

CELEBRATING THE WONDER OF SOIL

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Why would anyone write about something as common and as unwelcome as dirt? It's for good reason that we sweep our floors, wipe our shoes, and wash our soiled clothes.

There are, however, other ways of looking at the stuff of which the Bible says God made Adam.

In the following pages, RBC writer and naturalist Dean Ohlman does what he so skillfully did in earlier booklets about the wonder of trees and of water. Dean compels us to dig a little deeper into the nature and significance of the good earth that was valued far more by his grandfather's generation than by most of us today.

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LEAVING THE LAND

My dad, Henry Ohlman, was born on a Western Michigan farm in 1902. He was one of six boys who often chafed under the stern discipline of their Prussian father, Henry, Sr., whom they felt carried the Protestant work ethic to the extreme. Perhaps identifying more closely with their Dutch mother, they sometimes referred to my walrus-mustachioed grandfather as “the Kaiser”—out of earshot, of course!

It appears that all the Ohlman boys in turn left their rich bottomland farm in Hudsonville as soon as they were men, never to return. I’ve often wondered about that. Was their decision the result of the grueling farm work, or was it more likely a

consequence of the major shift of labor from the country to the city that accelerated rapidly from 1915 onward? The first two decades of the 20th century are called the Golden Age of American agriculture. By the beginning of the First World War, farm prices had risen to a historic high. And because Europe was at war, with millions of its farmers on the battlefields, America took up the slack. The US provided a large part of Europe’s food from 1915 to 1920. As a result, farmers profited more than ever.

The increased demand for farm products in those years was the likely reason their father required all but the youngest of the Ohlman boys to drop out of school and work the farm. As a result, my dad’s formal education ended with the eighth grade. During the Great War,

farm production soared—setting up a major crisis at the end of the conflict. In the early 20s, with American young men back from the war, European men back home on their farms, and the rapid automation of farming, an agricultural depression was certain.

Within a few years, the elder Ohlmans found themselves virtually alone on the farm—all their homegrown farm hands settling into manufacturing and sales jobs or skilled trades in nearby Grand Rapids. The final blow came with the Great Depression. The bank foreclosed on the last of Henry and Denah Ohlman's acreage, and they were compelled to live in a small place behind the much grander home of one of their sons, the town assessor. Apparently as a tribute, my uncle named several town plats after his

father. Now the family name is attached to hundreds of deeds as Hudsonville, one of West Michigan's most rapidly growing communities, scrapes off the rich farm topsoil and redistributes it to landscape small home lots now spreading into fields my father tended some 85 years ago.

SOIL IS SCARCE

Whether it was because of economics or hard labor, it appears that none of my uncles demonstrated a desire to maintain the intimacy with soil that has characterized farmers for millennia. For most of human history, to farm or not to farm was hardly an option. To eat, you had to kill an animal, forage, or cultivate the earth.

As the first book of the Bible indicates, farming was the original occupation. The second chapter of Genesis recounts a familiar understanding about our first parents, Adam and Eve:

The Lord God planted a garden eastward in Eden, and there He put the man whom He had formed. . . . Then the Lord God took the man and put him in the garden of Eden to tend and keep it (Gen. 2:8,15).

On the Ohlman farm, passages like this were no doubt read aloud many times—an after-dinner Scripture-reading tradition my father carried on in our home.

Contrary to popular opinion, it's clear from this passage that God gave us work even before the Fall. God required that Adam maintain the fruitfulness of the garden. On this original farm, however, tending the

soil was not arduous or exhausting.

Contrary to popular opinion, it's clear from Genesis 2:15 that God gave us work even before the Fall.

It's fascinating to contemplate how gardening as an occupation may have differed from farming as it became after the Fall—one of hard labor. No doubt our attitude toward cultivating the earth then would have been significantly different. Any dirt farmer who has pulled thistles or hacked away thorny shrubs invading his cultivated land likely finds it difficult to imagine tending a farm as something he could enjoy.

A Common Miracle. Dirt is something we usually want to get rid of. To the fussy homemaker, it lurks everywhere, boldly making entrance with every child or, like Carl Sandburg's fog, even creeping in "on little cat feet." In terms of the cosmos, however, dirt—soil—is exceedingly scarce. To get an idea about the extreme rarity of soil, imagine the earth as an apple. Cut it in half and examine the flat side. A tiny rim of red skin barely shows at the outer edge. That slim arc represents the soil thinly spread across the surface of our planet.

What are the implications of this mental picture? Here are a few: The only life we're aware of in the entire cosmos is what we see on earth. Billions of heavenly bodies are stretched across an expanse beyond our ability to

imagine, and the only sign of life is here on our little apple. Further, all such life is concentrated at or near the surface. A skimpy skin on a little planet is home to all material life that exists in the universe! Aside from what exists in the realm beyond our consciousness (the dwelling place of God and the unseen angels and spirits), all thinking, all procreation, all music and art, all hating and loving, all laughing and crying, all joy and sorrow are generally confined to within a few feet of the earth's surface—all because of soil.

Soil is the anchor of the biosphere, the segment of the earth and its atmosphere where all life exists. The peak of Everest at 29,000 feet above sea level marks the upper limit of the sphere, and the Mariana Trench in the Pacific Ocean at about 36,000 feet below sea level

marks the extreme lower limit. So the maximum area of our planet capable of containing all life is a lean layer hardly 12 miles thick. And at the extremes there is little life at all. If you could take a core sample from the earth all the way through its 8,000-mile diameter, you'd find that the biosphere is merely the top and bottom 350th of your core sample.

I find it interesting to note that astrophysicists can provide us no earthly explanation for the existence of carbon-rich soil on this planet. That much carbon, by their assessment, could not have an earthly origin. But they can detect huge clouds of carbon-containing molecules in space that seem to be the result of star explosions. Their most recent conjecture is that this key life-giving element in soil is extraterrestrial. Simply put, they say we're

all made of stardust—no surprise to Tinkerbell! These, and countless other findings, merely add more significance to the truism: Life is a miracle.

It Takes A Universe.

When science first came to understand the vastness of the universe and began to inform the public of its findings, many people of faith were disturbed—especially when scientists suggested that the earth is merely an insignificant speck in an unfathomably large cosmos. They thought the Bible implied that the earth was the center of the universe, not just a minuscule planet floating in some “tiny backwater” in space, as asserted by Bertrand Russell. This outspoken English skeptic declared in his book *Religion And Science* that “the Copernican revolution will not have done its work until it has taught men

more modesty than is to be found among those who think Man sufficient evidence of Cosmic Purpose.”

It's ironic that Russell, no humble man himself, would admit the need for mankind to consider itself and its wee planet as next to meaningless. In his era, however, it indeed seemed that our planet had to be considered as nothing more than a “pale, blue dot” in the fathomless ocean of space. That was the picture painted by another agnostic, Carl Sagan, who dramatically highlighted for us on public television the fact that modern astronomy has revealed that there are “billions and billions” of galaxies in existence. Certainly, suggested Sagan, we can't be the only intelligent creatures in so vast a universe. Hence he inspired the ongoing multi-billion-dollar hunt for

extraterrestrial life—which, so far, has been a fruitless search (see Discovery Series booklet *Are We Alone In The Cosmos?* Q1110).

Today the minds of scientists are reeling as they contemplate the significance of the earth. What's becoming increasingly evident is that the earth is not the center of the universe and not even the center of our solar system. By all logical and mathematical appearances, it seems to be the center of attention for Someone with awesome intelligence and skill who indeed purposed the earth not just for life, but for human life. The facts now asserted about the physics of all the forces and objects in space are compelling scientists to grapple with a theory they refer to as the anthropic principle. In simple terms, this theory states that by all appearances, the nature

and main purpose of the entire universe is to support life, especially human life, on this tiny speck of a planet. They now realize that it is for good reason that the earth is not the

By all appearances, the nature and main purpose of the entire universe is to support life, especially human life, on this tiny speck of a planet.

center of the universe or of our solar system. If it were, it could not support life. It needs to be exactly where it is, and the entire cosmos must have its exact characteristics for life to exist. Simply put, it takes

a universe to make earth the sole “living” planet.

While the psalmist David didn’t know such facts about outer space, he certainly did grasp the implication of human life in reference to it:

When I consider Your heavens, the work of Your fingers, the moon and the stars, which You have ordained, what is man that You are mindful of him, and the son of man that You visit him? For You have made him a little lower than the angels, and You have crowned him with glory and honor. . . . O Lord, our Lord, how excellent is Your name in all the earth! (Ps. 8:3-5,9). The heavens declare the glory of God; and the firmament shows His handiwork. Day unto day utters speech, and night unto night reveals

knowledge. There is no speech nor language where their voice is not heard (Ps. 19:1-3).

And the marvel is that material life exists because of a layer of soil on this, our divinely privileged planet.

SOIL IS VALUABLE

The straightforward and simple nature of the biblical story of creation often conceals the deep and complex truth encompassed by it. We understand from the Scripture narrative that mankind—Adam—was formed by our Creator out of the soil of the earth. Early man certainly understood that lifeless human and animal flesh decomposed into the earth, but he had little evidence that living flesh had its source in the earth. He only knew that living

flesh came from other living flesh through the process of procreation. Life begetting life. Certainly dust could not beget life.

Scientific knowledge has now provided us with evidence that our material elements are indeed “dust.” What science has not been able to discover, however, is what life is and how it could have originated “naturally.” The biblical account, in fact, speaks only of its supernatural origin—dead matter begetting life because it was so gifted by God:

The Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living being. . . . And out of the ground the Lord God made every tree grow that is pleasant to the sight and good for food. . . . Out of the ground the

Lord God formed every beast of the field and every bird of the air, and brought them to Adam to see what he would call them (Gen. 2:7,9,19).

It's clear that the common factor in God's creation of people, animals, and vegetation is that these all have their source in "the ground." The Hebrew word for "ground," *adamah*, is similar to the word *Adam*, the name for the first man. They first appear together in Genesis 2:19 where we learn Adam's name. One meaning of *adam* is "earthy," or "like reddish earth." While not all Bible scholars agree, many have maintained that *adam* is linguistically derived from *adamah*. What is clear, though, is that Adam was physically derived from the ground. The full meaning of the word *adamah* in Hebrew is even more instructive. It refers

to arable soil—soil that has the capacity to bring forth and support life.

Our Humble Origin. Shortly after science was able to identify the common elements of the earth and the atmosphere, studies were made to determine if the elements and compounds that make up the human body were all present in the earth and air. I recall as a boy hearing that scientists had indeed discovered all these elements and found them very common in the biosphere—so common, in fact, that if you were to purchase the raw elements from a chemical supplier, you'd pay less than a dollar. Now, according to a 2004 study by the US Bureau Of Chemistry And Soils, that value has risen to the whopping sum of \$4.50!

Knowing that our human elements have little monetary value should

keep us humble—which leads us to another word study. The word *humble* has its origins in the Latin word *humus*, the term for “ground.” The ground identified by *humus* is, again, arable soil—that which gives it the capacity to grow things. Classification scientists have even used this connection between soil and man and have literally labeled our race with it, using the term *homo* derived out of *humus* to designate man. Hence, people now have the Latin-derived scientific label *homo sapiens*. *Sapiens* is a Latin term for “knowledge” or “wisdom.” The combination of the two terms becomes a statement: The only life-infused “wise creature” on earth is begotten of the soil. Knowing this fact should keep us down to earth—literally humble.

When I registered for a word origins course in college (only because it was required of English majors), I prepared myself for boredom. But I never got bored. The sweet, saintly, and always-encouraging professor, a frail little woman in her early seventies, hooked me on the lore of word origins right from the start. Today, some 40 years later, I’m still referring to the now dog-eared pages of my textbook. Part of the reason is that a great deal can be learned about the beliefs of the ancients from the way they formed their language and cross-related their words. It should not be surprising for us to discover foundational truth about man and soil buried just below the surface of the vocabulary we use every day. So God’s special revelation, the Bible, tells us both directly and derivatively that Adam is

from the *adamah*. The classical languages tell us derivatively that humans are from the *humus*. And God's general revelation, the creation, confirms it.

This fundamental fact, if nothing else, should reveal to us the great value of soil. We are part of the earth, and the earth is part of us. Further, every living thing owes its existence and survival to soil. The ultimate truism here was stated by Charles Kellogg, "There can be no life without soil and no soil without life."

The Nature Of Soil.

Leonardo da Vinci once noted that "the earth has the spirit of growth; its flesh is the soil." This is not a bad way to think about it, for soil lives and allows everything else to live. It's a virtual stew of minerals, chemicals, decaying organic matter, water, air, and untold

billions of living organisms, most of which are the tiny sort.

I remember being told about the makeup of soil—especially the minuscule mites—in third or fourth grade. For days afterward, my friend Lanny and I spent a good bit of our school recess lying on our bellies in the new spring grass competing with each other for the highest number of small living things we could find in carefully-measured, equal plots of about 6 inches square.

It's amazing to me how some of the early revelations I received while growing up were so profound that I can take you back to my old hometown and escort you to the exact spot of several discoveries. I could lead you to the location of the patch of grass where, with corsage pins and

magnifying glasses in hand, Lanny and I discovered itty-bitty red mites, micro “scorpions,” and antlike things with springy tails all carrying on busy lives in a world previously undiscovered beneath our feet. What we could not see, however, were the microscopic forms of life, like the 5,000 to 7,000 species of bacteria also living in that small plat.

Now, year after year when the frost has left the ground and cock-eyed robins tell me “the worms are up,” the smell of sun-warmed earth makes me recall that loamy lot on the northwest corner of the First Ward School playground. It was about 60 yards from the monkey bars to which my tongue had once become firmly fixed one frosty winter morning! When we’re young, it seems that all our senses are begging to experience

each wonder we discover.

Canada’s Agriculture, Food, And Rural Development agency provides even more amazing figures about life in the dirt: A single spadeful of rich garden soil contains more species of organisms than can be found above ground in the entire Amazon rain forest. A teaspoonful of soil contains more than 2 billion microorganisms, and the total weight of living organisms in the top 6 inches of an acre of soil can range from 5,000 to as much as 20,000 pounds. And earthworms can move up to 100 tons of soil per acre per year.

Every area of expertise has its own terms, and pedology (the study of soil) is no exception. Soil scientists have chosen the term *horizon* to define the layers we find in soil. I imagine that’s because an

exposed cross-section of an intact soil sample looks a lot like the photographic profile of a distant landscape with its variety of lines, colors, textures, and shapes leading our eyes to the horizon. Each level is classified by a letter. The O-horizon, for instance, is the top layer of loose duff (twigs, dead leaves, and other organic litter). Just below it is the A-horizon where decomposed organic matter has begun its transformation to plant food—and ultimately people food. This is the topsoil that farmers and landscapers treasure: literal “pay dirt.” Below this are three more horizons (E, B, and C) that lay atop the lowest layer: the R-horizon, R standing for rock—bedrock.

Each of these horizons has a life-critical role to play: providing substance and space in which roots can grow, serving up both organic and elemental

nutrients, and allowing for either the retention or percolation of water. Together they create just the right conditions to support the microbial and other life forms that are vital to vegetation in both its germination and its aboveground structure.

These subterranean horizons are almost as varied as the visible horizons we’re familiar with. Some thin and some thick. Some black, orange, brown, yellow, or white. Some coarse and some fine. Some sandy and some clayey. Some acidic and others alkaline—waiting to be analyzed by eager 4-H’ers with their soil-testing kits. It’s these differences that allow for the great variety we see above ground: marshes, grasslands, and deserts; and tropical, deciduous, and coniferous forests.

Soil is not only

classified by its layers, but also by its texture and content. Besides the vital elements of water and air, soil has varying amounts of humus, sand, silt, and clay. According to G. Tyler Miller, Jr. in *Living In The Environment*:

To get an idea of a soil's texture, take a small amount of topsoil, moisten it, and rub it between your fingers and thumb. A gritty feel means that it contains a lot of sand. A sticky feel means a high clay content, and you should be able to roll it into a clump. Silt-laden soil feels smooth like flour. A loam topsoil, best suited for plant growth, has a texture between these extremes—a crumbly, spongy feeling with many of its particles clumped loosely together (p.316).

The Work Of Soil.

One of the most significant features of soil is its role as a recycling instrument. Water, nitrogen, and carbon all work their way into the soil and then find their way back out again, mostly through the growth, death, and decomposition of vegetable and animal life. The phrase “dust to dust,” so often said at graveside funeral ceremonies—and accompanied by the somber tossing of soil on the casket—hails back to the Garden of Eden when Adam received his death sentence from the Creator. Immediately after being told that his gardening was now going to become miserably difficult, Adam learned about his ultimate earthly humiliation: His body was going to become an active part of the carbon cycle.

*In the sweat of your face
you shall eat bread till
you return to the ground,*

for out of it you were taken; for dust you are, and to dust you shall return (Gen. 3:19).

It's humbling for us all to realize that the life-giving carbon atoms that make up so much of our own bodies were not so long ago in plants, bugs, animals, and other human beings. I might contain an atom or two cycled through from Martin Luther, Augustine, and Moses, but probably a lot more atoms from beetles, slugs, earthworms, and poison ivy!

Aside from its role as provider, sustainer, and incubator of life, what are some other gifts of the soil? Soil is the filter that gives us pure, mineral-rich water to drink. It's the sponge that prevents flooding. It's the provider of particulates that cause water drops and then rain. It's the producer of many of the greenhouse

gases that moderate temperature and shield us from harmful cosmic radiation. It's the dwelling place of billions of God's creatures that share this bountiful earth with us.

It's humbling for us all to realize that the life-giving carbon atoms that make up so much of our own bodies were not so long ago in plants, bugs, animals, and other human beings.

It's the anchor of our cherished trees. And soil is the palette that holds up for the brushes of human creativity the textures, colors, and substances that make so many of our

own endeavors beautiful.

Mankind commonly believes that diamonds, emeralds, and gold are the earth's most valuable materials. But soil is the most precious substance we know—that which softens the contours of the hills, cushions our footfalls, and is the material source and sustainer of all life.

William Bryant Logan wrote:

How can I stand on the ground every day and not feel its power?
How can I live my life stepping on this stuff and not wonder at it. . . .
We spend our lives hurrying away from the real, as though it were deadly to us. “It must be somewhere up there on the horizon,” we think. And all the time it is in the soil right beneath our feet (*Dirt: The Ecstatic Skin Of The Earth*).

SOIL IS THREATENED

Farmers like my grandfather cherished the soil.

They learned most of the features essential to tilling soil from their forebears, from a lifetime of experience, and from living in community with other farmers. When the soil was “sour” (acidic), they knew it was time to apply marl, a whitish earth made up of decomposed limestone. “Sweet” soil (alkaline) required an application of sulfur. Some of the old farming lore stayed with my dad, who nostalgically recalled and repeated it to his boys. “You plant corn when the leaves of the oak are the size of a mouse’s ear.” “Healthy corn should be knee high by the Fourth of July.” He even tried to convince me that on hot August nights he could

hear the corn growing!
Then there was weather
wisdom in rhyme: “Red sky
at night, farmers’ delight;
red sky in the morning,
farmers take warning.”

Today, of course,
farmers have the
advantage of weather
forecasts accurate up to
5 days or more in advance.
They have soil-testing
methods that can tell them
not only the acid/alkaline
level of the soil, but also
how much of almost every
other chemical and nutrient
the land requires to grow the
desired crop. Expensive farm
implements can “read” the
soil and, by a computer
linked to global positioning
satellites, adjust the
application of fertilizer to the
exact amount needed yard-
by-yard. The modern farmer
has available to him almost
everything to ensure that his
crop is well nourished, bug
free, weed free, disease
resistant, and drought safe.

If he has enough money, he
can protect his crop from all
but the most catastrophic
“act of God.” Because of
genetic engineering, he can
grow sweeter sweet corn and
more sugary sugar beets. He
can plant corn that grows
ever-larger ears and at just
the right level above the
ground to maximize the
efficiency of his corn picker.
One man can virtually

***One man can
virtually sow and
reap today what
hundreds of
farmers could
scarcely accomplish
a century ago.***

sow and reap today what
hundreds of farmers could
scarcely accomplish a
century ago. Therein lies
the problem.

The Impact Of Technology. As technology improves and increases in scale and impact, soil is used more intensively than ever before. And as the cost of technology increases, small-scale farmers are either forced into cooperatives, or forced into selling their farms to high-tech farmers or large agricultural corporations. Big-scale farmers are not very interested in the old family-farm tradition where cash crops were grown on more distant acres, and subsistence crops and food animals were cared for closer to the house. Most farms a century ago were self-sufficient. With cows for milk, steers and hogs for meat, chickens for meat and eggs, a number of fruit trees, and an ample garden, even large farm families could care for themselves off the fruit of their own

land and the sweat of their own hard labor. One farm family in my home church in the 1950s had 23 members: a prolific mom and dad and their 21 children, which included five sets of twins. Our own neighbors, who lived in an old farmhouse, were a family with 17 children. By the late 50s, however, the only evidence of a farm was their 2-acre garden. Our house and the surrounding houses had been built on old family acreage. Because the farm was close to the city, selling off land for houses became a huge financial benefit to the former farmer and his family—and a welcome reprieve from hard labor. None of the children continued farming. Most went into construction—sort of in self-defense. They were in the path of onrushing suburbia.

Around the city of Grand

Rapids today, sprawling housing developments now occupy thousands of acres of former farmland—its topsoil either carted away or turned into landfill. Multiply this by thousands of communities across the nation and around the world that are experiencing rapid population growth. Seemingly lost in this modern land rush is the soil—which was the prize to be obtained in most other historic land rushes. The desertion of the family farm, in conjunction with the encroachment of “agriculturally-challenged” suburbanites on farmland, not only constitutes the greatest population movement in American history, but is probably the least considered and potentially most damaging threat to the soil.

I recently did a search for the location of the woodlot my grandfather

owned and maintained by the gradual harvesting of mature trees. He sold them to furniture, boxboard, and wood-shaving (excelsior) factories in Grand Rapids. Examining the county records, I found the location and the purchase price of his lot: \$2,000 for 40 acres. It was bought a couple of weeks after my father was born and sold for \$4,000 some 13 years later. I discovered that the woodlot was located on a plat that I often passed: a new housing development with waterfront homes selling for \$300,000 or more. Gravel had been discovered under the soil years ago, a huge pit dug, and finally a lake created. One could consider that to be the epitome of “soil loss.”

When the overtaking and destruction of farmland by residential, commercial, and industrial interests is

coupled with the overtaking of farming by agricultural corporations, serious problems develop. This is in part because fewer true farmers actually work the land they live on and patiently manage on a seasonal cycle. Not much soil rests today under the watchful eye of people who cherish it.

The livelihood of the new farming technician depends on how much land he can engineer to provide a high yield that he can quickly get to market to obtain a good price; so that he can buy more and better implements and chemicals to provide an even higher yield in the future; so that he can increase his profit enough to improve his living standards that will allow him to buy all the food he wants, 24 hours a day, from the supermarket that has obtained its food products from all over

the world expensively transported by ship, train, and truck to satisfy the desires of fussy consumers who want fresh and unblemished tomatoes, apples, strawberries, and grapes available to them every day of the year regardless of the season.

Whew! Trying to unpack all the implications of that run-on sentence would take a book and a dozen critical essays. Yet at the heart of these

What we no longer appreciate and understand, we often come to abuse.

complex social, economic, and environmental issues is this reality: What we no longer appreciate and

understand, we often come to abuse.

The Erosion Of Soil. We live as though soil is inexhaustible. The truth is that it's not. A visit to the Web site of the US Department Of Agriculture Natural Resources Conservation Service Resource Assessment Division tells the story in the United States. While technology in America is now reversing the cropland erosion crisis, as recently as 1997 in the major river watersheds of the eastern half of the nation, water erosion was reducing soil on 41 million acres at the rate of 5 tons per acre every year. Wind erosion in the western half of the country was taking an equal amount of tonnage from 40 million acres. And because of the heavy application of chemicals to the most easily eroded topsoil, nutrients, pesticides, and herbicides

are riding the sediment to the sea, polluting almost all of the nation's major rivers. These, in turn, have created serious fishery problems in our bays, estuaries, and nearby ocean waters. Other consequences create negative environmental and economic ripples throughout the entire globe.

We see the practical result of this in another set of sobering statistics: In the United States, 6 pounds of farmable soil is lost for every pound of food we eat. This is occurring in the nation with the most advanced farming technology in the world. In less developed nations, twice as much soil is lost per pound of food. In China, it's three times that amount: 18 pounds of soil lost per pound of food eaten. Not too many years ago in parts of eastern Washington State, over 12 bushels of soil were blowing

or washing away for every bushel of crop—giving us an entirely new meaning for “Washington”!

When you place the soil erosion rate next to the rate at which soil is formed—generously estimated to be a quarter of a ton per acre every year—you realize that the US is losing soil at a 20:1 ratio. According to some agricultural economists, as much as \$42 billion is potentially lost per year because of erosion in the US. Worldwide, the figure is over \$400 billion.

SOIL AND THE BIBLE

In the Bible, the true significance of soil is not immediately grasped by statements directly addressing it. By inference, however, we learn how truly foundational our use of soil is as it relates to

all of life. We see it first, of course, in the creation story of Genesis 1. Then in the second chapter of Genesis, where the creation story is illuminated further, we read:

This is the history of the heavens and the earth when they were created, in the day that the Lord God made the earth and the heavens, before any plant of the field was in the earth and before any herb of the field had grown. For the Lord God had not caused it to rain on the earth, and there was no man to till the ground (Gen. 2:4-5).

God then created man and placed him in the Garden of Eden:

Then the Lord God took the man and put him in the garden of Eden to tend and keep it (v.15).

When the two Hebrew terms used here, “tend” and “keep,” are put together

with all their different connotations, you come to understand that Adam and his progeny were to develop an intimacy with the land that compelled them to serve it almost as much as the garden served them. “Tend” (*abad*) means “to work, serve, or labor for.” The word for “keep” (*shamar*) is the same word used in the familiar church benediction that was echoed in the hearts of millions of farm families over the centuries as they made their way back home after Sunday morning services to enjoy the fruit of their labors:

The Lord bless you and keep you; the Lord make His face shine upon you, and be gracious to you; the Lord lift up His countenance upon you, and give you peace (Num. 6:24-26).

The full meaning of *shamar* (“keep”) is also

telling. In Genesis 2:15, it means “to guard, protect, preserve, observe, and celebrate” the fruit and fruitfulness of the garden. That was obviously man’s original purpose, since this was the way he was to keep alive. The fundamental understanding about man’s existence is the same today. We and our daily bread are both products of the soil.

“A man [who] farms his land to the waste of the soil or the trees destroys not only his own assets but Nature’s assets.”

Franklin D. Roosevelt

American president Franklin D. Roosevelt, dismayed over soil erosion

after the Dust Bowl disaster of the 1930s, declared in his 1938 state-of-the-union address, “A man [who] farms his land to the waste of the soil or the trees destroys not only his own assets but Nature’s assets.”

Biblical Principles.

When we understand that our role is the stewardship of creation’s resources, we can better grasp some biblical principles about it.

First, the poor must not be disenfranchised from the land or denied access to the fruit of the land. The prophet Ezekiel was given word from the Lord to admonish the wealthy leaders of Israel who callously forced the poor off the land and then in the midst of their abundance carelessly damaged the land and polluted the water. The key verse is Ezekiel 34:18.

Is it not enough for you to feed on the good

pasture? Must you also trample the rest of your pasture with your feet? Is it not enough for you to drink clear water? Must you also muddy the rest with your feet? (NIV).

What followed was a sober prophecy that God would remove them from the land and bring back the poor, who loved the land and used it responsibly and obediently. I believe we need to consider carefully how that might apply to the modern removal of poor farmers from the land they cherish and understand.

It was for this reason that the principle of “gleaning” was instituted in the Mosaic law. The landholders of Israel were not to harvest all their crops to the edges and corners of the field so that the poor would have access to the excess (Lev. 19:9).

Because it was God’s

intent to have His chosen people demonstrate godly living, they were often disciplined for their failure as witnesses. One such failure was their lack of concern for the poor and disenfranchised. This was demonstrated by their accumulation of arable land in adjoining fields. They did this to keep the poor from having access to the land for their own farming. And they also wanted quiet solitude—to have their own space. Isaiah wrote:

Woe to those who join house to house; they add field to field, till there is no place where they may dwell alone in the midst of the land! (5:8).

The prophets mourned the failure of God's people who were "planted in good soil by many waters, to bring forth branches, bear fruit, and become a majestic vine" (Ezek. 17:8) but

who instead experienced the discipline of God who gave them barrenness as a consequence.

One wonders how things might be different in the nations of the world today if there were effective laws that limited selfish accumulation of land, and efficient agencies assisting the disenfranchised in obtaining enough land for them to at least sustain their families. There might be far less boredom and resultant crime among those who are continually on the welfare rolls in our urban areas if they were able to work the soil and draw moral strength from that creative activity.

Russian philosopher Nicolas Berdyaev seemed to imply this principle in his classic work on creativity, *The Destiny Of Man*:

The soul is afraid of emptiness. When there is no positive, valuable,

divine content in it, it is filled with the negative, false, diabolical content. When the soul feels empty, it experiences boredom, which is a truly terrible and diabolic state. Evil lust and evil passions are to a great extent generated by boredom and emptiness.

***Live off the fruit
of the land, but
in the process
don't destroy
its fruitfulness.***

Further, we should adhere to a second principle: Live off the fruit of the land, but in the process don't destroy its fruitfulness. Besides being an obvious bit of wisdom like "Don't eat your seed corn," this principle is

implicit in a number of wisdom principles found in the laws of the book of Deuteronomy. There, the children of Israel are instructed not to destroy fruit trees when they cut timber to besiege the cities God commanded them to take. Also, they were not to take a mother bird when they took her eggs or fledglings for food (Dt. 20:19-20; 22:6-7).

We should apply this principle in our day to the destruction of our land's fruitfulness by the complete removal of topsoil that is accompanied by abuse of the remaining soil by overuse of chemicals and the application of salt-laden irrigation water to the land. It's logical to extend this principle to every way in which humanity carelessly reduces the fruitfulness of the creation.

A third principle is also evident in the Old

Testament: Give the land its Sabbath rest. Cal DeWitt, in his booklet *Earth-wise*, puts it like this:

God's Torah states, "When you enter the land I am going to give you, the land itself must observe a Sabbath to the Lord" (Lev. 25:2). This means that the earth's land and creatures are not to be pressed relentlessly or pushed for all they are worth for human financial and material gain. Instead, honoring the will of their Creator, humans must give land and creatures their time for rest, rejuvenation, and recreation (see Ex. 23:10-12 and Lev. 25-26).

To understand how serious a matter this was to God, consider the fact that Israel would be taken into captivity for 70 years, in part because for 70 years they did not give the soil

its weekly and 7-year rest (Lev. 26:31-35).

This is a concept still understood today, but less frequently used. It's the idea of fallowness—the practice of allowing land to occasionally rest uncultivated for at least a year so that it can regain moisture, combat plant diseases, and control undesirable vegetation. Many agronomists believe that modern crop rotation is better than fallowing because it allows the farmer to continuously make money off all his land. While this may be true, it ignores the spiritual benefits of deliberately taking soil out of production. By so doing, you declare your dependency on God—the One who created life and causes all increase. Because so little land is now cultivated by people who live on it and love it, this sacramental and

sacrificial practice is virtually ignored.

Also missing are the nonpragmatic elements of relieving the land from the pressure of constant tilling. When I drive through the intensely cultivated rural regions of the former prairie states and provinces of North America, my soul seems to sense the heavy weight borne by our overburdened soil. It yearns for the fencerows and fallow land that used to give relief.

This nonutilitarian understanding is ancient. The Greek poet, Hesiod, writing in the days when Israel was still the homeland of God's covenant people, said that "fallow land is a defender from harm and a soother of children." I believe I know what he meant about "soother of children." Some of my most pleasant memories of childhood

are of the times when my friends and I wandered through resting pastures, undeveloped woodlands, and abandoned fields where new growth abounded with wildlife and wildflowers.

*"Fallow land
is a defender
from harm
and a soother
of children."*

Hesiod (c. 700 BC)

A Biblical Parable.

This brings us to perhaps the most significant reference to soil in the New Testament: Jesus' parable of the sower and the seed. The story's metaphor is a sower whose seed is scattered, falling on many areas that are not good for growth: the

trampled byway, the stony ground, and the weed and thorn-infested land. Yet some of it does fall on good soil (Lk. 8:4-15). Understandably, as every farmer knows, the seed takes root and grows to maturity only in rich arable soil.

Jesus explained to His disciples that the seed is God's Word that goes out to all people. The good soil represents the souls of those who receive it "with a noble and good heart" and patiently allow it to bear good fruit. While Jesus' listeners apparently did not grasp the meaning of the spiritual parable, they understood perfectly the subject of Jesus' allegory. They lived close to the land, they prayed and fasted regularly for the rain essential to growth, and they feasted annually in celebration of the harvest. Today, followers of Christ

usually know the spiritual meaning of the parable, but I fear we fail to grasp the full significance of the story's referents: good soil and careful sowing.

A Biblical Promise.

These biblical principles and this parable gain more significance in the light of an important biblical promise: The curse God placed on the soil will one day be lifted. It is stated in clear terms among the many promises found in the final chapter of John's Revelation:

There shall be no more curse, but the throne of God and of the Lamb shall be in [God's holy city], and His servants shall serve Him (22:3).

The beauty of this spot, our ultimate destination, is that it has many of the features of the original Garden of Eden—including pure, life-giving water and access once again to the

Tree of Life, which Adam lost in the first garden.

*The curse
God placed on
the soil will one
day be lifted.*

This final lifting of the curse has long been celebrated by the church with the words of Isaac Watts' great hymn, "Joy To The World." We sing it almost exclusively at Christmas, but we should sing it all year long:

No more let sins
and sorrows grow,
Nor thorns
infest the ground;
He comes to make
His blessings flow
Far as the curse is found.

THE FINAL RESTORATION

Adam's sin resulted in death and in God's disciplinary action against mankind by making the earth resist our efforts to cultivate it. While there are a number of ways that we can look at this act of disobedience, one way is to recognize that, like us, Adam was not content with what God gave him. By his disobedience he surrendered the glorious kingdom our souls now yearn and pray for. Not only that, but the earth itself is groaning in anticipation of the restoration that is yet to come:

For the earnest expectation of the creation eagerly waits for the revealing of the sons of God. For the creation was subjected to futility, not willingly, but because of Him who subjected it in hope;

because the creation itself also will be delivered from the bondage of corruption into the glorious liberty of the children of God. For we know that the whole creation groans and labors with birth pangs together until now (Rom. 8:19-22).

“The creation itself also will be delivered from the bondage of corruption into the glorious liberty of the children of God.”

Romans 8:21

It's comforting to realize that the natural world and the souls of all those who are born of the soil and are resting their faith in Jesus Christ will alike be blessed with a final restoration of God's original purpose for

it and for us. One aspect of our moving in the direction of that transforming restoration is to recover the sense of wonder we seem to have lost for the fundamental material element that gives and sustains life—soil. When the marvel of soil works in tandem with the miracle of seed to produce our material sustenance, our bodies continue to have life in which to provide a healthy home for our eternal souls and a temple for God's Holy Spirit.

We'd be wise to recover the ability of which the poet William Blake spoke so eloquently in his “Auguries Of Innocence”:

To see a world
in a grain of sand
And a heaven
in a wild flower,
Hold infinity
in the palm of your hand
And eternity
in an hour.

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