Atoms

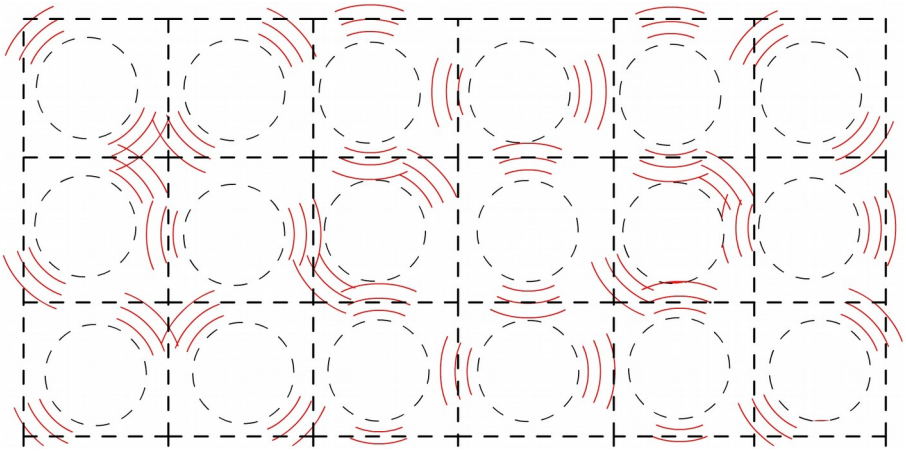
by Roger Munday

Atoms 29.9

Since the introduction of Electron Microscopy in the 1980's the atomic structure of solids, e.g. metals, needed revision, the first diagram below represents the previously accepted "lattice structure" of atoms oscillating in an interstitial vacuum.

This asserted that atoms occupied around 22% of the total volume while the remaining 78% of the volume was composed of an 'extra-atomic' vacuum.

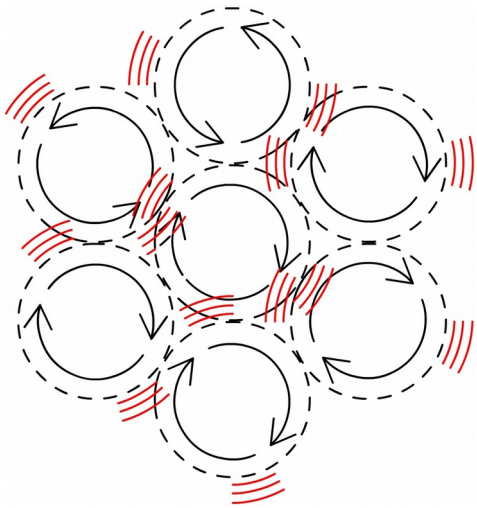
1) Lattice Structure, Atoms 22%, Vacuum 78%.



But to conform to the images produced by EM technology, this hypothetical structure was 'adjusted' to the now currently assumed one of atoms in "close packed arrays", as in the second diagram.

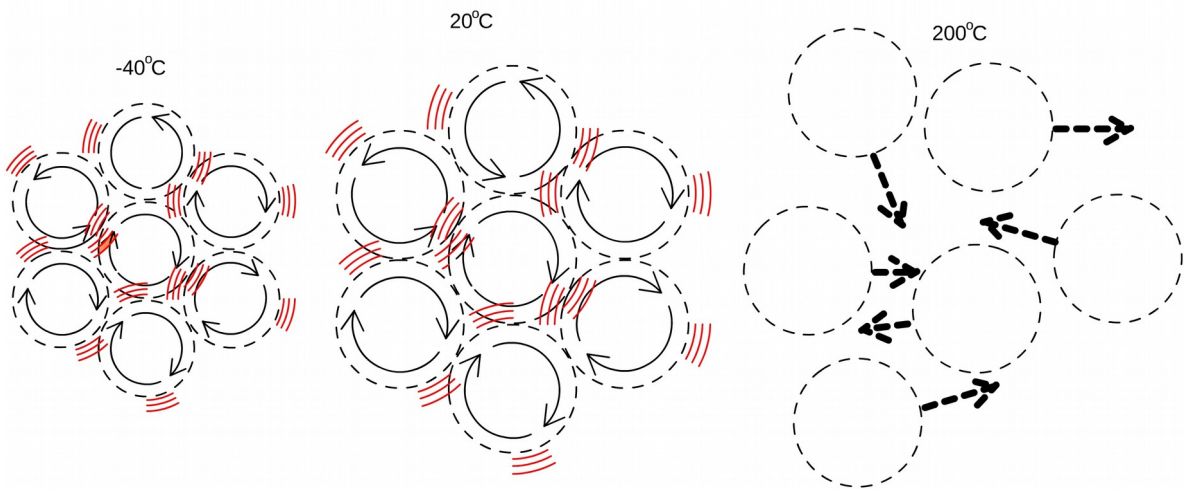
In this postulate the atoms were now assumed to be in continuous contact and were *"kinetically rotating and vibrating"* in place, and which atoms now occupied 72% of the total volume, while the extra-atomic vacuum was reduced to just 28%. This is, approximately, the maximum volume of space that could exist at the face diagonals between a close association of large number of identical spherical objects.

2) Close Packed Array, Atoms 72%, vacuum 28%.



And in both cases the atoms in these two diagrams are the currently accepted, vacuous “Rutherford” atoms introduced in 1919, the nuclei of which cannot be depicted on this scale as they occupy just one trillionth of an atom’s total volume.

But this revised “close packed array” theory created a problem, as this was the assumed structure of matter at 20ºC, and so in the observed reduction in the volume of metal in concert with a reduction in temperature, as depicted in the first image below at -40ºC, it was now necessary to assume that the component atoms were individually and physically reduced in volume due to the extraction or the emission of energy.



This is an official, and facile, “explanation” for the observed contraction of atoms downwards from STP.

“Thermal contraction is the opposite of thermal expansion. When the temperature drops, ***atoms calm down and shrink****. They aren’t bouncing so aggressively off each other and* ***don’t need that much space to co-exist****. When they shrink, the boundaries of the material shrink. The material contracts.”*

However in complete contrast it is now stated that, on the further application of heat energy to these atoms from 20ºC, they do not increase in volume but instead the extra-atomic vacuum alone expands as in the third image above at 200ºC, where of course the absorption of heat is assumed to generate a “kinetic” energy of motion which has moved the atoms apart randomly within this greater volume of vacuum.

In other words from this point it is suggested that the individual mass densities of the component atoms do not change, and the reduction in mass per unit volume is due to the increase in the volume of an interstitial vacuum.

Mass - energy equivalence, *"if a body gives off energy in the form of radiation, its mass diminishes"*, and vice versa.

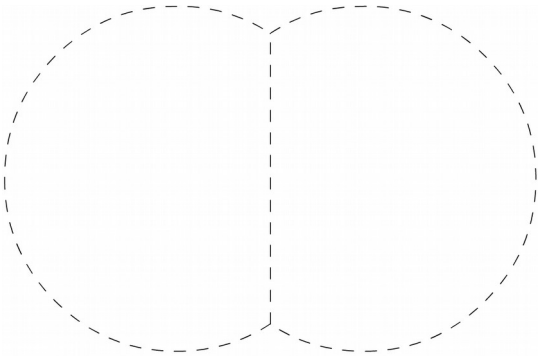
“The ***density,*** *the* ***volumetric mass density,*** *of a substance is its mass per unit volume.”*

So, according to theory, at 20ºC we have atoms that are composed mostly of a vacuum, the outer extents of which atoms have a nominally spherical form, and which atoms are in close contact at their face diagonals with the outer extents of the

spherical fields of adjacent atoms, and at which minuscule point of contact both repulsive and attractive forces are of necessity acting continuously to maintain their individual structural integrity and that of the solid macroscopic matter of which they are a part.

To say the least it is difficult to imagine how this theoretical interaction, this perfect repulsion, can occur at such a mutually vacuous point at the outer limits of the vacuum spaces of any two atoms.

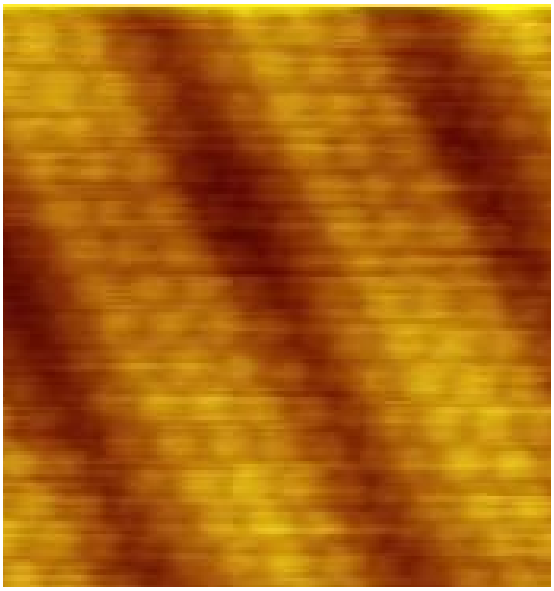
But then of course it is stated that individual atoms of an element can associate into di-atomic and multi-atomic molecules, where both attraction and repulsion must be continuously acting to form and to maintain such hypothetical structures, as indicated below.

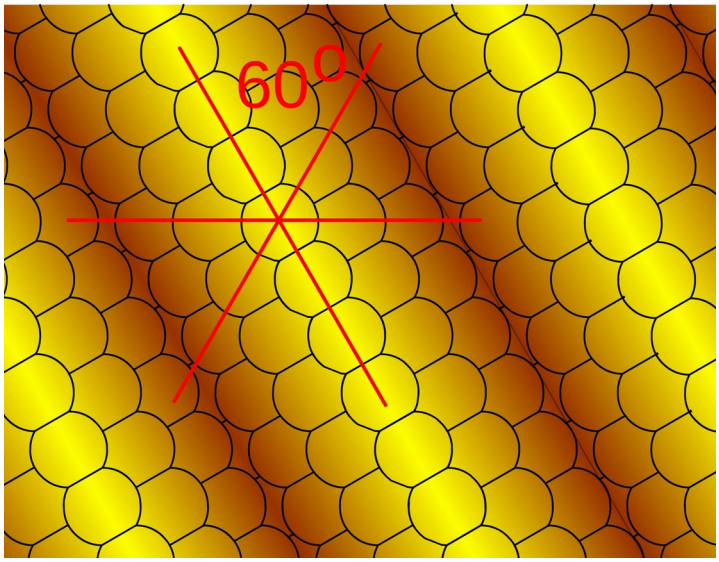


All this implies that the ultimate structure of matter in the conditions of STP here at the surface of the Earth are the ‘gold standard’ universally, which is a totally absurd assumption of theoretical physicists alone.

Below is an Electron Microscopy image of a gold surface and below that a manual reconstruction of that surface.

And according to theoretical physicists an increase in temperature from STP results in these gold atoms collectively moving apart and creating a mutually interceding “vacuum”.





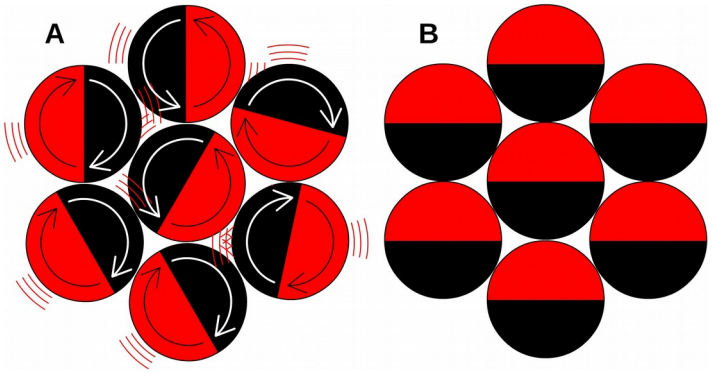
I suggest that if heat was applied to these gold atoms they would simply expand, individually and physically, and remain in a continuous, close contact, and it is accordingly necessary to consider that the component atoms would individually increase in mass density, i.e. mass per unit volume.

So if a body absorbs energy and increases in volume its mass density, mass per unit volume, diminishes, an example is an enclosed balloon - heat applied mass density decreases, heat expelled mass density increases.

But according to kinetic theory, from STP, when a body absorbs energy the mass densities of individual atoms remain the same and these move apart within an increased volume of vacuum, and the mass density of the expanded body accordingly decreases.

This means that upwards from say -40°C an absorption of energy increases the volumes of atoms and accordingly the overall mass densities of these atoms decrease, which suggests that the mass densities of atoms increase progressively to the core.

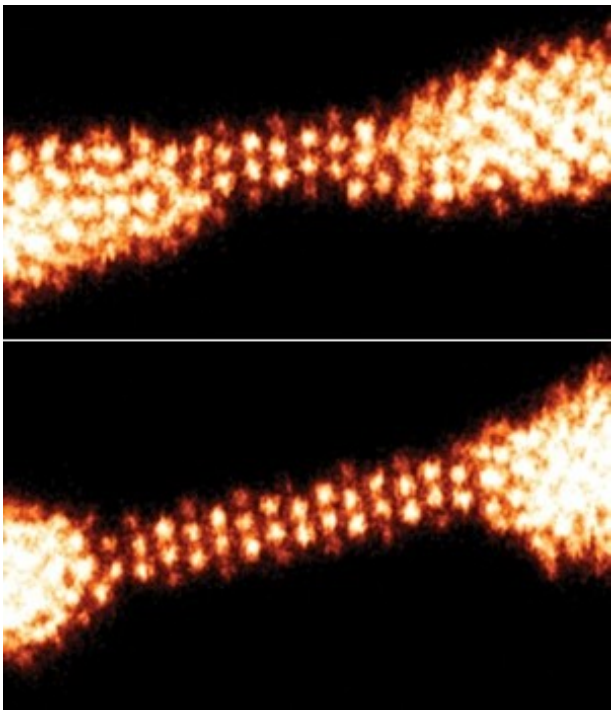
In terms of current theory the atomic structure of metals at STP are as depicted below (A) where perfectly spherical atoms of constant dimensions are *"randomly rotating and vibrating in place"* and are separated by a minuscule volume of vacuum at the face diagonals, comprising 26% of the total volume.



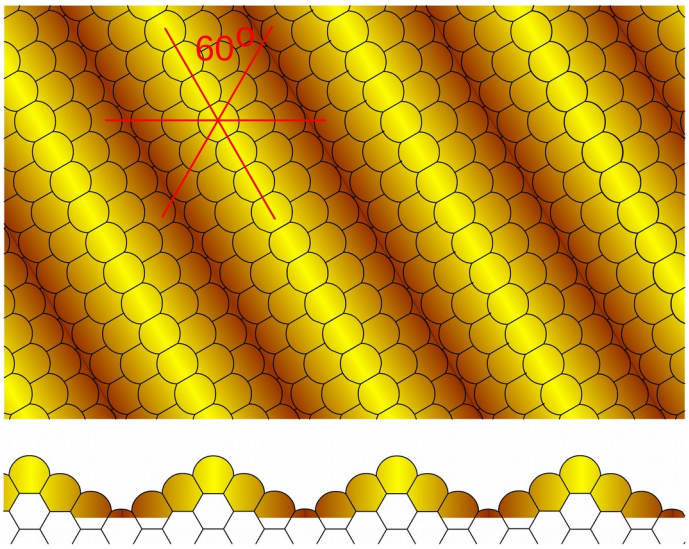
However as iron atoms in a magnet must be collectively and continuously aligned N-S to be able to generate a strong and stable external magnetic field as is observed, there is no possibility of any individual random motions of the component atoms, as is depicted in diagram **B**.

It is stated unequivocally in scientific literature that most metals are non-magnetic:- *"Non-magnetic materials have atoms aligned in random directions, so their magnetic fields cancel each other out"*.

It is evident that the general rigidity of all metals can only be the result of the actions of strong inter-atomic attractive forces, as is demonstrated in the image below of gold atoms acting mutually to form a nano scale wire, which is physically drawn out between two pieces of gold.



And this is a reconstruction of an image produced by an electron microscope of a gold surface.



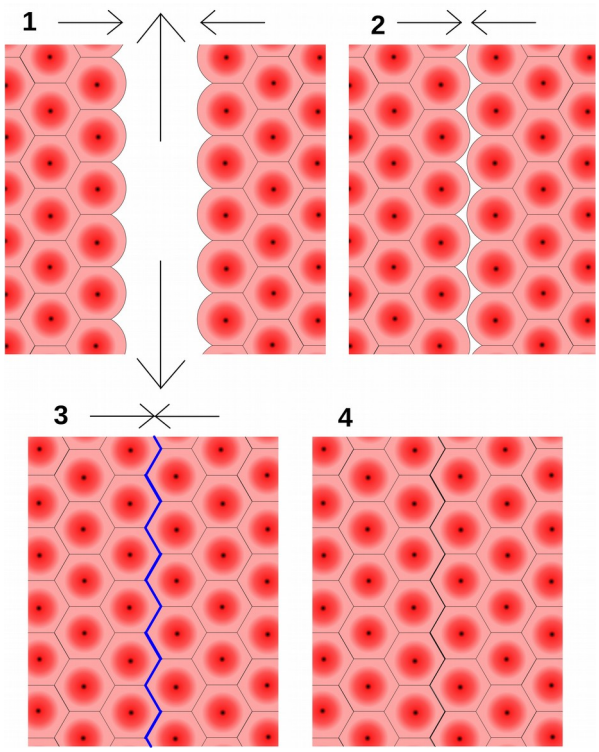
It is therefore true in this respect that the magnetic fields of individual atoms *"cancel each other out"* with respect to generating an externally acting influence, however it is absolutely clear that their fields are not *"randomly aligned"*.

These short range, attractive effects are confirmed by experiments demonstrating that two such *"ultrathin gold nanowires (diameters less than 10 nm) can be cold-welded together within seconds by mechanical contact alone"*.

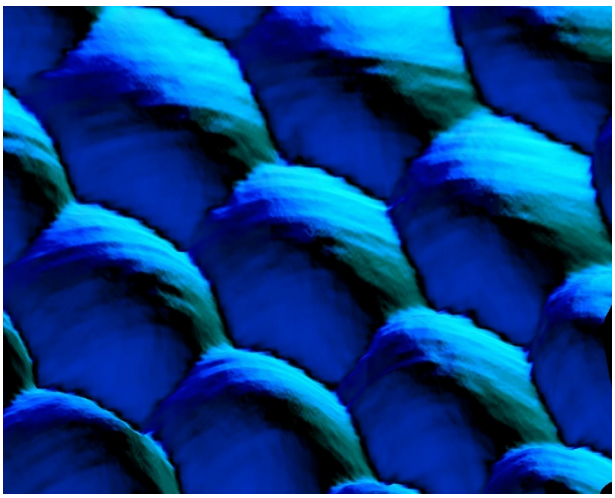
And this 'cold welding' effect is also observed with larger masses, as when two sheets of various metals are brought into close contact.

"Cold welding was first recognized as a general materials phenomenon in the 1940s. It was then discovered that two clean, flat surfaces of similar metal would strongly adhere if brought into contact under vacuum." (Wikipedia).

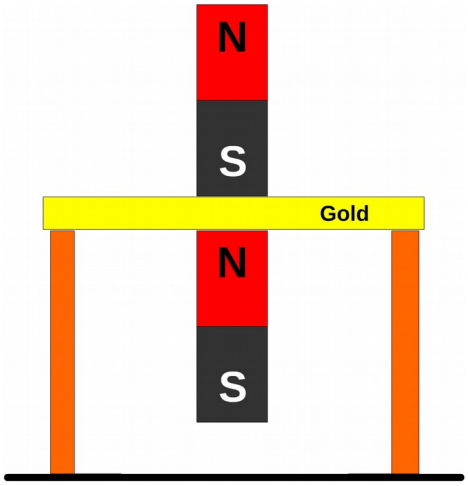
The perfectly plane, facing surfaces of the two metals in Fig. 1 below are brought together while the intervening gases are extracted to create a low pressure environment, which process leads to the complete fusion of the two surfaces so that one, continuous piece of metal is created as in Fig. 4.



This structural arrangement is clearly confirmed by electron microscopy images such as this one below of platinum atoms, that is similar to that of gold atoms, which clearly shows that atoms are in such close confines that their outer extents are distorted, to the extent that there is no interceding ‘space’ of any description.



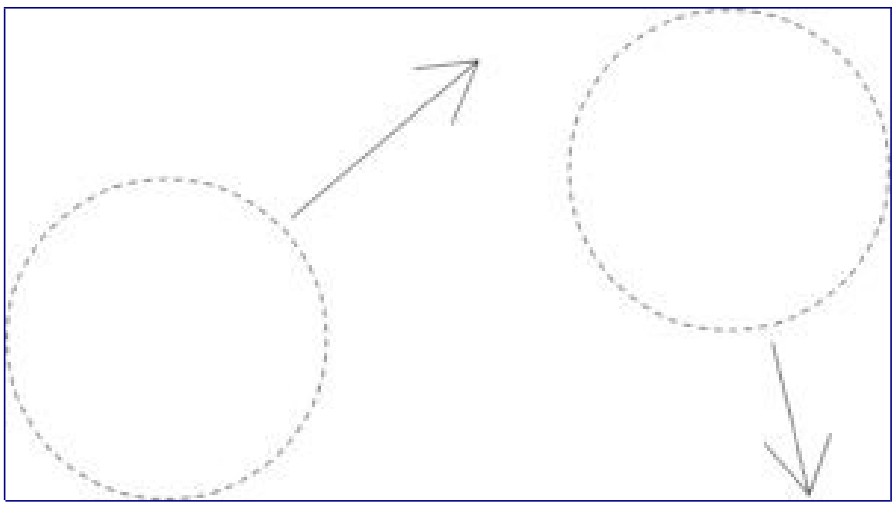
It is also observed that when two magnets placed either side of a sheet of metal of any element as in the diagram below, they are attracted (or repulsed) through the metal, which means that their fields combine through and therefore influence the magnetic alignments of the atoms of these interceding metals, and as soon as the magnets are removed the gold atoms return to their natural magnetic alignments.



A magnetic field is observed to be emitted to and is transmitted continuously through the intervening atmosphere, in other words there is no ultimate dimensional point where the field is not acting.

But, as it is generally believed by physicists that the atmosphere is composed of a vacuum component 1000 times the volume of the "kinetic" gaseous atoms enclosed within it (which atoms are themselves composed almost entirely of vacuum) then a magnetic field could not in this case, by any theoretical conjecture, interact between the compass and the iron based magnet placed in its vicinity.

The image below depicts two vacuous, gaseous atoms in kinetic motion, the dashed lines are indicative of the hypothetical outer extents of their "electron shields". Both their electrons and nuclei cannot be shown on this scale, as to be able to show a nucleus as being, say, two pixels in diameter these "electron shields" would need to be over 2 metres in diameter.



Extensive, and very expensive, experiments have failed to isolate, to create the state of perfect vacuum, i.e. to extract all atomic matter from a small compartment, which given its hypothetical qualities of non-resistance to the interactions of tangible atomic matter, is inexplicable.

And so, this general belief of theoretical physicists as to its all-permeating "existence", which would be incapable of transmitting a force between two macroscopic material entities, is not only absurd, it is stupidity.