

**SCIENTIFIC
AMERICAN**

**CUMULATIVE
INDEX
1948-1978**

**SCIENTIFIC
AMERICAN**

N-7
N-7
E 1

Cumulative Index 1948-1978

*Index to the 362 issues from
May, 1948, through June, 1978*

Scientific American, Inc., New York

Published by SCIENTIFIC AMERICAN, INC.
415 Madison Avenue, New York, N. Y. 10017

Copyright © 1979 by Scientific American, Inc.
All rights reserved.
Printed in the United States of America.

No part of this book may be reproduced by
any mechanical, photographic, or electronic process,
or in the form of a phonographic recording,
nor may it be stored in a retrieval system, transmitted,
or otherwise copied for public or private use
without written permission from the publisher.

ISBN: 0-89454-002-5

Preface

This *Cumulative Index* embraces, inclusively, all issues of **SCIENTIFIC AMERICAN** from May, 1948, (the first under the magazine's present editorial direction) through June, 1978.

References are by year, month and page of issue, in that order; thus, the entry "1954 Aug. p. 77" refers to page 77 of the August, 1954, issue. The Index consists of eight independent parts, each alphabetically arranged, as follows:

Index to Topics offers access to the subject matter covered in 2,964 articles and some 3,500 "Science and the Citizen" items published in 362 issues indexed. This is a rotated key-word index. That is, the topics covered in a given article or item are cited by "key words" (average of seven per article and two per item). The key words are entered together in a cluster, and each key word takes its turn as the first term in the cluster in its entry and reentry down through the alphabet of this Index. Thus:

DNA, double helix, X-ray crystallography, genetic code, structure of DNA resolved	1954 Oct. p. 54-61 [5]
double helix, DNA, X-ray crystallography, genetic code, structure of DNA resolved	1954 Oct. p. 54-61 [5]
genetic code, DNA, double helix, X-ray crystallography, structure of DNA resolved	1954 Oct. p. 54-61 [5]
X-ray crystallography, DNA, double helix, genetic code, structure of DNA resolved	1954 Oct. p. 54-61 [5]

In most cases, a secondary descriptive phrase, highlighting some aspect of the entry (in the example above: structure of DNA resolved) rides along with the rotating key words. Each entry is designed to serve, therefore, as a "mini-abstract" of the original.

Entries that begin with the same key word are listed in chronological order; articles are listed first, and "Science and the Citizen" items follow.

Articles are referenced by first and last page numbers (thus: 1978 June p. 60-72); "Science and the Citizen" items, by first page number (thus: 1978 June p. 74).

References to about one third of the articles close with a one- to four-digit number in brackets (in the example above: [5]); this is the Offprint number and identifies articles republished as Offprints by W. H. Freeman and Company (660 Market Street, San Francisco, California 94104).

Listing of Tables of Contents in chronological order permits ready identification, by titles and authors, of the articles cited in the foregoing index.

Index to Authors lists all authors of articles.

Index to Titles lists all articles by the first word in the title (exclusive of "The" or "A") and by the other key words in the title. "Underwater Archaeology in the Maya Highlands" thus appears under "Archaeology" and "Maya" as well as "Underwater."

Index to Book Reviews lists longer book reviews. The section is divided into three parts: Authors of books reviewed, Titles of the books and Reviewers.

Index to Mathematical Games lists the puzzles, games and diversions presented in the department since its inception in January, 1957, under editorship of Martin Gardner. It also includes Gardner's article on Flexagons (December, 1956) and the "twelve-ball" problem that cropped up in "The Amateur Scientist" in 1955.

Index to The Amateur Scientist lists the projects, experiments and demonstrations presented in this department from April, 1952, through February, 1976, (under the editorship of A. G. Ingalls until April, 1955, and thereafter under the editorship of C. L. Stong) and from July, 1977, through June, 1978, under the editorship of Jearl Walker.

Index to Proper Names lists the names of all persons mentioned in the articles or "Science and the Citizen" items and of places and institutions featured in a primary role.

The indexing was accomplished with collaboration of Excerpta Medica B. V., of Amsterdam; Infonet B. V., of Amsterdam, conducted the computer processing of the entries and composition of the pages.

THE EDITORS

November, 1978

BOARD OF EDITORS: Gerard Piel (Publisher), Dennis Flanagan (Editor), Francis Bello (Associate Editor), Philip Morrison (Book Editor), Judith Friedman, Brian P. Hayes, Paul W. Hoffman, Jonathan B. Piel, John Purcell, James T. Rogers, Armand Schwab, Jr., Jonathan B. Tucker, Joseph Wisnovsky, and K. Chester (up to April, 1952). Albert G. Ingalls (up to April, 1955), E. P. Rosenbaum (up to June, 1963), James R. Newman (up to July, 1966). Leon Svirsky (up to May, 1974), C. L. Stong (up to February, 1976).

Contents

<i>Preface</i>	<i>v</i>
<i>Index to Topics</i>	<i>1</i>
<i>Listing of Tables of Contents</i>	<i>251</i>
<i>Index to Authors</i>	<i>273</i>
<i>Index to Titles</i>	<i>305</i>
<i>Index to Book Reviews</i>	<i>365</i>
<i>Authors</i>	<i>365</i>
<i>Titles</i>	<i>377</i>
<i>Reviewers</i>	<i>389</i>
<i>Index to Mathematical Games</i>	<i>397</i>
<i>Index to The Amateur Scientist</i>	<i>401</i>
<i>Index to Proper Names</i>	<i>407</i>

Index to Topics

A

- A.A.A.S.:** American Association for the Advancement of Science
- A.A.A.S., centennial**
 Roger Adams president-elect 1948 Aug. p. 22
 annual meeting 1949 Feb. p. 29
 annual meeting 1950 Feb. p. 24
 annual meeting 1951 Feb. p. 30
 annual meeting 1952 Feb. p. 30
 annual meeting 1953 Feb. p. 34
 presidents Condon and Weaver 1953 May p. 54
 annual meeting 1954 Feb. p. 42
 annual meeting 1955 Feb. p. 52
 Carnegie teaching grant 1955 Aug. p. 48
 annual meeting 1956 Feb. p. 48
 to boycott racially segregated cities 1956 Mar. p. 52
 annual meeting 1957 Feb. p. 58
 annual meeting 1958 Feb. p. 42
 science policy, A.A.A.S.-sponsored 'Parliament of Science' 1958 May p. 51
 annual meeting 1960 Feb. p. 66
 annual meeting 1961 Feb. p. 66
 annual meeting 1962 Jan. p. 72
 science and public policy 1970 Feb. p. 42
- abacus,** calculating machine, Galileo's sexton, mechanical calculators, slide rule, sexton 1976 Apr. p. 104-113
- ablation,** heat, materials, temperature limits, rocket nozzle, turbine bucket, high temperatures: materials 1954 Sept. p. 98-106
- artificial satellite,** orbital motion, space exploration, Mercury, re-entry vehicle, re-entry corridor, re-entry from space 1961 Jan. p. 49-57
- ABM:** antiballistic missile
- ABM,** radar blackout, atomic warfare, arms race, counterforce strategy, ICBM, U.S. ABM system capabilities and limitations 1968 Mar. p. 21-31
- MIRV, SALT, deterrence, ICBM, arms race, counterforce strategy, dynamics, instability of arms race 1969 Apr. p. 15-25 [642]
- arms race, ICBM, MIRV, SLBM, mutual assured destruction, counterforce strategy, strategic balance, national security 1969 Aug. p. 17-29 [330]
- ICBM, MIRV, atomic armaments, counterforce strategy, strategic weapons, mutual assured destruction, arms race 1973 Nov. p. 18-27
- ABM controversy,** Operations Research Society of America 1971 Nov. p. 48
- ABM systems,** arms race, ICBM, MIRV, atomic weapons, SALT, atomic test ban, strategic weapons, prospects for freeze on numbers and qualitative improvement of weapons 1971 Jan. p. 15-25
- abnormal behavior,** spider webs, drug action, animal behavior 1954 Dec. p. 80-86
- comparative psychology, parental care, emotional development, maternal deprivation, early experience and emotional development, experiments with rats 1963 June p. 138-146 [478]
- aboriginal culture,** hunting, herding, food gathering, tribal cultures, agricultural society, India, 'living prehistory' in India 1967 Feb. p. 104-114
- aborigine,** stone tools, Paleolithic man, dingo, Tasmanian devil, Australian aborigine, antiquity of man in Australia 1966 Mar. p. 84-93 [628]
- abortion,** birth control, infant mortality, maternal mortality, public opinion, legal status, incidence in U.S. and other countries 1969 Jan. p. 21-27 [1129]
- population, marriage rate, death rate, birth rate, vital statistics, menarche, infant mortality, 1538-1812, parish registers, York, England 1970 Jan. p. 105-112
- birth control, contraception, family planning, population control, public policy in U.S. 1973 July p. 17-23
- population, birth control, public health, infant mortality, maternal mortality, international comparison of experience with legalization of abortion 1977 Jan. p. 21-27 [1348]
- liberalization of U.S. legislation 1969 Nov. p. 56
- U.S. District of Columbia abortion statute 1970 Jan. p. 50
- model abortion law 1970 June p. 47
- legal in N.Y. State 1971 Oct. p. 42
- legalization in U.S., social implications 1972 July p. 51
- U.S. Supreme Court affirms legality 1973 Mar. p. 44
- fetal research 1975 Feb. p. 40
- abrasive wear,** materials technology, wear, adhesive wear, corrosion, fatigue wear, surfaces in sliding contact 1962 Feb. p. 127-136
- absorption line,** phosphors, energy emission, energy transformation 1954 Oct. p. 62-66 [237]
- spectroscopy, radio astronomy, hydrogen, interstellar matter, 21-centimeter wave absorption 1957 July p. 48-55
- absorption of energy,** see: absorption line
- abyss,** climate, ocean circulation, currents in the abyss 1958 July p. 85-90
- abyssal fish,** bioluminescence, glow worm, firefly, luciferase, 'cold light' 1948 May p. 46-49
- abyssal life,** ocean abyss, bioluminescence, marine biology, fauna at 4000 meters 1957 Nov. p. 50-57
- abyssal sediments,** oxygen isotopes, temperature measurement, foraminifera, paleontology, glaciation, climatic change, measurement of ancient temperatures 1958 Feb. p. 54-63
- Acapulco trench,** Pacific Ocean, earth crust, Tonga Trench, Cedros Trough, ocean floor 1955 Nov. p. 36-41 [814]
- accelerated-ion technique,** ion implantation, microelectronics, semiconductor, 'doping' 1973 Apr. p. 64-71
- acceleration,** space medicine, g-forces, weightlessness, semicircular canals, black-out 1951 Jan. p. 16-19
- human physiology, manned space flight, weightlessness, space medicine, human centrifuge, g stress 1962 Feb. p. 60-70
- rocket sled 1955 Oct. p. 44

accelerometer

- accelerometer**, aircraft navigation, navigation, air transport, inertial navigation, gyroscope, commercial adaptation of military and space technology 1970 Mar. p. 80-86
- accident-proneness**, predisposition over-rated 1949 Oct. p. 28
- acclimatization**, metabolism, oxygen starvation, erythrocyte, attitude adaptation 1955 Dec. p. 58-68
- brown fat, altitude adaptation, Quechua Indians, deer mice, hemoglobin, metabolic rate, exercise, human physiology at high altitude 1970 Feb. p. 52-62 [1168]
- sports medicine, Olympics at 7,450 feet altitude 1968 Jan. p. 51
- accounting**, systems design, computer technology, computer decision making, bookkeeping, uses of computers in organizations 1966 Sept. p. 192-202
- Acetabularia**, giant cells, mermaid's wineglass, cell nucleus, cytoplasm, algae, giant cells in study of nucleus-cytoplasm interaction 1966 Nov. p. 118-124 [1057]
- acetaldehyde**, metabolism, alcohol tolerance, drug abuse, liver function 1953 Dec. p. 86-90
- acetaldehydism**, defective alcohol metabolism 1975 May p. 43
- acetic acid**, fatty acid synthesis, microsomes, coenzyme A, lecithin, lipids, synthesis not breakdown in reverse 1960 Feb. p. 46-51
- acetylcholine**, nervous system, nerve impulse, nerve excitation, inhibitory impulse, neuromuscular synapse, neurotransmitters, dynamics of inhibition 1948 Sept. p. 44-49
- hormone, nerve impulse, serotonin, synapse, emotional illness, neurotransmitters, central nervous system, physiological psychology, chemical mediation of nerve impulses 1957 Feb. p. 86-94
- algal bloom, Dinoflagellata, marine ecology, nerve poisons, poisonous tide 1958 Aug. p. 92-98
- acetylcholinesterase, nerve gases, nerve poisons, citric-acid cycle, alkaloids, toxins, lethal mechanisms at cellular level 1959 Nov. p. 76-84
- electric fishes, sodium ion potential, electroplaques, neurophysiology, synapse, animal behavior, nerve impulse, bioluminescence 1960 Oct. p. 115-124
- adrenalin, catecholamines, dopamine, drug effects, nerve physiology, neurotransmitters, noradrenaline 1974 June p. 58-71 [1297]
- nerve impulse, synapse, neurotransmitters, nerve-muscle synapse, chemical mediation of neuromuscular transmission 1977 Feb. p. 106-118 [1352]
- acetylcholinesterase**, acetylcholine, nerve gases, nerve poisons, citric-acid cycle, alkaloids, toxins, lethal mechanisms at cellular level 1959 Nov. p. 76-84
- acetylene**, chemical industry, plastics 1949 Jan. p. 16-21
- Acheson-Lilienthal plan**, arms race, U.S.S.R. atomic bomb, Baruch plan, U.S. negotiating position at termination of 'atomic monopoly' 1949 Nov. p. 11-13
- Acheulean culture**, man as hunter 1966 Dec. p. 58
- achievement**, motivation, aspiration, social surveys, psychological testing, self-anchoring scale 1963 Feb. p. 41-45
- acidity**, pH, galvanic cell, glass electrode, hydrogen ions 1951 Jan. p. 40-43
- acoustic analysis**, voice analysis, sound spectrogram, speech quality of mental patients 1965 Mar. p. 82-91 [492]
- acoustic circuit**, ultrasonic wave amplification 1961 Nov. p. 84
- acoustic formants**, verbal communication, communication, phonetics, markedness/unmarkedness dyad, morphemes, syntax, context sensitivity, invariant/variable dyad 1972 Sept. p. 72-80
- acoustic holography**, laser, sound waves, interference, holography, acoustic imaging, nondestructive testing, medical diagnosis 1969 Oct. p. 36
- acoustic imaging**, acoustic holography, laser, sound waves, interference, holography, nondestructive testing, medical diagnosis 1969 Oct. p. 36
- acoustic oscillation**, combustion instability, rocket engine, resonant combustion, propellant 1968 Dec. p. 94-103
- acoustic pulses**, air pressure, lightning, thunder 1975 July p. 80-90
- acoustic reverberation**, architectural acoustics, sound waves, auditoriums, wave acoustics, sound interference, sound diffraction, effective management of sound in public buildings and dwellings 1963 Nov. p. 78-92
- acoustic toys**, Corrugahorn, Hummer 1974 June p. 56
- acoustics**, physics, harmony, string instruments, wind instruments, piano, voice, musical scale, agreeable melodies and physical laws 1948 July p. 32-41
- whip-crack physics 1959 Feb. p. 68
- acquired characteristics**, Lysenkoism, Lamarck, genotype, evolution, phenotype, mutation, ostrich calluses, speciation, religion, orthodoxy, Darwinism, experiments in acquired characteristics 1953 Dec. p. 92-99
- acrasin**, amoebae, cell differentiation, social amoebae, slime mold, Dictyostelium cell aggregation 1959 Dec. p. 152-162
- amoebae, adrenalin, social amoebae, slime mold, Dictyostelium, cyclic AMP 1969 June p. 78-91
- acrosome reaction**, fertilization, sea urchin, spermatozoon, sexual reproduction, moment of fertilization 1959 July p. 124-134
- A.C.S.:** American Chemical Society
- A.C.S.**, annual meeting 1951 Oct. p. 33
- annual meeting 1952 Nov. p. 44
- annual meeting 1953 Nov. p. 56
- annual meeting 1954 Nov. p. 48
- annual meeting 1955 Nov. p. 49
- annual meeting 1957 Nov. p. 70
- A.C.S. vs A.M.A.**, charges of 'monopoly' 1951 Oct. p. 33
- ACTH:** adrenocorticotrophic hormone
- ACTH**, cortisone, inflammation, degenerative diseases, hormone, stress, experience with and appraisal of two hormonal drugs 1950 Mar. p. 30-37 [14]
- pituitary gland, gonadotrophic hormones, metabolic hormones, growth hormone, endocrine system, the master gland 1950 Oct. p. 18-22
- war, stress, combat fatigue, psychiatry, Korean war studies of battlestress 1956 Mar. p. 31-35
- hormone, sexual characteristics, growth, thyroid-stimulating hormone, follicle-stimulating hormone, prolactin, androgens, estrogens, secondary sexual characteristics, human physiology, endocrine system, chemical integrators of the body 1957 Mar. p. 76-88 [1122]
- adrenal gland, pituitary gland, cell communication, molecular structure of ACTH, relation to function 1963 July p. 46-53 [160]
- actinomyosin, ecdysone, cortisone, insulin, estrogens, gene activation, RNA synthesis, aldosterone, growth hormone, thyroxin, mechanism of hormone action 1965 June p. 36-45 [1013]
- adrenal hormones, glucocorticoids, pituitary hormones, stress 1971 Jan. p. 26-31 [532]
- child development, dwarfism, emotional deprivation, growth hormone, deprivation dwarfism, 'bone age', anorexia nervosa 1972 July p. 76-82 [1253]
- ATP**, glucogenesis, glycolysis, hormone, epinephrine, cell metabolism, cyclic AMP, activation of cyclic AMP by hormones 1972 Aug. p. 97-105 [1256]
- cortisone, conference on potent new drugs 1949 Dec. p. 28
- structure resolved 1955 Aug. p. 49
- synthetic ACTH 1961 Jan. p. 83
- total synthesis 1963 Oct. p. 57
- pituitary gland, hormone function 1964 May p. 62
- actin**, muscle contraction, ATP, myosin, muscle fibril, biochemical mechanism of muscle contraction 1949 June p. 22-25
- electron microscopy, muscle contraction, muscle fiber, myosin, muscle fiber structure and function 1958 Nov. p. 66-82 [19]
- actinomyosin, cyclosis, cilia, muscle contraction, flagella, cytology, cytoplasmic streaming, myosin, underlying unity of cellular motion 1961 Sept. p. 184-204 [97]
- muscle contraction, myosin, ATP, electron microscopy, sliding-filament hypothesis 1965 Dec. p. 18-27 [1026]
- ATP**, myosin, actinomyosin, muscle contraction, tropomyosin, troponin, calcium, microstructure of muscle filament and biochemistry of contraction 1974 Feb. p. 58-71 [1290]
- muscle contraction, muscle fibril, protein switch, tropomyosin, troponin, myosin, calcium in muscle 1975 Nov. p. 36-45 [1329]
- actinomycin**, antibiotics, DNA-actinomycin binding, mRNA inhibition, protein synthesis 1974 Aug. p. 82-91 [1303]
- actinomyosin**, muscle contraction, artificial muscle, Langmuir trough, ATP, muscle relaxation 1952 Dec. p. 18-21
- energy transformation, mechanochemical engine, muscle contraction 1954 Mar. p. 72-76
- cyclosis, cilia, muscle contraction, flagella, cytology, cytoplasmic streaming, actin, myosin, underlying unity of cellular motion 1961 Sept. p. 184-204 [97]
- ecdysone, cortisone, insulin, estrogens, gene activation, RNA synthesis, aldosterone, growth hormone, ACTH, thyroxin, mechanism of hormone action 1965 June p. 36-45 [1013]
- ATP**, actin, myosin, muscle contraction, tropomyosin, troponin, calcium, microstructure of muscle filament and biochemistry of contraction 1974 Feb. p. 58-71 [1290]

- action potential**, nerve impulse, refractory period, sodium ion potential, nodes of Ranvier, nerve membrane 1952 Nov. p. 55-65 [20]
- activated nucleotides**, DNA synthesis, virus π X 174, cell-free system, DNA polymerase, first test-tube synthesis of biologically active DNA 1968 Oct. p. 64-78 [1124]
- active site**, antibodies, antigens, immune response, lock-and-key theory, immunoglobulin, Bence-Jones proteins, Fab fragments, Fc unit 1977 Jan. p. 50-59 [1350]
- see also*: antibodies, enzymes
- active transport**, passive transport, pinocytosis, phagocytosis, cytology, osmosis, cell membrane, fertilization, functions of cell membranes 1961 Sept. p. 167-180 [96]
- kidney tubule, sodium pump, membrane potential, cell membrane, biological pumps 1962 Aug. p. 100-108
- cell membrane, membrane lipids, membrane permeability, phospholipids, membrane proteins 1972 Feb. p. 30-38 [1241]
- cell membrane, lipid molecules, membrane proteins, membrane structure 1974 Mar. p. 26-33 [1292]
- ATP, cell membrane, colicine, membrane energetics, E. coli 1975 Dec. p. 30-37 [1332]
- ATP, oxidative phosphorylation, cell membrane, mitochondrion, chloroplast, formation of the energy-exchange molecule in the cell 1978 Mar. p. 104-123 [1383]
- active trapper**, carnivorous plants, passive trapper, digestive enzymes, natural history 1978 Feb. p. 104-155 [1382]
- actuators**, control systems, automatic control, servomechanisms, frequency response, pneumatic servomechanisms, hydraulic servomechanisms, control systems 1952 Sept. p. 56-64
- acupuncture**, in the Western world 1974 Apr. p. 51
- acute illness**, infectious disease, national health insurance, medical care, child health care, chronic illness, delivery of medical care 1973 Apr. p. 13-17
- acute respiratory failure**, intensive care, tracheostomy, lung, alveolar collapse, emphysema, pathogenesis and treatment of acute respiratory failure 1969 Nov. p. 23-29
- artificial lung 1975 Apr. p. 57
- AD-X2**, NBS chief Astin fired 1953 May p. 53
- Astin reinstated at NBS 1953 June p. 44
- 'formula' still 'secret' 1953 Aug. p. 41
- Astin gets tenure 1953 Oct. p. 51
- inquest: NBS OK 1953 Dec. p. 50
- official burial 1954 Jan. p. 38
- F.T.C. condones maker's claims 1956 July p. 48
- still on market 1962 Feb. p. 81
- adaptation**, hot springs, high temperature, low temperature, glaciation 1949 Feb. p. 46-49
- extinction, species specificity, natural selection, evolutionary radiation, ecological niche, 'Is man here to stay?' 1950 Nov. p. 52-55
- birds, geographical distribution, speciation, ornithology, behavioral adaptation, bird migration, provinciality of birds 1957 July p. 118-128.
- comparative physiology, reptile, marine birds, salt excreting glands 1959 Jan. p. 109-116
- germination, seed dispersal, dormancy 1959 Apr. p. 75-84
- sand dune ecology, thermoregulation, succulent plants, behavioral adaptation, symbiosis, adaptive mechanism for life in hot acid environment 1959 July p. 91-99
- fleas, parasitism, host-parasite relationship, hormone, rabbits, estrus, the rabbit flea and rabbit hormones 1965 Dec. p. 44-53 [1027]
- fungi, orchids, symbiosis, mycorrhiza, plant evolution, adaptive ability of orchids 1966 Jan. p. 70-78
- Ama, diving, diving women, Korea, Japan, breathing, human physiology, basal metabolism 1967 May p. 34-43
- aquatic insect, insect eggshell, respiration, entomology, selective permeability of insect 1970 Aug. p. 84-91 [1187]
- auxins, trees, plant hormones, tree structure, ax-head model, mechanical design of trees 1975 July p. 92-102
- see also*: behavioral adaptation
- addition polymers**, molecular science, polymers, condensation polymers, introduction to single-topic issue on 'giant molecules' 1957 Sept. p. 80-89
- molecular science, polymers, condensation polymers, introduction to single-topic issue on 'giant molecules' 1957 Nov. p. 80-89
- adenoids**, tonsils, myriads of viruses 1954 Nov. p. 50
- adenosinetriphosphate**, *see*: ATP
- adenoviruses**, virology, X-ray diffraction, poliomyelitis virus, polyoma virus, herpes virus, influenza virus, vaccinia virus, tobacco mosaic virus, bacteriophage, structure of viruses 1963 Jan. p. 48-56
- cancer virus, SV40 virus, DNA virus, DNA recombination, gene transformation, tumor-virus antigen, virus etiology of cancer 1966 Mar. p. 34-41
- cancer virus, herpes virus, virus disease, viral vaccines 1973 Oct. p. 26-33
- viral etiology of cancer 1962 May p. 80
- adhesive**, molecular attraction, surface tension, elastic energy, epoxy resins, molecular repulsion, micromechanics of adhesion 1962 Apr. p. 114-126
- polybutadiene glue 1957 Nov. p. 72
- adhesive wear**, materials technology, wear, abrasive wear, corrosion, fatigue wear, surfaces in sliding contact 1962 Feb. p. 127-136
- adipose tissue**, hibernation, brown fat, thermoregulation, homeostasis, metabolism, cold adaptation, neonatal physiology, heat production in newborn animals, including man 1965 Aug. p. 62-65 [1018]
- adjacency principle**, visual perception, motion perception, contextual cues in perception 1978 May p. 126-139 [582]
- adobe house**, building construction, architecture, primitive architecture, climate, igloo, teepee, yurt, tent, sod hut, hogan, still house 1960 Dec. p. 134-144
- adolescence**, conformity, interpersonal relationships, social psychology, U.S. teenage attitudes 1958 June p. 25-29
- child development, growth, menarche, earlier maturation of children in industrial countries 1968 Jan. p. 21-27
- child development, medical care, growth hormone, 'bone age', menarche, heredity vs. environment 1973 Sept. p. 34-43
- family, alienation, racial discrimination, divorce, poverty, infant mortality, crime, suicide, drug addiction, changes in American family structure 1974 Aug. p. 53-61 [561]
- adolescent development**, menarche, bespeaks health rather than habits 1972 May p. 50
- adrenal gland**, stress, psychosomatic illness, alarm reaction, kidney disorder, cardiovascular disease 1949 Mar. p. 20-23 [4]
- schizophrenia, stress, steroid hormones 1949 July p. 44-47
- ACTH, pituitary gland, cell communication, molecular structure of ACTH, relation to function 1963 July p. 46-53 [160]
- pineal organ, biological clock, estrogens, progesterone, melatonin, serotonin, pineal regulation of sex glands 1965 July p. 50-60 [1015]
- effect on sexual receptivity 1972 Aug. p. 46
- adrenal hormones**, ACTH, glucocorticoids, pituitary hormones, stress 1971 Jan. p. 26-31 [532]
- brain circuitry, gonadal hormones, hormone-sensitive neurons, sex hormones, sexual behavior, sex differences, steroid hormones, action of hormones on nerve tissue 1976 July p. 48-58 [1341]
- electrocortin 1953 Nov. p. 54
- adrenalin**, fear, anger, noradrenalin 1955 May p. 74-81 [428]
- anxiety neurosis, lactic acidosis, biochemistry of anxiety 1969 Feb. p. 69-75 [521]
- acrasin, amoebae, social amoebae, slime mold, Dictyostelium, cyclic AMP 1969 June p. 78-91
- acetylcholine, catecholamines, dopamine, drug effects, nerve physiology, neurotransmitters, noradrenaline 1974 June p. 58-71 [1297]
- adrenocorticotrophic hormone**, *see*: ACTH
- adsorption**, zeolites, molecular sieves, ion exchange, separation of similar molecules 1959 Jan. p. 85-94
- Advanced Research Projects Agency computer network**, *see*: ARPANET
- advanced study**, \$2.75 million bequest to Berkeley 1955 Dec. p. 52
- new school at M.I.T. 1956 Feb. p. 49
- advertising**, subliminal stimulation 1958 Aug. p. 52
- A.E.C.: Atomic Energy Commission
- A.E.C., isotopes, U.S. Atomic Energy Commission makes isotopes available, free, to cancer research 1949 Apr. p. 16-17
- atomic weapons, nuclear power, science funding, university research, military secrecy 1949 July p. 30-43
- support for research 1948 June p. 24
- budget cut 1948 Aug. p. 22
- nuclear power, optimistic report 1948 Sept. p. 28
- loyalty and security, clearance procedures 1948 Sept. p. 28
- personnel security office 1949 Apr. p. 26
- new commissioners 1949 June p. 26
- Senatorial ordeal of David E. Lilienthal 1949 July p. 26
- Lilienthal hearings terminate 1949 Oct. p. 26
- Lilienthal resigns 1950 Jan. p. 28

- successor to Lilienthal 1950 May p. 27
 reluctant confirmation of Commissioner Pike 1950 Aug. p. 28
 roster filled 1950 Oct. p. 24
 new general manager 1950 Dec. p. 26
 nation's armorer 1951 Sept. p. 50
 Pike resigns 1952 Feb. p. 32
 reactors and weapons 1952 Mar. p. 34
 \$4 billion budget 1952 Sept. p. 70
 third uranium-separation plant 1952 Oct. p. 39
 Ohio uranium-separation plant 1952 Nov. p. 44
 Glennan resigns 1952 Dec. p. 38
 House-Senate Joint Committee 1953 Jan. p. 31
 uranium, weapons, reactors 1953 Mar. p. 44
 Adm. Strauss in wings 1953 Apr. p. 45
 new chairman 1953 May p. 53
 Strauss chairman 1953 Aug. p. 40
 Campbell appointed 1953 Sept. p. 72
 submarine reactors 1953 Sept. p. 72
 General general manager 1953 Nov. p. 50
 loyalty and security, 'Oppenheimer case', leaks from Oppenheimer hearing 1954 June p. 44
 loyalty and security, 'Oppenheimer case', Oppenheimer a security risk 1954 July p. 42
 loyalty and security, 'Oppenheimer case', Oppenheimer verdict sustained 1954 Aug. p. 36
 Libby succeeds Smyth 1954 Nov. p. 48
 Commissioner von Neumann 1954 Dec. p. 52
 Eisenhower commissioners 1955 May p. 50
 loyalty and security, 'Oppenheimer case', boycott of Oppenheimer boycott 1955 May p. 54
 new general manager 1955 June p. 47
 Vance commissioner 1955 Dec. p. 52
 appointments 1958 Aug. p. 50
 Libby resigns 1959 Apr. p. 64
 oil-man commissioner 1960 Apr. p. 88
 three scientists, two laymen 1961 May p. 74
 new commissioners 1962 Sept. p. 100
 first female commissioner 1964 May p. 60
- Aegyptopithecus**, primate evolution, hominoid, fossil primates, apes, man-apes, Fayum, Oligocene ancestor of hominoids 1967 Dec. p. 28-35 [636]
- aequorin**, ATP, muscle contraction, calcium, barnacle, bioluminescence, calcium ions in muscle construction 1970 Apr. p. 84-93 [1175]
- aerial mapping**, aerial photography, airborne radar, all-weather imaging, radar, radar holography, side-looking radar 1977 Oct. p. 84-95 [386]
- aerial photography**, natural resources, infrared photography, remote sensing, multiband camera, remote sensing of natural resources 1968 Jan. p. 54-69
- aerial mapping, airborne radar, all-weather imaging, radar, radar holography, side-looking radar 1977 Oct. p. 84-95 [386]
- aerial plankton**, animal migration, species dispersion, insect physiology, agricultural pest, entomology, wind-borne dispersal of species 1963 Dec. p. 132-138
- aerobic metabolism**, chloroplast, oxygen cycle, photosynthesis, biosphere, ozone, oxidation-reduction reactions, geological record, oxygen-carbon balance 1970 Sept. p. 110-123 [1192]
- ATP, muscle, glycolysis, aerobic metabolism, oxygen debt, lactic acid formation, anaerobic metabolism, energy mechanisms in muscle 1972 Mar. p. 84-91 [1244]
- ATP, muscle, glycolysis, oxygen debt, lactic acid formation, aerobic metabolism, anaerobic metabolism, energy mechanisms in muscle 1972 Mar. p. 84-91 [1244]
- see also*: oxidative phosphorylation
- aerodynamic whistles**, feedback, vortex, edge tone, hole tone, sound waves, whistles, flutes, organs and rocket engines 1970 Jan. p. 40-46
- aerodynamics**, shock waves, shadow photography, speed of sound, Mach cones, ballistics 1949 Nov. p. 14-19
 bird flight, airfoil, soaring, thermal cells 1952 Apr. p. 24-29
 boundary layer, airfoil, laminar flow, turbulence 1954 Aug. p. 72-77
 bridges, suspension bridges, harmonic oscillation 1954 Nov. p. 60-71
 bird flight, weight-strength ratio, bone structure, respiratory air sacs, birds as flying machines 1955 Mar. p. 88-96
 insect flight, locust, wind tunnel, efficiency of locust flight 1956 Mar. p. 116-124
 ailerons, aircraft design, smoke tunnel, airfoil, boundary layer, low-speed flight 1956 Apr. p. 46-51
- supersonic flight, shock waves, wind tunnel, molecular beam, ultra-high altitude aerodynamics 1958 Jan. p. 36-42
 insect flight, Stokes law 1958 Dec. p. 92-98
 soaring, wind velocity, thermal cells, air currents, ornithology, bird flight, flight of soaring birds 1962 Apr. p. 130-140
 air pollution, microclimate, micrometeorology, fluid dynamics, troposphere, meteorology, turbulence, atmospheric phenomena near the ground 1964 Oct. p. 62-76
 aerospace technology, Coanda effect, fluid dynamics, propulsion, nozzles, burners, nature and applications of Coanda effect 1966 June p. 84-92
 airfoil, boomerang, computer graphics, actual and theoretical boomerang orbits 1968 Nov. p. 124-136
 aircraft-wake vortexes, contrails, flight safety, jet flight, wake turbulence 1974 Mar. p. 76-83
 animal behavior, bird flight, insect flight, clap-fling mechanism, flip mechanism, hovering flight, lift generation 1975 Nov. p. 80-87 [1331]
- see also*: aeronautics, air transport
- aeronautics**, aircraft design, vertical take-off aircraft 1960 Aug. p. 41-49
 supersonic flight, commercial aircraft, aircraft design, sonic boom, aviation industry, technology and economics of supersonic transport 1964 June p. 25-35
 aircraft design, helicopters, helicopter flight, history, future development 1967 Apr. p. 38-46
 radiation hazards at 60,000 feet 1950 Dec. p. 30
 design and pilot error 1955 Apr. p. 49
 aircraft wing, speed of sound 1969 Sept. p. 95
 Gossamer Condor, man-powered flight 1977 Oct. p. 74
- aerosol**, light scattering, photometry, molecular size, hydrosol, Tyndall spectra, measurement 1953 Feb. p. 69-76
- aerospace technology**, Coanda effect, fluid dynamics, aerodynamics, propulsion, nozzles, burners, nature and applications of Coanda effect 1966 June p. 84-92
- aerothermodynamics**, heat, propulsion, energy transformation, laminar flow, turbulence, high temperatures: propulsion 1954 Sept. p. 120-131
- Afar triangle**, Red Sea, Rift Valley, guyot, Gulf of Aden, sea-floor spreading, continental drift, sea-floor spreading opens new ocean 1970 Feb. p. 32-40 [891]
- afforestation**, soil erosion, irrigation, agricultural technology, poverty, economic development, Mediterranean Project, United Nations 1960 July p. 86-103
 1964 Nov. p. 60
- afatoxin**, carcinogenesis, *Aspergillus flavus* 1964 Nov. p. 60
- Africa**, termite, entomology, insect behavior, air conditioning, airconditioned termite nests 1961 July p. 138-145
 marriage, sister exchange, marriage contracts 1975 Dec. p. 84-94
 Bantu language, Early Iron Age culture, language diffusion, linguistics 1977 Apr. p. 106-114
- African drum language**, communication, drums, gong language, talking drums 1971 Dec. p. 90-94
- African hominids**, brain evolution, fossil hominid brains, hominid, human brain, pongid brains, endocranial casts 1974 July p. 106-115 [686]
- African rifts**, gravity, ocean floor, mid-ocean ridge, oceanography, discovery of submarine rifted ridge 1960 Oct. p. 98-110
- 'after effects'**, human eye, optical illusion, vision, sensory perception, visual cortex, 'cortical satiation' 1962 Jan. p. 44-49
- afterimages**, color vision, photochemistry, sensory discrimination, visual pigments, photochemistry of color perception 1963 Oct. p. 84-93 [1089]
- phosphenes, vision, perception, prosthesis for blind, self-illumination of visual centers 1970 Feb. p. 82-87
 negative aftereffects, optical illusion, visual perception 1976 Dec. p. 42-48 [574]
- Agamemnon**, Mycenaean civilization, Classical archeology, burial treasure, dig started by Schliemann continues 1954 Dec. p. 72-78
- agamaglobulinemia**, gene expression, alkaptonuria, Wilson's disease, congenital anomalies, chemistry of hereditary disease, one gene-one enzyme hypothesis 1956 Dec. p. 126-136
- bacterial infection, blood proteins, gammaglobulin, antibodies, immunology, tissue grafts, hereditary immunological deficiency 1957 July p. 93-104
- immunology, value of normally unhygienic environment 1958 Oct. p. 56
- agar**, algae, phytoplankton, kelp, food chain, algin 1952 Dec. p. 15-17
- Agassiz**, glaciation, paleontology, natural history, Louis Agassiz, fostering of science in America 1949 July p. 48-51

- age of elements**, spectroscopy, age of universe, element formation, mass spectroscopy, nucleochronology, radioactive nuclei, stellar evolution, supernovae 1974 Jan. p. 69-77
cosmology, 'big bang' theory, 'closed' universe, 'open' universe, universe expansion, deuterium abundance, average density 1976 Mar. p. 62-79
- age of universe**, spectroscopy, age of elements, element formation, mass spectroscopy, nucleochronology, radioactive nuclei, stellar evolution, supernovae 1974 Jan. p. 69-77
- age-sex distribution**, fertility, U.S. census, human resources, mortality rates, population of U.S. 1951 Sept. p. 28-35
U.S. census, urbanization, baby boom, family size, central city, suburbs, U.S. census at 1960 1961 July p. 39-45
education, U.S. population, labor force, demographics, gross national product, U.S. census, more from the U.S. census of 1960 1962 Oct. p. 30-37
- agglutination response**, cancer, cell membrane, immunology, lectins, proteins 1977 June p. 108-119 [1360]
- aggression**, group behavior, pecking order, social psychology, experiments in group behavior 1956 Nov. p. 54-58 [154]
violence, delinquency, motion picture film, television, catharsis, effects of observing filmed violence 1964 Feb. p. 35-41 [481]
rats, animal behavior, social behavior, territorial behavior, natural history, *Rattus rattus*, *Rattus norvegicus* 1967 Jan. p. 78-85
- aging**, death, life expectancy, biology of senescence 1948 June p. 40-43
leaf shape, duckweed, systematic study of familiar amateur observation 1949 Oct. p. 22-24
rotifer, life expectancy, experiments in aging, age of mother 1953 Apr. p. 38-42
death rate, disease etiology, life expectancy, male:female life expectancy 1958 Feb. p. 22-27
death rate, life expectancy, comparative life spans in man and other animals 1961 Aug. p. 108-119
cell physiology, gerontology, life expectancy, manifestations of aging 1962 Jan. p. 100-110
collagen, tendons, biological age 1963 Apr. p. 104-114 [155]
fibroblasts, mitosis, cell culture, somatic cells, cell, DNA replication, experiments in aging 1968 Mar. p. 32-37 [1103]
radiation damage, free radicals, electron-spin resonance, chemical bond, spectroscopy, effects of free radicals on living systems 1970 Aug. p. 70-83 [335]
gerontology, longevity, senility, medical care 1973 Sept. p. 44-52
cataract, eye lens, human eye, vision 1975 Dec. p. 70-81
cytochrome C for senility? 1949 Aug. p. 24
free radicals 1969 Mar. p. 50
- Agora**, Classical archeology, Athens 1950 Aug. p. 46-51
- Agricola**, de re Metallica, woodcuts from Hoover translation 1951 Feb. p. 46-47
- agricultural economics**, forage crops, grasses, agronomy, hay, legumes, livestock feed, ruminants, silage, *Rhizobium* bacteria 1976 Feb. p. 60-75
food and agriculture, food processing, U.S. agriculture, 'agribusiness' 1976 Sept. p. 106-123
agricultural system, cropping systems, food and agriculture 1976 Sept. p. 98-105
- agricultural ecosystem**, solar radiation, photosynthesis, biosphere, climax ecosystem, energy cycle, ecosystem, food chain, respiration, biosphere energy cycle 1970 Sept. p. 64-74 [1190]
- agricultural history**, animal domestication, archeology, plant domestication, food and agriculture 1976 Sept. p. 88-97
- agricultural irrigation**, canals, hydro-engineering, pipelines, Jordan Valley Plan, water supply, Israel, Jordan 1965 Mar. p. 23-31
- agricultural pest**, alfalfa caterpillar, ecology, insecticide, life cycle, wilt disease, predation 1954 June p. 38-42
bacteriology, biological pest control, insecticide, insect physiology, virology, entomology, living insecticides 1956 Aug. p. 96-104
fire ants, dieldrin, pest control, insecticide 1958 Mar. p. 36-41
corn borer, insect behavior, species specificity, corn, adaptation of parasite to host 1958 May p. 87-94
aerial plankton, animal migration, species dispersion, insect physiology, entomology, wind-borne dispersal of species 1963 Dec. p. 132-138
- agricultural production**, poverty, education, economic development, language, Peru, literacy, Cornell-Peru experiment in economic development 1957 Jan. p. 37-45
- economic development, industrialization, population control, technology transfer, food production, economic planning, India, economic development by democratic planning 1963 Sept. p. 189-206
equatorial rain forests, tropical climate, laterization, developing countries, lateritic soil 1964 Nov. p. 96-102 [870]
food supply, human nutrition, population control, world food bank, human population 1974 Sept. p. 160-170
world food production 1971 Oct. p. 41
world food production 1972 Jan. p. 45
- agricultural resources**, land use, grazing, forestry, rangeland, land management, U.S. Western states 1970 Feb. p. 88-96 [1169]
gene manipulation, irrigation, photosynthesis, food and agriculture 1976 Sept. p. 164-178
- agricultural revolution**, slavery, Classical civilization 1949 June p. 40-43
New World archeology, mound builders, statistical seriation, Mississippian culture, pre-Columbian Mississippi valley on verge of urban revolution 1952 Mar. p. 22-27
Jarmo site, radiocarbon dating archeology, cave to village at Jarmo 1952 Oct. p. 62-66
Neolithic archeology, tools, slash-burn agriculture, cultural evolution, Stone Age forestry and agronomy 1956 Mar. p. 36-41
Fertile Crescent, human evolution, cultural anthropology, Neolithic archeology, 8000 B.C. domestication of plants and animals 1960 Sept. p. 130-148 [605]
demographics, population growth, cultural evolution, Industrial Revolution, population explosion, human evolution, historical perspective on human population growth, how many ever lived 1960 Sept. p. 194-204 [608]
New World archeology, Mexican agriculture, corn, urbanization, New World agricultural revolution 1964 Nov. p. 29-37 [625]
cities, urbanization, Industrial Revolution, communication, origin and evolution of cities 1965 Sept. p. 54-63
human population, food production, fertilizers, pollution, irrigation, biosphere, soil erosion, biosphere capacity to produce food 1970 Sept. p. 160-170 [1196]
Hoabinhian culture, Neolithic archeology, Spirit Cave site, Thailand 1972 Apr. p. 34-41 [675]
- agricultural society**, Macedonia, Nea Nikomedeia, Neolithic village, clay figurines, domestic animals, oldest Neolithic site in Europe 1965 Apr. p. 82-92
hunting, herding, food gathering, tribal cultures, aboriginal culture, India, 'living prehistory' in India 1967 Feb. p. 104-114
- agricultural system**, Nabataean culture, irrigation, wadi, desert, restoration of Nabataean irrigation works in the Negev 1956 Apr. p. 39-45
social values, Mormons, Zunis, Spanish-Americans, Navaho, comparative study of cultures in New Mexico 1956 July p. 25-31
commerce, market, peasants, peasant markets in Haiti 1960 Aug. p. 112-122 [647]
chinampa, canals, drainage, Mexican agriculture, Aztec civilization, highly productive farm plots, Aztec empire 1964 July p. 90-98 [648]
Arawak Indians, earthworks, flood plain, ridged fields, New World archeology 1967 July p. 92-100
water cycle, transpiration, evaporation, runoff, ocean, precipitation, biosphere, photosynthesis 1970 Sept. p. 98-108 [1191]
animal husbandry, ecosystem, energy cycle, power, New Guinea, tropical agriculture 1971 Sept. p. 116-132 [666]
agricultural economics, cropping systems, food and agriculture 1976 Sept. p. 98-105
- agricultural technology**, dust storms, drought, dry-land farming, soil reclamation, mulch, shelter belts, U.S. High Plains 1948 1948 Aug. p. 7-11
fertilizers, insecticide, herbicide, chemical agriculture 1952 Aug. p. 15-19
dust storms, dry-land farming, Great Plains, marginal farmlands, wind erosion 1954 July p. 25-29
weed control, insect herbivores, leaf-eating beetle, Klamath weed, living herbicides 1957 July p. 56-67
trace elements, cobalt, desert ecology, land reclamation, vitamin B12 synthesis, reclamation of infertile Australian land 1959 Jan. p. 97-106
Negev desert, irrigation, desert ecology, land reclamation, Israel, desert reclamation 1960 Mar. p. 54-63
soil erosion, irrigation, poverty, economic development, afforestation, Mediterranean Project, United Nations 1960 July p. 86-103

- economic development, technology transfer, human nutrition, food production, nutritional self-sufficiency in economic development 1963 Sept. p. 72-80 [1153]
- economic development, industrialization, national economic policy, Federal intervention in economic development of U.S. South 1963 Sept. p. 224-232
- plant growth, food production, fertilizers, chemical industry, increasing world food supply 1965 June p. 62-72
- irrigation, ground water, artesian well, Sahara desert, water resource management, land reclamation, intercalary water, 'fossil' water, making desert fertile 1966 May p. 21-29
- poultry production, food production, animal husbandry, chicken, eggs, U.S. chicken factories 1966 July p. 56-64
- People's Republic of China, industrial technology, economic development, technology in People's Republic of China 1966 Nov. p. 37-45
- mechanical harvesting, cotton picker, tomato harvester, hay cuber, cherry picker, grain combine 1967 Aug. p. 50-59
- sulfur, sulfuric acid, Frasch process, sulfur demand-and-supply production 1970 May p. 62-72
- land reform, food supply, population growth, F.A.O., human nutrition, F.A.O. Indicative World Plan 1970 Aug. p. 54-69 [1186]
- China, economic development, rice, hybrid wheat, hybrid rice, irrigation, livestock 1975 June p. 13-21
- center-pivot irrigation, irrigation, ground water 1976 June p. 90-99
- herbicide, mulch, weed control, tillage without plow 1977 Jan. p. 28-33 [1349]
- drip irrigation, irrigation, trickle irrigation 1977 Nov. p. 62-68 [1371]
- chemical revolution 1952 Apr. p. 36
- no-tillage farming 1968 Aug. p. 46
- drip irrigation 1975 Aug. p. 48
- plowless farming 1975 Nov. p. 60
- agriculture**, see: agronomy, agricultural system, agricultural technology and the like
- agronomy**, soil structure, chernozems, podzols, latozols, tundra, alluvial soils, ecology of soil, soil erosion, the soils of the world and their management 1950 July p. 30-39
- corn, hybrid corn, technology and promise of hybrid corn 1951 Aug. p. 39-47
- auxins, plant growth, oak, gibberellin, function of plant growth hormone 1957 Apr. p. 125-134 [111]
- climate, plant growth, greenhouse, photoperiodicity, day-night temperature, 'phytotron', environment simulator 1957 June p. 82-94
- Lysenko, genetics, potato virus, virus disease, vernalization, the Lysenko affair 1962 Nov. p. 41-49
- irrigation, sea water, salt-water agriculture, arid lands, salt tolerance 1967 Mar. p. 89-96
- plant hybrids, wheat, hybrid wheat, food production 1969 May p. 21-29
- chemical mutagens, plant breeding 1971 Jan. p. 86-95 [1210]
- corn, lysine, plant breeding, plant protein, human nutrition, malnutrition, high-lysine corn 1971 Aug. p. 34-42 [1229]
- legumes, nitrogen fixation, soybean products, plant protein 1974 Feb. p. 14-21
- grain, proteins, plant protein, plant hybrids, Triticale 1974 Aug. p. 72-80
- disease-resistant plants, plant breeding, plant disease, fungal infection, plant pathogens, sugarcane, mechanism of disease resistance in plants 1975 Jan. p. 80-88 [1313]
- agricultural economics, forage crops, grasses, hay, legumes, livestock feed, ruminants, silage, Rhizobium bacteria 1976 Feb. p. 60-75
- 'green revolution', food and agriculture, maize, potatoes, Mexican agriculture 1976 Sept. p. 128-150
- 'green revolution', India, food and agriculture, technology transfer, monsoons, irrigation, fertilizers, rice, wheat, hybrid crop plants 1976 Sept. p. 154-163
- crop yields, plant breeding, rice, wheat, maize, food and agriculture, plant genetics 1976 Sept. p. 180-194
- Southern leaf blight 1970 Oct. p. 54
- plant origins, sweet potato 1972 Sept. p. 68
- high protein sorghum 1974 Jan. p. 51
- barley, salt-tolerant crops 1976 Aug. p. 44D
- herbicide, nitrogen stabilizer 1976 Oct. p. 60
- ailanthus**, city trees, pollution effects, tree cloning, ginkgo, London plane, Norway maple 1976 Nov. p. 110-118
- ailerons**, aircraft design, aerodynamics, smoke tunnel, airfoil, boundary layer, low-speed flight 1956 Apr. p. 46-51
- air-breathing fishes**, evolution, lungfish, Devonian period, fish physiology, conquest of land-breathing organs 1968 Oct. p. 102-111 [1125]
- air conditioning**, Africa, termite, entomology, insect behavior, airconditioned termite nests 1961 July p. 138-145
- air vent, wind tower, domed roof, architecture, cooling system, passive cooling systems in Iranian architecture 1978 Feb. p. 144-154 [705]
- heat storage in salt 1971 Aug. p. 46
- air currents**, soaring, wind velocity, thermal cells, aerodynamics, ornithology, bird flight, flight of soaring birds 1962 Apr. p. 130-140
- air drive**, ultracentrifuge, molecular weight, sedimentation, fractionation, oil drive, magnetic suspension, 900,000 g; 60 million r.p.m. 1951 June p. 42-51
- air masses**, atmospheric circulation, hurricanes, upper atmosphere, tropical origin of hurricanes 1957 Aug. p. 33-39 [847]
- weather satellites, Tiros, telemetry, atmospheric circulation, heat budget of Earth, videocameras, photographic weather maps, weather forecasting 1961 July p. 80-94
- air pollution**, catalysis, combustibility, fly ash, dust storms, metallurgy, fine particles 1950 Dec. p. 50-53
- smog, atmospheric inversion 1952 May p. 15-19
- smog, 'blue haze', atmospheric inversion, particulates, ozone, peroxides, photochemistry 1955 May p. 62-72
- camouflage, evolution, melanism, moths, speciation, population genetics, mutation, genetic variation, evolution observed 1959 Mar. p. 48-53 [842]
- climate, carbon dioxide 'window', meteorology, fossil fuel, threat of 'greenhouse effect' 1959 July p. 41-47 [823]
- bronchitis, emphysema, public health, smog, environmental health, U.S. cities, smog and public health 1961 Oct. p. 49-57 [612]
- smog, automobile emissions, ozone, urban transport, air pollution control in Los Angeles 1964 Jan. p. 24-31 [618]
- aerodynamics, microclimate, micrometeorology, fluid dynamics, troposphere, meteorology, turbulence, atmospheric phenomena near the ground 1964 Oct. p. 62-76
- cities, water supply, sewage disposal, smog, water pollution, taxation, Los Angeles, New York, metabolism of cities 1965 Sept. p. 178-190
- automobile, electric automobile, battery, weight, cost, performance of, electric automobile 1966 Oct. p. 34-40
- cities, climate, heat emission, heat pollution, microclimate, infrared photography, heat island, climate of cities 1967 Aug. p. 15-23 [1215]
- cloud seeding, water cycle, water drop, ice crystals, fog, inversion layer, smog 1968 Dec. p. 74-82 [876]
- air transport, technology assessment, science policy, automobile transportation, noise pollution, technology assessment institutions proposed 1970 Feb. p. 13-21 [332]
- rickets, vitamin D, ultraviolet radiation, osteogenesis, calcium metabolism, epidemiology, sunlight 1970 Dec. p. 76-91 [1207]
- climate, atmospheric circulation, carbon dioxide 'window', particulates, ozone, temperature of Earth, human activity and climatic change 1971 Jan. p. 32-42 [894]
- corona discharge, electrocoating, fly ash, electrostatics, photocopying, xerography, electrostatic precipitation and separation 1972 Mar. p. 46-58
- automobile engines, rotary engine, Wankel engine, auto engineering 1972 Aug. p. 14-23
- Clean Air Act, emission standards, Environmental Protection Agency 1973 June p. 14-21
- evolution, melanism, moths, gene mutation, population genetics, predation, evolution observed again 1975 Jan. p. 90-99 [1314]
- effect of rocket exhaust on upper-air 1963 Mar. p. 74
- asbestos dust carcinogen 1964 Dec. p. 64
- Los Angeles carbon monoxide emission control 1965 May p. 52
- auto emission standards, safety standards 1965 Aug. p. 44
- increased precipitation downwind from industry 1968 Apr. p. 49
- sulfur dioxide 1968 Nov. p. 56
- U.S. clean-air auto race 1970 Nov. p. 44
- cadmium, toxic metal 1971 Aug. p. 47
- low-pollution automobile engines 1971 Sept. p. 80
- automobile engines, catalytic converter 1973 Apr. p. 44
- LPG for internal combustion fuel? 1973 Sept. p. 69
- automobile exhaust-emission standard 1975 Apr. p. 53
- automobile engines, fuel economy 1977 Jan. p. 43
- air pressure**, acoustic pulses, lightning, thunder 1975 July p. 80-90

- air traffic control**, air transport, radar 1952 June p. 64-65
 airport, transportation industry, radar 1960 Dec. p. 47-55
air transport, air traffic control, radar 1952 June p. 64-65
 aircraft landing, automatic pilot, blind landing, instrument landing system, precision approach radar, ground-controlled approach 1964 Mar. p. 25-35
 cargo handling, shipping, containerization, automatic control, loading 1968 Oct. p. 80-88
 technology assessment, science policy, automobile transportation, air pollution, noise pollution, technology assessment institutions proposed 1970 Feb. p. 13-21 [332]
 accelerometer, aircraft navigation, navigation, inertial navigation, gyroscope, commercial adaptation of military and space technology 1970 Mar. p. 80-86
air vent, air conditioning, wind tower, domed roof, architecture, cooling system, passive cooling systems in Iranian architecture 1978 Feb. p. 144-154 [705]
airbag, automobile design, automotive safety, seat belts, crashworthiness tests 1973 Feb. p. 78-86
airborne infection, histoplasmosis, fungal infection, respiratory infection, epidemiology, coccidioidomycosis 1948 June p. 12-15
airborne radar, aerial mapping, aerial photography, all-weather imaging, radar, radar holography, side-looking radar 1977 Oct. p. 84-95 [386]
airborne warning and control system aircraft, *see*: AWACS
aircraft design, ailerons, aerodynamics, smoke tunnel, airfoil, boundary layer, low-speed flight 1956 Apr. p. 46-51
 aeronautics, vertical take-off aircraft 1960 Aug. p. 41-49
 aeronautics, supersonic flight, commercial aircraft, sonic boom, aviation industry, technology and economics of supersonic transport 1964 June p. 25-35
 aeronautics, helicopters, helicopter flight, history, future development 1967 Apr. p. 38-46
aircraft landing, automatic pilot, blind landing, air transport, instrument landing system, precision approach radar, ground-controlled approach 1964 Mar. p. 25-35
aircraft navigation, accelerometer, navigation, air transport, inertial navigation, gyroscope, commercial adaptation of military and space technology 1970 Mar. p. 80-86
 inertial guidance 1957 June p. 70
aircraft propulsion, gas turbine, centrifugal compressor, axial-flow compressor, ducted fan, electric power generation 1953 Nov. p. 65-72
aircraft-wake vortices, aerodynamics, contrails, flight safety, jet flight, wake turbulence 1974 Mar. p. 76-83
aircraft wing, aeronautics, speed of sound 1969 Sept. p. 95
Airflow automobile, automobile history, streamlining 1977 Aug. p. 98-106 [697]
airfoil, aerodynamics, bird flight, soaring, thermal cells 1952 Apr. p. 24-29
 boundary layer, laminar flow, turbulence, aerodynamics 1954 Aug. p. 72-77
 ailerons, aircraft design, aerodynamics, smoke tunnel, boundary layer, low-speed flight 1956 Apr. p. 46-51
 aerodynamics, boomerang, computer graphics, actual and theoretical boomerang orbits 1968 Nov. p. 124-136
airglow, Earth, aurora, corpuscular streams, solar spicules, nightglow, aurora and airglow 1955 Sept. p. 140-150
 atmosphere, ionosphere, solar radiation, ozone, oxygen atoms, upper atmosphere, laboratory simulation, atomic energy levels 1966 Mar. p. 102-110
 atmospheric ionization, spectroscopy, atmospheric light, photochemistry 1972 Jan. p. 78-85
airplane seats, should face stern 1951 Dec. p. 36
airport, air traffic control, transportation industry, radar 1960 Dec. p. 47-55
alanine, RNA, nucleic acid, nucleotide sequence, tRNA, enzyme cleavage, fragment assembly, first nucleotide sequence 1966 Feb. p. 30-39 [1033]
alarm reaction, stress, psychosomatic illness, kidney disorder, cardiovascular disease, adrenal gland 1949 Mar. p. 20-23 [4]
 wild rats stronger 1951 Dec. p. 42
Alaska, Arctic, Stone Age hunters, Siberia, Greenland, Dorset culture, circumpolar Stone Age culture 1954 June p. 82-88
 New World archeology, Onion Portage site, Eskimo, Bering land bridge, human migration, stone artifacts, gateway to America 1968 June p. 24-33
Alaskan oil, Prudhoe Bay discovery 1968 Sept. p. 86
albatross, evolution, animal behavior, bird flight, sexual behavior, soaring, natural history 1970 Nov. p. 84-93 [1204]
Albatross voyage, ocean floor, sonar, seismology, sedimentary cores, isotope dating, Swedish deep-sea expedition 1950 Aug. p. 42-45
albedo, Antarctica, climatology, solar radiation, atmospheric circulation, Antarctica in Earth's heat budget 1962 Sept. p. 84-94 [859]
 wind, solar radiation, energy cycle, biosphere, atmospheric circulation, climate, ocean circulation, terrestrial radiation, carbon dioxide 'window', Earth energy cycle 1970 Sept. p. 54-63 [1189]
 asteroids, meteorites, planetesimal collisions, solar system formation, primordial dust cloud 1975 Jan. p. 24-33
albinism, gene mutation, Siamese cat, visual cortex, white mink, white tiger, cross-eyed trait 1974 May p. 44-54 [1294]
 associated with cross-eyedness in Siamese cats and white tigers 1973 Aug. p. 43
alchemy, transmutation, philosopher's stone, science history 1952 Oct. p. 72-76
alcohol, digestion, hydrochloric acid, aspirin, stomach mucosa, self-digestion safeguards 1972 Jan. p. 86-93 [1240]
 depresses appetite 1951 Jan. p. 30
 in violent deaths 1951 Aug. p. 30
 cardiovascular reaction 1965 June p. 57
alcohol metabolism, detoxification, drug inactivation, enzyme, liver function, metabolism of drugs, cirrhosis 1975 June p. 22-31 [1322]
 alcoholism, fatty liver, liver function, malnutrition, 'empty calories', acetaldehyde, cirrhosis 1976 Mar. p. 25-33 [1336]
 limit of metabolism 1952 Nov. p. 50
alcohol tolerance, metabolism, drug abuse, liver function, acetaldehyde 1953 Dec. p. 86-90
alcoholism, metabolism, drunkenness, physiological individuality conditions effect of alcohol 1948 Dec. p. 50-53
 alcohol metabolism, fatty liver, liver function, malnutrition, 'empty calories', acetaldehyde, cirrhosis 1976 Mar. p. 25-33 [1336]
 drug reinforces abstinence 1949 May p. 28
 on the increase 1952 June p. 40
 as occupational disorder 1953 Apr. p. 48
 role of culture in etiology 1957 July p. 69
aldosterone, actinomyosin, ecdysone, cortisone, insulin, estrogens, gene activation, RNA synthesis, growth hormone, ACTH, thyroxin, mechanism of hormone action 1965 June p. 36-45 [1013]
Aleutian culture, subverted by dorics 1955 June p. 54
Aleutian Islands, Aleuts, Eskimo, genocide, Aleuts as 'Southern Eskimos' 1958 Nov. p. 112-124
Aleutian Trench, ocean floor, topography, seamounts, bathogram, sonar, echo-sounding, the Pacific floor 1952 Apr. p. 19-33
Aleuts, Eskimo, genocide, Aleutian Islands, Aleuts as 'Southern Eskimos' 1958 Nov. p. 112-124
Alexander, archeological excavation, Phrygian civilization, Gordion, 700 B.C., preclassical Greek link with East 1959 July p. 100-109
alfalfa caterpillar, ecology, insecticide, life cycle, agricultural pest, wilt disease, predation 1954 June p. 38-42
algae, phytoplankton, kelp, food chain, algin, agar 1952 Dec. p. 15-17
 chlorella, food production 1953 Oct. p. 31-35
 lichens, symbiosis, fungi, desert ecology, polar ecology, symbiotic nature of lichens 1959 Oct. p. 144-156 [111]
 deuterium, reaction kinetics, metabolism of mammals, penicillin mold, heavy water biology 1960 July p. 106-116
 photosynthesis, chloroplast, oxidative phosphorylation, Calvin cycle, path of carbon in photosynthesis 1962 June p. 88-100 [122]
 lichens, fungi, symbiosis, fungi as symbionts in lichens 1963 Feb. p. 122-132
 coral, coral rings, fossil reefs, paleontology, climatic change, dating by coral rings 1966 Oct. p. 26-33 [871]
 Acetabularia, giant cells, mermaid's wineglass, cell nucleus, cytoplasm, giant cells in study of nucleus-cytoplasm interaction 1966 Nov. p. 118-124 [1057]
 xylan, mannan, plant cell wall, cellulose, xylan, mannan in place of cellulose in marine plant tissue 1968 June p. 102-108 [1110]
 forest communities, lichens, ecology, food chain, nitrogen cycle, treetop ecosystems 1973 June p. 74-80 [1274]
 bacteria, legumes, nitrogen fixation, nitrogenase, genetic engineering, Haber process, rhizobium, legumes, symbiosis, nitrogenase, biological nitrogen fixation 1977 Mar. p. 68-81
 algal bloom, blue-green bacteria, cyanobacteria, gas vacuoles 1977 Aug. p. 90-97 [1367]
 bacteria, photoelectric effect 1964 Mar. p. 59

- algal bloom**, Dinoflagellata, marine ecology, acetylcholine, nerve poisons, poisonous tide 1958 Aug. p. 92-98
bacteria, symbiosis, blue-green algae, simplest plants, resemblance to bacteria 1966 June p. 74-81
algae, blue-green bacteria, cyanobacteria, gas vacuoles 1977 Aug. p. 90-97 [1367]
- algebra**, mathematics, science history, matrix, vector 1964 Sept. p. 70-78
- algin**, algae, phytoplankton, kelp, food chain, agar 1952 Dec. p. 15-17
- algorithms**, games theory, logic, computer theory, problem solving, Turing machine 1965 Nov. p. 98-106
incompleteness theory, mathematical proof, random numbers, algorithmic definition of randomness 1975 May p. 47-52
computer language, computer programming, hash table, binary search trees 1977 Apr. p. 63-80
computer science, Koenigsberg bridges, undecidable questions, polynomial-time problems, exponential-time problems, efficiency of algorithms 1978 Jan. p. 96-109 [395]
scheduling, combinatorial analysis, critical path scheduling, bin-packing, mathematization of efficiency 1978 Mar. p. 124-132 [3001]
- 'Alice in Wonderland'**, mathematics, logic, Carroll, Dodgson, Lewis Carroll (Charles Lutwidge Dodgson), biography 1956 Apr. p. 116-128
- alienation**, adolescence, family, racial discrimination, divorce, poverty, infant mortality, crime, suicide, drug addiction, changes in American family structure 1974 Aug. p. 53-61 [561]
- aligned crystals**, crystal structure, materials technology, metals, alignment of crystals for control of mechanical and magnetic properties 1959 Apr. p. 125-141
- alkali**, ion exchange, desalination, amino-acid separation 1950 Nov. p. 48-51
- alkali bog**, quicksand, fluidized sand 1953 June p. 97-102
- alkali-metal anions**, alkali-metal cations, cryptands, electron orbitals, solvated electrons, quantum mechanics 1977 July p. 92-105 [368]
- alkali-metal cations**, alkali-metal anions, cryptands, electron orbitals, solvated electrons, quantum mechanics 1977 July p. 92-105 [368]
- alkaloids**, anthropology, medicine, magic, psychoactive drugs, hypnosis psychiatry, lessons from primitive medicine 1948 Sept. p. 24-27
plant physiology, morphine, strychnine, 'hemlock', physostigmine, caffeine, coniine, quinine, cocaine, ricinine, LSD, human toxins in plant physiology 1959 July p. 113-121 [1087]
acetylcholine, acetylcholinesterase, nerve gases, nerve poisons, citric-acid cycle, toxins, lethal mechanisms at cellular level 1959 Nov. p. 76-84
- hallucinogens, mental health, drug addiction, consciousness alteration, LSD, psychosis, psilocybin, mescaline, effects of LSD 1964 Apr. p. 29-37 [483]
- butterfly, larvae, symbiosis, insect repellants, behavioral adaptation, plant evolution, mimicry, butterfly-plant association 1967 June p. 104-113 [1076]
- alkaptonuria**, agammaglobulinemia, gene expression, Wilson's disease, congenital anomalies, chemistry of hereditary disease, one gene-one enzyme hypothesis 1956 Dec. p. 126-136
- all-weather imaging**, aerial mapping, aerial photography, airborne radar, radar, radar holography, side-looking radar 1977 Oct. p. 84-95 [386]
- allergic reaction**, autosensitivity, poison ivy, dermatitis, rheumatoid arthritis, multiple sclerosis, delayed hypersensitivity 1960 Apr. p. 129-137
antibodies, antigen complement, immune response, lymphocytes, virus antigens, virus disease, autoimmune disease, immune-complex disease, glomerulonephritis, lymphocytic choriomeningitis, serum sickness 1973 Jan. p. 22-31 [1263]
antibodies, antigens, immune response, anaphylactic shock, immunology, lymphocytes 1973 Nov. p. 54-66 [1283]
- allergy**, immune reaction, antigens, antibodies, serum sickness, hypersensitivity 1948 July p. 26-29
asthma, hypersensitivity, stress 1952 Aug. p. 28-30
antigens, immune response, antibodies, hypersensitivity, phagocytosis, inflammatory response, leukocyte, thymus gland, lymphatic system, cellular immunity 1964 Feb. p. 58-64
- allocation of time**, television, content analysis, a critical review by educators 1951 June p. 15-17
- allosteric enzymes**, myoglobin, hemoglobin, X-ray diffraction, amino-acid sequence, contour maps, folding of four chains, alpha chain, beta chain 1964 Nov. p. 64-76 [196]
enzymes, protein synthesis, hemoglobin, myoglobin, control systems, feedback, cooperative enzymes, control of biochemical reactions 1965 Apr. p. 36-45 [1008]
chemical reaction, chemical kinetics, proton transfer, enzymes, catalysis, chemical equilibrium, relaxation methods in chemistry 1969 May p. 30-41
- alloying**, mechanical alloying, metallurgy, metal-powder alloying 1976 May p. 40-48
- alloys**, eutectics, crystal structure, metallurgy, controlled eutectics, whiskers, controlled-cooling magnets 1967 Feb. p. 86-92
materials technology, metals, crystal structure, grain boundaries, lattice defects, dislocations, electron 'gas', nature of metals 1967 Sept. p. 90-100
metallizing, materials technology, diffusion, surface alloy, molten fluoride, electrolysis 1969 Aug. p. 38-46
crystal structure, dendrites, metal casting, metallurgy, solidification of metal 1974 Dec. p. 88-95
superconductors, alloy by ultrarapid cooling 1964 Sept. p. 88
superconductors, intense magnetic fields 1970 May p. 56
- alluvial soils**, soil structure, chernozems, podzols, latozols, tundra, agronomy, ecology of soil, soil erosion, the soils of the world and their management 1950 July p. 30-39
- alluvial valley**, Mississippi river, meanders, deltas, floods 1951 Apr. p. 18-23
- Alnico**, cobalt-rare earth alloys, magnetism, permanent magnets, magnetic domains, anisotropy 1970 Dec. p. 92-100
- alopecia areata**, white hair 'overnight' 1972 Nov. p. 54
- alpha clustering**, alpha particles, atomic nucleus, elementary particles, nuclear clustering, neutron, nuclear forces, nuclear surface, proton 1972 Oct. p. 100-108
- alpha decay**, neutrino, elementary particles, neutron decay, beta decay, setting trap for detection of theoretical particle 1956 Jan. p. 58-68
transuranium elements, isotopes, nuclear stability, beta decay, radioactive decay, 'synthetic' elements, periodic table, the 'superheavy' elements beyond 103 1969 Apr. p. 56-67
- alpha helix**, proteins, amino acids, peptide chain, enzyme catalysis, lock-and-key theory, how is a protein made? 1953 Sept. p. 100-106
proteins, polypeptide chain, amino acids, hydrogen bonds, X-ray crystallography 1954 July p. 51-59 [31]
collagen, proteins, beta chain, polypeptide synthesis, polymers, amino acids, synthesis and architecture of proteins 1957 Sept. p. 173-184 [7]
amino acids, myoglobin, proteins, X-ray crystallography, 3-D structure of protein molecule 1961 Dec. p. 96-11 [121]
proposed by Pauling 1951 Aug. p. 33
- alpha keratin**, keratin, X-ray diffraction, protein structure, feather keratin 1969 Aug. p. 86-96 [1155]
- alpha particles**, alpha clustering, atomic nucleus, elementary particles, nuclear clustering, neutron, nuclear forces, nuclear surface, proton 1972 Oct. p. 100-108
- alpha rhythms**, electroencephalography, brain waves, medical diagnosis, Fourier analysis, toposcope display, automata theory 1954 June p. 54-63
- alpine environment**, cushion plant, pinks, lammergeier, Himalayan mountain ecology 1961 Oct. p. 68-78
- Altai Mountains**, Scythian culture, Siberia, tombs, refrigerated tombs, archeology, cloth, leather and wood artifacts preserved by refrigeration 1965 May p. 100-109
- Altamira**, cave art, cave paintings, Paleolithic archeology, sculpture, Lascaux 1968 Feb. p. 58-72
- alternating current**, electric light, lighting, zinc sulfide, technology of indoor lighting 1957 Aug. p. 40-47 [221]
electric power, high-voltage transmission, power transmission, hydroelectric power generation, corona discharge, economic advantages of high-voltage transmission 1964 May p. 38-47
- alternating-gradient synchrotron**, 'eightfold way', omega-minus particle, bubble chamber, particle accelerator, high-energy physics, U.S. Brookhaven National Laboratory experiment 1964 Oct. p. 36-45
- Altintepe**, Biblical archeology, Mount Ararat, Urartu, 800 B.C. culture at Noah's landing-place 1967 Mar. p. 38-46
- altitude**, highest mountain: Mount Chimborazo 1973 Feb. p. 49
- altitude adaptation**, brown fat, Quechua Indians, acclimatization, deer mice, hemoglobin, metabolic rate, exercise, human physiology at high altitude 1970 Feb. p. 52-62 [1168]
- aluminates**, materials technology, ceramics, crystal structure, silicates, heat resistance, ionic bonds, covalent bonds, nature of ceramics 1967 Sept. p. 112-124

- aluminum 'soldering'**, by ultrasonics 1953 Sept. p. 80
- alveolar collapse**, acute respiratory failure, intensive care, tracheostomy, lung, emphysema, pathogenesis and treatment of acute respiratory failure 1969 Nov. p. 23-29
- alveoli**, lung, human physiology, breathing, mechanism of breathing 1960 Jan. p. 138-148
- lung collapse, premature infants, lecithin, breathing, surface tension, surfactant, hyaline membrane disease, soaplike agents regulate surface tension in lungs 1962 Dec. p. 120-130
- gas exchange, thorax, lung, pulmonary ventilation, breathing, human physiology, vital capacity, mechanics and physiology of breathing, anatomy of lung 1966 Feb. p. 56-68 [1034]
- Ama**, diving, diving women, Korea, Japan, breathing, human physiology, basal metabolism, adaptation 1967 May p. 34-43
- amanita**, mycology, fungi, wheat rust, ergot, potato blight, morel, *Penicillium notatum*, yeast, molds and men 1952 Jan. p. 28-32 [115]
- Amanita phalloides**, fungi, mushrooms, mushroom poisoning, toxins, thioctic acid 1975 Mar. p. 90-101
- Amazon**, tropical rain forest, developing countries, resource prospecting, economic planning, forest management, mineral resources, electric power, the Amazon frontier 1948 May p. 11-14
- amber**, ants, insect evolution, insect census, insects in 'more than royal tomb' 1951 Nov. p. 56-61 [838]
- amber mutants**, bacteriophage, gene mapping, virus particles 1965 Feb. p. 70-78 [1004]
- ambulatory care**, medical care, medicine, physical incapacitation, morbidity, mortality rates, hospital care, triage, health insurance, introduction to single-topic issue on medical care 1973 Sept. p. 22-33
- medical technology, medical care, hospital care, morbidity, international comparison of medical care systems 1975 Aug. p. 17-25
- American Association for the Advancement of Science**, see: A.A.A.S.
- American Book Exchange**, to rebuild science libraries 1948 Nov. p. 25
- American Chemical Society**, see: A.C.S.
- American Geological Institute**, Earth sciences federate 1948 Dec. p. 26
- American Indian**, see: Amerindian
- American Institute of Biological Sciences**, established 1948 May p. 33
- American Institute of Physics**, launches 'Physics Today' 1948 May p. 33
- American languages**, speech, language, dialects, linguistics, changes in U.S. speech 1950 Jan. p. 48-51
- palatalization, speech, changes in American speech 1955 Aug. p. 78-83
- American Negro**, skin color, blood typing, recessive gene, marriage preferences, population genetics, genetic meaning of race 1954 Oct. p. 80-85
- public opinion, U.S. whites, desegregation, attitude survey, racial segregation, sociology, longitudinal attitude study 1956 Dec. p. 35-39
- cities, racial discrimination, social geography, segregation, metropolitan segregation 1957 Oct. p. 33-41
- desegregation, racial integration, public opinion, attitude survey, U.S. whites, longitudinal attitude study reported in 1956 1964 July p. 16-23 [623]
- racial discrimination, segregation, Puerto Ricans, housing, poverty 1965 Aug. p. 12-19 [626]
- black power, racial discrimination, group identity, economic power, ethnic groups, slavery, social deprivation 1967 Apr. p. 21-27 [633]
- ghetto, racial discrimination, unemployment, urban riots, public opinion, social class, 'riffraff theory' versus 'blocked-opportunity' theory 1968 Aug. p. 15-21 [638]
- intelligence, race, whites, IQ, heredity, heredity, population genetics, science policy, social psychology, twins, environment, racial discrimination 1970 Oct. p. 19-29 [1199]
- desegregation, racial integration, U.S. whites, attitude survey, public opinion, longitudinal attitudes study 1971 Dec. p. 13-19 [673]
- racial discrimination, prejudice, public opinion, attitude survey, U.S. whites, segregation, integration, longitudinal attitude study 1978 June p. 42-49 [707]
- American Nuclear Society**, convenes 1954 Dec. p. 53
- American Revolution**, white pine, North American forests, Royal Navy, King's Broad Arrow, colonial building 1948 June p. 48-53
- American soldiers**, public opinion, attitude survey, social discrimination, sociology, studies of attitudes and morale of U.S. troops during World War II, including experiments in racial integration of military units 1949 May p. 11-15
- America's Cup race**, yachting, yacht design 1974 Dec. p. 64
- Amerindian**, Hopi Indians, Tewa Indians, cultural assimilation, Pueblo Indians 1957 June p. 126-136
- Havasupai, Cohonina, Paleolithic culture, prehistoric man in the Grand Canyon 1958 Feb. p. 97-102
- racial discrimination, genocide, cultural assimilation, civil rights, persisting identity of Amerindians 1960 Feb. p. 37-45
- mining, gypsum, New World archeology, prehistoric man in Mammoth cave 1960 July p. 130-140
- Hopewell cult, burial mounds, New World archeology 1964 Dec. p. 90-102
- Eskimo, burial site, New World archeology, 2000 B.C., Port au Choix, Newfoundland, skeletons 1970 June p. 112-121 [657]
- Iroquois Confederacy, New World archeology, cannibalism, Onandaga tribe 1971 Feb. p. 32-42 [658]
- burial mounds, Cahokia, Mississippian culture, New World archeology 1975 Aug. p. 92-101 [688]
- New World archeology, burial mounds, Labrador 1976 Nov. p. 122-129
- Amerindian antiquity**, radiocarbon dating 1950 Nov. p. 26
- Amerindian prehistory**, Teotihuacan, Middle America, Mexico, New World archeology, pre-Columbian metropolis 1967 June p. 38-48
- 'Ames room'**, visual perception, distance perception, motion perception, optical illusion, size perception, illusions as clues to organization of perception 1951 Aug. p. 50-55
- visual perception, personality, aniseikonic lenses, anxiety, 'Honi' phenomenon, emotional relationships condition perception 1959 Apr. p. 56-60
- amino-acid deficiencies**, dietary requirements, human nutrition, metabolism, food and agriculture 1976 Sept. p. 50-64
- amino-acid pairing**, genetic code, codon, DNA, RNA, Gamow proposes triplet codon 1955 Oct. p. 70-78
- amino-acid separation**, ion exchange, alkali, desalination 1950 Nov. p. 48-51
- chromatography, fractionation, paper chromatography 1951 Mar. p. 35-41
- amino-acid sequence**, protein structure, protein synthesis, peptide bond, hydrogen bonds, tertiary structure, nature, diversity and function of proteins 1950 June p. 32-41 [10]
- insulin, protein structure, first total sequence 1955 May p. 36-41
- virology, mutation, tobacco mosaic virus 1955 July p. 74-78 [59]
- insulin, sugar metabolism, cell membrane, human physiology, action of insulin 1958 May p. 99-106
- insulin, protein structure, ribonuclease, enzyme action, myoglobin, resolution of atomic structure of three molecules 1961 Feb. p. 81-92 [80]
- genetic code, tobacco mosaic virus, RNA nucleotides, protein synthesis, mutation, relation of RNA mutations to amino acid changes 1964 Oct. p. 46-54 [193]
- allosteric enzymes, myoglobin, hemoglobin, X-ray diffraction, contour maps, folding of four chains, alpha chain, beta chain 1964 Nov. p. 64-76 [196]
- lysozyme, X-ray crystallography, enzyme-substrate complex, protein folding, three-dimensional structure and action of lysozyme 1966 Nov. p. 78-90 [1055]
- protein structure, gene-protein colinearity, DNA structure, mutation, 'gene mapping, base 1967 May p. 80-94 [1074]
- antibodies, antibody molecule, immunoglobulin, Bence-Jones proteins, heavy chain, light chain, antigen-antibody complex 1967 Oct. p. 81-90 [1083]
- antibody molecule, myeloma, immunoglobulin, antigen binding, Bence-Jones proteins, antibody amino-acid sequence determination 1970 Aug. p. 34-42 [1185]
- amino-acid substitution**, sickle cell disease, malaria, anemia, hemoglobin 1951 Aug. p. 56-59
- evolution, proteins, species specificity, computer analysis, cytochrome, phylogeny from amino-acid substitution 1969 July p. 86-95 [1148]
- cytochrome C, protein evolution, protein structure, respiration, mutation rate, 1.2 billion year record of evolution, ancient protein 1972 Apr. p. 58-72 [1245]
- amino acids**, proteins, peptide chain, alpha helix, enzyme catalysis, lock-and-key theory, how is a protein made? 1953 Sept. p. 100-106

amino acids synthesized

- proteins, polypeptide chain, hydrogen bonds, X-ray crystallography, alpha helix 1954 July p. 51-59 [31]
 fossil, bone, mollusk shells, paleontology, paleochemistry 1956 July p. 83-92 [101]
 collagen, proteins, beta chain, alpha helix, polypeptide synthesis, polymers, synthesis and architecture of proteins 1957 Sept. p. 173-184 [7]
 myoglobin, proteins, X-ray crystallography, alpha helix, 3-D structure of protein molecule 1961 Dec. p. 96-11 [121]
 evolution, hemoglobin, myoglobin, molecular evolution, evolutionary distance measured by amino-acid substitution 1965 May p. 110-118 [1012]
 DNA, protein synthesis, genetic code, mutation, molecular biology, triplets, RNA, anticodon, ribosomes, triplets, wobble hypothesis 1966 Oct. p. 55-62 [1052]
 protein synthesis, formylmethionine, ribosome, mRNA, tRNA, initiation of protein synthesis 1968 Jan. p. 36-42 [1092]
 insulin, automatic synthesis, protein synthesis, peptide bond, 'solid phase' method of synthesis, polystyrene beads 1968 Mar. p. 56-74 [320]
 left from right, amino acid isomers separated 1949 Nov. p. 31
 in Precambrian rock 1968 May p. 50
amino acids synthesized, Miller-Urey experiment 1953 July p. 42
ammonia, nitrogen, biological nitrogen fixation, nitrifiers, denitrifiers, nitrogen cycle, legumes 1953 Mar. p. 38-42
 solvated electrons, radiolysis, ionization, radiation chemistry, sodium, alkali metals 1967 Feb. p. 76-83
ammonia manufacture, biological nitrogen fixation, Haber process, metallo-organic process, nitrogen fixation 1974 Oct. p. 64-70
ammonia maser, atomic clock, cesium clock, maser, zenith tube, mercury mirror, improvements on sidereal time 1957 Feb. p. 71-82 [225]
amniocentesis, enzyme deficiency, genetic disease, prenatal genetic diagnosis, hemophilia, Down's syndrome, Tay-Sachs disease, chromosomal anomalies 1971 Nov. p. 34-42 [1234]
 enzyme deficiency, fat metabolism, genetic disease, Tay-Sachs disease, lipids, lipid-storage diseases, 10 lipid-storage diseases 1973 Aug. p. 88-97
amoebae, social amoebae, slime mold, Dictyostelium acrasin, role of acrasin in cell aggregation 1949 June p. 44-47
 cell, cytology, sol-gel reaction, high pressure, effect of high pressure on cellular activity 1958 Oct. p. 36-43
 cell differentiation, social amoebae, slime mold, Dictyostelium cell aggregation, acrasin 1959 Dec. p. 152-162
 phagocytosis, cell motility, cytoplasmic streaming, sol-gel reaction, front contraction theory of amoeboid motion 1962 Feb. p. 112-122 [182]
 social behavior, slime mold, Dictyostelium, chemotaxis communication, spatial orientation 1963 Aug. p. 84-93 [164]
 acrasin, adrenalin, social amoebae, slime mold, Dictyostelium, cyclic AMP 1969 June p. 78-91
amorphous metals, glassy metals 1978 Apr. p. 86
amorphous polymers, polymer microstructure, random-coil model, semicrystalline polymers, synthetic polymers, thermoplastic polymers 1975 Dec. p. 96-106
amorphous semiconductors, switching, glass, memory, threshold switch, memory switch 1969 Nov. p. 30-41
 nonperiodic systems, Ovshinsky devices, quantum mechanics, semiconductor technology, switching phenomena 1977 May p. 36-48 [362]
 Ovshinsky devices 1972 Mar. p. 40
amorphous solid, materials technology, glass fiber, optical glass, ceramics, properties of glass as 'undercooled liquid' 1961 Jan. p. 92-104
 crystal structure, solid-state electronics, X-ray crystallography, metals, semiconductor, nonmetals, materials technology, electrical conductivity 1967 Sept. p. 80-89
 materials technology, glass, supercooling, crystal structure, geometry of glass, two-phase glasses 1967 Sept. p. 126-136
amphetamines, behavior, encephalitis, hyperactive child, temperament, genetic disease, possibly innate disease syndrome 1970 Apr. p. 94-98 [527]
amphibian, frog, color vision, retina, retinal image-processing, visual perception, retinal processing of visual sensation 1964 Mar. p. 110-119
 metamorphosis, frog, thyroxin, pituitary gland, hypothalamus, neurosecretory system, hormone, chemistry of amphibian metamorphosis 1966 May p. 76-88 [1042]
amphibian metamorphosis, tadpole, frog, thyroid hormone, chemistry of amphibian metamorphosis 1963 Nov. p. 110-118 [170]
amphora, Classical archeology, commerce, underwater archeology, Roman empire 1954 Nov. p. 98-104
amplification, *see*: amplifiers
amplifiers, electronics, electron tubes, communication technology, rectifiers, electron optics, cathode-ray tube, communication, power, thermionic emission, state of the technology 1950 Oct. p. 30-39
 junction diode amplifiers, sound reproduction, transistor, electronic circuitry, noise 1959 June p. 118-129
 fluid dynamics, switching, Coanda effect, logic gates 1964 Dec. p. 80-88
anaerobic metabolism, ruminants, metabolism, symbiosis, cellulose digestion, fermentation, how cows digest grass 1958 Feb. p. 34-38
 animal behavior, cryptobiotic animals, metabolism, suspended animation, Nematoda, Rotifera, Tardigrada 1971 Dec. p. 30-36
 ATP, muscle, glycolysis, aerobic metabolism, oxygen debt, lactic acid formation, aerobic metabolism, energy mechanisms in muscle 1972 Mar. p. 84-91 [1244]
analgesics, aspirin, inflammation, fever, histamine reaction, bronchospasm, anaphylactic shock, mode of action and hazards of most widely used drug 1963 Nov. p. 96-108
 morphine, opium, poppy, heroin, codeine, Bentley's compound, drug action, search for strong, safe analgesic 1966 Nov. p. 131-136 [304]
analog-to-digital conversion, computer, automatic control, solid-state electronics, digital computer, analogue computer, the universal machine 1952 Sept. p. 116-130
 computer applications, syntactic analysis, computer modeling, computer technology, computer as instrument and as 'actor' in science 1966 Sept. p. 160-172
analogue computer, computer technology, digital computer, relay computers, binary arithmetic, logic, automatic control, computer memory, control systems, status of 'mathematical machines' 1949 Apr. p. 28-39
 computer, automatic control, solid-state electronics, analog-to-digital conversion, digital computer, the universal machine 1952 Sept. p. 116-130
 ancient instruments, astrolabe, planispheric astrolabe, science history, how they did it then 1974 Jan. p. 96-106
analogue storage media, information theory, statistics, thermodynamics, noise, redundancy, digital storage media, information compression, automatic control, information 1952 Sept. p. 132-148
analytic geometry, Fermat, Descartes, mathematics history, conic sections, Euler, mathematics 1949 Jan. p. 40-45
 creativity, mathematical invention, set theory, Fermat's last theorem, innovation in mathematics 1958 Sept. p. 66-73
 Cartesian geometry, mathematics, philosophy, Descartes, René Descartes, biography 1959 Oct. p. 160-173
analytical engine, Babbage, computer, difference engine, digital computer, life and work of Charles Babbage 1952 Apr. p. 66-72
anaphylactic shock, aspirin, inflammation, analgesics, fever, histamine reaction, bronchospasm, mode of action and hazards of most widely used drug 1963 Nov. p. 96-108
 antibodies, antigens, allergic reaction, immune response, immunology, lymphocytes 1973 Nov. p. 54-66 [1283]
Anatolia, Arzawa, archeology, Hittites 1955 July p. 42-46
 Assyrian civilization, commerce, 2000 B.C., trade patterns 1963 Feb. p. 96-106
Anatolian plateau, Neolithic archeology, Catal Hüyük 1964 Apr. p. 94-104 [620]
anatomy, *see*: human anatomy, comparative anatomy and the like
anchovy, Peru Current, guano, seagulls, El Niño, upwelling 1954 Mar. p. 66-71
anchovy crisis, El Niño, fishing, upwelling, Peru Current, Peruvian anchovy 1973 June p. 22-29 [1273]
anchovy disaster, El Niño and overfishing 1977 July p. 60
ancient instruments, Antikythera, planetary motion, Greek computer, science history, Classical archeology, computer technology, 2,000-year-old computer 1959 June p. 60-67
 analogue computer, astrolabe, planispheric astrolabe, science history, how they did it then 1974 Jan. p. 96-106
ancient trade, archeology, writing, Elamite culture, Mesopotamian culture, Persia, Sumer, Iran, Tepe Yahya 1971 June p. 102-111 [660]
Andes, anthropology, Paleolithic culture, stone tools, obsidian, El Inga site, prehistoric man in the Andes 1963 May p. 116-128

- earthquake distribution, mountain formation, plate tectonics, seismic waves, volcanic activity 1973 Aug. p. 60-69 [910]
- androgens**, ACTH, hormone, sexual characteristics, growth, thyroid-stimulating hormone, follicle-stimulating hormone, prolactin, estrogens, secondary sexual characteristics, human physiology, endocrine system, chemical integrators of the body 1957 Mar. p. 76-88 [1122]
- Andromeda Galaxy**, universe expansion, Cepheid variable, Clouds of Magellan, galactic yardstick, doubling of yardstick doubles size and age of the universe 1953 June p. 56-66
- galactic rotation 1973 June p. 30-36
- galactic clusters, local clusters, M81 cluster, Virgo cluster 1977 Nov. p. 76-98 [390]
- anemia**, sickle cell disease, malaria, amino-acid substitution, hemoglobin 1951 Aug. p. 56-59
- sickle cell disease, hemoglobin S, human evolution, malaria hematology, adaptive benefits of sickle-cell anemia 1956 Aug. p. 87-94 [1065]
- brain damage, environmental toxins, blood disorders, kidney disorder, lead poisoning, nerve disorders 1971 Feb. p. 15-23 [1211]
- chemotherapy, cyanate, genetic disease, hemoglobin, erythrocyte, sickle cell disease 1975 Apr. p. 44-50 [1319]
- sickle cell disease, chemical basis of hemoglobin mutation 1957 Aug. p. 58
- anemometer**, meteorology, radiosonde, rain gauge, barometer, hygrometer, instrumentation of meteorology 1951 Dec. p. 64-70
- anesthesia**, pain, cocaine, procaine, surgery, medical research, neuropharmacology, pharmacology, psychiatry, research in pain suppression 1957 Jan. p. 70-82
- barbiturates, hypnotics, tranquilizers, sedatives, pharmacology 1958 Jan. p. 60-64
- senility hastened 1955 Dec. p. 54
- dissociative anesthesia 1971 June p. 56
- aneurysm**, common etiology 1968 Dec. p. 50
- anger**, fear, adrenalin, noradrenalin 1955 May p. 74-81 [428]
- fear, different adrenalins 1951 Nov. p. 40
- angiogenesis**, avascular tumors, cancer, tumor inhibition, tumor vascularization, tumor angiogenesis factor (TAF) 1976 May p. 58-73 [1339]
- angiotensin**, hypertension, atherosclerosis, stress, etiology and care of hypertension 1948 Aug. p. 44-47
- hypertension, kidney function, human physiology, isolation of angiotensin 1959 Mar. p. 54-58
- angiotonin**, *see*: angiotensin
- Anglo-Saxon King**, Sutton Hoo, ship burial, a treasure hoard 1951 Apr. p. 24-30
- angular momentum**, dust cloud hypothesis, binary stars, photophoresis, gravitational collapse, element abundance, origin of the Earth 1952 Oct. p. 53-61 [833]
- ultracentrifuge, ultra-high speed rotation, magnetic flotation, molecular weight determination, 90 million r.p.s. 1961 Apr. p. 134-147
- pulsar, white dwarfs, neutron stars, gravitational collapse, 'lighthouse' model proposed 1968 Oct. p. 25-35
- Crab Nebula, neutron stars, pulsar, radio source, stellar evolution, gravitational collapse 1971 Jan. p. 48-60
- animal behavior**, opossum, marsupial, death-simulation, playing possum by opossum and other animals 1950 Jan. p. 52-55
- sexual behavior, courtship display 1950 July p. 52-55
- hibernation, metabolic rate, thermoregulation, body temperature 1950 Dec. p. 18-21
- problem box, intelligence test 1951 June p. 64-68
- stickleback, courtship display, sexual behavior, displacement activity, ethology 1952 Dec. p. 22-26 [414]
- curiosity, rhesus monkeys, problem solving, genetic traits 1954 Feb. p. 70-75
- zoos, captivity 1954 May p. 76-80
- courtship display, gulls, releaser stimulus, displacement activity, ethology 1954 Nov. p. 42-46
- spider webs, drug action, abnormal behavior 1954 Dec. p. 80-86
- tawny owl, nocturnal animals, predator-prey relationship 1955 Oct. p. 88-98
- bowerbirds, sexual behavior, courtship display, arena behavior, Australian bowerbird, natural history 1956 June p. 48-52
- bird song, animal communication, learning, innate behavior 1956 Oct. p. 128-138 [145]
- learning, imprinting, developmental psychology, effect of early life on later learning 1958 Mar. p. 81-90 [416]
- ethology, evolution, ritualized behavior, innate behavior, releaser stimulus, evolution of behavioral patterns 1958 Dec. p. 67-78 [412]
- incubator birds, eggs, chicken, fowl, ornithology, hatching eggs in hot places 1959 Aug. p. 52-58
- comparative psychology, prairie dogs, social behavior, territorial behavior, innate behavior, learning behavior, field observation of prairie dog communities 1959 Oct. p. 128-140
- ornithology, crow, signal behavior, language of crows 1959 Nov. p. 119-131
- learning, stress, behavior disorders, stimulation in infancy 1960 May p. 80-86 [436]
- electric fishes, sodium ion potential, electroplaques, neurophysiology, synapse, acetylcholine, nerve impulse, bioluminescence 1960 Oct. p. 115-124
- ethology, social behavior, gulls, comparative psychology, evolution, reconstructing gull family tree from behavior of species 1960 Dec. p. 118-130 [456]
- ecological niche, symbiosis, reef ecology, cleaning behavior, behavioral integration of reef ecology 1961 Aug. p. 42-49 [135]
- behavioral adaptation, ground squirrels, Mojave desert, kidney function, thermoregulation, desert adaptation, desert mammals' adaptations to heat and aridity 1961 Nov. p. 107-116
- cichlid fish, marine iguana, rattlesnake, fighting behavior, comparative psychology, oryx 1961 Dec. p. 112-122 [470]
- evolution, innate behavior, lovebird, sexual behavior, interspecies differentiation of behavior 1962 Jan. p. 88-98
- bioelectricity, physiological psychology, electrically controlled behavior 1962 Mar. p. 50-59 [464]
- marine biology, fish, schooling behavior, sensory systems for parallel orientation 1962 June p. 128-138 [124]
- sharks, attack prevention, sensory systems, feeding behavior 1962 July p. 60-68 [127]
- Phalangida, harvestman, daddy longlegs, Arachnida, natural history 1962 Oct. p. 119-128 [137]
- archer fish, predator-prey relationship, natural history, Toxotes 1963 July p. 100-108
- arena behavior, bowerbirds, sexual behavior, courtship display, releaser stimulus, ethology, natural history 1963 Aug. p. 38-46 [1098]
- Antarctica, ornithology, skua, south polar skua 1964 Feb. p. 94-100
- chimpanzee, symbolic language, learning, operant conditioning, binary numbers, chimpanzee learning arithmetic 1964 May p. 98-106 [484]
- brain stimulation, neurotransmitters, hormone, drive activation by injection of chemicals into rat brain 1964 June p. 60-68 [485]
- population control, territorial behavior, reproduction, homeostatic population controls 1964 Aug. p. 68-74 [192]
- habitat selection, ecological adaptation, heredity, learning, field experiments with mice 1964 Oct. p. 109-116 [195]
- Arachnida, false scorpion, natural history, Chelifer canroides 1966 Mar. p. 95-100 [1039]
- sex differences, hypothalamus, testosterone, physiological psychology, sex hormones, pituitary hormones, sex differences in rat brain, effect of testosterone 1966 Apr. p. 84-90 [498]
- aggression, rats, social behavior, territorial behavior, natural history, *Rattus rattus*, *Rattus norvegicus* 1967 Jan. p. 78-85
- nervous system, vision, reflex arc, motor neuron, interneuron, small neuron systems as models for study 1967 May p. 44-52 [1073]
- evolution, fossil tracks, fossil animal tracks, burrows 1967 Aug. p. 72-80 [872]
- speciation, gulls, evolution, sexual behavior, innate behavior, ethology, species discrimination, *Larus*, eye rings 1967 Oct. p. 94-102 [1084]
- learning, cerebral cortex, striatum, bird nervous system, crows, pigeons, canaries, chickens 1968 June p. 64-76 [515]
- cryptozoa, Berlese funnel, natural history, ecological niche, cryptosphere, life under rocks and rotting logs 1968 July p. 108-114 [1112]
- marine birds, phalarope, sexual behavior, parental care, sex role, hormone 1969 June p. 104-111
- innate behavior, learning, parental care, feeding behavior, sea gull chicks 1969 Dec. p. 98-106 [1165]
- locomotion, herpetology, snake, lateral, rectilinear, concertina and sidewinding modes of progression 1970 June p. 82-96 [1180]
- albatross, evolution, bird flight, sexual behavior, soaring, natural history 1970 Nov. p. 84-93 [1204]
- mollusks, central nervous system, neurophysiology 1971 Feb. p. 68-75 [1212]
- biological clock, circadian rhythm, circannual rhythm, hibernation, animal migration, manic depression 1971 Apr. p. 72-79 [1219]