

Glossary of terms

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Abacus: the top moulding of a capital, derived from the Greek *äbaxí*.

Abrasive - Hard, fine particles used to polish metals, stone, wood, glass and other materials. Naturally occurring materials used as abrasives include diamond, emery, corundum, sand, crushed garnet, quartz, pumice, diatomite, kaolin, fuller's earth, talc, chalk and cuttlefish bone. Manufactured materials used as abrasives include silicon carbide, aluminium oxide, zirconium oxide, titanium dioxide, green rouge (chromic oxide), tin oxide, cerium oxide, glass, boron carbide, boron nitride and diamond. Abrasives are sold as powders, slurries and as abrasive clothes, papers and wheels. They are characterised by hardness and particle size. Their hardness can be measured on the Mohs scale in which the diamond is rated as a 10. Mild abrasives, such as chalk and talc, have a hardness of 1-2 Mohs. Diamond and silicon carbide are hard abrasives. Particle size depends on the mesh of the sieves used for separation, i.e. a 600 grit abrasive contains particles 8 micrometers and smaller.

Synonyms: diamond; emery; corundum; sand; garnet; quartz; pumice; diatomite; kaolin; fuller's earth; talc; chalk; cuttlefish bone; silicon carbide; aluminium oxide; zirconium oxide; titanium dioxide; green rouge; chromic oxide; tin oxide; cerium oxide; glass; boron carbide; boron nitride; steel wool; abrasive paper; lubrisil, micromesh; abrasive powder; crocus powder; jewellers rouge; rottenstone; tripoli powder; whiting.

AC - asbestos cement.

Acanthus: a plant commonly called *äBearís beechí* whose leaves are often used for decorating the Corinthian and composite capitals.

Acceleration - (1) An increase in velocity or rate of change. (2) The ordered or voluntarily expedited performance of construction work at a faster rate than anticipated in the original schedule, the purpose of which is to recapture project delay. This is accomplished by increasing labor hours and other resources. (3) The speeding up of the setting or hardening process of concrete by using an additive in the mix. The process of acceleration allows forms to be stripped sooner or floors finished earlier.

Accelerator - A compound that speeds up a chemical reaction. When added to paint, concrete, mortar, or grout mix, it speeds the rate of hydration and thereby causes it to set or harden sooner. For example, alum is used to decrease the setting time of plaster of Paris or Portland cement and metallic soaps are used to hasten the drying time for oil paints.

Synonyms: promoter; activator; accelerant; drier.

Acoustical plaster - A sound-absorbent plaster. Acoustical plasters, developed in the 1920s, were made porous and sound-absorbing by the incorporation of fibrous or porous aggregates, such as wood, mineral wool, cork or asbestos. An alternative method called Hushkote, incorporated yeast in the plaster mixture to generate bubbles that would increase the porosity. By 1945, spray-applied acoustical coatings were available (Spray-Acoustic). These generally incorporated mineral wool or asbestos in a fireproof binder.

Synonyms: Sabinite plaster; Akoustilith plaster; Macoustic; Kilnoise; Kalite; Hushkote.

Acroteria: small pedestals found at the extremities and apex of a pediment. Originally intended to support figures. Can also be termed *äpinnaclesí*.

Acrylic resin - Colourless, thermoplastic polymer or copolymer of acrylic acid, methacrylic acid or acrylonitrile. Acrylic resins are a commercially important family of polymers that were first discovered in 1880 by the Swiss chemist Georg W.A. Kahlbaum. Otto Röhm of Germany thoroughly described their production in his doctoral

thesis (1901) then later patented the process in 1915. Polymethyl methacrylate was first marketed by Rohm and Haas in Germany in 1927. Acrylics have been sold as glass substitutes and as adhesives, varnishes and paint media. Acrylic resins range from soft, tacky materials to hard solids. They are glossy, crystal clear with good shock and water resistance. They are stable to outdoor weathering and resistant to chemicals including by mild acids and bases. Acrylics are used as paints, coatings and adhesives.

Synonyms : acrylics; acrylate; methacrylate; Plexigum® [Rohm & Haas]; Lucite® [DuPont]; Paraloid® [Rohm & Haas]; Elvacite® [DuPont]; Plexiglas® [Rohm & Haas]; Perspex®; Magna [Bocour]; Liquitex [Permanent Pigments]; Shiva [Shiva]; Hyplar [Grumbacher]; Aqua-tec [Bocour].

Active hydraulic binder: a hydraulic binder which acts without the addition of an activator such as lime. In effect this includes hydraulic cements and hydraulic limes, but excludes pozzolans.

Additive - A substance that is added to a material to enhance or modify its characteristics, such as curing time, plasticity, colour, or volatility. Additives were used for the preparation of stucco marble. The aim of inorganic additives is to increase hardness, resistance, and durability and to retard setting. They are added at some stage of the working process. The aim of adding organic substances is either to improve the workability, to harden the mass, to retard setting, or to influence the mechanical properties of the stucco mass in a way that it can be polished so that a sufficient gloss is obtained.

Adhesive - A substance that adheres one surface to another. Those which have been used for several millennia are also known as glues, the weaker, more refined ones often being called size. Adhesives may be classified as inorganic and organic adhesives. Examples of inorganic adhesives are water glass, plaster of Paris and Portland cement. Organic adhesives may be subdivided by origins into animal (hide, bone, blood, casein, etc.), vegetable (starch, gum, resin, etc.) and synthetic (acrylic, vinyl acetate, cyanoacrylate, epoxy, silicone, etc.). Adhesives provide a wide selection of properties, solubility, tackiness, bonding time and bonding strength. They can be used on nearly every kind of surface. In some cases, surface treatment, abrasion or an adhesion promoter may be needed to increase the strength or durability of the adhesive bond. Synonyms: mastic; cement; glue; size; mucilage; paste.

Admixture - An ingredient other than cement, aggregate, or water that is added to a concrete or mortar mix to affect the physical or chemical characteristics of the concrete or mortar. The most common admixtures affect plasticity, air entrainment, and curing time.

Aggregate: the hard filler materials, such as sand and stones, in plasters and renders.

Air-entraining agent - An additive to hydraulic cement or an admixture for concrete or mortar that causes air to be incorporated in the form of minute bubbles on the concrete or mortar during mixing, usually to increase its workability and frost resistance. Air-entrained Ordinary Portland Cement contained agents, such as calcium lignosulphate, which entrain 4%-5% minute, discontinuous uniformly distributed air bubbles, The density reduction may mean a decrease in strength of up to 15%.

Ashurst (1983); RS Means Building Glossary (undated)

Air-entraining hydraulic cement - Hydraulic cement containing an air-entraining addition in such amount to cause the product to entrain air in mortar within specified limits.

Air limes: limes which set through carbonation rather than through chemical reaction with water.

Air slaked lime: the mixture of calcium carbonate, hydroxide and oxide which results when a quicklime slakes naturally in moist air.

Albarium - A white lime used for stucco.

Alabaster - A fine-grained marble-like mineral of gypsum (hydrated calcium sulphate). Alabaster is usually a translucent white or pink but may also be a muted red, yellow or grey. It is soft and can be scratched slightly with a fingernail. It also dissolves slowly in wet environments. Alabaster was used since ancient times in the Near East, Egypt, Greece and Italy for ornamental building work, sculpture, vases and small decorative carvings. Powdered alabaster has been used as a paint pigment called mineral white or terra alba. The word alabaster is derived from the Greek word for substance. In ancient times, it was used to refer to several other minerals such as limestone onyx, travertine and calcite.

Synonyms: gypsum; satin spar; alabastrine.

Alabaster-gypsum - It is mentioned as the basic material of scagliola according to various written sources.

Albumen - The protein mixture found in egg whites. It has and is used as an adhesive, coating, and binder. See also egg white. Synonyms: egg white; albumin.

Albumin - A naturally occurring, water-soluble protein found in egg white, milk and blood. When spelled as albumen, the use generally refers only to egg white protein. Albumin is a strong, coagulating protein that is used in adhesives and varnishes. Dried albumin powder is yellowish and forms a colourless solution in water. Albumin proteins will remain water soluble unless heated to temperatures above 50°C (122°F) or exposed to intense or long-term light. Albumin is listed among the organic additives used for the preparation of stucco marble according to literature. According to Cröcker, egg-albumin was especially used for white marble imitations on sculptures. See also albumen, egg white, and casein.

Synonyms: albumen; egg white

Alcove: a recess in a wall or room often vaulted or coved.

Alite - The primary constituent of Portland cement clinker. Alite is composed of tricalcium silicate and small amounts of magnesium oxide, aluminum oxide, ferric oxide, and other materials.

Alizarin, natural - Natural alizarin is a red colorant extracted along with purpurin from the roots of the madder plant, *Rubia tinctoria*. The chemical name for alizarin is 1,2-dihydroxyanthraquinone. It has been used as a dye and pigment since ancient times. The colorant was first isolated in 1862 by Colin and Robiquet in France. The synthetic form of alizarin was first made in 1868 by Carl Graebe and Carl Lieberman, from anthracene.

Synonyms: madder; alizarine; 1,2-dihydroxyanthraquinone; Natural Red 6, 8-12; CI 75330.

Alum - A general name used for aluminium sulphate salts. Most commonly the term alum, or potash alum, refers to aluminium potassium sulphate. It is a colourless, crystalline material. Other materials referred to as alum are aluminium sulphate or the mixture of aluminium sulphates obtained by treating pulverised bauxite with sulphuric acid, ferric ammonium sulphate, chromium sodium sulphate and chromium ammonium sulphate. Alum is listed among the inorganic additives used for stucco marble preparation according to literature. See also : alum-gypsum.

Synonyms: aluminium potassium sulphate; aluminium ammonium sulphate; aluminium sulphate; alum cake; alunite.

Alum-gypsum - It is a mixture of CaSO₄ with alum - i.e. plaster of Paris soaked with alum solution, then burnt again and finely ground. After setting, it obtains high mechanical strength and hardness. According to Leixner, alum-gypsum, also called marble-gypsum, has been primarily used up to the 1960s.

Aluminous cement - See cement.

Ammonium carbonate - A white powder that smells strongly of ammonia. Ammonium carbonate slowly decomposes in air to form ammonia and carbon dioxide. It is used in ammonium casein glue. Ammonium carbonate is commonly called hartshorn because it was historically prepared by the destructive distillation of the antlers from harts (red deer). Hartshorn is actually composed of a double salt of ammonium bicarbonate and ammonium carbamate.

Synonyms: hartshorn; volatile alkali; carbonate of ammonia; smelling salts; crystal ammonia; ammonium sesquicarbonate; sal volatile; rock ammonia.

Angles: intersections of plaster or render surfaces at varying degrees. Can be either internal or external angles.

Angle bead or Angle-staff: a round member found at exterior angles.

Anhydrite CaSO_4 - A naturally occurring mineral of anhydrous calcium sulphate that is often found in gypsum deposits. Anhydrite was first identified as a mineral in deposits at Innsbruck, Austria. Anhydrite can be transparent or translucent and has a lustrous sheen. It occurs in several colours such as white, grey, blue, pink, red and lavender. Anhydrite was used in ancient Egypt for carved objects and vessels, many of which are in the shape of animals (Fay, 1998). It is used in the manufacture of Portland cement to control the set.

Synonyms: blue marble; calcium sulphate.

Anhydrous lime - See lime.

Animal black - An impure black carbon pigment prepared from burnt animal bones.

Animal black, or bone black, contains about 10% carbon along with 84% calcium phosphate with smaller amounts of magnesium phosphate and calcium carbonate. The blue-black pigment is denser than carbon black and has a good working quality for oil paints and watercolours. A fine particle grade of bone black is now sold as ivory black and an inferior grade has been sold under the name of Paris black. Drop black is dried lumps formed after bone black is mixed with water and glue. Drop black was commonly used in the 19th century for house paints.

Synonyms: bone black; ivory black; drop black; Frankfort black; German black; Pigment Black 9; CI 77267; Paris black; abaiser.

Animal glue - A strong, liquid adhesive consisting primarily of gelatin and other protein residues of collagen, keratin or elastin. The primary amino acids in animal glues are: glycine (24.7%), proline (13%), alanine (10.1%), glutamic acid (9.7%), arginine (8.2%) and hydroxyproline (7.4%) (Mills and White 1994). Gelatin (size) is similar to glue, but purer and better refined. Animal glue has been made from ancient times from bones, skins and intestines of animals (fish, goats, sheep, goats, cattle, horses, etc.). These agglutinating materials are hydrolysed and broken down in boiling water; the cooled solution yields a jelly-like substance which is gelatin or glue. The water soluble glue occurs in a wide variety of forms and colours ranging from transparent to opaque and white to brown. Glue is soaked in cool water to form a turbid jelly that will become clear and thinner with gentle heating. Glue will decompose and darken when it is boiled. Top-quality animal glues are made from rabbitskin, sturgeon bladders and parchment clippings. Hide glues are used in the manufacture of gessoes, gilding and paints. Animal glues are available as, pellets, hot melts or a liquid solutions (with a plasticizer or preservative).

Synonyms: glue; gelatin; size; isinglass; fish glue; bone glue; parchment glue; Cologne glue; calfskin glue; nikawa; hide glue; rabbitskin glue; sturgeon glue; pearl glue; carpenter's glue; scotch glue.

Annulet: a ring - often applied to the fillets under the Doric Capital.

Antifreeze - An additive used to lower the freezing point of a liquid. When added to fresh mortar or rendering, the anti-freeze additive increases the rate of heat evolution by accelerating the set. The additive is here often calcium chloride.

Applique: moulded or carved ornament fastened to a subject as distinguished from being planted, which is embedded in its surface.

Aqua regia - Common name for an acid mixture that contains 3 parts hydrochloric acid and 1 part nitric acid. Aqua regia was used to produce tin chloride, also called killed spirits, in the 18th century. This dark red colorant was made by dropping a block of tin in the aqua regia solution. Aqua regia will dissolve all metals except silver.

Synonyms: nitrohydric acid; yellow fuming liquid; nitro-muriatic acid; nitrohydrochloric acid; chloronitrous acid; chlorazotic acid.

Arabesque: a scroll ornamentation of leaves, animals and humans shapes.

Arcade: a series of arches.

Arch: a system of bridging over an opening, resting onto piers and having a curved soffit, intrados or archivolt. They can be semicircular, segmental, stilted, pointed/triangular, curved or horseshoe form.

Architectural coating - A paint or varnish designed for use on the interior and exterior of buildings. Architectural coatings are used for protection and decoration on residential, commercial, institutional and industrial buildings. Under normal weathering and use, the lifetime of an architectural coating is expected to be 5-20 years.

Architrave: a moulding formed around a door or window opening, the lowest member of an entablature.

Archivolt: the moulding around an arch.

Armature: a rod or framework of iron or other material built into a surface, usually a wall or ceiling, for the purpose of strengthening or providing additional support to build up plaster or render to form features in relief, usually decorative.

Arris: the sharp or external angle formed by the intersection of two plane or curved surfaces.

Artificial pozzolan: A man-made material which will react with lime and water to give a hydraulic set, eg. brick dust.

Argillaceous limestone - A limestone that contains a significant amount of clay.

Argillaceous limestone is used in cement manufacturing.

Synonyms: pelitic; cement rock.

Artificial marble - A synthetic, moulded stone prepared to imitate the appearance of marble. One type of artificial marble, called Marbelite, is made by heating potassium alum in water then adding 10% heavy spar and marble dust (Brady 1971). Another type of artificial marble, called Exsilite, is made by fusing grains of silica and pigments to form a slab that simulates onyx marble. Artificial marble is one historic technique for decorating architectural surfaces. Other techniques besides artificial marble are scagliola, stucco marble, stucco lustro and marmorino. See also : artificial stone
Synonyms: Marbelite; Exsilite.

Artificial stone - Any mixture of cement or plaster prepared to imitate the appearance of natural stone. In early Egyptian tombs and Roman buildings, walls were coated with lime and gypsum plaster then painted to simulate the appearance of natural stone (Proudfoot 1996). By the 16th century, recipes for artificial stones included marble dust, lime and glue. Manufacturing centres were preparing cast stones based on terra cotta (Coade Stone) or cement (Pulham stone, Haddon stone) by the mid 19th century for use in buildings, statuary and decoration. Also in the 19th century, various mixtures of modified gypsum plasters, such as Keene's cement, crushed stone and colouring materials were patented as artificial marbles, many of which were cast into slabs for interior decoration. Cement, mixed with sand and crushed stone, and often referred to

as cast, reconstituted or reconstructed stone, was widely used from the late 19th century in Europe and North America to produce balustrades, columns, architraves, arches and tracery windows. Various aggregates such as granite and other stone dusts, slag and crushed brick were used to produce a range of colours and textures; pigments could also be introduced. Artificial stone can often be distinguished from natural stone by its appearance and by the fact that the latter is colder to the touch. More precise identification of the simulant can involve microscopic examination and chemical analysis of its components.

Synonyms: cast stone; reconstructed stone; reconstituted stone; oxychloride cement; renders; Victoria stone; Protean stone; Frear stone; Siliceous Concrete Stone; Coade's stone; Ranger's artificial stone; Permastone; Pulham stone; Haddon stone; Bradstone; Empire Stone; Pulhamite Stone; Guattaris marble; artificial marble; scagliola; marezzo; stucco lustro.

As dug (sand): sand exactly as it is dug from the quarry, without any sieving or washing.

Asbestos - A common name given to any of several fibrous silicate minerals. The most widely used asbestos mineral is a type of serpentine called chrysotile (white asbestos). Other asbestos minerals are: riebeckite, crocidolite (blue asbestos), amianthus, anthophyllite, amphibole, amosite (brown asbestos), tremolite, or actinolite. Asbestos is non-combustible and heat resistant. It was used by the ancient Greeks, Egyptians and Chinese as a fireproof fabric. In the 19th and early 20th centuries, asbestos was used for fireproofing and insulating new houses. Small asbestos fibres were mixed with binders and compressed into boards, shingles, tiles and sprayed onto ceilings. Health concerns have limited the use of asbestos since the early 1960s. In the U.S., it was declared a hazardous material in 1986.

Synonyms: amphibole; asbestus; serpentine; earth flax; chrysotile; cork fossil; mountain leather; mountain cork; mountain flax; mineral fibre; amosite; crocidolite; silicate fibre; amianthus; riebeckite; anthophyllite; tremolite; actinolite; salamander wool.

Ash (residue) - A greyish white to black powdery residue that remains after a substance has burned. The residual ash is composed of non-combustible, or mineral, matter such as silica, alumina, iron oxide, clay, etc. Ash from plant material generally contains high amounts of lime, sodium carbonate and/or potassium carbonate. Wood ash was the principal source for potassium for several hundred years. Phosphorus was obtained from the ash of animal bones (calcium phosphate). Ash from sea plants contains high amounts of iodine.

Ashlar: squared and regular masonry finish. External plasters/renders are often applied with a smooth and plain face marked and scribed to imitate the block form of Ashlar masonry.

Astragal: a small round moulding which encircles the top or bottom of a column. Often separates the column shaft from the capital.

Atlantes: male figures used instead of columns.

Autogenous healing: the self healing of fine cracks in a plaster or render from the binder already in that plaster. Free lime is transported by moisture into the cracks.

Axis: a straight line, real or imaginary which passes through the centre of a building or object

Azurite $2\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ - A deep blue mineral composed of basic copper carbonate that is naturally found with the green copper carbonate mineral called malachite. Azurite and malachite have been used as gemstones and paint pigments since before 3000 BCE. They are prepared as pigments by careful selection, grinding, washing and levigation. Coarsely ground azurite gives a deep blue colour while finely ground particles give a lighter more transparent tone. Azurite is lightfast but is sensitive to acids

and sulphur fumes. Basic copper carbonate can also be made artificially by colouring chalk with copper sulphate. The synthetic pigment, called blue verditer, blue bice, Bremen blue or ashes blue, tends to have regularly sized particles with rounded edges. The colour is similar to finely ground azurite. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: blue verditer; mountain blue; Pigment Blue 30; CI 77420; ashes blue; Bremen blue; blue bice; Armenian stone; lapis armenius; chessylite; blue malachite; mineral blue; basic copper carbonate; basic cupric carbonate; copper blue; chessy copper; bleu d'Allemagne (Fr.); Bergblau (Ger.); Bergasur; Azurit (Ger.); azurite (Fr.); azzurrite (It.); azzurro della magna (It.); azurita (Sp.); azurium citramarinum.

Background: a surface other than any plaster rendered surface on to which plaster or render is applied eg: stone, brick, concrete, lathing, etc.

Backing: the plaster or render undercoats applied to a background. Also called render coat, floating coat or scratch coat.

Bagged lime: usually dry hydrate of lime. Calcium hydroxide in a dry power form and sold in sacks.

Ball flower: a formed Gothic moulding representing four curved and rounded petals enclosing a ball.

Baluster: a small round or square pillar or pilaster, serving to support a rail or cornice, generally ornamented with mouldings and other decorations.

Balustrade: a connected series of balusters surrounding balconies, terraces, parapets, steps, staircases, tops of houses, etc. They are sometimes used solely as ornaments.

Band: a flat often profiled moulding.

Bandeler: a plain moulding

Banker: a raised board on which plaster is stored beside the plasterer for immediate use.

Baque: an annular moulding.

Base or Base moulding: the lower part of a column, pedestal or wall.

Bas-relief: a model or cast in which the figure or figures do not project in full from the ground.

Batter: where a wall is built intentionally with a sloping face ? the slope is termed 'the batter'.

Bay: a compartment of a building; the space between two pairs of columns or two roof principals.

Bay-window: a bow-window; projecting beyond or from the general surface of the building.

Bead: a small round moulding.

Beaded: a string of balls or beads; often used as a moulding.

Beeswax - A wax produced by many species of bees; the most common is *Apis mellifica*. Beeswax is secreted from the organs on the underside of the abdomen of the worker bees to form honeycomb cells. The wax is prepared for use by first melting the combs in hot water then filtering out the impurities which may contain resins, sugars, and plant materials. The waxes from different localities and species can vary considerably in colour (light yellow to dark brown), texture and chemical composition. The darker varieties are often bleached by exposure to light and air or with chemicals. Beeswax contains about 10-14% hydrocarbons in addition to alcohols, fatty acids and esters. The primary component is myricyl palmitate ($C_{15}H_{31}COOC_{30}H_{61}$). Punic wax is refined beeswax. Beeswax has been used as a protective coating, adhesive, paint binder, and plasticizer. Oil was often applied to the surface of stucco marble to increase the gloss of an already well polished surface often followed by further wax treatment: in these cases, wax, sometimes beeswax, was applied to the surface with a linen cloth.

Synonyms: punic wax; crude beeswax; bleached beeswax; yellow beeswax; white beeswax; virgin beeswax; ghedda wax; cera colla.

Bed-mould: the moulding under the bold projection of a cornice or frieze.

Bevel: a slope made by cutting of an angle except one of 90°. Anything that is not square is generally called a bevel angle.

Binder - (1) Almost any cementing material, either hydrated cement or a product of cement or lime and reactive siliceous materials. The kinds of cement and the curing conditions determine the general type of binder formed. (2) Any material, such as asphalt or resin, that forms the matrix of concretes, mortars, and sanded grouts. (3) That ingredient of an adhesive composition which is principally responsible for the adhesive properties that actually hold the two bodies together.

Bitumen - A common name for the organic, or hydrocarbon, portion of asphalt. Bitumen is a dark brown or black solid to semisolid material. It was used by ancient Egyptians as an adhesive. Bitumen is currently used in hot-melt adhesives, coating, paints and sealants. It is also used as a waterproof binder or protective coating. The name bitumen has been used as a synonym for asphaltum, tar, and pitch and was also used as a commercial product name for a transparent, brown artists pigment made from asphalt.

Synonyms: asphaltum; tar; pitch

Blended cement - A hydraulic cement consisting of an intimate and uniform blend of (a) granulated blast-furnace slag and hydrated lime, (b) Portland cement and granulated blast-furnace slag, (c) Portland cement and pozzolan, or (d) Portland-blast-furnace slag, cement, and pozzolan. Blended cement is produced by intergrinding Portland cement clinker with the other materials or by a combination of intergrinding and blending.

Blister: a scaly protuberance on the surface of plaster work, caused by the blowing or bursting of improperly burnt or slaked lime, or by the presence of foreign matter.

Blocking Course: a plain course of stone or cast stone over a cornice; a plain string course.

Blub: a trade term for holes in moulds, casts, and plaster work, caused by contained air and careless manipulation of the materials.

Blue Lias lime: a hydraulic lime prepared from some of the limestones in the Lias formation which runs across England and the south of Wales. This was used extensively for engineering and external work in the nineteenth century.

Boiled oil - A type of linseed oil processed with heat and metallic dryers to produce a faster drying product. Boiled linseed oil is not actually boiled but heated to about 130-150°C with small amounts of soluble dryers (organic salts of manganese, lead or cobalt). This treatment accelerates the drying process and makes the oil thicker. Boiled oils have been used for industrial paints, varnishes and waterproofing.

Bois durci - A brand name for an early plastic material made from albumen or blood mixed with sawdust from a hardwood such as ebony or rosewood. The sawdust could be mixed with any vegetable, mineral or metallic powders and the albumen with any other glutinous or gelatinous substance. The powder was soaked in albumen diluted with water, dried and then compressed in a steel mould under heat and pressure. The cooled mix formed a hard, dense, glossy product. Bois Durci was patented by FranVois Charles Lepage in Britain in 1856. It was produced between 1855 and the late 1880s, and was used to make decorative mouldings, usually in the form of plaques commemorating famous people.

Bond: the adhesion between the background and backing and the backing and finishing coats.

Bone black - An impure black carbon pigment prepared from burnt animal bones. Bone black, or animal black, contains about 10% carbon along with 84% calcium phosphate with smaller amounts of magnesium phosphate and calcium carbonate. The blue-black

pigment is denser than carbon black and has a good working quality for oil paints and watercolours. A fine particle grade of bone black is now sold as ivory black and an inferior grade has been sold under the name of Paris black. Drop black is dried lumps formed after bone black is mixed with water and glue. Drop black was commonly used in the 19th century for house paints. Bone black is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms : animal black; ivory black; drop black; Frankfort black; German black; Pigment Black 9; CI 77267; Paris black; abaiser.

Bone glue - A strong, liquid adhesive made from collagen in bones, sinew and cartilage. Bone glues are considered inferior to skin and parchment glues. They are often sold in granular form instead of sheets. Bone glue is mentioned as one of the organic additives used for stucco marble preparation according to literature. See also animal glue.

Synonyms: lining glue; animal glue

Boning: the operation to align or level angles, lines or objects by purely visual means. It is performed by placing two parallel straight edges on an object, and sighting on their upper edges to see if they range.

Boning-rods: are used for boning. They are made in the shape of the letter 'T'. The head giving the point of sighting.

Borax - A natural product composed of hydrated sodium borate. Borax is produced by the evaporation of water in shallow lakes. Borax was used by the Egyptians for mummification and by the Romans for glassmaking. In the 9th century, it was used as a flux for soldering gold in Arabia and by the 10th century, borax was being used in ceramic glazes in northern China. By the 13th century, tincal (borax) was regularly imported from Tibet to Europe for use in Venetian glass. The white powder is now mined from deposits in India, Russia, Persia and California. Borax was one of the inorganic additives used for stucco marble preparation according to literature. Borax was especially used for stucco or special gypsum-containing cements.

Synonyms: sodium borate decahydrate; sodium diborate; tincal; tincalconite; tincar; hydrated sodium boration; sodium tetraborate; rasorite; Sporax®.

Boss: an enrichment often used at the intersections and ends of Gothic mouldings.

Bowtel: a round moulding.

Bracket: a skeleton support for plaster mouldings, also used in solid plastering/rendering as a means for saving materials. Can be made of wood and metal, shaped to the required contour and fixed in position. In fibrous plastering they can give additional strength in the form of canvas and plaster covered members fixed on the backs of plaster casts, generally across the width.

Brazil wax - See carnauba wax

Breatheability: the extent to which a building material is able to allow moisture to move to the surface and evaporate harmlessly.

Breaks and returns: the interruption in the continuity of mouldings and plain surfacing is the break and the return is the continuance of the same work at a different angle.

Bremen blue - A synthetically prepared azure blue pigment composed of copper hydroxide and copper carbonate. Bremen blue was probably first made in the 18th century and was used in the 19th century for both distemper and oil based interior house paints. Its particles are more rounded and regular in size than natural azurite. See azurite, and copper carbonate, basic.

Synonyms: blue verditer; blue bice; copper blue; blue ash; lime blue; Neuwied blue; mountain blue

Brick - Standard rectangular block or tablet bonded on mortar joints in a regular arrangement or pattern for strength or decoration. The individual units, of reasonably

consistent size and shape, are generally lightweight and small enough to be picked up with one hand, allowing their positioning and setting in mortar to be accomplished by one person. Brick is made by pressing a form of clay, called brickearth, into a mould and then hardening it either by sun-drying or firing. It may contain varying quantities of chalk, lime or iron oxide which effect colour, density, texture and durability, as does the type of brickearth used.

Brown millerite - An oxide of calcium, aluminum, and iron commonly formed in Portland cement and high alumina cement mixtures.

Building lime: lime of a suitable nature and in an appropriate state for building uses.

Burnt gypsum - An archaic common name for plaster of Paris. Plaster is prepared by burning gypsum to drive off the water of crystallisation, thereby producing hemihydrate calcium sulphate. See plaster of Paris.

Synonyms: plaster of Paris; calcined gypsum; brime.

Burnt lime - See calcium oxide.

Burnt umber - A chocolate brown iron ore pigment made by burning umber. Burnt umber contains calcined raw umber, iron oxide plus manganese dioxide. It is a permanent pigment that has been used in oil and watercolour paints.

Synonyms: Caledonian brown; Cappagh brown; mineral brown; Turkey umber; Pigment Brown 7; CI 77492.

Bust: a portrait statue of a person comprising the head, shoulders and breast.

Cable moulding: moulding in the form of a strand of rope.

Caission: a sunken panel.

Calcareous (material): material containing chalk or other forms of calcium carbonate or lime.

Calcination: in this context the conversion of carbonate to lime.

Calcined plaster - Another name for calcium sulphate, hemihydrate. See plaster of Paris.

Calcite - The most common crystalline form of calcium carbonate. Calcite is widely distributed throughout the world as chalk, limestone, and marble. Iceland is famous for producing large clear calcite crystals that are used in optical systems (Iceland spar). In addition to clear colourless crystals, calcite may also appear white or pale shades of other colours depending on the crystal size and the presence of impurities. Marble is limestone that has been metamorphosed to form compact crystals of calcite. Calcite has been gathered or mined since Paleolithic times. In the form of chalk, calcite was powdered for use as a pigment. It is the main raw material used in the manufacture of Portland cement. Limestone and marble are used for sculpture and buildings.

Calcite limestone - A limestone that does not contain any more than 5% magnesium carbonate (Grimmer 1984).

Calcium aluminate cement - A combination of calcium carbonate and aluminates that have been thermally fused or sintered and ground to make cement.

Calcium carbonate CaCO_3 - A white powder that can occur in three crystalline forms: calcite (hexagonal-rhombohedral), aragonite (orthorhombic) and vaterite. Calcium carbonate occurs naturally in many forms such as chalk, limestone, marble and sea shells. It can be found world-wide and ranges in colour (because of impurities) from white to grey to yellow. A white pigment of calcium carbonate is prepared by grinding limestone, chalk or shells with water then using levigation to separate the coarser material. Artificial chalk, also known as precipitated chalk, is whiter and more homogeneous than natural chalk. Pearl white is made from calcined oyster shells. Synonyms: chalk; calcite (Eng., Fr., It.); calcita (Sp.); aragonite; pearl white; oystershell white; marble; limestone, whiting; lime white; marl; travertine; Pigment White 18; white earth; English white; Paris white; drop chalk

Calcium hydroxide $\text{Ca}(\text{OH})_2$ - A soft, white, alkaline powder. Calcium hydroxide, or slaked lime, is made by grinding quicklime (calcium oxide) with water; this forms a fine-grained precipitate. Calcium hydroxide absorbs carbon dioxide from the air forming calcium carbonate. It is used as a component in hydraulic cements because it will set underwater. Calcium hydroxide is also used, as a preservative in water paints. A saturated solution of calcium hydroxide, called limewater, has a pH of 12.4.

Synonyms: slaked lime; calcium hydrate; lime hydrate; caustic lime; limewater

Calcium oxide - White, alkaline lumps. Calcium oxide is a refractory solid that becomes incandescent at temperatures near its melting point (2500°C). Calcium oxide is primarily used in the manufacture of slaked limes for mortar, plasters and cements.

Synonyms: lime; quicklime; burnt lime; calx; unslaked lime; fluxing lime

Calcium sulphate CaSO_4 - Commonly found in three forms: anhydrous (anhydrite), dihydrate (gypsum) and hemihydrate (plaster of Paris). Anhydrite is a colourless, inert pigment which is often used as a paper filler. Calcium sulphate dihydrate is used in the manufacture of Portland cement. Gypsum is also used as a filler and pigment in paints, enamels, glazes and paper. Plaster of Paris is used for wall plaster, wallboard, mouldings and statuary.

Synonyms: anhydrite; gypsum; plaster; terra alba; alabaster; calcium sulphate; mineral white; crown filler; alabastine; pearl filler

Calcium sulphate, anhydrous CaSO_4 - White, odourless crystals whose mineral form is called anhydrite. Anhydrous calcium sulphate is ground to form a colourless, inert pigment.

Synonyms: anhydrite; karstenite; muriacite; anhydrous sulphate of lime; anhydrous gypsum;

Calcium sulphate, hemihydrate $\text{CaSO}_4 \cdot 0.5\text{H}_2\text{O}$ - Fine-grained, odourless powder. Plaster of Paris is made by partially calcining gypsum. When mixed with water, plaster of Paris will dry to a hard mass. It is used for wall plasters, wallboard, mouldings and statuary. See plaster of Paris.

Synonyms: plaster of Paris; dried calcium sulphate; dried gypsum; plaster

Camber: an upward curve or slope in a beam or lintel. A camber arch is one which tends to be flat.

Candelilla wax - A yellowish-brown vegetable wax exuded from the leaves and stems of succulent shrubs, *Euphorbia antisiphilitica* and *Pedilanthus pavinia*, native to northern Mexico and the south-western U.S. Candelilla wax is obtained by boiling the leaves and stems in water and sulphuric acid. Candelilla is composed of hydrocarbons, centred around C31 with smaller amounts of esters and triterpenoids. It is a dark brown wax that is hard and brittle with little tack. Candelilla wax is an all-purpose wax used for polishes, cements, Ebonite varnishes, waterproofing, metal casting and insect-proofing. Synonyms: candilla wax (sp.); Stralpitz [Strahl & Pitsch]

Canopy: an ornamental projection over windows, doorways, niches, etc.

Cant: an obtuse angle.

Cantilever: a term often used to describe a form of projecting bracket.

Capital: the head or top part of a column or pilaster.

Caput mortuum - An obsolete name for a reddish-brown pigment prepared by calcining red iron oxide. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century. In the twentieth century, polishing-red (iron oxide, caput mortuum; English red) was mentioned as one type of polish introduced. It could be mixed into a polishing wax.

Carbonate of lime - Common name for calcium carbonate prior to the 1800's when chemical compound names were standardised (Schur 1985).

Synonyms: calcium carbonate

Carbonation, carbonated: a lime plaster is said to have carbonated when the binder has reacted with carbon dioxide from the air and developed strength beyond that which is achieved simply by drying out.

Carton Pierre: an old method used to produce fine casts of ornament, it consisted of paper pulp, glue size and whiting mixed to a dough like consistency then pressed into plaster moulds.

Carborundum - A brand name for any of several artificial abrasives made from silicon carbide, fused alumina and other materials. Edward Acheson accidentally made Carborundum in 1884 when he was attempting to synthesise diamonds. He incorrectly assumed his new product contained carbon and aluminium and hence trademarked the name Carborundum as a variant of corundum. His product was, however, composed of silicon carbide which has a Mohs hardness value of 9.17. Now many varieties of Carborundum are available with varying hardness and grit.

Synonyms: silicon carbide

Carnauba wax - A hard, yellowish vegetable wax exuded from the leaves of the palm tree, *Copernicia cerifera*, native to the arid regions of north-eastern Brazil. The leaves are collected, dried then beaten to remove the wax surface coating. The wax is melted, filtered and bleached with fuller's earth or charcoal. Carnauba wax is harder than beeswax and melts at a higher temperature. Carnauba wax contains ceryl palmitate, myricyl ceretate, myricyl alcohol (C₃₀H₆₁OH) along with other high molecular weight esters and alcohols. Olho wax is a pure whitish grey carnauba wax obtained from young leaves. Refined olho wax is called flora wax. Palha wax is a brownish wax obtained from older leaves. Palha wax can be emulsified with water to form chalky wax.

Carnauba is used in varnishes. For stucco marble, wax treatment often followed the application of oil to the surface in order to increase the gloss of an already well polished surface. In these cases carnauba wax was often used, applied to the surface with a linen cloth.

Synonyms: Brazil wax; ceara wax; olho wax; flora wax; pahla wax; chalky wax

Carpenter's glue - Usually a skin or bone glue. See animal glue.

Carton-Pierre - This was made from pulped paper with glue and whiting added, and found considerable decorative use, mainly in the 18th and 19th centuries, in the form of applied architectural decoration, candelabra and statuary.

Case: a plaster frame to keep various parts of a mould in position - casement: a wide, shallow moulding.

Casein - A natural phosphorous-containing protein found in milk. Casein is composed of the following major amino acids: glutamic acid (20.2%), proline (13.2%), aspartic acid (6.1%), leucine (9.0%), lysine (6.7%), valine (7.2%), tyrosine (5.5%), isoleucine (6.0%) and phenylalanine (5.1%) with no measurable amounts of hydroxyproline (Mills and White 1994). It has been used as a glue and binder since earliest recorded periods.

Casein curds form naturally as milk sours, but it is also precipitated by adding dilute hydrochloric acid to hot skim milk. The curds are collected, washed and dried to form a white to yellowish powder. The dried casein is insoluble in water and alcohol but is soluble in carbonates and other alkaline solutions. For use, casein is soaked overnight in a solution with a weak alkali (ammonium carbonate, borax or lime) to form a clear, viscous solution. Solutions of casein are used as adhesives and as paint binders and architectural paints. The paint film is brittle but very hard-wearing. It was popular in the late 19th century for stencilling on walls as it dries quickly and has the required matt finish. Furthermore, since it is instantly soluble and does not form a thick layer, elaborate schemes could be built up with four or five overlaid stencil shapes. Casein paints are now sold in powder form or ready-prepared. See also : casein paint.

Synonyms: caseinate; whey glue; Casco Glue; milk acid powder; kasein; ammonium

casein; borax casein; lime-casein; Lactilith; Galalith; Erinoid; Kyloid; causeum

Casein adhesive - A clear, viscous solution formed when casein powder is soaked in water with an alkali (ammonium carbonate, borax, lime, etc.). The alkali hydrolyses the casein to make a solution that is usually stable for several weeks. Occasionally a plasticizer, such as glycerol or sorbitol and a preservative, such as phenol, are added to the solution. Casein glues since ancient times as a water-proof adhesive. Lime-casein glues were first patented in the mid 19th century. They were an important commercial glue through W.W.I for applications such as plywood. Casein glues were mostly replaced by phenolic, resorcinol and urea-formaldehyde adhesives in the 1930's and 40's.

Synonyms: casein glue; ammonium casein; borax casein; lime-casein; lime casein

Casein paint - A water-based, matte paint with a casein binder. Dry casein is hydrolysed with alkalis (lime, borax, ammonium carbonate, etc.) to form a clear viscous solution. Casein paints dry to a matte, brittle film that is insoluble in water and impervious to most paint strippers. It may sometimes be removed with strong alkaline or ammonia solutions. Casein paints have been used for panel paintings, wall paintings and as architectural paints. Casein paints were sometimes varnished or glazed to imitate oil paints. Commercial production of casein paints began about 1900. Prior to that time, most casein paints were prepared by the painter. See also : casein.

Synonyms: milk paint; farmers paint; casein tempera; lime casein

Cassel brown - A naturally occurring dark brown earth named for a city in central Germany. Cassel earth, also known as Vandyke brown and Cologne earth, contains organic humus or coal material mixed with iron oxides, alumina and silica. When ignited, the pigment leaves a soft grey residue. The colorant is fugitive and fades on exposure to strong light. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: Cassel earth; Cassel's earth; Kassel earth; Cologne earth; Pigment Brown 9; CI 77430; Vandyke brown; Castle earth; Castile earth; Cullens earth; Colens earth; Collens earth

Cast: an object produced from a mould.

Cast in fibrous plaster: a relatively thin coat of plaster 203 mm thick, reinforced by wooden members, laths, etc, and Hessian canvas; finally, a further thin coat of plaster often termed firstings and seconds.

Cast stone - A precast building stone prepared from several formulations that harden to a rocklike solid. It has the appearance of stone when cast into the desired form or structural shape. Examples of some cast stone binders are: clay (Coad's stone), plaster (Protean stone), water glass (Siliceous Concrete Stone), oxychloride cement (casting stone), epoxy, and Portland cement (Frear stone, Victoria stone, Benedict stone). Cast stones were used extensively in the late nineteenth and early twentieth centuries. They often incorporated fine and coarse aggregates for texture along with pigments or dyes to imitate colouring and veining of natural stones. Cast stones were produced in many sizes and shapes, often with intricate patterns and tracery. See also artificial stone; artificial marble.

Synonyms: artificial stone; imitation stone; reconstituted stone; reconstructed stone; beton; Victoria stone; Protean stone; Frear stone; Siliceous Concrete Stone; Coad's stone; Benedict stone; Arnold stone; Chicago Art Marble; Dextone; Edmunds Art Stone; Instone; Litholite; Pulham stone; Haddon stone; artificial marble; scagliola; marezzo; stucco lustro

Casting plaster - A fine-grained plaster of Paris. Casting plaster is white, slow setting and capable of taking fine detail (Mayer 1969). It can also mean a plaster mixture with additives to provide properties desirable for casting work.

Caustic lime - A material, white when pure, that is obtained by calcining limestone, shells, or other forms of calcium carbonate. Caustic lime is also called quicklime or burnt lime and is used in mortars and cements.

Cavetto: a round concave hollow moulding containing the quadrant of a circle. Often found in a cornice.

Cement - A fine grey powder obtained by heating limestone and clay, which sets hard by chemical reaction and is used as a mortar and a render. Portland cement was patented in 1824 by Joseph Aspidin. It was called so because it was supposed to resemble Portland stone. It was made by firing limestone to produce lime, which was then crushed and mixed with clay. This was fired between 1000°C and 1200°C. Although this material was hydraulic, it was not as strong as modern cements because it was manufactured at lower temperatures. In the late 1830s Isaac Johnson discovered that overburnt lumps from the kilns produced a stronger, more reliable product with a slower set. His process, patented in 1838, involved heating limestone or chalk to 1300-1500°C, which converted it to quicklime. This then reacted with the clay to form clinker which was ground and mixed with gypsum to retard the set. For use it was mixed with water. The set occurs through the formation of calcium silicates and calcium aluminates in the film. These react with water to form starburst-shaped particles which interlock to give cement its strength. Modern ordinary Portland cement is a hard, grey, impervious material which is mixed with sand for use as a mortar and a render. Early 19th century rendered façades were colour-washed with distemper; oil paint for external walls was introduced around 1840. See also : Portland cement

Cement clinker - A lump or ball of fused material, usually 1/8" to 1" in diameter, formed by heating cement slurry in a kiln. When cool, the clinker is interground with gypsum to form cement. See also : cement

Cement mix - A binder combined with various aggregates which sets and holds together into a mass which then hardens and gains strength.

Cement mortar - 1. A plastic building material made by mixing lime, cement, sand, and water. Cement mortar is used to bind masonry blocks together or to plaster over masonry. 2. Any cement used for mortar of masonry walls. Masonry cements are generally more workable than normal Portland cement. They usually start with a Portland cement base and add hydrated lime, crushed limestone, diatomaceous earth or granulated slag to aid in spreading.

Cement paste - A mixture of cement and water.

Cement plaster - Plaster containing Portland cement as the binder and commonly used on exterior surfaces or in damp areas.

Cement putty - A type of cement mortar composed of pure cement and water. See cement mortar.

Cement rendering - A wash of Portland cement and sand applied over a surface.

Cement rock (cement stone) - A natural, impure limestone that contains the ingredients for the manufacture of Portland cement.

Cement slurry - A thin, watery cement mixture for pumping or for use as a wash over a surface.

Cement stone - See cement rock.

Cement stucco - 1. A mixture of Portland cement, sand, and a small percentage of lime. Used to form a hard covering for textured exterior walls. 2. A fine plaster used for interior decorations and moldings.

Cement temper - The addition of Portland cement to lime plaster to improve its strength and durability.

Chalk - A soft, porous white mineral composed of fine-grained limestone. Also called whiting, pure varieties of chalk contain up to 99 percent calcium carbonate as the

mineral calcite. Chalk was formed in the Cretaceous period and occurs naturally in thick beds in many parts of the world, such as the chalk cliffs along the English Channel. Chalk beds are collections of the shells of such tiny marine organisms as foraminifera, coccoliths, and rhabdoliths. Ground chalk has been used as a pigment since ancient times. When mixed with glue, it was the most common ground for northern European paintings from medieval times well into the 18th century. Chalk was also commonly used for making lime, Portland cement, putty and polishing powders. Chalk is stable and inert. It is made synthetically by precipitating fine particles of calcium carbonate. It is listed among the inorganic additives used for stucco marble preparation according to literature.

Synonyms: whiting; English white; Paris white; gilder's whiting; Champagne chalk; calcite; limestone; calcium carbonate; marble white; Kreide (Ger.); craie (Fr.); creta (It.); greda (Sp.)

Chamfer: a bevelled face.

Chaplet: a moulding containing pearls or rosettes.

Charcoal black - A black pigment prepared from the porous black residue left after the destructive distillation of wood. Charcoal black has been used as a pigment since ancient times. The best charcoal black is produced from willow, bass, beech, birch, maple or other even-textured wood. The residue is ground then washed to remove any potash. Charcoal contains about 80-98% carbon with some ash and moisture. The grey-black powder is porous and light, but it has poor covering properties and is seldom used in paints. Charcoal black has been used for preliminary sketches, cartoons, pouncing and underdrawings. It produces a soft, easily smudged drawing that is often sprayed with a fixative to prevent smears. Charcoal black was also used as a pigment in English house paints. See also carbon black, charcoal, and charcoal crayon.

Synonyms: peach black; vegetable black; vine black; birch black; blue black; soft black; willow black; Pigment Black 8; CI 77268; charcoal grey

Checquer: a pattern formed of alternate squares.

Chert - An impure, flintlike rock, usually dark in color. Some of its common impurities react with cement, making its use as an aggregate undesirable for certain applications.

Chord: a line in a circle connecting the two ends or springing of a circle or arch.

Chrome green - A pigment mixture prepared with chrome yellow (lead chromate) and Prussian blue. Chrome green has been used since the early 19th century, primarily in house paints and industrial products.

Synonyms: cinnabar green; green vermilion; Victoria green; Prussian green; bronze green; Milori green; Pigment Green 15; Brunswick green; nitrate green; royal green; zinnobor green; oil green

Chromic oxide - A dull, olive-green colour pigment. Anhydrous, opaque chrome oxide green was first made in 1809 by Vauquelin and was listed as an artists pigment in the 1840 Winsor and Newton catalogue (Newman 1997). It is opaque, lightfast, and durable with excellent resistance to chemicals and heat. Chromic oxide has limited use in paints because of its dull colour. Chromium oxide is also used as an abrasive.

Synonyms: chrome oxide; opaque chromium oxide; chromium oxide green opaque; chrome sesquioxide; Anadonis green; ultramarine green; Pigment Green 17; leaf green; oil green; green rouge; chromia; --not to be confused with chrome green (lead chromate and Prussian blue) and emerald green (copper acetoarsenite); Schnitzer's green

Chrysocolla $\text{CuSiO}_3 \cdot n\text{H}_2\text{O}$ - A sky blue mineral composed of hydrated copper silicate. Chrysocolla is a secondary copper ore that has also been used as a gemstone and a blue-green pigment. It has been gathered or mined as a semiprecious stone since 3000 BCE. Chrysocolla is mined in Cornwall, Cumberland, Congo, Chile, and the U.S. (Pennsylvania, Arizona, New Mexico and Utah). The translucent to opaque stone is sky-

blue in its natural state, but appears green when ground into a fine powder. Chrysocolla has been found as a pigment in wall painting at Kizil in Turkistan and in Twelfth Dynasty Egyptian tombs (Gettens and Stout 1966). In the 16th and 17th centuries, it was used as a watercolour pigment called cedar green. Chrysocolla is stable to light but is decomposed by acids, alkalis and heat.

Synonyms: cedar green; copper silicate

Cinnabar HgS - A soft, dense, red, native ore composed of mercuric sulphide.

Cinnabar is widely distributed around the world and is most often found in veins near volcanic rocks or hot springs. It has been mined from the Spanish cliffs near Almadén for over 2000 years. Other deposits are found in Italy (Iudrio), Germany, Austria, Yugoslavia, China (Hunan, Kweichow), Turkestan, Mexico, Peru (Huancavelica) and the United States (Texas, California). Cinnabar was finely ground for use as an artist pigment since antiquity. Red mercuric sulphide has been made synthetically since at least the 8th century in Europe and possibly earlier in China. Synthetic mercuric sulphide is called vermilion. Due to impurities, vermilion was favoured over ground cinnabar as a red pigment. When exposed to ultraviolet light, mercuric sulphide darkens as a portion changes from its normal red crystalline form to a black isomorph. This can result in splotchy discolorations. It is listed among the pigments and dyes used for colouring stucco marble in the seventeenth and eighteenth century.

Synonyms: vermilion (synthetic pigment); Chinese vermilion; English vermilion; Pigment Red 106; CI 77766; red mercuric sulphide; red sulphuretted oxide of mercury; liver ore; Zinnober (Ger.); cinabrio (Sp.); cinabre (Fr.); cinabro (It.); shinsha (Jap.); tan-sha (Chin.)

Cinque foil: a trio-leaved flower used in the arches of the lights and tracery of windows and external panelling.

Clay - A naturally occurring earthy mineral that is plastic when wet but becomes permanently hard when heated. Clay is composed of hydrated aluminium silicates, such as kaolinite, illite, palygorskite, attapulgite, bentonite and montmorillonite. Small amounts of other minerals can change the colour (white, yellow, brown or red) and texture of the clays. When pure, clay is a fine, white, amorphous powder which becomes plastic when water is added. When heated to high temperatures, clays become hard due to the loss of water and are used to make pottery, porcelain and bricks. Clay is also used as a filler and whiting in paints and grounds.

Synonyms: clays; China clay; kaolin; porcelain clay; tonerde; fuller's earth; white bole; pipe clay; Bouvival white; Rouen white; Spanish white; Troy white; feldspar

Clay-lump - Lumps of clay, tempered with straw or reed and dried in the sun, usually about 6" x 9" x 1 1/3".

Clay mortar - See mud mortar

Museum of Fine Arts, Boston (2000)

Coade Stone - A brand name for a cast stone made from fired clay. Coade Stone was developed by Eleanor and George Coade in England and manufactured from 1769 to 1843. The formula, which was lost following closure of the factory, has only been deduced from recent analysis and experimentation. Analysis indicates the raw materials were ball clay from Dorset or Devon with the addition of 5-10% flint, 5-10% quartz sand, at least 10% grog and about 10% soda-lime-silica glass. The material was fired at temperatures between 1100°C and 1150°C over a four-day period, producing a hard, partially vitrified and durable material. Minimal shrinkage and distortion in the kiln, owing to the presence of the pre-fired grog, contributed to the material's commercial success. These terracotta cast stones were used for interior and exterior ornamental elements. Coade Stone is acid resistant and weathers well. It was used for statues, tombs, balustrades, vases, pillars and decorative architectural elements.

Synonyms: terracotta; imitation stone; architectural terra cotta; artificial stone

Coarse stuff - A coarse, fibre-filled, base coat for plaster. Coarse stuff contains lime paste mixed with sand and hair. Other fibre fillers may be used such as sisal, jute, wood or asbestos. This coarse plaster mixture was used for the base plaster layers applied to the metal or wooden lathes. It was covered with a smooth finish plaster.

Synonyms: fibre plaster; scratch coat; brown coat

Coat: a layer or thickness of plaster or render done at one time.

Coating - A protective layer placed over the surface of another material (substrate). Many type of materials are used for coatings. Examples are paints, varnishes and polymer films. Coatings may be painted, sprayed or vapour deposited onto the substrate.

Cob (Clob) - Walls composed of clay, earth, straw, lime and sand, mixed with water. Wet clay or chalk is tempered by the tread of horses with straw or reed. It is constructed without shutters in layers upon a stone or brick plinth. It is lifted wet on to walls, the surface is trimmed in position as it hardens. Shrinkage is considerable. It is usually covered with protective limewash or plastered.

Cobalt blue - A clear blue to blue-green pigment. Cobalt blue is composed of a double oxide of cobalt and aluminium that is also called cobaltous aluminate. Cobalt blue is resistant to weathering, sunlight, acids and alkalis. Though possibly discovered earlier, the process for making cobalt blue by heating cobalt phosphate with alumina was first published by L.J.Thénard in France in 1802. Leithner discovered a process for making cobalt blue from cobalt arsenate and alumina. By the early 19th century, cobalt blue was sold as an artists pigment as a replacement for smalt. In recent years, the cobalt blue hue has been imitated using mixtures of ultramarine and phthalocyanine.

Synonyms: Thenard's blue; Pigment Blue 28; CI 77346; cobalt ultramarine; cobaltous aluminate; king's blue; Olympia blue; Vienna blue; Vienna ultramarine; Leyden blue; Hungary blue; azure cobalt; Gahn's blue; Leithner blue; new blue; Kobaltblau (Ger.); bleu de Thénard (Fr.)

Cobalt violet - A general name for several violet coloured cobalt pigments. First developed in the early 19th century, cobalt violet was the primary permanent violet pigment available. Cobalt violets range from deep to pale shades with either a pink or blue hue. The first cobalt violets used were composed of cobalt arsenate. This highly toxic compound is now rarely used. Instead most current cobalt violets are non-toxic and are made from either cobalt phosphate, or cobalt ammonium phosphate. Cobalt violets are used in paints.

Synonyms: cobalt arsenate; cobalt phosphate; cobalt ammonium phosphate

Cobble - Naturally occurring glacial rock fragments (diameter 64-256mm) larger than pebble and smaller than boulder.

Coffer: a recessed or sunken panel often found in ceilings, soffits, domes or vaults.

Colnade: a row of columns.

Collagen - The protein which makes up the main three-dimensional fibrous network in a skin. It is found in stucco marble (Krzeszów, Poland ? late Baroque), which indicates that the glue used for the preparation of the stucco mass was obtained from collagen-containing materials, like fish, animal bones or skins.

Collar: a plaster band or bands that will provide the correct outline for a plaster to use as grounds when forming columns in plaster or other mixes.

Colorant - Any compound, such as a dye or pigment, that gives colour to another material. Colorant may occur naturally in a material (colours in flowers), may be added as part of a mixture (pigments in paint) or may be applied to the surface (dyes on a fibre).

Coloured cement - A decorative cement prepared by adding a limeproof pigment to the concrete mixture.

Column: a vertical pillar or shaft, usually supported off a base and crowned with a capital. A column can be circular, oval or square in section; smooth or fluted. In classical design, the dimensions and ornamentation of a column will vary depending upon the appropriate classical order.

Common lime - Hydrated lime or quick lime used in plaster or mortar.

Concave: a rounded or circular hollow. The opposite to convex.

Concrete - A hard, strong construction material cured from a semi-fluid matrix of water, sand, and aggregates with cement and/or lime. Several types of aggregate are used such as crushed stone, slag, cinders or gravel. Ancient Romans developed pozzolana cement about the 3rd century BCE. Modern concretes use various cements such as Portland or hydraulic. Concrete is durable and relatively inexpensive. It is used for building. Concrete is strong in compression but weak in tension so it is often reinforced with steel bars or wire netting. Once a concrete mixture is stirred with water and poured into a mould, it should be allowed to cure slowly over about a week. Stresses, such as vibration, freezing and rapid drying, will diminish the strength and durability of the concrete. As it ages, concrete is subject to erosion, spalling and pollution. Poor mixing can cause erosion. Spalling can be due to freeze thaw-cycles of moisture and ice, salt crystallisation, or corrosion of steel reinforcements. Acid rain can deplete the natural alkaline reserve of fresh concrete. See also cement.

Synonyms: Breton

Concrete plaster - See bond plaster

Console: a bracket supporting the cornice over a window or doorway.

Consolidant - A substance used to strengthen and solidify another material. A consolidant is infused into the interstices of a porous, friable or deteriorated material, such as stone, paint or wood. The consolidant hardens within the pores to stabilise the structural integrity of the piece. Examples of materials used as consolidants are: epoxies, acrylics, silicates and polyethylene glycols.

Convex: rising in a circular form - opposite of concave.

Copal - A general name given to a large variety of hard, natural resins obtained directly from trees such as *Trachylobium hornemannianum* and *Hymenaea courbaril*. Copals are also obtained as fossil resins from Zaire and Zanzibar. The fossil resins are very hard and almost completely insoluble. Copals are diterpenoid resins that contain communic acids, communol, resene and volatile oil. They range in colour from colourless to a bright yellow-brown. The hardest copal resin is Zanzibar. Sierra Leone, Kauri, and Congo are of medium hardness. Manila, and Borneo are soft copals. The oldest resins are the hardest. Copal resins may be purchased as large lumps or small tears. Copal resins were used as oil varnishes in the 18th and 19th centuries but they tend to darken and become insoluble with age. They also have been used in commercial varnishes.

Synonyms: Zanzibar; Demerara; Benguela; Sierra Leone; Mozambique; red Angola; white Angola; Congo; kauri; Manila; Pontianak; Madagascar; Accra; Loango; Gaboon; Borneo; Singapore; South American; Cochin; Brazilian; Benin, swamp gum; anime; cowrie

Copper vitriol - The term vitriol, now obsolete, was formerly applied to a number of metal sulphates because of their glassy appearance. In the twentieth century, coloration of stucco marble was obtained by chemical reaction involving copper vitriol, iron vitriol, gypsum and alum with lime. See also : vitriol.

Coved: an arched recess - a concave moulding.

Corbel: a projection jutting out from the face of a wall, usually to support the weight of a structure or ornament above.

Core (of a wall): in some forms of masonry construction the walls are built with carefully set facing units on the two faces, and the space between these is filled with a rubble concrete which is known as the core.

Core: the inner portion of a column or other large component onto which plaster/render is run. The core is provided to save materials and weight.

Cornice: a projection made up of several members which finishes or crowns an entablature or wall.

Corona: the top edge of a cornice projecting over the bed-moulding designed to throw off water often termed the drip or weathering.

Counter laths: spacing laths running behind and at right angles to the main laths which carry the plaster. This may be to even up the surface, or to allow a space for the nibs to form a key when the plaster is pressed through.

Crude beeswax - See beeswax

Synonyms: virgin wax

Crenelle: a parapet or cornice with battlements or loopholes.

Cross screeds: The secondary screeds which run between, and at right angles to, the main screeds in defining the plane of a carefully ruled plaster surface.

CS - cast stone Cure (to cure): The setting and hardening process of a plastic mix containing a cementitious binder.

Curing: the hardening of a material by time in a natural manner.

Cusp: one of a series of points projecting from the soffit or mouldings of an arch, giving a trefoil or multifoil form in the arch.

Cyanoacrylate - A thermoplastic polymer commonly used as a fast-setting, strong adhesive. The first cyanoacrylate adhesive was made in 1941, but not marketed till 1958 as Eastman 910®. Cyanoacrylate adhesives are based on ethyl-2-cyanoacrylate polymers. Most commercial formulations also contain stabilisers, thickeners and catalysts. The glues set rapidly (5 seconds - 3 minutes) upon exposure to ultraviolet radiation or moisture. When cured, they form an extremely strong bond that is fairly insoluble. Cyanoacrylate glues have been used for gluing glass, ceramics and other hard materials. Some cyanoacrylate glues may lose adhesive strength with time. Ultraviolet light and contact with alkaline materials (glass and some stones) will accelerate the degradation process.

Synonyms: super glue; Super Glue Gel® [Loctite]; Krazy® glue [Borden]; Super Attack [Loctite]; Zap; Eastman 910® [Eastman Chemical]; ELFY® super glue; ethyl cyanoacrylate

Cyma recta: is a moulding which is concave at the top and convex at the bottom.

Cyma reversa: is a moulding which is convex at the top and concave at the bottom. Often also called an Ogee moulding.

Dado: the lower part of a wall usually marked by and below a dado rail moulding or cornice.

Daub - Application of earth based plaster to a backing of lath or wattle used in internal or external walls. Composite mixture which may include clay soil, dung, straw, lime putty, sand or horsehair.

Datum: a fixed horizontal line from which all heights and depths can be calculated and measured.

Daubing: an ancient term for rough plastering.

Decorative plaster - Ornate or patterned decoration, carved into or moulded from plaster English Heritage (2000)

Deionised water - Water which has had all charged particles removed. Deionised water baths will readily dissolve or leach any salts or ions from articles.

Synonyms: demineralised water

Dental plaster - A fine, highly purified plaster of Paris available from dental supply companies. The plaster sets completely within one hour, but may be removed with water. Dental plaster has been used for repairing ceramics, mending gesso-based frames and casting replacement pieces.

Synonyms: gypsum cement; Permastone; Hydrocal

Dentil: a bed moulding used in a classical cornice consisting of a series of small square projections. Their breadth should be half their height and their intervals two-thirds of their breadth.

Depeter: decoration of an external render by pressing in hard decorative stones or fragments of other materials to form a decorative pattern.

Dextrene: when made into a solution and added to the water in which plaster/render is to be mixed it will both harden and retard.

Diaper: a geometrical pattern carved on a wall in a frieze or panel.

Diatomaceous earth - An absorbent powder composed of the siliceous skeletons of microscopic water plants called diatoms. Diatomaceous earth is composed of 88% silica. The soft, whitish material is used as an inert pigment or filler in paint, brick, tile, ceramics, and a large number of other products. It produces a reduced gloss, acts as a suspending agent and increases viscosity. It absorbs dyes well and has been used as a base for lake colours. Diatomaceous earth is also used as an absorbent, and poultice since it can absorb up to 4 times its weight of water.

Synonyms: diatomite; Celite® [Celite]; fuller's earth; infusorial earth; kieselguhr; fossil flour; tripoli; Sil-O-Cel; diatomaceous silica; siliceous earth; Super-Cel; Kenite®;

Diactiv®; Primisil®

Diluent - An inert material used to decrease the concentration of an active component. A diluent may be a solvent used to decrease the concentration or viscosity of a coating or paint. Also a diluent may be an inert filler added to an adhesive or pigment as a bulking agent to increase workability or just to decrease cost. For example, sand is added to cement as a diluent. See also extender, filler, and thinner.

Synonyms: thinner; thinning agent; filler; extender; adulterant

Dispersing agent - An additive that increases the workability or fluidity of a paste, mortar, or concrete.

Distemper - A general term for paint with a water-miscible binder such as gum, size, casein or egg yolk. Most commonly, however, it refers to chalk-based paint bound with size, usually made from rabbitskin glue. For centuries soft distempers were used as cheap house paint, but since the 1950s they have been largely replaced by modern emulsions. The paint is made up as a slurry with the consistency of cream, and by adding tinting pigments a range of pastel shades can be achieved. The finish is opaque and powdery, and as it is not as hard-wearing as oil paint or emulsions, distemper has to be replaced more frequently. Oil-bound distempers contain a little oil suspended in glue as an emulsion, and this makes them more durable. They lack, however, the soft, chalky finish for which distempers have always been prized.

Distilled water - Water that has been heated to its boiling point of 100 degrees centigrade, vaporised, then condensed on a cool surface and collected. Distilled water is purer than tap water because any dissolved solids, such as salts, will not vaporise. However, some dissolved organic materials may co-distil with the water.

Dolomite - A mineral containing calcium and magnesium carbonate, used primarily as an aggregate in making concrete. It is soft, often white, but may be transparent. Dolomite can be found on its own, but may also occur as a replacement mineral found in some rocks, particularly limestone, formed after action by magnesium-rich fluids. See also dolomitic limestone.

Dolomitic lime - A name commonly used for high-magnesium lime.

Dolomitic limestone - A form of cut limestone that contains dolomite and is used in building construction and for architectural ornament. Its softness and texture permit the carving of fine detail. It is a pale fine-grained limestone, also called magnesium limestone.

Dope - An additive in mortar or plaster to accelerate or retard the set.

Dots: plaster applied in small dabs to either the background or backing, levelled or plumbed and then used as grounds for the formation of the final plaster surface.

Draught: draw, the very slight splay given to all vertical members of a plaster mould. This will enable casts to be removed from the mould without the loss of an arris.

Dressing: bedding, planting, the fixing of lines of enrichment, ornament, etc., to plaster models and mouldings, ordinary Portland cement/sand cornices and cappings.

Drivers: the dry mix of ordinary Portland cement and sand used to extract surplus water when forming moulded features in this material.

Dryer - A substance that accelerates the drying of oil-based paints and varnishes. Dryers are sold as liquids and contain metallic salts of organic acids (i.e. metal soaps) which accelerate the oxidation of oil. Examples are cobalt linoleate, cobalt oleate and cobalt naphthenate. Salts of other heavy metals, such as manganese, cerium, lead, chromium, iron and zinc, can also be effective dryers. A prepared liquid dryer, or siccative, generally acts as a catalyst to speed the polymerisation and oxidation processes involved in the drying of oils and alkyds. Some pigments also act as dryers, such as lead oxide and manganese oxide. In recent years non-metallic dryers, such as orthophenathroline, are being used as replacement for the toxic heavy metal dryers.

Synonyms: siccative; cobalt drier; drying agent

Drying oil - Any vegetable oil that will form a solid, non-tacky film when spread into a thin layer and exposed to air for a few days. Drying oils solidify by polymerisation and oxidation reactions that occur at the unsaturated carbon double bond (C=C) sites of some of their fatty acids. The greater the number of double bond sites available for reactions, the faster the oil will dry. All drying oils have at least 65% polyunsaturated fatty acids (oleic, linoleic, etc.). This high degree of unsaturation is indicated by a high iodine number (usually 120 - 200). Drying oils are obtained from the seeds, skins, and fruits of several plants, such as flax (linseed oil), poppy, walnut, safflower and sunflower. Drying oils are mixed with pigments and used in artists paints or mixed with resins and used as varnishes and coatings. They have been used as a primary artist medium since the 15th century and may have been used as early as the 12th century. Dryers, or siccatives, can be added to the oil-based paint to speed its drying time.

Synonyms: drying oils; linseed oil; tung oil; perilla oil; sunflower oil; hempseed oil; safflower oil; lumbang oil; oiticica oil; stillingia oil; walnut oil

Drywall - A prefabricated plasterboard used to finish wall and ceilings of homes constructed in the late 20th century. The gypsum boards were popularly called 'drywall', when their use replaced wet plastering as the technique for covering wall studs.

Synonyms: gypsum board; plasterboard; Sheetrock® [U.S.Gypsum]

Dubbing or Dubbing-out: a mode of bringing a hollow or uneven surface to a fair one, to receive the usual thickness of plaster work. It is accomplished by fixing pieces of tile, slate, bricks, or lath with gauged coarse stuff, cement, or nails.

Dutch-rush: a fine fluted reed having a sharp file-like surface. It is used for taking seams of casts and for cleaning up plaster and cement cast work. It is superior to glass paper, as it is not so readily affected by damp. It is also used for wet polishing plaster, cement, and wax.

Dye - A natural or synthetic colorant. True dyes should not be confused with pigments or pigment dyes. Until around 1900 yellow, red and blue were the three colours basic to dyeing. The two great dyes ? madder for red and indigo for blue ? achieved their

positions of dominance not only by virtue of their superior fastness, but also because they provided strong colours. These dyes, together with other colorants introduced from the New World during the 16th century, remained important until the end of the 19th century. Although few in number until c. 1900, of far greater relative importance were the insoluble dyes, which were dissolved chemically before dyeing could begin. The emergence of entirely new dyes began with the isolation from c. 1800 of various chemicals, including aniline from indigo (1826). Lakes are organic pigments prepared when a dye has been precipitated on a powdered, inorganic substrate. See also : lake

Earth red - See red ochre

Synonyms: Venetian red, English red; Spanish red; caput mortuum; Indian red; light red; burnt sienna

Earth yellow - See yellow ochre

Synonyms: yellow ochre; gold ochre; raw sienna; French ochre; raw umber

Efflorescence: a white frothy deposit that appears on the surface of finished work. Due usually to the presence of salt in the background.

Egg - Whole egg, yolk or white may be used as a tempera medium. The egg yolk is a stable emulsion of an aqueous liquid with an oily, proteinaceous medium which dries quickly into a hard, insoluble film. It is the traditional tempera medium and may be mixed with oil and/or resin for painting. The white of the egg is used as a size for attaching gold leaf. Albumen is the adhesive substance of egg white. As a pure film, albumen is clear, brittle and water soluble. Water solubility can be decreased by heating or adding tannin.

Egg and Dart: an enrichment in a classical cornice consisting alternately of eggs and darts.

Egg and Tongue: oviformed figures alternately with a tongue.

Egg tempera - A tempera paint prepared from dry pigment with the whole egg, the yolk or the white as a medium. Traditionally, the pure egg yolk, with its surface delicately dried by rolling in the palms, was poured from its yolk sac then ground with pigments. Vinegar or clove oil was sometimes added as a preservative. Other recipes use whole egg, as an emulsifier, mixed with linseed oil and water (see tempera grassa).

Occasionally, resin was also added. The paint is thinner with water; it dries quickly. Large blocks of even colour are hard to achieve, and egg tempera is most suitable for small-scale decoration or ornate detail. It is a very stable medium: once dry it is unaffected by organic solvents and changes little with time. Some sulphur containing pigments, vermilion and cadmium colours, are incompatible with egg tempera.

Egg white - The colourless proteinaceous fluid (albumin) surrounding the egg yolk of bird eggs. Egg white is approximately 85% water and 12% protein with small amounts of fat, carbohydrates and salts. The distribution of major amino acids is: glutamic acid (13.9%), aspartic acid (10.5%), leucine (10.3%), lysine (8.0%), valine (8.3%), arginine (6.8%), alanine (6.3%), isoleucine (6.2%) and serine (5.8%) with no measurable amounts of hydroxyproline (Mills and White 1994). This proteinaceous mixture is chemically known as albumin but has been commercially spelled as albumen when used in food and as a binder for photographic emulsions. Albumin forms an amorphous solid when dried that is soluble in water. However, egg white is heat sensitive and forms an insoluble irreversible mass when heated to temperatures above 60 degrees centigrade. Egg white was used as a paint medium, called glair, in illuminated manuscripts. It was also used in gilding for bole and for shell gold or powdered gold applications. Albumen was as an emulsion medium in mid-19th century photographic and lithographic prints. Egg white is also as an adhesive, coating, and binder.

Synonyms: - albumin; albumen; glair

Ellipse: a part of an oval, a curve produced from two or more centres.

Emulsion - A stable, colloidal suspension of two or more immiscible liquids. Fine, microscopic droplets of one liquid are evenly dispersed within the second liquid. A third material, called an emulsifier, coats the droplets to keep them from coalescing and settling out. Examples of natural emulsions are milk and egg yolk. Examples of synthetic emulsions are many oil-in-water paint formulations, leather dressings, margarine and aqueous polymer preparations.

Synonyms: Emulsions

English red - A former name for iron oxide red. The name 'English red' was changed to 'light red' in 1942 by the Paint Standard. Artificial English red was made by heating iron sulphate with chalk and often contain small amounts of gypsum. It is listed among the additional pigments used for colouring stucco marble in the nineteenth century. It is also mentioned among the polishing-red (one of the components?) used as polish.

Synonyms: Pigment red 101; light red; iron oxide red

Enrichment: an added ornamentation usually consisting of lines of bead, bead and reel, dentils, egg and dart, fret, guilloche, honeysuckle and various leaf designs.

Entablature: the horizontal superstructure on the columns in classical architecture. It is divided into three parts: the architrave, or lintel, the frieze, and the cornice or projecting member.

Entasis: the convex swell found on classical columns, may be the full height of the column or the upper two thirds.

Epistyle: architrave on the capitals of columns which unites them.

Epoxide resin - See epoxy

Epoxy - A series of thermosetting polymers based on the chemical reactivity of an epoxide group. Epoxies, first developed in Switzerland in the 1930s, they became commercially viable in 1939, were further developed in the 1940's and 50's. They are composed of a liquid that, when mixed with a catalyst, crosslinks to form a hard, strongly bound solid. The most commonly used epoxies are made with epichlorohydrin reacted with bisphenol A. Epoxies are typically dense, insoluble structures that are dimensionally stable and wear resistant. They are used as protective coatings, as very strong adhesives, and with glass fibre to make fibreglass.

Synonyms: epoxide resin; Ablebond; Araldite [Ciba-Geigy]; CM Bond; Epon® [Shell Chemical]; Epotek; Hxtal; Phillyseal R (formerly Pliacre) [Philadelphia Resins]; UHU

Expanded metal lathing (EML): a sheet steel material which is cut and stretched to form a perforated surface. It is used as an alternative to wooden laths but is a poor substitute when working with lime plasters.

Extender - An additive used to dilute main components of the mixture. For example, aluminium trihydrate, and talc are two common extenders used to dilute pigments because they are inexpensive, inert and colourless.

Extrados: the outer convex side of an arch.

Face mix - A concrete mix bonded to the exposed surface of a cast stone building unit.

Façade: the face or front of a building.

Fascia: a flat member or broad band, generally used in the architrave of the more elegant orders. They are divided into three bands; the lower called the first fascia, the middle one the second, and the upper one the third fascia.

Fat lime - A quicklime or hydrated lime used in plastering and masonry obtained by burning a pure or nearly pure limestone source.

Fattening up: the slow absorption of water into a lime putty. This literally plumps it up and makes it more plastic.

Fatter: the fatter a lime is, the more and it can carry cohesively and the smoother its putty.

Feather edge rule: a tapered rule used to close in floating and straightening finishing.

Fence: a clay, plaster, wood, or metal guard to enclose a mould or cast, to prevent the escape of wax or other liquid material.

Festoon: garlands of flowers, fruit and leaves, arranged in loops, often used on friezes and panels.

Fibre plaster/Fibrous plaster - Plaster units cast from moulds and reinforced with hair or wood chips used from 1856. The plaster was normally plaster of Paris. Fibre plaster was generally used as thick base coat on wooden laths.

Synonyms: coarse stuff; scratch coat

Filler - 1. An inert powder added to a base material such as a paint, pigment, adhesive or concrete. Fillers may serve multiple purposes such as: extend a matrix, dilute a colour, decrease cost, provide bulk, increase strength, improve working properties or generally enhance performance. Examples of materials that are used as fillers are: acrylics, calcium carbonate, barium sulphate, clays, diatomaceous earth, glass fibres, glass spheres, gypsum, sand, silicates, starches, talc, titanium dioxide. Finely divided inert material, such as pulverized limestone, silica, or colloidal substances are sometimes added to Portland cement, paint or other materials to reduce shrinkage, improve workability, or act as an extender. 2. A preparation made for filling gaps, cracks, pores or holes. Examples are Dental plaster, Polyfilla, mastic, Plasticwood, Metalux, gesso, steel stick, brummer stopper, spackling and wax.

Synonyms: fillers; diluent; extender; reinforcing agent; gap filling adhesive; cement; lute; filling compound; fill; mastic.

Fillet: a band applied principally to mouldings.

Fine stuff - A lime paste finish coat for plaster. Fine stuff was a lime putty often mixed with gypsum plaster. It had little to no aggregate or fibre. Fine stuff was applied over a dry plaster base coats and dried to form a smooth white surface finish.

Synonyms: plaster putty; setting stuff; plaster finish coat

Finial: the ornament which forms the external termination of a pinnacle or other point.

Firstings: the first coat of casting plaster used when producing fibrous plaster casts.

Fish glue - A proteinaceous, water soluble adhesive made from fish heads, bones and skin and other parts containing collagen, keratin or elastin. The agglutinating agents are removed by extraction with hot water, then cooled and dried to produce gelatin or glue. Varied production techniques can produce poor-quality fish glues. The highest quality is made from the swim bladders of sturgeons. It is clear, bluish white and very flexible.

Isinglass is a fine glue made from a specific type of sturgeon. It is generally sold in narrow soft translucent strips. In general, fish glues are lighter in colour than hide glue and form a weaker adhesive bond. They dry to a hard, sandable surface and adhere well to glass, ceramics, metal, wood, and leather (Norland 1977). Fish glue is sold in liquid form and is used in painting and gilding. It is mentioned as one of the organic additives used for stucco marble preparation according to literature. See also : adhesive; glue

Synonyms: isinglass; sturgeon glue

Fixing Fillet: a band or wedge of wood or other material embedded in the structure to which woodwork or other materials are fixed.

Float (to float): a float is a laying on and smoothing tool for plastering.

Floating: the undercoat in solid plasterwork that produces a flat, true surface to receive the finishing (setting) coat.

Float finish - A decorative plaster finish material. A float finish contained lime plaster with a fine white sand aggregate. It dried to form a textured surface often prepared in a swirl pattern. Float finishes were popular for plaster ceilings in the early 20th century.

Synonyms: plaster finish coat

Floating flair: to use the float to achieve a sound, smooth and flat finish on plaster.

Flour - A fine powder obtained from grinding grain products such as wheat, corn, rye and rice. Flour contains starch and gluten. It will form a thick, viscous paste with boiling water that, once dried, is strong and water-insoluble. Flour paste has been used historically mixed with oil or glue to form an inexpensive paint binder. Flour pastes may only be removed with the aid of enzymes and are susceptible to attack by micro-organisms, thus they are not in current use in conservation.

Flush: a term used to signify a continuity of surface in two bodies joined.

Flute: one of a series of channels running up the face of a column or frieze. Sometimes it is filled by a staff which runs up to one-third of the height of the column, and it is then said to be cabled or reeded.

Fly ash - The finely divided residue resulting from the combustion of coal which is transported from the fire box through the boiler by flue gases. Fly ash is a common additive to concrete to improve strength, workability, and waterproof qualities.

Foliage: ornamental scrolls or lines formed with stems, branches, and leaves. The serrations of ornamental leaves are termed lobes

Free lime - Calcium oxide (CaO) as in clinker and cement that has not combined with SiO₂, Al₂O₃ or Fe₂O₃ during the burning process, because of underburning, insufficient grinding of the raw mix, or the presence of traces of inhibitors.

Fresco: the painting of freshly applied lime plaster finish so as to produce a combined paint plaster surface.

Fresco pigments - A group of pigments that remain stable and chemically resistant to the lime plaster used as a base in fresco paintings. The highly alkaline lime base in fresco paintings may react with and alter the colour of some pigments. For example, Prussian blue and chrome yellow both discolour within a few hours. Lead white may turn black slowly. Other pigments, such as some ultramarines and ivory black, may contain dissolved salts that will slowly leach to the surface and leave a white efflorescence. Examples of fresco pigments are: carbon black, iron oxide, chromium oxide, and cobalt blue.

Synonyms: limeproof pigments

Fret: From a term used in heraldry. An enrichment consisting of one or more bands, generally straight, and forming various squares and parts of squares.

Frieze: the middle member in the entablature which separates the architrave from the cornice. In the Tuscan order it is always plain; in the Doric it is enriched with triglyphs; in the Ionic it is sometimes swelled; in the Corinthian and Composite orders it is enriched with figures or foliage. The term is also applied to decorated longitudinal wall surfaces.

Furr: a white scaly lime substance which often forms on the surface of moulds.

Fuller's earth - A naturally absorbent colloidal clay composed of a mixture of aluminium magnesium silicates, such as montmorillonite, kaolinite, attapulgite and palygorskite. Deposits of fuller's earth are located in England, Japan and the USA. Fuller's earth obtained its name because it originally was used for fulling wool; a process where oil and dirt were removed by kneading the wool in a mixture of water and fine earth.

Fuller's earth is used as a filler in paint and epoxy resin.

Synonyms: floridin; attapulgite; bentonite; diatomite; montmorillonite; Fuller's earth (sp.); fullers earth

Furring: nailing wood fillets on joists and rafters to strengthen them, or to make the surface straight and level to receive lath and plaster or fibrous slabs.

Gargoyle: a grotesque Gothic ornament, often used as an outlet for water.

Gathering on: a poor finish produced on run mouldings, caused by either insufficient pressure being applied or by the profile bending.

Gauged mortar - 1. Mortar made of cement, sand, and lime in specific proportions. 2. Any plastering mortar that is mixed with plaster of Paris to hasten setting.

Gauged skim coat - A mixture of gauging plaster and lime putty applied very thinly as a final coat in plastering. The mixture is trowelled to produce a smooth, hard finish.

Gauged stuff - 1. A mixture of lime putty and gypsum plaster that is used as a finish coat in plastering. 2. Gauged mortar.

Gauging: the accurate gauge of quantities, and the proper mixing of different materials by means of a gauging rod or measure.

Gauging plaster - A finish plaster coat prepared from lime putty mixed with about 35% gypsum plaster, producing a quick-drying finish coat.

Gelatin - A mixture of proteins prepared by hydrolysing, via boiling, collagen obtained from skin, ligaments and tendons. Gelatin is composed of amino acids in the following proportions: glycine (25.5%), proline (18.0%), hydroxyproline (14.1%), glutamic acid (11.4%), alanine (8.7%) along with small amounts of arginine, leucine and aspartic acid. Gelatin is approved as a food product. Its production differs from that of animal glue in that raw materials are selected, cleaned and treated with special care so that the product is cleaner and purer than glue. Gelatin is strongly hydrophilic. In cold water, dried gelatin can absorb up to ten times its weight of water, forming a viscous mass. Adding alum to gelatin produces a harder gel. Potassium chrome alum and formaldehyde (formogelatin) also harden gelatin and make it insoluble. Gelatin is used for sizing and adhesive. It is mentioned as one of the organic additives used for stucco marble preparation according to literature.

Synonyms: gelatine; glue

Gesso - A hard, white ground layer primarily used for tempera painting and water gilding. As the Italian word for gypsum, the term gesso was applied to ground layers prepared from gypsum and animal glue. Gesso grounds were used since medieval times in Europe. They were often applied in multiple layers with the initial gesso layer containing coarse gypsum particles (gesso grosso) and the final layer containing fine gypsum particles (gesso sottile). The dried surface was polished to an ivory-like finish. Because it was hard and inflexible, gesso was usually applied to a rigid support, such as a panel, picture frame or sculpture. From Renaissance times, a hard gesso prepared from calcium carbonate (chalk) in glue was used in northern Europe for oil and casein paintings. More recent formulations for gesso use synthetic binders and with one or more white pigments such as chalk, zinc oxide and titanium dioxide (about 10% for opacity).

Synonyms: gesso grosso; gesso sottile

Gesso, glue - See gesso

Gigstick: radius rod, an arm attached to a running mould and used as a compass leg to run circular features.

Glue - A strong, liquid adhesive originally made from animal protein. Now the term 'glue' is generally used for any type of adhesive, especially water-based formulations. Animal glue has been made from ancient times by boiling animal hides, tendons, bones and hooves in water. The collagen is hydrolysed to form a semitransparent gelatin. Animal glues are applied hot and bind on cooling to form a strong, flexible and water-resistant joint. Often glycerin or sorbitol is added as a plasticizer and phenols are added as preservatives to minimise biological growth. Top-quality animal glues are made from rabbitskin, sturgeon bladders and parchment clippings. Animal glue is mentioned as one of the main ingredients of stucco marble, more specifically as a binding medium.

Several types of glue (fish, skin, rabbit skin, bone, horn glue and gelatine) are listed as organic additives for stucco marble preparation according to literature.

Synonyms: animal glue; adhesive; gum; mucilage; gelatin; size; isinglass; fish glue; bone glue; parchment glue; Cologne glue; calfskin glue; nikawa; hide glue; rabbitskin

glue; sturgeon glue

Glyphs: perpendicular flutings formed on the Doric frieze.

Gorge: a hollow moulding.

GRP: glass reinforced plastic. A resin cast reinforced by fibreglass.

GRC: glass reinforced cement. A ready mixed material of cement and chopped fibre glass used to reproduce traditional external finishes of all types as well as in a more modern method.

Grease plasterers: a release agent made up by mixing linseed oil or paraffin and tallow together and applying it to a shellac sealed surface.

Green: freshly applied plaster just before it sets or hardens.

Green earth - A natural earth pigment composed of iron silicate clays. Green earth pigments have been used since ancient times. They were ground from available earth minerals, such as celadonite, glauconite, cronstedtite and chlorite. The colour of green earth can range from yellow-green to sea-green to greenish-grey. In general, green earth is translucent in oils with moderate tinting strength and poor hiding power. It is a permanent, stable pigment that is compatible with all media. Green earth, or terre verte, is sometimes imitated by mixtures of Naples yellow and Prussian blue. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century. Synonyms: terre verte (Fr.); terra verde (It.); tierra verda (Sp.); grune Erde (Ger.); creta viridis; celadon; Veronese earth; Belgian earth; Hessian earth; Tyrolean earth; Bohemian earth; Saxon earth; green stone; Theodotium; prasina; holly green; green stone; verdetta; Pigment Green 23; CI 77009; aegirin; celadonite, glauconite, cronstedtite; chlorite

Green state: the transitory state of a plaster which, in the process of drying out, had developed a little mechanical strength just from its loss of plasticity, but which has not yet developed significant strength from carbonation or hydraulic reaction. It may have a characteristic dull dark green colour.

Groin: the line formed by the intersection of two arches which cross over each other at any angle.

Groined ceiling: one formed by three or more curved surfaces, so that every two or more may form a groin, all the groins terminating in one point.

Groined vaulting: a vault which is formed by groins springing from various points and intersections.

Grotesque: the Gothic form of arabesques, consisting of plaited scrolls budding into figures, masks and animals of fantastic character.

Ground - A foundation layer used to prepare a support material for the application of paint. Grounds provide a smooth, uniform, and nonporous surface. They can also act as a separating and stabilising layer to minimise environmental distortions or support deterioration due to reactions with the paint. For artist paintings, grounds typically fall into these categories.

1. Gesso or chalk - a glue binder mixed with gypsum or chalk
2. Emulsion - a glue medium emulsified with some oil, egg or resin
3. Oil ground - a drying oil, such as linseed oil, with lead white or other white pigment
4. Synthetic - acrylic or alkyd based primer introduced in the late 20th century. For gilding, bole is used as a coloured ground or priming layer. Bole is typically composed of a red or brown clay.

Synonyms: grounds; primer; gesso

Ground lime: quicklime which has been ground down to a specified particle size range.

Grout - A liquid mixture of cement and sand or cement alone.

Guattaris marble - Patented in the 19th century, this is an artificial stone made by treating blocks of the anhydrite form of gypsum with chemicals such as sodium and calcium silicate to harden them. They are heated to a high temperature and the material

crushed to a powder known commercially as marmorite. This can be mixed with water to make moulded ornament; pigments could be added to marmorite to produce coloured casts. See also : artificial stone.

Guilloche: a form of plait, consisting of bands of fillets undulating and crossing each other.

Gum - Carbohydrate based containing exudates obtained from some trees or shrubs which are insoluble in alcohol and either soluble or swellable in water. Some gums, such as, agar, funori and carrageenan, are extracts from seaweed. Gums are used as adhesives, paint binders and sizes. The word 'gum' has also been commonly used to refer to any plant exudate. See also: gum arabic, gum tragacanth, cherry gum, plum gum, almond gum, bata gum, morocco gum, khair gum, karachi gum, cape gum, gum mamrah, cashew gum, semla gum, carob tree gum, guaic, chitin, napal, chicle, keetha gum, khaya gum, mesquite gum, cholla gum, soap berry gum, tartar gum, tandra gum, orange gum, grapefruit gum, neem gum, sapote gum, drum stick gum, lemon gum, agar, locust bean gum, xanthan gum, carrageenan, funori, seaweed glue, guar, ormocarpum, Joshua tree gum, spinifex gum, leopard tree gum

Synonyms: Gums

Gum arabic - A water soluble gum commonly used in binding media of paints. Gum arabic is the amorphous exudate from the stem of several species of Acacia trees, especially Acacia senegal, found in tropical and subtropical areas of the world. Most gum arabic coming from the sub-Sahara region in Africa. Gum arabic contains arabinose, galactose, rhamnose, and glucuronic acid. It is sold in the form of round lumps, granules, thin flakes or as a powder; all of which may be white or slightly yellowish. Gum arabic is completely soluble in hot and cold water, yielding a viscous solution. However, heating a gum arabic solution to the boiling point will cause it to darken and will change its adhesion properties. Solutions of gum arabic will precipitate or gel with the addition of ferric salts, borax, alcohol, or sodium silicate. Gum arabic is used in watercolour paints. It is listed as an organic additive for stucco marble preparation according to literature.

Synonyms: gum arabicum; kordofan; picked turkey; white sennar; senegal gum; ghezineh gum; gomme blonde; gomme blanche; gum acacia, East India gum; kami; wattle gum

Guttú: small drops, usually placed under cornices, etc.

Gypsoplaste: a cast taken in plaster. Gypsum, sulphate of lime, called plaster of Paris, also *éplasterí* after it is calcined.

Gypsum: $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. The dihydrate of calcium sulphate from which the various forms of gypsum plaster are prepared by dehydration, and to which they revert on setting.

Gypsum $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ - Gypsum (calcium sulphate dihydrate) is the product found in any gypsum mass after setting. However, with regard to the basic material used for preparation, a large range of calcium sulphate phases in different stages of hydration and of different habitus has to be considered, depending on petrographic nature of the raw material and the way it is burnt. References to the exact temperature of calcination vary among different authors, between 107°C and up to 400°C for scagliola. In the seventeenth century, a special variety of gypsum, selenite or sericolite, burnt at 300°C, was used, while the currently used kind is gypsum calcined at 130° to 170°C. At this temperature, the hemihydrate is formed. According to the degree of purity and other factors, this hemihydrate is the major constituent of both plaster of Paris and alabaster gypsum. Some authors mention special procedures used for burning gypsum. For example, the technique based on the immersion of gypsum into sulphuric acid, drying and then calcinating again produces the so-called gypsum marble. Alum-gypsum, on the other hand, is a mixture of CaSO_4 with alum ? i.e. plaster of Paris soaked with alum

solution, then burnt again and finely ground. After setting, it obtains high mechanical strength and hardness. According to Leixner, alum-gypsum, also called marble-gypsum, has been primarily used up to the 1960s. Gypsum is also the main component of gypsum cements, such as Keene's cement and Martin's cement. The mineral gypsum is also found naturally; it is soft, transparent and easily cleaved. Massive blocks of fine-grained white, translucent gypsum are called alabaster and have been used since ancient times for carved ornamental objects and statuary. Gypsum is a commonly found mineral associated with sedimentary rock and deposits from seas, lakes and volcanic springs (gypcrete). For a long time, gypsum quarries in the Montmartre district of Paris supplied the starting material for the burnt gypsum that was, and still is, called plaster of Paris. Raw gypsum is used for carvings (alabaster), for wallboards (Sheetrock), as a paint pigment (terra alba) and as an ingredient in Portland cement. Its principal use is to manufacture gypsum plaster.

Synonyms: native calcium sulphate; alabaster; selenite; terra alba; satinite; mineral white; satin spar; light spar; sulphate of lime; puritan filler; crown filler

Gypsum board - A type of wallboard with a plaster core sandwiched between two layers of paper. Gypsum board was patented in 1894 by Augustine Sackett. By World War I, production methods for gypsum board were standardised and it was widely used for the construction of military barracks. Over time, various fillers were added to decrease weight (pumice, bubbles, etc.), to increase fire resistance (asbestos) and to increase crack resistance (wood and mineral fibres). Dextrin, or starch, is typically used as a binder. Gypsum board, also called drywall, is fire resistant, dimensionally stable and inexpensive. During World War II, gypsum board completely replaced the use of metal lath/plaster walls in new construction because the prefabricated boards were faster to assemble and because the use of steel was restricted. Currently, it has widespread use in the construction of interior walls and ceilings.

Synonyms: plasterboard; plaster board; wallboard; drywall; Sheetrock® [U.S.Gypsum]; Gypsite; Sackett Board; Samson Plaster Board; Adamant; Bestwall Firestop; Gold Bond; Rocklath; rock lath

Gypsum cement - A group of cements that are produced from calcined gypsum (plaster). Gypsum cement is also called gypsum concrete. Many various formulations are used. Some contain sand, hair or straw as extenders and many may contain small amounts of salts (potassium sulphate) as accelerants. Organic materials (blood, glue, casein) and weak acids (citric acid, boric acid) can act as retardants. -Keene's cement - plaster mixed with alum or aluminium sulphate. -Mack's cement - plaster mixed with sodium or potassium sulphate. -Martin's cement - plaster mixed with potassium carbonate. -Parian cement - plaster mixed with borax. -Scott's cement - plaster mixed with lime. -Spence's plaster - plaster mixed with Portland cement, sand, aluminium sulphate.

Synonyms: gypsum plaster; gypsum concrete; plaster of Paris; Keene's cement; Parian cement; Martin's cement; Mack's cement; Scott's cement; Spence's plaster

Gypsum mortar - An early mortar used in ancient Egypt for limestone construction (Lucas and Harris 1962). The gypsum was burnt and slaked then applied in thin layers between the heavy stones.

Gypsum plaster - A type of plaster composed of calcium sulphate hemihydrate. Gypsum plaster was known to the ancient Egyptians and Mesopotamians and has been used for renders and mortars. It is also used for moulds, sculptures and castings. It is prepared by heating gypsum (calcium sulphate dihydrate) to partially remove the chemically bound water, thus producing calcium sulphate hemihydrate. When gypsum plaster is mixed with water, it converts to the hydrated calcium sulphate which rapidly sets to an impenetrable solid. It generates heat with setting and may expand slightly. Its

rapid setting necessitates great skill in handling when used as a wall plaster. The set and workability of gypsum plaster are controlled by various additives. When mixed with aggregate and water, the resulting mixture is used for base-coat plaster. As it is slightly water soluble, its use in temperate climates was largely confined to interior decoration, as a finish for walls and ceilings, although it was occasionally used, on its own or mixed with lime, for external work such as pargeing or as an infill in timber-framed buildings. In such situations the surface had to be worked to a smooth finish and protected by effective roofing. Plaster of Paris is a pure form of gypsum plaster originally obtained in Paris. Martinís cement and Keeneís cement, both patented in the 1830s, involved the modification of gypsum plaster through heating and chemical treatments to produce a material which reliably set more slowly than gypsum but more rapidly than lime. This obviated the problems of difficulty in working and delay before decoration could be carried out.

Synonyms: plaster; plaster of Paris; gypsum cement; calcium sulphate hemihydrate

Hack: to cut back and roughen the surface.

Hair hook: a tool like a broad-pronged rake for mixing hair into a lime plaster or render.

Hair - Hair has long been used as a binding material in lime and gypsum plasters. The best hair should be long, strong, and free from grease and other impurities. Ox hair is common, but horse, goat, and even human hair have been used as substitutes. The use of human hair is rare because of its fineness and poor strength. Short cropped hair is frequently found, and failures from ãlumpsî of hair sometimes occur where they have caused weak spots.

Hard (plastering on the hard): when plaster is placed straight on to the masonry rather than on to laths it is said to be on the hard. In damp conditions an air lime plaster on the hard will not set.

Hard finish - A mixture of gypsum, plaster, and lime applied as a finish coat, usually over rough plastering, then trowelled to provide a dense, hard, smooth finish.

Hardener - An unstandardised name for a substance that is mixed with another to make the second material harder and more durable. Hardeners are used in paints, varnishes, adhesives and cements. Other more specific names for materials that may be considered hardeners are: catalyst; initiator, accelerator, drier or filler.

Harling: a thrown finish of lime and aggregate, applied by throwing the material on to a well-prepared background. The heavily textured surface improves durability making it suitable for more severe climates. Traditional for external walls in Scotland.

Hawk (plastererís hawk): a hand tool made of a rectangular board with a handle below, to carry plaster for laying.

Helix: the small volutes under the abacus of the Corinthian capital.

Hemp - A general name given to any of several coarse, durable bast fibres obtained from a variety of plants, e.g., Hibiscus cannabinus (Deccan hemp, kenaf, paco-paco), Cannabis sativa (Indian hemp), Musa textilis (Manila hemp- see abaca) or Agave sisalana (Seisal hemp- see sisal). Indian hemp, also called true hemp, is an ancient crop cultivated in Asia for its fibres as early as 2800 BCE. Hemp fibres range from 1-2 meters long and are yellow to brown in colour. They have a high cellulose content with little lignin. Hemp is lustrous, strong and durable with ,good resistance to water, salts, light and insects.

Synonyms: Indian hemp; marijuana; ganja

Hessian: a woven jute canvas of either 3 or 6 mm mesh, used to reinforce fibrous plaster.

High-calcium lime - A type of lime composed primarily of calcium oxide or calcium hydroxide and containing a maximum of 5% magnesium oxide or hydroxide.

High-magnesium lime - The product resulting from calcining dolomitic limestone or

dolomite and containing 37%-41% magnesium oxide or hydroxide, as compared to the 5% contained in high-calcium lime.

Horsehair - The hair from the manes and tails of horses. Horsehair is usually coarse and strong. Horse hair has been used for plaster binders.

Synonyms: horse hair

Hood Mould: the horizontal moulding over an arch.

Horse: can have two meanings: (1) the general term for a full running mould. (2) as an alternative to the slipper of a running mould.

HTI (High Temperature Insulation) powder ? Finely ground refractory ceramic products which will react with lime to produce hydraulic properties in mortars.

Hydrated lime - Calcium hydroxide powder prepared by slaking lime with water, producing a dry, relatively stable product. Hydrated lime, or slaked lime, is finer, purer and has more consistent usage properties than unslaked lime. Hydrated lime has replaced quicklime in most applications.

Synonyms: slaked lime

Hydration: in this context it is used to describe the chemical combination of calcium oxide with water to form the hydroxide. If carried out in a wet state this is called 'slaking to putty' and with minimum water 'dry hydrate' or powder is formed.

Hydraulic binder: a binder which sets and develops strength by chemical interaction with water. It can set under water.

Hydraulic cement - A cement that hardens by the chemical reaction with water. The main types of hydraulic cements are based on one or more of the following compounds: calcium silicate (Portland cement), calcium-aluminate, magnesium oxychloride, pozzolana, slag, lime, barium silicate/barium aluminate or gypsum. These compounds react exothermically with water to harden into a water resistant solid.

See also Roman cement, and Portland cement.

Hydraulic hydrated lime - The dry, hydrated, cementitious product resulting from the process of calcining a limestone containing silica and alumina to a temperature just below incipient fusion. The resultant lime will harden under water.

Hydraulic lime - A type of lime, calcium oxide, that will harden under water. Hydraulic lime contains a mixture of lime and clay and is composed of at least ten silicates

Synonyms: hydraulic cement

Hydraulic mortar - See hydraulic cement

Hydraulic set (of limes): the chemical combination of lime, burnt clay or other pozzolanic material and water to form a stable compound, even under water. This can either be arranged by mixing an air lime (or any other) with a pozzolan and water, or by mixing a hydraulic lime and water. In the latter case the lime and clay will already have formed intermediate compounds in the firing.

Imbrication: a fish scale ornamentation.

Impervious: forming a barrier to water in its liquid state.

Impost Moulding: the horizontal moulding along the tops of piers (where the arch springs from); the moulding round the arch is called the archivolt.

Indian red - A red iron oxide powder used as an artists pigment. Indian red is a brick red colour. It was originally the name for a red earth pigment imported from the Persian Gulf and India. In the early 18th century, a synthetic Indian red composed of pure ferric oxide was made from steel mill wastes. It is a dense, opaque, permanent pigment. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: India red; Venetian red; red iron oxide; Pigment Red 101; colcothar; Pompeian red; light red; roofers red; iron saffron

Indigo $C_{16}H_{10}N_2O_2$ - A natural dark blue dye obtained from *Indigofera tinctoria* plants

native to India, Java and other tropical areas. The use of indigo was first mentioned in Indian manuscripts in the 4th century BCE. It was exported to Europe in Roman times but did not become plentiful until sea routes opened up in the 17th century. The natural material is collected as a precipitate from a fermented solution of the plant. The colouring component, indigotin, is extracted as a colourless glycoside, but turns blue with oxidation. Synthetic indigo was first produced in 1880 by Adolf von Baeyer and became commercially available in 1897. Made from anthranilic acid, the synthetic colorant is chemically identical to natural indigo and has almost entirely replaced the natural dyestuff. Indigo is a fine, intense powder which may be used directly as a pigment in oil, tempera or watercolour media. It is listed among the pigments and dyes used for colouring stucco marble in the seventeenth and eighteenth century.

Synonyms: indigotin; India blue; intense blue; rock indigo; stone blue; indigo carmine; intense blue; indico; indicoe; indicum (Pliny); indego; nil; indigo (Fr.); Indigo (Ger.); anil (Sp.); indaco (It.); aneel; anile; ai (Jap.); blue ynde; blue inde; anneil; Natural Blue 1; CI 75780 (natural); Vat Blue 1; CI 73000 (synthetic); Pigment Blue 66

In situ: in the permanent or original situation.

Insertion mould: basically a reverse plaster mould containing one or more lines of enrichment. This or these are reproduced by having a pliable mould to the complete line in either gelatine or PVC.

Intonaco: a relatively simple Italian stucco technique with sands, a little crushed brick and lime.

Iron oxide red - Iron oxides, in hydrated and anhydrous forms, produce a wide variety of red shades ranging from light, bright red to a deep purplish red. They can be natural, earth pigments (hematite, Indian red, Venetian red) or synthetically prepared pigments (light red). All iron oxide reds are stable, permanent pigments with good tinting strength. Iron oxides generally provide the colour in ochres and siennas. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century. It is also mentioned among the polishing-red (one of the components?) used as polish.

Synonyms: red iron oxide; red ochre; red ochre; haematite; hematite; Indian red; caput mortuum; rouge; Persian red; Tuscan red, Pompeian red; light red; Venetian red; terra Pozzuoli; English red; pozzuolana, terra di Pozzuoli

Iron vitriol - The term vitriol, now obsolete, was formerly applied to a number of metal sulphates because of their glassy appearance. In the twentieth century, coloration of stucco marble was obtained by chemical reaction involving copper vitriol, iron vitriol, gypsum and alum with lime. See also : vitriol.

Ivory black - An impure black carbon pigment originally prepared from charred ivory or horns. Ivory black is a fine-grained, intense black pigment. Current formulations of ivory black usually contain a fine grade of animal black with some Prussian blue. Animal black, or bone black, contains about 10% carbon along with 84% calcium hydroxyapatite with smaller amounts of magnesium phosphate and calcium carbonate. Ivory black is a stable blue-black pigment that is denser than carbon black and has a good working quality for oil paints and watercolours. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: bone black; animal black; drop black; Frankfort black; German black, Pigment Black 9; CI 77267; Paris black; Elfenbeinschwarz (Ger.); noir d'ivoire (Fr.); abaiser

Jamb: the side of a window or door opening.

Japan wax - A pale yellow, soft vegetable wax obtained from the berries of the Japanese sumac tree, *Rhus verniciflua*. Japan wax is a by-product of lacquer manufacture. It is not a true wax but a fat that contains 10-15% palmitin, stearin and olein with about 1% japanic acid. Japan wax is sold in flat squares or disks and has a

rancid odour. Japan wax is used as a substitute for beeswax.

Synonyms: Japan tallow; sumac wax; sumach wax; vegetable wax

Jute - Long bast fibres obtained from the stems of linden plants, *Corchorus capularis* (white jute) or *Corchorus olitorius* (Tossa jute). Jute probably originated in the Mediterranean region and was taken to India and south-east Asia where it flourished. Jute has been used by man since prehistoric times. The pale brown fibres are soft, lustrous and coarse ranging in length from 4 to 10 feet. Microscopically, the fibres exhibit irregular, long cells with a visible lumen. Jute is composed of cellulose (69%), lignin (18-20%) with some uronic anhydride (4.5%). The brittle fibres are used to produce a thread called hessian. Jute becomes so weak when wet that a thin twine can be broken by hand. It turns brown and degrades with time, sunlight, water, acids, alkalis and bleach.

Synonyms: Tossa jute; white jute; Indian jute; hessian; Bengal hemp; Calcutta hemp

Kaolin - A group of hydrated aluminium silicate clays. Kaolins are primary clays formed by the weathering of aluminium silicates such as feldspars and nephelite. When pure, kaolin is a soft, white, absorbent powder. Impurities may give it a yellow, red, blue, grey or brownish colour. It occurs at many locations around the world (France, England, Germany, China, United States, etc.). Kaolin is used as a base for lake colours and as a filler in paints, cements and epoxies. Kaolin (brick dust) has been used as an abrasive. Synonyms: kaolinite; China clay; bolus alba; porcelain clay; white bole; argilla; paper clay; brick dust; fuller's earth; white bolus; pipe clay; pipeclay

Kaolinite $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$ - A hydrated aluminium silicate mineral which is the principal constituent of kaolin clay. Kaolinite crystals have a lamellar or plate-like structure that gives the clay its slippery feel. It is a natural alteration product of aluminium silicate rocks, such as feldspar. Pure kaolinite is a primary clay. Most secondary clays contain only a small percentage of kaolinite (Fournier 1996).

Keene's cement/Keene's cement - Patented by J.D. Greenwood and R.W. Keen in 1838. It is a type of interior wall plaster obtained from gypsum. Gypsum is heated above 170°C to form anhydrous calcium sulphate. This was soaked in a solution of alum (potassium aluminium sulphate) to accelerate the set. The mixture was then reheated to 400-500°C and ground to form a plaster. Because Keene's cement sets more slowly than gypsum plaster it is easier to use; it does however set more rapidly than lime and produces a hard, smooth finish which can be painted or wallpapered within a few hours of application.

Key: a mechanical bond produced by the physical interpenetration of the first plaster coat with the background and of one plaster coat with another. The plaster key on lath background is made by the nibs that are formed between and behind the laths by pressure with the float when laying on the first coat. The nib is ideally a dovetail shape, but in practice just an irregular nib or scratching.

Keystone: the highest centre stone in an archway.

Kieselguhr - A German name for diatomaceous earth.

Synonyms: diatomaceous earth

Knocked up: material after it has been gauged ready for use.

Label: a hood mould.

Lake - An organic pigment prepared when a dye has been precipitated on a powdered, colourless, inorganic substrate. The term derives from the Latin word *lacca*, used in the Middle Ages to denote both lake pigments and the Lac dye. Because of its transparency, aluminium hydroxide is the most commonly used substrate or carrier. Barytes, barium sulphate, provides an opaque lake pigment. Other compounds used as carriers are: chalk, clay, gypsum, tin oxide, zinc oxide, white earth, and green earth. Often a mordant, such as tannic acid, lactic acid, or sodium phosphate, is used to fix the

dye to the substrate. Many of the natural dyes were made into lake pigments, such as cochineal, kermes, madder and lac for use in oil painting. In the late 19th century the chemical industry discovered synthetic equivalents of madder and indigo and went on to produce a range of new ones from coal tar derivatives. These and many of the bright new pigments introduced in the 20th century have all been manufactured as lakes. Some, such as aniline dyes, are also prepared in this manner for use as paint pigments. See also : dye.

Synonyms: Lakes

Lampblack - Amorphous carbon particles obtained from the soot of burned fats, oils or resins. Lampblack is soft bluish-black pigment that is very stable and unaffected by light, acids and alkalis. The powder is extremely fine. It is a useful pigment if a very dense, opaque black is required. It was often mixed with lead white to produce a grey pigment. Lampblack may contain a small percentage of residual fats, oils or resins. This makes it mix poorly with water and also makes linseed oil dry slowly into a soft film. Umber was often added to the mixture as a drier. For use as a watercolour, lampblack was mixed with glue, prepared in sticks and sold as India ink. Currently lampblack is used as a black pigment in cements. It is listed among the pigments and dyes used for colouring stucco marble in the seventeenth and eighteenth century. See also bone black, charcoal black, and vine black.

Synonyms: carbon black; CI 77266; Pigment Black 6; smoke black; soot black; oil black; flame black; blacking; lamp black

Land plaster - An obsolete name for gypsum.

Lapis lazuli $(\text{Na,Ca})_4(\text{Al,SiO}_4)_3(\text{SO}_4,\text{S,Cl})$ - A brilliant, opaque, azure-blue colour gemstone, with a hardness on the Mohs scale of 5.5. Lapis lazuli is a mixture of minerals, primarily containing the lazurite (blue) with small amounts of calcite, sodalite, and gold-coloured flecks of pyrite. Lazurite is a sodium, calcium, aluminium sulphochlorosilicate. The blue coloration, which can be deep or pale, greenish or nearly purple, is produced by sulphur contained in the lazurite. Lapis lazuli has been commercially mined since 3000 BCE at the Badakhshan mines in Afghanistan. Other mines are found in Argentina, Siberia, Chile, Myanmar (formerly Burma), Pakistan and California. The semiprecious blue stone was, and still is, used for jewellery, mosaics and small carvings. Lapis lazuli was also ground and purified to make natural ultramarine blue pigments.

Synonyms: lazurite; lapis; Persian blue; Fra Angelico Blue; Armenian stone; ultramarine blue (pigment)

Laps: small square or rectangular portions of canvas used to assist the main reinforcing in fibrous plaster casts. They are soaked in plaster and pushed into the back of the cast.

Larry: a long-handled mixing tool for mixing lime putty and coarse stuff. It is like a hoe with a half-moon shaped hole in its blade.

Latent hydraulic binder: a pozzolan. It can combine with lime and water to give a hydraulic set.

Lath - Narrow strips of wood which can form the groundwork for slates, panels or plaster work

Lead linoleate $\text{Pb}(\text{C}_{18}\text{H}_{31}\text{O}_2)_2$ - A yellowish-white paste that is prepared by heating a solution of lead nitrate with sodium linoleate. Lead linoleate is used as a drier in oil paints and varnishes to speed the polymerisation and oxidation processes.

Synonyms: lead plaster

Lead plaster - A sealant composed of a fatty acid lead salt. See lead linoleate.

Lead white - A white synthetic pigment (lead carbonate) made by exposing strips of metallic lead to acidic vapours and carbon dioxide. It has been an enormously significant pigment since pre-classical times. Unlike any other pigment, it forms a

chemical link with the drying oil, giving the paint properties that cannot be reproduced using the modern whites titanium white and zinc white. In domestic house paint it has always been admired for the way it becomes soft and silvery with age.

Lead white, sublimed - In current usage, sublimed lead white refers to basic lead sulphate. However, in the 19th century sublimed lead white was introduced as a non-toxic white paint pigment that contained a mixture of lead sulphate, lead monoxide and zinc oxide. Sometimes the mixture also contained barium sulphate and chalk. The mixture was also called leaded zinc white. See basic lead sulphate.

Synonyms: basic lead sulphate; leaded zinc white

Lean Lime: Class B lime. A lime prepared from a limestone or chalk which contains impurities which do not contribute to a hydraulic set, but act instead as part of the aggregate in a mortar.

Lime CaO - Any of several forms of calcium oxide obtained from heating calcium carbonate (limestone, marble, chalk and shells) in a kiln. Also, a general term for the various chemical and physical forms of quicklime, hydrated lime, and hydraulic hydrated lime. Lime is used as a constituent of modern mortar, cement and stucco or as slaked (non-hydraulic) lime in lime putty, daub, limewash and traditional lime plaster, mortar and renders. When calcium carbonate is heated to between 900°C and 1200°C, carbon dioxide (and any water) is driven off leaving anhydrous calcium oxide or quicklime, sometimes described as unslaked lime or, misleadingly, as lump lime. When quicklime is soaked in water, it is changed to calcium hydroxide or slaked lime. Slaked lime that is dried and ground to a fine powder is called hydrated lime or lime hydrate. The addition of highly reactive forms of silica and alumina, such as volcanic earths, ash or rock (such as tuff or pumice), brick dust, or ground iron slags, produces a hydraulic set in which the lime does not set by carbonation, but instead forms calcium silicates and aluminates by reaction with these additives and can solidify rapidly even under water. Materials which induce this effect are called pozzolanic additives. Hydraulic lime can also be made by calcining limestones such as lias, which have a high silica content. Lime is one of the main components of lime plaster, limewash (whitewash), marmorino and stucco lustro. Synonyms: calcium oxide; calcium hydroxide; calcia; quicklime; caustic lime; hot lime; hydraulic lime; hydrated lime; burnt lime.

Lime, air-slaked - A white powder containing both calcium carbonate and calcium hydroxide. Air-slaked lime is lime that has absorbed carbon dioxide and moisture from the atmosphere.

Synonyms : wind-slaked lime.

Lime, wind-slaked - A white powder containing both calcium carbonate and calcium hydroxide. Air-slaked lime is lime that has absorbed carbon dioxide and moisture from the atmosphere.

Synonyms : lime, air-slaked.

Lime ash - The residue from the kiln floor of lime-burning in the traditional manner firing coal and/or wood and lime together in a clamp or kiln. Mixed with water and plasticising or setting additives and reinforced with reeds and straw it formed a useful flooring material or, gauged with gypsum, a backing coat for internal or external renderings.

Lime-and-cement mortar - A lime, cement, and sand mortar used in masonry and cement plaster. In addition to imparting a favorable consistency to the mix, the lime also increases the flexibility of the dried mix, thus limiting cracks and minimizing water penetration.

Lime-casein - A paint binder or adhesive prepared by hydrolysing casein with lime (calcium oxide). Lime-casein is prepared by soaking casein powder in water with lime. This forms a clear, viscous solution that dries to form a water-insoluble film. Lime-casein has a high pH (9.0-9.9) compared to ammonium casein (8.0-9.0), and borax casein

(7.0-7.8). Lime-casein is often used as a ground or size for wall paintings on lime plaster, gypsum plaster and stone. It dries to a brittle, insoluble, matte film. Occasionally a plasticizer, such as glycerol or sorbitol and a preservative, such as phenol, are added to the solution. Lime-casein is also used as a paint binder. Because of its alkalinity, however, its pigment palette is limited (see fresco pigments).

Synonyms: lime casein; casein adhesive; casein glue

Lime concrete - A lime, sand, gravel, and concrete mix made without Portland cement. Lime concrete is found in older structures, but is no longer in general use.

Lime flour - Finely powdered lime.

Lime hydrate - Lime, calcium oxide, that has been slaked, or hydrated, to form calcium hydroxide. then dried and ground to a fine powder. See lime.

Lime mortar - A masonry mortar that is composed of hydrated lime or lime putty and water with sand or marble dust. Lime mortar was the primary mortar used for masonry before the invention of Portland cement (Bucher 1996). Nowadays it is not often used because it hardens at a very slow rate. It has been used as a plaster for fresco (Mayer 1969).

Synonyms: lime-sand mortar

Lime pit: a covered tank formed in the ground to store lime putty in moist conditions.

Lime plaster - A type of plaster composed of calcium oxide (lime). Lime plaster has been used since antiquity. It is prepared by heating limestone to high temperatures over a long period to remove the chemically bound water, thus producing calcium oxide (quicklime). When quicklime is mixed with water, it converts to calcium hydroxide (slaked lime). Slaked lime hardens by the evaporation of water. The set of lime is very slow and requires the presence of carbon dioxide. Also, without additives the plaster is weak and prone to shrinkage and cracking. Often aggregates or binders are added to increase the strength and decrease porosity. Lime plasters were used for wall coverings, frescos and wall decoration. For wall plaster, animal hair gives the lime and sand greater toughness and cohesion; in medieval work gypsum plaster was frequently added to lime as an accelerator of set. Additives to provide water-repellency, such as tallow or linseed oil, or to entrap air and thus improve the set, such as urine or beer, were traditionally used. For hand-modelled ornament gypsum was added, with a retardant such as glue, sour milk or wine, to allow a long working time. Marble powder was added as an aggregate because it permitted the rendering of fine detail. Lime plasters were commonly used in Europe, both internally and externally, but their long setting time of several months made decoration with paint or wallpaper difficult.

Synonyms: lime; quicklime; slaked lime

Lime powder - A 19th century name for air slaked lime.

Lime putty - A thick lime paste used in plastering, particularly for filling voids and repairing defects. It is prepared by adding excess water to quicklime without drowning it, resulting in the formation of a soft, rather greasy mass of material.

Lime white - A fine, white pigment composed of calcium hydroxide, and calcium carbonate. Lime white is produced by the long-term slaking of lime in water or air to form a thick, white, alkaline paste. It was used for fresco painting because it hardens to form a cohesive film without the aid of a binder. Lime white reacts with proteins, such as egg white, or casein, to produce a tough, insoluble film.

Synonyms: St. John's white; bianco sangiovanni (It.)

Limestone CaCO_3 - A granular, sedimentary rock composed primarily of calcium carbonate in the form of calcite. Limestone is formed from compressed and cemented seashells and marine animal skeletons. It is softer and more easily worked than marble. Limestone is usually a cream to grey colour and varies in grain size and hardness. Chalk is a porous, fine-grained limestone. Coquina is a soft limestone made up of shell

fragments. Limestone is used as a building stone and for sculpture. It is also crushed into aggregate, or burned to produce lime. It is also used in the manufacture of cement.
Synonyms: Coquina

Limestone: any rock or stone whose main constituents are calcium carbonate or calcium and magnesium carbonates.

Limestone whitening - See whitening **Limewash** (whitewash, whitening) - Limewash is one of the simplest, but also one of the most effective, external *épauit* treatments. It consists of a milk-like mixture of water and lime used to coat the exterior or interior surfaces of a structure. It has no added binding medium. Calcium oxide (quicklime) is made up as a slurry in water, and brushed directly onto the wall. As the water evaporates, the calcium oxide takes up carbon dioxide from the air and forms insoluble calcium carbonate.

Slaked lime mixed with water will rub off rather easily. Traditionally, additional ingredients included glue, or size water, to bind and improve adhesion. Sometimes, common salt or calcium chloride would be added to tallow washes (Lime-tallow limewash) to assist the tallow to emulsify, and being hygroscopic would assist the carbonation of the lime on exposure. It is possible to tint limewash, using chemically inert pigments such as ochres and umbers, but limewashes are usually white.

Limewater - An aqueous solution of calcium hydroxide produced by slaking lime.

Limewater, is a colourless somewhat milky solution that is strongly alkaline even though calcium hydroxide is only slightly soluble in water. Limewater was used to saturate plaster before the application of secco colours.

Synonyms: calcium hydroxide; milk of lime; lime water

Limewash: a simple form of paint prepared from lime, with or without various additives. It is most suitable for use on walls and on ceilings, both internally and externally.

Lincrusta Walton - The name of a relief-decorated wallpaper produced from the end of the 19th century in England in imitation of ornamental plasterwork. The paper was patented in 1877 by Fredrick Walton. It was made from a mixture of cotton fibres and linseed oil which, formed into a sheet, was passed between two metal rollers. The pattern was raised on one roller and recessed on the other, so that the material was forced into relief.

Linen fold: a popular pattern resembling the folds of a napkin. More commonly found in wood

Linseed oil - A drying oil obtained from the seeds of the flax (*Linum usitatissimum*) plant. Linseed oil contains glycerides of linolenic (48-60%), oleic (14-24%), linoleic (14-19%), palmitic (6-7%) and stearic (3-6%) (Serpico and White 2000). The drying property is due to the unsaturated bonds in the linoleic and linolenic groups. Linseed oil is the most important and largely used oil for paints and varnishes. The yellow-gold colour oil is commercially extracted by various methods. The seeds can be crushed in hydraulic or screw-type presses to produce cold-pressed oil. The same process performed on steam-heated seeds produces hot-pressed oil. Cold-pressing is a less efficient manner for extraction, but it produces a higher quality artist paint. Many types of ageing, refining and bleaching procedures have been used to purify the oil and make it dry faster.

Linseed oil produces a hard, insoluble film as it dries. It is used in paints, varnishes and synthetic resins. The application of oil, including linseed oil, to the surface of stucco marble has always been quite common in order to increase the gloss of an already well polished surface.

Synonyms: flaxseed oil; linum oil; raw; cold-pressed; refined; stand oil; blown; bodied; boiled; sun-refined; sun-bleached; double boiled

Linseed oil, boiled - A processed linseed oil that has been heated (but not to its boiling point) to produce a medium that dries faster than normal. Often called linseed oil varnish, the oil is heated to 200°C for several hours. Small amounts of dryers, such as

cobalt or lead salts may be added (see linoleate varnish). Boiled linseed oil dries with a high glossy sheen and is used for industrial paints and varnishes.

Litmus - A natural, blue dye extracted from certain lichens, such as *Variolaria Roccella tinctorum* or *V. Lecanora tartarea*. Litmus is water soluble and may have been occasionally used as a watercolour pigment. In alkaline solutions (above pH 8.3) litmus turns blue and in acid solutions (below pH 4.5) it is red. The neutral tint is violet. It is listed among the additional pigments used for colouring stucco marble in the nineteenth century.

Synonyms: lichen blue; lakemus

Logwood $C_{10}H_{14}O_6 \cdot 3H_2O$ (dye) - A natural red dye extracted from a small redwood tree, *Haematoxylon campechianum*, indigenous to Central America, Mexico and the West Indies. The dye is contained in the heartwood of the tree; the wood is cut into blocks and sold directly or further cut into chips. The primary water-soluble colorant, hematoxylin, oxidises to form the reddish-brown metallic crystals of hematein that are insoluble in water. Using a variety of mordants, the red extract can be prepared as a lake ranging in colour from dark blue (chrome or copper), violet-blue (alum or tin) to black (iron). Logwood was used in watercolours. Logwood dye was introduced in Europe by the Spaniards in the 16th century. Because of poor lightfastness, Britain banned the use of logwood from 1581 and 1662. The ban was lifted about 100 years later when it was shown that mordants could make the colour more stable. Logwood became an important dye because it was inexpensive and covered a wide colour range. It is not used as an artist pigment because of poor lightfastness. It is mentioned among the organic dyes typically used for dark colours for colouring stucco marble.

Synonyms: campeachy; campeachy; hematein; haematein; hematoxylin (colorant in wood extract); hematoxylon (wood extract); haematoxylon; haematoxylum; blockwood; St. Martin's wood; province wood; Natural Black 3; CI 75290

Madder - A natural red dye obtained from *Rubia tinctorum*, a perennial herb cultivated in Europe and Asia Minor. The cultivation of madder spread to Asia Minor about the 10th century; it was introduced into Europe by the 13th. The dye contains three principle colouring components: alizarin (red), purpurin (red) and xanthine (yellow). The colours are extracted from the dried, powdered root as a precipitate when it is boiled in water. Alum lakes of madder, madder lake and rose madder, were used as artists pigments. Madder forms a bright red colour when precipitated on aluminium hydroxide. Tin, chromium and iron mordants can produce purple, brown and pink colours. After commercial introduction of the synthetic alizarin in 1871, the natural product was no longer used, though natural rose madder was still used occasionally as a lake for artists' colours. Madder lake is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century. The presence of purpurin along with alizarin has been used to distinguish natural madder dyes from the synthetic alizarin dyes. Purpurin fluoresces a bright yellow-red while alizarin produces a pale violet colour.

Synonyms: madder lake; alizarin (natural); purpurin (natural); xanthine (natural); garancine; Pigment Red 83; CI 58000:1; Natural Red 9; CI Nos. 75330, 75420; dyer's root; Farberrote (Ger.); Krapplack (Ger.); laque de garance (Fr.); lacca di robbia (Ital.); laca de rubia (Sp.); rose madder; Turkey red

Magnesian limestone - Permian limestones which have had their chemical composition naturally altered with the calcium content being replaced by magnesium. Fine grained and varying from yellow/brown to cream in colour, although they weather to a dark grey.

Synonyms: magnesium limestone

Making good: repair work to existing plaster or render work.

Malachite $\text{CuCO}_3\text{-Cu(OH)}_2$ - An opaque green mineral composed of basic (hydrated) copper carbonate with pronounced, often concentric, banding. It has a Mohs hardness of 4. Malachite occurs naturally with the blue copper carbonate mineral called azurite with malachite being the more abundant of the two. Major deposits of the copper ores have been found in Siberia (Nizhne-Tagilsk), France (Chessy), Namibia (Tsumeb), and the U.S. (Bisbee, Arizona). Both malachite and azurite have been used as gemstones and paint pigments since before 3000 BCE. Malachite is prepared as a pigment by careful selection, grinding, washing and levigation. Coarsely ground malachite gives a dark green colour while finely ground particles give a lighter more transparent tone. Malachite is lightfast but is sensitive to acids and sulphur fumes. Basic copper carbonate can also be made artificially by colouring chalk with copper sulphate. The synthetic pigment, called green verditer, tends to have regularly sized particles with rounded edges. The colour is paler than malachite. It was rarely used in fine art paintings, but rather for both distemper and oil based interior house paints in the 19th century. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: basic copper carbonate; basic cupric carbonate; green hydrous copper carbonate; green bice; Bremen green; green verditer; Hungarian green; mountain green; mineral green; copper green; iris green; Olympian green; Berggrün (Ger.); Malachit (Ger.); verdetto della Magna (It.); malachito (It.) malaquita (Sp.); malachite (Fr.); rokusho (Jap.); shih lü (Chin.)

Manganese oxide MnO - 1. Manganese oxide is a general name for the various oxide forms of manganese: such as manganese oxide (MnO), manganese dioxide (MnO_2), manganese sesquioxide (Mn_2O_3) and manganese tetroxide (Mn_3O_4). 2. Manganese oxide (MnO) is a bright green powder that can be oxidised to form the other manganese oxide compounds.

Synonyms: manganous oxide; manganese monoxide

Man made material - A material or combination of materials manufactured by human effort, or fashioned into shape by man or a man made industrial process (excluding metal).

Marbelite - A synthetic, mouldable, artificial marble. Marbelite is made by heating potassium alum in water then added 10% heavy spar and marble dust (Brady 1971). It is cast into rubber moulds.

Synonyms: artificial marble

Marble CaCO_3 - A hard, dense, crystalline stone primarily composed of calcium carbonate. Marble is limestone or dolomite that has been metamorphosed with heat and pressure. Pure calcite marble is white, but impurities produce a wide variety of colouring and patterns. Marble has fine grains and polishes to a smooth, high gloss. It is used for statuary and buildings. Marble has been quarried from sites around the world. Mayer (1969) lists the following locations and types of marbles: - Greece: Parian marble, Pentelic marble, rosso antico, Eleusinian marble - Italy: Carrara marble, bardiglio, cipolin, parmazo marble - Belgium: rance, Belgian black, St. Anne marble - France: Languedoc marble, griotte, Sarrancolin marble - U.S.: Vermont white statuary, Georgia white, Colorado Yule statuary, Alabama cream, Tennessee pink, Rockingham royal black.

The technique used in the production of scagliola, which employs coloured mixes of gypsum plaster and small chips of stone, was developed to imitate the rich colour of pietre dure.

Synonyms: calcium carbonate; Marmor (Ger.); marbre (Fr.); marmo (It.) marmol (Sp.)

Marble dust - Marble chips that have been crushed to form a powder. Marble dust is used as an inert pigment and filler in paints. Even as a fine powder, some of the

crystalline surfaces reflect light adding a sparkle to regions in which it has been added to the plaster used in a fresco support.

Synonyms: marble meal; marble grit

Marble-gypsum - An alternative name for alum-gypsum.

Marezzo marble - A similar material to Scagliola, also used to imitate marble, but relying entirely on pigments rather than stone aggregates for effect. Coloured Keene's cement or gypsum plaster is used, together with animal glue and pigments, if a coloured marble is being copied. Frequently marezzo was cast on smooth sheets of slate or glass to give a polished surface; some polishing with pumice stones then followed. However, as the mould itself creates a reasonably smooth surface, the polishing process is not as lengthy as that for scagliola and thus marezzo is easier to produce. It was sometimes used for small areas of external cladding.

Marmorino - A mortar prepared from lime mixed with marble dust. It is mentioned as one of the historic techniques for decorating architectural surfaces.

Synonym : marmorina

Matrix: often used today to describe some form of cementing material used in the production of a plaster/render mix. Derived from the Latin, its original meaning related to a mould in which anything is formed.

Metope: used to describe the spaces found within certain friezes, eg: the space between two dentils in an Ionic frieze, or the space between two triglyphs in the frieze of the Doric order.

Milk of lime: a free flowing suspension of hydrated lime in water in such proportions as to resemble milk in appearance.

Mitre: the line formed by the intersections of two mouldings or other surfaces at any angle other than 180°.

Mitre leaf: a plaster leaf, often pre-cast used to cover over the intersection of a line of enrichment.

Model: the original form which a copy or a mould is taken and will be produced. Either formed by a modeller or by a plasterer often using several techniques.

Modeller: one who designs and makes models in clay, plaster, wax, resin/plastic, etc.

Modelling: the forming of figures, architectural details, and works of art, from which copies will be reproduced. Can also mean the forming of figures and ornamentation direct from the final material, such as terra cotta, clay, plaster, cement, etc.

Modillion: an ornament like a small bracket or console used beneath a classical cornice. Also termed a block.

Module: a measure of proportion, the lower diameter of the shaft of a column.

Mortar: Any material in a plastic state which can be trowelled, becomes hard in place, and which can be used for bedding and jointing masonry units.

Mould: a reverse pattern of a model in which a cast is formed, these may be of plaster or a flexible plastic.

A running mould is used to form plastic mouldings. A reverse running mould is used to form a casting mould and a reverse casting mould is one made without the aid of a model.

Mouldings: these form part of an order or element of decoration, which is composed of various curves and squares. Can be projecting or sunken often forming bands on the face of a wall, column or panel. Capable of infinite variations.

Moulding-Piece: a model or original with a ground, or otherwise constructed to mould form. It is sometimes termed a solid.

Muffle: a temporary profile used on both solid and reverse running moulds to assist with the building up of a feature, or detail of ornamentation. May be made of wood, metal or plaster.

Nail-head Moulding: moulding composed of a series of pyramidal projections.

Napkin Pattern: (see Linen Fold)

Natural cement - Any naturally occurring mixture of limestone and clay. A natural cement is made by powdering the rock then calcining the limestone and then grinding the material into a fine powder to produce a hydraulic cement. This is the ancient method of cement production that was used for Roman cement. Natural cement sets quicker than Portland cement but it is softer and weaker.

Synonyms: natural cement; Roman cement; Rosendale cement; hydraulic lime

Neat cement - A cement mortar or grout made without addition of sand or lime.

RS Means Building Glossary (undated)

Neat: plaster or cement with no aggregate, no additive, used, nothing added but water.

Neat plaster - Plaster without the addition of sand or aggregate.

Neck Mouldings: those round the lower part of a capital.

Niche: a recess in a wall, pillar or column. From the Italian *nicchia* ? a shell.

Non-hydraulic lime: Class A lime. A lime with high purity.

Non-drying oil - Vegetable and fish oils that do not dry or form a film, even on long exposure to air. Non-drying oils have a high degree of saturation, which is indicated by a low iodine number (80 - 100). Some non-drying oils are used as plasticisers with drying oils and with natural and synthetic resins. Fish oils are sometimes used in industrial paints.

Synonyms: non-drying oil; fish oil; mineral oil; castor oil; jojoba bean oil; coconut oil; peanut oil; olive oil; spike oil; sesame oil; lavender oil; almond oil; hazelnut oil; rice oil; wheat germ oil; peppermint oil; turtle oil; clove oil; lemon oil; aniseed oil; patchouli oil; rosemary oil; cassia oil; camphor oil; citronella oil; pine oil; avocado oil; palm oil; tea tree oil; basilic oil; lime oil; grape oil; rapeseed oil; hempseed oil; claw oil; rice bran oil; eucalyptus oil; plate oil; mustard oil; arachis oil; ravisson oil; jamba oil

Nosing: the projecting part of a moulding.

Oblique Angle: an angle that is greater or less than a right angle.

Oblong: a rectangle of unequal dimensions, a figure longer than broad.

Obtuse: the opposite to an acute or sharp angle.

Ochre - Ochres are a group of pigments varying in colour from red to brown to light yellow. Natural ochres are minerals combining clay and iron oxide : the colour of the ochre is determined by the proportion of iron oxide present. They are an important type of pigment as they are chemically inert and therefore completely reliable on all surfaces and in all media. Ochre is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Ogee: or O.G. a curve composed partly of a convex and partly of a concave line;

applied to the sections of moulding and the outlines of arches **Oil** - A general name for a wide variety of viscous liquids that are obtained from mineral, vegetable, animal and synthetic substances. In general, oils are slippery, combustible liquids that are immiscible in water. In the 1800s, oil were classified as either volatile or fixed. Currently oils are further subdivided by function and type. One classification scheme is as follows (with examples): 1. Mineral - aliphatic (paraffin) or aromatic (asphaltic) 2. Vegetable - drying (linseed), semidrying (soybean) or non-drying (castor) 3. Animal - fats (lard), liquid (fish oil) 4. Essential - odorous oils from plants (turpentine, clove, lemon, camphor)

1. Edible - plant oil used in food products (olive, soybean, corn).

The application of oil (linseed oil, poppy-seed oil, nut oil and sometimes olive oil) to the surface of stucco marble has always been quite common in order to increase the gloss of an already well polished surface. Different types of oil are mentioned in the seventeenth, eighteenth and twentieth century as substances used for coating the

surface of stucco marble. Further wax treatment is often added: in these cases, wax (or wax in turpentine, carnauba wax or beeswax) is applied to the surface with a linen cloth.

Oil of tartar - See potassium carbonate

Synonyms: potassium carbonate

Oil gilding - A gilding process in which gold leaf is applied over a thin layer of a drying oil placed on a gesso surface that has been sized. The drying oil may be composed of linseed oil, an oil-resin, an oil-wax or urushiol. Oil gilding was used for small areas of paintings and for lacquer ware.

Oil paint - A paint made by grinding pigments with a drying oil such as linseed oil, from the flax plant; this dries most rapidly but is slightly yellow. Other oils used include poppy or walnut oil. After 1940 many oil paints contained alkyd binders to provide faster drying times. Oil paint can be used on all impervious surfaces and on porous ones, provided these have been sized or prepared with some kind of ground.

Synonyms: oil colour; oil paints

Oil of turpentine - A name for turpentine used prior to World War I.

Olive oil - A pale, greenish-yellow non-drying oil expressed from the fruit of the olive tree, *Olea europaea*. Olive oil contains glycerides of oleic acid (56-83%), palmitic acid (8-18%), linoleic acid (4-19%), stearic acid (2-5%), linolenic acid (0.3-1%) and arachidic acid (0.9%) with small amounts of squalene, phytosterol and tocopherol (Serpico and White 2000). Olive oil becomes rancid on exposure to air and becomes turbid at cold temperatures. The application of oil, including olive oil, to the surface of stucco marble has always been quite common in order to increase the gloss of an already well polished surface.

O.P.C.: Ordinary Portland Cement.

Orders: the five orders of classical architecture: The Tuscan, the Doric, the Ionic, the Corinthian, the Composite. Their chief parts are the Column, with its base, shaft and capital, and the Entablature, the treatment of which constitutes the particular style.

Oriel: a bow-window, either corbelled out from the wall or rising from the ground.

Original: a first design or model. The term may also be applied to a moulding piece.

Oversail: the part of an entablature, cornices, etc., overhanging the face of a wall shaft of a column, etc.

Ovolo: a round convex moulding.

Paint - Any pigmented liquid, liquefiable, or mastic composition designed for application to a substrate in a thin layer which is converted to an opaque solid film after application. Paint applied to masonry may be solvent or water based, or may be a masonry paint of a slightly cementitious nature specially formulated with various types of aggregate or thickening agents to smooth rough or uneven masonry walls. Colour washes based on lime, such as whitewash, although not technically considered to be paint, and colour stains which do not form a film on top of the masonry, but instead penetrate into the masonry substrate, have traditionally provided many of the same benefits as paint.

Pamure: a vine ornament.

Paraffin wax - A white, translucent odourless hydrocarbon wax that is chemically inert. Paraffin was first produced commercially in 1867 as a refined petroleum product composed of a mixture of saturated straight chain hydrocarbons (C_{22} - C_{36}). Production consists of separation by distillation followed by chemical treatment and decolorisation. Synthetic paraffin wax made from coal products was introduced after World War II. The snow-white synthetic paraffin is harder and purer than petroleum-based paraffin waxes. Paraffin is used to make sealing materials and for masonry and concrete treatment. Microcrystalline wax is a special refined grade of paraffin wax.

Synonyms: microcrystalline wax; paraffin scale

Paraform - Paraformaldehyde, an additive used with wood flour as a hardener in adhesives. See also resorcinal resin adhesive.

Parchment - A material made by stretching a wet skin, usually calf-, deer-, goat- or sheepskin, which has been unhaired using lime, on a framework and allowing it to dry in the untanned condition under tension. Often the grain layer is scraped away, using a special knife, and the surfaces are then treated with hot water, chalk and other materials to remove grease and give a more uniform substrate.

Parchment glue - A jelly-like, water soluble product of cooked parchment scraps. Parchment glue is composed of gelatin.

Synonyms: parchment size

Parchment size - Parchment size is listed as one of the organic additives used for stucco marble preparation according to literature. In particular, parchment size is defined as gelatine made from parchment waste. See also : parchment glue.

Pargeting (Pargetting or Parging) - External decorative plasterwork often incised or modelled with ornamental impressions or patterns made with a mould or comb. It consists of a tough lime plaster, made of lime putty or mixtures of lime and gypsum plaster, reinforced with ox hair, and with tallow sometimes added as a plasticizer and a water-repellent. The surface of the pargeting was frequently limewashed; occasionally linseed oil or wax was used as a protective coating. It was usually applied to timber-framed houses, especially during 15th and 16th centuries in south-east England. Ashurst (1983); Grimmer (1984); Trench (2000); English Heritage (2000)

Parian cement - Patented J. Keating 1846. A hard finish plaster used for interior stucco decoration. It was similar to Keene's cement plaster, except borax was used as an additive to finely powdered gypsum in place of alum, to accelerate the setting. Plaster of Paris was soaked in a solution of borax (sodium borate), cream of tartar (potassium hydrogen tartrate) in water and subsequently calcined. Parian cement was free working and possessed good tensile strength. It had high strength and could be polished. It was a hard-finish plaster, used neat for mouldings over a float coat of one part Portland cement to three parts sand. It was also used for flooring and for imitation tiling, as well as for sgraffito.

Synonyms: gypsum cement; hard-finish plaster

Patera: a small circular ornament in classical architecture. The term is now often applied to any small carved ornament forming one of a series.

Pearlite - A eutectic structure of cast iron composed of alternating layers of ferrite and cementite. Pearlite occurs when the carbon content reaches 0.8% (Scott 1991). It is commonly found in ancient steels.

Pediment: a gable or triangular crowning ornament often placed on the front of a building, over doors, windows or other openings. The apex maybe open when it is then termed a *ëbroken pedimentí*.

Pebble - Rock fragment (diameter 4-64mm) larger than gravel and smaller than cobble, combined with other material e.g. flint, for decorative effect.

Pebbledash - A render with small washed stones added as aggregate. Popular in the early 20th century.

Peg mould: a running mould with pegs fixed into the slipper or horse in such apposition that they will become the main bearing points.

Penetrant - An additive that increases a liquid's ability to penetrate a surface or enter the pores of a substrate. Penetrants are typically used as wetting agents.

Peristyle: a colonnade round a courtyard.

Perlite - 1. A eutectic material formed between ferrite and cementite. 2. A type of obsidian found in California that is 70-75% silica, 12-14% alumina and 6-8% alkalis. Perlite contains a high proportions of cracks, spheroids and water. When it is flash

roasted to 1000°C, perlite expands to 20 times its size forming bubble-filled beads. This white aggregate is then crushed and used as an extender. Expanded perlite is also used to make insulating bricks.

Synonyms: Pearlite

Permeability: the ease with which a liquid or vapour can pass through a solid material.

Persian berries - Persian berries, also called buckthorn berries, are small berries from any shrub of the buckthorn family, such as *Rhamnus infectorius*, *R. amygdalinus*, *R. oleoides*, or *R. alaternus*. Buckthorn plants are native to the near East and have been cultivated in Europe since Roman times. A water-soluble dye was extracted from the berries for use in lake pigments. The unripe berries produce a yellow juice or sap that is used for making a yellow pigment called sap green. The ripe berries were used to make Dutch pink, a yellow lake. The principle colorant, rhamnetin, is extracted from the dried berries by boiling water. Some plants also contain other colorants such as kaempferol (*R. cartharticus*), quercetin, xanthorhamnin and emodin. Sap green lake is made with alum and can vary in colour from yellow to green. A fugitive yellow colour prepared on alum was widely used in house paints in England in the 18th century. Persian berries are listed among the additional pigments used for colouring stucco marble in the nineteenth century.

Synonyms: French berries; buckthorn berries; dyer's buckthorn; Persian berry lake; yellow berries; sap green; Dutch pink; grain d' Avignon (Fr.); Avignon berries; Gelbbeere (Ger.) Spincervino (Ital.) Espino cervical (Sp.); Persische bessen (Dut.); rhamnetin

PFA: Pulverised Fuel Ash is a waste product from power stations burning pulverised coal. The product varies with different coals and different burning conditions, but some PFAs are pozzolanic. They are all contaminated with sulphates, some much more so than others. PFA is used in grouts with lime, and with cement where it serves two purposes: much of the material is in the form of tiny spheres of glass which help the grout to flow readily.

Pargeting, parging, to parge: 1: rich decoration on external plasterwork by modelling the surface. 2: lining a flue or other surface with a mix of lime putty and cow dung.

Pigments - A coloured powder which, unlike dye, is insoluble. When they are mixed in large amounts with a clear binding medium, pigments become paint, but they can also be added in small quantities to fluid materials to act as colouring agents. A limited range of pigments, including ochres, umbers and some inorganic pigments such as cobalt blue, chrome green and chrome yellow, can be used to colour lime mortars, concrete and plaster. Early literature has indicated that mineral pigments as well as organic dyes were used for the coloration of stucco marble. Usually, different manuals recommended choosing the pigments used for frescoes - resistant to light and to the caustic action of lime - even though this was not always the practice, especially in the nineteenth and twentieth century. During the baroque period, the pigments recommended were those used for fresco paintings. Mixtures containing organic dyes have been much less used than mineral pigments because natural dyestuffs tend to fade. Organic dyes (tannins from gall-nuts, brown wood, logwood, walnut husk for black marble imitation) were typically used for dark colours. In the twentieth century, coloration was obtained by chemical reaction involving copper vitriol, iron vitriol, gypsum and alum with lime.

Pilaster: a flat, rectangular column against a wall.

Pitch - A sticky, black residue obtained from the distillation of coal tar, petroleum or pine tar. Pitch is used as a sealant as well as a component in roofing and water proofing.

Synonyms: Burgundy pitch; Canada pitch; Jew's pitch

Pitting and popping: a defect in plasterwork caused by late hydration of over-burnt quicklime when it has been incorporated into a plaster. As the quicklime hydrates it tries to expand and pressure builds up behind the surface.

Plaster - 1. Shortened name for plaster of Paris which is composed of calcium sulphate hemihydrate. It is also called calcined gypsum. 2. A powder, that forms a pasty mixture with water and dries to a hard impenetrable solid. Plaster is made using several formulations. Most plasters contain calcined gypsum or lime as a binder; some contain clay. Many use sand, hair, jute or straw as extenders. Some may contain small amounts of salts (potassium sulphate) as accelerants. Organic materials (blood, glue, casein) and weak acids (citric acid, boric acid) can act as retardants. Plaster is used as a finish material in wall and ceiling construction. In its plastic form it can be used for moulding and casting. Some examples are:

- lime plaster - contains calcium oxide; used for frescos and wall decoration - gypsum plaster - contains calcined and ground gypsum; See gypsum cement. - plaster of Paris - calcined gypsum; used for moulds, sculpture, casts - stucco - contains gypsum and sand or chalk; used for walls, ceilings, decoration

Plain plastering: plastering to simple smooth surfaces without three dimensional relief or decoration.

Plain face, plaster: precast fibrous plaster to form areas of plain surfacing on either ceiling or wall.

Plain face Ordinary Portland Cement OPC/sand: float finish cement and sand.

Planted: a term applied to mouldings and other ornamental features that are moulded or cast separately and then attached and not formed in the solid.

Planting: fixing any part of a moulding or an ornament on the main part of the work.

Plaster of Paris: calcium sulphate hemi-hydrate, $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ derived from gypsum. Casting plaster. A very quick setting plaster which expands as it sets.

Plaster: plaster may be any material used in a plastic state to form a durable finishing coat to the surfaces of walls and ceilings and other elements of a building. Typical materials are based on lime or gypsum or cement or soil, or any combination of those.

Plaster gypsum: the basic gypsum plaster is made from mined or quarried gypsum which is washed, crushed and ground then heated till three-quarters of its water content is driven off. The product is class A gypsum plaster, which, when added to clean water, will set within a period of some fifteen to twenty minutes. Various additives and aggregates are added in bulk to produce the classification of gypsum plaster as listed in BS 1191 Parts 1 and 2.

Plaster of Paris $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ - A fine white powder composed of calcium sulphate hemihydrate. Plaster of Paris obtained its name because it was primarily prepared from gypsum quarried in the Montmartre district of Paris. It is produced by heating gypsum, alabaster or selenite, which are composed of calcium sulphate dihydrate, to temperatures below 250°C ($150^\circ - 160^\circ\text{C}$) to drive off some of the water of crystallisation. The resulting calcium sulphate hemihydrate is stable in air, but readily combines with water to form a paste that rapidly sets (in approximately 30 minutes) to an impenetrable solid. It generates heat with setting and may expand slightly. When the set is complete the plaster returns to its original size. Setting can be accelerated by the addition of small amounts of salts (aluminium sulphate, potassium sulphate) or retarded by the addition of organic materials (blood, glue, casein). Plaster of Paris has long been used for moulds, sculpture and casts, and for the decoration of walls and ceilings. Because plaster of Paris is pure white and highly porous, the surface is readily soiled and was therefore often coated. Materials such as tea, gum arabic, waxes, shellac, lime wash and oil-based paints have been used as coatings. Plaster of Paris is also frequently painted and oil-gilded. A sealant, such as animal glue, gum arabic or shellac, is applied first to reduce the porosity of the plaster. Distemper and oil-based paints are commonly used. It is a component of alum-gypsum.

Synonyms: calcined gypsum; burnt gypsum; partially dehydrated gypsum; plaster;

calcium sulphate hemihydrate

Plaster stone - See gypsum

Plaster resin-based: modern materials produced for internal and external smooth and textured finishes may be trowel or spray applied. Consist mainly of resin and aggregate and in some instances lime, usually premixed and read for use.

Plasterboard - See gypsum board

Synonyms: wall board; drywall

Plasterwork - Architectural finishing or decoration executed in plaster. Plasterwork is used both internally and externally. The term stucco can also be used to describe all forms of decorative plasterwork. Renders in clay and gypsum plasters were used in ancient Egypt, India and China to produce a smooth surface over rough stone or mud brick walls. The finished surface was often painted or decorated. The Romans used mixtures of lime and sand to build up preparatory layers over which finer applications of gypsum, lime, sand and marble dust were made; pozzolanic materials were sometimes added to produce a more rapid set. Modelled stucco was employed throughout the Roman empire and plaster decoration continued to be used in Europe in the Middle Ages. From this time, surface decoration on building exteriors was produced by incising patterns into wet plaster or by moulding and free-hand modelling. Following the fall of the Roman empire, the addition of marble dust to plaster to allow the production of fine detail and a hard, smooth finish in hand-modelled and moulded decoration was not used until the Renaissance. Stucco was widely employed by Mannerist and Baroque artists throughout Europe because it allowed the production of elaborate high relief but lightweight figurative decoration. In the 17th and 18th centuries, lime and sand mixes usually prevailed, with gypsum added to accelerate the set; if the set was too rapid to allow detailed working of the surface, glue and water were used to retard it. Various materials were used to increase pliancy, including curd, glue and almond oil. Marble dust was used where it was available. Plaster of Paris was used from the 18th century to cast repeat decoration for walls and ceilings. A further advance in the prefabrication of ornament was the invention of fibrous plasterwork in the mid-19th century, in which large sections of lightweight ornament could be quickly produced and fixed in place. Exterior stucco can be painted using the fresco technique, in which the pigments become incorporated into the plaster during the setting process, or with oil-based paints. Other surface finishes include unpainted, smooth, polished surfaces, sgraffito, scagliola, or decorations made by pressing objects such as shells, pieces of glass and mirrors, and pebbles into the plaster while wet, a technique referred to as grotto-work.

Plasterer's putty - A hydrated lime with just enough water added to make a thick paste for use as a hole or crack filler.

Plasticiser - An additive that increases the plasticity of another material, such as a cement paste, mortar, or concrete mixture, or the flexibility or softness of organic compounds. plasticisers are usually non-volatile organic liquids or low-melting solids. Examples are dibutyl phthalate, tricresyl phosphate, ethylene glycol, and castor oil. Phthalate plasticisers were commonly used in the middle of the 20th century for PVAC paints. However, since these oily plasticisers tended to creep and separate with time producing an oily surface and leaving a brittle substrate, later formulations began using copolymerisation techniques for film modification rather than plasticisers.

Plastic materials: in this context, plastic means readily moulded with very little pressure.

Plasticity: a measure of the ease with which a material may be moulded or distorted.

Plasticizer: an additive used to make a mortar or concrete more workable. Often this will be an air entraining agent to form tiny bubbles in the mix.

Plinth: the base of a wall above the ground with a projecting surface.

Pointing: the finished surface layer in the joints between masonry units.

Polyester resin - A thermoplastic alkyd type resin. Polyester is made by the reaction of an ester of dihydric alcohol and terephthalic acid. There are two major types of polyester. One type, polyethylene terephthalate (PET) was first developed by English chemists, J. R. Whinfield and J.T. Dickson, in 1941. PET is used to make Mylar® and other strong moisture-resistant films. The second type, polybutylene terephthalate (PBT), is mainly used as a moulding compound. When catalysed, polyesters can harden at room temperature and pressure with very little shrinkage to produce a clear, colourless fibre, block or film.

Synonyms: Dacron® [DuPont]; Mylar® [DuPont]; Bio-Plastic; Caroplastic; Castolite; Vestopal; Terylene [ICI]; Tergal; Tetlon; Palatal; Leguval [Bayer]; Kodel® [Eastman Chemical]; Paraplex [Resinous Products and Chemicals]

Polyvinyl acetate $[-CH_2CH(OOCCH_3)-]_n$ - A colourless, non-toxic thermoplastic resin prepared by the polymerisation of vinyl acetate. Polyvinyl acetate (PVAC) was first produced in 1912 and was used as an artists medium in 1938. It is one of the most widely used water-dispersed resins. Polyvinyl acetate water-based emulsions have been used as latex house paints, artists' media and common household white glues. Setting is accomplished by the removal of water due to evaporation or absorption into a substrate. PVAC resins produce clear, hard films that have good weather resistance and withstand water, grease, oil and petroleum fuels. Additional properties are high initial tack, almost invisible bond line, softening at 30-45°C, good biodegradation resistance, poor resistance to creep under load and low cost. Polyvinyl acetate resins and copolymers are also used as hot-melt adhesives, sealants and plastic wood.

Synonyms: PVAc; PVAC; PVA (incorrect); poly(vinyl acetate); vinyl emulsion; Vinamul [Vinyl Products]; AYAT [Union Carbide]; Elmers® Glue-All [Borden]; Duratite White Glue [DAP]; Gelva® [Solutia]; Rivit Glue; Resin W; Polymer Tempera [Borden]; Vinavyl

Poppy-seed oil - A natural, colourless, transparent drying oil obtained from the ripe seeds of the opium poppy (*Papaver somniferum*) native to the western Mediterranean region. Poppy seed oil contains linoleic acid (62-72%), oleic acid (10-30%), palmitic acid (9-10%), stearic acid (1.5-2.5%) and linolenic acid (0-5%) (Serpico and White 2000). Manufactured poppy seed oil comes primarily from India, Russia, France and Asia Minor. Cold pressed poppy oil is nearly colourless, but the hot pressed oil is reddish. Poppy oil dries slower than linseed oil, but it yellows less, so it was sometimes used with white pigments starting about the 17th century. The application of oil, including poppy-seed oil, to the surface of stucco marble has always been quite common in order to increase the gloss of an already well polished surface.

Synonyms: poppy oil; poppyseed oil; poppy-seed oil

Porosity: the extent to which a solid material has pores or voids.

Portland cement, ordinary Portland cement, O.P.C.: the common form of cement conforming to certain standards and made by grinding a clinker formed by firing a slurried mixture of clay and limestone at high temperature in a kiln. Calcium sulphate is also ground in to modify the setting rate. Originally so called because when set it was said to be as hard as Portland stone.

Potassium carbonate K_2CO_3 - White deliquescent powder. Potassium carbonate is used in the manufacture of glass, pottery and smalt.

Synonyms: salts of tartar, pearl ash; potash; salt of wormwood; carbonate of potassium

Pozzolana - A rosy red volcanic clay that has been used as a pigment and a component in cement. Pozzolana is mined in Italy at Pozzuoli near Naples. It has been used since ancient times by the Romans. Pozzolana is mixed with lime to form pozzolana cement. It dries slowly but forms a strong surface. Similar cements contain trass and Santorin earth. Pozzolana was also a popular pigment for fresco paintings

because it dried quickly to a hard impenetrable surface like cement. Synthetic pozzolanas are made from slag, burnt clay, HTI powder (a ceramic material of high temperature insulation), PFA (pulverised fuel ash) and powdered bricks.

Synonyms: terra di pozzuoli; Pozzuoli red; pozzuolana; gaize cement; puzzolan cement; Santorin cement; silikat-cement; tarras cement; trass cement

Pozzolana cement - 1. A natural cement, used in ancient times, made by grinding pozzolana with lime. 2. A cement that contains Portland cement (calcium silicate) mixed with ground pozzolana (volcanic rock) and sometimes lime.

Pozzolana cement is a hydraulic cement that hardens with water. It is more resistant to corrosive environments than plain Portland cement. Pozzolana cement is used for wall coatings. Artificial pozzolana cement is made with furnace slag (slag cement).

Synonyms: pozzuolana cement; gaize cement; puzzolan cement; pozzolanic cement; Santorin cement; silikat-cement; tarras cement; trass cement; slag Cement

Pozzolan, pozzolanic material: a pozzolan is any material which contains constituents, generally alumina and reactive silica, which will combine with hydrated lime at normal temperatures in the presence of moisture to form stable insoluble compounds with binding properties. There are many naturally occurring pozzolanic materials such as certain volcanic ashes, and several artificial materials such as crushed soft bricks

Profile: outline of a moulding or other ornament.

Prussian blue $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ - A vivid, lightfast blue pigment. Prussian blue, synthetically produced ferric ferrocyanide, was developed in Berlin in 1704 by Diesbach. It is made by adding ferric chloride to a boiling solution of hexacyano ferrate. This forms a white intermediate, called Berlin white, that is oxidised in air to produce Prussian blue. Prussian blue has deep blue, finely divided particles that are transparent in watercolours. It has high tinting strength and is stable to light, although it will fade in strong light and turns brown in the presence of alkalis or heat. It is therefore inappropriate to use it on plaster walls. Prussian blue was the first cheap and stable pigment to replace the costly minerals azurite and lapis lazuli. It has tremendous tinting strength and is used as a pigment in watercolour and oil paints. It is listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: ferric ferrocyanide; iron blue; Turnbull's blue; Paris blue; Milori blue; Chinese blue; bronze blue; Berlin blue; American blue; Antwerp blue; steel blue; mineral blue; Hamburg blue; Pigment Blue 27; CI 77510; toning blue; gas blue; new blue; Erlanger blue; celestial blue; lacquer blue; soluble blue; oriental blue; Persian blue; potash blue; paste blue; Preussisch Blau (Ger.); bleu de Prusse (Fr.); Berlinerblau (Ger.); azzurro di Prussia (It.); azul de Prusia (Sp.); konjo (Jap.); yang lan (Ch.)

Pumice - A pale grey, porous, volcanic stone. Pumice is composed of potassium aluminium silicate with small amounts of iron and alkalis. Its spongy texture is due to numerous cavities formed by gas bubbles that were trapped when the stone solidified. Pumice is used as an abrasive. It has also been used as a coarsening agent for texturing painted surfaces. It is mentioned as grinding stone for polishing stucco marble by repeated grinding and polishing, performed with the use of a lot of water and various grinding stones, including pumice and sandstone for the first and second grinding; serpentine, limestone, hornblende, jasper, bloodstone for dark surfaces and meerscham for white surfaces. Today also synthetic pumice and sanding paper are used for some of the grinding and polishing steps. Pumice can also be added to lime to obtain a hydraulic set.

Synonyms: volcanic glass

Pumicestone paper - An abrasive paper.

Punic wax - A processed beeswax that was used in encaustic paintings. Punic wax

was probably made by combining beeswax with soda lime to produce a waxy soap. Repeated washings in hot water removed any excess caustic. Experiments conducted in Berlin to recreate an ancient recipe, yielded flakes of a hard brittle wax that melted between 73-75°C (163-167°F) (Wehlte 1975).

Synonyms: Carthagian wax; eleodoric wax

Quartz SiO₂ - A hard, crystalline, transparent, often coloured mineral made of silicon dioxide. Quartz is one of the most common minerals in the earth's crust and occurs as grains (sand), masses (agate, bloodstone, chalcedony, jasper, carnelian, etc.) or crystals (rock crystal, amethyst, citrine, etc.). It can also be found as a major constituent of rocks such as granite. Quartz usually crystallises in hexagonal prisms or pyramids. It has been mined or gathered as a semiprecious stone since Paleolithic times. Sand is an additive in porcelain, brick, cement and mortar. Because of its hardness (Mohs 7), quartz is also used as a cutting abrasive.

Synonyms: sand; agate; bloodstone; chalcedony; jasper; carnelian; sard; rock crystal (colourless); amethyst (purple); citrine (yellow); onyx; rose quartz (pink); smoky quartz (brown to black); yellow quartz; milky quartz (milk white); chrysoprase

Quarter Round: a moulding a quarter of a circle in section.

Quatrefoil: a four-leafed flower ornamentation.

Quicklime - Calcium oxide (CaO). See also lime.

Quirk: the recessed or sunk part placed at the side of a bead or moulding, much used in Gothic architecture. In Grecian architecture ovolos and ogees are usually quirked at the top, and sometimes in Roman. A *ëdouble quirkí* is when both sides of a bead or moulding are recessed.

Quoin: the external angle of a wall . The word is often used in connection with corner stones

Rabbit: (rebate, rabbet) a rectangular sinking along the edge or a piece of material, usually of wood or stone.

Radius: a straight line drawn from the centre to the circumference.

Radius Rod: used to strike/scribe out arches and also gives the length for the gig-stick in running circular mouldings.

Raffling: serrated or notched edges of leaves or foliage

Rangerís artificial stone - Patented in 1832 and named after its inventor, this artificial building stone combined a hydraulic lime with an aggregate such as beach shingle or broken flints and boiling water, which apparently produced a rapid set. See also : artificial stone

Rape-seed oil - A pale yellow vegetable oil expressed from the seeds of the *Brassica campestris* plant. Rapeseed oil is high in unsaturated acids, i.e., oleic, linoleic and erucic. This term is mentioned as small admixture of the polish composed of linseed oil, generally used in historic stucco in Krzeszów, Poland.

Synonyms: Colza oil; canola

Raw umber - A brown natural earth pigment that contains manganese dioxide and iron hydroxide.

Synonyms: umbra; terre d'ombre (Fr.); Pigment Brown 7

Reactive silica material - Several types of materials that react at high temperatures with Portland cement or lime during autoclaving, including pulverized silica, natural pozzolan, and fly ash.

Red ochre - Any of several naturally occurring red earth pigments. Red ochres contain hematite, red iron oxide, mixed with clay and vary widely in hue. They are stable pigments that have been used since ancient times. See red iron oxide.

Synonyms: red ochre; red earth; iron oxide red; Indian red

Reeding: a number of parallel beads.

Relief: prominent sculpted or modelled ornament partly projecting from the background on which it stands.

Relieving Arch: an arch over a lintel.

Render - A general term for the weatherproof coat on the external walls of a building.

Render coat: 1: the external plaster system. 2: the first coat of two-coat work (render and set) or of tree-cat work (render, float and set).

Rendering: applying a first coat of coarse stuff to a solid background.

Resin - A solid or semisolid amorphous organic material. Resins are usually high molecular weight materials that fracture conchoidally. Natural resins are clear to translucent brown exudates obtained from trees or insects, such as copal, rosin, sandarac, mastic, dammar, or shellac. Most natural resins are soluble in alcohols, ethers and carbon disulphide, but insoluble in water. They are used in varnishes, and adhesives. Synthetic resins, or polymers, are formed by a chemical reaction between two or more substances. Examples are acrylics, alkyds, vinyls, epoxies, polyesters, polyolefins, phenolics, polystyrene and cellulose acetate. Synthetic resins are used in plastics, paints, and adhesives.

Retarder - A chemical used to slow the drying rate of paint. Retarders were commonly used in the nineteenth century for wet-in-wet techniques. Examples of retarders for linseed oil paints are clove oil, spike oil, lavender oil, rosemary oil and poppy seed oil. Butyl lactate has been used as a retarder for industrial lacquers.

Synonyms: Inhibitor

Return: a continuation of a member or moulding in another direction, usually at right angles.

Reveals: the sides of an opening such as a window or doorway between the frames and the face of the wall.

Rich lime - A high quality calcium oxide with few impurities. When mixed with mortar, it improves the plasticity or workability of the mortar. Rich lime is also used for fresco plastering.

Rims: of casts, the bearing or fixing parts.

Rims: of moulds, the ruling-off edges.

Riven battens, riven laths: formed by splitting rather than sawing the timber. This leaves the fibres intact and gives considerable extra strength compared to sawn timber of a similar size.

Roman cement: the very first quick-setting natural cement was patented by James Parker in 1796. The patent was vigorously exploited and the material was very widely used for fifty years. It has a characteristic warm brown colour. There was production in England, Germany, Russia and the USA.

Roman cement - Technically a quick setting hydraulic cement or lime, made by calcining a natural mixture of calcium carbonate and clay, such as argillaceous limestone, to a temperature below that required to sinter the material, but high enough to decarbonate the calcium carbonate, followed by grinding. The term has also been adapted to denote cement made from burning lumps of marl found in London clay, a technique adopted for C19th building work. The term is so named because its brownish colour resembles ancient Roman cements produced by use of lime-pozzolan mixtures, but is not intended to denote a relationship with Roman period

Ropes: canvas cut into lengths, soaked in plaster, squeezed and twisted to form ropes. Usually placed under laths when reinforcing fibrous plaster casts.

Rose: the round flower placed in the centre of each side of the Corinthian capital; a circular ornament; a flower.

Rottenstone - A porous, lightweight, siliceous limestone used for polishing. This is mentioned as one of the polishes for stucco marble introduced in the twentieth century

(along with tin ashes, polishing-red, polishing lime, sorrel salt and talcum).

Roughcast - A render including an aggregate of gravel or stone chipping thrown rather than trowelled onto an external wall.

Rules: types used by plasterers; rules backed, buried, eccentric, featheredge, nib, notched, running, ruling in, traversing.

Running a mould: forming a cornice or similar moulding in plasterwork by drawing a template (the running mould) along guides across the plaster.

Running down: this consists of running down short lengths of moulding on either the spot board or a scaffold board, cutting and bedding in position.

Rustic-work, or Rustication: Ashlar masonry with the surface treated in a particular way. There are several varieties; the face of the stone is left rough or is artificially roughened; or it is smooth, but projects and has chamfered or rebated edges.

Sacrificial pointing or rendering: a pointing mortar or render deliberately designed to be less durable than the masonry it protects. Any harmful salts are drawn into its pores and away from the masonry units.

Saffron - A natural, golden yellow colorant obtained from the orange stigmas of the *Crocus sativus* flower native to the Middle East. Saffron was introduced to Europe through Spain in the 8th century. The deep yellow to orange colour in saffron is primarily due to crocetin. It is extracted by boiling the dried flowers in water. The transparent colorant was used as a watercolour pigment and a tint in varnishes. It is listed among the pigments and dyes used for colouring stucco marble in the seventeenth and eighteenth century.

Synonyms: crocin; karcom (Lat.); krokus (Gr.); azafran de Otono (Sp.); auripetrum colorant; red gold; Natural Yellow 6; CI 75100; safran (Fr.); Echter safran (Ger.); zafferano (It.); safraan (Dut.); French saffron

Sand - 1. Granular material passing the 3/8" sieve, almost entirely passing the No. 4 (4.75-millimeter) sieve, and predominantly retained on the No. 200 (75-micrometer) sieve, and resulting from natural disintegration and abrasion of rock or processing of completely friable sandstone. 2. That portion of an aggregate passing the No. 4 (4.75-millimeter) sieve, and resulting from natural disintegration and abrasion of rock or processing of completely friable sandstone. Note: The definitions are alternatives to be applied under differing circumstances. Definition (1) is applied to an entire aggregate either in a natural condition or after processing. Definition (2) is applied to a portion of an aggregate. Most natural sands are at least 98% silica. Fine aggregate produced by crushing rock, gravel, or slag commonly is known as manufactured sand. Finer than gravel, sand is used as an ingredient in mortar and other traditional building materials. It is also listed as inorganic additive used for stucco marble preparation according to literature.

Sand finish - 1. In plastering, a textured final coat, usually containing sand, lime putty, and Keene's cement. 2. A smooth finish derived from rubbing and sanding the final coat.

Sandstone - A sedimentary stone composed of grains of quartz sand, deposited following the erosion of older rocks, held together by cementing material and compacted by the weight of overlying sediments. The cementing material may be calcium carbonate, quartz, clay or various forms of iron. The nature of the cementing material and the degree of compaction affect the hardness, colour, texture and durability of the stone; the size of the quartz grains and the presence of other minerals also influence the character of the sandstone. Because of its gritty texture sandstone has been used as an abrasive. It is mentioned as grinding stone for polishing stucco marble by repeated grinding and polishing, performed with the use of a lot of water and various grinding stones, including sandstone and pumice for the first and second grinding;

serpentine, limestone, hornblende, jasper, bloodstone for dark surfaces and meerschaum for white surfaces.

Scotia: hollow moulding at the base of a column or pedestal.

Sap green - An obsolete lake pigment made from the juice of buckthorn berries (primarily *Rhamnus catharticus*), mordanted on alum. The primary colourant in *R. catharticus* is kaempferol, but berries from other buckthorn plants may contain rhamnetin or quercetin.

Sap green is a fugitive dark, yellowish green colour that was used in watercolour paints in the 17th and 18th centuries. It is listed as one of the additional pigments (?) used for colouring stucco marble in the nineteenth century.

Synonyms: bladder green; iris green; verd vessie

Scagliola - Scagliola is an inlay work of various coloured, smoothed and polished stucco pastes. Recipes from various written sources mention alabaster-gypsum as the basic material. The actual Italian meaning of scagliola is gypsum calcined between 130° and 170°C. The name scagliola originates probably from a variety of gypsum (Italian: gesso) used - selenite - a kind of gypsum made of transparent and translucent scales (scaglie). This mineral was known and used during the antiquity under the name of lapis specularis because of the translucent, mirror-like surface. The scagliola technique was invented by stuccoists working in Bavaria in the 16th century. Italian artists working in Germany introduced Italianate designs. The technique appeared in Italy during the baroque period, with the cult of illusionism. It was used to imitate marble and was popular in the 17th and 18th centuries for architectural features. One of the most famous production centres of scagliola with marble imitation was Carpi in Italy. In the seventeenth century, scagliola was made using selenite or sericolite occurring in the Appennino Emiliano in Italy. The selenite was put in an oven at 300°C until it was broken and could be ground with mortar and pestle into powder that was then sieved. Adding water and animal glue (rabbit skin glue or parchment glue) retarded the set of the plaster and produced a thick paste that could be coloured. Additives included sand or marble dust, and lime. The mix was coloured with dry pigments and filled with coloured marble or alabaster chips. Veining was mimicked by dusting the surface with dry pigments. The surface was smoothed with a metal scraper. Once the plaster had set, the long process of polishing the surface with pumice stones and filling any voids with a plaster slurry was carried out. Finally the surface was rubbed with oil to produce a high sheen. Figurative and ornamental decorations could be made with this material, imitating at least to some extent the pietra dura technique in which stones are cut to form inlays, mostly on flat surfaces like e.g. altar tables. It was also used for ornamental panels and columns (Rowland and Riley 1981). For the decoration of larger architectural areas, the technique of scagliola was used to imitate natural stone rather than to recreate decorative drawings - this is, according to most sources, how stucco marble started to develop. Scagliola is softer than true marble and scratches easily. Inlaid scagliola, which resembles pietre dure, uses the same materials, applied over a rigid support such as slate. A solid background colour is laid down and the shapes to be inlaid are gouged out. Coloured is then pressed into the voids to build up the desired image and the surface is polished and oiled.

Scour, scouring: giving plaster a smooth hard surface by working it in a circular motion with a cross grained float. This draws the binder and finest particles (laitance) to the surface. The same process can actually reduce durability in external work by leaving a lean layer behind the surface, that is a layer with a reduced proportion of binder.

Screed: (in plastering) a carefully levelled band of stuff to act as a guide for the rule, the tool which sets the level of the whole surface.

Scutch hammer: a hammer designed to be fitted with plain or toothed blades which can

be replaced when worn out. Used for hacking back grounds to form a key for plaster and render.

Seconds: the second coat of casting plaster used in casting large fibrous casts. It is always retarded and used to brush in all canvas, soaked laths, laps and ropes.

Sealant - Any material used to seal joints and openings. Natural waterproofing materials, such as waxes and tars have been used since ancient times. Oil-based caulk, or putty, was composed primarily of calcium carbonate and drying oils. The first synthetic elastomeric sealant, developed in the 1950s, was composed of polysulphide (Thiokol). Butyl rubber sealants, also manufactured in the 50s, contained talc, calcium carbonate, polybutene, mineral spirits and adhesion promoters. The first acrylic sealant, developed in 1958, was a solvent curing product that included calcium carbonate, silica, solvent and plasticizer. Silicone sealants, introduced in the 1960s, contained fumed silica, calcium carbonate, ground quartz, carbon black, talc and plasticisers.

Polyurethane elastomers provide good abrasion resistance. Latex caulks, available in the late 1960s, eliminated the use of organic solvents. They typically contain a polymer emulsion in water with calcium carbonate, plasticisers and other additives.

Synonyms: caulking; glazing; mastic; putty; Thiokol

Sedimentary rock - Rock such as limestone or sandstone that is formed from deposits of sediment consolidated by cementitious material and/or the weight of overlying layers of sediment.

Selenite $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ - A kind of gypsum made of transparent and translucent scales (ĕscagliei). This mineral was known and used during the antiquity under the name of ĕlapis specularis because of the translucent, mirror-like surface. Selenite and sericolite, both occurring in the Appennino Emiliano in Italy, were defined/called scagliola in the seventeenth century in Italy. The selenite was put in an oven at 300°C until it was broken and could be ground with mortar and pestle into powder that was then sieved. Adding water and animal glue produced a thick paste that could be coloured.

Selenitic: the addition of up to 5 per cent of gypsum plaster to hydraulic lime produces selenitic cement.

Selenitic cement (selenitic lime) - A type of lime cement that has had its hardening properties improved by the addition of 5-10% plaster of Paris.

Semi-hydraulic lime - A type of lime categorized intermediately between high-calcium lime and eminently hydraulic limes. When run to putty it is almost as workable as non-hydraulic lime, even though its hydraulic characteristics can be substantially reduced by soaking in water for several hours.

Septaria: the petrified excreta of extinct animals, found in nodules in various parts, and used in the manufacture of Roman and similar cements.

Setting: the quality that any material possesses of getting hard in a short time. The term is also used for the finishing coat of plaster work.

Setting stuff: a mix of lime and fine aggregates and possibly gauged with gypsum, for the finishing coat in two- and three-coat lime plasterwork.

Sgraffito: a decorative treatment of plaster achieved by cutting and scratching through a coat of one colour to reveal a different colour in the coat behind. This is done before the plaster has set.

Shellac: a substance made from lac which is a resinous insect secretion. The shellac flakes are soaked in methylated spirits and the solution used to seal plaster surfaces prior to the application of a release agent.

Sicilian brown - An old name for raw umber

Synonyms: raw umber

Silica SiO_2 - Colourless crystals or white amorphous powder. Silica is widely available because it makes up one of the largest portions of the earth's crust. In its purest form,

silica, or silicon dioxide, occurs as crystalline quartz. The more common, but less pure, forms are quartzite, sandstone and sand. The fossil form of silica is diatomaceous earth. All forms of silica are inert, unaffected by heat, insoluble in strong acids (except hydrofluoric) and slowly attacked by strong alkalis. Silica is not commonly used as a pigment, however, it is found in grounds, primers and wood fillers. Silica is used in the manufacture of glass, water glass, abrasives, ceramics and enamelware.

Synonyms: silicone dioxide; silicic anhydride; quartz; silex; diatomaceous earth; flint; diatomite; sand; quartzite; sandstone; amethyst; jasper, chalcedony; agate; onyx; tridymite; opal; cristobaliteilica

Silica flour (silica powder) - Very finely divided silica; a siliceous binder cement that reacts with lime under autoclave curing conditions. The flour is prepared by grinding silica, such as quartz, to a fine powder.

Silicate paint - A water-based paint containing a pigment with a silicon-containing binder such as sodium silicate or a silicon ester. Silicate paints have been used in murals and stereochrome paintings.

Synonyms: sodium silicate; water glass; silicon ester

Silicone - Any of a large group of semi-inorganic polymers based on siloxanes.

Silicones were first discovered by F. Kipping in England in 1900, but were not commercially produced until 1943 by Dow Corning. Silicones can be liquids, gels, solids and elastomers. In general, they have excellent heat and chemical resistance and are water repellent. Silicones are used as adhesives, protective coatings and paints.

Synonyms: polysiloxane; organosiloxane

Silicone resin - A polymer that contains silicone, carbon and oxygen. Silicone resins were first discovered by F. Kipping in England in 1900, but were not commercially produced until 1943 by Dow Corning. Silicone resins are made by the room-temperature vulcanisation (RTV) of silicone oils. They can cure either with moisture in the air (single-component system) or by the addition of a peroxide catalyst (two-component system). Once cured, silicone resins are chemically inert and can exist as elastomers and resins (both thermosetting and thermoplastic). They function over a wide temperature range, are water repellent and have very poor adhesion. Silicones are used as sealants, moulding compounds and varnishes.

Synonyms: polysiloxane; organosiloxane; SI; Silastic

Silicious Concrete Stone - A brand name used by the Pacific Stone and Concrete Company (San Francisco) for an artificial stone made with water glass. Silicious Concrete Stone was made by a process patented by F. Ransome in 1856. In this process, water glass (sodium silicate) is mixed with sand (and gravel, flint, chalk, or limestone) in an aqueous solution of caustic soda. Then this alkaline solution is mixed with calcium chloride to form an insoluble silicate stone.

Synonyms: cast stone; imitation stone; artificial stone

Silver sand: a very fine-grained sand with negligible iron impurities and hence no yellow colour. It has a whitish-grey colour. Sometimes suitable for use in lime plaster finishing coats and lime:sand grouts.

Sisal: a natural material produced from the sisal plant used as a reinforcement and a substitute for hair.

Size (glue size): a glue derived from animal products and used in solution with water to reduce the suction on a porous surface before applying a paint.

Size - Animal glue dissolved in water. Collagen is extracted from the skin of animals such as rabbits or sheep by boiling it for many hours, and is usually stored as leaves of gelatin or powder. It diluted form it is used to seal porous surfaces. Size has been a painting medium since pre-classical times, usually for wall paintings e.g. distemper. Examples are rosin, glue, gelatin, casein, gums, starch and modified cellulose.

Synonyms: Sizing

Skin glue - An impure gelatin prepared from the skins of animals (Gettens and Stout 1966). It is mentioned as one of the organic additives used for stucco marble preparation according to literature.

Synonyms: animal glue; hide glue; nikawa

Skirting: narrow projecting bunch at the base of a wall.

Slag cement - A type of hydraulic cement. Slag cement is made by mixing Portland cement (calcium silicate), powdered blast furnace slag and lime. It is also called artificial Pozzolana cement.

Synonyms: artificial Pozzolana cement

Slaked lime: calcium hydroxide, Ca(OH)_2 . Prepared by hydrating quick-lime in an excess of water to form a milk or putty.

Slaking: 1. Slaking to putty; the action of combining quicklime with excess water to form milk of lime or lime putty. 2. Slaking to dry hydrate; the action of combining quicklime with the minimum amount of water to form dry hydrate powder. 3. Air slaking: the exposure of quicklime to the air in sufficient quantity to promote hydration.

Slap-dash - See slab plastering

Synonyms: slap dash; slab plastering

Slurry - Cement/water mix often used as covering. Use this for entries including slurring and slurried.

Smalt K, Al, Co silicate - A finely ground blue potassium glass containing small amounts of cobalt oxide. It was used in European paintings from the 15th century to the early 19th century when it was replaced by Prussian blue. The composition of smalt varies with manufacture. It is prepared by fusing cobalt oxide with potassium carbonate and silica. Smalt has been used as a blue colourant in paints. It is also listed among the pigments used for colouring stucco marble in the nineteenth and twentieth century.

Synonyms: azure blue; Dumont blue; Hungary blue; Saxon blue; eschel; zaffre; zaffera; royal blue; blue glass; starch blue; king's blue; bleu de smalte (Fr.); couleur; Streublau (Ger.) Smalte (Ger.); Zafferblau (Ger.); azzurro di smalto (It.); smaltino (It.); esmalte (Sp.); hana konjo (Jap.)

Soap - A water-dispersible cleansing product. Soaps are produced by the saponification reaction of long chain fatty acids, such as found in oils and fats, with an alkali, such as sodium hydroxide or lye. Soaps made from animal fat and wood ashes have been used since antiquity. Soap is listed as a substance for coating and polishing the surface of stucco marble in the seventeenth and eighteenth century (soap solutions) and in the nineteenth century (soap water).

Soffit: 1: The horizontal lining at the head of an opening. 2. The underside of features such as eaves, arch and stairs, etc.

Solid Work: a modern trade term used to distinguish lime or cement plaster work laid on walls or ceiling from fibrous plaster work.

Solvent - Any liquid which dissolves another compound (solute) to form a homogeneous solution. Solvents are characterised by their polarity, evaporation rate and composition. Water is the most common solvent. It is strongly polar. Organic solvents, such as acetone, ethanol, turpentine and carbon disulphide are less polar. Hydrocarbon solvents such as hexane and mineral spirits are non-polar. Many solvents are volatile and some are flammable and toxic.

Sorrel salt - potassium binoxalate $\text{KHC}_2\text{O}_4 \cdot \text{H}_2\text{O}$. White, slightly hygroscopic crystals. This is mentioned as one of the polishes for stucco marble introduced in the twentieth century (along with tin ashes, rottenstone polishing-red, polishing lime, and talcum).

Synonyms: potassium acid oxalate; potassium hydrogen oxalate; salt of lemon (incorrect)

Spandrel: applied to almost any surface of irregular form either plain or enriched; such as the spaces above an arch; between an arch and a cusp; between the ribs of a vault.

Spatterdash: an ordinary Portland cement/sharp sand mix 1:2 prepared to the consistency of a slurry and applied by brush to smooth dense backgrounds to provide a key.

Spence's plaster - A type of gypsum cement. Spence's plaster is made with finely powdered gypsum mixed with Portland cement. It also contains aluminium sulphate and sand. It is a hard, strong, durable finish plaster.

Synonyms: gypsum cement

Spinning: the running of circular plastering using a gig-stick and pivot.

Splay: a large chamfer, as to the jamb of a window, etc.

Squinch: an arch built across each angle of a tower to form an octagon to carry a spire.

Stand oil - A pale, thick, concentrated form of linseed oil. Stand oil is prepared by anaerobically heating linseed oil to about 300°C. This allows the oil to partially polymerise without any oxidation occurring. Anaerobic conditions are obtained using a vacuum or carbon dioxide atmosphere. Stand oil was likely developed by the Dutch in the 19th century. Stand oil dries more slowly and yellows less than untreated linseed oil. It forms a tough, flexible film that is resistant to weathering. Stand oils have been used in varnishes, glazes and as a high viscosity additive to other paint media. Half oil is half stand oil and half oil of turpentine.

Synonyms: English oil varnish; Standöle (Ger.); half oil; standoil

Staff Bead: a bead at an angle, with a quirk at each side.

Starch - Carbohydrate granules of varying size obtained from roots, bulbs and seeds of most plants. Starch is primarily obtained from rice, wheat, corn, potatoes, cassava (tapioca), sago and arrowroot. The white, powdery granules range in size from 3-150 micrometers. Starch is a mixture of the soluble straight-chain amylose molecules and the insoluble, branched-chain amylopectin molecules. When starch is heated, the granules swell and form a thick, tacky jelly upon cooling. Starchy adhesives have been used since at least 3500 BCE in Egypt. Starch is sensitive to moisture and biodegradation. Paste films become brittle with age. Dextrin is prepared from starch by baking it at 200-250°C until the material becomes completely soluble in cool water. Soluble starch can also be made by hydrolysing the granules with dilute hydrochloric acid followed by neutralisation with an alkali. Soluble starch has been used as a binder in watercolour paints.

Synonyms: fecula; wheat; corn; rice; potato; tapioca; arrowroot; sago palm; amyllum

Steading's compound - Dicalcium aluminate monosilicate-8-hydrate, a compound that has been found in reacted lime-pozzolan and cement-pozzolan mixtures.

Steady up (allow to steady up): allow plaster to take its initial set by drying out to reduce plasticity.

Sticker - An additive that increases the strength with which water-soluble materials attach to solid surfaces.

Stilted Arch: an arch of which the springing is above the capital.

Stone lime: a description used before the explicit understanding of hydraulic limes. Sometimes describing hydraulic limes (from greystone chalks) and sometimes fat limes from pure limestone deposits. It was wrongly believed from very early times that the setting strength of a lime depended on the strength of the material from which it was calcined. On that basis limes prepared from marble were believed to be particularly potent.

Stonework: reconstructed; precast ordinary Portland cement/sand features, produced to look like natural stone usually by including crushed rock as part of the aggregate.

Stopping: the filling up and making good small cracks or other defects in plaster or cement work.

Strap Work: ornamentation formed of intertwined flat mouldings.

Strike Offs: the edges on the back of a reverse mould used as grounds when eruling off a plaster cast, hence the term striking off.

String Course: a horizontal projecting moulding in a wall.

Stuc, (Stooc): Gypsum plaster and sand used when forming imitation masonry internally, float finish or masonís drag.

Stucco - A term used broadly to describe all forms of decorative plasterwork, although it refers specifically to relief decoration modelled and moulded in lime and aggregate (often marble dust) mixes, with or without the addition of gypsum plaster. These mixes can take fine detail and be worked to a hard, smooth finish. The word also has regional variations : in Italy it is used to describe a range of pliable materials which can be shaped; in Britain and the USA it can refer also to cement and sand renders, which from the late 18th century were used on building faces to imitate stonework. Stucco has been used since ancient times. Still widely used throughout the world, it is one of the most common of traditional building materials. Historically, the term "plaster" has often been interchangeable with "stucco"; the term is still favoured by many, particularly when referring to the traditional lime-based coating. Interior stucco was usually made with gypsum, marble dust and glue. It was often moulded into ornamental shapes and polished to a marble-like finish. During the 17th and 18th centuries, elaborate painted figures and ornaments were made with stucco. By the nineteenth century "stucco," although originally denoting fine interior ornamental plasterwork, had gained wide acceptance in the United States to describe exterior plastering. "Render" and "rendering" are also terms used to describe stucco, especially in Great Britain. Exterior stucco is usually composed of cement, sand and hydrated lime, or lime and sand or brick dust. It is mixed with water and applied wet. Occasionally, pebbles or other aggregate are added for texture. Examples include pebble dash, rough cast, tabby and spatter dash. Other historic treatments and coatings related to stucco in that they consist at least in part of a similarly plastic or malleable material include: parging and pargeting, wattle and daub, "cob" or chalk mud, pise de terre, rammed earth, briquete entre poteaux or bousillage, half-timbering, and adobe. All of these are regional variations on traditional mixtures of mud, clay, lime, chalk, cement, gravel or straw. Many are still used today.

Stucco duro: a high quality plastering material based on lime putty, marble dust and fine sands often containing finely ground pozzolanic aggregates.

Stucco lustro - A form of imitation marble (sometimes called stucco lucido) used from the 17th century, in which a thin layer of lime or gypsum plaster is applied over a scored support of lime. While the plaster is still wet, pigment is scattered on the surface and then dragged across it with a brush or comb to suggest veining. The surface is then polished to a high sheen with a hot iron. Although this method does not make as faithful a reproduction of marble as scagliola, it has the advantage of being quicker to produce and does not require the use of scraping tools, which are difficult to employ on curved surfaces. It is mentioned as one of the historic techniques for decorating architectural surfaces.

Stucco marble - The Italian definition of stucco marble is *scagliola ad imitazione del marmo*, meaning literally *scagliola with marble imitation*. It has a complex composition, and its many variations are a function of period, region and, probably, individual manufacturing practices. The main ingredients of stucco marble are gypsum (sometimes with the addition of lime), perhaps with additives (e.g. alum, borax), water, a binding medium containing protein and/or organic pigments and an organic surface

coating to give it the characteristic high gloss. There are two different ways of colouring the stucco: addition of pigments to the glue (a method to obtain a uniformly dyed mass), or addition of dry pigments to the fresh stucco paste. To obtain the effect of a natural stone, small balls of paste in different colours are formed, layered, kneaded, and cut transversely. The ground for stucco marble is usually masonry, with plaster covered by the usual adjustment layer. The stucco marble layer is attached with glue while damp and pressed with a metal trowel (brass, copper or steel). The characteristic of the stucco marble technique is the special treatment of the gypsum mass that hardens when dry because of the addition of various substances. The paste has to be plastic enough to allow kneading and set hard enough to be polished and smoothed. The goal is to obtain on the one hand the highest degree of hardness of the stucco paste, and on the other, to retard the setting of the gypsum. Therefore, the primary requirement is the right calcination (burning) of the gypsum. Once the desired quality of gypsum powder is obtained, the next step is the setting in water: substances retarding the setting and facilitating hardening are added to water. The smoothness and glossiness typical of marble is obtained through grinding and polishing. The surface must be very well smoothed until it becomes hard. After scraping with a knife or a wooden spatula, holes or pores are filled with a mixture of gypsum and glue if necessary. After each grinding step this procedure must be repeated. The grinding is done with the use of a lot of water and various grinding stones. For additional gloss, oil is applied to the surface. When it is all smoothed, it must be left to dry and then rubbed down with a linen cloth. Further wax treatment is often added: in case, solid wax (or wax in turpentine) is applied to the surface, which is then buffed with a linen cloth. Stucco marble is frequently confused with stucco lustro which is based on lime plaster and belongs primarily to the fresco technique. Stucco marble was used to imitate marble in wall decorations, from the seventeenth to the twentieth century in Europe.

Stucco mesh - A type of wire cloth used as a support for stucco. Stucco mesh is typically made from 17 gauge wire twisted to form 1.5 inch hexagonal openings (Bucher 1996).

Synonyms: stucco netting

Suction: the absorption of water by an applied plaster mix.

Sugar - A photosynthesis product in plants. Sugar is an important source of metabolic energy in foods and its formation in plants is an essential factor in the life process.

Sugar is a small carbohydrate composed of one, two or more saccharose groups. The chief monosaccharides are glucose (dextrose) and fructose (levulose). Some primary disaccharides are sucrose (from cane or beet sugar); lactose (from milk); maltose (from starch); and cellobiose (from cellulose). Table sugar is primarily composed of sucrose.

Support - The inner structural material on which an exterior finish (i.e., paint, veneer, etc.) is applied. In architecture, supports maintain the primary weight-bearing load and are usually constructed from wood or steel.

Surfactant - A commonly used shortened form of surface active agent. Surfactants are compounds which reduce interfacial tension at the boundaries between gases, liquids and solid. They promote wetting and penetration of liquids into solids and act as a detergent, emulsifier, or dispersing agent. These include additives to a concrete mix to reduce the surface tension of the mixing water and facilitate wetting, penetrating, emulsifying, dispersing, solubilising, foaming, and frothing. Non-ionic surfactants, such as ethoxylated alkyl alcohols and alkyl phenols, have been used as emulsifiers in acrylic emulsion paints.

Synonyms: surface active agent; wetting agent; detergent; penetrant; emulsifier; penetrant; dispersing agent

Swags: festoons of leaves and flowers with drops at each end.

Synthetic resin - Synthetic resins or polymers are becoming increasingly available and have applications in nearly every aspect of life. Their wide range of properties and forms provide films, coatings, adhesives, paint media, fabrications, cushions and protectors.

Talcum - 1. An obsolete Latin term for talc. 2. A perfumed dusting powder, usually made with powdered talc.

This is mentioned as one of the polishes for stucco marble introduced in the twentieth century (along with tin ashes, rottenstone polishing-red, polishing lime, and sorrel salt).

Synonyms: talc

Talde: a bad or group of horizontal mouldings.

Talin: a moulding formed of two arcs of a circle.

Tallow - A hard fat obtained from animals, especially beef and sheep. Tallow is separated by moisture and fibrous tissue by melting and cooling. It primarily contains fatty acids: oleic (37-43%), palmitic (24-32%), stearic (20-25%), myristic (3-6%), linoleic (2-3%). Oleo stock refers to the highest grade of beef tallow.

Synonyms: oleo stock

Tar - A viscous, black crude oil obtained from the distillation of peat, wood, coal or other organic substances, chemically a mixture of hydrocarbons with resins. Some tars, such as those obtained from pine or beech wood, have been mixed with linseed oil to form a dark brown glaze (White, 1986).

Synonyms: coal tar; mineral tar; pine tar; wood tar; birch bark tar; creosote

Tempered: a term used to denote the mixing of plastic material. Well-tempered stuff means that the materials are thoroughly incorporated and in a plastic state by being properly mixed and worked.

Template: used to form angles and other similar features/details in plaster or render finishes.

Tempera - A water thinned paint that dries to a water resistant film. Egg tempera is an aqueous emulsion paint with an egg yolk or whole egg binder that originated in medieval Europe. These paints dry to a semi-matt appearance by the evaporation of water and the coagulation of the egg protein. After about 1400 CE, variations of tempera were made with egg/oil, gum/oil, glue/oil and other emulsions as artists began to experiment with drying oils. As linseed oil paints became popular at the end of the 16th century, tempera died out. It enjoyed a revival near the end of the 19th century when Cennino's treatise was published. Other water thinned paints that dry to form a water soluble film (e.g., distemper, gouache, poster paint and watercolours) are sometimes incorrectly called tempera paints.

Synonyms: egg tempera; glue tempera; gum tempera; oil tempera

Thermal conductivity: the ease with which a material conducts heat.

Terra-cotta - A moulded fired clay product, used as a substitute material, very popular in the late 19th and early 20th centuries. It simulated the appearance of intricately carved stonework, which was expensive and time-consuming to produce. Terra cotta could be glazed to imitate a variety of natural stones, from brownstones to limestones, or could be coloured for a polychrome effect.

Thickening agent - Any hydrophilic material that increases the viscosity of a liquid.

Thickening agents are used in adhesives and paints. The main types of thickeners are (based on Lewis 1993): 1. Natural products: starch, gum, casein, gelatin, agar, etc. 2. Synthetic cellulose derivatives: carboxymethyl cellulose, etc. 3. Polymers: polyvinyl alcohol; polyacrylate. 4. Inorganics: clay, bentonite, silicates, colloidal silica.

Synonyms: thickener; rheology modifier

Throat-drip: a sunken member to a horizontal section preventing the spread of water.

Throwing (throwing a render): quite literally throwing the coarse stuff at the wall, usually by flicking it from the edge of a trowel, but in some cultures by throwing balls of

stuff straight from the hand. The impact helps adhesion, but tends to alter the balance of the mix, leaving it leaner in parts and richer in others.

Tin ashes - stannic oxide SnO or $\text{SnO}_2 \cdot x\text{H}_2\text{O}$. White powder that is often incorrectly called tin oxide. Stannic oxide, or tin dioxide, occurs in nature as the mineral cassiterite. It is used as an abrasive. This is mentioned as one of the polishes for stucco marble introduced in the twentieth century (along with rotten stone, polishing-red, polishing lime, sorrel salt and talcum).

Synonyms: stannic anhydride; tin peroxide; tin dioxide; tin oxide (sp); stannic acid; putty powder; putty; jeweller's putty; white tin oxide; flowers of tin; polishing powder; tin ash

Titanium dioxide TiO_2 - A dense, white, opaque powder often used as a pigment. Titanium dioxide occurs naturally in three crystalline forms: anatase, rutile and brookite. It is a very stable compound with a high refractive index. Titanium white pigment was prepared from ground rutile as early as 1870. Synthetic titanium dioxide was first prepared in 1906, was manufactured commercially in Norway and the United States in 1916 and sold under the name of Titanox. It contained 25% titanium dioxide co-precipitated with 75% calcium or barium sulphate. Both pure titanium and barium base titanium pigments have a very fine texture. Prior to 1938, only anatase was produced. However, white paints with anatase were subject to chalking and yellowing, so manufacturing shifted to the use of rutile in 1938 and rutile white pigments were first commercially produced in 1940. Currently, titanium pigments are usually sold as admixtures with zinc oxide. In addition to paints, titanium dioxide is used as an abrasive. Synonyms: titanium white; rutile; anatase; brookite; Titanox; titania; Pigment White 6; CI 77891; titanous anhydride; titanous acid anhydride; titanous oxide; Unitane; titania; oxyde de titane (Fr.); Titandioxid (Ger.); bianco di titanio (It.); dióxido de titanio (Sp.); titandioksid (Nor.)

Titanium white - A durable white paint pigment used in the 20th century. Titanium white is composed of titanium dioxide. It is a very stable compound with a high refractive index. Titanium white pigment was prepared from ground rutile as early as 1870. Synthetic titanium dioxide was first prepared in 1906, was manufactured commercially in Norway and the United States in 1916 and sold under the name of Titanox. It contained 25% titanium dioxide co-precipitated with 75% calcium or barium sulphate. Both pure titanium and barium base titanium pigments have a very fine texture. Prior to 1938, only anatase was produced. However, white paints with anatase were subject to chalking and yellowing, so manufacturing shifted to the use of rutile in 1938 and rutile white pigments were first commercially produced in 1940. Currently, titanium pigments are usually sold as admixtures with zinc oxide.

Synonyms: Titanox; titanium dioxide

Tobermorite - (1) A mineral found in northern Ireland and elsewhere, having the formula $5\text{CaO} \cdot 6\text{SiO}_2 \cdot 5\text{H}_2\text{O}$. (2) $\text{Ca} : 4\text{HO}$, the artificial product tobermorite, G, of Brunauer, a hydrated calcium silicate having CaO/SiO ratio in the range 1.39 to 1.75. It forms minute layered crystals that constitute the principal cementing medium in Portland cement concrete, being also responsible for important engineering properties such as strength, shrinkage, permeability and resistance to the stresses of freezing and thawing. The mineral has 5 mols of lime to 6 mols of silica, and usually occurs in plate-like crystals.

Tobermorite gel - The binder of concrete cured moist or in atmospheric-pressure steam. A lime-rich gel-like solid containing 1.5 to 2.0 mols of lime per mol of silica.

Tooth ornament: a serrated decoration found in hollow mouldings.

Torso: in sculpture, is a body without arms or legs.

Torus: a moulding of semicircular form and used in the bases of columns.

Tracery: Gothic ornament in panels, etc. consisting of curved flowing lines or straight mouldings intersecting each other.

Trass - A light coloured volcanic ash used in hydraulic cement. Trass is similar to pozzolana, but is found in Germany, France and the Netherlands.

Travertine - A light-coloured, porous rock composed of calcium carbonate. Travertine is formed from multilayered calcium carbonate deposits usually near hot and cold spring waters, streams or lakes. Plant residues are often layered with the calcite deposits resulting in large elongated, often interconnected pores in the stone. Very porous, spongy travertine is called tufa. Travertine polishes to a matte finish. It is used as an interior and exterior building material. Thick deposit of travertine occur near Tivoli, Italy. Synonyms: tufa limestone; false marble; travertin; Mexican onyx; Egyptian alabaster

Trefoil: ornament based on the clover leaf.

Trellis Moulding: intertwined zigzag lines forming diamonds.

Triglyph: an ornament in a Doric frieze, consisting of a projection with the two vertical edges chamfered and with two vertical grooves.

Trilobe: ornament having three lobes.

Tripoli - A fine, naturally occurring, lightweight silica. Tripoli is a sedimentary stone composed of diatoms and finely weathered chert. It is derived from schistose rocks. It was originally obtained from northern Africa, but is now quarried in the USA. Tripoli is used as an abrasive, as a filtering medium and as a filler in paints.

Synonyms: tripolite; tripoli powder; diatomaceous earth; soft silica

Trowelling up: hardening up a plaster surface by alternately sprinkling it with water and working it with the trowel.

Tudor Arch: a flat arch.

Tudor Flower: an upright leaf used in cresting on the tops of cornices.

Tuff - An igneous rock composed of fine-grained volcanic ash which has become solidified over time. It is generally white or grey and is soft enough to be easily worked. Tuff has been used as a building stone in Italy and Germany, where it is known locally as trass. Tuff is also added to lime to obtain a hydraulic set.

Tufa - A porous, calcareous mineral formed by hot springs, dry lakes or ground water deposits. It can be coloured yellow or red, due to the presence of iron oxides. Tufa is a microcrystalline type of limestone that has been used occasionally since ancient times for sculptures (Mayer 1969). It is lightweight and has been used to fill the spaces between the ribs of vaulted ceilings. It has also been used as a building stone, for example in Verona.

Synonyms: calc-tufa; calc-tuff; calcareous tufa; tufa limestone

Tuffaceous limestone (Travertine, Tufa) - Very light, depositional limestone formed by the precipitation of calcium carbonate rich water (Tufa). The more dense and compact form, Travertine, is formed in a similar way.

Tuffaceous limestone - A sedimentary limestone that contains up to 50 percent volcanic tuff (ash and cinders). Tuffaceous limestone is often light or dark green with some grey and blue varieties. It can have predominant grains of calcite with small amounts of iron oxide, quartz, plagioclase and glass shards.

Synonyms: Tuff

Turpentine (oil) - A volatile, flammable liquid used for thinning oil paints. Turpentine is obtained as the steam distillate from gum turpentine. It is a mixture of cyclic monoterpene hydrocarbons, such as pinene. Turpentine is primarily used as a solvent for paints and varnishes and as a cleaner for paint brushes. It is also a good solvent for many natural resins, waxes, oils, plastics and rubber. The best quality turpentine is fresh, clear and thin. Turpentine thickens and yellows with age; moisture can cause cloudiness in varnishes. Three major grades of turpentine are:

- Pure Gum Spirits of Turpentine (double distilled, rectified) is pure, and without water. This is the grade of turpentine used by artists. - Wood turpentine is made from ground wood. - Sulphate turpentine is obtained as a by-product of the paper pulping industry. - The chief varieties of turpentine are: - common turpentine (*Pinus abies*, *Pinus sylvestris*, etc.),

- Venice turpentine (*Larix Europea*), - Bordeaux turpentine (*Pinus maritime*), - Strasbourg turpentine (*Abies picea*), - China turpentine (*Pistacia lentiscus*), - Canadian turpentine (*Abies balsamisfera*), - Chian turpentine (*Pistacia terebinthus*), and - American turpentine (*Pinus australix*, *Pinus taeda*).

It is listed among the substances used for coating the surface of stucco marble in the twentieth century.

Synonyms: spirits of turpentine; turpentine; oil of turpentine; turps; huile de terebenthine (Fr.); Terpentinol (Ger.); gum spirits; wood turpentine; gum turpentine

Turning: as in wood turning, the formation of plaster features by turning on a spindle.

Tympanum: the space enclosed between the lintel of a doorway and the relieving anchor or between the horizontal and sloping cornices of a classical pediment.

Undercut: a section that cannot draw due to the overhang of the ornament.

Vermiculated: a plastered surface ornamented with irregular channels.

Vesica Piscis: the pointed oval forming the auriole or glory round representations of the Deity and the Virgin.

Vitruvian Scroll: a long series of scrolls joined together.

Volute: the scrolls at the angle under the abacus of capitals. In plasterers' terms they are called *ehornsí*.

Vousoirs: the stones that form an arch.

Vriils: thin, elongated volutes, as in the tendrils of vines.

Wads: canvas dipped in plaster and laid flat over the back of casts, also when joining casts together.

Walnut oil - A natural, colourless drying oil pressed from the nuts of a walnut tree, *Juglans regia*. Walnuts contain approximately 65% oil. The cold-pressed oil is pale yellow while the hot-pressed oil has a green tinge. Walnut oil dries slower, yellows less and cracks less than linseed oil; it dries faster than poppy seed oil. It was popular as a paint medium in Italy, the Netherlands and Germany. Walnut oil will turn rancid and develop a strong odour on storage.

The application of oil, including nut oil, to the surface of stucco marble has always been quite common in order to increase the gloss of an already well polished surface.

Synonyms: nut oil

Water glass $\text{Na}_2\text{O} \cdot x\text{SiO}_2$ - An aqueous solution of sodium silicate prepared from silicon dioxide (SiO_2) and sodium oxide (Na_2O) in a ratio that varies from 2 to 3.5. Water glass forms a hard glasslike mass when it dries. A water glass solution is viscous and has little tack, so when it is used as an adhesive pressure must be applied to hold materials together while bonding. The dried product is brittle and water sensitive. Aluminium salts can be added to the formulation to improve water resistance. Water glass has been used to make artificial stone. It was tried unsuccessfully as a binder in the 19th century for fresco paintings. Calcium water glass was used in the Ransome process of stone preservation. This procedure used alternating solutions of an alkaline silicate and calcium chloride to form insoluble calcium silicate (calcium water glass) in the pores of the stone. Potash water glass is composed of potassium silicate. Double water glass is a mixture of equal parts potassium silicate and sodium silicate.

Synonyms: soluble glass; soluble silicate; liquid glass; aqueous sodium silicate; flint liquor; silicate of soda; waterglass; water-glass; calcium water glass; double water glass; potash water glass

Water limes, water building limes: John Smeaton's term to describe hydraulic limes. Limes which were suitable for building work in water, such as canal locks or harbours or lighthouses.

Water retention: as lime putty matures it draws water into its body, far beyond what is needed for its hydration. This lubricates the mortars made from it, making them plastic (easily mouldable) and hence comfortable to use. When a mortar is applied to a porous masonry unit, the masonry tries to suck the water away from the mortar. To some extent this is helpful as it forms the bond between unit and mortar. With poor quality mortars, the suction reduces the plasticity of the mortar, making it harder to work. Water retentivity is the measure of the ability of a putty (or mortar) to retain the water it holds against the suction of the backing.

Wattle - Wooden rods or stakes which can be interlaced with twigs or branches to make walls or fences, or more commonly, to form the basis of panels in traditional timber framed buildings which are then covered with daub

Wattle and daub - A building material composed of interwoven sticks, twigs or branches plastered with clay, grease or mud. Wattle and daub construction was used for roofs, walls and fences, especially in the early 19th century.

Synonyms: Willow

Wave Moulding: a succession of wavy lines.

Wax - A solid or semi-solid substance that is slightly greasy to touch. Waxes are composed of long chain hydrocarbon compounds, and may contain esters of fatty acids and alcohols. They are thermoplastic and melt at low temperatures (<100°C). In general, waxes are water-repellent, smooth and soluble in organic solvents. Waxes are classified by their origin: - animal: beeswax, lanolin, spermaceti, shellac wax - vegetable: carnauba, candelilla, bayberry, Japan wax - mineral: paraffin, ozocerite, ceresin, Montan - synthetic: polyethylene, polymethylene, Carbowax®, Halowax Waxes are used for sealants, coatings, adhesives and waterproofing. Wax is mentioned as a substance used for coating and polishing the surface of stucco marble. Wax (or wax in turpentine, carnauba wax or beeswax) was usually applied to the surface with a linen cloth and the treatment was usually carried out after the polishing with oil.

Synonyms: animal wax; beeswax; lanolin; spermaceti; shellac wax; vegetable wax; carnauba; candelilla; bayberry; Japan wax; mineral wax; paraffin; ozocerite; ceresin; Montan wax; synthetic wax polyethylene wax; Carbowax®; Halowax

Weathering: a splayed surface designed to allow water to drain/run off.

Weathering qualities: the durability of a material against the destructive actions of the weather and atmosphere. These actions include cycles of heating and cooling, frosts, wind abrasion and airborne chemicals.

Weather Moulding: a drop stone or outwardly sloping moulding.

Wetting agent - A component added to a liquid to decrease its surface tension and thus increase its ability to wet, or spread, over a solid surface. Wetting agents are sometimes added to watercolour paints. Examples of wetting agents are: surfactants, soaps, alcohols, gum arabic, ox gall and fatty acids.

White coat (finish coat) - A lime-putty plaster coat with a trowelled finish.

White glue - A common name for milky white adhesives composed of aqueous emulsions of polyvinyl acetate. White glues are widely used. They are easy to work with and effectively bond most materials. Most white glues contain numerous additives, such as tackifiers, plasticisers, antifreeze solvents and biocide preservatives. Most white glues will soften when soaked in water and will yellow in sunlight.

Synonyms: CM Bond®; Titebond; Rhoplex® N-580; Elmer's® Glue-All [Borden]; Bulldog Grip®

White lime - Another name for whitewash.

White Portland cement: a white coloured Portland cement which is made from clays containing no iron. Where cement must be used in the conservation of old buildings it is sometimes selected because it contains fewer soluble salts than OPC.

Whitewash - An inexpensive white paint. Whitewash contains lime suspended in water. Other additives can include: glue, whiting, salt or sugar. The non-permanent water soluble paint was used on walls and ceilings.

Synonyms: white lime; limewash

Wood fibre plaster - A plaster reinforced with wood chips used in the 1800's. Fibre plaster was generally used as thick base coat on wooden laths.

Whiting - A fine powder of white chalk (native calcium carbonate). Whiting has been used as an inert pigment in paints. Synthetically prepared calcium carbonate, called precipitated chalk, is much whiter and finer than whiting.

Synonyms: whitening; Spanish white; limestone whiting; Paris white; English white

Workability: the ease with which a mortar may be used. This important property is not easily defined, but it includes high plasticity and good water retention. A highly plastic binder, say a good lime putty, can allow the use of much sharper sands than are possible with, say, a cement binder. These sharp sands contribute to the long-term durability.

Wreathed: a moulding formed of two twisted members as entwined ribbons. A wreathed column twisted or contorted.

Xonolite - Calcium silicate monohydrate (C₃S₅H), a natural mineral that is readily synthesized at 150o - 350oC under saturated steam pressure. Xonolite is a constituent of sand-lime masonry units.

Yellow ochre - A natural yellow earth mineral primarily composed of goethite (iron hydroxide) and clay. Yellow ochres occur naturally throughout the world and have been used as a pigment since prehistoric times. Synthetically produced yellow ochre pigment, introduced at the end of the 18th century, is sold under the name of Mars yellow.

Synonyms: goethite; yellow ochre; Mars yellow

Zigzag: a succession of diagonal lines placed alternately in sequence.