The Murchison Meteorite

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On a Sunday morning in September of 1969, a spectacular fireball was seen over southeastern Australia. Many people witnessed the fall of this meteorite and saw it split into three main pieces, leaving trails of smoke in their wake. People guessed (correctly) that pieces of this meteorite had probably survived the fall and might be found lying about on the landscape. One family did not have to search, as a 1.5 lb (680 g) piece broke through their barn rood and landed in the hay. The pieces were scattered over 5 square miles (13 km2). Many were small hand-sized pieces, but the largest weighed 15 lbs (7 kg). In total, about 220 lbs (100 kg) of rock were eventually found. The town of Murchison was the center of this fall and gave its name to this now-famous meteorite. Why is this meteorite famous? There were enough pieces that many labs and museums around the world were able to obtain some of them. In 1970, scientists began analyzing the chemistry of these rocks from space. What they discovered shocked them.

The Murchison meteorite is classified as a Carbonaceous Chondrite. “Carbonaceous” means that it contains a substantial amount of the element carbon, and “chondrite” means that it has many tiny, light-colored dots called chondrules. Walt Brown describes chondrules on page 418 of the new 9th edition. The chondrules in the Murchison are made of high-temperature rock, but the surrounding matrix rock is made of rocks found in low temperature environments on the surface of the earth (such as clay or limestone). One secular explanation for chondrules is that the tiny spheres were blobs of minerals floating in space after the Big Bang had done its thing and clouds of elements were starting to condense. These tiny blobs were then incorporated into larger blobs. Some of the blobs stayed small and became meteorites, but other went on to collect and condense into planets. They say that on earth we don’t have chondrites in our rocks any more because the entire earth melted and reheated. (No time to discuss all the problems with this theory.. we must move on.)

Other astronomers have realized the logical problem that chondrules present, having dots of high-temperature minerals embedded within low-temperature matrix rock. They see that something caused pinpoint locations to experience a temperature high enough to melt the minerals in the chondrules. These locations also had to cool very quickly so that the surrounding rock remained unaffected. Astronomers can't find any reasonable explanation of how this could happen in outer space. The answer? It didn't happen in outer space. It happened on earth as the flood began.

Dr. Brown suggests that as the fountains of the Great Deep continued to expel the waters of the deep into space, there was less water to bear the weight of the crust, causing it to sag and then flex up and down as the water spewed out in pulsed surges. Every time the crust flexed, the quartz-filled granite in the crust was stretched and compressed, causing piezoelectric "lightning bolts." As the Proton-21 lab experiment showed (page 392), lightning can cause a "Z-pinch" effect where tiny "hot dots" can reach reach temperatures hotter than the sun within a fraction of a second. This is a local effect, melting the elements in the dot area, but not extending very far outward. This can explain how chondrules can be embedded in minerals that have a lower melting point. Chondrules are quite impossible to explain without some type of lightning hypothesis. Even secular astronomers have proposed that lightning would produce chondrules, but they can't explain how lightning bolts could happen in outer space.

Right after the chondrule dots were super heated they were ejected into space and experienced very rapid cooling. They tumbled as they cooled, which preserved their spherical shape. The matrix rock in which they are embedded also experienced chemical changes due to heating and mixing, but all at lower temps than the "hot dots." No meteorite ever found has been identical to earth rocks, which leads secular astronomers to conclude that they were never a part of the earth and have come from some place very far away. Hydroplate advocates suggest that the "trauma" that rocks experienced during the early stages of the flood was enough to alter their chemistry.

Many meteorites contain carbon, but so far the Murchison takes the prize for the highest ratio of carbon found in the form of organic molecules. Over the decades, new organic molecules continue to be found in various samples of the Murchison. No piece has exactly the same chemistry as any other and two wildly different types of molecules can be sitting side by side. Thousands of molecules (some sources say as many as 14,000) have been found including 70 different amino acids (with an excess of left-handed aminos, the kind that occurs in all living things on earth), alcohols (such as ethanol and methanol), sugars (such as ribose, xylose, and arabinose), components of DNA and RNA (adenine, thymine and uracil), and many other organics such as toluene, DMSO, chloroform, formaldehyde, fullerenes, and carboxylic acids. Some of these are fairly simple molecules and could have been produced by the random interaction in a heated environment of the elements carbon, hydrogen, oxygen, nitrogen, and sulfur, but other molecules are complex enough to leave astronomers scratching their heads. At first they wanted to blame it on contamination through careless handling by regular people who gathered up all the fragments. Astronomers were a bit irritated that normal folks were involved in the collection process. But as organics were found on the insides of some very large samples, contamination as the main cause of these organics was eventually ruled out.

Several oddities were found such as an overabundance of carbon-13 (carbon atoms with an extra neutron). Because of the inclusion of C-13 in many organics, a terrestrial origin was not considered. However, as Dr. Brown points out, one consequence of the breaking up of the crust and the fountains of the deep was the release of many free neutrons. Some of these would have ended up joining the nuclei of atoms, creating heavier isotopes. Another odd finding was the radiometric dating of some of the mineral grains, including silicon carbide. These were estimated to be 2 billion years older than the age of the earth. For this reason, it was assumed that the meteorite pre-dated our solar system and therefore these organics were part of the “condensates” that contributed to the formation of our planets. Dr. Brown would say that the radiometric dates are showing us something other than time. The tension and compression of the crust produced a massive “zoo” of isotopes. The most unstable of these immediately decayed and disappeared, but many survived and are still present in rocks today. Radiometric dating has to assume that ALL “daughter products” were produced by decay of the “parent” atoms. If this is not true, the radiometric dates are wrong.

The amount of carbon-based organic molecules in the Murchison is quite an enigma, and hard for any theory to explain. It seems unlikely that amino acids and components of DNA were part of the crust or mantle rock. It is highly likely that C, H, O, N and S were in the subterranean waters, but how would they have come together to form a hard rock? It seems likely that the organics in the Murchison are the result of breakdown and degradation of larger molecules, rather than a build-up from single elements, although some build-up could have occurred as the rock experienced severe heating. What would happen if you took a chunk of clay from a sea bottom, squeezed it until it was super heated, shot a few lightning bolts through it, launched it into space, then had it endure a second round of super-heating as it fell to earth in 1969? Were bacteria and other microorganisms cooked down into simple organics? Complex molecules could have fallen to pieces, then the pieces could have recombined randomly to form the myriad of strange molecules that the chemists are finding in the rock. A similar process happens when you cook food. The protein, sugar, and fat molecules break apart then the pieces form random molecules. This is called the Maillard reaction. Some of the more common random molecules have been cataloged and are known to produce the wonderful smells we associate with cooking food. However, the Murchison does not smell good. Reports say that it has a stinky smell often described as cooked Brussels sprouts or compost. The stench is possibly due to the presence of sulfur. Sulfur is often the culprit in many stinky things.

Another possibility is that molten rock picked up a load of pulverized organics as it was spewed out of the crack. The organics got mixed into the rock as it tumbled and swirled in the first part of its journey, but then quickly hardened into solid rock as it experienced the extreme cold of outer space. However, exact details about this idea are rather hard to hypothesize. We may not ever completely figure out how this strange and famous meteorite formed.

References:

https://pmc.ncbi.nlm.nih.gov/articles/PMC2840304/
https://en.wikipedia.org/wiki/Murchison_meteorite/
https://www.scientificamerican.com/article/murchison-meteorite/
Geoscience Australia channel “Murchison Meteorite: Witnessing the fall of the most famous space rock”
https://www.youtube.com/watch?v=UVBd4l7qqEw
Natural History Museum channel: “What does the Murchison meteorite smell like?”
https://www.youtube.com/watch?v=aHTfRQRWoFA