

ON REVIVALISM AND THE MEANS OF GRACE

Mice from a Dirty Shirt

*Two thousand years of believing life makes itself, and one Frenchman
with a bent glass neck*

Essay · By **Larry Herzog Jr.** · *Ordinary Means*
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I. The Recipe

Jan Baptist van Helmont was not a crank. He coined the word *gas*. He ran what may be the first quantitative experiment in plant physiology, growing a willow in a weighed pot of soil for five years and proving the tree's mass did not come from the dirt. He proposed something very like a randomized controlled trial for fevers, three centuries early. Serious man. Real scientist.

He also left behind a recipe for mice.

You take a soiled shirt. You stuff it into the mouth of a jar containing wheat. You wait about twenty-one days. The ferment from the shirt, working on the fumes of the grain, transmutes the wheat into mice.¹

Van Helmont reported that he had seen it work. He added the detail that seals it as the report of a man who has genuinely looked: the mice come out fully grown, and there are both males and females.

He had a scorpion recipe too. Crushed basil, sealed between two bricks, left in the sun.

Before we laugh too hard, it is worth sitting with what he actually saw. He put a shirt in a jar of grain in a seventeenth-century Flemish house. Three weeks later there were mice in it. Adult mice. Boys and girls. He was not hallucinating. He was reporting his data accurately and drawing the only conclusion his framework allowed.

That is the thing about spontaneous generation. It was never stupid. It was obvious.

II. Why Everyone Believed It

Aristotle gave the theory its systematic form, and his reasoning is not embarrassing. Living things are found in earth and water; earth holds water, water holds air, and air carries vital heat. Therefore, in a real sense, everything is full of soul. Certain creatures — insects, shellfish, eels — do not need parents. They need conditions.

And the evidence was everywhere. Leave meat out and maggots appear. Let a pond go stagnant and it fills with frogs. Barns produce mice. Wool produces moths. Manure produces flies. Nobody had ever seen a fly egg, because fly eggs are roughly the size of a comma.

Virgil put the theory to poetry in the *Georgics*: kill a bullock, seal up the carcass, and in time bees will boil out of it. The Greeks called it *bougonia*, ox-birth. Roman farmers apparently tried it.

The medieval period produced the masterpiece of the genre: the barnacle goose. Barnacle geese winter in Britain and Ireland and breed in the Arctic, which meant that for most of European history nobody had ever seen a barnacle goose nest, egg, or gosling. They simply appeared in October and vanished in March. So a theory grew up that they grew — on driftwood, out of gooseneck barnacles, hanging by their beaks from waterlogged timber until they ripened and dropped.

Gerald of Wales recorded the belief around 1187, and recorded something else with it. Irish clergy were eating barnacle geese during Lent. The logic was airtight: the birds were not born of flesh, therefore they were not flesh, therefore they were fish, therefore pass the goose. Gerald was not persuaded. Adam was not born of flesh either, he pointed out, and eating Adam's leg would still be eating meat.

Innocent III is commonly reported to have banned the practice at the Fourth Lateran Council in 1215 — conceding the odd biology while ruling that anything that lives and feeds like a duck may be classified as a duck. It is a wonderful story, and it may be a later one; the surviving conciliar canons contain no such decree, and the attribution appears to trace to Vincent of Beauvais writing a few decades afterward.² Either way, the fact that the question required an answer tells you how firmly the theory was held. And it tells you something about human beings that the single most durable application of spontaneous generation in Christian history was a loophole in the fasting rules.

The theology accommodated it without much strain. Augustine had proposed *rationes seminales*, causal principles God planted in creation at the beginning that unfold in their own time — which handled creatures appearing after the sixth day without requiring new acts of creation. Aquinas took spontaneous generation as a settled fact of natural history and folded it into providence: creatures arising from putrefaction still arise under God's ordering of secondary causes.³ Nobody thought spontaneous generation was atheism. It was simply how the world was observed to work.

III. The Gauze

Francesco Redi broke it in 1668, and he broke it the way these things get broken: he stopped arguing and started covering things.

Redi took flasks of meat and divided them three ways. Some he left open. Some he sealed. Some he covered with fine gauze — open to the air, closed to flies. The open jars produced maggots. The sealed jars produced none. The gauze-covered jars produced none *inside*, and produced maggots on top of the gauze, where the flies had laid them while trying to get in.⁴

That is a beautiful experiment. It does not merely fail to produce the effect; it catches the real cause in the act.

Redi is the honest hero of this story for a second reason. He did not overclaim. He was convinced about flies and meat. He still thought gall wasps and intestinal parasites arose spontaneously, because he had no better account of where they came from. He killed the theory in the one place his evidence reached and left the rest standing. It took another two hundred years to finish the job.

The trouble was that Antonie van Leeuwenhoek had, in the meantime, pointed a lens at pond water and found it teeming. The maggots were settled. The animalcules were wide open. Boil a broth, seal it, and after a few days it swarms — so where did those come from?

John Needham ran exactly that experiment in 1748 and concluded, reasonably, that they came from nowhere. Lazzaro Spallanzani ran it again in 1765, boiled longer, sealed better, and got nothing. Needham's counter is the most quoted defense in the history of dying theories: Spallanzani had boiled so violently that he destroyed the vegetative force in the broth, and sealed it so tightly that he excluded the air life requires.⁵

This is the classic move of a theory in its last decade. It cannot be tested to death because every failed test is explained by the harshness of the test.

IV. The Bent Neck

The French Academy of Sciences finally offered prize money to settle it. Louis Pasteur took the money in 1862, and the reason he took it is that he did the one thing nobody had thought to do: he stopped sealing the flask.

Pasteur's swan-neck flask is open. That is the whole point. He drew the neck of the flask out into a long S-curve, boiled the broth, and left the mouth of it standing open to the room. Air moves freely in and out. If there is a vital force in the air, it has unobstructed access. But dust and spores are heavy; they settle in the low bend of the neck and never reach the broth.

Nothing grew. Not for days. Not for months. Some of the original flasks are still sitting sterile in Paris.

Then he tipped one, so the broth washed into the curve of the neck and back again, and it clouded.

Pasteur presented all of this at the Sorbonne in 1864 and said the line: “Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment.”⁶ He was right. Rudolf Virchow had already popularized the slogan — *omnis cellula e cellula*, every cell from a cell.⁷ Pasteur’s experiments established the broader principle: *omne vivum ex vivo*. Life only from life.

Two thousand years of doctrine, undone by a piece of glass bent into a curve.

V. A Word About the Bible

You will occasionally hear that Scripture teaches spontaneous generation, usually from someone who has just discovered Genesis 1 and is feeling clever about it. “Let the earth produce vegetation.” “Let the water swarm.” “Let the earth produce living creatures.”

The reading does not survive contact with the text. Genesis is not describing a mechanism by which matter organizes itself under favorable conditions. It is describing a command and its result. The earth brings forth *because God said so*, and the text stops six times to say that the creatures reproduce according to their own kinds. That is the opposite of ox-birth. The land is not fertile in itself; it is fertile because it was spoken to.

Two places are worth noticing where the Bible walks right up to the theory and declines to endorse it.

The first is Exodus 8. Aaron strikes the dust and the dust becomes gnats over the whole land of Egypt. If any passage in Scripture looks like a textbook illustration of life arising from inert matter, this is it. But the Egyptian magicians, who had matched Moses on the blood and the frogs, try to reproduce the gnats with their secret arts and cannot do it. They go to Pharaoh and say the sentence the whole plague narrative has been building toward: *It is the finger of God*. The point of the episode is precisely that this is not a natural process. Dust does not do this. God does this, and the professionals know the difference.

The second is Judges 14. Samson kills a lion, comes back later, and finds bees and honey in the carcass. Every reader in the ancient Mediterranean knew the *bougonia* legend; bees from a dead beast was the standard story. The Hebrew narrator had every opportunity to tell it that way and did not. He says a swarm of bees was in the lion’s carcass. They moved in. He does not say the lion made them.

That restraint is worth more than a hundred arguments about Genesis. The Bible was written in a world that took spontaneous generation for granted, and it declines to build anything on it.

VI. What Actually Survived

Here is the part that should make us uncomfortable.

Pasteur killed spontaneous generation in biology. He did not kill it in religion. It just moved.

Spontaneous generation is, at its root, one specific claim: **life will arise on its own if you get the conditions right**. Not from a parent. Not from outside. From within the material, given warmth, moisture, time, and the correct arrangement.

Now describe an altar call.

The lights come down. The band moves into the seventh repetition of the bridge. The preacher has spent twenty minutes on the fragility of life and the possibility that you will not wake up tomorrow. Heads are bowed and eyes are closed so that nobody is watching, which everybody knows is not true. The invitation is extended, and extended again, and the pianist keeps playing because someone is *almost* there.

That is a dirty shirt in a jar of wheat. It is the exact same theory. Arrange the conditions — the music, the lighting, the emotional temperature, the anxious bench down front — and new life will generate inside the person. Warmth, moisture, twenty-one days. Charles Finney was explicit about it: a revival is not a miracle, it is the right use of the constituted means, and if you apply them correctly you get the result.⁸ That is not a theology of grace. That is a protocol.

And the machinery has the same failure mode van Helmont's did. It produces something, so it looks confirmed. People come forward. People weep. Something visibly happened in that room. The conclusion is drawn from the data, and the framework does not permit any other conclusion. Nobody is lying. They are just not covering the jar with gauze.

The gauze, in this case, is the next twenty years. Cover the jar and watch. This is why the last word of *The Altar Call, the Anxious Bench, and the Empty Pew* is *pew*. The anxious bench reliably generates a decision. What it does not reliably generate is a Christian who is still there in a decade, and when the decision does not hold, the person concludes that the failure was in the sincerity of his own heart — because in that system there is nothing else it could have been. He was the flask. Whatever was supposed to grow was supposed to grow *in him*.

VII. The Neck Is Open

Which brings us back to Pasteur's flask, and to why the shape of that flask is the best picture of the means of grace I know.

The flask is not sealed. That matters enormously, and it is the detail everyone forgets. Pasteur did not prove that the broth was safe because it was cut off from the world. He proved something better: the broth is wide open to the world, and still nothing arises inside it, because life does not arise inside things. It arrives. It comes in from outside, along a path, and the only question is whether the path is open.

This is the Lutheran claim about faith almost exactly.

Faith is not generated in you by favorable conditions. Not by the music, not by the mood, not by the depth of your sorrow or the sincerity of your resolve. You do not have it in you, and the confessions are blunt about why: you are dead. Not sick, not sluggish, not underperforming. Dead in transgressions and sins, and corpses do not spontaneously generate anything but decay. John says it flatly of the children of God — they were born not from bloodlines, not from human will, not from a husband's decision, but from God (John 1:13). The one causal factor Scripture explicitly rules out is the one revivalism is built on.

So how does anything get in?

The Augsburg Confession answers in one sentence, and it is a sentence about plumbing. God instituted the ministry of teaching the gospel and administering the sacraments, and *through these, as through means*, He gives the Holy Spirit, who works faith where and when He wills in those who hear the gospel (AC V). The Latin is *tamquam per instrumenta* — as through instruments. A channel. A neck of glass bent toward you.

And the same article condemns the alternative by name: those who imagine the Spirit comes to people *sine verbo externo*, without the external Word. Luther gave that error its permanent name in the Smalcald Articles — *enthusiasm*, the conviction that God deals with us apart from the external Word and sacrament, which he traces all the way back to the serpent persuading Eve that she had access to divinity from the inside (SA III.8). It is the oldest heresy there is, and it is the theological form of spontaneous generation: life from within, on favorable terms, without delivery.

Against it, Paul: "Faith comes from what is heard, and what is heard comes through the preached word of Christ" (Romans 10:17, NET). Peter: born again through the living and enduring word of God (1 Peter 1:23). Ezekiel, standing in a valley of bones so dry that no set of conditions could ever help them, given one instruction — *prophecy to them*. Speak the word over the corpses. The bones do not rise because the valley became favorable. They rise because something came in from outside and said so.

That is why the catechism's Third Article is framed as a confession of incapacity before it is a confession of the Spirit. I cannot by my own reason or strength believe in Jesus Christ my Lord or come to Him. The Holy Spirit called me *by the gospel*. Not by my willingness, not by the atmosphere in the room. By an instrument, wielded by someone else, aimed at me.⁹

Which means the pastoral upshot is not austere. It is the opposite.

If faith were spontaneously generated, everything would depend on your conditions — and your conditions are terrible, and you know it, and that is why you keep going back down front. But if faith arrives through appointed means, then the question is never *did enough happen inside me?* The question is *was the word spoken, was the water applied, was the body and the cup given to me?* Those are answerable questions. They have dates. Someone else can testify to them.

You are not the jar. You are not required to produce mice.

The neck is open. It is shaped like a font, and a pulpit, and an altar rail, and the whole point of it is that what comes to you at those places did not come from you.

Sources and Notes

1. Van Helmont's mouse recipe appears in his posthumous *Ortus medicinae* (Amsterdam, 1648) and in Pasteur's 1864 Sorbonne address. On his proposed randomized comparison of fever treatments, see I. M. L. Donaldson, "Van Helmont's Proposal for a Randomised Comparison of Treating Fevers with or without Bloodletting and Purging," *Journal of the Royal College of Physicians of Edinburgh* 46, no. 3 (2016): 206–213.
2. Gerald of Wales, *Topographia Hibernica* (c. 1187), on the barnacle goose and the Irish clergy. The purported ban is absent from the surviving canons of Lateran IV and may derive from Vincent of Beauvais, *Speculum naturale*; see Maaïke van der Lugt on the barnacle goose in medieval natural philosophy and theology.
3. Augustine, *De Genesi ad litteram*, on the *rationes seminales*; Thomas Aquinas, *Summa Theologiae* I, q. 71, on animals generated from putrefaction within the order of secondary causes.
4. Francesco Redi, *Esperienze intorno alla generazione degl'insetti* (Florence, 1668).
5. R. Mancini, M. Nigro, and G. Ippolito, "Lazzaro Spallanzani and His Refutation of the Theory of Spontaneous Generation," *Le Infezioni in Medicina* 15, no. 3 (2007): 199–206.
6. Pasteur's swan-neck flask experiments earned the Alhumbert Prize from the French Academy of Sciences in 1862. The "mortal blow" line comes from his Sorbonne lecture of April 7, 1864; see René Valléry-Radot, *The Life of Pasteur*.
7. Rudolf Virchow popularized *omnis cellula e cellula* in *Cellular Pathology* (1858). The broader *omne vivum ex vivo* predates Pasteur but became closely associated with the principle his experiments established.
8. Charles G. Finney, *Lectures on Revivals of Religion* (1835), Lecture I, on revival as the philosophical result of the right use of constituted means.
9. Confessional citations: Augsburg Confession V; Smalcald Articles III.8; Small Catechism, Creed, Third Article; Formula of Concord, Solid Declaration II. Scripture quotations are from the NET Bible.