SCIENCE NEWS of the Year

This is a review of important science news stories of 1985 as reported in the pages of SCIENCE NEWS. *The references after each item refer to the volume and page number in which the main article on the subject appeared in* SCIENCE NEWS *(Vol. 127 is Jan.-June; Vol. 128 is July-Dec.). Where several references exist, the news developed and was reported in more than one issue. Back issues or, when out of stock, copies of articles are available for one dollar each by writing to* SCIENCE NEWS, *1719 N Street, N.W., Washington, D.C. 20036.*

Anthropology & Paleontology

• Carbon isotope ratios in prehistoric human skeletons suggested that hunter-gatherers in South Africa did not travel far from coastal or inland camps to exploit seasonal food sources, as had been believed. 127:311

• A survey of the remains of *Homo erectus,* the species directly ancestral to modern humans, revealed significant evolutionary changes over a 1-million-year span. Some scientists, however, disputed the finding. 127:276

• Observations of scavenging among modern animals added data to the emerging view that human ancestors were primarily scavengers rather than hunters. 127:155

• A city in the Peruvian Andes that dates back to before the Incas, around A.D. 500, was reclaimed for scientific study (127:84). Initial reports that the site was a "lost city" were incorrect. 127:117

• A controversial analysis of fossil tooth enamel with an electron scanning microscope indicated that early human ancestors grew in a more apelike, rather than humanlike, fashion. 128:260

• Archaeologists found that the Maya civilization of Central America flourished even as Spanish conquest was imminent in the early 1500s. 128:214

• The *Titanic* was located with equipment that will revolutionize exploration of oceans and the seafloor. 128:182

• Excavation of a 16-century-old city on Cyprus yielded evidence that the city had been destroyed by three seismic waves. Excavators hope to rebuild an entire district of the city. 128:71

• A reconstructed piece of jaw and a newly found tooth of the primate *Amphipithecus* led some scientists to suggest that the gibbon-sized animal, which lived 44 million years ago, was the common ancestor of apes, monkeys and humans. 128:116

• Fossils of creatures from the Cambrian period 540 million years ago were discovered in Canada, giving paleontologists a rare view of life near its beginnings and suggesting that early evolution was more rapid or began earlier than previously supposed. 128:309

• A 225-million-year-old dinosaur skeleton was recovered in Arizona's Petrified Forest National Park. Thought to be the oldest known dinosaur skeleton, it represents a type of dinosaur never before described. 127:325

Astronomy

• Researchers discovered the first object that emits radiation (X-rays) in a quasi-periodic rhythm, apparently the first of whole new class of celestial objects. 128:52

• The first measurement by triangulation of the distance to a faraway galaxy and of the Hubble constant was reported. 128:340

• Discovery of a very unusual-appearing supernova led astronomers to propose that there are three classes of supernova instead of two as previously believed. 128:84

Owen/White, NRAO

• A galaxy with two centers was found. 127:52

• For the first time a quasar was observed in the middle of a cluster of galaxies (127:407). For the first time also a supernova was seen in association with a quasar (127:212). Both discoveries strengthen the contention that quasars are somehow related to the centers of galaxies.

• Two curious and important discoveries in the center of our galaxy were reported: a ridge of matter that emits strong X-rays (128:212) and a large collection of infrared sources (instead of a single strong one). 128:292

• Construction began in Hawaii on a 10-meter telescope, to be the world's largest. 128:181

Behavior

• Some children and adolescents show psychological and physical signs of having a Type A personality. Parental child-rearing practices were found to play an important role in fostering this behavior pattern. 128:133

• The thicket of nerve fibers connecting the left and right brain hemispheres is larger in left-handed and ambidextrous people than in right-handers, scientists reported. 128:102

• A stroke patient who cannot remember the names of many fruits and vegetables provided clues to a "thesaurus-like" ordering of words in the brain. 128:85

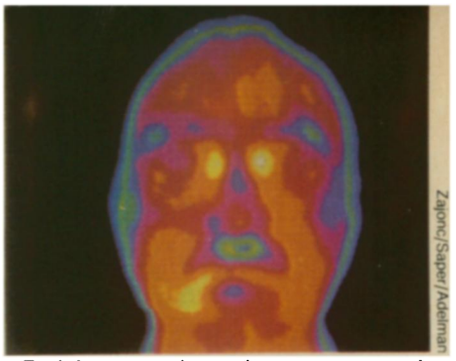
• The conversational sounds of wild vervet monkeys were found to be surprisingly similar in some ways to human speech. 127:356

• Contrary to traditional psychiatric predictions, many severe cases of schizophrenia showed substantial improvement when followed for 20 years or more. 127:340

• Verbally and mathematically gifted children are more likely than children of average ability to be left-handed, nearsighted and suffering from allergies, researchers found, suggesting that these may be biological correlates of intelligence. 127:263

• The widely accepted theory that memories of an event are altered by new experiences is largely wrong, concluded two psychologists. 127:164

• Severe depression—and not milder depression or other psychiatric disorders—appears to weaken the immune system, scientists reported. 127:100



Zapoc/Sapp/Adelman/Scholz

• Facial expressions, it was reported, serve to regulate blood flow to the brain and may, in turn, regulate emotions as well as follow them. 128:12

• Evidence linking viral infections with schizophrenia, although controversial, accumulated as laboratory techniques improved. 128:346

• The day after smoking a "social dose" of marijuana, performance of complex tasks such as flying an airplane can be markedly hampered, researchers found. 128:310

• Studies showed that left-handed people appear to be able to withstand moderate brain damage to either hemisphere with few of the motor problems that plague right-handed victims of brain damage. 128:296

• About two-thirds of a group of hyperactive boys who were followed into adolescence shed all or most of the disorder's main symptoms; the remainder, researchers suggested, may be "pure" hyperactives who are likely to hang on to their symptoms and commit crimes as teenagers. 128:245

• Exposure to toxic substances such as synthetic heroin may predispose people to develop Parkinson's disease later in life. The finding boosted efforts to prevent the disease from occurring. 128:212

Biology

• Federal agencies approved two experiments involving deliberate release of genetically engineered organisms, while other such experiments were blocked by a court decision (127:135, 148, 280; 128:324). Ecologists and molecular biologists met to explore the environmental issues raised by such experiments (127:390, 410). The White House proposed a board to coordinate agency activities regarding genetic engineering (127:7, 280; 128:198). The National Institutes of Health established guidelines for human gene therapy; the first clinical experiments appeared to be imminent. 127:71; 128:117, 140

• Successful transplantation of fetal brain cells into adult monkey brains reversed symptoms of experimentally induced Parkinson's disease. 128:276

• A newly analyzed gene provided strong evidence that genes may evolve as mosaics incorporating copies of pieces of various older genes. 127:309

• A new species of algae was discovered living deeper in the ocean and with far less light than any other plant known. 127:4

• Scientists reported purification and detailed characterization of a human protein that triggers blood vessel growth. 128:213

• Takins—obscure, large, hoofed animals—were described in their natural habitat, China's remote mountain forests. 128:148

Kenneth Lorenzen

• Honeybees were found to use pictorial memory to distinguish among flowers. 127:196

• Scientists demonstrated that oceans can provide a rich biological productivity that can be harnessed for food and feed. Caribbean king crabs were grown on algae in open cages floating in the sea. 127:220

• Molecular biology came to the aid of taxonomy. Protein and gene analyses of pandas revealed that the giant panda is a bear and the lesser, or red, panda is a raccoon (128:216). Analyses of molecules from museum-preserved skins of the extinct South African quagga demonstrated that the animal was more zebra than horse. 128:70

• Maps of the bat's brain showed an unusual representation of the body, reflecting its flying and upside-down-hanging postures. 127:118

• Two biotechnology firms reported steps toward the identification of the gene responsible for cystic fibrosis. 128:244

• Genes of some single-celled animals were shown to employ a variation on the "universal" genetic code. 127:180

• Parasitic wasps that inject their eggs into insect pests were found to inject at the same time a virus that debilitates the pest. 128:22

• The batstar starfish began to make a comeback along the California coast after an epidemic disease ravaged its numbers. 128:101

• Flowers were found to act like chameleons, changing color to match the preferences of pollinators present at different times. 127:69

• Scientists used protein engineering to alter known enzymes and to construct new molecules (127:357; 128:204). Genetic engineers remodeled the smallpox vaccine to provide immunity against other diseases. 127:378

• Unexpected similarities indicated an evolutionary link between the eye's retina and the brain's pineal gland, which in some lizards forms a "third eye." 128:298

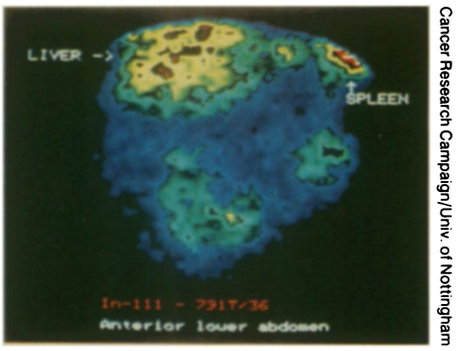
• Scientists determined that the small molecule called cyclic GMP is the crucial messenger in both types of cells that sense light in animal eyes. 128:164

Biomedicine

• The AIDS virus was shown to infect brain tissue (127:22; 128:229). A test to screen blood for AIDS was approved by the FDA and put into immediate use, a move researchers believe will stop most if not all cases of transfusion-associated AIDS (127:36, 100, 148; 128:84). The variability of the AIDS virus was explored (127:53; 128:119). Investigation of frozen blood suggested the virus may have been present in the United States in 1972 (127:173), while other work indicated the virus may have come from African green monkeys (127:245). Several therapies are under investigation (127:100, 260; 128:229, 293), but at year's end the disease remained incurable. Antibody response in infected but healthy individuals held out hope for a vaccine (128:40). The virus was seen to cause an entire spectrum of disease, from chronically swollen lymph glands to the fatal, full-blown syndrome (127:100, 260). The intimate-contact connection still held as the disease gained a foothold in the heterosexual community (127:260); epidemiologic studies made it clear that casual contact doesn't spread AIDS. 127:260; 128:213

• Among the items that received U.S. Food and Drug Administration (FDA) approval in 1985 were: the first pill for genital herpes (127:71), a testicle-cooling device for infertility (127:104), a drug to plug holes in babies' hearts (127:133), a vaccine against *Haemophilus influenzae b* (127:312), a marijuana derivative as an antinausea agent in cancer chemotherapy (127:377), aspirin for use in preventing heart attacks and an automatic defibrillator. 128:244

• Infusion of an ether derivative was used to dissolve gallstones without surgery. 127:104



Cancer Research Campaign/Univ. of Nottingham

• The independent roles of viruses, white blood cells and genetics are shedding light on cancer (127:10, 150, 248, 346). On the treatment front, surgery less extensive than radical mastectomy was found to be just as good for women with early-stage breast cancer (127:165). Vaccinations with treated tumor cells were evaluated in human patients (127:213), while a 10-year trial assessing dietary fat's relationship to cancer was begun (127:213). Among new treatments receiving attention: monoclonal antibodies hooked to cancer-killing agents (127:276) and drugs that enhance the body's immune response to cancer. 128:58, 359

• A National Institutes of Health consensus panel declared that being 20 percent or more overweight is dangerous to health. 127:119

• IUDs and pelvic inflammatory disease were linked to infertility (127:229, 263), while new treatments were also found. 128:378

• Several new treatments for arthritis were suggested, including radiation therapy (127:246) and immune system treatment (128:244). In animal studies, cell reproduction was seen to precede the inflammation that has been thought to be the cause of rheumatoid arthritis. 127:358

• The vaccinia virus was saddled with DNA from other viruses so the engineered virus could serve as a vaccine against them (127:379), while a hepatitis B virus product made by retooled yeast was successful in human trials. 128:55

• People carrying excess weight around the waist were found to be at a higher risk of cardiovascular disease than people who carry their weight in their hips (127:57). New ways to image heart attack damage as well as early atherosclerosis were introduced (128:343), and lasers removed atherosclerosis. 128:327

• Calcium was lauded as an atherosclerosis preventive (127:141), a cancer preventive (128:362) and a way to keep blood pressure down. 128:372

• A baboon-heart recipient's death was laid to tissue-mediated immunity. 128:390

• Research suggested that it's not the amount of cholesterol in the diet but whether it has been oxidized that contributes most to one's risk of coronary heart disease and atherosclerosis. 127:278

• The "omega-3" fatty acids in fish oil may help prevent heart disease and reduce the intensity of migraine headaches, studies showed. 127:295; 128:252

• Partially rotted, salted fish – responsible for southern China's high rate of nasopharyngeal cancer – became the first food proved epidemiologically as a cause of human cancer. 127:404

• Studies indicated that common trace-element deficiencies may be more serious than previously thought: Low copper levels may contribute to heart disease and low chromium levels to diabetes. 127:357

• Reducing dietary fat – saturated or unsaturated – will reduce blood pressure, government studies showed (128:345), and monounsaturated fats were found to be better than polyunsaturated fats in lowering blood cholesterol. 127:216

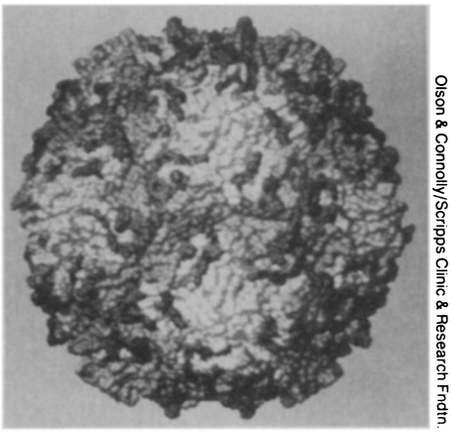
• Cow's milk, like human milk but unlike commercial infant formulas, was found to contain antibodies that can protect infants from a common diarrhea virus – which may explain why formula-fed babies get diarrhea more often than babies on human or cow's milk. 127:165, 328

• Lifetime exposure to food contaminated with the agricultural chemical daminozide could cause cancer in a large number of humans, federal researchers said. 128:149

• Researchers found a correlation between elevated cholesterol levels in humans and daily consumption of more than two cups of coffee daily (127:173). Another study indicated the caffeine in eight cups of coffee can trigger increases of anxiety, nervousness, fear, nausea and restlessness in patients suffering from panic disorder (127:199). A third showed that drinking five or more cups of coffee daily increases one's risk of heart problems 2.8 times. 128:327

• Epidemiologic and biochemical studies showed more adverse effects of smoking on nonsmokers (127:312); newly identified hazards for smokers themselves include infertility. 127:342

• Researchers proposed a way in which the toxic shock bacterium might attack the body (128:39), while a key role for magnesium in the infection was posited. 127:377


Olson & Connolly/Scripps Clinic & Research Fndtn.

• Three-dimensional models of a cold virus and a poliovirus were devised (128:181,215), while a new antiviral drug to attack cold viruses was discovered. 127:292

• While the safety of cadaver-derived growth hormone for human use was questioned (128:103), the FDA okayed a bacterially produced version. 128:263

• A tumor-fighting molecule and a weight-loss protein were found to be essentially the same. 128:132

• Genetic defects associated with cystic fibrosis and some forms of muscular dystrophy were identified. 128:151, 244

• A periodontal disease was found to be associated with an immune system deficiency. 128:221

• The repertoire of the Epstein-Barr virus, most commonly known as the cause of mononucleosis, was extended to include a chronic flulike condition. 127:21

• The causative agent of Potomac fever, which kills horses, was identified (127:68), and a vaccine against feline leukemia hit the market. 127:103

Chemistry

• Jerome Karle and Herbert A. Hauptman won the chemistry Nobel Prize for constructing a system of mathematical equations used in X-ray crystallography to determine the structure of molecules. 128:262

• Chemists identified ways to modify and trap compounds that create an unpalatable bitterness in the juice of some citrus fruits. 128:89

• Scientists characterized the molecular structure of what may be not only the world's sweetest compound but also one of the first taste-bearing proteins. 127:186

• A new low-calorie synthetic sweetener that tastes like sugar and will not promote tooth decay was developed. 127:262

• A new model for the way energy is transferred in proteins suggested that these molecules undergo "protein-quakes" to get rid of excess energy. 128:100

• Chemists discovered a 60-atom carbon molecule, dubbed buckminsterfullerene, that seems to have a structure with the same geometry as the pattern on a soccer ball. 128:325, 396

• A new experimental technique allowed scientists to show that the attractive force between two flat hydrocarbon surfaces is stronger than predicted by theory. 128:167

• The combination of a high-resolution electron microscope and a video-recording system showed that atoms on the surface of microscopic gold crystals were in constant motion. 128:200

• Two research teams succeeded in using a laser beam to bring a stream of speeding atoms to a halt. 127:183

• A National Academy of Sciences survey of chemistry recommended a doubling of federal funding for basic chemical research. 128:267

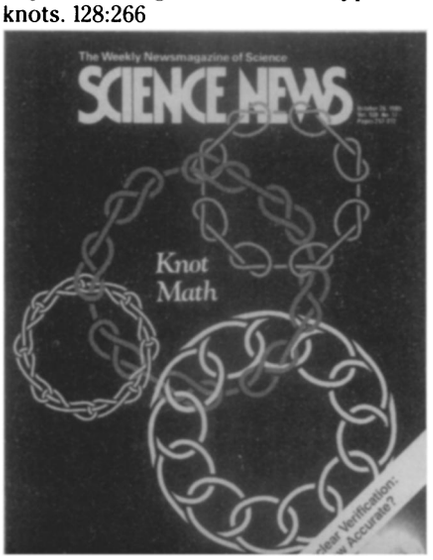
• Researchers developed a versatile purification method for recovering pure compounds from complex mixtures, which depends on balancing the flow of a liquid against the opposing pull of an electrical force. 127:198

• A recipe for synthesizing diamonds at low pressures was rediscovered. 128:75

Computers & Mathematics

• The National Science Foundation established four new centers for supercomputing at universities. 127:135

• Mathematicians found a new, simple way to distinguish different types of knots. 128:266



• A newly invented method for factoring large numbers seemed to be potentially faster than any of the general-purpose methods now in use. 127:151, 202

• Computer-generated pictures contributed to the discovery of a new minimal surface. 127:168

• The Intel Corp. developed a "personal supercomputer" based on Caltech's "Cosmic Cube" prototype. 127:117

• Two mathematicians invented a new algorithm for solving systems of linear equations. 127:391

• Testing a new supercomputer led to the accidental discovery of the largest prime number to date. 128:199

• Several companies produced microcomputer software designed to understand English-language sentences. 128:53

• Speech recognition by computers took a step forward with the demonstration of a microcomputer software-based system operating with a 2,000-word vocabulary. 128:359

• Techniques to make programming a computer as simple as sketching a diagram began to be developed. 128:108

• First, world computer chess champion CRAY BLITZ lost to an expert human player in a special match; then it lost to the computer program Hitech in the North American computer chess championship. 127:104; 128:260, 281

• Two linguists found languages containing grammatical features that put them outside of context-free phrase-structure grammars. 128:314

• Several manufacturers began to design and produce streamlined computer processors with only a small, built-in set of instructions. 128:140

Earth Sciences

• For some scientists, the discoveries of shocked feldspar and additional quartz grains as well as the possible find of extraterrestrial amino acids at the Cretaceous-Tertiary (K-T) boundary (128:300) fortified the theory that the dinosaurs and other life were wiped out 65 million years ago when an asteroid or comet shower bombarded the earth. The discovery of soot particles in the K-T layer (128:228) suggested that huge wildfires followed the impact. Other researchers, however, argued that a period of intense volcanic activity — and not an asteroid impact — was responsible for the K-T mass extinctions (127:172). One group of workers presented evidence that the dinosaurs lived well after the K-T event (128:151), while another suggested that Cretaceous dinosaurs were adapted to darkness and so might well have survived the darkening effects of a dust cloud thrown up by an impact (128:135). Meanwhile, a new theory involving the motion of a tenth planet was proposed to explain the apparently periodic barrage of comets on the earth, including the one that is postulated to have killed the dinosaurs. 127:40

• A devastating earthquake shook Mexico, killing thousands of people, especially in Mexico City, which is underlaid by an old lake bed that vibrates in resonance with seismic waves (128:196, 214, 234). Large earthquakes also rattled China and Chile (128:134). The first official U.S. earthquake forecast was made, predicting a magnitude 6 quake in Parkfield, Calif., within the next eight years (127:228). Seismologists also pinpointed the New York City area (128:277), the northwestern United States (127:270) and southwest Oklahoma (127:363) as likely targets for future earthquakes. The estimated seismic risk of northern California's Silicon Valley was also increased. 128:277


USGS

• A volcanic eruption in Colombia triggered massive mudflows, which killed more than 22,000 people (128:326). Mt. St. Helens erupted near the fifth anniversary of its 1980 catastrophic eruption. 127:373, 406

• As the drought in Africa continued last spring, scientists worked to understand what causes the land to go dry. 127:282

• While some scientists were on the trail of hydrothermal vents at the Gorda ridge off the coast of Oregon (128:8), others discovered the first "black smokers," spewing out blackened, mineral-laden water, on the slow-spreading Mid-Atlantic Ridge (128:197). At a hydrocarbon seep off the Louisiana coast, another group found the same types of animals that thrive at hydrothermal vents. 128:231

• Two oceanographers concluded that heightened hydrothermal venting may have been responsible for an increase in carbon dioxide 50 million years ago that led to warming of the planet (127:20). Other studies showed that the warming effects of most of the carbon dioxide added to the atmosphere in this century have yet to be felt (128:170). Other researchers calculated that the combined warming effects of methane and other "greenhouse" gases will be at least as great as those caused by carbon dioxide alone. 127:308

• The international Ocean Drilling Program (ODP) got under way with a new ship, the *JOIDES Resolution* (127:68), and with the financial backing of the United States, West Germany, Japan, France and Canada. Because Great Britain was unable to drum up the funds to join, British scientists were excluded from cruises and some ODP programs were curtailed (127:249, 128:247). The ODP drillship went to the Bahamas carbonate platform (127:294), the Bermuda rise and the Galicia Margin off the coast of Spain (128:7), the Vøring Plateau in the Norwegian Sea (128:165) and the Labrador Sea and Baffin Bay. 128:340

• Seismic profiling revealed a "suture" between North America and an African fragment – now called Florida – that was left behind when the two continents parted 190 million years ago. 128:87

• Scientists studied and debated a rapid change, or "jerk," in the earth's magnetic field, which occurred in 1969 and perhaps in 1912 and 1978. 128:218

• Japanese researchers, using newly developed equipment for melting large rock samples under very high pressures, succeeded in melting crustal rocks to form a very hot lava that last erupted billions of years ago. 127:390

• Space-based geodetic measurements helped scientists detect plate motion and find earthquake-prone areas. 128:388

• A number of researchers found evidence that many geologic processes are tied together. 127:24, 324; 128:311

Environment

• An $8 billion, five-year action plan to arrest destruction of tropical forests was proposed with the backing of the World Bank and United Nations. 128:261

• A study showed that even for people living in polluted communities, their highest exposure to volatile organic chemicals usually occurs inside the home. 128:198

• Most people carry a low-level body burden of dioxin that may affect health, researchers reported (128:26). A number of new techniques for destroying or containing dioxin were tested, to limit future human contamination. 127:297,391; 128:39

• Several studies challenged acid rain's toxicity. One indicated polycyclic aromatic hydrocarbons might be as much to blame as acid rain in killing aquatic life (127:313). Another suggested ozone may account for much of the forest damage previously attributed to acid rain. 128:279

• Researchers showed that at least for the Rocky Mountain states, emissions of sulfur dioxide lead to corresponding sulfate concentrations in rain falling hundreds of miles away. 128:133

• Important and largely unrecognized gaseous mutagens appeared to be prevalent in urban air. 127:166

• Acid rain was implicated in damage to a wide variety of materials – including a color change in the Statue of Liberty's copper skin. 127:404; 128:154

• Much of the crop damage caused by leaf-eating insects may be triggered by a chemical that plants make when stressed by toxic air pollutants, researchers reported (127:247). Some insects, they found, even co-opt a plant's own pesticidal agents for their use against the plant. 128:101

• Plants were found to respond to ethylene gas – a by-product of incomplete combustion – as a toxic pollutant, even though the chemical is also a natural plant hormone. 127:309

• Chemists identified a metallic signature for tracing pollutants from oil refineries and power plants back to the facilities that spewed them. 128:148

• An oversupply of nitrogen was suggested as a possible cause for the premature death of some coniferous trees. 127:228,345

• The Superfund law, which provides for cleaning up toxic-waste dumps, expired in September, while Congress debated ways to expand the program. 127:133; 128:215, 390

• Elevated levels of carbon dioxide that occur during fires, normally considered nontoxic, were found to double the toxicity of carbon monoxide, another combustion by-product. 127:297

• Filtering of water at treatment plants may not effectively remove bacteria and other micoorganisms from drinking water, two researchers contended. 128:4

Physics

• French experimenters reported observation of interference by single photons. 128:324

• Quasicrystals, arrangements of atoms that have a nonperiodic regularity to their structure, were discovered. 127:37, 188; 128:102, 278

• Superstrings, a topological defect of the space-time of the universe, were found to be the centers around which a new variety of unified theory of physics can be built. 127:277

• Neutrinos *do* have a small mass, revealed an experiment done in Guelph, Ontario. 127:293

• Protons and antiprotons were collided with total energies of up to 2 trillion electron-volts at Fermilab. 128:196, 202

• Electrons were accelerated for the first time by a new technique, collective-ion acceleration. 128:261

• Silicon, it was found, becomes a superconductor under extreme pressure. 127:217

• Successful focusing of lithium ions in Sandia National Laboratories' Particle Beam Fusion Accelerator I (127:244) and the first firing of Particle Beam Fusion Accelerator II (128:389) gave new hope to controlled nuclear fusion efforts.

• Nova, the world's most powerful laser, can supply bursts of up to 120 trillion watts. 127:270

• Scanning tunneling microscopes not only "see" individual atoms but were shown to identify the chemical species as well. 127:215

• Weakly interacting massive particles (WIMPs) may explain the sun's inability to produce as many neutrinos as theorists think it ought to. 128:23

Science & Society

• With the continued production of nuclear weapons and the possibility of further arms talks between the United States and Soviet Union, scientists continued to study and debate how well they can seismically verify nuclear test bans. 128:268, 282

• Controversy over the Reagan administration's efforts to control the flow of sensitive but unclassified information continued. A new issue involved restriction of access to supercomputers. 127:247, 295; 128:36, 181, 248

World Bank

• Research suggested socioeconomic factors play as great a role in famines – such as the one in Africa – as do effects of climate and weather. 127:118, 299; 128:9

• A 16-year moratorium on U.S. chemical weapons production ended. 127:407

• Ecologists and biologists reported data showing that even a mild "nuclear winter" could be expected to devastate agriculture, leading to the starvation of billions. 128:171

• Congress approved a four-year extension of the 1979 Export Administration Act, giving the government authority to control exports for national security reasons. 128:5

• The Food and Drug Administration proposed banning sulfites from fresh produce. The food additives, used to prevent wilting and discoloration, have been linked to the deaths of several asthmatics (128:100). FDA also proposed warning labels for drugs with sulfites (128:397). In response to a court ruling, the Treasury Department was forced to reinstate its plan to label alcoholic beverages containing sulfites. 128:330

• A report from the National Science Board criticized universities for seeking funds for facilities by going directly to Congress, but the practice continued. 127:167;128:71

• Reorganization of the National Science Foundation's engineering directorate aimed to give it a more active role in supporting academic research and industrial engineering excellence. 127:102

• The United States withdrew from the United Nations Educational, Scientific and Cultural Organization (UNESCO). 127:4

• Federal funding for a head-injury research project involving baboons was halted while allegations of animal care deficiencies were investigated and confirmed (128:53, 230). New animal welfare rules were enacted to limit similar abuse in the future (128:281). Meanwhile, research is pointing toward chemical safety tests that do not use laboratory animals. 128:125

• For the first time, computer chips received copyright protection. 127:23

• A court ruling made plants, seeds and plant tissue cultures eligible for patent protection. 128:267

• U.S. family-planning assistance to developing countries underwent policy changes. 128:55

• Changes in the Reagan administration included new cabinet secretaries for the Departments of Interior, Energy, Education and Health and Human Services (127:23, 39; 128:308). In addition, Presidential Science Adviser George A. Keyworth II resigned effective Dec. 31. 128:358

• The industrialized world may be no more than 10 or 15 years away from a dependency on Mideast oil producers that rivals or surpasses anything encountered in the 1970s, new analyses suggested. 128:68

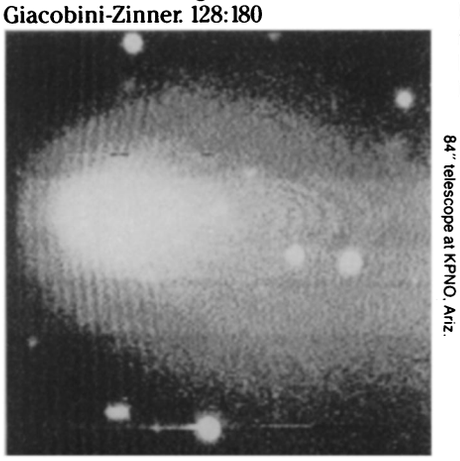
• Prices for between 50 and 60 percent of the nation's natural gas supplies were deregulated. 127:57

• Growing sales of computer software written by faculty and students forced universities to reevaluate their copyright and patent policies. 128:188

Space Sciences

• As Comet Halley neared the sun and earth for the first time in three-quarters of a century, scientists reported the beginnings of sublimation from its icy nucleus (128:38) and early signs of the formation of its fuzzy tail (128:245). In addition, five spacecraft were launched toward early-1986 encounters with the comet – two by the Soviet Union (127:5), one by the European Space Agency (128:20) and two by Japan (127:22; 128:180). The Soviet craft, passing by Venus on the way, released capsules that deployed instrumented balloons to track the Venusian winds and sent landing craft down to sample the planet's surface. 127:388

• The first visit to any comet by any spacecraft was made by a probe called the International Cometary Explorer, which flew through the tail of Comet Giacobini-Zinner. 128:180



84" telescope at KPNO, Ariz.

• Signs of rings around the planet Neptune – but not all the way around – were reported from stellar occultation observations. 127:37

• The first relatively clear picture of one of Uranus's rings was computer-crafted from six images taken by the Voyager 2 spacecraft. 128:373

• The thin atmosphere of Mercury was reported to contain sodium, in an amount far greater than any of the planet's other known atmospheric constituents. 128:103

• Huge "dust-devils" towering more than three miles above the surface of Mars were reported by scientists after examining overlooked details in photos taken years before by the orbiting Viking spacecraft. 127:197

• Pluto and its satellite Charon began showing signs of eclipsing each other as seen from earth, a relationship that (due to Charon's steep orbital inclination and Pluto's long path around the sun) is visible for only two brief time spans every 124 years. 127:132

• Two glowing "artificial comets," made by injecting clouds of barium ions into the solar wind outside earth's magnetosphere, were produced by a satellite as part of the Active Magnetospheric Particle Tracer Experiment (127:6; 128:54), which also created a barium cloud within the geomagnetic field's "tail." 127:212

• A satellite that had been studying the sun's corona since 1979 was, while still operating, deliberately destroyed by an aircraft-launched missile in a test for the administration's Strategic Defense Initiative program (128:197). The satellite had previously been credited with discovering three comets that then were apparently destroyed by passing too close to the sun. Two more such comets were discovered in the same satellite's data this year. 128:326

• The first two classified manned space missions ever flown by the United States were conducted aboard the space shuttle by the Department of Defense (127:70; 128:228). In addition, during an otherwise all-NASA shuttle mission, the Air Force carried out a nominally unclassified test of tracking the craft by ground-based laser beam, as part of the Strategic Defense Initiative. 127:405

• The Spacelab research facility was used for its first three missions aboard the shuttle in a wide variety of scientific and engineering experiments, including a West German mission that was the first shuttle flight ever to have almost its entire payload under the control of a foreign government. 127:292; 128:86, 308

• NASA's Galileo II airborne observatory, a heavily instrumented Convair 990 jet that the agency had been using for 12 years, was destroyed by fire in a takeoff accident as it was preparing to study one of the AMPTE "artificial comet" experiments. 128:54

Technology

• A British invention opened up the possibility of creating full-color stereo images of samples viewed under a special light microscope. 128:372

• The Argonne National Laboratory started a new program to develop a safer, less costly breeder reactor. 127:60

• Bacteria and other microorganisms were shown to be responsible for a significant amount of the corrosion that occurs worldwide. 128:41, 42

• Research showed that today's computer chips are vulnerable to electrical damage that can cause symptomless yet severely life-shortening damage. 128:332

• Research examining how much radioactivity might escape during a nuclear accident escalated debate over whether current nuclear regulations are too strict. 127:250

• New television pictures from inside the damaged Three Mile Island nuclear reactor suggested that fuel did melt during a 1979 accident there. 127:148

• Researchers at the Sandia National Laboratories demonstrated that an intense electron particle beam can be laser-guided into a straight-line course through a gas. 127:230

• The Department of Energy narrowed its choice of possible sites for the first high-level radioactive waste repository to three and designated a preferred location for its "monitored retrievable storage" facility. 127:6, 277; 128:119

• Perpetual motion machine or revolutionary new energy source? Joe Newman's "energy machine" was locked in a long-running dispute between the Patent and Trademark Office and the inventor over whether a patent should be issued. 127:342

• The Department of Energy decided to close two of its uranium enrichment plants. 127:375

• A novel method for making ceramic-metal composites called lanxides opened up the possibility of creating tough new materials for applications like armor plating. 128:388

• Researchers announced a new optical-fiber communications record for the product of information density times distance traveled without a repeater to boost the signal (127:119). Two related experiments doubled the speed of light-signal modulation (the switching of a light signal on and off). 127:134

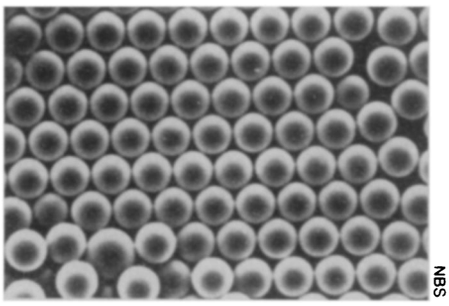
• Researchers at various universities developed prototype "walking machines" designed to tread where no tracked or wheeled vehicles can go. 128:9

• The race was on to develop and manufacture the first computer memory chip that holds more than 1 million bits of information. 127:135, 341

• Prototype models of erasable optical disks and drives for storing computer data were demonstrated. 128:57

• Aerial infrared surveys of crops were able to discern evidence of plant stress that is not yet visible to the naked eye. 127:70

• A biophysicist invented the world's smallest heater and thermometer for his probing of individual human cells. 128:167



NBS

• A 1983 space shuttle flight produced the first commercially available "made-in-space" product – microscopic plastic beads. 128:92

• The National Science Foundation established six engineering research centers at universities. 127:378

• The Nuclear Regulatory Commission decided to allow the undamaged unit of the Three Mile Island nuclear power plant to begin operating again after being shut down for six years. 127:359, 375; 128:150, 229

• By failing to renegotiate financial backing of the Great Plains Coal Gasification project, the U.S. government prompted sponsors to abandon the $2 billion facility, completed a year earlier. It was among measures that dealt the synfuels-development community a serious setback this year. 128:87

• The Aerobie, a newly invented flying ring, sailed to a world distance record for a thrown, heavier-than-air object. 127:153