

PENGUIN REFERENCE BOOKS

# A Dictionary of Geography

W. G. MOORE



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GEOGRAPHY

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DEFINITIONS AND  
EXPLANATIONS OF TERMS  
USED IN  
PHYSICAL GEOGRAPHY

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## AUTHOR'S NOTE

When this book was started, it was intended to embrace the entire field of Geography, but very soon it became evident that such a volume could not be compressed within the covers of a Penguin without making some of the definitions and descriptions so brief as to be virtually useless. It was thought preferable, therefore, to limit the volume, broadly speaking, to Physical Geography, including, of course, a generous sprinkling of Climatological and Meteorological terms, and a number of unclassifiable terms which might conceivably be met during a study of Physical Geography.

For the student who consults the book purely as a dictionary, the individual definitions and descriptions should prove adequate. There may be readers, however, who are interested enough in a particular branch of the subject to seek more information than is included in a single item. For them, the headings which are suggested for further reading are indicated in the text by the use of *italics*. A reference to **ABYSSAL DEPOSITS**, for example, would suggest for further reading the items on *Abyssal* and *Oozes*.

The asterisk inserted after certain headwords indicates that a relevant illustration appears in the photogravure section (between pages 64 and 65).

## A

- AA. The Hawaiian term, pronounced ah-ah, for *Block Lava*, sometimes used in place of its English equivalent.
- ABLATION. The process of carrying away or removing, e.g. the melting away of the surface of a glacier, or the wearing away of the surface of a rock through the action of water.
- ABORIGINES. (Sing. *Aboriginal*.) The human inhabitants who are believed to have been the original natives of a region, i.e. those who were found living in the region when it was first discovered.
- ABRASION. The wearing away of part of the earth's surface by the action of wind, water, or ice.
- ABSOLUTE DROUGHT. In the British Isles, a period of at least fifteen consecutive days, none of which has received as much as .01 in. of rain; the definition has not been internationally accepted. See *Drought*.
- ABSOLUTE HUMIDITY. The amount of water vapour present in unit volume of air, usually expressed in grams per cubic metre; the term is sometimes wrongly applied to the pressure of the water vapour in the air. See *Humidity*, *Relative Humidity*.
- ABYSSAL. The term usually means 'belonging to the lowest depths of the *Oceans*'. It is assumed that in general the abyssal region has a depth greater than about 2,000 fathoms – but its limits cannot be thus defined with precision. As sunlight does not penetrate to these depths, there is no plant life. There are, however, species of animal life, whose nature varies with the depth owing to differences in temperature and in supplies of food and oxygen. Much of their food consists of organic matter which sinks from the waters above. Conditions on the ocean floor at these great depths are extremely uniform – perpetually dark, cold, and covered with a barren expanse of ooze or clay, principally *Red Clay*.
- ABYSSAL DEPOSITS. The solid matter which covers the floor of the *Abyssal* region of the oceans. See *Oozes*.
- ABYSSAL ROCKS. See *Plutonic Rocks*.
- ACCUMULATION, MOUNTAIN OF. A mountain formed by the collection of material on the earth's surface, the best-known example being that of a volcano, or a mountain produced by the ejection of material from a volcano. Mountains of accumulation are frequently of great height and symmetrical in shape, and tend to occur as isolated peaks.

**ADRET** (French). A mountain slope which faces more or less equatorwards, and, being largely exposed to the sun's rays, receives considerable light and warmth during the day. The term is principally used of the Alps. The equivalent Italian term is *adretto*, the German *Sonnenseite*. See *Ubac*.

**ADRETTO** (Italian). See *Adret*.

**ADVECTION**. Transmission by horizontal movement: usually applied to the transfer of heat by horizontal movement of the air – in distinction from *Convection*, in which the movement is vertical. The most familiar example is the transfer of heat by the movement of tropical air from low to high latitudes.

**AEOLIAN**. Relating to, or caused by, the wind. Aeolian deposits are materials which have been transported and laid down on the earth's surface by the wind, and include *Loess*, and the sand of deserts and dunes.

**AEROGRAPHY**. The subject which seeks to describe the properties, dimensions, etc., of the atmosphere.

**AEROLOGY**. The science which treats of the atmosphere.

**AFFLUENT**. A *Tributary*; a stream flowing into a larger stream.

**AFFORESTATION**. The process of transforming an area into forest, usually when trees have not previously grown there. See *Reforestation*.

**AFRICAN TORNADO**. See *Tornado* (1).

**AFTER-GLOW**. The radiance or glow occasionally seen in the sky in mountainous regions after sunset, commencing when the sun is about 3° or 4° below the horizon.

**AGGLOMERATE**. A mass of coarse rock fragments or blocks of *Lava* produced by volcanic eruptions. Usually the fragments are angular, and the agglomerate differs from a *Volcanic Ash* by reason of their greater size.

**AGGRADATION**. A process which tends to build up the land surface by deposition of solid material in its lower areas; the term is usually applied to a river, in which case it involves the laying down of sediment on the river bed. When, along a certain stretch, the river is unable to carry all its solid loose material, for instance, the surplus is deposited at the head of the stretch, and so increases the slope of the bed. See *Degradation*.

**AGONIC LINE**. A line on a map joining places of zero magnetic declination, i.e. places where the magnetic compass points true north as well as magnetic north. In general, declination increases with increasing distance from the agonic line. See *Declination*, *Magnetic*.

**AGRICULTURE**. The practice of cultivating the soil in order to produce crops. In its most primitive form, as, for instance, in tropical regions like the Amazon valley and Central Africa, it simply consists in setting the plants in forest clearings; in its more advanced form,

however, it demands great knowledge and skill. The *type* of agriculture practised in a region depends to a great extent on climatic factors, such as rainfall and temperatures, and on the kind of soil. The term is sometimes loosely used to include *Pastoral Farming* as well as the cultivation of crops.

AIR GAP. See *Wind Gap*.

AIRPORT. An aerodrome situated on one of the principal air routes.

AITOFF'S PROJECTION. An equal-area or *Homolographic Projection*, in which the whole of the earth's surface is represented on an ellipse. Land masses near to the centre of the map have a fairly accurate shape, but those near to the eastern and western margins are badly distorted; it is superior to *Mollweide's Projection*, which it resembles, however, in that the angles of intersection of the meridians and parallels are not so greatly altered towards the margins.

ALIDADE. The movable arm of a *Quadrant* or similar instrument used for reading angular distances, and carrying the indicator and the sights.

ALKALIFLAT. An alkaline, marshy area in an arid region into which one or more desert streams lead. In the dry season, when all the water has evaporated, it becomes a barren area of hard mud covered with alkali; after heavy rainfall, it becomes a shallow, muddy lake. See *Salt-Marsh*.

ALLUVIAL FAN OR ALLUVIAL CONE. The deposit of sediment laid down by a swift-flowing stream as it enters a plain or an open valley, so called on account of its shape. It is in dry regions that the alluvial fan is commonest, for there the alternate drying up and flooding of the mountain streams favour its formation. The alluvial fan sometimes grows till it is many miles across, and several fans made by neighbouring streams often unite to form a continuous plain, known as a *piedmont alluvial plain*; under these conditions the depth of alluvial material may be hundreds of feet. Much of the water of a stream is absorbed by the loose material of its fan, and the soil formed by the fan is often of great agricultural value.

ALLUVIAL PLAIN. A level tract bordering a river on which *Alluvium* is deposited; it may be situated on a *Flood-Plain*, on a *Delta*, or on an *Alluvial Fan*.

ALLUVIUM. The surplus rock material consisting mainly of sand and silt, which a river has carried in suspension, and which it has been forced to deposit. Some of the most fertile land in the world consists of alluvium deposited in the deltas of the great rivers.

ALPINE. Belonging to the Alps, or, alternatively, to the higher regions of a mountain system. More strictly, the term refers to the mountainous region lying above the coniferous forests and below the permanent snow, i.e. between the *Timber Line* and the *Snowline*; the

climate of this region is often known as the *Alpine climate*. In the European mountain system known as the Alps, the word 'alps' is used specifically to signify the grasslands, or Alpine pastures, which occur in the Alpine region.

**ALTIMETER.** A type of aneroid *Barometer*, used principally in aircraft, which is graduated to show the approximate height above the ground or above mean sea level, instead of the atmospheric pressure.

**ALTITUDE.** (1) Vertical distance above *Mean Sea Level*, usually measured in feet or metres.

(2) Angular distance above the horizon measured in a vertical plane, e.g. of a heavenly body.

**ALTOCUMULUS.** A type of medium *Cloud* which in general consists of a mass of small, relatively thin, globular patches, sometimes so close together that their edges join.

**ALTOCUMULUS CASTELLATUS.** A variety of *Alto cumulus* cloud, in which many of the cloudlets have developed turreted tops.

**ALTOSTRATUS.** A type of medium *Cloud* in the form of a continuous sheet or veil, which is sometimes thin, sometimes so thick as completely to obscure the sun or moon. Normally the sun or moon shines through it indistinctly, with a gleam. It resembles thick *Cirrostratus* cloud, but does not give a halo with sun or moon. Thick altostratus cloud frequently gives a period of continuous rain.

**ANABATIC WIND.** A local wind caused by the flow of air during the day up valleys and mountain slopes; the slopes become heated by the sun, the air above rises in a *Convection* current, and the air of the anabatic wind moves in to take its place. An anabatic wind thus often alternates with the night-time *Katabatic Wind*. See *Valley Wind*.

**ANEMOGRAM.** The continuous record of wind speed and often also of direction made by an *Anemograph*; both traces show rapid fluctuations caused by eddies due to obstacles in the path of the wind at the surface.

**ANEMOGRAPH.** A self-recording *Anemometer* which gives a continuous trace of the speed and often also the direction of the surface wind. One of the best-known types is the Dines tube anemograph, in which the wind pressure acts upon the opening of a tube which is arranged as a vane always to face the wind; the pressure is transmitted via the tube to a float carrying a pen, and the height of the latter above the zero position on the *Anemogram* – which is fixed to a rotating drum – indicates the wind speed.

**ANEMOMETER.** An instrument by which the velocity and often also the direction of the wind is measured, usually in miles per hour or metres per second. The commonest type is that in which a system of cups is employed. One type, for instance, shows the rate of rota-

tion of the cups, so that the wind velocity can be obtained, by means of a speed indicator. A very open exposure is required, in order to reduce the effect of eddies and gusts.

ANEROID BAROMETER. See *Barometer*.

ANEROIDOGRAPH. A self-recording aneroid *Barometer*. See *Barograph*.

ANNULAR ECLIPSE. See *Eclipse, Solar*.

ANTARCTIC CIRCLE. The parallel or line of latitude drawn at  $66\frac{1}{2}^{\circ}$  S. Owing to the inclination of the earth's *Axis*, the sun does not set here on one day of the year, about December 22, the southern midsummer; similarly, the sun does not rise about June 21, the southern midwinter. Within the *Antarctic Circle*, the number of such days increases with nearness to the Pole. At any particular time of the year, conditions are the converse of those at the *Arctic Circle*.

ANTECEDENT RIVER. A river which has cut through land that has risen in its path, and so has maintained its course: so called because it is antecedent to the present topography.

ANTHRACITE. The hard, shiny black coal which is the coal of highest rank, i.e. containing the lowest proportion of water and volatile matter and the highest fixed carbon content; it is usually considered to represent the final product in the transformation of vegetable matter through *Peat*, *Lignite*, and *Bituminous Coal*.

ANTHROPOGEOGRAPHY. The study of the distribution of human communities on the earth in relation to their geographical environment; it thus bears the same relation to Anthropology as *Biogeography* does to Biology, and as *Zoogeography* does to Zoology, etc. Some geographers assume it to be synonymous with Human Geography.

ANTICLINE. The arch or crest of a *Fold* in rock strata. See *Syncline*.

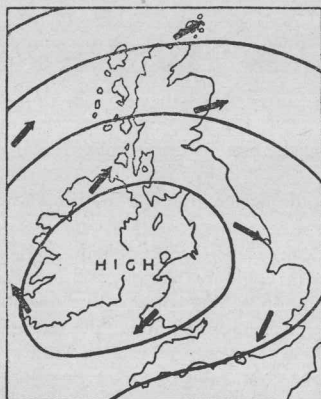
ANTICLINORIUM. A huge arch, in form resembling an *Anticline*, each limb of which consists of a number of small *Folds*.

ANTICYCLONE. A region in which the atmospheric pressure is high compared with that of adjacent areas, and which shows at least one closed *Isobar*; generally there is a series of concentric closed isobars, approximately circular or oval in shape, the highest pressure being at the centre. In the northern hemisphere the general wind circulation is clockwise round the anticyclone, in the southern hemisphere anti-clockwise. Near the centre the winds are usually light and variable, often calm, but increase in strength somewhat towards the edge of the anticyclone.

In the temporary anticyclones of temperate latitudes, quiet, settled weather conditions are characteristic, in contrast to the weather of *Depressions* or cyclones; in summer, skies are often cloudless, and temperatures relatively high, but in winter there is so much radiation that the lower layers of air become excessively cooled, and often

fog also results. Such anticyclonic conditions may persist for a considerable period, for anticyclones move very slowly, and often remain almost stationary for several days.

In addition to these temporary anticyclones, there are two great belts of permanent anticyclones, situated mainly over the oceans at about  $30^{\circ}$  N. and  $30^{\circ}$  S., which move slightly northwards and southwards, and also extend and diminish, with the seasons. See *Horse Latitudes*. Seasonal anticyclones form, too, over the great land masses in winter, the most noteworthy example being the Siberian anticyclone.



*Arrangement of Isobars and surface winds in an Anticyclone (N. Hemisphere).*

**ANTIPODES.** Two places situated on opposite sides of the earth, so that a straight line drawn through the earth from one to the other passes through the centre. London, England, and Antipodes Island, south-east of New Zealand, for example, are approximately antipodes to each other; the island is actually opposite to a point just north-west of Barfleur, on the coast of Normandy. To be exact antipodes, two places must be distant from each other by  $180^{\circ}$  of longitude, and one must be as many degrees N. latitude as the other is S. latitude. At antipodes, both the seasons and day and night are thus opposite: e.g. winter at one is simultaneous with summer at the other, and noon at one is simultaneous with midnight at the other. The term is often extended to include the whole region on the opposite side of the world from a given place.

**ANTI-TRADES or COUNTER-TRADES.** The winds of the upper air experienced in the regions of the *Trade Winds*, and blowing in the

reverse direction to those on the surface; e.g. in the region of the NE. Trade Winds (i.e. NE. at the surface), the upper wind, the anti-trade, is SW. The anti-trades are believed to be return currents, carrying the air brought equatorwards by the Trade Winds back to higher latitudes. The term is sometimes wrongly used to denote surface winds which are opposite in direction to the Trade Winds; e.g. the SW. surface winds of the North Atlantic region, opposite in direction to the NE. Trade Winds.

**APHELION.** The position of the earth in its *Orbit* when it is at its greatest distance from the sun, i.e. about three million miles farther away than when it is at *Perihelion*. It reaches this position during the northern *summer*; the northern hemisphere then receives the direct rays of the sun, the days are of maximum length, and the increased *Insolation* more than counterbalances the greater distance from the sun.

**APOGEE.** The position in the orbit of the *Moon* or of any planet when it is at its greatest distance from the earth.



*The group of islands, or Archipelago, of the Aegean Sea.*

**APPARENT TIME.** Solar time, or time as indicated by the apparent motion of the sun, and registered, for instance, by a sundial. Apparent noon at any point on the earth's surface, then, is the instant when the sun reaches the highest point of its apparent diurnal path – or when the shadow of a vertical object is shortest.

**AQUAFER OR AQUIFER.** A porous, tilted layer of rock, lying between impermeable layers, so that surface water may percolate through it and travel long distances.

**ARCHAEOAN ERA.** See *Pre-Cambrian Era*.

**ARCHIPELAGO.** (1) A sea studded with islands, originally applied to the sea now known as the Aegean Sea. (See Fig. on p. 13.)

(2) A group of islands.

**ARCTIC CIRCLE.** The parallel or line of latitude drawn at  $66\frac{1}{2}^{\circ}$  N. Owing to the inclination of the earth's *Axis*, the sun does not set here on one day of the year, about June 21, the northern midsummer; about December 22, the northern midwinter, the sun does not rise. Within the Arctic Circle, the number of such days increases with nearness to the Pole. At any particular time of the year, conditions are the converse of those at the *Antarctic Circle*.

**ARÊTE** (French). A sharp mountain ridge, often formed by the erosion of two adjoining *Cirques*. On many mountain masses, cirque erosion has taken place from several sides, leaving a series of arêtes radiating from the summit.

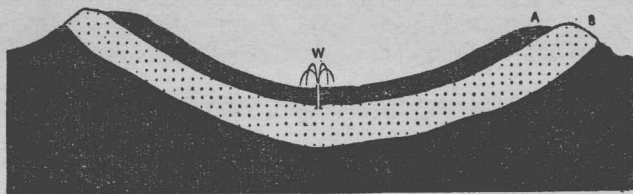
**ARGON.** An inert gas present in the atmosphere to the extent of rather less than 1 per cent of dry air.

**ARID.\*** Deficient in *Rainfall*: usually applied to a climate or a region in which the rainfall is barely sufficient to support vegetation, sometimes – quite arbitrarily – to one in which the average annual rainfall is less than 10 inches.

**ARROYO** (Spanish). A stream bed, situated in a desert area, which is normally dry, but is transformed into a temporary watercourse, even a torrent, after heavy rain; when the rain has ceased, the water soon subsides, and the bed dries up again. The term is mainly used in North and South America. See *Wadi*, *Nullah*.

**ARTESIAN WELL.** A type of *Well* which normally gives a continuous flow, the water being forced upwards by hydrostatic pressure; this pressure is due to the outlet of the well being some depth below the level of the source of the water. It is often found where a basin-shaped, permeable layer of rock, such as chalk, is sandwiched between two impermeable layers, such as clay, so that rain falling on the *Outcrop* of the permeable layer will filter through and collect underground. As the water cannot escape below, the permeable layer becomes saturated to the rim of the basin, and if a well is sunk through the upper impermeable layer into it, the water flows into the well. Should the *Water Table* at the outcrop, i.e. the source of the water, be sufficiently high, the water in the well will gush out above the ground, possibly as a fountain, without the necessity of pumping. An artesian well may also be formed, for instance, on a coastal plain, where water passes downwards through a porous

layer of rock, lying between two impervious layers, towards the sea. The depth of artesian wells varies considerably; some are only a few feet deep, others hundreds or even thousands of feet. Many small towns and villages rely on them for their supply of water. They are specially valuable for irrigation in semi-arid regions, such as the Great Plains of the United States and parts of Australia. The name is derived from Artois, the French province where some of the earliest artesian wells were constructed.



*A type of Artesian Well: B is a permeable layer, A and C impermeable layers, W is the well.*

**ÅSAR.** In Scandinavia, an *Esker*.

**ASH CONE or CINDER CONE.** The conical hill or mountain built up with the ejected material from a *Volcano*.

**ASH, VOLCANIC.** See *Volcanic Ash*.

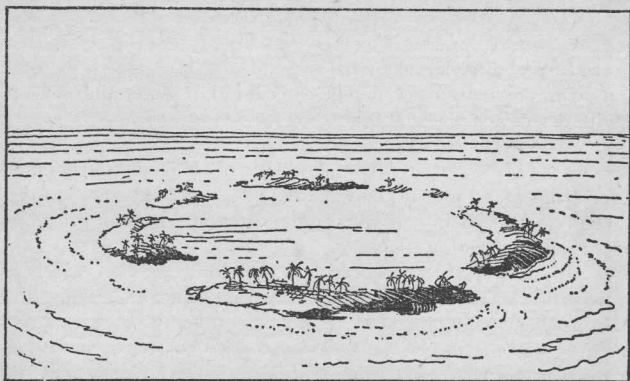
**ASTEROID or PLANETOID.** A minor *Planet*, of which there are many, revolving round the sun between the orbits of Mars and Jupiter. The largest is about 500 miles in diameter, the smallest probably less than ten miles in diameter.

**ATLAS.** A collection of maps bound into a volume.

**ATMOSPHERE.** The envelope of air which surrounds the earth, consisting principally of a mixture of gases – mainly *Oxygen* (21 per cent), *Nitrogen* (78 per cent), *Carbon Dioxide* (.03 per cent), *Argon* (nearly 1 per cent), *Helium* and other rare gases (.01 per cent) in dry air, and a variable quantity of water vapour. The nitrogen, a chemically inactive gas, serves merely to dilute the more important oxygen. With increasing height above the earth's surface, the atmosphere becomes more and more rare, but within the layers through which adequate investigations have been carried out, the relative proportions of the gases (excluding water vapour), remain almost constant. From the viewpoint of climate and general weather conditions, the amount of water vapour present in the atmosphere, usually expressed as *Relative Humidity*, is of paramount significance; the *Temperature* of the atmosphere and the *Atmospheric Pressure* are also important.

**ATMOSPHERIC PRESSURE.** The pressure at a point due to the weight of the column of air about that point. At the earth's surface this pressure equals about  $14\frac{1}{2}$  lb per square inch, and with increasing height above the surface, the overlying column of air being shortened, the pressure decreases. The atmospheric pressure is measured by a *Barometer*, and is normally registered in *Millibars*.

**ATOLL.** A *Coral Reef* in the shape of a ring or horseshoe, enclosing a *Lagoon*. According to Darwin's theory, an atoll began as a fringing reef round an island, then the island became submerged owing to subsidence, leaving only the ring-shaped reef enclosing a lagoon. According to Murray's theory, an atoll was formed on the top of a plateau or hill which rose from the ocean bed to a depth at which the reef-building corals live; the outer corals of a number of colonies grew most readily and reached the surface first, thus forming an atoll enclosing a lagoon. Neither theory, however, is entirely satisfactory, for atolls are formed in both these and probably in other ways.



*A typical Atoll in the Pacific Ocean.*

**AUREOLE, METAMORPHIC.** See *Metamorphic Aureole*.

**AURORA AUSTRALIS.** The light phenomenon seen in the southern hemisphere, corresponding to the *Aurora Borealis* of the northern hemisphere, being most often visible in latitudes higher than about  $65^{\circ}$  S.

**AURORA BOREALIS OF NORTHERN LIGHTS.** The light phenomenon seen in the sky at night in the northern hemisphere, mainly in the higher latitudes. Aurora comprises an electrical discharge, and