CREATOR

VOLUME 31 NUMBER 3

I Am Fearfully and Wonderfully Made

Bone of My Bones

Your hands fashioned and made me, . . Remember that You have made me like clay; and will You return me to the dust? . . You clothed me with skin and flesh, and knit me together with bones and sinews.
Job 10:8a,9,11

O Father in Heaven, please help us now to peer through the window of Creation and into the heart of our Creator, Christ Jesus. And help us to treasure in Creation the face of our beautiful Lord shining through all He has made, that we may savor His character and excellencies. For Your glory, by Your Spirit, and in Your Son's name we pray, Amen!

Our Heavenly Father uses the word "bone" to describe the frame of our body (Job 10:11). Four hundred years ago, theologians with little scientific training understood bones to be "the strongest and greatest parts of [our body], and the supporters of the rest."[1] Scripture sometimes uses the word poetically as our inmost being, "All my bones will say, 'Lord, who is like You?'" (Psalm 35:10). There can be no doubt that our skeletons largely represent the physical essence of our being.

1 Matthew Poole (1624–1679) commentary on Proverbs 16:24

Vital Bones

"This at last is bone of my bones and flesh of my flesh." Genesis 2:23

Few of us realize just how important bones are. Without them, we would not be able to breathe or hear, walk or swim. Moving our arms and making a fist would be impossible. Our arteries would contain no blood, and our vital organs would be exposed to serious injury. Without bones, none of us would have been born!

In this issue, we will dive deeply into the depths of Christ's design of our skeletons, yet we will not be able to touch bottom. Our Creator desires us to diligently study His Creation (Psalm 111:2), while grasping—the best we can—that His ways are infinitely higher than ours (Isaiah 55:9).

The 27 bones of the hand are the most unique "living rocks" in all Creation!

Bones embody the core of our lives and *God's intimate care for us*. They exemplify His enduring presence and sustaining power through all life's hardships (Isaiah 58:11)!

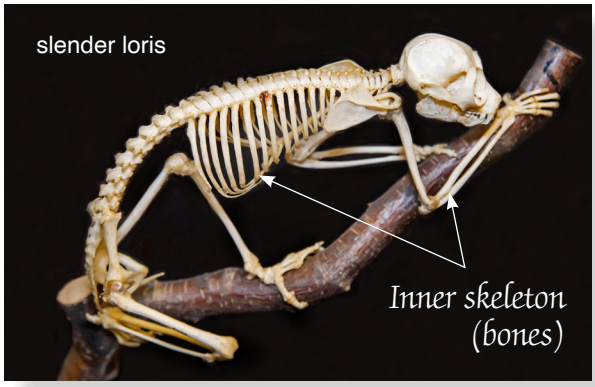
Bones also teach us to properly *fear our Lord Jesus*. And through a genuine childlike fear of God, He blesses us (Psalm 115:13).

"Living Rock"

And all drank the same spiritual drink. For they drank from the spiritual Rock that followed them, and the Rock was Christ. 1 Corinthians 10:4

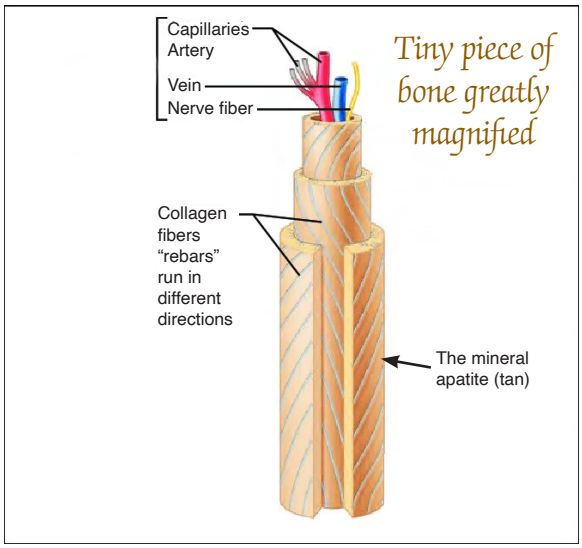
Science divides animals into two categories: vertebrates and invertebrates. *Invertebrates* "wear" their skeleton on the outside of their body. Therefore, it is called an

exoskeleton (exo- comes from the Greek language and means "outside"). *Vertebrates*, on the other hand, possess bones inside.[2]



Our Master Jesus designed the bones of vertebrates and people in the same basic way. Exceptions to this pattern are sharks, rays, hagfish, and lampreys. Instead of bones, their skeletons are composed entirely of cartilage (it never ossifies).

It was mentioned in the last ***CREATOR Journal*** that builders use long steel bars (rebars) to reinforce cement. This is patterned after the way God constructs bones using a "cement" of calcium phosphate (apatite) woven with strands of collagen fibers.[3] We might think of these protein fibers as the "rebars" of our skeleton; they provide strength and flexibility. Unlike concrete and steel, bones are quite alive. (No building in the world can boast this claim.)



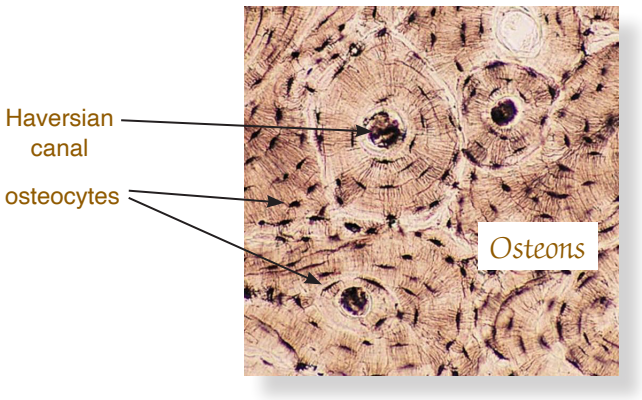
Jesus fashions bones with great skill and incomparable care. It is fascinating to note that even in 1878, it was recognized that "a living bone is a complex organ."[4] The outer portion is composed of dense, compact material, covered by a sheet of tissue—the *periosteum*. This membrane lies on the surface of bones and cartilage, helping nourish them. Abundant blood vessels and nerves populate the periosteum; if you bump your shin, it is the periosteum of the tibia that feels pain.

2 Vertebrates include mammals, birds, reptiles, amphibians, and fish.

3 This forms a very strong matrix of 2/3 mineral and 1/3 protein.

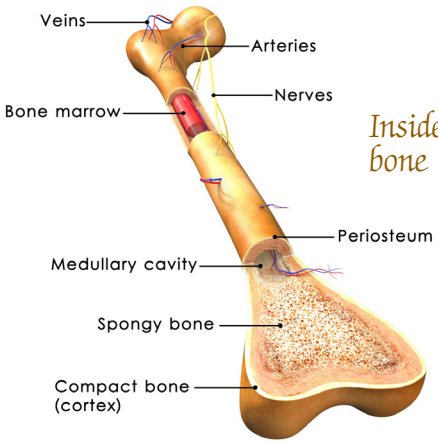
4 Encyclopedia Britannica, Vol.1, 1878, p. 854.

Under a microscope, *compact bone* is seen as dense tissue composed of *osteons*. The small dark "dashes" in the photo are *osteocytes*, specially designed cells that help maintain



the vital balance of calcium and phosphorus in your body.[5] And they sense physical stress as you move. The larger black oval space is a *Haversian canal*. It transports minerals, oxygen, and nutrition to the osteocytes.

Our Lord Jesus constructed the interior of bones in a honeycomb pattern of thin bony struts (spongy bone). This keeps bones as light as possible, while maintaining strength. Within these cavernous passageways, He stores blood-producing cells and fat.



Inside a long bone (femur)

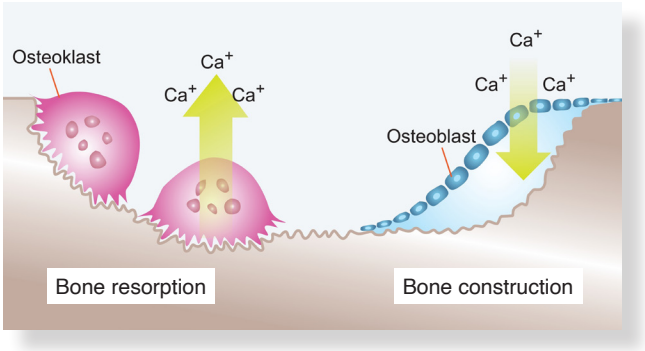
Scattered throughout our body reside three tiny cellular servants, hidden in darkness, working tirelessly to keep our bones healthy:

- osteocytes (os - tee - oh - sites)
- osteoblasts
- osteoclasts

5 Bones are the chief reservoir for calcium for the body.

Our incredibly loving Creator uses all three cell types to continuously form and reform our bones without our realizing it.

Osteoclasts (osteoklasts) dissolve bones while osteoblasts rebuild them.[6] *Christ never stops sculpting our skeletons!* Normally, these two cells are in balance with each other. As we get older, however, osteoclasts tend to



outnumber osteoblasts and bones gradually lose calcium, resulting in a condition known as *osteoporosis*. Modern medicines can be used to slow down this bone loss.

Bone Types

For the body does not consist of one member but of many. 1 Corinthians 12:14

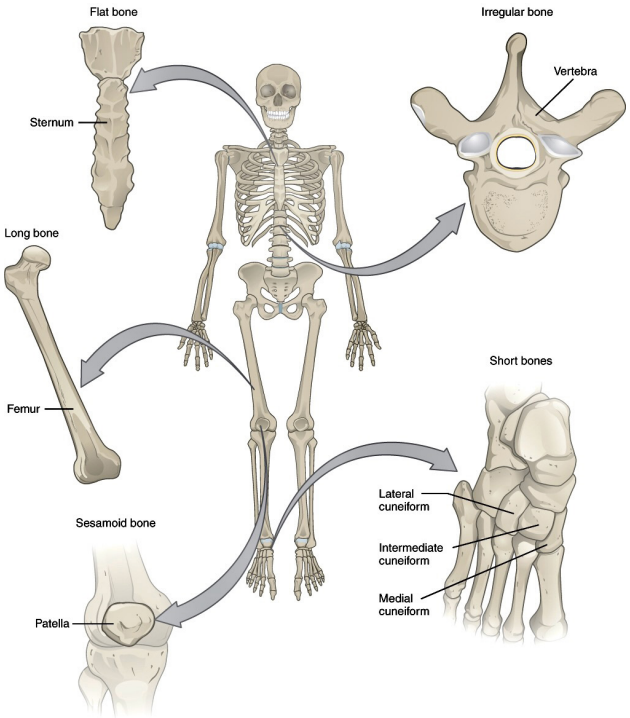
Our Lord never designs anything without purpose (Ephesians 1:11). I remember hearing one of my Medical School professors say that the appendix serves no good function other than to become infected. That's simply not true. We may not understand why God fashioned the appendix, but we must not pass judgment on the purposes of our Creator!

The same is true for the shape of our bones, which may seem strange to us. Our Lord Jesus has given each bone a special task to accomplish. Like snowflakes, He created no two alike. The shape of your shoulder blade (scapula) is slightly different from everyone else in the world. *God made you unique.*

6 osteo = "bone" in Greek
cyte = "cell" in Greek
blast = "develop(er)" in Greek
clast = "break(er)" in Greek
porosis = "forming holes" in Greek

Your skeleton is composed of five different types of bones:

- long bones – femur, humerus
- flat bones – shoulder blade, sternum
- unique bones – bones of your face
- short bones – bones of your fingers and toes
- sesamoid bones – patella (kneecap)



Together, they allow us to move our arms and legs securely, and stand upright so that we might look to the heavens. Bones also help form a person's physical shape, and protect our vital organs. This is especially true of the skull, which shields our brain, the ribs that form a "fortress" around the heart and lungs, and the vertebrae, which create a tunnel providing safe passage for our spinal cord.

"To You I lift up my eyes,
O You who are enthroned in the heavens!"[7]
Psalm 123:1

A Mysterious Creation

Just as you do not know the path of the wind and how bones are formed in the womb of the pregnant woman, so you do not know the activity of God who makes all things. Ecclesiastes 11:5[7]

To this day, doctors understand only a tiny fraction of God's work in transforming a single fertilized egg into a full-grown adult. Even as a single cell, we are impossibly complex! Science might not comprehend all that transpires within the miracle of the womb, yet *we must not spurn our Lord's labors*. With a childlike heart, let us then remember our beginnings as a single but beautiful cell.

From the moment Jesus put life into this single cell, He has been weaving and mending us every day (Psalm 139). Through divine humility, He constantly tends our well-being. By the time a baby is born, he or she represents a "miracle of life," with trillions of cells woven into an ever-changing, mysterious tapestry. Newborns possess approximately 100 more bones than their parents. Infant bones are largely soft cartilage; this prevents injury (such as can occur at the moment of birth). Over time, they fuse, reducing the number from 300 to 206. Jesus also richly infuses them with minerals, making bones tough and resilient.

Our Lord originally formed us from the dust of the Earth (Genesis 2:7). Christ built our entire frame literally "from the ground up" using many different kinds of minerals. And apart from the life of our wonderful Lord Jesus, we would be no better off than desert sand.

We say this not to disparage anyone but to exalt our amazing Creator! *He alone makes us alive*. His love shines everywhere in the universe, especially in us. And if we take the time to look, we will see Christ's intimate care radiating from the very bones He uses to shape us. He truly is the Rock of Ages and our very existence.

7 Scripture reference from the New American Standard Bible, Copyright © 1960, 1962, 1963, 1968, 1971, 1972, 1973, 1975, 1977, 1995 by the Lockman Foundation.

"In Him we live and move and have our being."
Acts 17:28

There may be times in our lives when, despite being "fearfully and wonderfully made," we feel as if we're falling apart. It's good to be reminded that Jesus will always hold us close to His heart and sustain us through life's difficulties if we trust Him:

I could never keep my hold
Through life's fearful path
For my love is often cold
He must hold me fast

He will hold me fast
He will hold me fast
For my Savior loves me so
He will hold me fast[8]

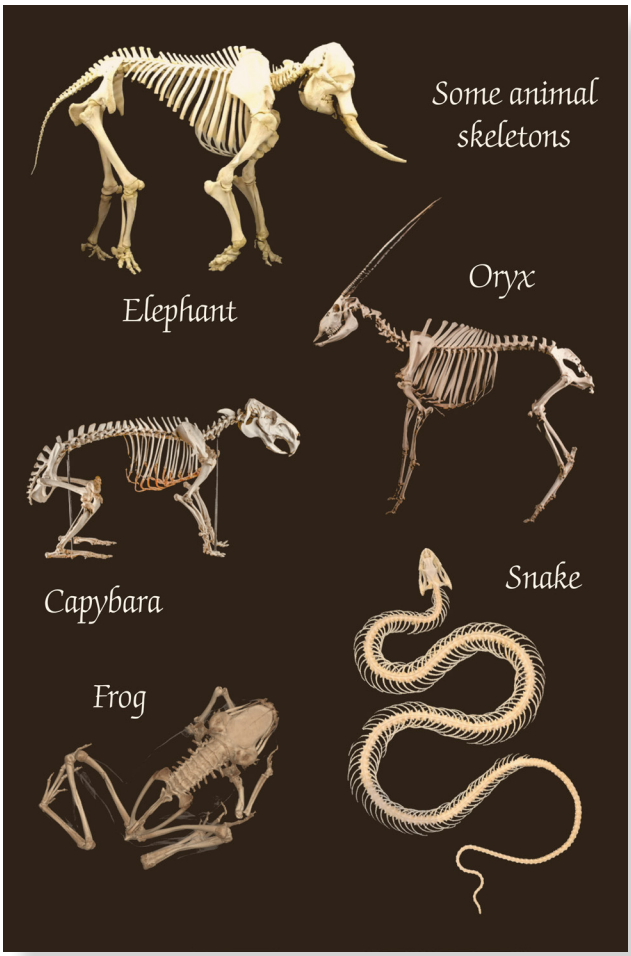
Skeletons

For not all flesh is the same, but there is one kind for humans, another for animals, another for birds, and another for fish. 1 Corinthians 15:39

Creator Jesus begins to fashion our skeleton within us when we are only six or seven weeks old as an embryo in our mother's womb. At first, bones are mostly cartilage—a tough, flexible connective tissue that is akin to the rubber heel of a sneaker. Over time, cartilage slowly hardens (becomes ossified). These soft bones also grow in size throughout childhood. Your upper arm bone, the humerus, however, doesn't fully form until you're 20; your entire skeleton matures by 25 years of age.

At birth, babies normally possess around 300 bones. Gradually, over the years, smaller bones fuse into larger ones under the tender, loving direction of our dear Creator. The adult complement of 206 bones doesn't appear until 18 to 21. From the very beginning, Jesus works tirelessly to add support and stability to the skeleton.

The bones of vertebrates have the same basic functions: protect organs, provide useful movement, produce blood cells, and provide internal support. (Without a skeleton, animals would collapse into a jelly-like mass. Not a pleasant thought.) The great Carpenter of life securely attaches bone to bone using *ligaments*. Ligaments resemble leather straps—connective tissue fashioned from the protein collagen. *Tendons* are similar; they attach muscles to bones, allowing movement.



Of the 70,000 known species of vertebrates, our Lord has blessed each with its own skeleton. Skeletons provide them with a unique shape and appearance. We can recognize a dinosaur as a dinosaur, and not an elephant, because of the arrangement of its bones (skeleton).

8 "He Will Hold Me Fast" by Ada R. Habershon (1906); music composed by Robert Harkness

If we compare and contrast the vertebrate skeletons our Lord designed, we get an idea of the breadth of His creative skills: Some frogs possess fewer than 60 bones, while snakes may have 1,800 or more!

The smallest skeleton in the world belongs to a tiny frog in Papua New Guinea, less than eight millimeters long (frog photo on page 5, greatly enlarged).[9]

Blue whales own the largest skeletons in existence, beating out the dinosaurs. Their jawbone alone reaches 20 feet (6 meters)—the largest single bone God ever created.

Of all the creatures Christ gifted with skeletons, ours is the most unique. People possess something special on Earth—*hands*. It is true that gorillas and chimpanzees have hands as well, but they cannot operate them with the skill and dexterity we can.

The human pelvis is also one of a kind. All vertebrates with a pelvis[10] have their hip bones positioned parallel to the ground. This allows them to walk or run swiftly on all fours. Not so with us. Our pelvis is not elongated—like that of a cat—but forms a basin instead (*pelvis* comes from a Latin word meaning "basin" or "bowl"). Christ Jesus specially designed us this way so we would walk upright!

Jesus Our Identity

And have put on the new self, which is being renewed in knowledge after the image of its Creator. Colossians 3:10

Bones are often tied to a person's identity in Scripture. More than anything, the skeleton provides one's shape. When Eve was fashioned from Adam's rib, he exclaimed, "bone of my bones and flesh of my flesh" (Genesis 2:23). Joseph ordered that his bones be carried out of Egypt during the Exodus, which Moses faithfully did. In this, Moses honored the son of a patriarch (Genesis 50:25; Exodus 13:19).

A similar type of honor can be found in the Appalachian Mountain region of the U.S.—not involving bones, but old buildings. Chimneys dot the rural landscape here. Some locals call these the "gravestones" of fallen houses; we might prefer the epitaph, "enduring backbones." These chimneys represent generational respect, for a home's hearth was seen as the core identity of family life.

Christ alone is the honor and true identity of the Church. Jesus forms the *living framework* or "bones" of His Bride, and we, as His people, humbly cling to Him in love. God miraculously fills His Church with the "vitalized dust of the earth." And it is Christ's strength alone (Philippians 4:13) that causes us to abide in Him! Jesus is:

- our Strength and Sure Foundation,
- our Support and Identity,
- the Source of our Life,
- our Perseverance and Enduring Rock.

Bones of His Body

As you come to Him, a living stone rejected by men but in the sight of God chosen and precious, you yourselves like living stones are being built up as a spiritual house. 1 Peter 2:4-5

If we are in Christ, we come before our Master for worship as the "living stones" of His "spiritual house" (1 Peter 2:4-5). We might think of a *living stone* as another name for *bone*. But Christians are not "bare bones;" in other words, God must be the Vital Being

9 Less than 0.3 inches long
10 Some fish, certain amphibians (caecilians), and many snakes lack a pelvis.

of the Church. We are united to the *Living One*; it is Jesus who makes His Bride alive. We began as the lifeless dust of the earth (Ephesians 2:1,5) and became one with Him.

There may be times when you feel like the least significant person in the kingdom of God. Perhaps you are an unseen bone in the foot of Christ's Body (1 Corinthians 12:15)! Consider this: the *intermediate cuneiform* (KYOO - nee - uh - form) represents the smallest bone in the foot, yet essential to everyday life. How important is it? This wedge-shaped bone was humbly designed to help carry the weight of your entire body (see drawing on page 4). Along with two other cuneiform bones, it forms an arch, preventing your foot from collapsing under your own weight. If the cuneiform becomes injured, you would likely experience intense pain, making it almost impossible to walk. *It is very important.*

You may be hidden away by God in the dark and relatively unknown to your peers. Be encouraged—*you're not unknown to Jesus* and far more important to His Church than you realize. He has placed you where He wants you to be, helping support the Body through humble prayer and service. Without you, His Bride might become lame and unable to walk properly.

Bone Repair

The Lord binds up the brokenness of His people, and heals the wounds inflicted by His blow. Isaiah 30:26

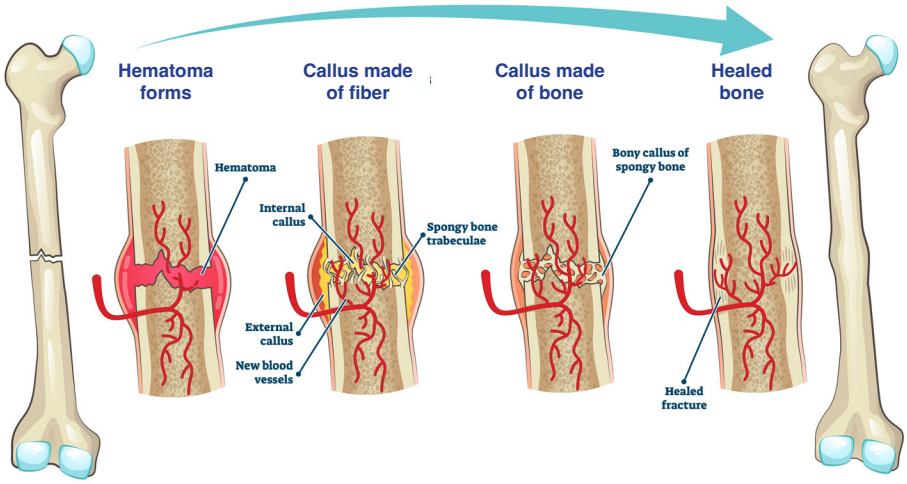
Have you ever heard the phrase, "This house has good bones"? This figure of speech or idiom means that the home is structurally sound and built to last. But there exists a big difference between a building and our body. A house cannot repair itself; Jesus engineered our skeleton to do exactly that.

Each year, nearly 200 million broken bones occur worldwide, and by age 65, over half of all Americans have experienced at least one bone fracture. Before the Fall of mankind, our Sovereign Lord lovingly designed our bodies to handle such injuries, knowing they would happen. *He is so good!*

As mentioned, God provides us with two very special cells that constantly shape and reshape our bones on a microscopic level. Osteoclasts secrete acid to dissolve minerals and enzymes to break down collagen—the protein in our bones. Meanwhile, osteoblasts construct new bone. We could say that our bones are constantly being "resurrected" or renewed. This divinely designed cellular activity is essential to our health.

What happens when a bone breaks?

- Blood leaks out, forming a hematoma.
- Protein fibers are added, producing a callus or "natural splint."
- Within two days, minerals begin hardening the callus.
- The callus becomes fully bone by six weeks.



The well-being of these "demolition/construction workers"[11] depends upon many things: a person's age, stress experienced, Earth's gravity, traumatic events, and daily nutrition. At around 50 years of age, osteoclasts start to outnumber osteoblasts, resulting in bone loss.

This is what happens when astronauts are exposed to weightlessness for long periods—they can lose bone density.

Astronauts eat fruit to help keep their bones healthy

Extended space travel must be accompanied by ways to simulate the beneficial effect gravity places on our bones. Much ongoing medical research is being done to solve this problem.

Bones can also weaken from poor diet, leading to two very common diseases. Deadly scurvy (SKUR - vee) once plagued sailors. This disease results from a lack of dietary Vitamin C (ascorbic acid), a vitamin essential for making collagen—the major bone protein. In severe cases, normal bone formation ceases, and the skeleton significantly weakens.

Before 1800, scurvy took the lives of over two million sailors worldwide. Thanks to Sovereign Love, God led Scottish surgeon James Lind to discover that citrus fruits prevent and cure the disease. By 1795, the British Navy mandated that lemon juice be included in all sailors' diets.[12]

In 1869, German doctor Julius Wolff was the first to realize that our bones are remodeled throughout our lives. This led to Wolff's Law in 1884: "Bone is laid down where needed and reabsorbed where not needed." This allows the bones of those doing manual labor to become stronger and less prone to fracture. Who other than our infinitely loving Creator could command such care?

In many countries, children suffer from *rickets*. This condition results from diets low in Vitamin D or calcium. Rickets leads to a softening and weakening of a child's bones and permanent deformity.[13]

If we maintain health, Jesus begins repair on our bones as soon as they become injured. During the healing process, He causes bone cells "to play tag-team." Osteoclasts remove damaged tissue, which is then replaced by osteoblasts, forming new bone. These microscopic servants faithfully obey their Master, intimately caring for us day and night.

Breaking a bone can be quite painful, but Christ's care brings healing. His glory is sweetest to our souls after a difficult trial (Mark 5:41-42).

"The Lord is compassionate and merciful."
James 5:11

James Lind giving sailors lemon juice

11 Osteoclasts and osteoblasts

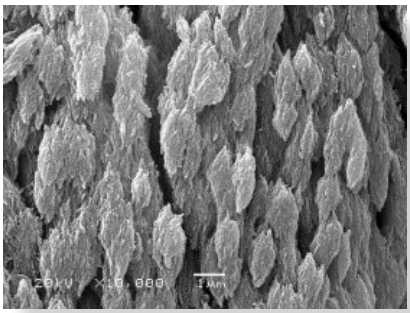
12 The Navy switched to limes in 1860 because they were cheaper than lemons. Eventually, British sailors came to be known as "Limeys."

13 Rickets is relatively common in the Middle East, Africa, and Asia.

Humble Apatites

In humility count others more significant than yourselves. Philippians 2:3

In 1 Corinthians 12, the Holy Spirit uses the human body as a metaphor (illustration) of the Church. Through the Apostle Paul, God teaches that no one part of Christ's body is more important than another. We all possess various strengths and giftings; *only together* can the Church become truly alive!



Microscopic apatite crystals in bone

Research on bones has shown that calcium forms unbelievably tiny crystals of the mineral apatite ($CaPO^4$).[14] When scientists attempt to grow these crystals in the lab, they are not nearly so small, organized, or strong. It is their "humble size" that provides bones fantastic strength.

If we allow Jesus to apply this principle to illustrate how He strengthens His Bride, the Church (Matthew 11:25; Ephesians 4:15-16), we see that it is not the strong or learned who hold her together, but *every humble Believer*. Only when we have the same concern for each other is His Body truly healthy and beautiful (1 Corinthians 12:12-31).

There may be no greater reminder of our origins from the dust (Genesis 3:19) than the mineral apatite. "The hardness of bone is due to the presence of [this] earthy matter."[15]

A Fearful Reminder

Dread came upon me, and trembling, which made all my bones shake. Job 4:14

Throughout history, skeletons have been a symbol of death. The gravestones of our Puritan ancestors often featured rather stark reminders of this. Graveyards and the sight

Headstone located in Boston, Massachusetts

of skeletons can be frightening, because they point to our mortality. Yet if we humbly embrace this reality, we become better able to find joy in Jesus, who is our Resurrection and Life (John 11:25)!

Much of the world remains enslaved to *the fear of death* (Hebrews 2:15). But for those who love your Creator, . .

You did not receive the spirit of slavery to fall back into fear, but you have received the Spirit of adoption as sons, by whom we cry, "Abba! Father!" Romans 8:15

Death was once my great opponent
Fear once had a hold on me
But the Son who died to save us
Rose that we would be free indeed![16]

Fear the Lord, and turn away from evil.
It will be healing to your flesh
and refreshment to your bones.
Proverbs 3:7b-8

14 Also known as hydroxyapatite. You can read about the minerals of our bones in the ***CREATOR Journal*** Volume 31 Number 2.

15 Encyclopedia Britannica, Vol.1, 1878, p. 853.

16 "It Was Finished Upon That Cross" by Rich Thompson, Jonny Robinson, and Nigel Ian Hendroff

Resurrected Bones

"Death is swallowed up in victory."
"O death, where is your victory?
O death, where is your sting?"
1 Corinthians 15:54-55

"Many of those who sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt" (Daniel 12:2). Every moment of every day, *our bones preach* the message of the coming resurrection (1 Corinthians 15). If the Almighty can easily turn a stone (apatite) into a bone, will it be difficult for Him to bring you back from the dead? And when He does, will you be with Christ in Paradise, or in prison awaiting judgment?[17]

It is good for us to ponder our bones and skeletons and how Jesus formed them from the dust of the Earth. Meditating on these things will lessen our pride and make us more fit to serve our King in loving obedience. It will move us to grow in a humble fear of the Lord, for in this there is true wisdom (Proverbs 9:10).

The word humility comes from the Latin *humus*, which means "fertile ground." Only when the Holy Spirit miraculously converts the dry, desert dust of our proud hearts into tender, lush soil can we repent of our sins and truly believe His Gospel. Christ's love can take us from the "Valley of Dry Bones" (Ezekiel 37) and make us alive in Himself!

How is your heart? If you are troubled by your sins, then Christ's Spirit is working in you. Please repent of them and believe that Jesus died on the Cross to forgive you.

We began the issue with prayer, and it's only appropriate that we conclude in prayer, that you would know the true salvation found in Jesus Christ alone (Acts 4:12)!

"For this reason I bow my knees before the Father, . . so that Christ may dwell in your hearts through faith."
Ephesians 3:14,17

17 Hell is not the final end for those who willfully disobey Jesus throughout their lives. It is a "holding tank" for whom the Lake of Fire is reserved (2 Peter 2:4-9; Revelation 20:14).

18 "Alleluia! Alleluia!" by Christopher Wordsworth (1872)

Christ is risen, we are risen!
Shed upon us heav'nly grace,
rain and dew and gleams of glory
from the brightness of Thy face,
that we, with our hearts in heaven,
here on earth may fruitful be,
and by angel hands be gathered,
and be ever, Lord, with Thee.[18]

"The first man was from the earth, a man of dust."
1 Corinthians 15:47

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