm-based cell phone with a color display. Estimated street price: \$500.

▶ **All-Digital Audio:** Compaq's IPaq Music Center packs 20GB of storage and CD recording in a box the size of a stereo receiver. Due in mid-June at a suggested retail price of \$799, it holds the equivalent of 400 CDs (5000 songs) and has an Internet connection for sharing music with PCs, handhelds, and other devices.



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quality in our tests was very good, thanks in part to the printer's generous maximum resolution of 2400 by 1200 dpi.

100-YEAR PRINTS

EPSON GETS the highest marks for longevity with its Stylus Photo 2000P. Our tests found its prints should remain fade-free for 100-plus years, thanks to a combination of Epson's Pigmented Archival Inks and high-end papers. That's decades longer than even traditional prints can claim (prints on Fuji's Crystal

Archive paper last for 60 years, and those on Kodak's Ektacolor Edge 8 fade after 22 years). *PC World* reviewers found that the 2000P's color prints rival those of photo labs; its maximum resolution is 1440 by 720 dpi. But at \$899, the unit is very expensive.

You pay about \$15 more for these ink cartridges (price of black and color cartridges combined) than for cartridges used by some other Epson Stylus Photo models, but paper prices are surprisingly affordable. You can pay as little as 36

cents per 8.5-by-11-inch matte sheet (add about 40 cents per sheet for glossy papers; traditional photo papers run about 30 cents per sheet). And there are no film development costs.

The key to the 2000P's long-lived prints is the Pigmented Archival ink, which is much more durable than ink jets' usual dye-based inks, says Fabia Ochoa, product manager for Epson desktop photo printers. Ochoa also claims that these prints, when made on the right paper, are as water resistant as those from

dye-sublimation printers, which have typically been better in this respect. The 2000P is the first desktop photo ink jet to use pigmented ink.

THE PRICE IS RIGHT

MOST OF US probably don't want to spend \$900 on an ink jet. Luckily, Canon and Epson also offer pocketbook-friendly models that delivered an average of 26 years of print life in Wilhelm Research tests. An Epson Stylus Photo 870 sells for as little as \$179; Canon's S800 Bubble Jet Photo and Epson's Stylus Photo 890 printers cost \$299 each.

However, Epson has had problems with the 870 and its \$399 wide-format 1270 sibling. The printers debuted last year boasting high quality and long print life, but users found that heavy ozone concentrations reacted with some prints, turning them orange quickly (sometimes in days). Epson offered a buy-back program last September, plus tips for minimizing the reaction (keep prints under glass or in photo sleeves). It also released a reformulated Epson Premium Glossy Photo paper with antioxidant coating that Ochoa says reduces ozone effects about sixfold. But this coating does not eliminate the problem.

For that, look to Epson's new ColorLife paper. It eliminates the fast ozone-related reaction and supports much longer print life—up to 17 years more than with the Premium Glossy Photo paper. And it's priced on a par with the older paper. ColorLife paper will be available in late July or August. The current Matte Paper Heavyweight is also more resistant to air damage than the other paper types, Ochoa says.

In *PC World* tests, an 870 model produced very good color prints; the 870 has a maximum resolution of 1440 by 720 dpi. Its newer 890 replacement has a resolution of 2880 by 720 dpi, as does the \$499 wide-format 1280.

Canon's paper is more expensive than Epson's (its recommended Photo Paper Pro PR-101 runs about 93 cents per sheet, while Epson's paper is 8 to 60 cents cheaper per sheet), but because you can replace Canon inks one at a time instead of all together—unlike with other printers we saw—you buy only the colors you need. A full set of six costs about \$72; single cartridges go for \$12 each. You may not save money on printing photos, but if you print logos or presentations that use one color heavily, you should see savings. (*PC World* has not tested the Canon printer.) The printer's maximum resolution is 2400 by 1200 dpi.

The reformulated, long-lived BCI-6 inks that debuted with the Canon S800 Color Bubble Jet this year are backward-compatible with the older BJC-8200, according to Ned Bunnell, director of product management for Canon's digital home and personal systems division. To improve image quality, he suggests updating your printer drivers for use with the new inks.

HP's prints last about 10 years less than Canon's and Epson's best in this price

class, and its optimum photo paper is more costly than either of those vendors' offerings. The three HP printers tested by Wilhelm Research all have 2400-by-1200-dpi resolution and cost \$299 to \$499. In our tests of the HP Photosmart 1218, print quality was good, although

made with six, and that the Photosmart units are meant to excel at both photo and mainstream multipurpose printing.

THANKS FOR THE MEMORIES

DYE-sublimation printers are becoming more affordable and offer well-heeled enthusiasts or small businesses a good alternative to photo ink jets. These fast printers typically deliver smoother color gradients and more subtle shades than ink jets, but are also more expensive: Those that print only 4-by-6-inch prints average about \$350, says IDC Research analyst Riley McNulty. Costs for ink and paper can accumulate quickly, and ink cartridges for these units tend to generate fewer pages than the ones that ink jets use. Dye-sublimation models are less versatile as well, permitting fewer print sizes than a typical ink jet, and they're less adept at printing text.

Make 'Em Last



WHO WANTS faded photos? Follow these tips to preserve your digital prints.

- 1 Choose a six-color ink jet printer for better color quality, and invest in the vendor's recommended photo paper for longest print life.
- 2 Store prints in an album: They will last longer than framed photos. But avoid albums with self-stick "magnetic" pages and PVC plastic covers.
- 3 Slip the prints you want to display in frames under glass (preferably with an anti-UV coating). Don't leave them exposed to open air.
- 4 Use aluminum frames: They're lightweight and unaffected by humidity.
- 5 Put an acid-free mat between the frame and the photo to prevent your prints from sticking to the glass or plastic over time.
- 6 Keep prints out of direct sunlight and humid rooms (such as bathrooms and basements), and away from intense heat (don't keep them in attics or kitchens or near heaters).
- 7 Make sure ink jet prints are very dry before you stack them, so they won't stick together (wait at least 24 hours).

the output had a bit less range of color and slightly more dithering than prints from some of its competitors.

These limitations are likely due to the HP printers' use of four-color cartridges, not six-color; four colors yield a bit less detail. Lisa Dowling, HP Photosmart product manager for North America, says that according to customer tests, most users cannot tell the difference between prints made with four colors and those

Ink jets will continue to improve, and prices will keep dropping. For now, the mid-range Canon and Epson models offer the best balance between long-lived prints and affordability. If you want to pass your pictures on to future generations, spring for the high-end Epson Stylus Photo 2000P.

For more information, read the story at [www.pcworld.com/news/july2001](http://www.pcworld.com/news/july2001).

Tidbytes

► **Office XP Annual Fee Killed:** Microsoft will not offer subscription pricing—an annual usage fee that would cover product updates via the Web—for Office XP in the United States. Instead, you'll pay the usual, more expensive one-time charge. Office XP should ship by the time you read this. (For Windows XP, Microsoft has set an October 25 launch.)

► **Rambus Setback:** Rambus lost the first round in legal battles over its patent claims on SDRAM memory. A few days after a U.S. District Court judge threw out the company's suit against memory maker Infineon, a jury awarded Infineon \$3.5 million in its countersuit accusing Rambus of fraud. Rambus, which has similar cases pending against other memory vendors, is appealing both decisions.

► **The Check's in the E-Mail:** Soon, CheckFree WebPay customers won't have to go to the Web to view and pay bills online. The next version of the service, slated to launch by fall, will let customers receive a bill via HTML e-mail—and pay by clicking a button in the message.

► **Print Your Own:** No more waiting in line for tickets purchased online—if they're from Ticketmaster.com for a venue that lets customers print their own. Each ticket has the buyer's name and a unique bar code that, Ticketmaster says, makes counterfeiting more difficult. The system is rolling out at 20 venues this summer. Midwestern movie theater chain Marcus Theaters also offers print-your-own tickets.

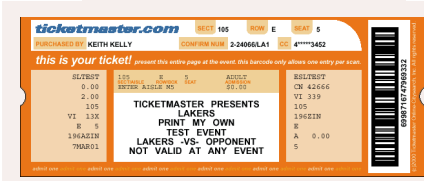


PHOTO PRINTERS PRICE/PERFORMANCE

The Prints and the Paper: When Will Your Photos Fade?

PRINTER/INK	Paper type	Cost per sheet	Time of display before noticeable fading occurs <sup>1</sup>
<b>Printer:</b> Canon S800 Bubble Jet Photo Printer (\$299) <b>Ink:</b> Canon BCI-6 ink (\$72 for six individual colors)	Canon Photo Paper Pro PR-101	\$0.93	26 to 28 years
<b>Printer:</b> Epson Stylus Photo 1280 (\$499), 1270 (\$399), 890 (\$299), 870 (\$179) <b>Ink:</b> Epson Color ink cartridge (\$55 for both black and color cartridges for 1270/1280 models; \$45 for both black and color cartridges for 870/890 models)	Epson ColorLife Photo	\$0.85	25 to 27 years
	Epson Matte Paper Heavyweight	\$0.29	24 to 26 years
	Epson Premium Glossy Photo	\$0.85	9 to 10 years
	Epson Photo	\$0.55	6 to 7 years
<b>Printer:</b> Epson Stylus Photo 2000P (\$899) <b>Ink:</b> Epson Pigmented Archival Inks (\$71 for both black and color cartridges)	Epson Archival Matte	\$0.36	More than 100 years <sup>2</sup>
	Epson Premium Luster Photo	\$0.78	More than 100 years <sup>2</sup>
	Epson Premium Semi-Gloss Photo	\$0.85	More than 100 years <sup>2</sup>
<b>Printer:</b> Hewlett-Packard Photosmart 1215 (\$399), 1218 (\$499), or 970 series (\$299) <b>Ink:</b> HP Tri-color ink (\$55, 38ml cartridge)	HP Colorfast Photo	\$1.15	15 to 17 years
	HP Premium Plus Photo	\$0.90	4 to 5 years
	HP Premium Photo	\$0.60	2 to 3 years
<b>Printer:</b> Lexmark Z52 Color Jetprinter (\$140) <b>Ink:</b> Lexmark High Resolution Photo Cartridge (\$37)	Kodak Premium Picture	\$0.60	Less than 1 year
	Fujicolor Crystal Archive	\$0.30 <sup>3</sup>	60 years
<i>Traditional color photographs</i>	Kodak Ektacolor Edge 8	\$0.30 <sup>3</sup>	22 years

**HOW WE TEST** Tests conducted by Wilhelm Imaging Research; results provided to *PC World*. Wilhelm Imaging Research tests print fading as follows: Prints are prepared with carefully calibrated neutral scales and pure color cyan, magenta, and yellow scales for each printer/ink/media combination. After drying in a controlled environment, the prints are exposed to high-intensity glass-filtered fluorescent illumination; temperature is maintained at 75°F, with a relative humidity of 60 percent. Data from these accelerated tests is extrapolated to a "real world" display condition of 450 lux (fairly bright room illumination) for 12 hours per day with prints framed under glass (fading may occur sooner if prints are freely exposed to the open atmosphere). Years of display before noticeable fading occurs are calculated using a visually weighted set of criteria for noticeable fading and color balance shifts in the neutral scale and fading of the pure color scales. Long-term tests under controlled low-intensity glass-filtered illumination are also conducted to confirm the validity of the high-intensity accelerated tests. In addition, prints are evaluated in a dark room at three levels of relative humidity (60, 70, and 80 percent) to determine their resistance to humidity-induced changes in density and color balance. <sup>1</sup> When prints are framed under glass. <sup>2</sup> Tests continuing. <sup>3</sup> Cost of print development not included.

PHOTOGRAPH: JOHN KUCZALA