ADAM'S RIB: CREATION & THE HUMAN BODY

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ADAM AND THAT 'MISSING' RIB

A head-on impact with a fully laden fuel tanker at highway speeds[1] is an experience I would hope for none to share. The surprise was to have survived it—God clearly had other plans for me.[2]

During the 5½ months in the hospital, and for years afterwards, I had a series of operations to reconstruct various parts of me, particularly the bones of my face.[3]

These operations often required using my own bone for grafting. I noticed that the plastic surgeon would keep going back to the right side of my ribcage (through the same horizontal scar, actually), to get more bone for these procedures. One day, I asked him why he hadn't 'run out of bone.' He looked at me blankly, and then explained that he and his team took the whole rib out *each time*. 'We leave the periosteum intact, so the rib usually just grows right back again.'

Despite having trained and practiced as a family doctor, I was intrigued; I had never realized this before. The *periosteum* (the literal meaning of this word is 'around the bone') is a membrane that covers every bone—it's the reason you can get things stuck between your teeth while gnawing on a leg of lamb, for instance. The periosteum contains cells that can manufacture new bone. Particularly in young people, 'rib periosteum has a remarkable ability to regenerate bone, perhaps more so than any other bone.'[4]

Thoracic (chest) surgeons routinely remove ribs, and these often grow back, in whole or in part. A lot depends on the care with which the rib is removed; it needs to be 'peeled' out of its periosteum to leave this membrane as intact as possible. A major reason why the rib is the ideal situation for such regeneration is that the attached intercostal muscles provide it with a good blood supply.

When the surgeon originally told me this, my immediate thought was—'Wow, that's really neat. Adam didn't have to walk around with a defect!' In Genesis 2:21, referring to the creation of Eve, we read:

> 'And the LORD God caused a deep sleep to fall on Adam, and he slept. And He took one of his ribs, and closed up the flesh underneath.'

Surprisingly, some have grown up believing that men have one less rib than women. They have the same number, of course. Some anticreationists have used the fact that men don't have any missing ribs today to mock a literal Genesis.

For years before my accident, when asked about this, I would give a reply something like: 'If your father had lost his finger in a circular saw, would you really expect all his children to have one less finger, too? Or all of his sons, but not his daughters? Of course not. The DNA instructions that are passed on from parent to child are in the form of a code, like writing—removing a rib (or finger) would not change the instructions on the code, so all the offspring would have all their ribs (or fingers).'

While all that is still very true and pertinent, this information about rib regrowth adds a new and fascinating dimension. God designed the rib, along with the periosteum. He would certainly have known how to remove the rib in such a way that it would later grow back, just as ribs still do today—without requiring any sort of special miracle.[5]

Adam would not have had any permanent area of weakness in his ribcage, but would have had, for all of the hundreds of years of his life, the same number of ribs that you and I have today.

# # #

SUPERBUGS—NOT SUPER AFTER ALL!

(Why drug-resistant germs in hospitals *don't* show that Darwin was right.)

As intimated in the previous section, after over 12 years as a medical practitioner, I suddenly found myself an avid consumer, rather than a provider, of medical care. Of the many months I spent in the hospital, the first weeks were in an intensive-care unit.

While there, I became infected with one of the varieties of so-called 'supergerms,' which are the scourge of modern hospitals. These are strains of bacteria which are resistant to almost every (and in some cases every) type of antibiotic known to man.

Several others in the same unit with me died as a result of infection by the same bacterial strain. The germs overwhelmed their immune systems and invaded their bloodstream, untouched by the most expensive and sophisticated antibiotics available.

This 'supergerm' problem[6] is an increasingly serious concern in Western countries. It strikes precisely those hospitals which are more 'high-tech' and handle more serious illnesses. Applying more disinfectant is not the answer; some strains of germs have actually been found thriving in bottles of hospital disinfectant! The more antibacterial chemical 'weapons' are being used, the more bacteria are becoming resistant to them.

The reality of increasing bacterial resistance seems at first to be an example of onwards and upwards evolution. But the facts, when carefully examined, show otherwise.

Natural selection, but not evolution

Evolution is basically the belief that everything has made itself—that natural processes (over millions of years, without miraculous, divine input of intelligence) have created an increasingly complex array of creatures. According to evolution, there was once a time when none of the creatures in the world had lungs. This means that there was no genetic information (the 'blueprint' for living things, carried on the molecule DNA) for lungs—anywhere. Then, at a later time, 'lung information' arose and was added to the world, but no 'feather information' as yet—feathers evolved later.

In other words, for every feature which arises by evolution, there would need to be new genetic information added to the total information in the biosphere (i.e. all the information in all creatures on Earth). Some features could be lost subsequently, of course, so there would not always be a gain; but if microbes turned into magpies, maple trees and musicians, there must have been a massive net *increase* in information. This is not just any jumble of chemical sequences, but meaningful information, since it codes for complex structures which have purposeful functions.

So if new information, new functional complexity, can be shown to be arising by itself where previously there was none, this would give some credibility to the idea of molecules-to-man evolution, although it would not strictly *prove* that it had occurred.

It can be shown, however, that in every situation where populations of living things change, they do so *without* increase (and often with a decrease) of information. Thus, it is completely illegitimate for anyone to claim that such changes show 'evolution happening.'

Let's look at what is known about how the 'superbugs' became resistant, and ask—did any new structures or functions arise in the process (which is another way of asking whether there was any evidence of evolution)?

There are a number of different ways in which germs can become resistant to these poisons. A 'superbug' is, by definition, resistant to many different antibiotics. It may have become resistant to antibiotic A in one way, to antibiotic B in a completely different way, and to antibiotic C in another

way again. So, if we look at *all* the known ways of resistance arising in a population of germs, we can see if *any* of them are uphill, information-adding processes.

1. Some germs already had the resistance.

If out of a million bacteria, five already have a feature which makes them resistant (however that arose) to, say, penicillin, then soaking them in penicillin will kill all of them except for the five. Now the body's natural defenses will often 'mop up' such a small population before it can multiply and cause harm, so resistance will not become a problem. However, if that doesn't happen, then those five germs can multiply, and their offspring will obviously also be resistant. So, within a short time, there will be millions of germs resistant to penicillin. Notice that:

a. this is why multiple resistance to major antibiotics is more common in hospitals which treat more serious conditions—these are the hospitals which will frequently be using the sophisticated, expensive, 'heavy artillery' antibiotics, so this sort of 'natural selection' will happen more often.

b. in this kind of instance, the information to resist the antibiotic was *already there* in the bacterial population—it did not arise by itself, or in response to the antibiotic.

That some germs were already resistant to man-made antibiotics before these were invented is common knowledge to microbiologists. Soil samples from villages where modern antibiotics had never been used show that some of the germs are already resistant to drugs like methicillin which have never existed in nature. Bacteria revived from the frozen intestines of explorers who died in polar expeditions carried resistance to several modern antibiotics, which had not been invented when the explorers died.[7]

2. Some germs directly transfer their resistance to others.

In an amazing process, the closest thing to sexual activity in bacteria, one germ inserts a tiny tube into another, and a little loop of DNA called a 'plasmid' transfers from one to another. This sort of gene transfer, which can obviously pass on information for resistance to a drug, can even happen between different *species* of bacteria.

Notice, again, that the information for the resistance must already exist in nature before it can be passed on. There is no evidence of anything totally new arising which was not there before. This is information *transfer*, not information creation.

So far, we have dealt with situations in which resistance was obviously already there. Evolutionists would claim, of course, that such resistance evolved originally in the (unobservable) past. However, if observed changes in the present do not show us new information, what support is there for the idea that such information arose in the past? The mechanism that is put forward for this past evolution is invariably mutation—a copying mistake, an accidental change in the DNA code passed on to the offspring. So that brings us to the final way in which bacteria can become resistant.

3. Some germs become resistant through mutation.

Interestingly, where this happens, there is no clearcut evidence of information arising. All such mutations appear to be losses of information, degenerative changes. For example, loss of a control gene may enhance resistance to penicillin.[8]

Some antibiotics need to be taken into the bacterium to do their work. There are sophisticated chemical pumps in bacteria which can actively pump nutrients from the outside, through the cell wall, into the germ's interior. Those germs which do this efficiently, when in the presence of one of these antibiotics, will therefore efficiently pump into themselves their own executioner, as it were.

But what if one of these bacteria inherits a defective gene, by way of a DNA copying mistake (mutation) which will interfere with the efficiency of this chemical pumping mechanism? Although this bacterium will not be as good at surviving in normal circumstances, this defect actually gives it a survival advantage in the presence of the man-made poison.[9] Once again, we see that information has been lost/corrupted, not gained.

Superwimps!

It is precisely because the mutations which give rise to resistance are, in some form or another, defects, that so-called supergerms are not really 'super' at all—they are actually rather 'wimpy' compared to their close cousins. When I was finally discharged from the hospital, I still had a strain of supergerm colonizing my body. Nothing had been able to get rid of it, after months in the hospital. However, I was told that all I had to do on going home was to 'get outdoors a lot, occasionally even roll in the dirt, and wait.' In less than two weeks of this advice, the supergerms were gone. Why? The reason is that supergerms are actually defective in other ways, as explained. Therefore, when they are forced to compete with the ordinary bacteria which normally thrive on our skin, they do not have a chance. They thrive in the hospital because all the antibiotics and antiseptics being used there keep wiping out the ordinary bacteria which would normally outcompete, wipe out and otherwise keep in check these 'superwimps.'[10]

If they are 'weaker,' then why do they cause so much death and misery in hospitals? These bacteria are *not* more aggressive than their colleagues; it is only that doctors have less power to stop them. Also, those environments which will tend to 'select' such resistant germs, like intensive care units, are precisely the places where there will be critically injured people, physically weakened and often with open wounds.

This is why more than one microbiologist concerned about these super-infections has mused (only partly tongue-in-cheek, as was the advice to 'roll in the dirt') that the best thing to happen in major hospitals might be to dump truckloads of germ-laden dirt into the corridors, rather than keep on applying more and more chemicals in a never-ending 'arms race' against the bacteria. In other words, stop using the antibiotics (which of course is hardly feasible), and all this 'evolution' will reverse itself, as the bacterial populations shift back again to favor the more hardy, less resistant varieties.

Summary & conclusion

1. 'Supergerms,' despite being a serious and increasing problem, are actually not 'super' at all. They are generally less hardy, and less fit to survive outside of the special conditions found in many hospitals.
2. There are many instances in which germs become resistant by simple selection of resistance which already existed (including that 'imported' from other bacteria).
3. Where a mutational defect causes resistance, the survival advantage is almost always caused by a loss of information. In no case is there any evidence of an information-adding, 'uphill' change.
4. 'Supergerms' give no evidence to sustain the claim that living things evolved from simple to complex by adding information progressively over millions of years.

Postscript

Death, suffering and disease (including infection) are part of the Curse which came upon a once-perfect world through the rebellion of our original ancestor, Adam, against his Maker.

Bacteria actually provide evidence *against* evolution. Bacterial populations multiply at incredibly high rates. In only a matter of a few years, bacteria can go through a massive number of generations,

equivalent to millions of years in human terms. Therefore, since we see mutation and natural selection in bacterial populations happening all the time, we should see tremendous amounts of real evolution happening. However, the bacteria we have with us today are essentially the same as those described by Robert Koch a century ago. In fact, there are bacteria found fossilized in rock layers, claimed by evolutionists to be millions of years old, which as far as one can tell are the same as bacteria living today.

The famous French biologist Pièrre Grassé, who held the chair of evolution at the Sorbonne for many years, admitted that mutations in bacteria simply showed shifts back and forth around a mean, but no net effect. Overall, he said, 'mutations do not produce any kind of evolution.'[11]

When next you read about 'supergerms,' remember that everything known about them is consistent with the Genesis creation of an originally good, complex world ruined by sin.

# # #

BRIDGES AND BONES, GIRDERS AND GROANS

Some years ago, while driving across the Sydney Harbour Bridge, my (then) small daughter asked me why the bridge was made with all those funny poles and cross-cross things. Why not in one smooth piece?

I asked her to imagine beginning with a bridge of solid steel, strong enough so that it wouldn't buckle and collapse as cars drove over it. I pointed out how heavy and expensive it would be. So we had to cut pieces out, in our imagination, to make it lighter and cheaper. Which pieces would be the best ones to leave behind, so as to stop it from crumbling? In time, playing with these ideas, the two of us non-engineers began to see how and why trusses supporting garage roofs, for example, could keep most of the strength of a solid, more heavy and expensive beam just by 'eliminating the pieces,' in a sense, that were not actually acting as braces against the load.

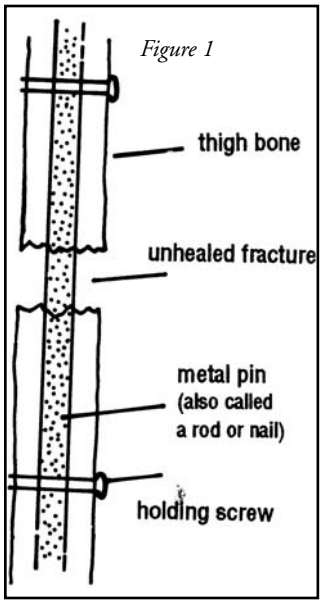


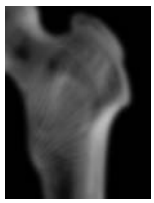
Figure 1

Several years later, owing to the major car accident mentioned earlier, I was walking around with a massive pin running right down the center of my thigh bone (femur)—see Figure 1. Because the fracture in that bone was not healing, all the weight of my body was being supported by the pin, locked in place by sturdy horizontal screws, top and bottom. The metal in the pin and screws was the finest space-age steel alloy. So why was the orthopedic surgeon advising yet another major operation to try to get the bone to heal? After all, I was able to walk around. Why not just let the massive steel rod carry my weight for the rest of my life? Surely man's high-tech metals are just as good as some old bone!

Trusses and braces

The surgeon knew from experience that the finest metal would eventually fatigue and give way in time—yet not so the average person's bones. (In fact, within a few months, signs of excess strain on the metal had already shown up on an X-ray. The amount of repetitive stress placed on the leg bones during walking is remarkable.) What is it about bone that makes it so special, so incredibly strong, yet light, and so resistant to stress and fatigue that it puts space-age metallurgy to shame?

Figure 2



Look carefully at the X-ray in Figure 2, and you will see lots of denser (whiter) fine lines inside the bone substance. These are like 'braces' inside the bone—areas of increased

strength for load-bearing, like the criss-cross members in a truss, so that the remaining areas can be lighter. Like our Harbour Bridge, this gives maximum strength for minimum weight. The 'braces' in bones are placed so that they are exactly coordinated with the lines of stress, the directions in which the weight is transmitted through that bone. In itself, that is a beautiful example of clever engineering design in bone. But there is more—much more!

The bridge that is continually rebuilding itself

If it were only a matter of clever engineering, man could design a similar structure for a leg bone with all sorts of internal bracing, which would make it as light as bone—able to bear the same load—at least at first. But even that would wear out after several years. So why is it that an ordinary thigh bone (for all practical purposes, and in the absence of diseases such as osteoporosis) will *never* wear out like a metal structure?

The answer lies mainly in the fact that bone, a *living* structure, is continually dismantling and rebuilding itself. It's likely that the bones you now have are not the same as you had ten years ago! They have all been 'removed and replaced,' brick by brick, as it were. Certain cells in your body have the job of devouring the old bone, while others lay down new bone in its place. Long before any fatigued areas can 'give way,' they will be replaced with brand 'new girders and trusses.' If that happened to the Sydney Harbour Bridge, it would last forever. But the marvels of bone engineering do not stop there.

Not only rebuilding, but redesigning

Bones and bridges cannot be compared exactly from an engineering viewpoint. A bridge always takes stresses along the same lines, between the same points, throughout its lifetime. But the situation for the human body is different. Throughout their lifetime, people change in the way their body weight is distributed (looked in the mirror lately?). For instance, they may, because of arthritis or some other disability, change the way they walk and the exact way in which they put weight on the limb.

So, when the lines of force transmission through the limb change so that the existing 'girders' or 'braces' are no longer in the right place, why does bone not eventually fatigue? The fascinating answer is that the bone is not only rebuilding itself, but remodeling ('redesigning,' as it were) itself as the lines of stress change. Remember our imaginary version of the Harbour Bridge, the one that is continually replacing its girders? Imagine that it was often being shifted onto different pylons and tilted at different angles, for example, so that the areas that have the greatest stress are continually somewhat different. Now we would find that replacing existing girders was not sufficient. They must be put into *new positions* according to precise engineering principles. Those that are no longer usefully bearing stress must be removed and replaced with others at the correct angle. And that is exactly what happens in bone, incredible as it may seem! Programmed in the DNA instructions that are in every cell of our bodies is the marvelous capacity for our bones to continually remodel themselves so that their internal engineering is always lined up so as to exactly cope, in the most efficient possible way, with the precise forces acting upon them. In fact, if the forces get larger (for example, a one-legged man who supports the weight of his body on the one limb all the time) the bone will actually become thicker and stronger.

Dissolving space men

This explains why weightlessness, which looks like such fun, is a major *problem* for would-be space travelers. No weight means no stress on bone, so the body's mechanisms have nothing to 'guide' their construction. Old bone is still being chewed up, but there is no way of knowing where the new 'girders' should be placed. The net result is that the bones tend to 'dissolve' and become porous.

Sloppy surgeons?

All of this also explains why a doctor setting a fracture doesn't have to be anywhere near as precise as you might think. Figure 3a shows a broken bone—let's say that Figure 3b shows the same bone after the young intern has had a go at getting it in the right position and has put plaster on it. Along comes the senior bone specialist whose job it is to check the X-ray. Does he say 'hold it' and demand that the two halves of this bone be repositioned so that they are in a perfectly straight line and end-to-end? Not at all, because he knows that this bone will heal (Figure 3c) and will in time 'remodel' itself in the way we have described (Figure 3d).

Figure 3a

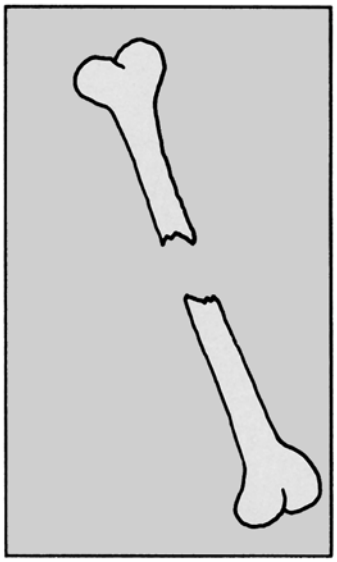


Figure 3b

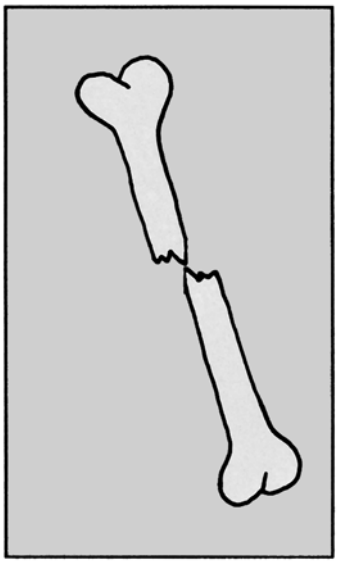


Figure 3c

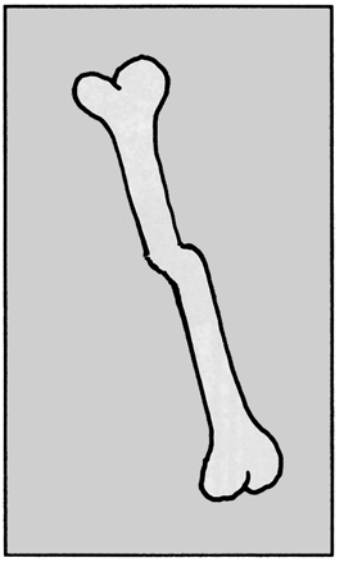
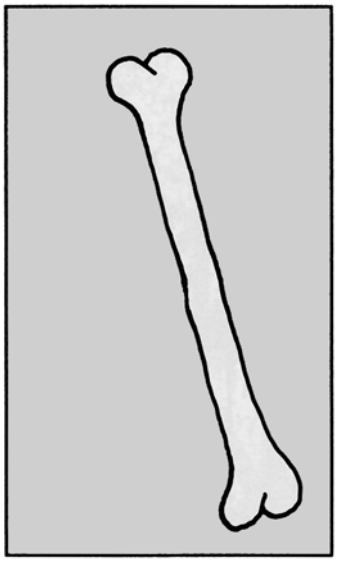


Figure 3d



In the first chapter of Romans, we are informed that men and women are 'without excuse,' since the evidence of God's power and wisdom is all around them in creation. How much more is this so in our age of tremendous advances in knowledge, which have revealed ever more astonishing marvels of complexity and design in the living world? The glory and honor of such engineering marvels do not belong to 'nature,' but to Jesus Christ, the Creator of all.

# # #

HERE'S THE GOOD NEWS

Answers in Genesis seeks to give glory and honor to God as Creator, and to affirm the truth of the Biblical record of the real origin and history of the world and mankind.

Part of this real history is the bad news that the rebellion of the first man, Adam, against God's command brought death, suffering and separation from God into this world. We see the results all around us. All of Adam's descendants are sinful from conception (Psalm 51:5) and have themselves entered into this rebellion (sin). They therefore cannot live with a holy God, but are condemned to separation from God. The Bible says that 'all have sinned, and come short of the glory of God' (Romans 3:23) and that all are therefore subject to 'everlasting destruction from the presence of the Lord and from the glory of His power' (2 Thessalonians 1:9).

But the good news is that God has done something about it. 'For God so loved the world, that He gave his only-begotten Son, that whoever believes in Him should not perish, but have everlasting life' (John 3:16).

Jesus Christ the Creator, though totally sinless, suffered, on behalf of mankind, the penalty of mankind's sin, which is death and separation from God. He did this to satisfy the righteous demands of the holiness and justice of God, His Father. Jesus was the perfect sacrifice; He died on a cross, but on the third day, He rose again, conquering death, so that all who truly believe in Him, repent of their sin and trust in Him (rather than their own merit) are able to come back to God and live for eternity with their Creator.

Therefore: 'He who believes on Him is not condemned, but he who does not believe is condemned already, because he has not believed in the name of the only-begotten Son of God' (John 3:18). The Bible also says, 'If we confess our sins, He is faithful and just to forgive us our sins, and to cleanse us from all unrighteousness' (1 John 1:9).

What a wonderful Savior—and what a wonderful salvation in Christ our Creator!

(If you want to know more of what the Bible says about how you can receive eternal life, please write or call the *Answers in Genesis* office nearest you—visit our Web site for more information:

http://www.AnswersInGenesis.org

FOOTNOTES

1. Combined speed of the collision, in 1986, was some 112 miles (180 kilometres) per hour.
2. As well as for my daughter Lisa, then 11, who miraculously escaped virtually unscathed.
3. As a direct result of the accident, I had a total of some 55 episodes of surgery under general anesthesia (the majority not involving rib removal).
4. Dr David Pennington, personal communication, May 7, 1999. Dr Pennington, a well-known plastic surgeon, was not one of those operating on me. I wrote to him in 1999 just to double-check the facts herein against his own knowledge and experience.
5. Of course, the really special miracle was the fashioning of Eve from the flesh and bone. Why this way? Why not directly from simple elements, or 'dust,' as for Adam? All of us have sinned 'in Adam'—and we can all be redeemed through the sacrifice of Jesus Christ, the 'last Adam' (1 Corinthians 15:45). So it was important that all of us, including Eve, were descendants of Adam.
6. Common types of bacteria that become resistant to many different types of antibiotics at once (called multiple drug resistance) are klebsiella, pneumococcus, and staphylococcus. The term 'golden staph' has become a lay expression for these superbugs, but it is actually a correct lay term

for the most common type of staph, otherwise known as *S. aureus* or *S. pyogenes*, which applies even if the bug is not multiply resistant.

7. R. McGuire, 'Eerie: Human Arctic fossils yield resistant bacteria' *Medical Tribune* December 29, 1988, pp. 1, 23.
8. The enzyme penicillinase, produced by some bacteria, destroys penicillin. If a member of a bacterial strain producing a modest amount of this substance were to inherit a mutational defect which damaged or deleted the gene controlling production of this enzyme, the organism would invest a lot of resources into producing copious amounts of penicillinase. Thus, this defect would be an advantage in an environment containing penicillin, but would be a disadvantage otherwise. Once again, a loss is involved. There is no evidence that the complex information coding for penicillinase production arose by mutation.
9. For a somewhat more detailed and technical treatment of the whole matter of antibiotic resistance, with further references, see also C. Wieland, 'Antibiotic Resistance in Bacteria,' *CEN Technical Journal* 8(1):5–6, 1994.
10. This of course is a real dilemma facing the medical profession, especially when faced with patient demand for antibiotics for illnesses which would probably get better without them. The more that antibiotics are used, the less effective they become for some of these life-threatening conditions.
11. P-P Grassé, *Evolution of Living Organisms*, Academic Press, New York, p. 88, 1977.