FARADAY *and the* ARAGO EFFECT

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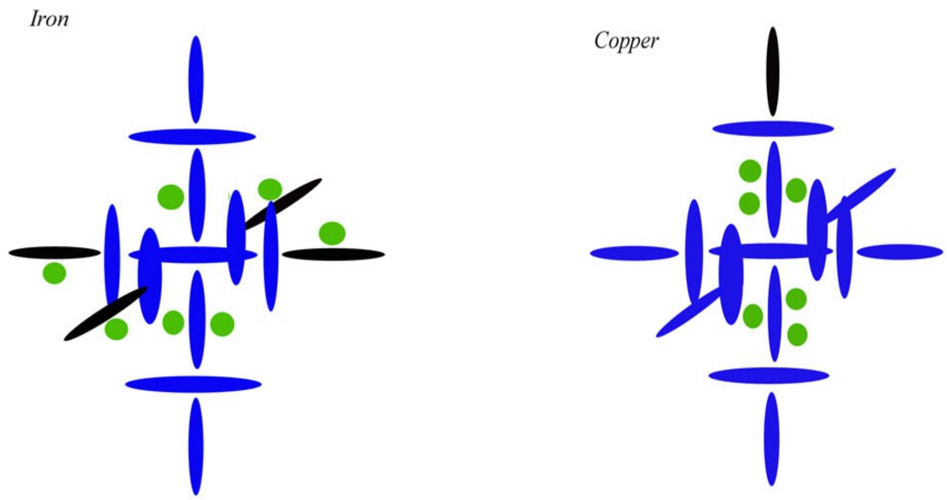
Some of you know my internet has been down for almost a month, but that has just given me a chance to return to my books. One of the books I pulled off the shelves was Faraday's book on electricity, hence this paper.

The Arago effect was discovered by Arago but "explained" by Faraday in the 1830s. It was a strange magnetization of copper by spinning. Normally copper has little or no magnetism, being a great conductor but not a good magnet. But Arago discovered that if he spun a copper disk in the correct direction relative to a magnet, it became magnetic. He could also spin the magnet, achieving the same effect. This phenomenon was completely mysterious as a matter of theory until Faraday explained it with magnetic induction. However, if you study Faraday's theory, you quickly see how threadbare it is. Basically all he does is give the phenomenon a name, and tell us induction is the process of magnetization moving across space to another body. A naming standing for an explanation. He then lists all the experimental ways this can be done. Faraday's explanation is still the current one: no real progress has been made on the question since then.

But no progress on this question *could* be made until it was understood how current and magnetism were created at the nuclear level, and that didn't happen until I explained it a few years ago by diagramming the nucleus. I showed how charge is channeled by the nucleus in streams, creating lines of charge far beyond the atom. I also showed that charge was made up of real photons, and that these photons had real spin. Finally, I showed that these photons could either be spinning up or down, being photons or antiphotons.

Without charge as real photons with real spins and real radii, "magnetic induction" was never more than empty words. No physical force or interaction can be induced across empty space, or in the absence of a real physical field of real particles. A powerful field of real photons had to be moving between Arago's two bodies, and it is amazing how much ink has been spilled trying to deny or refute that truism since the time of Faraday. We can forgive Arago and Faraday for misunderstanding this, since although the charge field is extremely powerful, it is also extremely tenuous in a way, being made up of particles with radii on the scale of 10^{-37} m. But since photons have high energies due to speed and spin, it should have not taken this long to pin them down. Contemporary physicists really have no excuse for their nescience, though they can lay partial blame at the feet of Bohr and his minions for diverting them away from photons and toward electrons for many decades. Also for shooing them away from demanding mechanical answers.

In my important paper on Period Four, I diagrammed both Iron and Copper, showing the major charge streams through the nucleus:



It is these diagrams that now allow me to give a simple mechanical explanation of the Arago effect. In EM, the most important charge stream is the polar stream, which runs south to north in these diagrams. In many elements, the main charge stream is pole to equator, with charge coming in at the poles and being released by the spinning carousel level of the nucleus. The Earth runs on that scheme, as well as the Sun and the Galaxy. But in EM, the elements involved have a strong polar stream. I have previously called this stream “through-charge”, since the charge passes straight through on the pole. Elements with more protons on the pole, and fewer in the carousel level, are more likely to have a strong through-charge. Given through-charge, the nucleus can either create current or magnetism, depending on how the pole protons set up. As I said in that earlier paper, the most important thing to notice with Iron and Copper is the protons plugged into the poles. Iron has two plugged north and south, while Copper has two south and one north.

Because Iron has an equal number north and south, it has a strong charge current running both north and south. The pole protons act like fans, pushing charge into the nucleus in a vortex. This gives us a push *into* the nucleus from both sides, which acts to create an apparent attraction all along that line of charge.* And, since the north and south lines of charge are pushed together on the tight nuclear pole, the spinning photons are forced to interact as they pass. In other words, even in this tight corridor, they are too small to collide head to head, but they do enjoy a big increase in edge hits, being spun up. This increases their energy, giving them more power should they encounter an ion such as an electron beyond the nucleus. This is how magnetism is created at the nuclear level.

With Copper, we don't have an equal number of protons on each pole, so through-charge is much stronger in one direction. The protons act like fans, pushing charge into the nucleus at the pole via a vortex, so in Copper, the external charge “knows” which way to go. The potentials are set, and they are set mainly south to north. For this reason, we get a strong current of charge moving north, but since it is not countered by an equally strong south-moving stream, it isn't spun up like Iron. It is electrical but not magnetic.

With that refresher course, we can now return to the Arago effect, which you can see is just making Copper act like Iron by main force. If we spin our Copper nucleus along an E/W axis, forcing the poles to switch sides, Copper will now have two protons north half the time and two protons south half the time. . . just like Iron. Since charge moves so fast and the spin is relatively slow compared to that, the external charge stream can now get pushed into the nucleus from both directions. And so spun Copper begins to act a lot like Iron.

Even then, it won't act exactly like Iron, and we can use my diagrams to predict the difference in magnetic strength, from the nucleus up. Each nucleus of Copper will be weaker magnetically, simply because Copper has a stronger carousel level. Copper is pulling charge out the equator with eight protons, where Iron only has four. So Iron will always have more through-charge than Copper.

Obviously, Arago's spinning Copper disk does what I said above: it flips the Copper nuclei in the disk relatively to the magnet. The historical and current explanation tells us that the magnet sets up eddy currents in the Copper disk, which then cause the magnetization. But you now see that is wrong. It is not eddy currents that cause the magnetization, it is the flipping of the nuclear poles. I will be told they know it is eddy currents, since if slits are drilled in the disk, the effect is mostly gone. The eddy currents are prevented from moving by the slits. But you can now see that isn't what is happening. The slits don't block the eddy currents, they block the basic conduction of Copper. Copper has to remain conductive throughout the experiment, since you can't flip lines of charge that are broken. The slits break the long lines of charge among adjacent nuclei, so that flipping them no longer matters.

In fact, it is quite easy to prove my thesis in simple experiments. If this works as I say, there should be some direction of spinning the Copper disk that *won't* cause magnetization. If we spin our Copper nucleus above on the N/S axis instead of the E/W axis, it won't create the Arago effect, since the Copper *is already* spinning on that axis. We won't be creating a pole flip, you see. Therefore, we should take Arago's Copper disk, but *not* spin it like a vinyl record. We should pierce it with a rod on the same plane as the disk, then spin the disk on that rod, at 90 degrees to the historical spinning. If we do that, we should find that one orientation will still give us the effect, but at another 90 degrees the effect will disappear. If you didn't follow that, what I mean is, once we have the disk spinning on the rod, we still have 360 degrees of rotation we can play with, still keeping it orthogonal to the original spin. On one line in that plane, we will still be causing a flip of nuclear poles, so the effect will remain. But at a further 90 degrees to that, we will just be spinning the nuclei on their own poles, so no flip will be occurring. In that case, no Arago effect will appear.

Furthermore, we can actually diminish the conductivity of the Copper with that spin. How? Well, since the nucleus is spinning CCW (seen from above), if we make our spin CW, and spin it fast enough, we can interfere with the south polar vortex. We can short-circuit the natural charge streams of the nucleus, which rely on spin. We could only hope to do that to a small degree, since air resistance will prevent us from spinning our macro-Copper at nuclear speeds, even if we make it very small.

You will say that doesn't explain spinning the magnet to get the same Arago effect, since spin is not symmetrical as a field mechanism. My spin isn't the same as your spin. True, but the explanation is still simple. Spinning the magnet reverses its field in a similar way. Specifically, if it was hitting the Copper plate with a charge stream heavier in photons, when we flip it those photons will act like antiphotons. So they will move to the opposite pole of the Copper. Half the time the south pole of Copper will be favored and the half the time the north pole will, creating the same effect.

While I am here, I would like to comment on one of Faraday's discoveries or compilations, which we find expressed in paragraph 1163 of his series. There he tells us of

the impossibility under any circumstances, as yet, of absolutely charging matter of any kind of one or the other electricity only [plus or minus]. . .

In my investigations, we have come to understand why that is so. Mainly, it is because the ambient charge field is always present. Every environment on the Earth, even the strictest vacuum, will contain the local charge field, which comes at us from both above and below, from the Sun via the sky, and from the Sun through the Earth, via charge channeling. Since this ambient field is composed of about 1/3rd antiphotons or anticharge, no experiment on Earth would be expected to dodge it. Another fundamental reason no experiment can be plus or minus only is that every nucleus has two poles, neither of which can be turned off. They are connected by an axis, so if you spin one, you spin the other. If you create a south pole vortex, the north pole vortex is also created automatically. Only by going supercold can you begin to influence this natural phenomenon, but even then both poles are affected equally. You cannot freeze just one end of every nucleus. Therefore, every current will necessarily have an anticurrent. The only way to avoid an anticurrent is to filter every single antiphoton, and no current is powerful enough to do that. No form of blocking is thorough enough to do that.

In paragraph 1165, Faraday proposes induction as the action upon contiguous particles, which interests us both positively and negatively here. Positively, because Faraday is admitting the necessity of a real medium; negatively because his inclusion of "contiguous" led inexorably to Maxwell's failure with the spinning vortices. I have shown that we do require a real field of real photons to mediate induction, but these photons do not have to be spinning edge to edge, or be *constantly* touching. To transfer energy, they have to touch for a moment, as in a collision, but they do not have to be constantly touching, you see. Contiguous implies "constantly touching" to most people, and did so to Maxwell, but in that form it begs the question of a plenum, as I show clearly in that previous paper.

Some have argued that the only way to dispense with action at a distance is with Faraday's or Maxwell's contiguous particles, but that is not the case. Simply, a collision is not action at a distance. With colliding particles, you can have great average distances between them, allowing us to keep the void and dodge the plenum, while at the same time allowing for the transfer of energy and influence by touch.

This is pretty basic diagramming, and the fact that Faraday and Maxwell missed it tells us the level of theory they were capable of. The great scientists of the past 200 years have been good in the lab, not so good in the imagination. Their skills as experimenters far exceeded their skills as theorists, and we have seen again and again that this was due to a deficit of visualization as well as a deficit of intuition. What we needed was a great scientist/artist, and we haven't had one of those since Leonardo. Instead, what we got with Modern science was an ever greater retreat from that, with 20th century physicists actually stooping to slander artists, philosophers, and all other non-specialists. The "scientific" mind has gotten ever narrower over the past two centuries, and that was not an accident. The contemporary physicist is a self-satisfied wonk of the narrowest sort, and his smallness has forced him to fence off his field to prevent competition. He can only succeed in the little pen he has made for himself. This has led to a general degradation of science, accelerating decade by decade, leading to the present moment, where you are fortunate to witness the artist-as-scientist getting more than even for a century of abuse. That is to say, those who are shocked to see me attacking everyone—the biggest names with the smallest—should be reminded how long they have had it coming.

Faraday continues to fail dramatically in 1166, where he says a test of action at a distance versus contiguous particles is whether the line of influence is straight or curved. If straight, we have action at a distance; if curved, we have contiguous particles. You can kind of see how he got there, because contiguous particles could create a curve without further thought or argument. But in stating the problem bilaterally like this, you can see he is walking right past the third possibility: collision. In a series of collisions of spherical particles, curvature is easy to explain. You can visualize it with pool balls.

I will be told Faraday means by contiguous “touching at a moment”, not “touching constantly”. It may be so, but he is not clear. If he had been clear, it is doubtful Maxwell would have bothered coming up with his theory, you know. At any rate, we find the usual state of physics and chemistry with Faraday: extremely thorough and even longwinded when describing experiments, but extremely brief and oblique when explaining theory or mechanics.

In fact, if we keep reading, we have more indications Faraday intended by “contiguous” a meaning closer to “constantly touching”, since in 1168 he states that

electric induction is an action of the contiguous particles of the insulating medium or dialectric.

That must mean he thought of electricity as something transferred directly between atoms, without an intervening “fluid”. I have shown he is wrong, though we don't need the intervening fluid either. We need an intervening *wind* of photons. A gas more than a fluid.

Faraday says that his inability to give “an independent charge of either positive or negative power only” showed charge was a not a separate fluid, but it showed nothing of the sort. It only showed that the fluid itself was always mixed. It also showed that Faraday was confused on the difference between “negative electricity” and negative potential. He had been confused by Franklin's (and others') previous misassignments, and so he believed in the existence of equal and opposite electricities. But I will have to get into that elsewhere.

But in 1170, we see just how confused Faraday is, by the way he states the case. He says,

The beautiful experiments of Coulomb upon the equality of action of conductors, whatever their substance, and the residence of *all* the electricity upon their surfaces, are sufficient, if viewed properly, to prove that conductors cannot be bodily charged.

Unfortunately, Faraday has not viewed this properly, since it is a muddle. His fundamental problem is the same problem physicists still have: they will not properly differentiate charge and electricity. If he had said that conductors cannot be bodily *electrified*, he would have been nearer to the data. But any substance can be charged, *and always is*. Charge is moving through every body in the universe at all times, and so all bodies are charged. The only difference is in *how much* they are charged, and in *what configuration.* Conductors channel charge in long lines, pushing all excited ions to the surface, which is why we find them there. We then call those excited ions electricity, to suit ourselves—or because those ions can be used for energy, provided we continue to corral them where we need them.

But you can obviously increase the charge channeling and charge density of a conductor or anything else: if you couldn't, then levels of electricity and magnetism couldn't vary so much. You will say those things are a function of ion densities, and in part they are. But in both phenomena the ions have to be *driven*. More ions can only be driven faster by *greater charge densities*. The two go hand in hand.

One of the most interesting sections in the book begins with paragraph 852, where Faraday is seeking the absolute amount of electricity associated with particles or atoms of matter. Again, he must mean charge, not electricity, since electricity is ionic and charge is photonic. He finds that it requires the amount of energy that could produce a powerful flash of lightning to decompose one grain of water, indicating the molecular bonds there contain a large amount of charge. But what Faraday and no one since has considered is that the bond there is dependent not only upon the atoms present, but on the ambient field present. Faraday doesn't just have a grain of water; he has a grain of water on the surface of the Earth, in the Earth's particular charge field. Therefore, even if he is able to calculate an energy to break that bond, he will not have found an *absolute* energy. He will have found the energy relative to the particular situation. In other words, water on another planet would require a very different amount of energy for decomposition, since that planet's charge field would be very different than ours. Nuclei here recycle what the field gives them, dependent upon their own structure. They are *tuned* to the local field. But that structure can recycle more or less charge as the need arises, as we know from experiment. When we flush more charge into a system, the atoms can almost always recycle more of it. And when we remove charge from a system, as with supercold, the atoms go dormant, with their atomic and molecular bonds also losing energy.

Even on the Earth, that bond strength will vary by some small amount, depending on the local charge field. The charge field on the Earth varies, therefore is not absolute. Recent experiments have proven that. That is what the variance in the standard kilogram is telling us, among many other experiments and phenomena.

Faraday also doesn't realize that when he is adding electricity to a system, he is adding *both* electricity and charge. He is adding both photons and ions. The photons can go anywhere, including through the nucleus, but ions can't. Even the smallest ions, electrons, cannot go through the nucleus. Faraday doesn't realize that he can track both photons and ions to answer his questions and explain his outcomes. Physicists and chemists *still* don't realize that, which is why solid-state physics is still such a mess and why physical chemistry is a gigantic hash. Faraday's series from almost 200 years ago require corrections in every paragraph, but your Physical Chemistry book from this decade is far worse. I bought a Physical Chemistry book recently to brush up, but soon realized the entire thing needed to be pulped. It is little more than 1000 pages of fudge, and has been made obsolete pretty much *in toto* by my recent work.

But back to Faraday. It is interesting to see him, in the first pages of his First Series, perplexed by the lack of induction by nearby wires upon one another. But that is because he once again has not separated charge from electricity. The electrical field is ions; the charge field is photons. Photons drive the ions. Induction is simply an influence, and like any other influence, it requires a path of influence. But the wires are *already* paths of influence. If they don't intersect, they cannot influence, and cannot induce. The only way to create a path between parallel paths is to create a third path between them, and that can only be done with charge potentials. In other words, there has to be a physical reason for the photons to move from one path to the other, creating induction. The only possible reason for them to move that way is a charge potential: a charge low for the charge to seek. We now understand that to some extent with wireless, which always requires a path. But it is just as true of wired paths. Wires were created to keep charge on a path, the wire being the path; so it is bit droll to see Faraday surprised to see it keeping to the path he has made for it. He is shocked the charge is not *off* the path, influencing a nearby wire.

I will be told that the current in both wires is known to create a magnetic field around it, and that the second wire should be in that field, causing induction. True, but that magnetic field is at right angles, so its charge path is also at right angles. In other words, *it cannot cause any current in the other wire*.

Unless, that is, the other wire is also at a right angle, and even then it can only cause a moment of current, since the magnetic field is not only at a right angle, but *circular*. So the circle can hit the line only at a tangent, which is a point. This is precisely what Faraday found: a moment of induced current only. This proves the influence is one of the charge field, not of the electrical field. These are lines of charge influence: photonic not ionic influence. Or, to put it in terms of Maxwell's later math, this is the displacement field D, not the electrical field E. D is the field cause of both E and M (or B). Moving and spinning photons cause *everything*.

For those who follow my historical research on my other site, it is interesting to check the bio of Faraday as well. We are told the usual sob story, where he was the son of a blacksmith, living in London, too poor to buy food or clothes. His mother is scrubbed in the common bios—also a red flag. Despite allegedly being destitute, he was working for a bookseller by age 12, and was apprenticed without fee at age 13. Very unlikely given his alleged background. He supposedly started his scientific education by reading the books he was paid to bind. Also unlikely, given that good science books were as rare then as now: the odds they would pass through his hands as a common binder were vanishing. Furthermore, Faraday's family were Glasites, Presbyterian dissenters who were followers of of the spooky John Glas. Like other dissenters, they were part of the early Theosophy Project to splinter Christianity on purpose. Going by previous research, we may assume these Glasites were cloaked Jews.

[More indication of that may be found by reading the Jewish J. D. Salinger, and his obviously Jewish family the Glasses. Remember Seymour Glass of *Seymour, an Introduction*? Or Franny and Zooey Glass? We have seen that these famous Jewish authors often (or always?) take their characters' names from their own ancestries, so we may have a clue here that Salinger is related to John Glas. In fact, Salinger's later stories have links to previous projects, since if you will remember, the plots of the Glass family stories have to do with mystifying Christianity or replacing it with Buddhism. See "Teddy", *from Nine Stories,* as just one example. That short story looks like a perfect continuation of the Theosophy project that I have unwound elsewhere.]

By age 22 Faraday had built his own lab from savings and was conducting experiments in electrolytic decomposition. "Through the generosity of a [bookbinding] customer", his way was paid to attend the lectures of Sir Humphrey Davy at the Royal Institution. Right. This was Humphrey Davy of the peerage, 1st Baronet, no parents given at Wikipedia or other common bios, whose wife was a Kerr and whose mother was a Millett—linking him to other top families. Stretching credulity even further, Davy hired Faraday just a few months later as a lab assistant. Based on what possible qualifications? Was Davy binding a lot of books in his lab? Only six months later, Faraday accompanied Davy on a tour of the universities and labs of Europe. They were gone for a year and a half! Just a few months after that Faraday was published in the *Quarterly Journal of Science*. So Faraday was either the luckiest person ever born, or there is something we aren't being told. As a clue to what that might be, we find he was for 30 years an advisor to Trinity House. He was elected to the Royal Society at age 31. He was later offered the presidency of both the Royal Society and the Royal Institution. Nonetheless we are told he died a poor man—a poor man who was given a house on Hampton Court by Queen Victoria. . . as so often happens.

Since there are Faradays in the peerage, best guess is Michael Faraday was a cousin or nephew of

Davy, and got his start that way. Faraday's mother may have been a Kerr or a Millett. So we can be sure that he was never poor, and that he benefitted from high connections from the beginning.

Since the Faraday bio I used for the above came from my Britannica Great Books Volume 45, I also took a peek at the bio of Joseph Fourier, in the section before Faraday. It throws up many of the same red flags, and then some. Fourier was born 23 years earlier, in France. He was the son of "a poor tailor". No chance that is true, but the "tailor" is probably a pointer to Fourier's Jewish roots. We can likely replace "poor tailor" with "rich cloth merchant". If you have read my other papers you know why I say that: we have seen it a hundred times. Fourier was "an orphan at eight". Another clue in the same direction, since the number eight often turns up as a similar marker along with these others. Despite being a poor orphan, he was "recommended by a friend to the Bishop of Auxerre", who got him into a Benedictine military school. I ask you, what part of that makes sense? How exactly do poor orphans get recommended to the Bishop of Auxerre? And why do Benedictines have a military school? I thought those guys were monks, devoted to the Prince of Peace. We are told that by age 12, Fourier's sermons were being used by priests in Paris. And you believe that? The top priests in France were getting their sermons from a 12-year-old boy in a Benedictine military academy?

The next stupid story concerns his application to the Artillery, which, we are told, refused him with this direct quote:

Fourier, not being of noble birth, cannot enter the Artillery, not even if he is a second Newton.

That doesn't pass the sniff test, reeking of a fake from the first reading. It was obviously manufactured to confirm that Fourier wasn't a noble. . . meaning he was, as you will soon see. We are also expected to believe he entered the Benedictine order as a novice, which is similarly faked to make us think he was a Catholic instead of a crypto-Jew. If you don't believe me, you just need to study the very next sentence closely:

Upon the outbreak of the Revolution, Fourier left the convent, although this did not result in any break with the Benedictines, since they immediately appointed him to the principal chair of mathematics at their school in Auxerre.

Fourier was just 20 at the time, and had been a novice for less than two years. You will say he had done so much brilliant math by that time he deserved such an appointment, but he hadn't. If he had, his bio would be telling us that, instead of repeating these ridiculous stories about writing sermons at age 12 and being a Benedictine novice.

The next sentence gives us clue what Fourier was really doing in this period:

At Auxerre, Fourier embraced the cause of the Revolution, joined the people's party, and served as publicist, recruiting agent, and member of the Citizen's Committee of Surveillance; in this last function he exercised such moderation that he himself was in danger from the Terror.

Again, that is completely transparent, being a bad fake by the history writers. They admit he was a recruiting agent and head of surveillance, but expect you to fail to put two and two together. In case you begin to be able to do that math, they try to head you off by tempering it with an obvious lie about his "moderation". Right. Because members of Committees of Surveillance are always known for their moderation. But ask yourself this: why was a 21-year-old Benedictine math teacher of zero lineage a member of a Committee of Surveillance? They forget to tell you that, don't they? Why would he even *want* to be? Well, you may wish to consult my paper on the French Revolution for some insight here. Also my paper on Napoleon, since he is about to come up as well. To make a long story short, these monastic orders like the Jesuits and Benedictines were not only crypto-Jewish enclaves, they were Intelligence fronts. They are admitting Fourier was a spy from a young age, but trying to cover it as having something to do with surveillance for the Revolutionaries. I'll tell you a little secret: the French Revolutionaries wouldn't have needed a Citizen's Committee of Surveillance in Auxerre, made up of real monks or mathematicians. Why? Because, according the mainstream story, the only people the Revolutionaries needed to surveil were nobles or the highest levels of the clergy. Monks and mathematicians shouldn't have been coming in to contact with such people, so they would be useless as spies of any sort. The only person Fourier could have been usefully spying on would be that bishop, but if he was doing that he was the worst sort of ingrate and turncoat. According to his bio it is that bishop that saved him from the orphanage and poorhouse, remember? For myself, the only thing I find believable about his early bio is that he was recruited by French Intelligence at an early age.

This is confirmed by the next decade in his bio, where he is quickly moved to Paris and soon finds himself at the Polytechnic. There he was discovered by Napoleon, who mysteriously didn't appoint him to some mathematical chair. Instead he took Fourier with him to Egypt, where Fourier became a top administrator, at first working directly under the General-in-Chief General Kleber (who faked his death) but later being acting governor of half of Egypt himself. That's right, an ex-orphan mathematician was governing Egypt by age 32. The things they expect you to believe. Returning to France, Fourier was made a Baron of the Empire before he was 40. He was prefect of the entire Department of Isere, a post he kept until 1814 despite supposedly getting crossways with both Napoleon and the Restoration. Finally, his bio tells us something to do with his scientific work. At age 39 he submitted his first paper on heat to the Academy of Sciences.

Of course no one states the obvious regarding Fourier: his analysis is all mathematical, and frankly quite naive. This is because it contains almost no theory as to the actual mechanism of heat transfer. If Fourier's heat analysis had been at all useful in the real world, Modern physicists and chemists would not have had to later jerry-rig it at every point with what is now called solid-state physics—see the Drude-Sommerfeld and Anderson models, and my critiques of them. I have had to totally rewrite the theory and therefore the math of heat transfer across real bodies, which means that, like the rest of Physical Chemistry, the equations of Fourier are now obsolete. His general equations based on mass or volume alone were never near to being correct, except for his imaginary bodies, since they contained none the important parameters. You can't begin to write equations for heat transfer until you understand exactly what heat is and how heat is *channeled* by real bodies. You have to understand how and to what extent each substance is composed and ionized, and how the ions interact with the photons and the nuclei. Until you do, any math will just be busywork, which is what Fourier's math is. I have never paid it the least attention. I have made quick progress only by ignoring most of these promoted mainstream people. I have stood on the shoulders of giants in the sense that I have had a gigantic pile of good data to collate, collected over centuries, but the amount of good theory or analysis since Newton has been almost nil. Conversely, the amount of bad theory and analysis—both physical and mathematical—since the time of Newton now stacks to the Moon. It has been clogging up all channels for at least 150 years, and we could say the sheer weight of it had already sunk the ship of science by about 1930.

*This is why E doesn't cause an attraction at this level while M does. E runs in one direction only, and you can't create an apparent attraction that way. Two ions placed in that stream will both be pushed in the same direction, hence no attraction. But since M creates motion in opposite directions, it can create attraction (or repulsion, depending on the spins of the ions involved).