

# **The New Hutchinson 20th Century Encyclopedia**

Edited by  
E.M.Horsley

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# Editor's Preface

Now, for the first time computer-set and presented in yet more handsome format, the *New Hutchinson Twentieth Century Encyclopedia* establishes once more its reputation as an up-to-date and reliable first source of reference, which many readers - as their letters tell us - have purchased in successive editions. There are numerous new entries and all others have been revised, so that the whole range of modern life, through science and technology to the arts and humanities is covered. The illustrations, both line and halftone, have also been renewed. The colour atlas has been doubled in size, and the text maps have been produced by a new photographic process. The useful appendices, including the handy

dictionary of abbreviations and the guide to weights and measures, have been retained and updated, and throughout the book metric (SI) and traditional British forms have been given side by side, as an invaluable aid in the transitional period.

Packed with information that is practically useful in home and factory, in office and school, the encyclopedia is an essential companion in leisure as well as in study. It is hoped that it may lie beside the radio and television set, and that, as a bedside book, it may encourage in the reader the faculty of serendipity - the making of happy and unexpected discoveries by accident.

# Maps

## Colour atlas

between pages 666 and 667

## Black-and-white maps in text as below

Africa (physical)  
Africa (independence)  
Antarctica (exploration)  
The Arctic (exploration)  
Asia (physical)  
Auckland  
Australia (physical)  
Australia (exploration)  
Berlin

## Continent (geological formation)

Earthquake belts  
England and Wales (physical)  
Europe (physical)  
London (central)  
London (boroughs)  
Melbourne  
Mid-Atlantic Ridge  
Moon (physical and Apollo missions)  
Moscow  
New York  
New Zealand (physical)  
North America (physical)

## Paris

Peking  
Quebec  
Roman Empire  
Scotland (physical)  
South America (physical)  
Sydney  
Tokyo

## Appendices following the text

Abbreviations  
Customary Forms of Address  
Weights and Measures

# Note to the Reader

Pronunciation is indicated approximately by the following simple system:

## Vowel sounds

a as in rack  
ā as in rake  
ah as in father  
ār as in mare  
aw as in raw  
e as in wreck  
ē as in mete

oi as in boil  
oo as in book  
ō as in boot  
ow as in cow  
u as in but  
ü as in Fr. *dune*  
ū as in mute

eh as in Fr. *née*  
i as in rick  
T as in mite  
o as in rock  
ō as in so  
ö as in Fr. *jeune*  
oh as in Fr. *eau*

## Consonant sounds

b, d, f, h, j, k, l, m, n, p, r, t, v, w, z, present no difficulty; c, q, x, are not used in this key.

ch as in chip  
dh is soft as in this  
g is hard as in get  
kh as ch in Scots loch

ks for x  
kw as in quick  
n is nasal as in Fr. *bon*  
ng as in singer

ngg as in finger  
s is hard as in set  
th is hard as in think  
y is consonantal as in yet  
zh as in treasure (trezhur)

Abbreviations follow the standard forms and are included in an appendix, an exception being the adoption of F.W.W. and S.W.W. to indicate the First and Second World Wars. In any article the title word (or words) may be represented by its initial letter (or letters), e.g. in the article AACHEN the letter A. stands for Aachen.

Illustrations have been placed as close as possible to the entry to which they refer. Usually they are on the same page, but occasionally the illustration is on the facing page, or overleaf.

# A

The first letter in nearly all the alphabets. The English *a* is derived from the Etruscan *a* through the Lat. alphabet, which is the parent of the West-European alphabets. The Greeks called the first letter *alpha*; the Semites *aleph* or *alph*, which meant 'ox', but more probably because the word began with this letter – a simple mnemonic device – than because the letter was formed as the rough outline of an ox-head, as some scholars have claimed.

**AACHEN** (ah'khen). German cathedral city and spa in the Land of North Rhine-Westphalia, 72km (45m) S.W. of Cologne. It is a thriving industrial centre and one of Germany's principal railway junctions. *A.* was the Roman Aquisgranum, and from the time of Charlemagne until 1531 the German emperors were crowned there. Charlemagne was b. and buried in *A.*, and he founded the cathedral in 796. The 14th cent. town hall, containing the hall of the emperors, is built on the site of Charlemagne's palace. Leading citizens estab. the annual *Charlemagne prize* (1949) for service to European co-operation: winners incl. Adenauer, Churchill, Heath, Schuman and Spaak. In the S.W.W. Aachen was the first major Ger. town captured by the Allies (20 Oct. 1944). Pop. (1970) 175,450.



**AACHEN.** Among the treasures of the cathedral is the Shrine of Charlemagne. Completed in 1215, it is a masterpiece of the goldsmith's art, and is decorated with fine reliefs. Here Charlemagne presents a model of the church to the Virgin. Photo: Marburg

**AALBORG** (awl'-). Danish port 32km (20m) inland from the Kattegat, on the S. shore of the Limfjord. One of the oldest towns in Denmark, it has a castle and the fine Budolfi church. Pop. (1970) 100,250.

**AALST** (ahlst) or **Alost**. Town in E. Flanders, Belgium, on the Dender, with brewing and textile industries. Pop. (1970) 46,750.

**AALTONEN** (ahl'-), **Wäinö** (1894–1966). Finnish artist. At first a painter, he later turned to sculpture; and was a pioneer in the revival of carving directly from the stone, his favourite medium being granite. His works incl.

portrait busts, notably one of Sibelius, and statues for the Finnish Parliament House and the Univ. of Helsinki.

**AARDVARK** (ahrd'-). Afrikaans name for the ant-bear (*Orycteropus afer*) found in central and southern Africa. A timid, defenceless animal about the size of a pig, it has a long head, pig-like snout, and large asinine ears. It feeds at night on termites, which it licks up with its long, sticky tongue.

**AARDWOLF**. One of the Carnivora (*Proteles cristatus*), resembling a small striped hyena. It is found in E. and S. Africa, usually in the burrows of the aardvark, and feeds on termites.

**AARHUS** (awr'hoos). Second city of Denmark, on the E. coast overlooking the Kattegat. It is the cap. of A. co. in Jutland, and a shipping and commercial centre with a univ. Pop. (1970) 187,000.



**AARHUS.** The 'Old Town', an open-air museum of old buildings gathered together from all over Denmark, and re-erected in part of the botanical gardens. Ancient crafts are carried on, as in the watch-maker's house on the right. Photo: J. Allan Cash

**AARON** (ā'ron). In the Bible, the elder brother of Moses and leader with him of the Israelites in their march from Egypt to the Promised Land of Canaan.

**AASEN** (aw'sen), **Ivar Andreas** (1813–96). Norwegian philologist, poet and playwright. Through a study of rural dialects he evolved by 1853 a native 'country language', which he called *Landsmaal*, to take the place of literary Dano-Norwegian.

**A'BACUS**. Method of calculating with a handful of stones on 'a flat surface' (Lat. *abacus*), familiar to the Greeks and Romans, and used by earlier peoples, possibly even in ancient Babylon, and which still survives in the E. in the more sophisticated bead frame form of the Russian *schoty* and the Japanese *soroban*. In the West arithmetic with written Arabic figures, the so-called 'pen-reckoning',

replaced 'counter-casting' for some 200 years, but is today being replaced by adding machines and electric calculators, themselves based on the principle of the A. The metal reckoning counters or jettons of the 13th-18th cents. are often very attractive. See **CAPITAL**.



**ABACUS.** Modern schoolchildren find the fundamentals of arithmetic easier to grasp with the aid of a Roman-type abacus. Behind it is the more familiar bead abacus. *Photo: Courtesy of J. M. Pullan*

**ABADA'N.** Iranian is. on the E. side of the Shatt-al-Arab. A. is the chief refinery and shipping centre for Iran's oil industry, nationalized 1951. This measure was the beginning of the world-wide movement by oil-producing countries to assume control of profits from their own resources.

**ABAKA'N.** Town of the R.S.F.S.R., cap. of Khakass autonomous region, Krasnoyarsk territory, E. Siberia. It lies just N. of the junction of the A. and Yenisei rivers. Pop. (1973) 90,000.

**ABALONE** (abalōn'i). Marine, snail-like animal (family Haliotidae), also known from its shape as the ear shell. It provides a bluish mother-of-pearl much used in ornamental work, and the animal itself is edible. California has several valuable species, and As. are eaten there, as well as in China and Japan.

**A'BBAS the Great** (c. 1557-1628). Shah of Persia from 1586, he defeated the Uzbeks near Herat in 1597 and also the Turks. Bandar-Abbas is named after him. At his death his dominions reached from the Tigris to the Indus.

**ABBAS II, Hilmi** (1874-1944). Last khedive of Egypt, 1892-1914. On the outbreak of war between Britain and Turkey in 1914, he sided with Turkey and was deposed following the establishment of a British protectorate over Egypt.

**ABBASIDS.** Dynasty of the Mohammedan empire who reigned as caliphs in Baghdad 750-1258. They were descended from Abbas, Mohammed's uncle, and some of them, e.g. Harun-al-Rashid (786-809) and Mamun (813-33), were outstanding patrons of cultural development. Later their power dwindled, and in 1258 Baghdad was burnt by the Tartars. Thence until 1517 they were caliphs of Egypt.

**ABBEVILLE** (ahbvēl'). Town in N. France in the Somme dept., 19km (12m) inland from the mouth of the Somme. During the F.W.W. it was an important base for the British armies. Pop. (1973) 25,000.

**ABBEY.** In the Christian church, a monastery of monks or a nunnery or convent of nuns, all vowed to a life of celibacy and religious seclusion, governed by an abbot or abbess respectively. Sometimes the word is applied to a religious edifice which was once the church of an A., e.g. Westminster A., or to a building or society that has long since been secularized, e.g. Battle Abbey. The first As. established in Syria or Egypt were mere collections of huts, but in course of time massive and extensive buildings were constructed. St. Benedict's A. at Monte Cassino in Italy - so strongly built that for weeks in 1944 it defied blasting by bomb and shell - set the pattern, and soon every country of Christendom could boast a number of noble As. England, esp. the north, is rich in A. ruins.

**ABBEY THEATRE.** Playhouse in Dublin associated with the Irish literary revival of the early 1900s that owed its origin to the co-operation of the writers George Russell (A.E.) and W. B. Yeats, with the actors W. G. and Frank Fay. The theatre was opened in 1904, and provided a stage for the works of a number of brilliant dramatists, including Lady Gregory, Yeats, J. M. Synge, Lennox Robinson, Padraic Colum, Conal O'Riordan, St John Ervine, Seumas O'Kelly, and Sean O'Casey. Burned out in 1951, the A. T. was rebuilt 1966.

**ABBOTSFORD.** Home of Sir Walter Scott (q.v.) from 1811, on the right bank of the Tweed, Borders region. Originally a farmhouse, it was rebuilt 1817-25 as a gothic baronial hall, and is still in the possession of his descendants.

**ABD EL-KADER** (c. 1807-83). Algerian nationalist. Emir of Mascara from 1832, he led a tribal struggle against the French until his surrender in 1847.

**ABD EL-KRIM, el-Khettabi** (1881-1963). Moroccan Arab chief known as the 'Wolf of the Riff'. With his brother Mohammed, he led the Riff revolt, inflicting disastrous defeat on the Spanish at Anual in 1921, but surrendering to a large French army under Pétain in 1926. Banished to the is. of Réunion, he was released in 1947 and d. in voluntary exile in Cairo.

**ABDICATION.** Renunciation of an office or dignity, usually the throne, by a ruler or sovereign.

**ABDUL-HAMID II** (1842-1918). Last sultan of Turkey 1876-1909. In 1908 the Young Turks under Enver Bey forced A.-H. to restore the constitution of 1876, and in 1909 insisted on his deposition. He d. in confinement. For his part in the brutal suppression of the Armenian revolt of 1894 he was known as the Great Assassin.

**ABDULLAH, Sheikh Mohammed** (1905- ). Kashmiri leader, known as the 'Lion of Kashmir'. He headed the struggle for constitutional government against the Maharajah of Kashmir, and in 1947 became P.M. He agreed to the accession of the state to India to halt tribal infiltration, but was imprisoned from 1953 (with brief intervals) until 1968, when he reaffirmed the right of the people of K. 'to decide the future of the State'. He became P.M. 1975, accepting the sovereignty of India.

**ABDULLAH ibn Hussein** (1882-1951). King of Jordan. The son of Hussein ibn Ali and brother of Feisal I of Iraq (q.v.), he worked with Lawrence in the Arab revolt of the F.W.W. From 1921 he was Emir of Transjordan, and assumed the title of King in 1946 when the country - until then a British mandate - became independent. He incorporated Arab Palestine into his kingdom, which then became the Hashemite Kingdom of Jordan, following the



# Famous Abdications

Sulla, Roman dictator	79 B.C.
Diocletian, Roman emperor	A.D. 305
Edward II of Eng.	1327
Richard II of Eng.	1399
Charles V, Holy Roman emperor	1555
Mary Queen of Scots	1567
Christina of Sweden	1654
Napoleon I	1814 and 1815
Louis Philippe of France	1848
Isabella II of Spain	1870
Abdul Hamid II of Turkey	1909
Manoel II of Portugal	1910
Pu-Yi of China	1912
Nicholas II of Russia	1917
Constantine I of Greece	1917 and 1922
Ferdinand I of Bulgaria	1918
Wilhelm II of Germany	1918
Charles (Karl) of Austria-Hungary	1918
George II of Greece	1923
Edward VIII of United Kingdom	11 Dec. 1936
Carol II of Rumania	1940
Victor Emmanuel III of Italy	1946
Umberto II of Italy	1946
Michael of Rumania	1947
Wilhelmina of the Netherlands	1948
Leopold III of the Belgians	1951
Farouk of Egypt	1952
Constantine II of Greece (deposed)	1973
Zahir Shah of Afghanistan	1973

1948-9 Arab-Israeli war. He was assassinated by an Arab fanatic.

**ABDUL RAHMAN, Tunku** (Prince) (1903- ). Malaysian statesman. In 1961-2 he headed the missions to London negotiating the formation of the Fed. of Malaysia, and was the country's first P.M. 1963-70.

**ABDUL RAZAK bin Hussein, Tun** (1922-76). Malaysian statesman. A barrister, he headed the mission which achieved the Bangkok Accord (1966) ending confrontation with Indonesia, and was P.M. of Malaysia in succession to Abdul Rahman 1970-6.

**ABEL** (a'bel). In Genesis, 2nd son of Adam and Eve. He was a shepherd, and his burnt offerings were more acceptable to the Lord than were the fruits of Cain, his brother. Filled with jealousy, Cain killed A.

**A'BEL, Sir Frederick Augustus** (1827-1902). British scientist. Chemist to the War Dept., he introduced a new method of making gun-cotton, was joint inventor with Dewar of cordite, and invented the Abel close-test instrument for determining the flash point of petroleum.

**A'BELARD, Peter** (1079-1142). French scholastic philosopher. B. near Nantes, he became canon of Notre Dame in Paris, and master of the cathedral school in 1115. When his seduction of, and secret marriage to, his pupil Héloïse became known, she took the veil and he was castrated by ruffians at the instigation of her uncle, Canon Fulbert, and became a monk. Resuming teaching a year later, he was cited for heresy and became a hermit at Nogent, where he built the oratory of the Paraclete, and later abbot of a monastery in Brittany. His autobiographical *Historia Calamitatum* drew from Héloïse the famous love letters. He d. at Châlon-sur-Saône, on his way to defend himself against a new charge of heresy.

Héloïse was buried beside him at the Paraclete in 1164, their remains being taken to Père Lachaise, Paris, in 1817. A. has a great place in medieval thought as a 'conceptualist', for whom 'universals' have only a mental existence.

**ABEOKUTA** (abē-ōkoo'tah). Agricultural trade centre in Nigeria, West Africa, on the Ogun river, 103km (64m) N. of Lagos. Pop. (1970) 200,000.

**ABERBROTHOCK.** Another name for ARBROATH.

**ABERCROMBY, Sir Ralph** (1734-1801). Scots soldier who in 1801 commanded an expedition to the Mediterranean, charged with the liquidation of the French forces left behind by Napoleon in Egypt. He decisively defeated the French at Aboukir Bay, but was mortally wounded in the action.

**ABERDĀ'RE.** Town in Mid Glamorgan, Wales, formerly producing high-grade coal, and now with electrical and light engineering industries. Pop. (1971) 38,000.

**ABERDARE MOUNTAINS.** Range in Kenya, to the N. of Nairobi, averaging 3,350 m (11,000 ft). Mt. Kenya to the S.E. It was in this area that white settlement was formerly most concentrated.

**ABERDEEN, George Hamilton Gordon**, 4th earl of (1784-1860). British statesman. B. in Edinburgh, he succeeded his grandfather as earl in 1801, and was a prominent diplomat. In 1828 he was Foreign Secretary under Wellington, and again in 1841. Although a Tory, he supported Catholic emancipation and followed Peel in his conversion to Free Trade. In 1852 he became P.M. in a govt of Peelites and Whigs or Liberals, but resigned in 1855 because of the hostile criticism aroused by the miseries and mismanagement of the Crimean War.

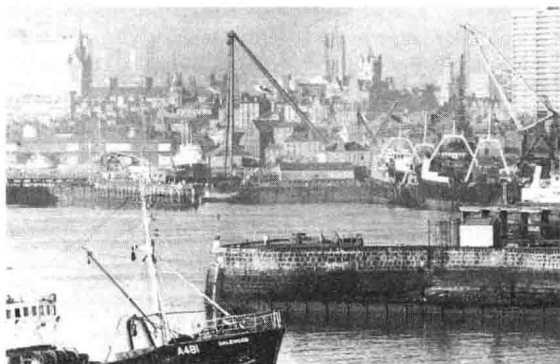
**ABERDEEN.** City, seaport and holiday resort on the E. coast of Scotland, admin. H.Q. of Grampian region. It is Scotland's third largest city, and is rich in historical interest and fine buildings, including the Municipal Buildings (1867); King's College (1494) and Marischal College (founded 1593; housed in one of the largest granite buildings in the world, 1836) which together form Aberdeen University; St Machar Cathedral (1378), and the Auld Brig o'Balgownie (1320). The 2 rivers which flank it, the Dee and the Don, are famous in history and the 2 miles of promenade and the sandy beach attract many holiday visitors. Industries include the manufacture of agricultural machinery, paper and textiles; fishing, ship-building, granite-quarrying, and engineering. However, oil discoveries in the North Sea in the 1960-70s transformed A. to the European 'offshore capital,' with an airport and heliport linking the mainland to the rigs, and new sources of employment in the shore-based maintenance and service depots. Pop. (1971) 181,785.

**ABERDEENSHIRE.** Former co. in E. Scotland, merged in 1975 in Grampian region.

**ABERFAN** (abervan'). Mining village in Mid Glamorgan, Wales, nr Merthyr Tydfil. An avalanche of coalmine waste overwhelmed a school and houses in 1966: 144 d. incl. 116 children.

**ABERRATION.** Astronomical term for the apparent displacement of a star resulting from the combined effects of the speed of light, and the speed of Earth as it moves in its orbit round the Sun, about 30km (18.5m) per sec. The constant of A. is 20.47 sec. *Chromatic A.* appears as coloured fringes when objects are illuminated and seen through simple lenses.





**ABERDEEN.** The 'Granite City', a focus of the British oil boom of the 1970s, is expanding fast under the impetus of its new prosperity. Office blocks tower over the traditional style buildings. *Photo: Camera Press*

**ABERY'STWYTH.** Holiday resort and university town, Dyfed, Wales, at the mouth of the Ystwyth river. The town developed round the fortress rebuilt by Edward I in 1277. The Univ. Coll. of Wales was founded in A. in 1872, and maintains the Welsh Plant Breeding Station. On the outskirts of A. is the National Library of Wales. Tanning is an industry. Pop. (1972) 10,650.

**ABIDJA'N.** Cap. of the Rep. of Ivory Coast, W. Africa. It is an important port with a trade in coffee, palm oil, cocoa and timber (mahogany); is linked by rail with Ougadougou, and has an airport. There is a univ. Pop. (1973) 600,000.

**ABILENE** (ab'ilēn). Town of Kansas, USA, on the Smoky Hill river. A western railway terminus, A. was a shipping point for cattle in the 1860s, and was a wild city until tamed by Marshal Wild Bill Hickok in 1871. President Eisenhower lived here as a boy and is buried here, and there is an Eisenhower Memorial Museum. Pop. (1970) 6,661.

**A'BINGDON.** Town in Oxfordshire, England, on the Thames 10km (6m) S. of Oxford. The remains of the 7th cent. abbey incl. Checker Hall, restored as an Elizabethan-type theatre. The 15th cent. bridge was reconstructed in 1929. There are light industries. Pop. (1971) 18,600.

**ABOMEY** (ahbō'mi). Town and port of Benin. It was once the cap. of the kingdom of Dahomey, which flourished in the 17th-19th cents., and had a mud-built defence-wall 10km (6m) in circumference. Pop. (1970) 45,000.

**ABOMINABLE SNOWMAN.** Man-like creature, with long arms and a thick-set body covered with reddish-grey hair. Reports of the existence of the A.S. in the Himalayas, where it is locally known as the 'yeti', have been current since 1832, but gained substance from a published photograph of a huge footprint in the snow taken by Eric Shipton of the Everest Reconnaissance Expedition in 1951.

**ABORIGINES** (abōri'jinēz). Those inhabitants of a country who are believed to have been there from time immemorial (Lat. *ab origine*, from the beginning). The word now more particularly refers to the native peoples of those lands which have become the scene of European settlement, and especially those of Australia. *Australian Aborigines* numbered c. 300,000 when British settlers first

arrived in 1788: the largest concentration is now in Queensland (24,000) and they total (1973) 116,000, with c. 20,000 of mixed blood. They have a rich tradition of legends, songs, rituals, and bark and cave paintings concerned with their 'dreamtime', a long-ago era when men were first on Earth, and when the tribal totem ancestors (the spirit eaglehawk, kangaroo, snake, etc.) wandered abroad. About 40% live tribally in remote desert areas, but are threatened by mineral discoveries on their lands, to which their rights have been officially disputed. The rest live in squalid conditions as casual labour on the town fringes. In recent years there has been a movement for the recognition of A. rights.



**ABORIGINES.** A fisherman of Arnhem Land in Australia's Northern Territory. Arriving in Australia from Asia 13-30,000 years ago, the Aborigines developed a complex and enduring culture in areas where white settlers were later to find survival difficult. *Photo: Axel Poignant*

**ABORTION.** In law, the expulsion of the contents of the pregnant womb at any time before full term; in medicine, the expulsion before the foetus is capable of living - before the 6th month. Expulsion after that is called miscarriage or premature labour. Strictly forbidden in times of shortage of manpower, e.g. in France in 1920 after the F.W.W., A. is a recognized method of birth-control in times of over-population, e.g. legalized in Britain 1968 in certain circumstances, but there is risk to the mental and physical health of the mother, with the danger of prematurity or complications in subsequent desired births.

**ABOUKIR** (abookēr') **BAY, Battle of.** Also known as the Battle of the Nile: Nelson defeated Napoleon's fleet at the Egyptian seaport of A. on 1 Aug. 1798.

**ABRAHAM** (fl. c. 2300 B.C.). Founder of the Jewish nation. B. at Ur, Abram was the son of Terah, and migrated to Haran, N. Mesopotamia, with his father, his wife Sarah, and his nephew Lot. Proceeding to Canaan, he received Jehovah's promise of the land to his descendants, and after sojourning in Egypt during a famine, separated from Lot at Bethel before settling in Hebron. On renaming him Abraham 'father of many nations', Jehovah promised him a legitimate heir, and then tested him by a command to slay the boy Isaac in sacrifice. By his 2nd

wife, Keturah, A. had 6 sons. He was buried in Machpelah cave, Hebron. See CANAAN.

**ABRAHAM, Edward Penley** (1913- ). British biochemist. Professor of chemical pathology at Oxford from 1964, he succeeded (with his group) in isolating the antibiotic cephalosporin (q.v.), capable of destroying penicillin-resistant bacteria.

**ABRAHAM, Plains (or Heights) of.** Plateau near Quebec, Canada, where on 13 Sept. 1759 the French under Montcalm were defeated by Wolfe, whereby Canada was won for the British Empire. It is now the National Battlefield Park.

**ABRASIVES.** Substances used for cutting and polishing or for removing small amounts of the surface of hard materials. They are divided into *natural* As., e.g. quartz, sandstone, pumice, diamond, corundum, and emery; and *artificial*, e.g. bath brick, rouge, whiting, and carborundum. They are usually referred to Mohs' (q.v.) Scale of Hardness.

**ABRUZZI** (ahbroots'i). Mountainous area of south central Italy; Gran Sasso d'Italia (2,914 m/9,560 ft) is the highest point of the Apennines.

**ABSALOM.** In the O.T., the 3rd and favourite son of King David. He headed a revolt against his father, was defeated in battle, and as he fled on a mule, his long hair caught in an overhanging branch. In this predicament he was slain by Joab, David's captain.

**A'BSINTH.** Strong alcoholic drink containing from 60 to 80 per cent of alcohol, which owes its toxic qualities to the oil of wormwood which gives its characteristic flavour. It attacks the nervous system and causes acute symptoms of narcotic poisoning.

**ABSOLUTE ZERO.** The lowest temperature which could possibly exist, equivalent to  $-273.16^{\circ}$  C. when molecules would have no energy. Near this temperature the physical properties of materials change substantially, e.g. some metals lose their electrical resistance.

**ABSTRACT ART.** Abstract works of art may be classified as (1) *semi-abstract* - i.e. those works which are based on nature, though they bear little resemblance to natural forms; and (2) *pure abstract* - i.e. those works which have no relation to nature, but consist of shapes and colours of the artist's own invention. In (1) we may group Cubism, Futurism, Vorticism, and the work of certain artists, such as Henry Moore and Archipenko, who have evolved their own individualistic styles. In (2) we may include Constructivism, Suprematism, and Neo-Plasticism. There are other movements, such as Expressionism, which defy classification. In Expressionist paintings forms are created instinctively, according to the promptings of the artist's emotions, but such works usually consist of lines and shapes, and can therefore be considered as abstract. Surrealist works are also executed in a similar way - they are the expressions of a dream-world - but since their chief interest lies in their subject-matter they cannot, strictly speaking, be classed as A.A. For definitions of the different movements see ACTION PAINTING, CUBISM, CONSTRUCTIVISM, FUTURISM, etc.

**ABSDUR, Theatre of the.** See ALBEE, E.; BECKETT, S.; IONESCO, E.; and SIMPSON, N. F.

**ABU-BEKR** (573-634). Mohammed's father-in-law and the first caliph. B. at Mecca and originally named Abd-el-Ka'ba, he was one of the first notable converts to Mohammed's teaching, accompanied the Prophet on his flight to Medina, and took the name Abu-Bekr, 'Father of

the Virgin', when Mohammed married his daughter Ayesha (c. 618). As Mohammed's successor (632) he proved a vigorous ruler, adding Mesopotamia to the Moslem world.

**ABU DHABI** (ah'boo dah'bi). Largest of the United Arab Emirates (q.v.), on the Arabian Gulf. The borders are ill defined and there have been disputes with Oman (Buraimi Oasis) and Saudi Arabia (The Liwa). The ruler is Sheikh Zaid. Exploitation of rich oil resources from 1962 has led to rapid expansion. The cap. is Abu Dhabi. Area 67,340 sq.km (26,000 sq.m); pop. (1973) 85,000.



ABU DHABI. Sheikh Zaid, in the foreground, leaves his royal palace followed by his bodyguard, who combine modern efficiency with traditional features of Arab dress. Photo: John Cowan / Camera Press

**ABUJA** (aboo'jah). Fed. cap. terr. of Nigeria, S.E. of Kaduna, in the region of the boundary between the Niger and Plateau states. The decision was made in 1976 to transfer the cap. from Lagos to this healthier, more central area, the transfer to be completed c. 1986.

**ABYDOS** (abi'dos). Ancient city of upper Egypt, W. of the Nile, c. 160km (100m) above Asyut. The Great Temple built here by Seti I (c. 1300 B.C.), is one of the most imposing Egyptian temples.

**ABYSSAL** (abis'al) **ZONE.** Deep area of the ocean (q.v.), calm, muddy, dark, not subject to seasonal changes, and with a temperature of approx.  $4^{\circ}$  C ( $39^{\circ}$  F). Fish and crustaceans may be blind.

**ABYSSINIA.** Another name for ETHIOPIA.

**ACACIA** (ak'a'sha). Genus of trees and shrubs of the family Leguminosae. Most of the 400 species flourish in the tropics of Africa and Australia. See WATTLE and MIMOSA.

**ACADEMY** (Gk *akadēmeia*). Name given to the Platonic school of philosophy, which met in the gardens of Academe, in the N.-W. of Athens. Here among the olive

groves Plato and his successors taught their disciples, until in A.D. 529 Justinian closed all the pagan schools.

First of the As., in the modern sense of a recognized society estab. for the promotion of one or more of the arts and sciences, was the Museum of Alexandria, founded by Ptolemy Soter in the 3rd cent. B.C.

The *Académie française* originated as a literary society in 1629, and was granted letters patent by Louis XIII in 1635. Since 1639 its membership has been restricted to 40 at a time, the '40 Immortals'.

The Soviet *A. of Sciences* was originally estab. by Catherine I in 1725 as the *Académie Impériale des sciences de Saint-Petersbourg*. Responsible for such achievements as the *Sputnik*, the A. formerly admin. many of the country's 3000 scientific establishments, but in 1961 was reorganized to concentrate on the most promising lines of theoretical research. The practical side of scientific research work was entrusted to the newly-created State Committee of the Council of Ministers for the Co-ordination of Scientific Research Work.

In Britain an 'academy' generally means a society dealing with the arts, such as the Royal Academy.

**ACADIA**, or **ACADIE** (ahkahdē'). Name given to Nova Scotia by the original French settlers in 1604. France renounced her claim to the colony in 1713. Many of its inhabitants migrated to New England and Louisiana: some 4,000 others were expelled in 1755.

**ACA'NTHUS**. Genus of herbaceous plants, family Acanthaceae, of the Mediterranean region. The A. was frequently used as a motif in classical architecture, the Greeks preferring the species *A. spinosus* and the Romans *A. mollis*. The latter, often grown as an ornamental plant, and also called bear's breech grows some c. 1m (3ft). The spineless, hairy leaves are shiny, and the flowers form handsome white or pinkish spikes.

**ACAPULCO** (ak'apōō'lkō). Mexican holiday resort, famed for its beauty and deep-sea fishing, set in an almost land-locked bay 305km (190m) S.W. of Mexico City. Pop. (1970) 234,800.

**A'CCAD**. Ancient town on the left bank of the Euphrates from which a Semitic people of N. Babylonia took their name - Accadians. It was the chief city of the empire of Sargon I.

**ACCELERATION**. The rate of increase in the velocity of a moving body, usually expressed in feet or centimetres per second per second. The acceleration due to gravity is the A. shown by a body falling freely under the influence of gravity, either in a vacuum or after allowing for the retardation due to air resistance; it varies slightly at different latitudes, but is equivalent to c. 980cm/32.16ft per sec per sec. Retardation is actually A. in the reverse direction, e.g. a rising rocket is actually being accelerated towards the centre of the earth.

**ACCESSARY**. An *accessary before the fact* is one who instigates another person to commit a crime which that person then commits. If he is present when the crime is committed, he is not an A. but an *abettor*. An *A. after the fact* is one who assists a person who he knows has committed a crime.

**A'CCOLADE**. Gentle blow on the shoulders with the flat of the sword given by the Sovereign, or a representative, in conferring a knighthood. The word comes from the French for an embrace or clasping about the neck, and in earlier times the knightly ritual included such an embrace and sometimes a kiss.

**ACCOMPLICE**. One who is associated with another in the commission of a crime. In law, the word is applied not only to persons who played a minor part in the crime, but also to the principal offenders.

**ACCORDION**. Portable musical instrument invented by Damian of Vienna in 1829. Box-like in form, it comprises a pair of bellows with many folds and a keyboard of up to 50 keys. On these being pressed and the bellows worked, wind is admitted to metal reeds, whose length and thickness determines the notes they emit.

**ACCOUNTANCY**. The art or practice of an accountant. The accountant today enjoys professional status and is entrusted not only with the control of the book-keeping functions and the preparation of Trading and Profit and Loss Accounts and Balance Sheets, but with numerous other duties in connection with the financial affairs of an organization. The auditing of accounts is the work of professional accountants who may also be required to serve as liquidators of companies, receivers for debenture holders, etc. During the 1970s inflation rendered A. a less exact process, and the CCA (current cost accounting) system was advocated in 1975 by the Sandilands Committee for enforcement in the UK. Accountants, however, maintained that this alone still did not allow for valid comparisons over a period in which the value of money changes and urged its combination with their own CPP (current purchasing power) method of adjustment. A combination of the two was adopted.

In the British Isles there are Inst. of Chartered Accountants for England and Wales, Scotland, and Ireland and other professional organizations; the American Inst. of Accountants dates from 1887.

**ACCRA'**. Capital and port of Ghana, W. Africa. It is an important commercial and industrial centre with good road, rail, and air communications. The Univ. of Ghana (1961) is at nearby Legon, with its medical school in A. itself. Pop. of the Greater A. region (1970) 851,614. See TEMA.



ACCRA. The University of Ghana, where a motif from Ghanaian folk art decorates the wall of the George Padmore library. Construction on stilts over an ornamental pool gives much-needed coolness. Photo: Camera Press

**ACETALDEHYDE** (asetal'-) ( $\text{CH}_3\text{CHO}$ ). In chemistry, one of the chief members of the group of organic compounds known as aldehydes. It is a mobile inflammable liquid boiling at  $20.8^\circ\text{C}$  ( $69.6^\circ\text{F}$ ).

**ACETIC** (asē'tik) **ACID** ( $\text{CH}_3\text{COOH}$ ). One of the simplest members of a series of organic acids called the fatty acids. In the pure state it is a mobile colourless liquid with an unpleasant pungent odour; it solidifies to an ice-like mass of crystals at  $16.7^\circ\text{C}$ , and hence is often called glacial acetic acid. See **VINEGAR**.

Cellulose (derived from wood, etc.) is treated with A.A. to produce a cellulose acetate solution, which is then extruded to form the synthetic textile fibre formerly called acetate rayon and now simply acetate.

**ACETONE** ( $\text{CH}_3\text{COCH}_3$ ). A colourless mobile inflammable liquid used extensively as a solvent. It boils at  $56.5^\circ\text{C}$ , is miscible with water in all proportions, and has a pleasant and characteristic odour.

**ACE'TYLENE** ( $\text{C}_2\text{H}_2$ ). A colourless inflammable gas produced by the action of water on calcium carbide. It was discovered by Edmund Davy in 1836 by the action of water on some impure by-products of the preparation of potassium.

The most important modern development in the use of A. is its conversion into artificial rubbers. Since the combustion of A. provides more heat relatively than almost any other fuel known - its calorific power is three times that of coal gas and five times that of hydrogen - the gas is of great value in obtaining an intensely hot flame, e.g. in oxyacetylene welding and cutting.

**ACHAEA** (akē'a). Ancient name for Greece. The name Achaeans was originally used for the fair-haired invaders from the N. who swept over the whole of Greece some time before 1100 B.C., submerging the ancient Aegean civilization of Mycenae, and who then captured Troy, as told in the *Iliad*.

The Achaean League of 275 B.C. united most of the cities of the northern Peloponnesus, and achieved victory over Sparta, but it was worsted by the Romans in 146 B.C.

**ACHAEMENIDS** (akimen'ids). Dynasty ruling the Persian Empire 550-330 B.C., and named after Achaemenes, ancestor of Cyrus the Great, founder of the Empire. His successors incl. Cambyses, Darius I, Xerxes I and Darius III, who, as the last Achaemenid ruler, was killed after defeat in battle against Alexander the Great in 330 B.C.

**ACHERON** (a'keron). In Greek mythology, one of the rivers of the lower world. The name was taken from a river in S. Epirus which flowed through a deep gorge into the Ionian Sea.

**A'CHESON, Dean Gooderham** (1893-1971). American statesman and lawyer. He was Under-Secretary of State 1945-7, and was closely associated with George C. Marshall in the preparation of the 'Marshall Plan'. He succeeded him as Sec. of State from 1949 till the end of the Truman régime in 1953. He played a leading part in establishing NATO, and is remembered for his comment that Britain had 'lost an empire and not yet found a role.'

**ACHILL** (ak'il). Largest of the Irish islands, lying off the coast of Mayo. The scenery is wild and mountainous, and on the N. and W. are cliffs reaching 275m (900ft). Area 148 sq.km (57 sq.m).

**ACHILLES** (akil'ēz). Greek hero, the central figure of Homer's *Iliad*. He was the son of Peleus, king of the Myrmidons in Thessaly. His mother Thetis dipped him into the r. Styx and thereby made him invulnerable except for the heel by which she held him. Bravest and hand-somest of all the Greeks, he took part in the Trojan War, and in a mighty combat killed Hector. In the end he was

himself slain by Paris, whose poisoned arrow wounded him in the heel.

The A. tendon pins the calf muscle to the heelbone, and is one of the largest in the body.

**ACID** (Lat. *acidus*, acid, sour). In chemistry, a substance which in solution in an ionizing solvent (usually water) gives rise to hydrogen ions. The more obvious properties of As. are their sharp taste, and their ability to turn litmus red, to neutralize alkalis to form well-defined salts, and act as solvents. The first known A. was vinegar. Inorganic As. include boracic, carbonic, hydrochloric, nitric, phosphoric, sulphuric, and sulphuretted hydrogen; and among organic acids are acetic, benzoic, citric, formic, lactic, oxalic, and salicylic. As. combine with bases (alkalis are soluble bases) to form salts. 'Strength' of an acid is measured by its hydrogen-ion concentration, indicated by pH value and expressed on a scale of numbers from 0 = extremely acid, through 7 = neutral, to 14 = extremely alkaline.

**ACLINIC** (aklin'ik) **LINE**. The magnetic equator, an imaginary line near the equator, where the compass needle has no 'dip' or magnetic inclination.

**ACNE** (ak'-). A skin eruption due to inflammation of the sebaceous glands that secrete an oily substance called sebum, the natural lubricant of the skin. Sometimes their openings become stopped and they swell; the contents decompose and pimples form.

**ACONCA'GUA**. An extinct volcano (6,960 m/22,834 ft) in the Andes on the W. border of Argentina. The highest peak in the Americas, it was first climbed in 1897 by Vines and Zurbriggen (FitzGerald Expedition).

**A'CONITE**. Genus of poisonous plants of the Ranunculaceae family. Of some 60 species, *Aconitum napellus*, or Monkshood, is the common European species; also known as *A. lycoctonum*, wolf's bane. The roots yield aconitine, formerly used for poison arrows.

**A'CORN**. Fruit or seed of the oak tree. It is a nut, based in a shallow cup or cupule. The sea-acorn or acorn-shell (*Balanus*) is a genus of Cirripedia, allied to the barnacles.

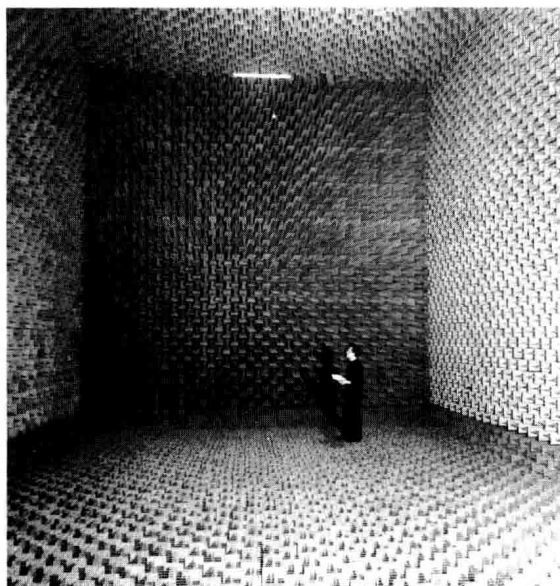
**ACOUSTICS** (akoo'- or akow'-). In general, the experimental and theoretical science of sound; but more specially, that branch of the science that has to do with the phenomena of sound in space, e.g. public buildings, concert halls, cinemas, etc. Acoustical engineering is concerned with the technical control of sound, and the subject also enters into architecture and building, with the necessity for the control of vibration, for sound-proofing and the elimination of noise; it also includes all forms of sound recording and reinforcement, and hearing-aids. See **SOUND**.

**ACQUAVIVA** (ahkwah-), **Claudius** (1543-1615). A Neapolitan, he was General of the Jesuits from 1581 and one of their ablest organizers and educators.

**ACQUITTAL**. In law, the clearing or setting free of a person charged with a crime or accusation. In an English court this follows on a verdict of 'not guilty', but in a Scottish court the verdict may be either 'non-proven' or 'not guilty'. A. by the jury must be confirmed by the judge.

**A'CRE**. City and port of Israel, on a promontory at the northern extremity of the Bay of A. It has played an important part in history, owing to its strategic position. In 1517 it became part of the Turkish empire. Napoleon besieged it in 1799, but was withstood by the Turkish Jezzaz Pasha, supported by a British fleet under Sir Sidney Smith. During the F.W.W., General Allenby captured it





**ACOUSTICS.** The anechoic room at the Building Research Station of the Department of the Environment at Watford. Lined with sponge wedges to eliminate echoes, it is for detailed study of sound transmission and general acoustic research. *Photo: Crown copyright*

from the Turks (1918); the Israelis captured it in 1948. A. has lost importance owing to the growth of Haifa, 14km (9m) S. but exports olive oil, corn, and wool. There is a Naval Officers' School. Pop. (1970) 20,000.

**Ā'CRE.** Traditional English land measure (4,047 sq.m/4,840 sq.yds/0.405 ha). Originally the word meant a field, and it was of a size that a yoke of oxen could plough in a day, but as early as Edward I's reign it was standardized by statute for official use, although local variation in Ireland, Scotland and some English cos. continued.

**A'CRIDINE** ( $C_{13}H_9N$ ). An organic compound which occurs in crude anthracene oil, from which it may be extracted by dilute acids. It is also obtained synthetically. It gives rise to many dye-stuffs and some valuable drugs.

**ACROME'GALY.** A disease distinguished by an unsightly enlargement of the prominent parts of the body (Gk. *akra*, high parts), e.g. the hands and feet, and the lips, nose, tongue, and jaws. It is due to an excessive output of growth hormone by the front lobe of the pituitary gland.

**ACRO'POLIS.** The citadel of an ancient Greek town. Best known is the A. at Athens, famous for the ruins of the beautiful temples built there during the great days of the Athenian empire.

**ACROSTIC.** A verse or set of verses whose initial letters form a word, phrase, or sentence; the term comes from the Gk for 'at the end of a line or row'. Sometimes the end letters form the same (or different) words as the initial ones, and sometimes, too, the letters run down the middle of the verse like a seam. Thus we have single, double, and triple As.

**ACRYLIC** (akril'ik) **ACID.** Acid obtained from the aldehyde acrolein derived from glycerol or fats. Glass-like thermoplastic resin is made by polymerizing esters of A.



**ACRE.** The strong walls guarding the seaward side of the city reflect its troubled history, but, though pitted by shot, still stand firm. *Photo: Courtesy of the Israeli Government Tourist Office*

or methacrylic acid, and used for transparent parts, dentures, lenses, etc. Other A. compounds are used for adhesives, artificial fibres such as Acrilan and Orlon, and the resins used as a medium by many modern artists for their brilliant effect.

**ACTAEON** (aktē'on). Greek mythical hero. The son of Aristaeus and Cadmus' daughter Autonoë, he was a famous hunter. He accidentally spied upon Artemis as she was bathing, and the goddess changed him into a stag, whereupon he was torn to pieces by his own hounds.

**ACTINIDES.** Those chemical elements with nos. 89–105, all radioactive and man-made above uranium, no. 92. They are grouped because of their chemical similarities, and also by analogies with the rare-earth elements (lanthanides).

**ACTI'NIUM.** Rare radioactive element, at. no. 89, at. wt. 227, the first of the actinides, a weak emitter of high-energy alpha-rays. Made in quantity by bombarding radium with neutrons.

**ACTION.** One of the proceedings whereby a person enforces his civil rights in a court of justice. The best-known proceedings not commenced by action but by petition are bankruptcy and divorce.

**ACTION PAINTING.** Abstract expressionist style of painting developed in New York in the 1950s. The word was first used by critic Harold Rosenberg, who wrote that the painter's canvas seemed to these artists 'an arena in which to act'. The paint was applied often by violent

methods: see POLLOCK, JACKSON. Franz Kline and Mark Rothko are also of this school.

**A'CTIUM.** Ancient name of a promontory in western Greece on the gulf of Arta, where the fleets of Antony and Cleopatra were defeated by Octavian in 31 B.C.

**ACT OF CONGRESS.** In USA a bill or resolution that has been passed by the Senate and the House of Representatives and has received the President's assent. If he vetoes it, it may become a A. of C. if it is returned to Congress again and passed by a majority of two-thirds in each House.

**ACT OF GOD.** Legal term meaning some direct, violent, sudden, and irresistible act of nature which could not reasonably have been foreseen, e.g. extraordinary storms, snow, or frost.

**ACT OF INDEMNITY.** An Act of Parliament passed to relieve some person from the consequences of some action or omission which, at the time the action or omission took place, was illegal, or of which the legality was doubtful.

**ACT OF PARLIAMENT.** A parliamentary statute; a decree of the sovereign legislature having the force of law. Acts of P. are of two kinds, public and private, but there is no distinction as to their force, only as to their application; i.e. public Acts of P. have a general effect, while private Acts deal with matters of purely local interest.

Acts are known not only by the year of the reign, but by a short title, e.g. that of 22 Geo. 5 c. 4. is commonly referred to as the Statute of Westminster, 1931.

The body of English statute law comprises all the Acts passed by Parliament, and the existing list opens with the Statute of Merton, passed in 1235. An Act (unless it is stated to be for a definite period and then to come to an end) remains on the statute book until it is repealed.

**ACTON, John Emerich Edward Dalberg-Acton,** 1st baron A. (1834–1902). British historian. B. at Naples, of old English R.C. stock, he was elected a Liberal M.P. in 1859 and became a friend and admirer of Gladstone. As leader of the Liberal R.Cs. he opposed the promulgation in 1870 of the doctrine of papal infallibility. Appointed prof. of modern history at Cambridge in 1895, he planned and edited the *Cambridge Modern History*, but d. when only the first 2 vols. were completed.

**ACTORS STUDIO.** Theatre workshop in New York, USA, estab. 1947 by Cheryl Crawford, Elia Kazan and Robert Lewis: there is also a Los Angeles branch. Selected 'life members' here study the 'method' of Stanislavsky (q.v.), etc.

**A'CTUARY.** An official of a government department, insurance co., or friendly soc., whose task it is to make the calculations concerning human longevity, etc., on which the tables of mortality, sickness, accident, etc., and hence the premiums or charges, are based. Professional bodies are the Inst. of Actuaries (England, 1848), Faculty of Actuaries (Scotland, 1856) and Society of Actuaries (US, 1949, by a merger of 2 earlier bodies).

**ACUPUNCTURE** (ak'ü-). Method of healing involving the insertion of metal needles into the body (Lat. *acu*, with a needle) at points determined according to a system which in China, where A. originated, requires a decade of study. Electroacupuncture, developed from the 1950s, is widely used in China to produce anaesthesia. The patient remains conscious, and is able to co-operate with the surgeon in operations on the heart, lung, etc.



**ACUPUNCTURE.** Three needles (one in the body, one in the left ear and one in the left forearm) have made this patient unaware of pain, although fully conscious. The operation — at the Peking Medical College — is a major one for removal of a tumour in the oesophagus. Photo: Camera Press

**ADAM.** Four brothers — Robert, John, James, and William — distinguished Scottish architects and interior decorators.

**Robert A.** (1728–92), was b. at Kirkcaldy, travelled in Italy and Dalmatia, and was appointed Architect to the King in 1762. With the assistance of his brothers, he designed the district of London between Charing Cross and the Thames, which was named after them the Adelphi (from the Gk for brothers). The area was largely rebuilt in 1936. The A. brothers were responsible for a great improvement in architectural taste, and developed a style which was decidedly their own. Robert A. also earned a considerable reputation as a furniture designer.

**James A.** studied in Rome, and succeeded Robert as Architect to the King in 1768; **William A.** is described as an architect and a banker; and **John A.** succeeded his father as an architect in Edinburgh.

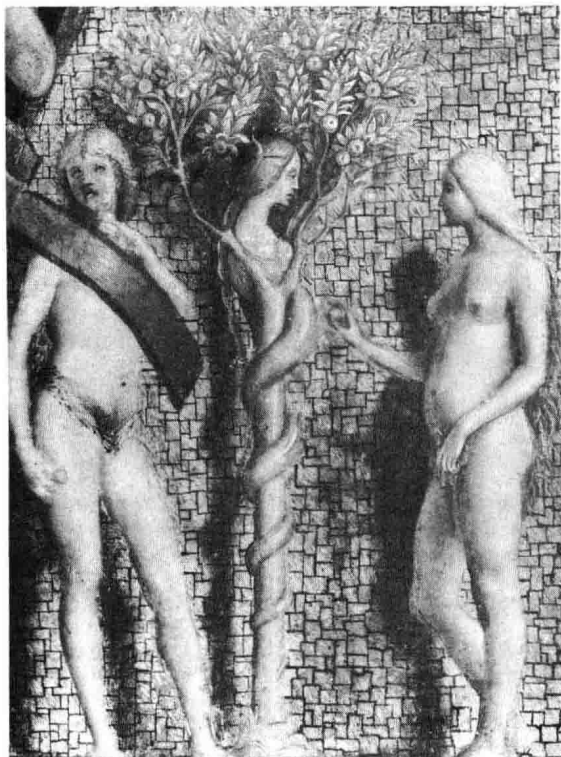
**ADAM** (ahdon'). **Adolphe Charles** (1803–56). French composer of light operas. Some 50 of his works were staged; he is best known for the classic ballet *Giselle*.

**ADAM (or Adan) DE LA HALLE** (c. 1235/40–87). French troubadour, known as the 'Hunchback of Arras'. His *Jeu de Robin et Marion* is the earliest French comic opera, and *Le jeu Adan* or *Le jeu de la Feuillée* a precursor of the modern revue.

**ADAM and EVE.** In the Bible, the first parents of the human race. According to Gen. ii, 7–iii, 24, Jehovah (Yahweh) formed man from the dust, breathed into his nostrils the breath of life, and put him in the Garden of

Eden, where the fruit of the Tree of Knowledge of Good and Evil was forbidden him. God formed a woman from a rib of the man while he slept. The woman was tempted by the serpent to eat the forbidden fruit, persuaded A. also to eat, and they were expelled from Eden.

**Adam's Peak** is a mtn (2,245 m/7,365 ft) in the Kandyan Hills, Sri Lanka. The 'footprint' on the summit is revered by Moslems as that of A., driven from Paradise, and by Buddhists as that of Buddha: it is a place of pilgrimage.



ADAM AND EVE. The parents of mankind from an exquisite detail in 'The Virgin and Child with St William of Aquitaine and St John the Baptist', painted by Costa and Mainieri for the Oratory of the Conception at Ferrara 1497-1500. Photo: Courtesy of the National Gallery, London

**ADAMOV, Arthur** (1908- ). Russian-born French playwright. He has pub. translations of Gorki, Chekhov, and Gogol and their influence is noticeable in his plays: *La Parodie*, *Le Ping-Pong*, *En Fiacre* and *Spring '71*.

**ADAMS, Henry Brooks** (1838-1918). American author. A grandson of President John Q. A., his best known works are the studies of the 13th cent. *Mont-Saint-Michel and Chartres* (1904), and of the contrasting complexities of the 20th, *Education of H.A.* (1907).

**ADAMS, John** (1735-1826). 2nd President of the USA. B. at Quincy, Mass., he was a member of the Continental Congress, 1774-8, and signed the Declaration of Independence. In 1779 he went to France and negotiated the treaties that closed the War of American Independence. In 1785 he became the first American ambassador in London. Returning home, he was Vice-President (1789-97), and President 1797-1801.

**ADAMS, John Couch** (1819-92). British astronomer. B. in Cornwall, he deduced the existence of the planet Neptune in 1845, and in 1858 became professor of astronomy at Cambridge.

**ADAMS, John Quincy** (1767-1848). 6th President of the USA. Eldest son of President John Adams, he was b. at Quincy, and became US minister in turn at The Hague, Berlin, St Petersburg, and (1815) London. In 1817 Monroe made him Secretary of State, and 1825-9 he was President.

**ADAMS, Léonie** (1899- ). American poet. B. in N.Y., she became instructor in writing at Columbia Univ. in 1947, and is noted for her romantic, metaphysical lyrics, as in *Those Not Elect* (1925) and *This Measure* (1933).

**ADAMS, Samuel** (1722-1803). American statesman. B. in Boston, he was a 2nd cousin of President John Adams, and was a leader of the revolutionary party in Massachusetts. He sat in the Continental Congress 1774-81, and signed the Declaration of Independence. In 1776 he anticipated Napoleon in calling the English a nation of shopkeepers.

**ADANA** (ahdah'nah). Town in Turkey-in-Asia, on the r. Seyhan. It has cotton, tobacco, and agricultural machinery factories. Pop. (1970) 351,650.

**ADDAMS, Jane** (1860-1935). American sociologist and feminist. A founder and head of the social settlement of Hull House, Chicago, she was active in the peace movement: co-winner Nobel prize 1931.

**ADDER.** See VIPER.

**ADDINGTON, Henry** (1757-1844). British Tory statesman, Prime Minister of UK, 1801-4. In 1805 he was created Viscount Sidmouth.

**ADDINSELL, Richard** (1904-77). British composer. B. in London, he studied at the Royal College of Music and abroad, and wrote music for many theatrical productions and films, e.g. *Dangerous Moonlight*, which includes the 'Warsaw Concerto'.

**ADDIS ABABA** (Amharic, meaning 'new flower'). Cap. of Ethiopia, and of Shoa prov., founded 1887 by Menelik, then chief of Shoa, at the request of his wife Taitu who found the climate of his existing cap. Entotto, lying farther north, too severe. A. lies at 2,450 m (8,000 ft) a.s.l., but is protected by the surrounding Shoa highlands, and includes hot springs. Eucalyptus woods were planted nearby by Menelik who, when he ascended the throne of Ethiopia in 1889, made A.A. cap. of the whole country. A.A., which is linked by a railway completed 1917 with Djibouti on the coast of the Terr. of the Afars and the Issas, was cap. of Italian East Africa 1936-41. Of the four royal palaces in the city, one was presented by Haile Selassie to Ethiopia's first university, inaugurated by him in 1961. It is HQ for UN Economic Commission for Africa, and for OAU. Pop. (1971) 795,900.

**ADDISON, Joseph** (1672-1719). British essayist and poet, b. in Wilts. In 1699 he was granted a pension to enable him to qualify for the diplomatic service by foreign travel, and in 1704 celebrated Marlborough's victory at Blenheim in his poem 'The Campaign'. In 1706 he became Under-Sec. of State, and in 1708 secretary to the Lord-Lieutenant of Ireland, and an M.P. In 1709 he began to contribute to the *Tatler*, just started by his friend Steele; and in 1711 the two together estab. the *Spectator*, to which A. contributed the 'Coverley Papers'. In 1713 his successful tragedy *Cato* was performed and he contributed to Steele's *Guardian* and in 1714 to the revived *Spectator*. In 1716 he was appointed a commissioner for trade, and in



1717 a Sec. of State, but failing health led to his withdrawal from public life in 1718.



ADDISON. Kneller's portrait for the dining-room of the Kit-Cat Club, to which Congreve, Steele, Vanbrugh and publisher Jacob Tonson belonged. The pictures were less than half-length because the room was low, hence portraits of this size are still called 'kit-cat'. Photo: National Portrait Gallery

**ADDISON, Thomas** (1793-1860). Physician. B. nr Newcastle, he became physician to Guy's Hospital, London, in 1837. He was the first to recognize the condition known as *Addison's disease* - a disease of the suprarenal capsules.

**ADDITIVE.** Chemical substance added to give food longer life (from the traditional salt to modern antibiotics); more attractive colouring or flavour; greater food value (vitamins, etc.); greater convenience in manufacture, etc. Legislation controls the use of As. since many apparently harmless substances may have toxic effects, especially in the long term.

**ADELAIDE** (1792-1849). Queen of William IV. Daughter of the duke of Saxe-Meiningen, she m. William, then duke of Clarence, in 1818. No children of the marriage survived infancy.

**ADELAIDE.** Capital of South Australia. Founded in 1836, and named after William IV's queen, it stands on high ground overlooking Holdfast Bay and sheltered on the S. and E. by hills: the highest peak is Mt. Lofty 711 m. (2,334 ft). It is a noteworthy example of town-planning. The residential districts are separated from the commercial by the r. Torrens, dammed to form a lake. The most impressive streets are King William St and North

Terrace. A.'s fine buildings include Parliament House (built of marble), Government House, the Anglican cathedral of St Peter, the R.C. cathedral, the University, the State observatory, museum and art gallery. Pop. (1973) 868,000.



ADELAIDE. The city's parkland setting is one of its most attractive features, and Adelaide prides itself on having no slums. This view is taken across the Municipal Golf Course in North Adelaide. Photo: Courtesy of the South Australian Government

**ADÉLIE LAND.** See ANTARCTICA.

**AD'EN.** Cap. of the People's Democratic Rep. of Yemen, on a peninsula of barren rock at the S.W. corner of Arabia, commanding the entrance to the Red Sea. It comprises the new admin. centre Madinet al-Sha'ab; the commercial and business quarters of Crater and Tawahi, and the harbour area of Ma'alla. There is an internat. airport. Pop. (1975) 250,000.

A. and its immediate area (121 sq.km/75 sq.m) was annexed by Britain in 1839 and developed as a ship refuelling station after the opening of the Suez Canal. It was a colony 1937-73, and then, after a period of transitional violence between rival nationalist groups and British forces, was combined with the former A. protectorate (290,000 sq.km/112,000 sq.m) to create in 1967 the Southern Yemen People's Rep., later re-named the People's Democratic Rep. of Yemen (q.v.).

**ADENAUER** (ah'denower), **Konrad** (1876-1967). German statesman. He was Lord Mayor of his native city of Cologne from 1917 until his imprisonment in 1933 by Hitler for opposition to the Nazi régime. After the war he headed the Christian Democratic Union, and was Chancellor of the Federal Republic 1949-63. He strongly supported all measures designed to strengthen the Western bloc in Europe, e.g. his support of Britain's entry into the Common Market.

**ADENOIDS.** Popular word for the glandular tissue on the back of the upper part of the throat, into which the nose opens. This is apt to overgrow in children as a result of infection, and to cause chronic blocking of the nose and mouth-breathing. The open mouth makes the child's expression look vacant, and the voice has a dull twang. The child is subject to constant colds, is in danger of middle-ear disease and deafness, and often suffers from chronic tonsillitis. The treatment is the removal by surgery of the tonsils and overgrown adenoid tissue.

**ADER** (ahdār'), **Clement** (1841–1925). French pioneer airman. His first steam-driven machine, the *Éole*, just made the first powered take-off in history (1890), but it could not fly. In 1897, with his *Avion III*, he failed completely, despite his false claims made later.

**ADHĒ'SIVE**. Substance sticking 2 surfaces together. Natural As. incl. gelatine in its crude industrial form (made from bones, hide fragments and fish offal), and vegetable gums. More recent developments are the synthetic thermoplastic and thermosetting resins, often stronger than the substances they join, replacing nails and screws, etc., and elastomeric (stretching) As. for flexible joins.

**ADIABA'TIC**. The A. expansion or contraction of a gas is one in which a change takes place in the pressure or volume of the gas, although no heat is allowed to enter or leave.

**ADIGE** (ah/dējeh). Next to the Po, the longest river in Italy, it rises in the lakes of the Resia Pass, traverses the Lombardy Plain, and enters the Adriatic a few miles N. of the Po delta: c. 410km/254m long.

**ADI GRANTH** or **GRANTH SAHIB**. The holy book of Sikhism (q.v.).

**ADIRO'NDACKS**. Mountainous area in the N.E. of New York State, USA, famous for its scenery and sport facilities: Mt. Marcy 1,629 m/5,345 ft.

**ADLER** (ahd'ler), **Alfred** (1870–1937). Austrian psychologist, founder of the school of Individual Psychology. B. in Vienna, he was a general practitioner and nerve specialist there 1897–1927, serving as an army doctor in F.W.W. He joined the circle of Freudian doctors in Vienna about 1900, but did not accept the more dogmatic Freudian theories of infantile sexuality. After 10 years of collaboration, he parted company with Freud to develop his own distinctive line of thought. His books incl. *Organic Inferiority and Psychic Compensation* (1907) and *Understanding Human Nature* (1927).

**ADMINISTRATIVE LAW**. The laws made and the judicial decisions arrived at by the Executive under powers delegated to them by the Legislature; such legislative powers have been vastly extended in the 20th cent. in many countries and have been attacked by lawyers. In the US the Administrative Procedure Act (1946) was an attempt to cope with the problem.

In Great Britain the very many new powers delegated to Ministers of the Crown are so wide as frequently to enable the Ministers to make regulations which amend or override Acts of Parliament, and in some cases they further take away from the courts of law the power they have hitherto exercised of confining the legislative activities of the Executive within the limits of the authority delegated to them by Parliament by declaring any regulation that exceeds these limits to be *ultra vires*, and so of no effect.

**ADMIRAL**. Naval officer of the highest rank: in the RN (in ascending order) rear-admirals, vice-admirals, admirals, and admirals of the fleet; in the USN there are 4 corresponding grades.

**ADMIRAL'S CUP**. Racing trophy for sailing yachts estab. 1957: teams of 3 yachts for each competing nation take part in 4 races, the most gruelling being the 975km (605m) Fastnet Cup (from Cowes, round the Fastnet Rock off the coast of Cork, Rep. of Ireland, and back to Plymouth). A fifth race was added to this biennial event in 1977.

**ADMIRALTY**. From the reign of Henry VIII until 1964, the **Board of A.** was the dept of State charged with the provision, control and maintenance of the Royal Navy; its functions – apart from that of management – then passed to the new unified Min. of Defence (q.v.). The 600-year-old office of Lord High Admiral, in commission in the A., then reverted to the Sovereign, to prevent its extinction.

**ADŌ'NIS**. In classical mythology, a beautiful youth beloved by Aphrodite. While hunting a boar he was gored to death; from his blood sprang the anemone. He was permitted to return each year from the underworld to his mistress for six months. He was worshipped as Adon by the Phoenicians, and earlier still the cult is found in Babylonia and Assyria.

**ADOPTION**. The legal acquisition of the rights and duties as to the custody and maintenance of a child not one's own legitimate offspring. In antiquity – as in Greece and Rome – emphasis tended to be on the acquisition of an heir, and, as in India, might have religious significance. A. was legalized in England only in 1926, and the modern emphasis is on the welfare of the child and its complete acceptance as if lawfully born to the adopter, e.g. by the Act of 1958 an adopted child inherits on an intestacy as if it were the child of the adopter, and closer restrictions were placed on A. societies. In the US there is a particularly high rate of A., conditions being regulated by the laws of the various states. Stress on care of the child is illustrated by international As., e.g. those of Korean refugee children adopted in the UK through the International Social Service of Great Britain.

Preference is given to young married couples, and all relations with the child's natural parents are severed. Legalized abortion, increased use of contraceptives, and the lessening stigma of being an unmarried mother have combined to decrease the numbers of children available for A. since the S.W.W. and of those 90% are usually illegitimate. In the U.K. the rights of natural parents to prevent A., when the child's welfare might thus be adversely affected, were diminished under the Children Act (1975), and a new legal status of 'custodianship' was created, enabling foster-parents to apply for legal custody after caring for the child for one year. At majority (18) a child is entitled to know its original name.

**ADOWA**. Alternative form of ADUWA.

**ADRĒ'NAL GLANDS**. A pair of glands situated on the upper poles of the kidneys and known also as 'suprarenal' glands. They are soft and yellow, and consist of 2 parts. The cortex (outer part) secretes various hormones (steroids) related to sex hormones, controls salt and water metabolism, and other processes. The medulla (inner part) secretes **adrenalin**, whose nature was discovered by Oliver and Schäfer in 1894, and which constricts the blood vessels of the belly, lungs, and skin so that more blood is available for the heart, lungs and voluntary muscles – an emergency preparation for 'fight or flight' causes a large output of adrenalin.

**Ā'DRIAN IV**. Pope, 1154–9; Nicholas Breakspear, the only Englishman to sit in the papal chair. He was b. at Abbots Langley, became a monk in France, and in 1137 abbot of St Rufus, near Arles. Elected pope at the end of 1154, he secured the execution of Arnold of Brescia, crowned Frederick I Barbarossa as German emperor; refused Henry II's request that Ireland should be granted to the English crown in absolute ownership; and was at