From: Philip Corbin
Sent: Thursday, March 08, 2007 3:06 AM
Subject: Dissertation to Dunamis Diamonds

Greetings, CFW brethren and precious diamonds in the making, in the Durable Diamond-Decked Name of JESUS!!

"The sin of Judah is written with a pen of iron, and with the point of a diamond: it is graven upon the table of their heart, and upon the horns of your altars" Jer 17:1, KJV

As Christians, we may learn many lessons or pointers from diamonds; I shall attempt in this "dissertation" to list some of them.

A diamond is the hardest known naturally occuring substance known to man. In fact the word "diamond" comes from the Greek word "adamas" (from which we get the English word "adamant") meaning "invincible" or "unconquerable". (It is said the Greeks believed diamonds were tears of the gods, while the Romans believed they were splinters of fallen stars.) Yet diamond is composed of the same carbon atoms that make up brittle graphite, the writing substance used in pencils. An ordinary pencil is easy to break, but not diamond. That is the reason God wrote the sin of Judah with a pen of iron (rather than easy-to-break wood) and with the point of a diamond.

It so happens that I spent several hours in school and several days in post-Ph.D. private research studying the structure of diamond (my research involved an in-depth study of all possible space-filling lattice structures and their properties re modelling the most important electromagnetic field in nature, that of the point charge in space). In doing so I discovered some interesting things.

Both weak brittle graphite and incredibly-strong diamond are composed purely of carbon atoms bonded together. In the case of graphite, the bonding is mainly on planes, two dimensional bonding. Here the carbon atoms are arranged at the corners of interlocking hexagons (regular six-sided polygons). Bonding both above and below to carbon atoms is there also, but it is weak. The planes of the hexagons can relatively easily slide one over the other. In the diamond crystal lattice, on the other hand, the bonding is three-dimensional.

Permit a digression here. There are 5 solids (called the Platonic solids) which fascinated the ancient Greeks due to their incredible beauty - the only objects, so they thought, which have surfaces composed of regular polygons. These are the tetrahedron (composed of 4 equilateral triangles joined together in space), the cube (6 squares joined together), the octahedron (8 triangles), the dodecahedron (12 pentagons) and the icosahedron (20 triangles, 12 vertices). The Greeks literally worshipped these shapes due to their beauty - comparing them to earth, water, wind, fire and the universe. In actual fact, however, there are really 7, not 5, such objects - the sixth being the rhombic dodecahedron, composed of 12 surfaces (each surface composed of joined double equilateral triangles), and the seventh being the sphere (one surface).

Those of you that are into the significance of numbers in scripture should notice the occurrence of the number 12 and its association with the most beautiful higher-order 3-D objects known to man. This is not an accident. If you take identical table tennis balls and join them together, you will find that only 12, and no more, are able to touch a central ball - recall the 12 tribes of Israel grouped around Jacob, the 12 disciples of Jesus touching our Saviour, and the 12 pearly gates surrounding the New Jerusalem - nature reflects scripture.

Coming back to our theme, the most basic "Platonic solid" is the tetrahedron, composed of 4 equilateral triangles joined together in space, and it is on this structure that diamond is based.

Permit one more digression. In his famous 350 BC book "On the Heavens", the Greek mathematician and philosopher Aristotle, student of Plato and teacher of Alexander The Great, claimed that space can be filled by tetrahedra joined together. I reckon, however, that he was just as lazy as I was when I independently asked myself the same question in the late 1980s. Not knowing what Aristotle or others had written on the subject, rather than try to work through the (admittedly tedious) trigonometric mathematics to see if it was so or not, I constructed some tetrahedra out of cardboard and tried fitting them together. I noticed an error of a few degrees - the tetrahedra did not quite fit! But the error seemed so small that I figured that I had merely cut them badly and continued gaily on with my analysis assuming that the tetrahedra fit. I semi-justified this lackadaisical approach since (unlike Aristotle) I knew from school days that the diamond lattice structure was based on tetrahedra, and assumed therefore that tetrahedra joined together "must" fit space, never mind the "error" in my cardboard models.

Several months later, I was down in the dumps! I had developed a beautiful equation describing the electromagnetic behaviour of all space-filling lattice network structures in three-dimensional space, but... the joined tetrahedra was the sole structure not fitting the equation! I went over and over the mathematics ad nauseum. Finally, in desperation (remember this was the late 1980s and the Internet as we know it did not exist otherwise the issue could have been resolved in a Google search in mere minutes), I went to the Cave Hill Campus library and trusted the Holy Spirit to guide me. He did. I found a mathematical journal which stated that Aristotle had made an error - tetrahedra do not fit together to fill space - and moreover because of the "greatness" of Aristotle this error had been perpetuated for nigh two-thousand years! When mathematicians came along in the Middle Ages who said "the great" Aristotle had been wrong, they were not believed at first! It turns out that my cardboard model was correct... there is an error of a few, easily overlooked, degrees when you join tetrahedra together (try it)!

What has all this got to do with diamonds or indeed Christianity, you must be wondering! Apologies for the digressions! Read on...

The diamond structure is based on tetrahedra that touch rather than fit together - to be precise each tetrahedron fits inside a cube, and it is the cubes that fill space when joined

together. (To see precisely how, check the diagrams on the websites given in the notes at the end of this dissertation!).

Here is the point: we Christians, the church corporate, are too much in our bonding like graphite and not enough like diamonds. We bond on the horizontal plane with those (similar "carbon atoms") like us, but we do not bond sufficiently up or down - up to those we deem "above us", in particular God, and we do not bond downwards to those we deem "below" us. Even the Christian groups that do bond up and down tend to be within adjoining "tetrahedra" that do not fill space, rather than in a cubic space-filling structure, so the enemy is able to get in - because again the structure is weak.

So lesson number one from diamond (and the biggest!)is this: we need to bond better with God and with all our brothers and sisters in Christ if we desire to be strong, like diamond.

Here is lesson number two: beauty is often formed under pressure, and hidden until revealed.

Diamonds, the scientists tell us, originate around 90 miles or 150 km below and within the earth's surface, formed under high pressures (typically 5 gigapascals) and temperatures (typically 1200 degrees Celsius or 2200 degrees Fahrenheit).

So right now you may be well out of sight, hidden away, but a diamond in the making. And those stresses and pressures of life you keep complaining about? Guess what? They make the difference between graphite, which is formed at relatively low pressures and temperatures, and diamond, which is only formed at higher pressures and temperatures. And the upheavals in your life? Guess what? It is volcanic action brings diamonds to the surface. It was disruption which moved Joseph, a diamond in the making, from the pit to the palace.

Lesson number 3: The beauty of a diamond lies in how certain parts of it are cut away.

A diamond typically reaches the surface of the earth, following volcanic action to bring it there, with the shape of an octahedron (one of the "Platonic solids" loved by the ancient Greeks) and the vertices rounded. Such a "diamond in the rough" is however nowhere as shiny or reflective as diamonds sold commercially. It needs to be "cut" to achieve maximum beauty.

Viewed from above, when light enters the top (known as the "crown") of a diamond, it is reflected around internally in its base (known as the "pavilion") and if the diamond is cut in a very precise manner, this reflection is largely internal before the light reflects back out to the eye of the viewer. This gives a diamond what is referred to as its "brilliance". Also, a diamond is highly dispersive of light, hence the colours of the spectrum appear as the light spectrum is spread, giving a diamond its multi-colour glitter, referred to as the "fire" of a diamond. There is also the "scintillation" factor of a diamond - the best diamonds will flash or "scintillate" if the light source or angle of viewing is shifted, again

a factor of how well the diamond is cut. The guy who developed a lot of the science of all this is mathematician and gem enthusiast Marcel Tolkowsky back who published a landmark book on it back in 1919.

In other words, the same original diamond, if skillfully cut to ably reflect and refract light, will be far more valuable than a poorly cut diamond, even one with facets cut only a few degrees out of alignment. (Hence the cutting process can be traumatic for the jeweller; the Cullinan Diamond, part of the British Crown jewels, was the largest gem-quality rough diamond ever found (1905), at 3,106.75 carats, and it is said that the poor guy who cut it, after preparing for months to do so, fainted in his task!)

The spiritual application is this: Christ is our circumcision (Col 2:11) who cuts off the sins of the flesh - as He does so, others are able to see His reflection in us, and the "brilliance, fire, and scintillation" of the Holy Spirit. In particular, viewing from above, the Father wants to see the image of His Son reflected back to Him, and He is working all things together for good to that end (Rms 8:28-29).

As we are turned for others to see, we should also reflect the light of Jesus to them also. Check chapter 3 of the apostle Paul's second letter to the church at Corinth chapter 3. The last verse says:

"But we all, with open face beholding as in a glass the glory of the Lord, are changed into the same image from glory to glory, even as by the Spirit of the Lord." 2 Cor 3:18

We tend to read that verse and nod and say "yes, we are being changed into the glory of Jesus as we behold Him" and that is true, but the verse also means that others should see His reflection in us, and this is the point Paul makes in the next chapter where he says:

"For God, who commanded the light to shine out of darkness, hath shined in our hearts, to give the light of the knowledge of the glory of God in the face of Jesus Christ." 2 Cor 4:6

Lesson # 5: Diamonds must be cleaned and polished to shine best. Even so we must allow the blood of Christ, and the polishing of His Word the Bible, to clean and polish us, and this cleaning and polishing must be done on a regular basis.

The first diamond engagement ring can be traced to the marriage of Maximilian I (Archduke of Austria) to Mary of Burgundy in 1477. In this connection, Fred Cuellar, author of the best-selling book "How to Buy a Diamond" and one of the world’s most renowned experts on the subject of diamonds, has observed the following:

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"I’ve lined up a hundred couples and asked them the condition of their marriage and relationship and I found a direct correlation between clean rings and great marriages and

filthy rings and relationships that no longer connected or were drifting apart. Just a coincidence? Could be. Or maybe it's that any good marriage takes work, care and effort. Marriage isn't easy. When a problem arises, a lot of people just let it go, thinking it will fix itself. It won't. A clean ring will always get dirty unless you don't allow it.
A good marriage will do the same unless you work at it and keep the dust off.

Fifty-four percent of women who receive an engagement ring say they would never get rid of their original engagement ring. They would keep it till they die.
Forty-six percent however, say that even though they have fond memories of their original engagement ring, they wouldn't keep the first car they ever had or first home they ever had! If better comes along they will snatch it! That being said, here's how the divorce bug attacks each group. Seventy-five percent in group one "The I'll keep it forever" folks tend to stay married while eighty percent in group two are splitsville."

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How polished or clean is our diamond ring relationship with God? Or with our spouse? How much do we value it? Are we working at it?

Lesson #6: Impurities cloud transparency and lessen value.

The value of a diamond is dependent on what are termed the "four C's" - its Carat value (which increases with size - this is the weight of the diamond, where one carat is a fifth of a gram); its Colour, its Clarity, and its Cut.

Re colour, a diamond is typically colourless and transparent, but with impurities present it starts to turn yellowish or brownish, and loses value.

Similarly its clarity diminishes with impurities. The clarity of a diamond is a measure of its internal defects, called inclusions, caused by non-carbon atoms in the lattice structure of the diamond. These, and flaws, and defect planes in the crystal lattice all affect the hardness and value of a diamond. Only about 20% of all diamonds mined have a clarity rating high enough for the diamond to be considered appropriate for use as a gemstone; the other 80 percent are relegated to industrial use.

When impurity or sin is in our lives, we tend not to be fully transparent with each other or with God, just like a diamond with impurities cannot be fully transparent. Our value thereby diminishes. Similarly with the "inclusions" of character flaws in our lives.
They diminish our value and usefulness as a gemstone for Jesus.

Lesson #7: Only a diamond can cut or scratch another diamond.

Pause and think about that one - the application is deep. I submit that we can cut or scratch each other's spirits in a way that no other creature can. We are at a different (higher) level to the rest of creation on earth. We are all potentially diamonds, and as such we can cut (i.e. affect for good or bad) each other in a way no mere plant, insect, dog or cat can. That is food for thought. I further submit that only the pure diamond of

the Spirit of the Living God can make the precision cuts needed to bring out His beauty in us. That is why when we minister to others, we need to do so in the Spirit, i.e. in love, and not in the flesh or in anger etc.

We think diamonds are ever so valuable, but our thinking is skewed. Currently, a half a carat (0.1 g)diamond may cost about 1 thousand US dollars, a 1 carat diamond over 5 thousand US dollars, a 3 carat diamond over 50 thousand US dollars, and a 5 carat diamond over 100 thousand US dollars. The Cullinan Diamond, part of the British Crown jewels, was the largest gem-quality rough diamond ever found (1905), at 3,106.75 carats, but in reality such a diamond is merely a speck of dust. A theory has been developed, by a modern astronomer, that our galaxy's largest diamond is the core of a white dwarf star which has been observed, and that this diamond crystal is 4000 km in diameter. I don't doubt him - according to Rev 21:21, the gates of our heavenly abode are each cut out of a single pearl! But even a diamond at the core of a star, which would be worth more than all the money in the world, is mere dust also. We are each of far more value to Our Heavenly Father than any earthly or heavenly diamond. And He assures us His diamonds are indeed forever and will shine like the stars (Daniel 12:3).

In scripture the diamond is mentioned in 3 places: in Exodus 28:18, 39:11 as one of the 12 gems in the breastplate of High Priest, in Jer 17:1 (quoted at the beginning - "The sin of Judah is written with a pen of iron, and with the point of a diamond..."), and in Ezekiel 28:14 as one of precious stones that covered satan before his fall. In the first instance (Exodus), it is the preciousness (rarity) of the diamond that stands out, in the second (Jeremiah) its durability, and in the third its beauty.

May the Lord continue to cut and shape us, via the dunamis "dynamite" power of the Holy Spirit, into flawless diamonds, precious, durable, and beautiful, shining with the light of His presence, amen.

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NOTES

For general information re diamond, its structure and that of graphite, check:

http://en.wikipedia.org/wiki/Diamond

http://www.avogadro.co.uk/structure/chemstruc/network/g-molecular.htm

The (award-winning) UWI Cave Hill mathematics article mentioned ("Which Tetrahedra Fit Space?") is now online (first page) at:

http://www.uncp.edu/home/mcclurem/lattice/diamond.htm
http://links.jstor.org/sici?sici=0025-570X(198111)54%3A5%3C227%3AWTFS%3E2.0.CO%3B2-R