SCIENCE NEWS of the Year

Of the approximately 1,000 stories published in SCIENCE NEWS each year, which will be of lasting importance? Having just returned to SCIENCE NEWS, I find myself reflecting on pieces that I wrote more than a decade ago. Some of the findings, such as the identification of a mysterious syndrome that was later to be named AIDS (SN: 11/14/81, p.309), turned out to be of worldwide importance. Many other findings that I reported have long been forgotten. Can we predict which scientific results will have the most impact?

One category, such as the identification of AIDS, contains findings that directly affect the lives and commerce of many people. For example, cryptography was an esoteric concern a decade or so ago. SCIENCE NEWS described a mathematical model that allows two people talking on the phone to toss a coin to make a decision without suspecting each other of cheating (SN: 9/26/81, p.205). Today, however, theoretical advances in cryptography are turned into everyday procedures for the electronic marketplace (SN: 12/16/95, p.406).

Another type of important advance leads to powerful new technologies. In 1977, I wrote an article about recombinant DNA subtitled "What are those molecular biologists so excited about?" (SN: 4/2/77, p.216). Now, those techniques are so widely used that they are taken for granted.

Some stories are enduring because they are early episodes in a compelling saga. SCIENCE NEWS reported on global warming almost 40 years ago (SN: 3/1/58, p.134) and the Antarctic ozone hole nearly 10 years ago (SN: 3/1/86, p.133). In another aspect of the heavens, astronomers have long sought stillborn stars that they call brown dwarfs. In 1984, SCIENCE NEWS reported a potential brown dwarf (SN: 12/15/84, p.373), and this month, astronomers finally produced an image of an orbiting object almost certain to be a brown dwarf (SN: 12/2/95, p.358; 12/9/95, p.389).

Perhaps the most lasting type of scientific report is one that reflects a basic change in perception. When SCIENCE NEWS first wrote about chaos theory, the notion that results can be sensitively dependent on initial conditions seemed highly speculative, although scientists recognized its potential (SN: 7/30/83, p.76). In the years that followed, chaos was identified as a crucial factor in such disparate phenomena as laser emissions (SN: 2/22/92, p.119), nerve cell electrical signals (SN: 8/27/94, p.134), and planet movements (SN: 1/28/95, p.58).

Of course, not every science article reports a major paradigm shift. Luckily, there is yet another goal of science reporting. It is to provide information that will fuel the reader's brain: amazing facts that make good dinner-table conversation or ideas that promote speculation on the origin of the universe or the nature of human behavior. For stimulating new views, a science report can be as effective and satisfying as a painting or a poem. We hope that some of the articles listed below have stimulated your thinking in 1995. Which will be remembered a decade hence?

— Julie Ann Miller

Anthropology


AP

Newly discovered cave paintings in France.

● Remains of a new species in the human evolutionary family emerged in Africa (148: 119); the species lived between 4.2 million and 3.9 million years ago and apparently walked upright. Other fossils suggest that a two-legged gait evolved in stages (148: 71).

● Investigators reported that complex cultural behaviors arose in Africa 90,000 or more years ago, long before similar advances in Europe (147: 260; 148: 378).

● Explorers in France found an underground cavern containing a huge array of the world's oldest known wall paintings, rendered about 30,000 years ago (147: 52).

● Chinese fossils suggested that human ancestors reached eastern Asia more than 2 million years ago and may have evolved into *Homo erectus* (148: 327).

● Archaeologists uncovered the largest and most elaborate tomb known in Egypt's Valley of the Kings; the tomb was built by a pharaoh who ruled 3,000 years ago (147: 326).

● A Spanish cavern yielded evidence of human ancestors who lived at least 780,000 years ago, much earlier than most estimates of Europe's first colonization (148: 100).

● New fossils established that primates inhabited Egypt about 36 million years ago (148: 6). Chinese finds added to the controversial claim that Asian primates lived 45 million years ago (148: 309).

Astronomy

● Researchers found two planetlike objects orbiting ordinary stars near the solar system (148: 260), spotlighting searches for planets around more distant stars (148: 332). One of the newfound objects may have a sibling (148: 358) and may have been dragged in from a more distant orbit (148: 412). The other object represents the clearest example of a brown dwarf (148: 389).

● Astronomers gathered compelling evidence for the existence of two other brown dwarfs (147: 389; 148: 200, 260).

● Researchers detected signs of ionized helium in the early universe, lending support to the Big Bang theory (148: 133, 372).

● Observations with the world's largest optical telescope suggested that the first generation of stars predated galaxies by a billion years (147: 230).

● Some astronomers may have uncovered a major episode of galaxy formation (148: 69). Others may have found an ordinary galaxy—perhaps the most distant ever imaged—undergoing its first wave of starbirth (148: 212).

● Using a continentwide array of radio telescopes, researchers reported "the best case yet" for a black hole at the center of a galaxy (147: 36). The Hubble Space Telescope found another candidate black hole (148: 407).

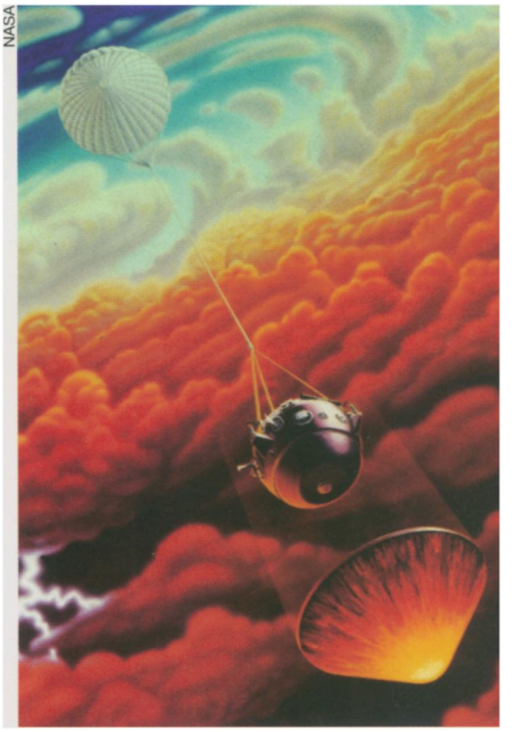
● Researchers detected clouds of hydrogen gas in what were thought to be giant voids between clusters of galaxies (148: 9).

● Theorists developed a new understanding of how massive stars die (147: 106).

● Hubble took one of its most breathtaking images—pillars of gas, resembling stalagmites, that constitute the birthplace of stars in the nearby Eagle nebula (148: 294).

● Astronomers gathered more evidence that the Milky Way's halo of dark matter consists of exotic material totally unlike ordinary atoms (147: 261).

● An astronomer proposed that stormy weather in the gaseous disks surrounding young stars may help to spawn massive planets (147: 251).



Drawing of Galileo probe parachuting into Jupiter.

Behavior

● Four independent investigations supported a preliminary finding that an unknown gene on a small segment of chromosome 6 confers vulnerability to schizophrenia in a substantial minority of cases (147: 297; 148: 292).

● Researchers contended that the brains of men and women often take different approaches to discerning the sounds that correspond to written letters (147: 101).

● Two research teams reported a link between severe trauma, such as military combat or repeated sexual abuse in childhood, and damage to a brain structure involved in memory (147: 340).

● Long-term investigations indicated that impulsive, low-IQ children experience a strong pull toward a lifetime of hard-core delinquency (147: 232).

● An analysis of eminent achievers concluded that a "template" of personal characteristics—not simply manic depression or other mental disorders—underlies great creativity (147: 378).

● Scientists looked at what happens in the brain during visual and auditory hallucinations (148: 310) and during voluntary mental imagery (148: 372).

● A national survey found that a large minority of men and women who survive severe traumas report periods of partial or complete memory loss concerning those events (148: 135).

● Alcoholics exhibit either strikingly low or slightly elevated concentrations of dopamine in their brains, according to a study that rekindled debate over possible genetic contributions to alcoholism (148: 20).

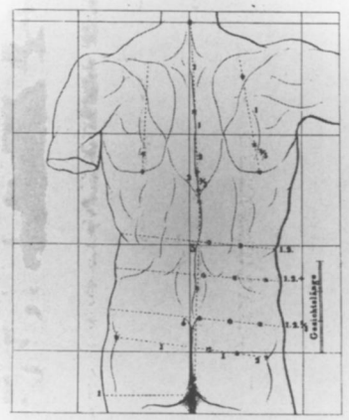
● Researchers argued that family physicians ably identify major depression in their patients but often encounter mild cases of depression that respond best to emotional support rather than medication (147: 148).

● Evidence suggested that a virus which causes neurological disease in some animals may play a role in human mood disorders (147: 132).

● Studies indicated that some children possess a biological sensitivity to stress that raises or lowers their vulnerability to respiratory ailments, depending on social environment (148: 230).

1995

Biology



Symmetry may sway mating choices.

● Geneticists sequenced the full genomes of two different bacteria (147: 367).

● Tiny animal found on the mouth of lobsters is so unusual scientists proposed a new phylum to contain it (148: 404).

● A second study linked male homosexuality to the X chromosome (148: 295).

● A firefly gene illuminated how biological clocks work (148: 108). Light adjusts the clock of yeast by turning on a key gene (148: 111); in the fruit fly, two proteins interact to run the clock (148: 334).

● New plant species may arise through mutations in a few key genes (148: 148).

● Avian parents with a large flock to feed fell victim to infection more often then their less stressed counterparts (147: 103).

● The human mouth produces infection-fighting peptides, biologists reported (147: 166).

● Unintentional interbreeding of Sumatran and Bornean orangutans creates unwanted genetic mongrels (147: 184).

● Baby loggerhead turtles appear to make a trans-Pacific journey (147: 263).

● Chromosome tips suggested how cells age and cancers progress (148: 362).

● Nature uses symmetry to signal the well-being of an individual (147: 46, 60).

● Biologists found a protein that briefly glues chromosomes together when cells divide to form eggs or sperm (148: 262).

● Postpartum depression may stem from a temporary hormone deficiency (148: 15).

● Investigators discovered that enzymes can flip bases, small parts of DNA, out of chromosomes for repair or modification (148: 188).

● Researchers found a carnivorous sponge (147: 69) and vegetarian corals (147: 212).

● Dominant female baboons don't have the reproductive advantages once thought (147: 28), and seals don't deserve their reputation as polygynists (148: 7).

● All men share an identical stretch of DNA on the Y chromosome, providing a clue to when modern man originated (147: 326).

● Researchers added insects to grain bins to devour grain-eating pests (147: 298).

● A protein in grasshoppers' mouths boosts plant growth (147: 381); carbon exhaled by ants nourishes the plants they live on (147: 381).

● The genetic engineering of plants to tolerate insects may prove more difficult than expected (148: 119); unusual genes help a common coffee pest survive a popular insecticide (148: 247).

● Researchers hatched 330-year-old copepod eggs scooped from a pond (148: 236).

● Scientists found that fish can change sex multiple times (148: 266).

● Viruses revealed the brain circuits behind the fight-or-flight response (148: 276).

● A gene controls whether an immature brain cell will become a neuron or a support cell (148: 284).

● Tiny bacteria helped investigators make dolomite at normal temperatures (148: 197).

Biomedicine

● Federal officials and scientists warned against the use of older versions of nifedipine, a drug prescribed for heart disease and hypertension (148: 164).

● In combination, two common drugs, one normally used to treat ulcers and the other for cancers, induce safe abortions (148: 165).

● Immune cells secrete proteins that slow HIV replication (148: 71, 388). The drug PMPA prevents infection of monkeys by SIV, a relative of HIV (148: 324).

● Investigators found two similar genes that when mutated cause early-onset Alzheimer's disease (148: 23, 118).

● Long-term use of aspirin slashes the risk of colorectal cancer in half (148: 165).

● AZT may be useful only if administered soon after HIV infection (148: 116) and is ineffective for HIV-infected children (147: 100).

● A cholesterol-lowering drug reduces heart attacks in men with high cholesterol but no history of heart disease (148: 326).

● Even before AIDS symptoms appear, HIV wipes out a billion immune cells a day (147: 21). The body's mechanism for conferring immunity against other viruses may keep HIV infection going (148: 276).

● A nonhormonal drug, alendronate, effec-

tively battles osteoporosis (147: 388).

● Doctors advised that infants be laid on their backs or their sides to prevent sudden infant death syndrome (147: 151).

● Mutations in two separate genes can cause a potentially fatal heart rhythm abnormality called long QT syndrome (147: 149).

● A weakened mutant strain of HIV-1 may offer a route to an AIDS vaccine (148: 308).

● A defect in insulin processing causes obesity in one strain of mice (147: 341), and the hormone leptin slims down other genetically obese and normal mice (148: 68). A genetic defect may explain why Pima Indians suffer high rates of obesity and diabetes (148: 103).

● FDA approved a new diet drug (148: 358). Even a modest weight gain increases women's heart disease risk (147: 108).

● Subtle changes in brain function, visible in PET scans, may foreshadow the onset of Alzheimer's disease (147: 181).

● Hydroxyurea became the first drug to prevent painful attacks common in sickle-cell anemia (147: 68).

● Birth control pills boost young women's breast cancer risk (147: 356); taking progestin fails to reduce breast cancer risk associated with estrogen replacement therapy (147: 375; 148: 94).

● In mice, a naturally produced molecule called GDNF protects the neurons ravaged by Parkinson's disease (147: 52).

● Gene therapy for cystic fibrosis and myotonic dystrophy had poor results, while three attempts to treat a rare blood disorder fared better (148: 284). A federal panel advises sticking to basic genetic research (148: 428).

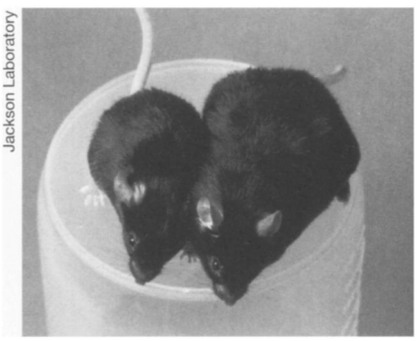
● *BRCA1,* a gene associated with inherited breast and ovarian cancers, also plays a role in some noninherited breast cancers (147:213). Many Ashkenazi Jews harbor the same mutation in *BRCA1* (148: 215). Where in the cell the protein encoded by *BRCA1* resides may determine if ovarian cancer occurs (148: 334). Scientists isolated a second breast cancer gene, *BRCA2,* which increases both sexes' risk of the disease (148: 420).

● A mutant gene that can cause a fatal brain disorder in children may increase an individual's cancer risk (147: 389).

● Physicians implanted fetal pig cells into the brains of Parkinson's patients (148: 230). Research on cross-species transplants stirs hope and controversy (148: 298)

● Bacteria that cause ulcers and stomach cancer may be spread through drinking water (147: 367).

● A surgical procedure designed to treat an eye ailment often affecting the elderly proved hazardous (147: 116).



Jackson Laboratory

Scientists tease out what makes some mice—and perhaps humans—obese.

Chemistry

● Scientists observed individual molecules react (148: 38), a scanning tunneling microscope broke specific bonds (147: 391), and a laser controlled a reaction (147: 328).

● Synthesis of pantetheine (147: 135), cytosine, and uracil (148: 7) showed how life may have arisen, with RNA playing a larger role than expected (147: 279).

● Showing how an aspirin variant binds to the enzyme PGHS-1 revealed how the drug cuts pain and swelling (148: 102).

● A mathematical proof explained matter's stability in a magnetic field (148: 252).

● X rays revealed the structure of photolyase, a repairer of DNA damage (148: 20).

● A tamoxifen derivative shrinks animal tumors (147: 231).

● A plausible model indicated how proteins may fold (147: 164).

● Genetically engineered bacteria could yield new antibiotics (147: 374).

● Scientists pinned down vitamin K's role in preventing hemorrhages (148: 199).

● Hydrogen and oxygen combust less readily under pressure (148: 293).

● Derivatives of thalidomide may provide new treatments (148: 171).

● A new catalyst eases chlorine removal from pollutants (147: 327).

● Scientists viewed proteins as processors of cellular information (148: 70).

● A novel way to split nitrogen molecules may help industry (147: 294).

● An organism's chemical pathways resemble those of circuits (148: 85).

● Certain food dyes kill bugs (147: 237).

● Genetically engineered rubber trees could yield novel drugs (147: 143).

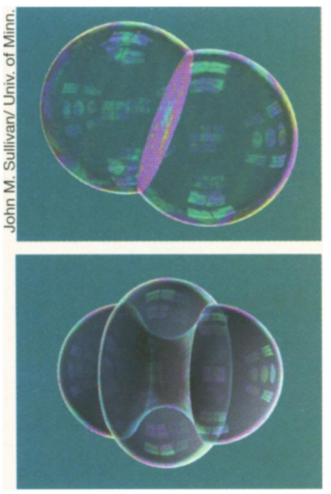
● A neurotoxin made by marine worms suggests potential Alzheimer's treatment (147: 212).

Liquido/USDA

Fruit fly dines on light-activated pesticide.

1995

Computers & Math



Standard double bubble (top) and torus bubble (bottom).

● Mathematicians proved that the standard double bubble seen in nature is the two-chambered geometric structure of least surface area (148: 101).

● Mathematical research suggested that sets of simple rules, which specify the way individual proteins can stick to one another, automatically lead to the kinds of virus structures that biologists observe (147: 186).

● Researchers overcame a major mathematical obstacle to using string theory for making verifiable predictions about the physical universe (148: 140).

● Mathematicians developed a formula for computing isolated digits of pi, while the computation of pi itself reached more than 4 billion digits (148: 143, 279).

● Researchers began to take a closer look at the feasibility of constructing a quantum computer (147: 30, 325).

● A computer search produced a sequence of seven consecutive primes in arithmetic sequence, beating the previous record of six (148: 167).

● To thwart tampering, computer scientists developed a "digital notary system" to prove that a computer record existed in a specific form at a specific time (147: 138).

● The discovery that several important encryption methods designed to protect electronic transactions are vulnerable to a special kind of attack focused attention on security issues in computer networks (148: 406).

Earth Science

● An earthquake devastated the Japanese city of Kobe (147: 54). Subsequent studies found that the subsurface displayed chemical changes before the disaster (148: 37).

● Oceanographers stimulated a spectacular plankton bloom by fertilizing part of the Pacific with iron (148: 53), raising the possibility of manipulating the oceans to slow global warming (148: 220).

● Oceanographers gained access to a treasure trove of formerly classified data about the ocean floor (148: 410).

Sampling Kilauea's lava.

● Scientists stated that humankind is altering the climate in identifiable ways (147: 362). Action to stem the problem is warranted, an international panel declared (148: 293).

● Nations agreed to complete by 1997 a new treaty to reduce greenhouse gas emissions (147: 271), even though many countries are having difficulty meeting the less stringent targets included in the current treaty (147: 183).

● Geologists discovered that Earth's magnetic field shifted direction markedly over an 8-day span 16 million years ago (147: 244).

● A statistician claimed that global warming may be disrupting the pace of the seasons (147: 214).

● A Greek physicist claimed to have developed a technique to predict earthquakes by monitoring electronic signals from the ground (148: 260).

● The ozone hole over Antarctica reached near-record proportions in October (148: 245), even as Congress discussed canceling the phaseout of ozone-depleting chemicals (148: 238).

● The Atlantic Ocean spawned more hurricanes and tropical storms than it has in any year in several decades (148: 213).

● Oceanographers started measuring the sea's temperature using sound waves (148: 415), despite many protests (147: 350).

● Geophysicists discovered new clues about the formation of the Andes Mountains (148: 124).

● Scientists discovered signs that the tropics cooled substantially during the last ice age (148: 70).

● Geophysicists predicted that Southern California will see more earthquakes or bigger earthquakes in the future (147: 37). Other researchers were unconvinced (147: 357). Complex modeling portrayed a large Los Angeles quake (148: 404).

● Early in the year, chemical pollution and natural weather patterns caused ozone concentrations to sink to record lows over the Northern Hemisphere (147: 277).

● Geoscientists warned that Kilauea volcano on Hawaii could produce massive earthquakes and landslides (147: 216).

● Global temperatures started to rise again, after cooling for several years (147: 154).

Environment

● Acid rain is saturating forests with nitrogen, suggesting that such forests may begin to grow much more slowly—and become less effective at sopping up the carbon dioxide that could trigger global warming (147: 90).

● Lead's neurotoxicity may trace to its ability to enlist the immune system in an attack on the brain (147: 23) and to whether an individual possesses a gene for effectively storing the pollutant (147: 151).

● The body's dioxin receptor appears to play an essential role in mammalian development (147: 277). But when dioxin binds to the receptor, breast tissue maturation may slow and cancer or heart disease develop, researchers found in studies of animals (148: 92, 399).

● Despite new data that methyl bromide's lifetime in the atmosphere is shorter than had been assumed, industrialized nations agreed to phase out this insecticidal fumigant—a threat to stratospheric ozone—by 2010 (148: 278, 405)

● Breathing federally allowed concentrations of fine dust or carbon monoxide appeared to cause hospitalizations for heart disease (148: 5, 247).

● Analysis of the hantavirus outbreak suggested that major climate perturbations may temporarily alter the environment in ways that foster the emergence of disease (148: 196).

● The Supreme Court upheld a provision of the Endangered Species Act that prohibits destruction of a protected species' habitat, even if it exists on private land (148: 43).

● Researchers identified leaking canisters of liquefied petroleum gas as a major new source of the hydrocarbons fueling Mexico City's smog-ozone problem (148: 117).

Mexico City smog.

● While one new study found no link between radon exposures and lung cancer risk (147: 26), a reanalysis of data from 11 such human studies showed a strong link. For equivalent doses, those delivered more slowly proved more dangerous (147: 383).

● As a scientific report came out supporting almost all federal rules to protect wetlands, Congress introduced legislation to make it easier to build on wetlands (148: 56).

● Several studies identified new dietary sources of plastics that mimic the action of estrogen, the primary female sex hormone (147: 341; 148: 47). Paper mills spew estrogen-mimicking substances, suggesting why fish downstream have trouble reproducing (148: 295). Other types of environmental hormones also disrupt normal sexual development, sometimes to the point of emasculating or feminizing males (148: 44).

Food Science

● Obesity may foster esophageal cancer, but diets high in fiber and fresh produce appeared to offer protection against the disease. Diets high in olive oil reduce breast cancer risk in women (147: 39).

● Studies offered contradictory new findings on the role of antioxidant vitamins and nutrients in fighting cancer (147: 248, 271). A dietary deficiency in selenium, another antioxidant, helped a benign virus turn virulent and humans lose weight (147: 276, 399).

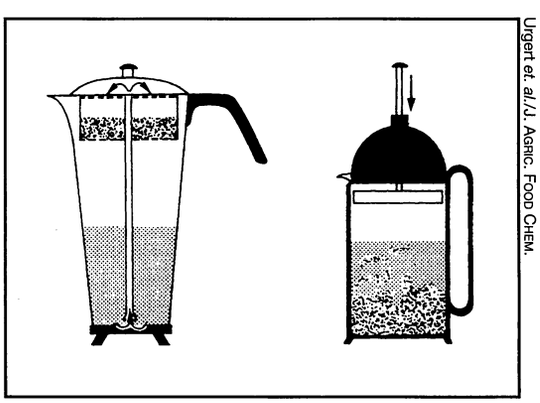
● At least one *trans* fat—a chemically hardened form of oleic acid—does not pose the heart risks usually associated with such fats (147: 127).

● Copper deficiency—common in the United States—depressed the activity of the body's infection-fighting immune system (148: 102).

● How much milk a pregnant woman drinks appeared to affect her risk of developing a dangerous blood-pressure-elevating condition (147: 315). By consuming large amounts of vitamin A, she may increase her child's risk of serious birth defects (148: 244).

● Folic acid, a B vitamin, appeared to lower concentrations of homocysteine in the blood; the compound is linked to heart disease risk (148: 264).

● Paper filters and percolator baskets removed most of the cholesterol-raising oils in coffee (147: 72). But the plungers in French press brewing allowed high concentrations of the oils to remain (148: 182).

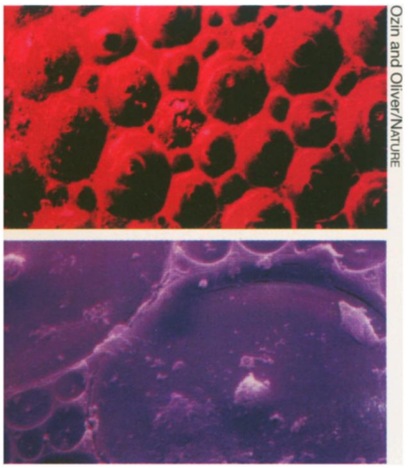


Unlike the French press method, a percolator filters most cholesterol-raising oils from coffee.

● Plant breeders developed a new grape cultivar that dries into a raisin while on the vine, permitting low-cost, mechanical harvesting (147: 292).

1995

Materials Science

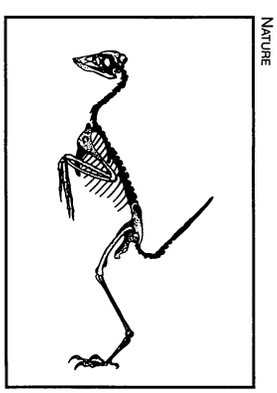


Ozin and Oliver/NATURE

Chemists brewed structures resembling microbe shells.

- Lab-grown tissues helped damaged organs (148: 24), including heart valves (147: 228), and a new biomaterial sped bone healing (147: 180).
- A terahertz imaging system showed an object's chemical makeup (148: 136).
- A device measured velocity with Doppler shifts of white light (148: 215); a laser cooled objects (148: 246).
- A silicon chip stimulated a nerve cell in a direct silicon-to-neuron junction (148: 137).
- Missile-tracking software guided an X-ray machine to irradiate tumors (148: 137).
- A fiber-optic probe pierced and explored a live cell (148: 157).
- Strips of pliable tape superconducted at 75 kelvins (147: 269).
- Arrays of magnetized nickel pillars stored vast amounts of digital data (147: 245).
- A microscope made sharp, three-dimensional images of live cells in dim light (147: 359).
- Bacterial patterns suggested how microbes may communicate (147: 136).
- Brewed-in-a-beaker crystalline forms resembled microbe skeletons (148: 309).
- Scanning tunneling microscopes helped make tiny circuits and gears (147: 287).
- Dissolvable microspheres released drugs slowly inside the body (147: 262).
- A new, oscillating catalyst yielded a flexible plastic (147: 23).

Paleobiology

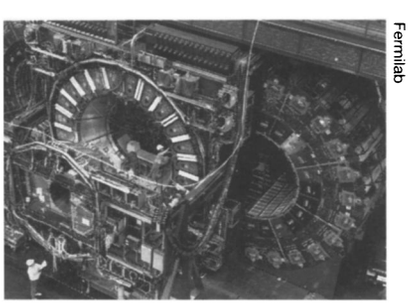


NATURE

Confuciusornis.

- Paleontologists described the second-oldest known bird, a 140-million-year-old animal called *Confuciusornis* from the late Jurassic period (148: 277).
- Microbiologists claimed to have reawakened ancient bacteria encased in 135-million-year-old amber (147: 308).
- Chinese scientists described fossils that may be the oldest examples of multicellular life (148: 294).
- Scientists dismissed claims of the discovery of dinosaur DNA (148: 373).
- Paleontologists reported that extinct creatures called conodonts were some of the earliest vertebrates (147: 261).
- A paleontologist proposed that the enigmatic Ediacaran fossils from 565 million years ago are actually lichens instead of early animals (148: 28).
- Bursts of evolution during the early Paleozoic and middle Mesozoic eras were linked to vast undersea eruptions (148: 4).
- Researchers discovered a 120-million-year-old, plant-eating crocodile from China (148: 132).
- Argentinean scientists unearthed a creature called *Giganotosaurus,* the largest known carnivorous dinosaur (148: 199).

Physics



Fermilab

The massive Collider Detector at Fermilab.

- Three teams succeeded in driving ultracold atoms into a single quantum state to create a Bose-Einstein condensate—a state of matter never previously observed (148: 36, 164, 373).
- A 2-year experiment at Los Alamos produced evidence supporting the idea that neutrinos have mass (147: 85).
- Physicists using two different detectors at Fermilab confirmed the discovery of the top quark (147: 149; 148: 10).
- Researchers showed experimentally that heating an atomic nucleus to extremely high temperatures causes the nucleus to expand considerably before it disintegrates (147: 228).
- Experiments by three independent groups produced values for the gravitational force constant that disagree significantly with the currently accepted number and with each other (147: 263).
- Physicists used finely tuned, precisely timed laser pulses to smear a single electron within an atom into interfering with itself (148: 133).
- An international collaboration experimentally demonstrated laser oscillation without population inversion (148: 223).
- The use of lasers to guide atoms along hollow optical fibers offered a convenient, flexible method of controlling the paths of atoms (148: 292).

Science & Society

1995

● The House Science Committee drafted a plan to fold most federal research agencies into a cabinet-level Department of Science (147: 183; 148: 59).

● Citing a need to cut costs, Congress closed its 23-year-old in-house research agency (148: 228), leaving several European spin-offs to carry on its legacy of technology assessments (148: 286).

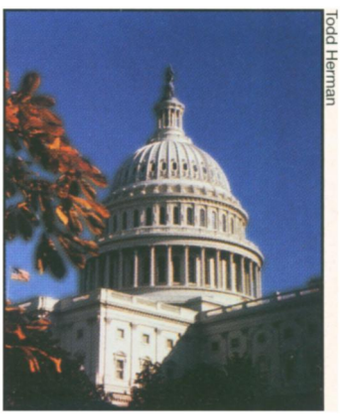
● The Republican-controlled Congress began redirecting science funding priorities (147: 20; 148: 204). President Clinton sent Congress the first budget blueprint in many years that would reduce research and development spending (147: 86).

● The Department of Energy released all of the files it had uncovered on human radiation experiments (147: 102). The findings of the Committee on Human Radiation Experiments led President Clinton to create a bioethics advisory commission to comb ongoing studies for possible abuses (148: 245).

● Responding to recommendations on how best to overhaul the management and financing of the Energy Department's national laboratories (147: 108), Hazel O'Leary announced that her agency would cut $1.6 billion in spending on labs over the next 5 years—even selling some of them (148: 213).

● Federal investments in cooperative research and development agreements with private firms roughly doubled over the past 2 years to $5.8 billion (148: 72).

● Several federal agencies collaborated to sponsor the development of virtual libraries—repositories of books and other information in digital form (147: 344).



Todd Herman

The new Congress set science agencies and research budgets reeling.

Space Science

● Newly discovered comet Hale-Bopp may put on a dazzling light show when it nears the sun in April 1997 (148: 103, 200, 244, 428).

● On route to Jupiter, the Galileo spacecraft plowed through the most intense interplanetary dust storm ever detected (148: 191). Two months before Galileo entered Jovian orbit, its tape recorder began malfunctioning (148: 283). After a 6-year piggyback ride, the probe on Galileo separated from its mother ship and parachuted into the giant planet (148: 54, 375). Early results from the probe indicate a lower than expected abundance of water and possibly high concentrations of xenon and krypton in the atmosphere (148: 420).

● Astronomers detected three fresh volcanic eruptions on Jupiter's moon Io (147: 148, 335; 148: 244).

● Debris that clobbered the moon 4 billion years ago may have been part of a solar-system-wide bombardment (148: 199).

● A recently identified meteorite formed 4.5 billion years ago is the oldest known piece of Mars to have struck Earth (147: 180). Another rock was identified as the 12th known meteorite from Mars (148: 250).

● The Hubble Space Telescope shed new light on several denizens of the solar system (147: 204; 148: 244, 334).

● After exploring the solar system for nearly 22 years, the Pioneer 11 craft began a slow death (148: 250).

● Relying on data from spacecraft, researchers found tentative evidence of an elusive wave, akin to a seismic wave on Earth, that originates deep within the sun (148: 79).

● During a rare moment when Saturn's icy rings nearly vanished from sight, astronomers discovered two additional moons orbiting the planet (148: 87).

● The Ulysses craft found that the region surrounding the sun and dominated by the solar wind extends much farther at the sun's poles than at its equator (148: 89). In its journey over the poles, the craft took the first snapshot of the solar magnetic field (148: 278).

● Images taken during a lunar eclipse revealed that the moon's tenuous atmosphere is twice as large as previous observations had indicated (148: 397).

Hester, Paul A. Scowen/NASA

Pillars of gas in the Eagle nebula show erosion due to ultraviolet light from hot stars.

This is a review of important science news stories of 1995 as reported in the pages of SCIENCE NEWS. The reference after each item refers to the volume and page number on which the main article on the subject appeared (vol. 147 is January–June; vol. 148 is July–December).

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