

The FS Loop Antenna; proof of concept for spin-fields within Ferrite Sleeve inductors.

by Graham Maynar 14th February 2011.

**The best compact AM antenna in the world -
ever!**

This brief article covers;-

- (1) some puzzling 'hands-on' findings not explained by conventional magnetic and electromagnetic 'field' theories;
- (2) alternative explanations based upon fundamental charge spin;
- (3) testing the new ideas via their application to an innovative yet very simple Ferrite Sleeve cored radio-frequency inductor;
- (4) the construction and testing of this new inductor as entirely passive Medium and Short Wave AM receiving antennas.

Post-scripts added after Final Notes - 12th + 14th March 2011.

Preliminary notes:

The performance of this new and extremely simple inductor was examined by connecting its terminals to a variable capacitor for use as if a resonantly tuned AM loop antenna, whereupon it was immediately recognised as being a significant step forwards when compared to all previously known resonant long, medium and short wave antenna designs.

Simultaneously, there was cognitive realisation that this development had, as of its first 7th January 2011 testing date, immediately rendered all prior work, constructions and publications (including my own) relating to tuned ferrite 'loop-stick' and 'air-core loop' based Medium Wave antenna designs throughout our history of radio reception - *obsolete*.

Two compact examples of the new form of resonant electromagnetic-radiation

transducer described below offered more than ten times an increase in sensitivity (20dB) when compared to any equal size of maximum dimension construction previously available, hence this development cannot be seen as being anything other than *very important*. Its design eventually developed out of renewed joined together thinking to become a novel antenna not only capable of enhancing portable and table top AM radio reception anywhere in the World, but additionally via scaling and adjustment it should be useful at frequencies spanning from ULF to the 49 metre band and beyond, also for processes relating to alternating field generation close to the ferrite sleeve, for pulsed field technology applications, and possibly be applicable to the development of compact plus directable MF transmitting antennas.

I use the word 'novel' because I am not aware of any prior publication or Patent application for this kind of open ferrite-sleeve type of construction, as would normally be the case following similar development or use elsewhere. Yet ferrite materials have been around and used as inductor cores since their invention in 1930, and for as long as electric mains power grid systems have enabled radio manufacturers and public radio broadcasting to become the services we take for granted today.

So why it is only now that this form of inductor-antenna has suddenly been designed ?

<http://www.localhistory.scit.wlv.ac.uk/Museum/Engineering/Electronics/history/radiohistory.htm#end>

Belief or Understanding?

Please understand then, my expression of total disdain at the manner in which scientific theories in relation to magnetism and electromagnetic 'wave' propagation have been inculcated since the first intuitive attempts to explain same during the pre-electronic epoch. New conceptual exercises related to the investigation of physics fundamentals, plus the subsequent design of this new inductor have made me realise that dogmatic repetition, and worse, the indoctrination of erroneous hypotheses into formative student minds *including my own* by the so-called "know-men" of science who control education curricula in our schools, colleges and universities, had, for 45+ years (and I state this as being a genuinely truthful fact related to my own situation) quite literally prevented me from thinking any earlier about the so astoundingly efficient and compact tuned radio frequency inductor described here!

I must continue by stating that because I do not have any special kind of mind, and merely the gift of time to ponder real-world findings and thus the implications of empirical observations, I now believe that so many great men as far back as the birth of Radio itself, and as are known by their major works throughout radio-electronics history, must also have been similarly disabled from inventing a similar type of inductor due to the same seriously flawed concepts we have all been *taught* to adhere to - and - which we have so clearly accepted and believed as if truth.

So please remember as you read these pages, that the same supposedly established

'fundamental theories' I had been presented with, and which so misguided me, are most likely to be what you already believe as you read these words. I further suggest that your present understanding is likely to be the same as is that still being expounded here by Wikipedia, the Internet based encyclopaedia universally recommended as being the source of reference for all present day enquiring minds; -

http://simple.wikipedia.org/wiki/Electromagnetic_wave

We have been brought up to accept without challenge, and thus to believe without question, those prior concepts and 'theories' which led to past progress and orderly development, even though those same developments led to new revelations and more advanced technologies which so long ago allowed our world to move on and become what it is today. It is as if I could write "Everything You Know Is Wrong" because we need better ways of re-examining fundamentals related to so many things we have taken for granted since accepting explanations based upon so called "expert" opinion, with many other opinions daily reinforced via mainstream media "experts" on television, however, that particular expression is already a title in print, and it is so much more thought provoking than my words could ever be.

Thus before I continue, I ask you to bear in mind that - "The mind's eye is much too susceptible to illusion!"

Also, most folk seem to forget that when they are but one in a crowd of like minded and consensus deriving thinkers, everyone still has individual and personal responsibility for what they themselves believe, and thus for all of their actions which result from their beliefs, whether these appear to be majority determinations or not. Yet whilst some individuals do not know what questions to ask in order to develop a fundamentally correct comprehension, or are maybe unwilling to be recognised for being seen to ask an important question which might upset many egotists or activists within their group (yes, even in science), with the result that many follow blindly without asking or thinking, or accept that they ought not ask when told to not do so, no one can achieve a usefully realistic understanding without provision being made for the answering of each and every question posed. So in relation to formative learning, we ought not rely solely upon explanations provided exclusively by the hierarchical and subjectively imagined hypotheses which led to the development of qualified "expert" opinion, but instead strengthen foundations by building upon irrefutable findings via the objectively established and openly truthful reporting of observation and occurrences, also repeat testing, demonstration and experimentation, such that we might beware a collection of isolated facts becoming joined together in a manner which misrepresents fundamental truth, due to our minds having been conditioned in a manner which makes it difficult to see beyond any 'power presentation' of anything we are told; as especially with relation to the fundamental nature of electromagnetic-radiation itself.

Tesla.

The type of inductor described here is likely to be so useful that I simply cannot

allow its design to go unreported and remain unused. Yet I cannot explain the concepts behind its design, its functioning and construction without simultaneously challenging established 'theories' which so long ago became the very foundations of present day Physics education, with those theories already supposed to be scientifically proven hypotheses!(?) Also, as there is so much beyond my lone capacity to cover, prove or establish here, I can do no more than ask readers of these pages to keep an open mind, to accept my disclaimer below, and to ponder these words penned by 'The Father' of all electric, magnetic, electromagnetically radiated field and resonant technologies himself - Nikola Tesla - way back in 1919 -

"The Hertz wave theory of wireless transmission may be kept up for some while, but I do not hesitate to say that in a short time it will be recognised as one of the most remarkable and inexplicable aberrations of the scientific mind which has ever been recorded in history."

Tesla was pre-eminent in all matters relating to electromagnetic fields within and beyond our gravity related vision, thus his words had had me wondering what it was he understood about electromagnetic radiation, but which we didn't. The true significance of his statement, plus some others he made recounting the way his body had felt the impacts from electromagnetically radiated switching transients, are aspects I have only recently come to fully comprehend as a result of the thinking necessary to understand why the ferrite rod antennas used inside ordinary transistor radios do not behave as *transverse 'wave' electromagnetic 'field' theory* would have us all believing.

Will Tesla's 'short time' last for 100 years before everything is reported as it should be; that is before the established(?) 'wave theory' of electromagnetic propagation still being expounded today by the Masters of Science, eventually becomes consigned to its rightful place in the rubbish bin labelled 'Incorrect Hypotheses', for being the aethereally propagated non-science (= nonsense) he so clearly knew it to be?

Disclaimer.

Before I reveal to readers the path I eventually cleared after finding that the maintained pavements lead nowhere because they merely bring us back to where we started, I need to make it very clear that the conceptual explanations revealed along this freshly cleared way are my own. These concepts might already be known and understood by others, or maybe they have already been disproved - I do not know - but they cannot and must not be said to represent the views of any other person, or publisher, nor anyone who is additionally via these words freely granted individual right to construct and use the new type of inductor design I describe here, either as an antenna or for any other purpose anywhere in the world. Permission is also granted to re-publish this text either in full or in part, though with credit please to article title, date, and my authorship.

Please note, I realised early on that I should not attempt to Patent this FS Loop antenna design because not only is life too short, but there is no way that Patent Officers could accept my explanation of how the design works due to my need to

state hypotheses very different to the 'theory' they would be obliged to maintain during any filing, examination and certification Grant. Besides, our(?) UK Governments have allowed new commercial ventures starting here to become seriously over-burdened by EU centred legislation. Thus I am making this work open-source, and I should be only too pleased to see Ferrite Sleeve Loop antennas being manufactured elsewhere to assist AM radio listeners on more expansive continents, or for those who receive local low power AM broadcasts, or for those who - like DXers - often tune and listen to more distant stations. However, would anyone wishing to start such enterprise again please acknowledge the design origin, and check for other possibly related Patent registrations which might apply to their own utilisation of technology, for this is the manufacturer's responsibility, and not for me to do on their behalf.

..... Graham Maynard.

The Ferrite Rod Anomaly.

It was about 50 years ago I first tuned regional MW broadcasts on a self constructed crystal set, and even today MW remains my choice for radio listening because it is capable of providing an excellent service almost anywhere via inexpensive pocket sized radios, especially in areas where FM still does not reach, or becomes intolerably dissonant due to land topology or building induced multi-path distortion. Even digital radio cannot compete when it comes to both signal coverage and battery life, whilst needing to use metered broadband via feeders or satellites for Internet radio listening as transmitters close really is such an incredible waste of modern technology and bandwidth. Analogue services on Long, Medium and Tropical Wave Band frequencies have worked so well for decades because they had been tested and selected for broadly-casting at the very outset, a fact no digitally minded pen-pushing legislator can more efficiently provide for, though of course if listeners go elsewhere then stations will close.

Through the years I have tried most types of antenna in order to tune more distant MW stations, and especially indoor tuned loops of which I have designed and constructed many. I also erected, adjusted and measured the performances of many outdoor loops in order to listen with less interference from modern television, computer and digital technologies; this being where more cleanly transduced signals are brought indoors via a low impedance feeder. And yet - no matter how good any of these 'air core' loops are, the indoor types tend to be cumbersome and inconvenient with wires becoming snagged or broken, whilst the outdoor types rarely survive for more than one year of outdoor weathering and wind flexing.

Ferrite bar or rod based (loop-stick) antennas are useful too, however, making them bigger does not make them better in the same way as can be achieved with long wire and 'air core' loop antennas, because no matter how thick or how long a ferrite rod is made, its ability to transduce radio 'waves' is not improved, this being why I always used the wire loop antennas for more distant reception.

Back in the 1960's, I compared many different sizes of ferrite rod and found the best for medium wave to be about 8" long by 3/8" diameter, though only if the antenna coil was wound upon a sliding insulating former to reduce capacitive coupling losses between the wire and rod, and with that former positioned about 1" down from one end of the rod, plus the grounded end of the winding and any coupling turns towards the centre. Thus the number of turns in a coil winding should be adjusted to provide the required low frequency range with the tuning capacitor fully enmeshed and the coil already correctly positioned on the rod; which means not by moving some pre-wound inductance coil up and down a rod until the correct low frequency tuning becomes achieved. Coils closer to the end or centre of an 8" rod were observed as being slightly compromised at low or high frequency frequencies respectively, but I gave little thought to the reasons for these empirically determined findings, thinking at that time they might have been related to rod permeability and-or coil 'Q'.

Additionally I noted that by real world testing many different tuned windings, the best MW coils on ferrite rods (unlike when used for 'air core' loops) were not necessarily those wound using Litz copper wire, but of plain wire having a fine cotton covering, with the winding itself gapped from the rod by its turns retaining former. Coils wound directly upon the surface of a ferrite rod always had lower 'Q' and proved more susceptible to nearby voltage interference fields, which of course makes sense, because ferrite rods do have a high metallic content. Ferrite might be an insulator at DC, but it is not so with RF, and at higher frequencies it can transition to become like a solid metal conductor. Touch a ferrite rod whilst listening to a weak signal and listen for local interference coming through as the voltage your body picks up becomes capacity coupled directly into an unbalanced and resonantly high impedance tuned antenna coil. Some rods are much worse than others in this regard, as indeed some radio input stages are much more susceptible too, especially when it should be considered that a few coupling turns on a ferrite rod are effectively an HF tuned winding in their own right!

Of course this interference problem might not show up during tests on a design laboratory test-bench where purely theoretical aspects are being examined, but it most definitely does happen in the real world when repeated clicks might come through from someone doing their ironing, or an incessant but changing buzz comes through from neighbours watching a digital television you can't turn off. Also interferences picked up by ferrite rods at much higher frequencies than those being tuned, can and do break through into circuitry and deleteriously affect reception, because the resonant properties of some ferrite rods at AM frequencies can become real time modified by interference fields having much higher frequencies at which they naturally react. This is why some portable radios are better to listen to than others in noisy environments, and why the more specialised balanced plus differentially coupled loop antennas were always better.

Free Music.

I had access to many transistor radios during the 7" vinyl single days of Rock-n-Roll,

and I often listened to 'Pop Pirate' broadcasters the Governments kept shutting down with unproven claims that emergency frequencies were being jammed.

Check out this modern 'Pop Pirate' based service -

<http://www.bigl.co.uk/listen-live-player.php>

Here in N. Ireland their signals were so much weaker, so I constructed many different tube and transistor (then IC) receivers to hear distant stations, yet without exception the limiting factor always proved to be antenna sensitivity. One specially purchased 8" long by 1" diameter rod I thought would make a 'bigger = better' MW antenna, ended up never being used and is likely in a parts box somewhere up in the seldom visited roof space, because it was easily out-performed by a 4" x 3/8" rod at the higher Pop-Pirate frequencies. Actually some pocket portables using no more than 2" long ferrite rods or bars performed well at the top end of the MW band where Radio Luxembourg was then on 1439kHz, though these short antennas were less good at the lower MW frequencies used for regional 'Home' broadcasting.

Medium size radios having internal ferrite antennas of just 4" length definitely performed well, with some being better than larger sets using 8" rods. This was because a properly designed and optimised construction with accurate 'hands-on' trimming for a 4" rod, can perform better than one built to satisfy mere design specifications without regard to track tuning capabilities based upon an 8" antenna.

Back then I also tried two rods end-to-end, but did not note any worthwhile improvement, no matter how the coil inductance was matched to suit any position along the new length. Two rods were also tied side by side, and although slight improvement was noted it was not deemed worthy of the additional cost, the space needed, plus the requirement for a special coil overwind to cope with the odd shape. Come to think of it, I don't recall ever seeing a commercially manufactured radio using two ferrite rods, unless they had been used as distinctly separate antennas for switched use on different wavebands.

The Anomaly Re-visited.

Bringing these notes forwards to the early 1990's, when I spent much time squeezing through garden bushes and trees adjusting dimensions and measuring the relative performances of many larger wire loop antennas strung out and erected therein, I noted that there was a limit to what could be achieved in rural surroundings due the increased levels of interference generated by modern entertainment equipment and automatic lights being used by neighbours who had no thoughts for any electric noise fields their equipment might be generating via household wiring. Thus during the hours of darkness, the extra sensitivity of a large outdoor antenna often provided little advantage over say a good indoor loop capable of being used in an electromagnetically quiet indoor room, though of course those outdoor loops are better on quiet (low A-K geomagnetic indices) nights as a source for mixing signals from antennas having different omni-directional and figure-of-eight reception patterns in order to direct cardioid or cottage-loaf type reception nulls on any

bearing; this being where the mixing of received antenna signals can quieten powerful EU signals in order to hear other co-channel or split-channel signals from stations in different directions - as for transatlantic medium wave reception.

(Large variable resistor/ capacitor tuned outdoor 'flag' type directional loop antennas are not being considered here.)

By then I had many good outdoor and indoor loops, so I decided to take yet another and more determined look at ferrite based antennas in order to re-investigate those earlier indelible memories of finding some larger rods actually making poorer MW antennas.

I started with a taped bundle of thirty-six 6" x 5/16" ferrite rods and wound over them a coil suitable for normal MW tuning.

Result - negative; and worse than when one good rod was used on its own.(?)

Next I taped rods tightly end-to-end until 6 feet long on a length of timber; then I placed two other similar lengths in tight side-by-side triangular formation with overlapping joins. Now this could still be moved to obtain altazimuth nulls, but it was most unwieldy.

Yet again however, its length did not make it better, and it did not matter where I placed any tuned coil overwind along the composite rod; this monstrous thing performed worse than one good rod on its own.(?)

Then I thought - 'Aha' - the size of the rod is altering permeability and relative impedances, so maybe I should be using a low impedance coupling winding to transduce the 'magnetic components' of incoming electromagnetic radio 'waves'!

Hence I tried a few thick turns as a low impedance source: No good either.(?)

Turns anywhere on the rod, or a long spiral spaced? Again - No.(?)

Maybe then I should try ten separate four turn windings along the 6 foot length, with them all connected in parallel? Yet again - No.(?)

That long line of ferrite rods was but a tiny fraction of a MW frequency wavelength, yet everything I tried, including a single central rod with long bundles either end to 'pull in more magnetic field' proved worse than when one good normal sized ferrite rod was used on its own; so the whole contraption was dismantled.

Whereupon I realised I had not tried any low impedance coupling winding over my original 36 rod bundle; though that too proved to be no better either.(?)

Anomaly or Error?

What was going on here?

I had ended up with more questions than before I started because I had positively confirmed my earlier memories, and conclusively established that any ferrite rod larger than about 8" x 3/8" performs worse as a MW antenna. I also confirmed that the deterioration starts at higher frequencies first.

I could not say that I had wasted my time, because a negative result is as important as a positive one, but I had not developed any design pointers for improving ferrite rod antenna capabilities in order to construct a new one capable of challenging the superiority of indoor tuned loop antennas for the indoor listening of distant MW stations.

We have been taught, as per Wikipedia etc., that there are both voltage 'field' and magnetic 'field' components travelling transversely with respect to the direction of any incoming radio 'wave'. This concept may even be demonstrated when whip or long wire antennas can be both observed and measured transducing the voltage 'field' of an incoming electromagnetic 'wave'. That same 'theory' also appears to hold true when loop antennas are used to transduce and measure the 'magnetic component', where loop voltage output may additionally be demonstrated as having a figure-of-eight reception pattern plus sensitivity modification due to any relative angle difference between the coil winding sense, and the direction or polarisation of an incoming 'wave'.

It also appears to be universally understood that because loop antennas transduce only the 'magnetic component' of electromagnetic radio 'waves' they provide a wanted-signal to noise ratio advantage when used in noisy voltage field environments or regions of higher static interference, though actually, unless a loop winding is electrically balanced and tuned about its own central zero potential connection, plus any signal output is taken off differentially, then a loop antenna **is** susceptible to voltage field interference!

So I asked myself, how can it be that larger ferrite rod antennas, which contain magnetic domains capable of alternating so much more quickly than could any demands expected of them by alternating 'magnetic field' components at MW frequencies, be empirically proven incapable of drawing more energy from the 'magnetic field' components of any incident electromagnetic 'wave'?

We have been informed that ferrite rods concentrate the 'magnetic field' component of an electromagnetic 'wave' through a tuned coil, so why on Earth does increasing the amount of ferrite exposed to an incoming electromagnetic 'wave' not increase 'loop-stick' coil output in exactly the same way as does increasing the 'air core' size of a wire loop antenna?

The results I had just witnessed had so very clearly and undeniably demonstrated that something was not right here, and in spite of all my studies, plus carefully observed empirical findings with measurements noted via a dB calibrated communications receiver signal strength meter, either - I must have been missing something - or the theory must be wrong - or maybe this was a bit of both.(?)

Today, larger ferrite rods remain available for antenna purposes, but in my opinion, these are overly expensive for what they can provide in terms of improved MW reception. Thus I would suggest to anyone who is expecting much better reception, that they first learn just how little improvement there is to be gained from larger lengths and cross-sections of ferrite material. Actually, they should repeat my investigations using smaller rods as above (and below) before committing to purchase

an expensive single item which might well prove totally incapable of fulfilling any of their 'theory' based expectations.

Permanent Magnets.

I wish to digress a little here by bringing these notes forwards to 2008, with mention of my 'silver surfer' watching of some YouTube videos claiming to be about "magnet powered motors"; ie. perpetual motion machines independently doing work without additional input, and thus self generating the forces by which they run = Free Energy. Actually it is hard to find anything of consequence newly published about magnets these days because so much is being professed about magnets' capabilities for saving the Earth and humanity!

For interest, here is a good one for anyone to exercise their mind with;-

http://www.youtube.com/watch?v=FLek_3Hpwus

After 'A' levels I went on to study Thermodynamics during student years, and so I am fully aware of conservation of energy, plus limitations within closed systems.

However, after being inspired to buy some of the new neodymium magnets to see what they are like, I concluded;-

for their size they are extremely powerful;

though strong, the fields generated around magnets remain flexible;

physical forces are caused by placement related field interactions;

magnets latch and cannot self alternate fields to do continuous work;

energy generation requires cyclic action via additional field control.

Yet I found something quite remarkable about magnets, and neodymium in particular, for apart from their obviously strong polarisation, it is the way in which they snap together when 'N' and 'S' polarities attract. When this happens there is always an accurate axial alignment before those joining poles disappear. It is not just the 'N' pole corner of one magnet attracting the 'S' pole corner of another, but as if the centre of one magnet attracts the centre of another into axial alignment. Hence, if two neodymium magnets are clicked together and you attempt to slide one pole face off another and then let go, there is a centring force with respect to a common polar axis which attempts to physically realign the magnets into a position where they have a minimum axial length!

Also, square and rectangular pole face magnets always attempt to 'shape match' align as well, as they settle into their clicked together position, for if you rotate one rectangular magnet already clicked on to another, and then let go, they will re-align to form one rectangular magnet. This is as if invisible lines of force around the bodies of the magnets attempt to tighten an imaginary external sleeve acting upon the magnet edges, with those sleeves attempting to align and constrict a 'grip' which minimises not only the field circumference, but also the external bodily dimensions of any composite magnet thus formed.

The reverse happens when you try to push two like magnetic poles against each other, as with 'N' to 'N' or 'S' to 'S', for any axial force becomes transformed into an axially separating sideways moment which attempts to prevent the pole faces from meeting unless both magnets are mounted within holders and forced together via some kind of mechanical device. When opposing pole faces are forced and glued together their opposing poles do not disappear; instead their unlinking lines of force become a squashed outwards barrier bulging from the join, so that spinning the magnet pairing about an axis through the join will realise a sequence of apparent 'N'-'S'-'N'-'S' poles per single revolution; also, whichever polarity of field lines emanate from the join, these can be angularly 'steered' with a single variable current powered electromagnet coil overwind!

Field Induced Spins.

Now there is so much more happening here than I was taught at school when we were allowed to play with bar magnets and iron filings in order to sketch the pretty field patterns they made on paper; those days being when some receptive young minds are amenable to much greater explanation than is presently provided by schools. I was taught that magnets are effectively made up of microscopically small 'N'-'S' magnetic domains at molecular level within the metal, and that these microscopic magnets effectively work together within the body of the one we see.

I also believed what I had been taught, and I never gave it a second thought, though of course I have come to understand so much more since then.

Hence I accepted the 'N' and 'S' polarity labelling convention, as based upon ancient observation of an induced moment about a pivot any magnetic material experiences causing it to align with the Earth's magnetic field (as with a magnetic compass) even though magnetism per-se, and the tracing of associated field lines does not *explain* the motion we witness being induced. Magnets are no different to any other matter formed from neutrons, protons and electrons, yet these elemental particles are not 'magnetic' themselves, merely fundamental particles which align within interlinking electron bonds as stable or unstable elements, or as larger and more complex molecular structures within composite materials.

Sometimes atoms and molecules can be strongly bonded throughout their physical substance without all of their outer electrons being paired within those bonds. This being when magnetic qualities can become observable, for if one or more free/unpaired electrons orbits around an atomic/ molecular centre and they spin in some sense, then we can imagine their charge rotation generating an infinitesimally small magnetic field, in exactly the same way as electron 'flow' can be shown to generate a magnetic field when energising electron spin alignments within a turn or coil of wire. Any magnetic field generated by electron orbits can thus be imagined as if being equivalent to the field generated by an infinitesimally small bar magnet on the axis of electron rotation, with its 'N'-'S' poles aligned with the axis of electron spin according to a left hand grip rule where fingers point in direction of electron spin motion, and

the thumb shows the direction of the north pole.

Hence magnetism and magnetic fields are wholly the result of electric charge spin and flow, and it is most important that powerful magnets be thought of as materials comprising molecular frameworks retaining electron spin with most orbiting in the same angular direction, and thus on similarly aligned axes, as opposed non-magnetised materials where electron spins are disorganised and on randomly aligned axes which do not align to generate an homogenous magnetic field related to the size and shape of the physical body of the material. It is the effect of all these molecularly related electron spins we should be imagining within magnets and ferrite(!), not any tiny bar magnets associated with electron motion or apparent external magnetic field, because when we think in terms of charge spin orbits, then magnetism and everything else which we are and which we observe, no longer stands alone as being different, and thus apparently possess disparate fundamental characteristics which appears to be the case when we describe and explain each observation only via its own individual and macroscopically specific nature!

Electron Spin Fields.

Thus we need to think about the insides of magnets as if being aligned concentrations of spinning electrons, with any external magnetic field lines generated by these spins due to internal alignment being a cumulative secondary effect, as indeed are the magnetic field lines generated by passing current through conductors formed into a loop or coil of wire. In other words there is no magnetism without there being associated charge flow or circulation. Thus when we imagine looking into and through the pole-to-pole axis within any magnet we can also imagine looking axially through electron orbits having mostly the same angular rotation = spin, and thus creating microscopic magnetic field domains throughout its length. Our designated 'N' and 'S' polarities plus associated external field lines merely indicate the hierarchically accepted convention for magnetic field direction, whereas what we really ought to be thinking about at a fundamental level is the rotation and alignment of all those tiny internal electron gyroscopes within the material itself!

Now, when charges flow in the same direction through two adjacent conductors, a force of mutual attraction acts upon the wires due to the charge flow induced field independently generated around each wire, combining to encapsulate both.

Conversely, when currents flow in opposite directions through adjacent conductors, field lines become concentrated in the gap between them, and thus a separating force develops which acts against the wires carrying the charge. Hence there is a similar physical attraction between magnets embodying the same direction of axially aligned electron (charge) spin rotations, due to their same direction charge motions inducing fields which attempt to combine; as occurs when 'N' and 'S' poles are brought together. Also not that the axial electron spins within those magnets rotate in the same sense even though the poles are differently labelled.

Conversely, attempting to bring magnets together embodying opposite electron spin

motion, as with like polarities and 'N' to 'N' or 'S' to 'S' pole placements, causes a direct physical resistance to any external force attempting to push the magnets together, and this resistance is experienced via the bodies of the magnets, due to their encapsulated counter-rotational electron spins causing a build up and intensified gradient of field lines between the magnets.

Also note what happens if you use just one finger on each of two magnets and attempt to push like poles together from a distance on a flat surface; a point will be reached where internal axial electron spins transform the axial direction of applied force, this making one magnet suddenly turn around so that the internal electron spins axially align with each other and cause unlike poles to click together. Simply looking at external magnetic field lines around the magnets will demonstrate what is happening, but not *why*! The reason being related to the invisible electron spin alignments within the magnets effectively attempting to minimise molecular dimensions separating same sense electron spin motion. Actually, the force of attraction due to aligned spin orbits can be so powerful that when this is induced via an external electro-magnetic field coil it can change the physical dimensions or properties of a material - as with magnetostriction.

Thus all magnets should be thought of as if primarily comprising axially aligned electron spin orbits, these inducing aligned magnetic domains within the molecular structure of its material, which coincidentally generate the composite magnetic field lines around their physical bodies, and, whilst none of these spins or fields can be seen, all can be demonstrated via some directly related physical reaction, or be measured via an electrically metered or transduced equivalence.

Thus it is only when magnets (and ferrite) and the fields they generate around their physical form are examined in relation to their fundamental molecular genesis of aligned internal electron spins, that we can begin to truly understand the basis for what we observe happening electro-magnetically, and with regard to electromagnetic radiation.

Electromagnetic Radiation.

It was the electron-spin field aspect of magnetism which brought me back to thinking about electromagnetic radiation, where both voltage 'field' and magnetic 'field' components within the propagating 'wave' are said to alternate transversely with respect to its direction.

Seemingly, one or other of the 'transverse' electromagnetically propagating 'fields' can be used to demonstrate the results of electromagnetic radiation in relation to radio 'waves', yet once electromagnetic radiation frequencies become as high as those of light there is sometimes a need to accept the concept of a photon . Viewed simplistically, this is as like an applied maths student being told he needs to know which pure maths methods to apply in order to solve a problem, because you need to know in advance which mathematic process to engage to ensure that an incorrect result is not derived.

Thus I had long puzzled over how a continuous 'wave' could be split up into either magnetic or voltage 'fields', or individual photons, at a purely scientific whim as the manipulating need arose to theoretically explain and match specific empirically observed findings.

At a fundamental level, this is *not* science, and -

if it ain't simple - it ain't right

- end of !

Transverse 'wave' field equivalents could equally represent those measured within a static (non-radiating) alternating voltage or magnetic field depending upon what type of transducer is being used, and indeed that is how electromagnetic field strengths are measured. So, what could possibly allow both voltage and magnetic electromagnetic 'fields' to freely alternate for all time, and from one polarity to the other, though either air or a vacuum, without them being dissipated along their path?

Maybe this was where 'scientists' realised that another purely notional concept needed to be invented, that of an 'aether' to provide an imaginary explanation and to cover up for (in child like logic) their first equally notional concept relating to the transverse sinusoidal voltage and magnetic 'fields' supposedly propagating electromagnetic energy, as can be simplistically demonstrated with waves in a string or on water?

When measurements are made within an alternating static voltage field using a loop of wire, we can observe a result which could also have been due to an alternating magnetic field effect, yet where there could not possibly have been any real magnetic field in the first place, because no charge (current) had been flowing in any path until the sensing wire turn was placed in line with the alternating voltage gradient to differentially transduce the voltage field alternations, this generating the circulating currents within the sensing turn, and **creating** the magnetic component at that position where none had previously existed! Similar would arise with a wire sensor, whether lengthways or grounded in a static alternating voltage field, because the capacity coupled charge flow induced along the wire would generate magnetic lines of force around it!

Therefore I must emphasise that because there was not a magnetic field in either of the voltage field measuring scenarios above before the alternating voltage field sensing loop turn generated the apparent existence of one, we need to be extremely careful that we do not interpret the result of any measurement incorrectly, and thus ascribe 'magnetic' attributes to situations where such a field could not possibly have existed in the first place!

So; how can anyone possibly claim that an electromagnetic 'wave' has any 'magnetic field' component prior to it being transduced by a detecting loop - as Hertz did - with those supposed transverse electric and magnetic 'field' equivalents said to be related to the direction of 'wave' propagation and obeying the right hand rule, when any coil or wire based transduction measurement sensor will generate its own magnetic field anyway, from either a static alternating voltage or magnetic field, or from propagating electromagnetic radiation?

Where is the specific proof; for I have never seen it?

Time to wake up!

Actually the 'aether' was, and still is, supposed to be so much more than that imaginary place where our thoughts and notions come from, because it is meant to be an all encompassing and all pervasive medium, throughout all space, between and within everything, including within ourselves, and yet possessing extremely dense but purely electrical gyrostatic characteristics, without it having any detectable mechanical characteristics, because it must also have perfectly fluidity. (Sir Oliver Lodge - The Ether of Space - 1909.)

I too had accepted the 'aether' concept because it was the only way via which electromagnetic radiation 'fields' could be deemed to propagate as 'waves'; yet space really is just space, and air just air, no matter how many fields, particles, radiations (photons), or gravity effects contribute to the background 'Sea of Energy' we find ourselves in, and which changes with observing location. Thus I feel that such an inexplicable and conceptually blurring 'medium' being stated today says more about the unsubstantiable and 'classical' opinion-based belief system being perpetuated and used to 'dumb down' essential study, than it does about irrefutable findings based upon objectively recorded scientific observations.

So maybe we have slumbered a little too long in our aetherial world, leaving us with urgent need to fully wake up and hit the ground running in order to re-check, re-establish and re-write electromagnetic theory, thereby minimising the so long ago expected "short time" Tesla though would pass before such an inevitable realisation dawned!

This was why I started re-thinking about electromagnetic radiation from a viewpoint of fundamental electron spin and its magnetic outcome, where it is a fact that magnetic dipoles and magnetic fields cannot exist without there being some directly associated electron related charge flow-spin-circulation, as via atomic-molecular orbit or flow via a conductor, coil or plasma etc.

And from this viewpoint I ask:

How can it be stated that an already radiated electromagnetic 'wave' propagates with an associated transverse magnetic 'field', when electromagnetic radiation is know to not be a stream of electrons (current) travelling at the speed of light, whilst additionally, at no point along the 'wave' is there any circuit through which charge can circulate or flow in order to generate a magnetic field?

There is no answer to that question; and thus I personally cannot any longer accept that there is any sinusoidal alternating transverse magnetic 'field' component accompanying the propagation of a radiated electromagnetic 'wave';

>>> and, I further believe that this is why larger ferrite rods do not 'attract and concentrate' more propagating electromagnetic flux through their domains, plus any coil overwind thereon, because there is no alternating magnetic field

component within a propagating electromagnetic 'wave' to directly energise the magnetic domains within ferrite in the first place! <<<

If anyone can prove otherwise; ie. that ferrite rods are directly magnetically energised by the supposed magnetic 'field' component of electromagnetic radiation without any coil first being wound upon them, then I suggest that they would need to publish same if they wish existing electromagnetic 'wave theory' to remain established! It would be so very easy for 'transverse wave' and 'electromagnetic field' believers to state that I do not know what I am writing about, or state that I am wrong, or even make offensive and undermining comment, but unless they simultaneously provide substantiating *evidential proof* for their understanding, and not just rely upon their qualified or institutional status, which merely prove their willingness to repeat the old *opinion* based 'theories' I show do not hold true in relation to the ferrite rod transduction of electromagnetic radiation, then it is they who show themselves up as being wrong, as based upon the evidence of simple ferrite rod experiments anyone, including 'scientists' may repeat!

"Empirical evidence is the truth that theory must mimic." (*1)

So next I ask myself whether there can be any sinusoidal alternating voltage field component to electromagnetic radiation?

Surely if there was, then it too would diminish whilst propagating through air-sky. Also we have here exactly the same aspects relating to no voltage field existing along the propagation path of electromagnetic radiation until after it has been transduced via some conductor or body of material arranged to provide an equivalent alternating voltage field strength measurement at a specific location.

Hence I personally cannot accept that there is any sinusoidal alternating transverse voltage 'field' component accompanying the propagation of a radiated electromagnetic 'wave' either.

I further continue by stating that whilst I believe voltage and magnetic 'field' components associated with propagating electromagnetic radiation do not exist, it does remain the case that equivalent voltage and magnetic 'field' strengths may continue to be measured using equipment designed to transduce propagating radiation, and thereby provide an equivalent intensity value; as for example - when a light meter provides a reading if positioned in and becomes illuminated by, a passing (but otherwise invisible) beam of light.

This was a conceptual turning point for me, for I could no longer accept the stated existence of transverse 'wave' components being related to the propagation of electromagnetic radiation, and thus I could not even visualise electromagnetic radiation as being a 'wave' either.

Has anyone ever explained how electron motion induced voltage-magnetic fields around a transmitting antenna are supposed to change from their 90 degree resonating relationship at the antenna itself, and as documented by Hertz himself, to become as is presently universally illustrated, phase coherent the moment they start propagating as a transverse 'wave'? No! And nobody ever will either, because it

does not happen.

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

Hertz measured the 90 degree relationship in standing waves close to his dipole antenna, check his drawing. The relative phase change between that 90 degree relationship at the antenna introduced by his resonant sensing coil turn, and the present day illustrations suggesting zero degree coherence within a propagated 'transverse wave', does not exist because there has never been any propagating voltage plus magnetic components radiating from the antenna in the first place!

Tesla must have despaired for the future of his fellow species, and quite rightly too, for those voltage and magnetic attributes manifest in the material of the receiving transducer only, and without there having been any alternating field associated with radiant energy propagation!

Indeed, I now think of the 'wave' description of radiation as being a most unfortunate and erroneously simplistic term which has incorrectly permeated the whole of science since it was once deemed a correct term for usage after Hertz used his single turn resonant loop detector to determine the equivalent field intensities radiated by a dipole. (Hence my use of inverted commas when now using the 'wave' term.) Of course radiated frequency and wavelength always have been and always will remain inversely related via time, with received phase related to path distance measured observations, but from an electromagnetic radiation viewpoint I can no longer visualise anything being cast off and propagating through free space as being an electric plus magnetic 'wave'.

Photon Spin.

Continuing:

If electromagnetic radiation is said to have dualistic 'wave'/ photon properties, then what mechanism could possibly exist in free space that is capable of chopping up its continuous 'wave' characteristic into photon entities, as would appear to occur when viewing the light from a distant star. Starlight from a star many light years away, would in its own vicinity be like the radiated 'waves' we receive from our Sun, yet from here, if we turned a sensitive digital telescope to that distant star we would note only individual and widely spaced photons via which an optically coloured image may gradually be built up using CCD sensors and computer memory.

Hence the existence of photons is undeniable, and thus I feel obliged to accept that all electromagnetic radiation, including radio waves, is none other than a continuous stream of photons, with each photon being a self sustaining gyroscopic spin motion energy packet rotating at the frequency it was radiated. Photons become emitted (radiated) when atoms in a substance are energised, as with heat when random atomic vibrations within molecular electron bonds energise electron spins to a higher orbit level, such that when any electron subsequently drops back to its normal orbit, a photon of electromagnetic energy is released, often being what we experience as

being heat = infra-red electromagnetic radiation.

At radio frequencies, when we look at the voltage and current relationships in a transmitting antenna resonated with respect to its own physical characteristics and surroundings (ie. tuned), the currents in an antenna become reflected upon themselves by whip, dipole or helicoil (open ended spiral) end impedance discontinuity, and thus I suggest that the excess continuous input energy flow at resonance causes a ninety degree phase shifted magnetic field energisation of electron orbit spins in the antenna conductor with respect to the other antenna atom orbits providing longitudinal electron flow, with electrons temporarily attaining not just higher energy orbits, but ones which are twisted with respect to the normal spins within the antenna conductor at rest, or when that same antenna might generate a purely static alternating voltage field at some non-resonant frequency.

I further suggest that when the outer orbit electrons return from their temporarily magnetically induced higher energy, axis rotated, outer spin orbits within the antenna conductor, the photons emitted, and which spin-stream away from the antenna, then possess angular rotation directly related to the orbit twist modification induced by their electro-magnetic energisation. Also that the start angle and angular direction for any individual photon spin initiation and radiation is directly related to the instantaneous alternating magnetic to voltage field relationship within and around the antenna element(s) at the moment it becomes 'transmitted'. Thus, every individual photon, energised via a resonantly higher electro-magnetic field induced phase of electron spin orbit plus axis shift and return, becomes one of a stream of photons, each carrying within its own independent gyroscopically radiating frequency dynamic, an angular momentum energy component directly related to the instantaneous phase of induced magnetic amplitude change within the length of antenna conductor at the instant it was radiated.

Electromagnetically radiated energy is thus a continuous stream of free spinning photons (as opposed to coincidentally alternating voltage and magnetic 'fields') with the spin dynamic embodied by each photon being gyroscopically self sustaining until it impinges, liberates and transfers its energy into the electron spin bonded atomic structure of other matter, such as a wire conductor or an eye retina. I also suggest that radiated photons cannot generate any transverse 'fields' along their propagating paths because they do not possess the higher level electron spin or flow related charge or conduction quanta necessary to generate a magnetic field!

$e=mc^2$.

Thus I now imagine electromagnetic radiation as being a stream of invisible 'gyroscopic' photons, and electromagnetic propagation the motion of photon energy as if a charge on its axis precessing edge. This charge would carry energy with a mass energy equivalence via Einstein's $e=mc^2$, and though the charge would have orbital spin motion velocity 'c' about its own central axis, at no point along the path it takes (as it spins) through space can it actually circumnavigate a circular orbit with

respect to surroundings, because its own spin axis is already freely travelling at the speed of light 'c', and this without any need for an 'aether' type of gyroscopically maintaining medium. Hence the ' c^2 ' energy-mass equivalence term. The spin sense a photon has about its own axis is then easy to imagine being related to its angle of polarisation, with any subsequent propagation and refraction effects being directly related to its angular rotation, as with individual frequency related light photons passing through any different medium or ionised (charge) gradients.

This is like when the Earth spins around the Sun. Our motion is not circular with respect to the Galaxy because the Sun is travelling very fast on its own account; and the Sun is on an arm spiral anyway. To us, our motion might appear circular around the Sun, whilst in reality we are spiralling through space, with all sorts of motional perturbations induced by distant gravity, fields, impacts etc.

Going back to the photon, its linear charge velocity must be 'c' with respect to a static local observer, and thus its axis must be precessing. It is stated that nothing can travel faster than the speed of light, though that relates to mass in macroscopic gravity, whereas the photon is gyroscopically spinning with its own mass related gyroscopic momentum plus a frequency related charge, and Einstein's ' c^2 ' energy/mass equivalence is relative to rest energy and rest mass only. Yes a photon may have equivalent mass via the $e=mc^2$ transform, but it does not have any rest mass, or we'd all go blind by seeing more than we are meant to. LOL!

If a photon is spinning charge with a circumferential velocity 'c', plus having constant angular rotation directly related to the RF frequency or colour of radiation, then the radius of orbit must also change with frequency such that higher frequencies mean smaller charge spin radii. This makes perfect sense too, because cosmic radiation is so much more atomically penetrating and destructive of electron bonds within matter than are X-rays; ultra-violet light is more deeply damaging than infra-red; micro-'waves' energise water molecules so much more than ordinary radio-'waves'; and, larger radio frequency photon orbits are more easily imaginable as being reflected (bounced off) electromagnetically dense and flat metal surfaces.

Hence the fundamental process of resonantly energised electromagnetic radiation of elemental charge already provides for the distant photon stream inducement of electron/ charge/ field energisation within remote materials like conductors, and this is why single photons can be detected by high sensitivity astronomical telescopes, because light is not a 'wave' at all, but a stream of spun off fundamental angular momentum charged photon energy packets which become diluted to unitary presence after propagating extreme distance, and yet which until they give up their energy within other material, always retain their individually radiated colour/frequency-phase identity.

As with light, so too with radio 'waves', for these are all photon streams and not propagating voltage or magnetic 'fields' travelling at the speed of light!

Even the 'wavelength' aspect of electromagnetic radiation is no more than an inverse relationship of frequency with respect to time, such that the phase and amplitude (intensity) of light or a radio 'wave' at any instant and at any distance is directly

related to the number of angular rotations and quantity of impinging photons as each one gives up its energy. Thus the relative phase and amplitude (not 'wave' amplitude) at any receiver is directly related to the number of photon rotations occurring along any time lapsed distance path between radiation and its impingement or transduction via receiving matter in the photon stream.

Thus everything related to electricity, magnetism, fields, electromagnetic radiation etc. can be explained by considering fundamental electron or photon, charges and spins, such that an electromagnetic 'wave' is something quite different to the vision its name and 'theory' has been conjuring within our minds for so long. Also, vertical, horizontal, slant, circular and longitudinal descriptions of 'wave' polarisation, the latter which cannot be illustrated via current 'field' and 'wave' propagation convention, become easily imaginable as different orbitally angled planes of photon spin, with lower radio frequency photons having lower energy, thus lower angular velocity plus relatively larger spin radii.

Thinking further about $E=mc^2$, it becomes obvious that higher frequency/ energy photons must have a higher equivalent mass, and with this being related to angular velocity and charge spin radius, then higher frequency and longitudinally polarised photon streams can then be imagined as being the 'hammer drill' cousin of normal electromagnetic radiation. Hence the already realised electromagnetic 'ray-gun' weaponisation being due to a staccato like electron orbit energisation within remote molecular bonds of distant matter by such a beam, and this being imaginable via photon impact upon electron orbits, where a real understanding is not possible when thinking of "gentle" electromagnetic 'waves'! As Tesla realised so long ago, all it would take is for the highly energetic and directable electromagnetic radiation he generated (and which also became highly secretive university projects during the 1960's) using helical coils and high voltage fields to remotely, invisibly and non-thermically energise fields around and within remote matter, could turn any matter back into its elemental atoms (or a nanoparticulate dust) by breaking internal electron bonds, or, it could generate suddenly expansive and earth shaking explosions anywhere, including within the Earth itself, yet without there being any cause apparent at the site of occurrence via any sensors and detecting equipment as is currently based upon conventional 'field' and transverse 'wave' radiation 'theory'! We have all already witnessed far more happening in real life, on our televisions and via YouTube, than we realise has been caused from a distance by longitudinally radiated electromagnetic photons and electromagnetically induced interference effects;-

http://www.youtube.com/watch?v=P-z1_0260jc

The Ferrite Anomaly Solved.

Having at last sorted out all of the above in my mind I once again began to ponder ferrite-rod-cored coil efficiency related to radio-frequency electromagnetic radiation transduction, for by now I realised that the ferrite rod within a tuned 'loop-stick' antenna was not picking up any magnetic component of electromagnetic radiation at

all.

Thus the ferrite rod has never been the 'antenna' energising the coil, because it has always been the antenna coil energising the ferrite rod!

Electromagnetically radiated radio-frequency photons energise electrons within the coil; electron activity constitutes circular charge flow around the coil; this generates an alternating electro-magnetic field within the ferrite rod; which subsequently energises and aligns the unpaired electron spin gyros within the ferrite. Hence a ferrite rod does no more than concentrate the alternating magnetic field, as generated by photon induced electron flow within the coil, into aligned electron spins within the ferrite, and via its concentrating permeability, 'Q' magnifies the voltage transduced by the coil with an improved circuit efficiency through phase shifted oscillation of resonant energy exchange .

Wow! How photonically *illuminating*!

Clearly, I like you and most other folk, had, because of this kind of *teaching* -

http://en.wikipedia.org/wiki/Loop_antenna#Loopstick_antennas

become obliged to understand the functioning of 'loop-stick' antennas as being the exact opposite to what evidentially is occurring, and this incorrect understanding has been due to the fundamentally flawed 'theories' being endlessly expounded by mainstream science "experts" in relation to the transverse 'wave' propagation of electromagnetic radiation, plus the lack of instruction relating to the true nature of magnetism and magnetic fields.

For me this realisation developed during 2010, but at this point in time I had still not developed an understanding relating to ferrite rods and their size related anomaly. I did however realise that my earlier concepts had been rendered seriously flawed due to what I had been *taught*, and that this was why I had been unable to comprehend the evidence I had witnessed. They say you cannot understand anything until you can first explain it to yourself, and then explain it to others, so I set about imagining photon-energised electro-magnetically-induced alternating-field-patterns generated by the coil overwind, plus subsequent alternating **electron orbit spin modifications** magnetically induced within the material of the ferrite rod.

Whereupon I realised, and yet again due to what I have been taught, that I had been thinking wrongly about ferrite rods. The naive notion that ferrite rods are paramagnetic cores that become homogenously magnetised throughout their length by a 'magnetic component' of electromagnetic radiation had had me thinking that they did indeed become magnetised throughout their entire length, again as is illustrated in textbooks and on YouTube. Given that they are not magnetised by any magnetic component of electromagnetic radiation, and the antenna coil is the only provider of external radio-frequency alternating magnetic field lines entering the rod close to the coil, and thus inducing an electron spin coupling within the ferrite, then the electron spin alignments within the rod cannot be entirely homogenous in any part of the rod beyond which the tuning coil is wound!

Thus I came to realise that alternating radio frequency field lines induced by a resonantly tuned antenna coil would behave very differently to a homogenous field alternating throughout the entire length of a rod, as when the core could be imagined being wholly magnetised.

For example;- when a coil is wound over a ferrite rod it does not matter whether that winding is electrically energised by a radio-frequency signal generator or via electromagnetic radiation; either way there will exist an associated alternation of magnetic field lines entering the rod beyond the end of the coil, with the more distant field lines being at right angles to the rod.

Thus, if a ferrite rod is too long, or the frequency too high for the coil to maintain an alternating field within the rod much beyond the coil's length, then electron spin orbits energised within the side of the rod at some frequency related length, cannot any longer remain axially aligned with spin orbits induced within the coil winding, because the alternating magnetic field lines axes entering around the circumference of the rod are radial, thus normal to, and not parallel with, the axis of the rod.

! D'oh !

By extending this line of thinking to the end of a ferrite rod near to where a coil overwind is also situated, then we can imagine half toroidal (doughnut like) shaped field lines coming up from outside of the coil winding, rolling over the coil end and linking into the end of the ferrite rod. As before these coil induced magnetic field lines must generate related electron spins around them within the ferrite, these being concentrated where the external field lines turn around to enter the end of the rod just inside of the edge of the coil. Now at the end of a rod these coil induced electron-spins within the ferrite are axial, and hence electrons possess the same direction of angular rotation as those within the ferrite just inside of the coil winding, however, they are all alternating at radio-frequency, and have greatest intensity and alignment closest to the wire coil turns.

If I imagine holding seven ferrite rods as a bundle in my hand (a coil overwind with current flow), with six rods around a single central one, and I then scrunch the outside ones to make them all spin (coil induced electron orbit spins); yet I flex my wrist to keep the axes of the outer rods in the same position (ferrite rod domains); then I will observe the inner rod counter-rotate (central non-coil field induced electron orbit spin) in a sense opposite to the outer ones being externally energised by my hand. Thus a central electron spin interference zone develops embodying electron spin rotations which cannot be the same as the majority of axially induced electron spin rotations around the rod perimeter and thus much closer to the energising coil!

Thus any magnetically induced alternating electron spins at the outside edge ends of a ferrite rod cored inductor, cannot fail but to parasitically induce a 'Q' reducing central vortex of counter directional electron spin interference from the end, and into, the centre axis of the rod within the winding. This however, is simply not imaginable if a ferrite rod is deemed to be fully lengthwise permeated by alternating magnetic field lines entering its ends, as would be induced by a direct current energising the same

external coil, and as is actually illustrated as being the case when simplistic magnetic domains are imagined alternating within a ferrite rod due to alternating magnetic field energisation! Thus thinking in terms of aligned magnetic domains throughout a ferrite rod had **failed** to explain what is really happening at fundamental electron spin level.

> !!! <

Hence any ferrite rod physically 'too long' with respect to the desired frequency of operation or the length of resonant coil wound upon it, simply cannot homogeneously develop co-axial electron spins (magnetic domains) energised throughout its axial length, due to the incidence of electro-magnetically induced field lines entering the rod radially beyond the relatively short winding length of the tuning coil, with these field lines energising electron spins at right angles to the rod's axis, and field destructively opposite to each other across the diameter of the rod.

Also any 'too thick' a ferrite rod will parasitically energise its own axial end interference vortex zones due to centre electron orbits becoming spin reversed and increasingly lossy with increasing frequency with respect to those which are more strongly energised and aligned by the alternating electromagnetic field lines entering the rod around the outer end and edge much closer to the field generated by coil winding itself.

Clearly it had only been by me realising that current electromagnetic radiation theory needed to be re-examined from its basic physics fundamentals outwards, that I had at last managed to understand what was happening in relating to electron spin induced magnetic domains within ferrite. And of course later is better than never, but if it had not been for that real world 'hands-on' puzzle I had noted so long ago in relation to ferrite 'antennas', we would not have been able to explore beyond an electromagnetic frontier so steadfastly maintained by "experts" who still conceal the path we all need to be able to follow!

From the spin related reasoning above, the foundations for a new design of electro-magnetic field transducing ferrite cored inductor became obvious, and I'm sure many of you will by now have already worked it out;-

- (a) at medium/high frequencies do not use a ferrite core very much longer than the coil overwind itself;
- (b) obviate the development of an energy sapping axial interference vortex by using a hollow ferrite sleeve;
- (c) wind a larger diameter of tuned coil in order to increase the alignments of photon transduction activated electron orbits within the sleeve.

Thus my idea for a 100mm long Ferrite Sleeve Inductor having a much larger diameter and longer coil than is usual in order to increase field/ photon transduction,

wound over an electron-spin-field encapsulation comprising many rods side-by-side in a single layer, and which could not possibly suffer from induced circumferential or central interference vortexes, had become an imagineering concept in my mind. As I wished to start testing this new inductor around 1MHz I realised it would be so easy to observe its performance as if a MW loop antenna, so obviously there was nothing left for me to do other than to fabricate same, and examine its capabilities.

Testing The Spin Concept.

My first inductor was;-

a thin layer of foam rubber over a 10cm length of cardboard tube (from the inside of a used kitchen roll);

twenty 100mm long by 10mm diameter ferrite rods taped in place as they bedded into the foam;

two turns of single layer small bubble-wrap wound on top of the rods bound with tape to create a 5mm gap between the rods and the coil;

a 34 turn overwind of plastic insulated 16x0.2mm (3A) equipment wire, bifilar wound spaced with string such that the outer turns came to within about 1.5cms of the rod ends;

winding ends left about 20cm long and connected to a tuning capacitor out of an old transistor radio, likely having about 200pF of range when the trimmers were set to minimum value.

That was it - less than £10 worth of parts and fewer than 30 minutes between starting and testing.

Well this was daytime, and Radio Lancashire 1557kHz is not normally receivable here North of Belfast on my Tecsun PL-380, yet with this little radio standing its full 8.5cm high against the new slightly less high coil, there it was in full clarity as soon as I adjusted the tuning capacitor, and I have to tell you this, I was gob-smacked.

After 50 years of tuning medium wave stations this little antenna had me astounded, for here it was receiving signals as if it were a full sized box loop and yet it could fit on any bedside cabinet. It was the same with my Sangean ATS-803A too, for this little antenna could remain unseen behind that radio and again provide the type of DXing capabilities I cannot begin to make any reader appreciate without them first seeing and hearing it for themselves. Actually, this was when I became annoyed too, because I realised that this design might well have been imagineered some 60 or 70 years ago, but for the conceptual barrier raised against such ingenuity by the thoughtless perpetuation of erroneous concepts related to very early magnetism and 'transverse wave' theory.

That first test had already proved the accuracy of my concepts in relation to electromagnetic radiation photons being transduced via a tuned winding, with the new Ferrite Sleeve behaving exactly as expected. Next I needed to see how an eight

inch diameter version would perform; this being when my wife lost the top 9cm deep plastic section of her 19cm diameter vegetable steamer. It was overlaid with sixty-four 100mm long by 10mm diameter ferrite rods and these taped in place. Again two layers of small bubble-wrap were overwound to create about 6mm of gap for 24 spaced turns of ordinary insulated 16x0.2mm spread out to cover the rods to within about 1.5cms from the rod ends.

This too was just a typical 'Blue Peter' testing lash-up - but wow - did it work. Only 8.5 inches in outside diameter and providing a genuine 30dB of signal improvement when compared to a single 100mm rod antenna, as was demonstrated by taking an apparently clear channel (as determined by the lack of BFO beat on my Sangean) to full listening signal strength with any portable radio, including a most basic £5 Matsui from the Argos discount emporium.

The increase in received signal strength suggested that dividing the number of rods used by 2, gives a fair indication of what might be expected; eg. 20 rods gave approximately ten times gain, and 64 rods about thirty times gain with respect to an antenna wound on a single same sized rod. I also judged the performance of the 8.5" diameter construction to be equivalent of that from an eight to nine foot diameter 'air core' loop, suggesting performances where 1 inch of outside diameter for a finished Ferrite Sleeve Loop antenna, is equivalent to 1 foot of outside dimension for an 'air cored' construction. Actually, I thought the larger FS Loop antenna so powerful it might realise a 'portable crystal set' by merely adding a germanium diode and high impedance phones connected in series.

Many years ago I built little regenerative transistor radios, now this FS Loop antenna makes me think it would be possible to build a one transistor loudspeaker radio project. Also, connecting say a twenty rod FS Loop antenna in place of the first RF coil and having it on a swivel inside an old tube radio or radiogram where space is not limited - would provide amazing MW sensitivity and make an old fashioned "wireless" set really live up to its name!

Spin Precession?

At night that larger coil provided so much gain that care became essential when positioning a receiver, also when tuning it due to radio input stage overload and induced intermodulation effects being noted. This was not be a problem once the new loop was tuned to sidebands farther away from powerhouse signals. Any portable radio need only be brought close to a FS Loop antenna for its amplified magnetic field to become inductively coupled with the radio's ferrite antenna. When a radio is very close to, or touching an FS Loop, then its internal rod antenna becomes completely controlled by the field generated by the Ferrite Sleeve, which is not a bad thing because the resonantly tuned thermal noise of a radio antenna is then overcome with slight but clearly audible improvement in the wanted signal to noise ratio. Placing a portable close to an FS Loop also overcomes any tracking error within conventional superhet type receivers, and counters short rod inefficiency at longwave

frequencies.

I tried this larger antenna with more turns at LW and beacon frequencies, also on top band with fewer turns where it performed every bit as strongly, however I lost my dinner for two days whilst doing this, so it no longer exists. The most significant and instantly recognisable aspect of these FS Loop antennas, even with the larger dimension, was their very high 'Q', for even at the high frequency end of the MW band they could be peaked over one sideband. The 'Q' is so high that it is like tuning after regeneration has been applied to a box loop, and yet without any electronic circuitry or additional power source being involved, they are also thermally quieter too due to the lower level of un-aligned electron spins not generating incoherent noise. This had me thinking about electron spin orbits within the ferrite yet again, for something I have not come across before could be happening inside the sleeve to provide this notably high degree of longitudinal field amplification.

Now I am no expert on ferrite, and I do not have any equipment suitable for testing same, but do I feel that electron spin orbits within the rods making up the sleeve are more than simplistically resonantly oscillating about their axes. I cannot imagine the unbonded electron spin axes fully rotating around their molecular centres within the ferrite (though there might be some manner in which this could be externally induced for other purposes), yet they might be spin precessing like little gyroscopes due to resonantly alternating energy oscillating between the charge on the tuning capacitor plates acting upon electron motion, and thus their orbital alignment, via the tuned winding induced alternating magnetic field, such that that magnetic field (acting just like gravity does upon the spinning mass of a gyroscope) attempts to topple electron orbit spins within the ferrite, first one way and then the other. Thus I could imagine the axes of electrons spin precessing within the ferrite sleeve instead of linearly oscillating like a pendulum would though zero, with the electron orbits gyroscopically storing plus returning more energy, and that gyroscopic electron orbit precession possibly becoming an alternating magnetic wave, which could explain the very high degree of resonant field amplification quite literally generated around these Ferrite Sleeve Loops.

Given that there really is such high 'Q' and so great a field multiplication, it might prove useful to overwind an additional single wire turn around the centre of the tuned winding, and then connect its ends to a potentiometer in order to form a 'Q' damping control, or, split the winding into two halves and connect a potentiometer to their central ends. Either method will maintain loop balance and thus the loop's inherent figure-of-eight reception pattern, whereas a potentiometer inserted in series with just one winding end would not. If an FS Loop were to be made with end covers over the rod ends (or around the end of an empty plastic food or paint container etc.), there could be 'panel' space for mounting a tuning capacitor with some kind of plastic dial, a 'Q' control, and maybe even a range changing switch. Obviously hand capacitance effects can be a problem with circuits having very high 'Q', so mount the tuning capacitor away from hand movement, and use a plastic shaft extension with a large insulated knob. In the past I have overcome this problem by using a twin gang 500pF component with loop winding ends connected to one set of fixed vanes each; this

makes the maximum value swing just 250pF, but then hand capacitance is commoned via the centre spindle, and does not affect tuning.

I also need to comment about dimensions in relation to the external fields generated by these inductors, because you could tune one about 6" in diameter or larger, in one room, and couple with it through a dividing wall to a radio in an adjacent room. Also, when the larger FS Loop was tuned and then moved towards anything metal (or anything metal moved towards the loop) it would start going off tune beyond a distance of about 60 cm - 2ft! Even the silvering and metal frame of a sliding mirror-robe door affected tuning beyond 60cm, whilst mattress springs had me wondering where the previously amazing performance had gone to when I set one on a bed for some quick listening checks. Thus the FS Loop antenna works best well away from anything metallic objects, including wires embedded in walls etc.

Where above I wrote about the toroidal (doughnut) shaped field lines, once you construct one of these antennas you will be able to understand these by tracing the figure of eight antenna field using a small radio. When the radio is tuned to a station it cannot otherwise receive on its own, you will appreciate the concentrated magnetic field lines turning from being lengthways-on beside the winding, becoming 90 degrees rotated either side of each end, and then rotated another ninety degrees in line with rod ends. The centrally extending vortex of weak coupling within an FS Loop does not resolve until a radio positioned inside it becomes fully coupled with the coherent field close to the rods forming the sleeve.

Also regions or angles of reception null at some 2 to 20cms distance can be noted where free signal tuned by the radio becomes cancelled out by the field generated by the loop. Occasionally this effect can be put to good use for nulling powerful stations so that weaker co-channel ones may be heard; the loop needs to be tuned to the weaker signal, and the radio must not be so close as to be fully mutually coupled with the loop.

Antenna 'Q' related AM signal demodulation is another aspect to be considered here, for there are two ways of enhancing AM listening quality. One method (technical within the receiver itself) relates to 'switching' the demodulator synchronously in perfect time with the received carrier so that even during ionospherically induced fading the de-modulation cannot lose carrier related coherence. Very few receivers come provided with synchronous demodulators, and yet it is a system where two different stations on the same channel may be received entirely separately! The other way of enhancing poor signal reception is by having a high 'Q' antenna capable of peak tuning on the wanted carrier frequency such that the antenna becomes synchronised with its carrier, and the signal entering the radio thus enhances the radio's standard envelope demodulation capabilities. This is where the FS Loop provides another 'gyroscopic' advantage for improved signal to noise reception when used with ordinary radios, and especially for weaker signal reception in the presence of random electric noise fields.

Short Wave and Other Uses.

These antennas are exceedingly quiet . They have lower winding resistance plus small, totally isolated and floating balanced windings so much smaller than conventional 'air core' loops, and therefore they pick up much less voltage field interference (sometimes called the vertical effect). They certainly pick up much less noise than my Tecsun PL-380 does on its own, for this little radio can sometimes 'hear' radar like swooshes (some are switch-mode power supplies cycling without load) which other radios do not 'hear' because the interference is not predominately within the MW band.

I would expect a Ferrite Sleeve antenna made out of as few as ten rods to perform very well, and I even tried one of twenty 6" long by 5/16" diameter rods inside a glass jar with the coil wound over the outside - this being truly excellent too. So everyone should feel free to try whatever they might have to hand. Unfortunately ferrite rods have become much more expensive recently, though Rapid electronics have been selling them at a very competitive price -

<http://www.rapidonline.com/1/1/4790-ferrite-rod.html>

<http://www.rapidonline.com/Electronic-Components/Capacitors/Variable/Miniature-tuning-capacitor-100V/61811/kw/tuning+capacitor>

Having already tried two diameters already, I would recommend a good size to make the FS Loop antenna would be one utilising between thirty and fifty 100mm long by 10mm diameter ferrite rods, for a completed antenna of between four and six inches outside diameter, for a performance like that of a conventional tuned four to six foot 'air core' tuned loop. However even the twenty rod version worked astoundingly well whilst remaining very portable, and thus it represented a very useful night-time TA capable complement for modern Ultra-Light receivers.

From observations I would expect a 200 rod version to have a diameter of about 60cm, with a likely 40dB sensitivity gain over bareback portable MW receiver performance, and thus be approaching Beverage antenna performance via loop reception. This would however be extremely powerful, and would overload almost any receiver unless used in quiet (remote) locations. It would also generate a massive RF field around itself, so if taken to a DX-pedition site ought not be used in the same part of a house where other receivers are connected to Beverage antennas. I could however see a Ferrite Sleeve Loop antenna being useful if tuned and rotated near an incoming Beverage feeder to null out some undesired signal masking wanted reception.

Thinking it likely that this kind of antenna would work very well at tropical 120 metre band frequencies, and maybe even 90 metres too by adapting antenna turns and tuning capacitor value, I thought I would try making an FS Loop specifically for these frequencies.

This one was formed around the card inner tube from inside a standard roll of 5cm wide masking/ parcel tape; with thirty 100mm by 10mm diameter ferrite rods taped

in place over it; then a poly-foam protective wrap to create a 5mm gap; this then overwound with 12 turns of (string spaced) 24x0.2mm standard insulated wire. See photos below.

Portable radios tuning between the 180 and 49 metre bands do not usually use a ferrite rod (frequencies 1.7 to 6.2MHz), but do come with a telescopic antenna that can sometimes leave small radios a little deaf below 4MHz. Clearly there was no chance of mutual FS Loop field coupling here, and so I was wondering how an FS Loop might be connected because small portables do not come with sockets through which say, an additional single turn wound over the main 12 turn winding on an FS Loop could be screened or twin feeder connected.

Then I remembered that my original aim for these inductors had been for them to couple with or to generate electromagnetic fields in the 'free' space surrounding them, and now, because their resonantly energised electron spin fields do exactly that;- via the natural impedance of electron spin coupled surrounding space, all I would need to do is connect one coil end to a collapsed telescopic rod to provide tuned lower MHz SW reception. Thus the resonant, photon generated voltage developed by the inductor, would effectively be in series with the natural impedance of surrounding space relative to the radio, and this could establish a simple coupling to any portable via a single connection to its still collapsed telescopic antenna.

Once again the reception provided by an FS Loop had me sitting there in a daze of incredulity, for it works brilliantly!

Never before have I heard such clean 75 metre band reception because no telescopic or outdoor wire can work like this. At 10cm long via 11cm diameter this SW FS Loop antenna was just like having an ATU with an outdoor long wire antenna plus feeder, only better because it could be rotated to reduce either local TV timebase-computer psu interferences, or null the communications type buzzes so prevalent on lower frequency short waves. Those nulls were almost figure of eight on both 120 and 90 metre bands as well, though less well defined on 75metres, yet still helpful as high as 49 metre frequencies where the direct connection of the receiver was having a much greater unbalancing effect upon loop-receiver characteristics.

Yet again, here was a compact 'bedside table' sized SW antenna capable of competently and most conveniently feeding a portable without either any need to raise its interference collecting telescopic antenna, or any need to bring outdoor feeder cables into living spaces. Long Live AM!

Another use I could imagine for this kind of inductor is as the field coil for a metal detector. One of these coils would definitely not be lightweight, but its aligned spin field would be many times more sensitive to small metal objects in line with the edge of the sleeve.

Given the efficiency of a Ferrite Sleeve inductor at resonance, this type of component could make either a high efficiency tuned RF inductor or transformer; be used with a phased vertical as part of a compact directional transmitting antenna; at the end driving of Tesla coils; in pulsed field technologies; for radio therapy treatments; for

resonantly inducing or transducing alternating electron spin (magnetic) fields in say a liquid or gas close to or within, or flowing within the sleeve.

Also, after thinking about the electron spin relationships causing an energy destructive vortex at the centre of any solid core related to electrically switched or alternating magnetic fields (as within stepper motors or pulsing solenoids), then those other cores might also be more efficient if a hole were drilled axially through them! Also, chokes could be much less lossy if wound with hollow cores which would then allow their impedance to increase with frequency in correct relation to a lower frequency measured value; I am here thinking of cored inductors as used for simple crossover/ filter circuitry.

Similarly it is possible that other ferrite components could benefit from having either hollow cores, or cores made via two processes where the outer ferrite is set over a suitably moulded internal ceramic shape in order to minimise internal axial losses and effectively reduce the loss of initial permeability with increasing frequency.

(*1) - Dr Judy Wood. B.S., M.S., Ph.D. - 2010 - Where Did The Towers Go? - ISBN13:978-0-615-41256-6

Final Notes:

(1) Summarising the Ferrite Sleeve Loop antenna:

An incident radio frequency photon stream energises alternating electron motion through the metal atoms within the coil winding.

A tuning capacitor connected across the coil forms a resonant circuit where charge voltage developed across the capacitor becomes phase shifted with respect to electron flow through the coil.

The coil induces a homogenous alternating magnetic field through most of the Ferrite Sleeve; this in turn causes electron spins within the ferrite to align axially near the winding.

Resonant energy alternations between charge in the tuning capacitor and electron orbit spin alignments within the ferrite, magnify the amplitude of oscillation for both the photon induced voltage developed across the tuned winding, and the external magnetic field generated by electron orbits within the Ferrite Sleeve.

This cannot happen with long and-or thick ferrite loop-stick antennas, because the photon-energised alternating field which aligns electron-spin orbits within the ferrite rods is -

(a) not energised directly by any magnetic component of electromagnetic radiation; and

(b) when energised by a relatively small coil, is not homogeneously coherent and co-axial throughout the entire length and diameter of the rod, thus the larger the rod the greater the loss and random noise generated.

(2) It is essential that the magnetisation of ferrite be imagined as electron spins within the material being mutually aligned via external field lines of a coil or a magnet. Also, coils are coils no matter what; so going to a large diameter with respect to coil winding length increases both winding capacitance and resistance, which reduces 'Q', because the increase of inductance with diameter cannot compensate.

When it comes to an FS Loop it is likely that the thickness of ferrite in a sleeve could have a significant bearing upon coil diameter range with respect to length. All of my tests with 10mm dia rods had a mean sleeve diameter of between 0.5x and 2.0x rod length and proved successful; the coil then being wound over a 5mm insulation gap.

I have not checked for optimum dimensions of Ferrite Sleeve thickness with respect to sleeve diameter, nor for optimum length of sleeve versus diameter, these aspects still need to be empirically verified; however the ordinary insulated-cable coil winding length ratios of 0.7x Ferrite Sleeve length tested for MW (7cm of winding on a 10cm rod) and 0.8x for SW have already worked very well. I would expect an increase of FS Loop diameter to increase its overall sensitivity for any given length of ferrite rod or coil, though with its 'Q' slowly falling from the inherently very high starting point provided by a normal coil winding form.

As any antenna having too high a 'Q' can impair received program listenability, and the FS Loop already has high 'Q' when wound using ordinary equipment wire, Litzendraht wire is definitely not necessary when winding the coil. Indeed, what we seek here are two aspects; photon transduction, and dynamic efficiency for maximum energy exchange via the coil between winding charge flow field induction, and spin-field alignment within the ferrite (resonant precession?). Litzendraht wire is less lossy when conducting an alternating electric current, and it can have maximum efficiency at MW frequencies, but the parallel stranding within its construction must decrease its cross section area with regard to both effective photon transduction and its current carrying (field generating) capabilities, which must in turn negate its own apparent advantage by thus causing a reduction in the photon transduction to electron orbit dynamic.

(3) With tuning capacitor vanes fully open, I would adjust the number of turns wound on to an FS Loop to resonate at the highest required reception frequency, ie. 1700kHz for MW, and then ensure that the variable capacitor has sufficient swing to tune the lowest desired frequency, say 520kHz. Additional switched tuning capacitor padding can easily make a MW FS Loop tune beacon frequencies; a LF beacon FS Loop tune LW broadcasts; or a Tropical Bands FS Loop tune MW; but coils are always best within a 0.5x to 2x bandwidth range.

Also, I would not recommend using any varicap tuning arrangements due to the high RF voltages developed across the winding then also appearing across the semiconductor itself. Hence Ferrite Sleeve Loop antennas should not be directly connected as a ferrite rod substitute in radios utilising actively controlled varicap diodes; as within some modern Ultra-light receivers.

(Inductive mutual field coupling between an FS Loop and portable radios or Ultralight receivers is already more than adequate anyway.)

I have been asked about the simple square construction shape that works well with 'air core' loops, but do have prior experience which leads me to advise that a square FS Loop will be much less efficient than a circular one because the magnetic field coupling which induces electron spins within ferrite at corners will be very strong, then negligible in the middle of a straight side, whereas with a circular construction the spin coupling is equally reinforcing all around.

(4) After reading these pages above and realising (or experiencing via construction as so many people already are) what it is we have all been cheated out of for so long, you might better understand my stated disdain. Yet I remain optimistic for both better education in the future, and a widespread use of this new type of inductor.

If you do build an FS Loop for yourself, then your amazement will likely make your attitude change as well - because for every one constructed, another challenge will be made to the existing 'theories' which simply cannot be the truth they claim!

(5) I offer thanks to members of the UltralightDX group for their open feedback related to independent construction and use of the FS Loop, with confirmation that this novel design is indeed an important step forwards for LF and AM radio reception. I am being informed via independent 'hands-on' findings that it is indeed the coil transduction of incident electromagnetic energy which is most important, and NOT the ferrite rod which has supposedly been energising the coil overwind via induction from the 'magnetic' 'field' component from an electromagnetic 'wave'. Thus I suggest that this Ferrite Sleeve inductor is an important development and will soon find many more uses by those seeking to imagineer technologies utilising resonant electron spin/ precession/ electro-magnetic field/ electromagnetic radiation and transduction.

(6) Within these pages I have shared my thoughts relating to the nature of magnets and electromagnetic waves, and how everything mentioned here is either electron or photon spin related.

I was not able to develop the Ferrite Sleeve inductor until after I realised -

(a) there are no 'transverse magnetic-voltage field' components associated with the propagation of electromagnetic radiation, and

(b) magnetic fields are the result of electron motion; also magnets or materials rendered magnetic via magnetic field lines passing through them, as may be induced by electron flow though a coil overwind, are concentrations of aligned atomic sized electron spin orbits, which when acting in the same sense throughout a body of magnetised material are effectively - electron gyroscopes.

(7) If you are a science student, then please do not repeat what I have written, because even if you question what you have been taught,

you are still expected to *learn*, and *repeat*, and be *examined* upon, only the study curriculum within which the mainstream teachers, lecturers and professors actually *instruct* you.

in other words; you are under fear of being labelled a failure by examiners, if you do not re-state what they dictate you must 'know'!

(8) Sometimes we hear the expression of 'thinking outside the box', but is that not an admission that the mental processing of individuals, groups or nation's is deemed normal, and that 'the box' represents a most limiting place we should not want to find ourselves within, in the first place? Nothing could be worse for our future on Earth, than an increasing population of battery-farm-like raised youngsters majoritively acting via under-mentored but sexually active minds which have been conditioned to desire as of right by attractive media presentations, plus inadequate and-or knowingly incorrect teachings which not only prevent them from understanding their own situation, but also prevents them from free range developing to become the innovative and 'worldly' thinkers we will always need for development and survival here, on this, our ever changing, and *only* home planet.

(9; with 26th March additions)

Thus the still pertaining transverse 'wave' theory situation I mention above, is one where the supposedly learned but egotistically dogmatic plus myopic mindset of the "know-men" Masters of Science, via their autocratic and censoring guardianship of all sciences, education and law, render to themselves (especially via the eyes of those who are genuinely hands-on experienced, better educated and thus more far seeing) the label of being "no-men", due to the manner in which they effectively deny logical progress through any opinion other than that which is already controlled by their own patronising, and often bullying, self serving authority.

Of course by stating this I am placing myself at odds with the whole of present-day mainstream science, for I believe the certificated 'Professionals' have been wilfully duplicitous, and won't come clean until we point out that keeping the real theories as if 'Official Secrets' and thus away from those of us who pay their wages and pensions, is both dishonest and disrespectful of the whole of humanity. What is so difficult about speaking the Truth? Have so many amongst us forgotten that by merely repeating a lie, they makes themselves a liar too, and that hiding behind 'qualifications' or decades/ centuries of 'reference' publication is no defence whatsoever?

Never forget Commandment No 9 -- Thou shalt not bear false witness -

To which I add - And especially not inside the houses of our children's education

wherever the places, and who-ever the guardians or teachers might be.

So do be very careful about what you accept as being the truth in situations where you do not or cannot examine all reported evidence for yourself, and especially in case you end up having unfounded confidence and repeat what has been presented as fact, when it is NOT actually so, and when information itself has been engineered to become something you are expected to promulgate in order to serve a purpose you are not aware of! Also, if you come across censorship of information, or character assassination, or harassment preventing contact or exchange of opinion, then maybe there is something which the "no-men" who act at many levels within our societies are choosing to actively cover up so that they might maintain their own status quo, without consideration for anyone else, including yourself, who might be affected or denied as a result of their controlling behaviour.

Modern science, and education in general, have not been the same since about **1970**, when the inspirational Professor Eric Laithwaite demonstrated gyroscopic-lift live on BBC Television, as if countering the force of gravity. Repeated here as a separate demonstration -

<http://www.youtube.com/watch?v=MHIAJ7vySC8>

Mis-information was immediately published related to his work, as if he was defying Newton's Laws when actually he was adding new information related to them. The tapes were destroyed too, and the establishment then prevented Eric from inspiring youth and helping the whole of society via his unique expertise with the possibility for linear motors/ fields generating gyroscopically induced lift without need for propellers or rockets etc.

<http://www.gyroscopes.org/propulsion.asp>

So yes, mankind can locally modify gravitational fields, and 'we' really do already have 'flying saucers'. Also, because photons have an $e=mc^2$ mass equivalent, man can interfere with the propagation and reflection of light, thus render such craft invisible, though not remove all the other additionally induced field effects, especially those causing electronic interference or catastrophic failure within nearby electronic control circuitry in range of the otherwise invisible but substantial field disturbances.

(10) I must finish here by making the most important statement of all - this being to the person who has selflessly kept the cuppas and meals coming, even though there have been so many days when I'm;-

thinking about some possible circuit and conceptually imagineering = looking out the window or sitting at the computer;

writing = not talking and doing normal things;

testing some latest idea or project = repeatedly wasting time and money;

in short, not being with my loving wife Andrene as much as I should, for without her, none of my projects would have come into existence.

Her contribution is not visible via my writing, yet her efforts have been considerable, and so I am going to sign off now and go give her a great big 'Thank You' hug.

PS. Andrene's laughing response - "So we can get back to normal again then?"

We wish everyone _ Peace _ Love _ and _ Light _

graham.maynard1@virgin.net **Return to Home Page** - www.GMweb2.net

*** These post-scripts were added after my work had been completed. ***

12th March;- I thank Paul Birke of the UltralightDX club for finding US Patents by W J Polydoroff -

[2266262_ANTENNA_SYSTEM_FOE_WIRELESS.pdf](#)

[2354332_LOOP_ANTENNA.pdf](#)

Loop antenna pickup coils wound *as close as possible* over cores comprising finely divided insulated magnetic (ferric) particles to improve reception of radio waves, and having smaller physical dimensions; plus in the latter patent, angled windings to provide sense for radio direction finding, especially at night. The pick-up coils are illustrated as being wound over thick large diameter dust-iron core sleeves, as were the typical of the form within tuned inductors of that era in order to increase permeability and tune coil resonance. The aim of this work is stated to making a loop smaller by increasing the permeability of the medium constituting its core.

Clearly this was the first usage of a permeable sleeve type inductor for loop reception, and at RDF beacon frequencies;300kHz stated. However dust-iron provides much less advantage at MW and likely none at SW broadcast frequencies when used as an antenna core, especially when compared to what is possible with only slightly larger 'air-core' wire constructions. Polydoroff also claims that his dust-iron loop antennas are less affected by nearby metal, whereas an FS Loop (the by-product of testing an inductor designed to optimise field coupling between its coil and core plus electron spin interaction within surrounding space) *is* notably affected affected by nearby metal.

Also there is no recognition of an understanding for the essential need to construct with circular form, and provide an even gap circa 5 to 6mm between the winding and core (possibly a fortuitous part of his dust-iron construction), to ensure homogenous electron spin alignments within a ferrite sleeve at tuned resonance, and where this electron spin cannot equally arise in dust-iron cores. This likely being the reason we have not any earlier heard of a sleeve antenna being used for MW + SW broadcast frequency reception.

I also note that Polydoroff relates to voltage field related measurements, and not to magnetic components of electromagnetic radiation.

*** 14th March;- a ferrite rod based transmitting sleeve antenna found here;-

[Antenna_Russian_ferrite.doc](#)

this having a maximum stated power input of 10W, and where the magnetically induced (precessing?) electron orbits within ferrite were clearly put to good use via phase shift energising electron orbits within the antenna coil overwind.

An adjustably phased vertical radiator added here would then of course construct an antenna capable of generating directable radiation patterns.

** Also this added on 14th March:

A Senior (claimed) Member of the IEEE, who publicly posted in the above Group that I was "Insane" for stating there is no radiating magnetic component to electromagnetic radiation (removed by a Moderator), has since virtually accused me of plagiarisation and of being a liar via his persistent communication. For example by stating - ***"He (Polydoroff) was developing small antennas to be used in aircraft ADF receivers, the very antenna that you have been copying and elaborating on all this time."***

Read my text! I had been attempting to sort out theories which do not match empirical findings. Also to optimise a ferrite cored inductor design by focusing on energetic electron spin relations and field couplings at higher radio frequencies. As stated, this inductor was being made to minimise losses (for another 'energy' related investigation), and the fact that it works so well as an AM Loop, was neither intended nor planned from outset.

So how can this - MY work - be a copy of anyone else's Loop Antenna design, when I was not attempting to construct a loop antenna in the first place ?

This particular IEEE member further persisted with a very personally fixated follow-up, including;- ***"It's because we really don't care to see people such as yourself taking credit for the work of others."***

Again, how can anyone be accused of taking credit for work they did not know existed? It is not my fault that some early antenna research had been inadequately followed up with modern ferrite rod based construction, as opposed to my own 'hypothesis of theory' based approach to a ferrite sleeve inductor design for another purpose, which, by its more efficient nature, then worked very well as this FS Loop Antenna because of minimised induced electron-spin-orbit misalignment and reduced axial loss-noise generation within the ferrite core!

I also wonder who his "we" are? Is this what belonging to the IEEE is about? I really don't think so!

Different people can, do, and are allowed to have and to state similar ideas, and thus this person is the first and only one I have ever needed to block from mailing unhelpful comment, plus unfounded and disturbing accusations into my own e-mail

In-box.

(Copies of these communications retained.)



