

Glossary

This Glossary provides common definitions for terms used in the manual.

Pl. = Plural
Adj. = Adjective

Terms in **Bold Face** are defined elsewhere in the Glossary.

GLOSSARY

A

ACROMION

A PROCESS of bone of the SCAPULA, overhanging the head of the HUMERUS; occasionally persists as a separate bone in the adult.

ADIPOCERE

A greasy, soapy transformation of body fat which has partially decomposed in a warm, moist, oxygen-poor environment. Forms in well-nourished subjects in a matter of weeks or months and may persist for two or more years in exceptional circumstances.

ADULT TEETH

Refers to those teeth which replace DECIDUOUS teeth, or erupt behind them in the jaw. The first adult tooth erupts around six years of age, and optimistically all will last a person's lifetime; also known as PERMANENT teeth.

ALIDADE

An optical surveying instrument commonly used by archaeologists in combination with a PLANE TABLE and STADIA ROD for mapping the topography of the RECOVERY AREA.

ALISPHENOID

Paired PROCESSES of bone from the BASISPHENOID forming a small portion of the inferior NEUROCRANIAL VAULT. Also known as the greater wing, it exists as a separate CENTRE OF OSSIFICATION in the very immature SKELETON.

AMALGAM

Otherwise known as silver dental fillings, this is an alloy of silver and tin mixed with mercury; used primarily as restorations on posterior teeth. These restorations are highly resistant to decay and heat.

ANNULUS

A circular, almost complete, ring of bone forming the support for the outer ear drum. After FUSION to the PETROUS bone (around birth), the annulus grows out as a tube known as the external auditory meatus, the shape of which may be racially diagnostic; also known as the TYMPANIC RING (pl. annuli).

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ARTICULATED

Refers to a **SKELETON** in which the joints are still somewhat intact with **SOFT TISSUE** holding the bones in place; or bones which despite loss of soft tissue have not moved from their approximate anatomical position.

ARTIFACT

Any non-biological product of human activity associated with remains; for example, personal effects, surgical appliances, projectiles and foot prints.

ATLAS

First **CERVICAL VERTEBRA**, located at top of the spinal column, articulating with the **CRANIUM**.

AXIS

Second **CERVICAL VERTEBRA**, articulates superiorly with the atlas.

B

BASIOCCIPITAL

A separate **CENTRE OF OSSIFICATION** in the **OCCIPITAL** bone of the **FETAL CRANIUM** forming the anterior margin of the **FORAMEN MAGNUM**.

BASISPHEOID

A separate **CENTRE OF OSSIFICATION** in the **SPHENOID** bone of the **FETAL CRANIUM** forming the base of the pituitary fossa and articulating posteriorly with the **BASIOCCIPITAL**. The fibrous junction of the basioccipital and basisphenoid portions, known as the basal synchondrosis, obliterates through **FUSION** in young adulthood, serving as a useful indicator of skeletal maturity.

BIOLOGICAL IDENTITY

Expresses the basic biological characteristics of all persons in terms of age, sex, race and stature. This partial identification is usually determined from skeletal remains prior to attempts to determine personal identity.

BIOMETRICAL

Refers simply to measurements, of biological organisms, taken in a rigorous fashion between anatomically defined landmarks. This allows standardized comparisons between individuals or populations to show differences or similarities in size and shape.

BOSS

A marked accentuation in the curvature of the **FRONTAL** and **PARIETAL** bones. 'Bossing' is more pronounced, as a rule, in juvenile and female crania.

C**CALCANEUS**

The largest of the **TARSAL** (ankle) bones; forms the heel.

CANINE

Also known commonly as the eye tooth or cuspid, the canine is the third tooth from the front (mid-line) in both the **DECIDUOUS** and **PERMANENT DENTITIONS**. It is characterized by having a sharpish, pointed crown and long root.

CAPITATE

The largest of the eight **CARPAL** (wrist) bones. From the thumb side, the third bone in the **DISTAL** row of the **CARPUS**.

CARBONIZED

The result of a fire or cremation where **SOFT TISSUES** of the body, or whole portions of insects and plant materials are preserved as blackened, relatively crusty, resistant specimens from which the contained moisture has been driven off.

CARPAL/CARPUS

Refers to the wrist and wrist bones as a whole. The eight morphologically dissimilar bones of the wrist, found as two rows of four each.

CARRION

Dead, putrefying **SOFT TISSUE**; a food source for **SAPROPHAGOUS** insects.

CAUCASOID

A major racial stock of humankind, mostly of European ancestry, sharing an inherited complex of physical features. The term is usually considered synonymous with 'white' individuals characterized by light skin. Police usually speak of 'class' differences rather than 'racial' differences.

CENTRE OF OSSIFICATION

The areas within a body or within a **SOFT TISSUE** precursor of a skeletal element where bone initially forms. There are separate centres of ossification for individual bones, many of their **PROCESSES**, and either or both ends.

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CENTRUM

This is the heart or kidney shaped weight-bearing portion of the VERTEBRAE to which the NEURAL ARCH fuses during growth. All vertebrae and sacral vertebrae, except the first CERVICAL vertebra, have a centrum (pl. centra).

CERVICAL

In this context refers to the neck region, specifically the seven vertebrae of the neck.

CHRONOLOGIC AGE

This is the 'true' or calendrical age usually measured from date of birth (see PHYSIOLOGIC AGE).

CLAVICLE

Commonly known as the collar bone, the clavicle articulates with the MANUBRIUM and ACROMION PROCESS of the SCAPULA. It is a common site of fracture and often bears evidence of PREMORTEM trauma.

COCCYX

The 'tail bone' located at the end of the SACRUM, consisting of 3 to 5 bones.

COLEOPTERA

An ORDER of insects characterized by biting mouth parts, membranous hind wings beneath a thick, tough, outer wing, and complete METAMORPHOSIS; commonly known as beetles.

CONCHAE

Also known as turbinates, the conchae are delicate, scroll-like bones, inside the nasal aperture, lined with mucous membrane. Only the inferior conchae tend to separate from the CRANIUM after prolonged DECOMPOSITION.

CONTINUITY OF EVIDENCE

This vital aspect of FORENSIC procedure concerns the necessity for maintaining an unbroken chain of custody as evidence is collected, submitted through various investigators and specialists, to appear ultimately in court. It is essential that it be demonstrated that at no time did unauthorized persons have access to the evidence, or have opportunity to add, remove, or otherwise alter the evidence; also known as 'evidentiary escort'.

CORACOID PROCESS

A small finger-like PROCESS of bone on the SCAPULA.

CORNU

Small projection on the **HYOID** forming the arms of the 'U' from which ligaments attach the hyoid to the base of the skull (pl. cornua).

CORONOID PROCESS

Bony projection of bone on the **MANDIBLE** to which the **TEMPORAL** muscle attaches.

COSTAL

Refers to ribs (adj.).

CRANIUM

Considered to be that portion of the **SKULL** excluding the lower jaw and **HYOID**.

CRATERING

Describes the effect of a projectile on bone where the exit hole is larger than the entry hole due to an expanding bevel (cone of percussion) travelling through the bone from the point of impact. An example of this effect is seen in glass impacted by BB shot.

CREMATION

A fire in which a body is burned so severely as to affect the **HARD TISSUES**.

CUBOID

One of the seven **TARSAL** (ankle) bones located on the 'little toe' side of the foot.

CUNEIFORM

There are three of these roughly wedge-shaped bones in the ankle located between the 'big toe' side of the foot and the **CUBOID**.

D**DECIDUOUS**

Those teeth which are replaced by the **PERMANENT DENTITION**; also known as **MILK TEETH**.

DECOMPOSITION

The process of body decay after death caused by the **PUTREFACTIVE** qualities of intestinal bacteria, and by environmental effects such as insect infestation and temperature.

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DEHYDRATED

Bodies which lose their fluids rapidly in a warm dry locale tend to dry out and, under certain circumstances (for example, in an attic or behind a heat register), the **SOFT TISSUES** may actually mummify.

DENTAL FORMATION

The process of tooth growth starting at the top of the crown and proceeding to the tip of the root. The majority of a tooth's formation occurs prior to **ERUPTION** of the tooth but may be seen radiographically; i.e., with x-rays. Dental formation can be an accurate indicator of age in immature individuals, particularly children.

DENTAL RESTORATION

Refers to the materials involved in reconstructing the portion of a tooth removed to repair a cavity; may be **AMALGAM**, gold, silica, or plastic resin.

DENTITION

refers simply to the set of natural teeth in a mouth.

DEPTH BELOW DATUM (D.B.D.)

The vertical distance below a previously established arbitrary horizontal datum plane.

DIPTERA

An **ORDER** of insects characterized by a single pair of functional wings, sucking mouth parts and complete **METAMORPHOSIS**; commonly known as flies.

DISARTICULATED

A body which, through natural or purposeful agency, has the various joints no longer intact; usually signifies more or less scattered and often incomplete skeletal remains.

DISMEMBERMENT

Deliberate separation of the body into several parts (usually at the joints for the limbs and trunk); unless very skilfully done, cut or sawmarks will be preserved on the bone.

DISTAL

The extremity of an **ARTICULATED** anatomical element which is furthest from the trunk of the body. All long bones of the body have two extremities, one distal and one **PROXIMAL**.

DORSAL

The posterior or backwards facing surface of an anatomical structure from a subject in the normal anatomical position standing erect, face front with palms forward. Thus, one's back and the back of the hand are dorsal surfaces, regardless of the position of the body or its parts when observed.

E**EPIPHYSIS**

A SECONDARY CENTRE OF OSSIFICATION at the end of growing bones separated from the PRIMARY CENTRE by a tough fibrous band of SOFT TISSUE. With prolonged DECOMPOSITION the fibrous union will decay yielding a loose epiphysis which can be easily overlooked in the recovery of immature skeletal remains (pl. epiphyses).

ERUPTION

The process of emergence of a tooth through the gum into the mouth.

ETHMOID

A delicate bone in the midline of the SKULL behind the nose forming a portion of the inner side of each bony ORBIT.

EVERSION

Describes the degree of outward flare at the angle of the lower jaw; more pronounced in males and heavy chewers.

EXINE

The outer covering of POLLEN grains.

EXOCCIPTAL

A separate CENTRE OF OSSIFICATION in the OCCIPITAL bone of the FETAL CRANIUM forming the sides of the FORAMEN MAGNUM .

EXPOSURE CRACKING

Seen on most bones, but particularly the CRANIUM, where repeated bouts of moisture and high temperature produce stress cracks in the outer surface of the bone.

EXTENDED BURIAL

Describes a body in which the lower limbs are straight in line with the trunk; position of the arms may vary.

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EXTERNAL OCCIPITAL PROTUBERANCE

A bony projection on the **OCCIPITAL** in the midline forming the attachment for a major ligament which balances the weight of the **SKULL** on the spinal column; more pronounced in males because of the greater weight of the face.

F

FECES

Excrement or stool, which prior to evacuation of the bowels is described as fecal matter. Fecal matter should be collected for analysis of foods or drugs taken before death. Animal feces are called **SCATS**.

FEMORAL

Referring to the **FEMUR** (adj.).

FEMUR

The largest limb bone, forming the upper leg; also known as the thigh bone.

FETAL

Describes a developing human between four months **INTRAUTERINE** and full term (adj.).

FIBULA

The long, thin outer (lateral) of the two bones in the lower leg.

FIXED DATUM

A permanent reference point to which a mapped area is tied; for example, a tagged tree or marked stake. All mapping measurements must be referable to the fixed datum in order to relocate, with confidence, the spatial distribution of the site and its contents.

FLAGGING TAPE

Wide, non-sticky tape used by surveyors, forestry personnel and archaeologists to mark location or direction; usually bright orange or blue.

FLEXED BURIAL

A body, usually lying on its side, with the limbs drawn up into a contracted position. Such a position would normally indicate deliberate positioning of the limbs by someone else, except in the case of new-born infants.

FLOTATION

A process for recovering small items such as insect and plant materials by immersing **MATRIX** in a container of water. Both the floating residue and bottom sediment should be recovered, air dried and examined.

FORAMEN

A passage or hole in a bone through which nerves and blood **VESSELS** pass (pl. foramina).

FORAMEN MAGNUM

The large foramen in the **OCCIPITAL** at the base of the human **CRANIUM** through which protrudes the brain stem passing into the spinal column.

FORENSIC

Relating to the courts of law; commonly used to indicate matters of police or legal significance.

FORENSIC ANTHROPOLOGY

The study of human bones and teeth with associated evidence to assist various representatives of the legal system in the identification of human remains and interpretation of circumstances affecting death and decomposition.

FRONTAL

An element of the anterior **CRANIUM** forming the forehead and upper margin of the **ORBITS**. In **FETAL** and infant human remains (seldom in adults) the frontal is composed of left and right halves.

FUSION

The replacement of **SOFT TISSUE** between two bony elements by bone resulting in a solid union. Maturation of the human skeleton is characterized by progressive fusion reducing the number of discrete elements considerably. Trauma and old age can produce pathological fusion of elements.

G**GAMETE**

A general term for the male or female reproductive cell. Here the term refers to **POLLEN** grains of flowering plants which are analogous to human male sperm.

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GLABELLA

An anatomical landmark denoting the (usually) bald spot between the eyebrows or, in the SKULL, the most projecting point on the brow in the midline.

GROWTH ARREST LINE

Also known as Harris' Lines, these are relatively dense 'bands' of bone near the extremity of a skeletal element marking the former end of the growing bone when growth temporarily stopped, due to illness or malnutrition. These can be seen radiographically, and can assist in INDIVIDUALIZING the remains.

GRUB

LARVAL form of COLEOPTERAN insects.

H

HAMATE

A large wrist bone exhibiting a pronounced hook-like projection. From the thumb, the hamate is the fourth bone in the DISTAL row of the CARPUS.

HARD TISSUES

An inclusive term for the bones and teeth.

HAVERSIAN

Name applied to bone remodeled through the removal and redeposition of bone, in the form of secondary OSTEONS. Osteons are circular when the bone is thin-sectioned transversely for viewing under a microscope. Progressive changes in the incidence and form of osteons are used as an age indicator in adult skeletal remains.

HOLOMETABOLOUS

Describes insects, such as flies and beetles, which exhibit dramatic growth transformations from egg to LARVA to PUPA to adult; i.e., they undergo a marked change (METAMORPHOSIS) in body form, for example, growing wings and legs on a MAGGOT-like body during the pupal stage.

HUMAN REMAINS

An inclusive term for the dead human body regardless of the stage of DECOMPOSITION.

HUMERUS

The bone of the upper arm.

HYOID

A U-shaped bone in the floor of the mouth supporting the tongue and swallowing musculature. The fractured hyoid can be evidence of manual strangulation.

I

IDENTIFICATION

Broadly speaking, this implies determining who specifically is represented by some remains. However, the term is used by some **FORENSIC ANTHROPOLOGISTS** to mean only the preliminary diagnosis of the basic biological features of age, sex, race and stature (see **INDIVIDUALIZATION**).

ILIUM

The major portion of the **INNOMINATE** bone contributing to the pelvic basin which supports the abdominal contents. Around puberty the ilium fuses to the **ISCHIUM** and **PUBIS** in the region of the hip socket.

INCISOR

At the front of both the upper and lower jaws are four incisor teeth characterized by a crown with a chisel-like working edge and a single, short root.

INCUS

One of three very small bones from the middle ear inside the **TEMPORAL** bone of the **SKULL**; also known as the anvil.

INDIVIDUALIZATION

The process of determining the specific identity of a person from a comparison between idiosyncratic features of the bones and teeth and **PREMORTEM** records such as medical/dental records, x-rays and photographs.

INNOMINATE

The hip bone, or pelvis, forming a portion of the pelvic girdle. It forms through **FUSION** of the **ILIUM**, **ISCHIUM** and **PUBIS** at puberty.

IN SITU

Means 'in place'. The implication is that an object whose location is of importance must not be moved by the investigator prior to recording all relevant locational data, including photographs.

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INSTRUMENT

An inclusive term for any object which produces a wound on the body; for example, bullets, shovels, hat pins, rings and so on. The term is deliberately broad so as to embrace many more objects of violence than merely the commonly recognized "weapons".

IN UTERO

In the womb or uterus; the age of a **FETUS** is usually expressed in weeks or months since conception, i.e. 32 weeks in utero (i.u.).

INTRAUTERINE

Synonymous with **IN UTERO**.

ISCHIO PUBIC RAMUS

The portion of bone which joins the **ISCHIUM** and **PUBIS**; **FUSION** occurs around age eight.

ISCHIUM

A portion of the **INNOMINATE**; fuses with the **ILIUM** and **PUBIS** to form the **INNOMINATE**.

L

LACRIMAL

A small bone of the inner margin of the **ORBIT**, bearing a channel through which tears are passed into the nose.

LAMELLAR

Describes the layered structure of bone seen microscopically (particularly in cross-section). It is deposited during growth and throughout adulthood as sheets upon external and internal surfaces of bones, and within **OSTEONS** as concentric rings. The layered sheets are characteristic of immature bone, while concentric layered rings typify adult bone as a result of osteonal remodeling (see **HAVERSIAN**).

LARVA

A pre-adult growth stage derived from an insect egg prior to **METAMORPHOSIS**. The larva of flies is the **MAGGOT**, and of beetles is the **GRUB**. There may be several larval stages prior to adulthood (pl. larvae).

LINE LEVEL

Similar to a carpenter's bubble level, except it is designed to be hung from a horizontal string. Allows the determination of vertical depth measurements below the horizontal datum plane (see **DEPTH BELOW DATUM**).

LINGUAL

Indicates the surface of oral structures, particularly teeth, which face toward the tongue.

LUMBAR

Describes the five vertebrae in the lower back (waist) region which do not bear ribs.

LUNATE

A small crescentic bone of the wrist; from the thumb, the second bone in the **PROXIMAL** row of the **CARPUS**.

M**MAGGOT**

The **LARVAL** form of **DIPTERAN** insects.

MALLEUS

One of three very small bones of the middle ear located in the **TEMPORAL** bone; also known as the hammer.

MANDIBLE

The lower jaw which, in the newborn, is separated at the chin into left and right halves.

MANDIBULAR CORPUS

The body of the mandible including the chin, base and tooth-bearing region but excluding the **MANDIBULAR RAMUS**.

MANDIBULAR RAMUS

A roughly vertical bony link between the corpus and the **CRANIUM**. The majority of strong chewing muscles attach to the mandibular (ascending) ramus.

MANDIBULAR TORUS

A raised series of dense bony bumps, or a fairly continuous ridge of bone, along the **LINGUAL** side of the **MANDIBULAR CORPUS** below the teeth, which occurs more commonly in North American native peoples.

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MANUBRIUM

The topmost portion of the breast bone, most often occurring as a discrete element, to which attach the collar bone and upper ribs.

MASTOID PROCESS

A bony projection from the TEMPORAL bone of the CRANIUM to which attach muscles for turning the head to either side. Usually larger in males, the mastoid process can be felt just behind the ear lobe.

MATRIX

The dirt, soil, gravel, sand, ash and so on, in which human remains are found and which often adheres to the bone surfaces. Samples of matrix should be recovered along with the remains. The removal of adhering matrix should be left to the specialist.

MAXILLA

The upper jaw (pl. maxillae, designating left and right halves, adj. maxillary).

MEDIAL

Designates the surface of an anatomical structure which faces towards the midline of the body, for example, the medial side (inside) of the thigh.

METACARPALS

The five bones forming the palm of the hand between the wrist and the finger bones (PHALANGES).

METACARPUS

Name for the general region of the hand around the METACARPALS; all five metacarpals considered together.

METAMORPHOSE

The act of undergoing an extreme change; for example, the marked changes in the PUBIC SYMPHYSIS during adult life. Also the transformation of an insect from PUPA to adult is described as a metamorphosis (pl. metamorphoses).

METATARSALS

The five bones of the foot between the ankle and the toe bones.

METER GRID

A square box frame one meter on a side, fitted with a grid of strings (usually at intervals of 10 centimeters) as an aid to sketching or locating a concentration of exposed objects or features during mapping.

METRICAL ANALYSIS

The process of measuring bones in a standardized fashion and comparing the size and shape of the specimen to a reference set of figures, usually by means of statistics. Most metrical analyses of human skeletal remains in FORENSIC cases are meant to determine sex, race and stature. Metrical analysis is considered to be less subjective than observational (non-metric) analysis but is by no means necessarily more reliable. Applicability of metric techniques diminishes with increased fragmentation of the remains.

MILK TEETH

These are the so-called baby teeth which ERUPT into the mouth between six months and two and one-half years of age. They are replaced by the PERMANENT teeth between approximately six and twelve years of age. Also known as the DECIDUOUS teeth, there are five milk teeth in each QUADRANT of the mouth, or twenty in total.

MOLAR

These are the DECIDUOUS and PERMANENT teeth located at the back of the tooth row which have two or three roots and a large crown with a complex chewing surface. There are normally two deciduous and three permanent molars in each QUADRANT of the jaw.

MONGOLOID

A major racial stock of humankind found in eastern Asia and in the New World sharing an inherited complex of physical features, particularly yellow to brown skin and straight black hair. In that New World natives are recently derived from Asian mongoloids, it is difficult on occasion to tell them apart skeletally.

MORPHOLOGY

The study of the form or appearance of an organism or its parts; basically a description of what something looks like.

MYLOHYOID

A skeletal variation more commonly seen in North American native Indians where a bridge of bone roofs the MYLOHYOID groove, along which pass the MYLOHYOID artery and nerve. It is located on the inner side of the vertical portion of the mandible behind the teeth.

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N

NASAL ROOT

The depression beneath the brow and between the eyes where the top of the nose is located.

NASAL SILL

The bony lower margin of the nasal opening (aperture) on either side of the **NASAL SPINE**. The nasal sill tends to be more obvious and sharp in males.

NASAL SPINE

The bony projection from the lower margin of the nasal opening where the cartilage forming the nostrils attaches in the midline.

NAVICULAR

A medium-sized bone in the ankle which can be felt midway between the arch and the large bump (the **DISTAL** end of the **TIBIA**) on the inside of the ankle. The term is less commonly applied to the **SCAPHOID** bone of the wrist.

NEGROID

A major racial stock of humankind largely of African ancestry sharing an inherited complex of physical features notably kinked hair and dark skin; usually considered synonymous with "blacks".

NEURAL ARCH

The portion of a **VERTEBRA** on the posterior side which protects the spinal cord, and to which attach the deep back muscles. Each neural arch is initially ossified in a left and right half which fuse to each other before the neural arch fuses to the **CENTRUM**. Consequently, the spine of infants and young children can be quite difficult to excavate and collect because of the many separate elements.

NEUROCRANIAL VAULT

Describes the portion of the **CRANIUM** which houses and protects the brain; the cranium excluding the facial bones.

NORMATIVE STANDARD

A reference set of data on a particular aspect of the **MORPHOLOGY** of a large sample of persons whose important characteristics affecting the aspect in question have been fully documented. One example is the normal range of variation determined for male and female **STATURE** in different ethnic groups.

NUCHAL LINES

Ridges of raised bone on the lower part of the back of the **CRANIUM** where neck muscles attach; usually more pronounced in males.

0

OCCIPITAL

A bone at the back of the **CRANIUM** to which the neck muscles attach. The spinal cord passes (via **FORAMEN MAGNUM**) from the brain stem where the occipital curves forward to help form the base of the **SKULL**. Formed by the **FUSION** of the **BASIOCCIPITAL**, the **EXOCCIPITALS**, and **SQUAMA**.

OCCIPITAL CONDYLES

Two raised bumps on the **OCCIPITAL** bone, on either side of the **FORAMEN MAGNUM**, which help form the joint between the **SKULL** and spine; these tend to be larger in males.

OCCIPITAL PROFILE

Describes the evenness of curvature of the **OCCIPITAL** bone when the **CRANIUM** is viewed from the side. The occipital profile tends to be rounded in **CAUCASOIDS** and **NEGROIDS**, but more angulated in **MONGOLOIDS**.

OCCLUSAL

Describes the chewing, or working, surfaces of teeth; those surfaces of teeth, in upper and lower jaws, which contact each other.

ODONTOID

A tooth-like projection on the upper margin of the **CENTRUM** of the second **CERVICAL VERTEBRA (AXIS)** around which the **ATLAS**, and hence **SKULL**, pivot when the head is turned. Preserves well in severely cremated bodies.

ORBIT

In terms of the **SKULL**, refers to the opening which houses each eye; formed from the contributions of many bones in the **SKULL**.

ORBITOSPHEOID

Paired **PROCESSES** of bone from the **SPHENOID** forming the back of the **ORBIT** and through which passes the optic nerve to the eye; they exist as separate **CENTRES OF OSSIFICATION** in the **FETAL CRANIUM**.

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ORDER

A large scale grouping of biological organisms all of which share a number of physical and behavioural features not shared with other Orders; for example, Order **DIPTERA** or Order **Primates**, which includes, amongst others, monkeys, apes and man.

OSSIFICATION

The process whereby **SOFT TISSUE** is replaced by bone, normally during growth.

OSTEOLOGY

The rigorous study of bone, bones and skeletons, stressing their evolution, growth and function in relation to the whole organism.

OSTEOMETRY

Referring to the standardized measurement of skeletal elements for descriptive and comparative purposes (see **METRICAL ANALYSIS**).

OSTEOMETRIC BOARD

A standard measuring device for limb bones, fitted with an upright and a longer base marked out in metric intervals for ease of measurements.

OSTEON

A characteristic, roughly circular, microscopic structural feature of bone viewed, for example, in thin cross-sections of long bones. An osteon is characteristic of adult bone which is remodeled throughout life; hence, osteon numbers have been used as age indicators in adult skeletal remains (see **HAVERSIAN**).

P

PALATE

The roof of the mouth formed in great part by inward projections from the left and right **MAXILLAE**; should be examined carefully for signs of corrective surgery in the case of cleft palate.

PALATINE

Separate bones forming the posterior quarter of the **PALATE**.

PALYNOLOGY

The analysis of **POLLEN** grains whose protective coating and distinctive sculpturing allow identification of the type of plant; useful for determining the season of death or if a body has been transported to a locale differing in plant types.

PARIETAL

Two bones meeting in the midline of the **CRANIUM** and forming the top and sides of the **NEUROCRANIAL VAULT**. The degree of parietal **BOSSING** and strength of the **TEMPORAL** line on the parietal are useful sex indicators.

PATELLA

The knee cap which functions as a large **SESAMOID** in the tendon of the front thigh muscles increasing the mechanical advantage of the pull of these muscles when straightening the leg (acting somewhat like the bridge on a violin); these bones are commonly overlooked during recovery.

PENETRATING WOUND

A wound which only enters an anatomical structure but does not pass through to the other side (see **PERFORATING WOUND**).

PERFORATING WOUND

A wound which enters and passes all the way through to the other side of an anatomical structure; the significance of perforating wounds is that the holes of entry and exit must not be confused with two separate woundings.

PERINATAL

Around birth; indicates events or a stage of growth coinciding with a degree of maturity consistent with birth (whether or not such occurred, or the event was a live or still birth).

PERMANENT

In this context, refers to the **ADULT TEETH**.

PETROUS

A dense bone in the base of the **CRANIUM** containing the ear ossicles (**INCUS**, **MALLEUS** and **STAPES**) which fuses to the **SQUAMOUS** and tympanic ring (**ANNULUS**) to form the **TEMPORAL** bone. The petrous bone is one of the first in the human skeleton to start to ossify, around the fifth month **IN UTERO**.

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PHALANGES

The bones of the fingers and toes. The thumb and big toe have only two phalanges while the others all have three (singular 'phalange').

PHYSICAL ANTHROPOLOGY

The study of how and why human beings evolved into the physically and culturally varied populations we see today; a growing branch of physical anthropology is **FORENSIC ANTHROPOLOGY**.

PHYSIOGRAPHY

The description of variability in land forms relating to climate, vegetation, terrain and so on.

PHYSIOLOGIC AGE

Describes the physical maturity of an individual in comparison to the typical age at which the majority of the population reaches that degree of physical maturity. Since one cannot normally determine **CHRONOLOGIC AGE** from skeletal and dental remains, we are forced to express the age equivalent of the observed physical maturity with the stated assumption that the person is fairly average in that feature. For example, that **EPIPHYSEAL FUSION** is occurring indicates the attainment of puberty and an age of 'x' years, if he or she is not unusually advanced or retarded in this respect. The same problem is encountered in adult remains but becomes more acute with increasing age; for example, degenerative changes in the **SKELETON** can produce a senile appearance starting in middle age.

PISIFORM

A pea-sized wrist bone. From the thumb, the fourth bone in the **PROXIMAL** row of the **CARPUS**.

PLANE TABLE

An adjustable drawing table mounted on a tripod serving as the base for the **ALIDADE** in mapping.

POLLEN

Microspores of seed plants each containing the male **GAMETE**. Wind and insects carry the pollen to other plants containing the female egg cell where fertilization can occur.

POLLEN RAIN

The largely continuous load of pollen in the air which settles on the landscape throughout the year but which becomes much more intense during the flowering season. Thus, for example, a body deposited in the spring and covered since that time may bear a different variety of pollen types than that falling at the time of recovery.

POST-BREGMATIC DEPRESSION

Bregma is an anatomical landmark on the top of the SKULL where the two PARIETALS and the FRONTAL bone meet at a single point in the midline. A post-bregmatic depression, then, is a slight depression behind bregma on the parietals running from side to side.

POSTMORTEM

Refers to "after death"; observations made on features of the dead person which have not been altered by death or by subsequent postmortem events might be compared to descriptions of the same features made while the person was alive (see PREMORTEM).

PREMOLAR

Teeth of the adult DENTITION which replace the DECIDUOUS MOLARS and which are characterized by a crown with two cusps (peaks) on the OCCLUSAL surface and usually one root; two in each QUADRANT, they are situated between the CANINE and MOLARS.

PREMORTEM

Means "prior to death"; observations recorded on features of living individuals constitute premortem records and can be compared to POSTMORTEM observations in the process of INDIVIDUALIZATION.

PRIMARY OSSIFICATION CENTRE

The point where a future bone starts to OSSIFY prior to the appearance of SECONDARY CENTRES OF OSSIFICATION for the EPIPHYSES. Typically in a major limb bone the primary ossification centre grows to form the shaft while the epiphyses form either end.

PROCESS

A process constitutes any growth of bony substance which projects significantly from the main portion of the element, for example, ACROMION.

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PROGNATHIC

Indicates the mouth region which projects somewhat beyond the facial profile; usually a consequence of large teeth, particularly front ones; as in **NEGROIDS**.

PRONATED

Describes the forearm, when the hand is rotated so as to be palm down, with the **RADIUS** crossed over the **ULNA**.

PROSTHESES

Artificial appliances which replace missing teeth; dental prostheses are bridges that attach to existing teeth or dentures (false teeth) which are removable. Prostheses are often highly individualistic and resist decay and fire.

PROXIMAL

The extremity of an anatomical element which, when articulated, is in a direction towards the trunk of the body, for example, the proximal (shoulder) end of the **HUMERUS**.

PUBIS

The portion of the **INNOMINATE** which, with its counterpart from the other side, forms the pubic mound at the front of the pelvis. The penis and clitoris attach to the front surface of the pubis; modifications related to childbearing make the pubis an excellent indicator of sex. The pubis fuses to the **ILIUM** and **ISCHIUM** in the region of the hip socket around puberty (adj. pubic).

PUBIC SYMPHYSIS

The joining surfaces of the pubic bones in the mid-line of the pelvis at the front. Between the two surfaces is a gristle-like substance. Throughout adult life the surface of the pubic symphysis undergoes a fairly regular process of bone remodeling (termed **METAMORPHOSIS**) which is useful as an age indicator. Normally an immovable joint, in females experiencing hormonal changes in preparation for childbirth, the fibrous joint relaxes and widens somewhat. This results in more variability in the age related changes of the female pubic symphysis (pl. symphyses).

PUPA

Growth stage between **LARVA** and adult of insects which undergo **METAMORPHOSIS**, where movement and feeding cease but development continues until the adult form is completed (pl. pupae).

PUPARIUM

The pupal case protecting the developing PUPA; the discarded pupal case after the adult has emerged (pl. puparia).

PUPATION

The process of becoming a PUPA; the LARVA to pupa transition requiring the formation of the PUPARIUM.

PUTREFACTION

Flesh which is becoming rotted, an early stage in the process of DECOMPOSITION.

Q

QUADRANT

The full DENTITION is considered to consist of four quarters; i.e., left and right halves of both upper and lower jaws. Each quarter is called a dental quadrant.

R

RADIOGRAPH

A record produced on photographic film by roentgen rays; specifically an x-ray photograph. Commonly known as an x-ray, radiographs may be very useful PREMORTEM records; however, they are seldom kept on file (hospital, dental, chiropractic, etc.) for very long. As soon as a person is reported missing, precautions must be taken to ensure that all manner of premortem records are saved until such time as human remains are found for comparison.

RADIUS

One of the two bones in the forearm; lying on the thumb side of the forearm. A common site of fracture from falling on the outstretched palm.

RECOVERY AREA

The locale in which evidence is observed, mapped and collected.

RODENT

The most widespread and numerous of all mammals, characterized by large ever-growing incisors adapted for gnawing. Rodents are commonly observed to gnaw on dried SOFT TISSUE adhering to bones and on the bones themselves; a significant factor in the scattering, loss and breakdown of the SKELETON.

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S

SACRUM

Bone, forming the posterior portion of the pelvic girdle, which supports the spinal column and weight of the chest and head; consequently, the sacrum is a useful sex indicator.

SAGITTAL CONTOUR

The degree of curvature of the top of the CRANIUM when viewed from the side; a moderately useful criterion of race.

SAPONIFICATION

The process whereby subcutaneous fat of bodies decomposing in a warm moist, oxygen-poor environment changes its chemical structure to become a greasy soapy substance resistant to decay (see ADIPOCERE).

SAPROPHAGOUS

An organism, such as some insects, which feeds on rotting flesh or body fluids.

SCAPHOID

A bone of the wrist which ARTICULATES with the DISTAL RADIUS and, like the radius, is subject to fracture from falling on the palm. From the thumb, the first bone in the PROXIMAL row of the CARPUS.

SCAPULA

The shoulder blade, a triangular bone which is very thin in places and may preserve, rather faithfully, the shape of a PERFORATING instrument, such as a knife.

SCAT

Animal droppings or FECES; scats are often found in association with human skeletal remains and should always be collected as the evidence of animals in the locale may help explain the state of the remains. Not to be confused with bird pellets which are regurgitated bone, hair and feather bundles that have not passed through the digestive tract. Some birds, notably hawks, eagles and owls, feed on small animals and occasionally upon CARRION.

SEARCH AREA

The region around the discovery locale which is searched for further evidence of human remains, ARTIFACTS and the like; particularly approaches to the site, making observations on the environmental context of the remains.

SECONDARY OSSIFICATION CENTRE

EPIPYSIS, a small bony centre which grows at the extremities of major bones and to which they ultimately fuse, causing the cessation of growth (see **PRIMARY OSSIFICATION CENTRE**).

SESAMOID

A nodule of bone, usually situated within a tendon of a muscle which serves the dual function of protecting the tendon from being crushed and enhancing the leverage of the muscle. Sesamoids in the human **SKELETON** are the two knee caps and the barley-grain sized, paired sesamoids at the base of the big toes and thumbs. The bear paw, which approximates in appearance the human hand after prolonged decomposition, can be distinguished grossly or radiographically by the presence of sesamoids at the root of all the **PHALANGES**.

SETA

Tiny hair-like bristles on the legs of some insects (for example, beetles) which are useful for identification (pl. *setae*).

SIBLING

An inclusive term for one's brother or sister.

SINUS

An air-filled cavity within a bone, which serves to lighten the bone without reducing structural strength. Important sinuses in the human **SKELETON** are found in the **FRONTAL** bone, **MAXILLA** and **MASTOID PROCESSES**; they may be useful as sex indicators.

SITE BOARD

A slate or plastic letter board, included in photographs, describing what is being recorded, where and when.

SKELETON

The bony support structure of the body, which also serves to protect organs and as a mineral reservoir. Since the skeleton is considered to include the teeth, it can be fairly stated that the teeth are the only part of a skeleton to contact the environment directly in living animals. Their susceptibility to modification makes the **DENTITION** so useful in the **IDENTIFICATION** of human remains.

SKELETONIZED

Being stripped of flesh; reduced to bare bones.

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SKULL

That part of the human SKELETON forming the head which protects the brain and sense organs, and bears the teeth. The skull is composed of the CRANIUM, the MANDIBLE, and the HYOID.

SOFT TISSUE

A useful term for any residue of decomposing remains which is not bone or tooth.

SPHENOID

A complex bone in the base of the CRANIUM which is formed through FUSION of several PROCESSES (ORBITOSPHEOID, ALISPHEOID) to a central body (BASISPHEOID) by the end of the first year of life.

SQUAMA

The large, thin, curved, tabular portion of the OCCIPITAL at the back of the CRANIUM.

SQUAMOSAL

The thin, flat plate of bone attaching to the PETROUS which together help form the TEMPORAL bone located on the lower side of the NEUROCRANIAL VAULT in the ear region.

STADIA ROD

A calibrated surveyor's staff used for mapping elevations and distances in conjunction with an ALIDADE or TRANSIT.

STAPES

One of the three small ear bones, also known as the stirrup.

STATURE

An alternative term for height. A great deal of effort is expended by forensic anthropologists in determining stature from partial or complete limb bones, since height is a common attribute of a police blotter description of an individual.

STERNAL BODY

The lower part of the breast bone to which ribs attach (see MANUBRIUM).

STERNEBRAE

The STERNUM is composed of a number (usually five) of separate sternebrae which, in the young child, are rather like checkers. These finish fusing around puberty.

STERNUM

The breast bone, consisting of the **MANUBRIUM** and **STERNAL BODY**.

SUBPUBIC CONCAVITY

Describes the inferior margin of the pubic bone, useful as a sexing aid. In females, it appears in front view rather curved, but in males is straighter.

SUPINATED

Position of the hand with the palm facing forward so that the **RADIUS** and **ULNA** are parallel (see **PRONATED**).

SUPRAMASTOID CREST

A ridge of bone on the **CRANIUM** above the ear hole marking the attachment area for a major jaw muscle; often more pronounced in males.

SUPRAORBITAL MARGIN

The upper margin of the **ORBIT** which tends to be more rounded in males due to their heavier brows (see **SUPRAORBITAL RIDGES**).

SUPRAORBITAL RIDGES

A raised ridge of bone above each **ORBIT** contributing to the heavier brow of males.

SUTURE

The line of union at the immovable joints of the bones of the **NEUROCRANIAL VAULT**. Suture pattern is characteristically complex, almost like dove-tailing, for most cranial sutures. With increasing age, progressive **FUSION** leads to obliteration of the suture; hence suture 'closure' is a useful indicator of gross age categories, such as young or old adult.

T**TALUS**

A major ankle bone between the heel and lower leg bones. The sizes of the talus and **CALCANEUS** (heel) are reasonably good indicators of sex since virtually the entire body weight of the (usually) heavier male is concentrated on the ankles.

TARSALS

The seven ankle bones of the human foot, considered as a group.

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TARSAL SEGMENT

Many insect tarsae are divided into a characteristic number of tarsal segments (see TARSUS).

TARSUS

The portion of a typical insect's leg which is between the tibia and the claws. Variability in the structure of the tarsus as an adaptation for locomotion and feeding amongst different insects makes the tarsus a useful guide to identification of species (pl. tarsae).

TAXONOMY

The study of describing, naming and classifying organisms in terms of their similarities and differences in (primarily) MORPHOLOGY. Organisms classified together are considered to have had a relatively recent common ancestor from which they have diverged through evolution.

TEMPORAL - Definition 1

A major bone of the CRANIUM forming the lower side and part of the base; composed of the SQUAMOSAL, PETROUS and ANNULUS which finish fusing to each other shortly after birth.

Definition 2

Signifying time, that is, information about the relative timing of events.

TEMPORAL LINES

(See TEMPORAL Definition 1) A pair of lines, one of which is faint, on the side of the NEUROCRANIAL VAULT, marking the attachment of the temporal muscle which inserts on the CORONOID PROCESS of the MANDIBLE and acts to close the mouth. The temporal lines and the SUPRAMASTOID CREST are more pronounced in males because of their larger average lower jaw size.

THORACIC

Describes the rib-bearing VERTEBRAE (adj.).

TIBIA

The major bone of the two in the lower leg, on the big toe side; also known as the shin bone (see FIBULA).

TOOL MARK

An impression on relatively softer material by any tool, such that the individual characteristics of the tool are imparted to the contacted surface. These can be matched, linking a

particular tool (or weapon or INSTRUMENT) to a particular impression; for example, knife, saw or hatchet marks on bone. Because bone is fairly hard and brittle under heavy impact, tool marks on bone are rare; but if imparted should be fairly faithful reproductions with little distortion.

TRANSIT

A surveying instrument which is mounted directly on a tripod without an intervening PLANE TABLE (see ALIDADE).

TRANSVERSE PROCESS

Bony projections, each with its own EPIPHYSIS, from the sides of the VERTEBRAE to which attach back muscles.

TRAPEZIUM

A small wrist bone on which the thumb rotates across the palm. From the thumb, the first bone of the DISTAL row of the CARPUS.

TRAPEZOID

A small wrist bone. From the thumb, the second bone of the DISTAL row of the CARPUS.

TRIANGULATION

A method of recording the location of an object by measuring its distance from two other defined points a known distance apart.

TRIQUETRUM

A small wrist bone; from the thumb, the third bone of the PROXIMAL row of the CARPUS.

TROCHANTER

Major bumps on the PROXIMAL end of the FEMUR to which attach large hip muscles.

TYMPANIC DEHISCENCE

A hole in the inferior surface of the bony tube formed as an outgrowth of the TYMPANIC RING; more common in North American natives.

TYMPANIC RING

An alternative term for the ANNULUS, which supports the outer ear drum, and forms the outer wall of the middle ear. During childhood the tympanic ring grows outward to form a bony tube.

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U

ULNA

One of the two bones of the forearm, located on the little finger side (see **RADIUS**).

V

VASCULAR

Pertaining to blood vessels.

VENATION

The system of veins in the wing of an insect which is an important characteristic for classification.

VENTRAL

Describes a surface facing towards the front of the human body.

VENTRAL ARC

A distinct ridge of bone on the **VENTRAL** surface of the **PUBIC** bone. In the female the ventral arc sweeps widely to the side while in the male, the arc is more vertical and less distinct.

VERTEBRA

One of a series of bones in the back forming the spinal column, which serves to protect the spinal cord and as attachment areas for the trunk muscles (pl. vertebrae).

VITRIFICATION

The process where bone heated to temperatures in excess of 800°C acquires a hard porcelain-like quality with a distinct tonal sound when tapped against a hard surface.

VOMER

A small bone located behind the nose in the midline contributing to the bony nasal septum.

Z

ZYGOMA

The cheek bone, which in **MONGOLOID** peoples tends to be more projecting (pl. zygomae).