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INSIDE THE BELTWAY

By John

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War and Graceland

What, asks the Library of Congress, do **Franklin D. Roosevelt** and the Rolling Stones have in common?

Librarian of Congress **James H. Billington** selected sound recordings made by them and 21 others, including reggae king **Bob Marley**, for the National Recording Registry to be preserved for all time.

Every year the librarian is responsible for selecting recordings deemed "culturally, historically or aesthetically significant" enough to be placed in the National Recording Registry. Recordings must be at least 10 years old.

The number of recordings named now stands at 225, with this week's new additions spanning the years 1904-1986, including Roosevelt's address to Congress after the Japanese attack on Pearl Harbor; singer-songwriter **Paul Simon**'s album, "Graceland"; and the Rolling Stones' rock 'n' roll classic, "(I Can't Get No) Satisfaction."

Party time?

Ask any conservative, and they'll complain that the Republican Party isn't what it used to be, straying too far to the center. Same goes for liberals, who hang precariously onto a moderating Democratic wing.

So what's a party activist to do? The current state an
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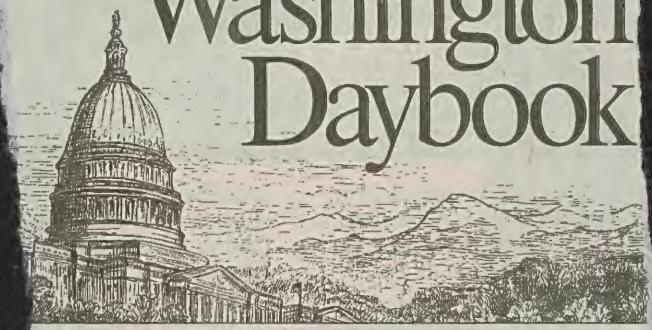

AY'S HEADLINERS

iscussion — 8:30 a.m. — Sen. Jon Kyl, Arizona Re- , and Rep. Jane Harman, California Democrat, partici- discussion on the recent action by China to destroy a satellite using a missile-launched anti-satellite weapon. Center for Strategic and International Studies, B-1 ce Level, 1800 K St. NW. Contact: 202/775-3242.

— 1 p.m. — The George Washington University holds by former President Jimmy Carter on his book, "Pales- e Not Apartheid." Location: GW, Lisner Auditorium, St. Contact: 202/994-6460.

act: 202/224-4515.

— Appropriations
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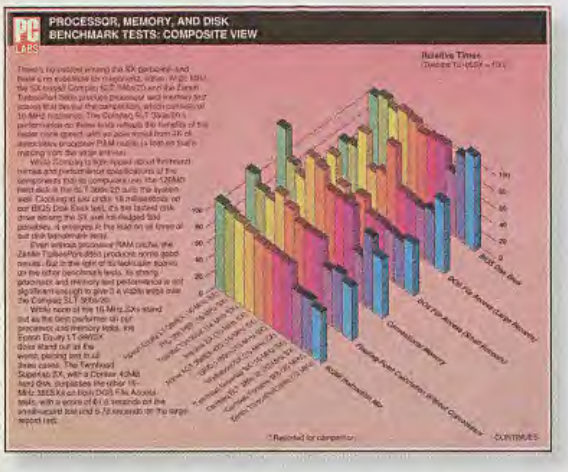
"Review of the Impact of Feed Costs on the Livestock Industry." Deputy Agriculture Secretary Chuck Conner and Agriculture Department Deputy Chief Economist Joe Glauber participate. Location: 1302 Longworth House Office Building. Contact: 202/225-2171.

10 a.m. — Appropriations financial services and general government subcommittee holds a hearing on the Supreme Court. Justices Anthony M. Kennedy and Clarence Thomas testify. Location: 2220 Rayburn House Office Building. Contact: 202/225-2771.

GENERAL AGENDA

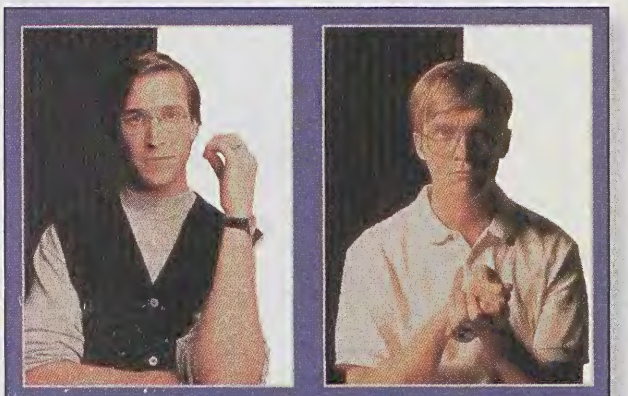
Leadership award — 8 a.m. — The Semiconductor Industry Association hosts its 2007 Leadership Awards to honor Sen. John Cornyn, Texas Republican; Rep. George Miller, California Democrat; and Education Secretary Margaret Spellings. Location: The Westin Hotel, 24th and M streets Northwest. Contact: 202/401-1576.

Caring for children — 9 a.m. — The Urban Institute holds a discussion, "Government Spending Children: Aligning Priorities and ces." G. William Hoagland Corp., and Scott McCow Public Policy ocation St.



October 16, 1990 Three dimensions are always better than two, right? Not in this case. We soon returned our testing charts to the easier-to-follow 2D.

October 12, 1993 The first PDAs, the EO (far left) and the Apple Newton. Notice the wacky phone add-on with the EO.



Titans of Silicon Valley

Relive the early days of the PC industry, as Noah Wyle stars as Steve Jobs (left) and Anthony Michael Hall stars as Bill Gates (right) in "Pirates of Silicon Valley," airing on TNT June 20th at 8:00 P.M. How did the stars go about researching their roles? Hall says he spent six weeks studying Gates biographies, interviews, and speeches. "There are so many aspects to his personality. I don't know if anyone can explain his work ethic. There's so much to him, and I had to look at him from lots of angles—as a CEO, as a public figure, as an industrialist, and as a technocrat."

June 22, 1999 The TV movie illustrates why real-life übergeeks don't warrant big summer box-office blockbusters. Their lives needed more explosions.

The latest version of the world's first Web browser, NCSA Mosaic has high principles and lots of perks.

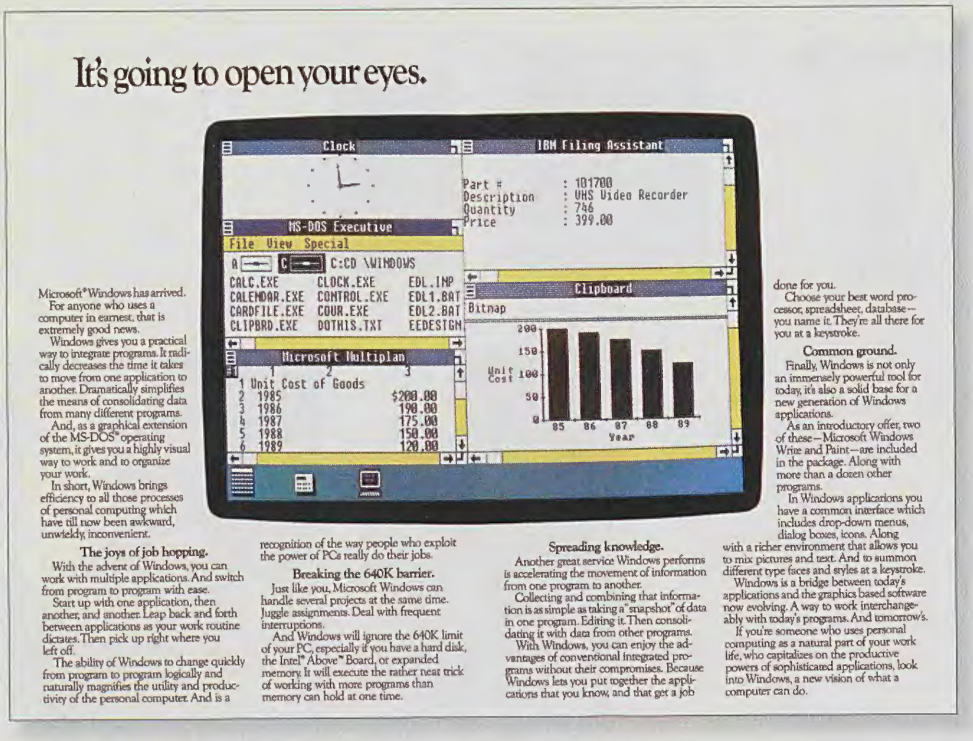
March 12, 1996 The world's first Web browser didn't look much better than a typical page on AOL at the time.

June 27, 1995 When the medium (not the content) was the message.

A HISTORY OF PERFECT PCS

The astounding advances in computer technology from the birth of the industry to today are reflected in the specs for these state-of-the-art computers. Notice the steadily plummeting costs of computing power.

	1981	1986	1993	1997	2001	TODAY
PROCESSOR	Intel 4.77-MHz 8088	Intel 10-MHz 80286	Intel 33-MHz 80486DX	Intel 200-MHz CPU with MMX	1.53-GHz AMD 1800 XP+	Intel Core 2 Quad
GRAPHICS MEMORY	4KB	256KB	4MB	4MB	64MB	256MB
MEMORY	64KB	640KB	16MB	32MB	256MB DDR	2GB
STORAGE	160KB, 5.25-inch floppy disk drive	1.2MB 5.25-inch floppy disk drive, 20MB hard disk	1.44MB 3.5-inch floppy disk drive, 4X CD-ROM drive	120-MB floppy disk drive, 3.6GB hard disk	80GB hard drive, DVD-R/RW drive, CD-ROM drive	500GB hard drive, HD DVD/Blu-ray combo drive
DISPLAY	12-inch monochrome CRT	14-inch CGA color CRT	15-inch VGA color CRT	17-inch CRT	19-inch flat-screen CRT	24-inch LCD widescreen
OS	PC-DOS 1.0	MS-DOS 3.2	MS-DOS 6.0, Windows 3.1	Windows NT	Windows XP Home Edition	Windows Vista Ultimate
PRICE	$2,880	$3,995	$3,500	$3,000–$4,000	$2,800	$2,800



It's going to open your eyes.

Microsoft® Windows has arrived.

For anyone who uses a computer in earnest, that is extremely good news.

Windows gives you a practical way to integrate programs. It radically decreases the time it takes to move from one application to another. Dramatically simplifies the means of consolidating data from many different programs.

And, as a graphical extension of the MS-DOS® operating system, it gives you a highly visual way to work and to organize your work.

In short, Windows brings efficiency to all those processes of personal computing which have till now been awkward, unwieldy, inconvenient.

The joys of job hopping.

With the advent of Windows, you can work with multiple applications. And switch from program to program with ease.

Start up with one application, then another, and another. Leap back and forth between applications as your work routine dictates. Then pick up right where you left off.

The ability of Windows to change quickly from program to program logically and naturally magnifies the utility and productivity of the personal computer. And is a recognition of the way people who exploit the power of PCs really do their jobs.

Breaking the 640K barrier.

Just like you, Microsoft Windows can handle several projects at the same time. Juggle assignments. Deal with frequent interruptions.

And Windows will ignore the 640K limit of your PC, especially if you have a hard disk, the Intel® Above™ Board, or expanded memory. It will execute the rather neat trick of working with more programs than memory can hold at one time.

Spreading knowledge.

Another great service Windows performs is accelerating the movement of information from one program to another.

Collecting and combining that information is as simple as taking a "snapshot" of data in one program. Editing it. Then consolidating it with data from other programs.

With Windows, you can enjoy the advantages of conventional integrated programs without their compromises. Because Windows lets you put together the applications that you know, and that get a job done for you.

Choose your best word processor, spreadsheet, database — you name it. They're all there for you at a keystroke.

Common ground.

Finally, Windows is not only an immensely powerful tool for today, it's also a solid base for a new generation of Windows applications.

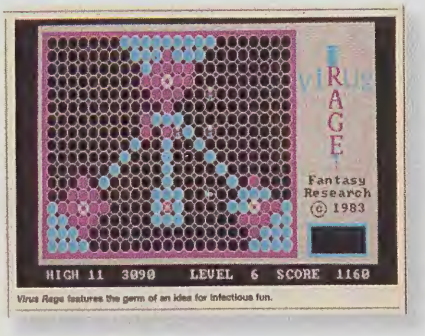
As an introductory offer, two of these — Microsoft Windows Write and Paint — are included in the package. Along with more than a dozen other programs.

In Windows applications you have a common interface which includes drop-down menus, dialog boxes, icons. Along with a richer environment that allows you to mix pictures and text. And to summon different type faces and styles at a keystroke.

Windows is a bridge between today's applications and the graphics based software now evolving. A way to work interchangeably with today's programs. And tomorrow's.

If you're someone who uses personal computing as a natural part of your work life, who capitalizes on the productive powers of sophisticated applications, look into Windows, a new vision of what a computer can do.

March 25, 1986 Here's an ad for the first Windows. It took a while, but it got better.



Virus Rage features the germ of an idea for infectious fun.

June 26, 1984 Viruses as a PC game motif managed to predate actual viruses on the PC.

FROM THE EDITOR'S SCREEN • BILL MACHRONE

The Market Grows Up

Just as the PC has evolved from a 16K machine to the trend-setting AT, so have all aspects of the PC market, especially the user, who today is sharper, better read, and more wary.

January 8, 1985 Editor-in-chief Bill Machrone kept an eye on the market for *PC Mag* in its earliest days.

The Versatron Footmouse gives you a hand by letting you tap PC commands with your feet.

August 1987 How could this go wrong, except for the smell of feet, that is?

July 1986 Coming in at a svelte 14 pounds, this portable was one of many that PC Labs weighed in on.

A HISTORY OF INNOVATION

Our Lifetime Achievement Award recognized the people who significantly shaped personal computing. Here are the winners.

1987 Douglas Englebart

1988 Dennis Ritchie

1989 John Warnock

1990 Adele Goldberg

1991 Daniel Bricklin and Robert Frankston

Philip D. (Don) Estridge (Person of the PC Decade)

1992 Raymond J. Noorda

1993 Jack St. Clair Kilby and Robert N. Noyce

1994 Vint Cerf and Robert Kahn

1995 Bill Gates and Paul Allen

1996 Ted Hoff, Federico Faggin, Stan Mazor, and Masatoshi Shima

1997 Steven P. Jobs

1998 Tim Berners-Lee

1999 Bill Joy

2000 Jeff Hawkins

2001 Michael Dell

2002 Jerry Sanders

2003 Scott Cook

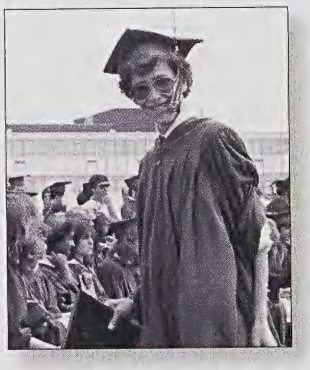
2004 Will Wright

2005 William Boyle and George Smith

Our Early Years

Travel back in time through the pages of *PC Magazine* when "portable" computers weighed just 28 pounds and a 5MB removable hard drive cost $1,795.

October 1983 Here's an ad for the first portable—from Compaq—more accurately described as "back-breaking luggable." Just try fitting *that* in the overhead bin.



1982 Our fearless leader, Lance Ulanoff, celebrates his high-school graduation the year *PC Magazine* launches.

April 1983 At those prices, a 1GB drive today would cost $367,616.

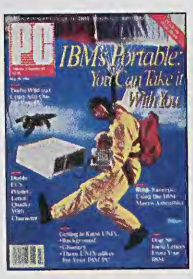
September 18, 1984 "Super-fast 2400-Baud? Pray that current 10-Mbps cable modems are someday seen as that sluggish.

BLAST FROM THE PAST

With never a shortage of products to report on, *PC Magazine* has kept its readers ahead of the technology curve.

January 1982
Our first issue investigates the IBM Personal Computer.

January 1983
Electronic mail is still a novelty.



May 1984
We haven't figured this one out either.

February 25, 1986
The desktop wars are under way.

January 17, 1989
Oops! The plaque honors "Technichal Excellence."

December 25, 1990
Remember the 33-MHz speed demons

Ulanoff photo by Gregg Ellman

Tech Flops

lousy resolution of your TV set. It worked great if the sites you visited used only the most rudimentary HTML and didn't venture into the uncharted territory beyond 640 pixels. Hidden plus: It tied up the TV *and* the phone.

PointCast Network

Noble experiment in push technology—or evil plot to bring the Internet to its knees? You decide. PointCast was actually the former, but the guys who forgot to do the math made it the latter. Local corporate Internet servers to offload beleaguered T1 lines didn't help. PointCast proved that people wanted customized news and information but left it to future generations to figure out how to get it to them.

The Coordinator

Supposedly the future of business communications, The Coordinator forced you to categorize all of your messages as requests, promises, assertions, acceptances, and denials. Our review summed it up as "e-mail for Nazis." Where was the category for kitten pictures with cute slogans?

IBM PS/2

Everything about the PS/2 was better than the PC, especially the Micro Channel system architecture. But IBM also wanted to wrest control from the clone PC makers, who realized that, with a little help from Intel, they were powerful enough to fight IBM and develop their own advanced buses. The concept of "coopetition" surfaced about the same time as the PS/2 but hadn't penetrated IBM, and the PS/2 never gained critical mass.

OS/2

IBM and Microsoft, once partners, codeveloped OS/2. When the two eventually parted company, they shared the code, which Microsoft at that point called Windows NT. OS/2 was actually a better product in some ways, but through its marketing, Microsoft convinced the world that NT was somehow more advanced. Despite heavy advertising and the insistence of our then-columnist Will Zachmann, OS/2 faded.

DataPlay

The music industry was poised to fill all that shelf space it had devoted to cassette tapes with prerecorded, half-dollar-size DataPlay removable optical discs. But technology delays, cheaper flash memory, iTunes, and music-biz problems managed to kill it.

Expanded Memory

EMS and its variants (LIM, CEMM, QEMM, and so on) weren't failures, but ugly, expedient, bank-switching solutions for memory-hogging programs such as Lotus 1-2-3 and dBASE III. Microsoft was forced to support EMS. In an interview with *PC Magazine* editors, Bill Gates slammed his fist on the table and shouted, "It's garbage! It's a kludge!—but we're going to do it!"

Flooz/Beenz

Flooz and Beenz were two sides of the Web currency coin, so to speak. You could purchase Flooz for shopping online and could also earn credits and redeem them for merchandise. You could earn Beenz through purchases or by repeated visits to some sites and either purchase things with your credits or convert them to real dollars on your MasterCard. Sad to say, there was no Flooz-Beenz exchange rate.

3COM AUDREY One of the most visible and uniquely styled "Internet appliances," Audrey did browsing and e-mail. Poorly.

MSN SPOT Watch/Smart Watch

Displays news, stock prices, weather? Check. Interfaces with Outlook calendar? Check. Works only in major cities? Check. Needs frequent recharging? Check. Annual subscription fee? Check. Bulky and ugly? Check. Tells time reliably? Uh, no.

ISDN

Integrated Services Digital Network was supposed to save us from dial-up. But 128 kilobits per second wasn't fast enough, and it was quickly eclipsed by DSL and cable modems. It Still Does Nothing. □

NEXT COMPUTER The guy you hired to run Apple pushes you out? Don't get mad, get even. That's what Steve Jobs set out to do with NeXT. Technologically advanced but expensive, the workstations sold poorly. Jobs went back to Apple; the processor-independent operating system, NeXTstep, became Mac OS 10. NeXT investors lost a bundle, but Apple gained an OS and the ability to use Intel processors. Weird, huh?

COMMENTARY

More brains than judgment

In his book "The Pursuit of the Ideal," the late Isaiah Berlin wrote, "Utopias have their value — nothing so wonderfully expands the imaginative horizons of human potentialities — but as a guide to the future they can prove fatal." Such was Paul Wolfowitz's utopian view of Saddam Hussein's Iraq with its 25 million people desperately waiting to be liberated with a one-size-fits-all democracy.

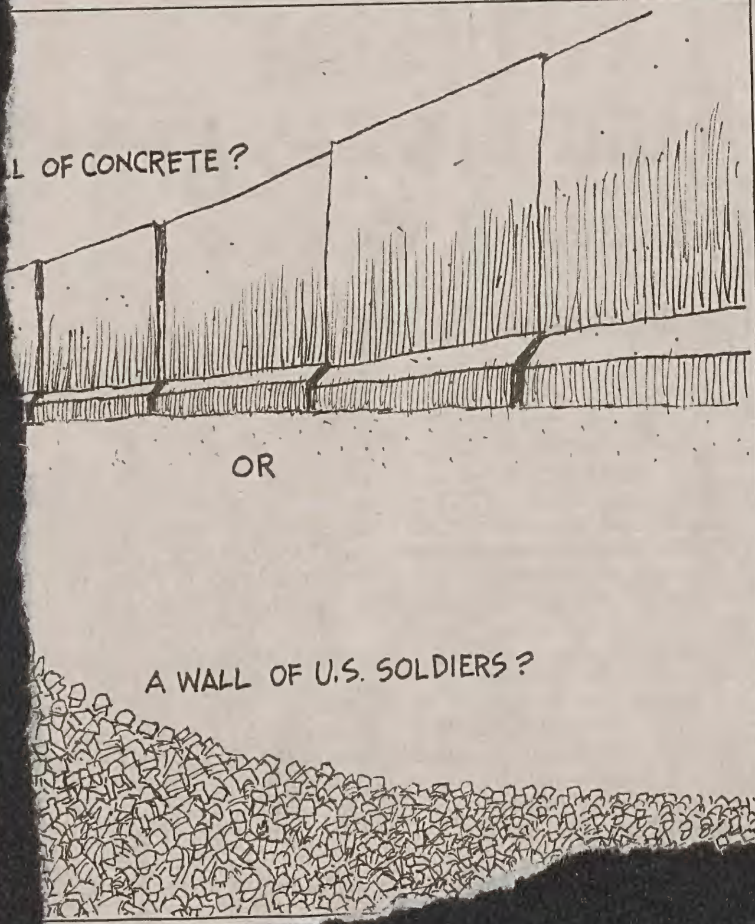
Three months before the invasion of Iraq, Mr. Wolfowitz dismissed the need to preserve Saddam Hussein's army and his Ba'ath Party. "If we go in," he said, "it will be like France in 1944." In other words, 25 million Iraqis will be waiting to greet their American liberators — and U.S. troops could be home

York, London, Frankfurt and Milan are now cities where over-the-top year-end bonuses make less privileged denizens feel like paupers. Goldman Sach's Christmas bonus pot was a staggering $16.9 billion — *billion*, not million. City of London financial district bonuses, says the Economist magazine, were roughly the same as the $18.4 billion the World Bank seeks to raise from 42 governments for its self-loan agency, the International Development Association (IDA).

It was probably the anything-goes-if-you're-at-the-top culture that led Mr. Wolfowitz to please his squeeze at the World Bank with the equivalent of an almost $400,000 salary (or $193,590 tax-free). The affair triggered hostile reactions throughout the 10,000 staff members at World Bank headquarters in Wash-

100 offices

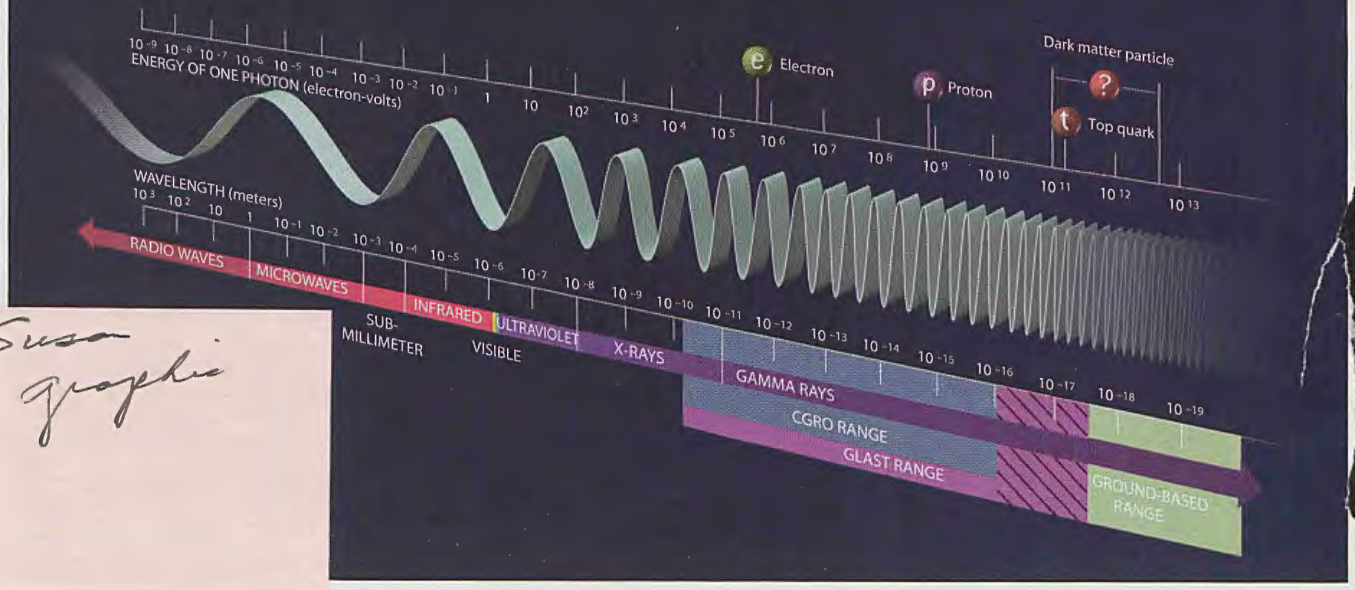
EDITORIAL



[THE ELECTROMAGNETIC SPECTRUM]

OPENING THE WINDOW

The GLAST satellite monitors a wide swath of the spectrum, including a hitherto unobserved region from 10 to 100 giga-electron-volts (*hatched*). Lying in this region could be the clues to mysteries such as the composition of dark matter.



ing for evidence of new phenomena, researchers must first exclude conventional astrophysical interpretations of the data. With this caveat, deep questions of physics can currently be answered only by astrophysical observations of the kind GLAST will soon provide.

From EGRET to GLAST

When it comes to studying the universe at high energies, the scientific questions and experimental techniques demand the expertise of both particle physicists and astronomers. The convergence of these traditionally distinct disciplines is one of the major trends in the physical sciences over the past two decades [see "When Fields Collide," by David Kaiser; SCIENTIFIC AMERICAN, June]. The three of us are evidence of that. Atwood and Ritz have backgrounds in particle physics, and Michelson is an astrophysicist and a member of the team that developed the Energetic Gamma Ray Experiment Telescope (EGRET), which flew on NASA's last major gamma-ray satellite, the Compton Gamma Ray Observatory (CGRO).

The primary instrument on GLAST, the Large Area Telescope, owes its origin to a seminar that Michelson gave at the Department of Energy's Stanford Linear Accelerator Center (SLAC) in 1991. During subsequent discussions that Michelson and Atwood had with members of SLAC's recently formed particle astrophysics group, led by Elliott Bloom, Atwood laid the groundwork for the LAT design. He proposed adapting silicon-based particle detectors, development of which was driven by the Superconducting Super Collider project, for use in gamma-ray telescopes. Although the collider project died, its technology lives on in GLAST. A second instrument on the GLAST observatory, the Burst Monitor, developed by a team led by Charles Meegan of the NASA Marshall Space Flight Center, monitors the sky for bursts of radiation in the energy band below that covered by the Large Area Telescope. The GLAST project draws on the expertise and effort of scientists, engineers and technicians in the U.S., France, Germany, Italy, Japan and Sweden.

Compared with EGRET, the Large Area Telescope will collect more than 100 times the number of gamma rays. Its field of view is comparable to that of the human eye, seeing approximately 20 percent of the sky at a time. In two orbits around Earth, taking about three hours, GLAST will cover the entire sky. This capability is particularly important for finding transient sources that were a feature of the gamma-ray sky observed by EGRET. In a matter of days, GLAST will achieve the same source sensitivity that EGRET took years to reach. The Large Area Telescope and the Burst Monitor together cover a factor of more than 10 million in energy across the electromagnetic spectrum.

FAST FACT

GLAST's main instrument, the Large Area Telescope, has a mass of three tons yet uses less than half the power of a hair dryer.

SLIM FILMS

Cosmic gamma rays might also come from the annihilation of the exotic particles that make up the mysterious dark matter. The LHC seeks to create those particles in the laboratory.

The possibility of gamma-ray astronomy was anticipated by the late physicist Philip Morrison (also a former *Scientific American* columnist) in a seminal 1958 paper. He noted that optical light, including starlight, is actually reprocessed emission that is only indirectly related to its original source, usually nuclear and subnuclear processes that occur at much higher energies. In fact, gamma-ray emission is much closer to the energy of the underlying astrophysical processes. It inherently identifies sites of extreme physical conditions and carries direct information about what occurs there.

Gamma rays usually have no trouble crossing most of the visible universe—billions of light-years—but they splatter on our atmosphere. In so doing, they convert their energy into showers of lower-energy particles. For the very highest energy gamma rays—above approximately 100 billion electron volts (GeV), to use particle physicists' standard energy units—the signal from the atmospheric particle shower is large enough to be picked up by specially designed ground-based observatories. But below this energy scale, researchers must launch special telescopes into space.

As with most astrophysical investigations, the wealth of gamma-ray emission in the universe cuts both ways: one investigator's signal is another's unwanted background. When hunt-

Marconi society

DVD inclusion:
early minutes of
GodFather III there's
presentation of
Marconi award

The Worldwide History of Telecommunications

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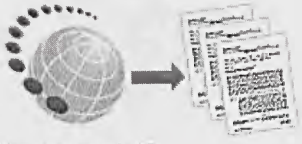

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and Performance (Forthcoming)

Radio Resource Management Strategies in UMTS

RF Technologies for Low Power Wireless Communications

UMTS

Reference Works

Encyclopedia of RF and Microwave Engineering

Reference Manual for Telecommunications Engineering

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