

CANST THOU SEND LIGHTNINGS?

A 1632 Story from [Grantville Gazette Vol. 7](#)

by

Rick Boatright

In like manner the lightning when it breaketh forth is easy to be seen; and after the same manner the wind bloweth in every country.

(Deuterocanonical Apocrypha, The Epistle of Jeremiah:61)

To: The Provincial of the Society of Jesus in Rome

From: Adolph Wise S.J., University of Eichstaett.

Enclosed with this letter you will find an example of the "Crystal Radio" that is being distributed throughout Thuringia. I enclose also instructions for the construction of more of these Radios as distributed by the American government.

I testify, of my own knowledge, further attested by the witnesses signatures hereto affixed and sealed, that anywhere within fifty miles of Grantville on most evenings, when you place your ear next to the opening in the box, you can hear voices and music and other sounds which originate miles away in Grantville. These voices are sent through the air itself by the lightnings into the wires of the Radio. The Radio is delicate and fails to function with the least mis-adjustment. However, when adjusted properly, at the correct time of day anyone can hear the Voice of America sent forth from the great stone tower of the Radio Station in Grantville.

No one that I have spoken with here in the university can begin to understand how this works. The Americans insist that this is nothing but another of their mechanical arts, related to the "electricity" of which I wrote in an earlier letter. They maintain that there is nothing more involved than the proper arrangement and composition of mundane physical materials. If so, then, as with so many other devices to be found in and around Grantville, it is the knowledge they possess that is important.

I have spoken with the local clergy, and they inform me that the Radios are being built mostly by jewelers and others who are used to working with fine wires and small detail work. There are others who are working on the equipment to send the lightnings from the great tower to the Radios. Again, the local clergy tell me that this equipment, although considerably more robust than the Radios, is still remarkably delicate in some ways and requires the deft touch of jewelers and similar folk.

The Americans insist that they welcome students. They also are training workers to assist in building their next "Radio Station," which they plan to locate in Magdeburg. When completed, it will be placed at Gustav Adolphus' disposal. It is said that he intends to use this voice to promote Lutheranism.

I beg of you to find within our ranks a young man, skilled in the jeweler's arts and firm in the Church, and send him to us. Some one of us must take this training, in order that we may first gain the knowledge of how this art works, and second, perhaps in some way delay or prevent the establishment of Gustavus Adolphus' Voice of Luther. Simultaneously, we must work to produce a Radio Station that can bring to the people the saving grace of the Holy Mother Church.

Signed

Adolph Wise S.J.

(and 12 other witnesses.)

Father Nicholas Smithson lowered the letter, and looked at Father Andrew White, his superior in the Society of Jesus. "Do you believe this, Father Andrew?"

"It does not matter what I believe, Nicholas. The Father General of the Society may or

may not believe it, but he has indicated it shall be treated as fact until it is proved otherwise."

"So be it. What the Father General orders shall be done." Nicholas nodded, then pursed his lips. "This is all very interesting, Father, but why is this letter here in London, and why are you discussing it with a humble parish priest?"

Father Andrew smiled. "Read the letter again. Paying particular attention to the skills of the workmen and the request made by Father Adolph."

When Nicholas set the letter down again, he was stunned. He could feel that his eyes were wide. He opened his mouth a time or two, but nothing came out. Finally, he coughed. "They have chosen me?"

"Aye, Nicholas." Father Andrew was sympathetic. "You are the son of a jeweler, trained in his craft, who is also a Jesuit. You are the very man that Father Adolph has called for."

"But... but what of my parish? Who will serve Mass, and catechism, and the rites to those hidden members of the true church if I leave?"

"My son." Father Andrew stood and walked to the window to stare out at the busy evening London street scene. "The situation in London—indeed, in all England—grows ever grimmer. Despite the fact that King Charles at one time did seem disposed to provide some little relief to those who follow Rome, since the advent of Grantville he is of no mind to tolerate dissent of any kind, even from priests. I am afraid he sees gunpowder under every chair. It may well be that we are returning to the dark times we walked under during Elizabeth's reign."

Turning back to the room, the older priest leaned against the window sill. "Nicholas, I do not doubt your courage. I am aware that if a martyr's crown called, you would respond willingly. The society has many brave, fervent men who can and will serve as priests in the darkness of London, perhaps to become martyrs if God so wills. But you, you are best suited to another task.

You are called to a different work."

Nicholas sat quietly, staring at the hands folded in his lap. There was only one decision he could make, as much as he might desire otherwise. When he accepted that, peace descended. When he finally raised his head to look at Father Andrew, he felt calm.

"Adsum, Domine. Here am I, Lord."

For when the lightning lightens, the thunder utters its voice, and the spirit enforces a pause during the peal.

(Apocrypha, The Book of Enoch 60:15)

John Grover, head of Voice of America and de facto head of radio communications in the USE, rubbed his eyes and massaged his aching temples. This weeks' staff meeting hadn't gone any better than the previous meetings had gone. Oh, they were making progress on the mundane stuff, things that just needed the application of some brute force and some material, like putting up lightning arresters and lightning rods in various locations in town. Likewise, those issues that just required the application of money were going pretty well; witness the report of the purchase of two more video cameras and the completion of the second studio setup.

Even the weekly Murphy report—detailing the things that had gone inexplicably wrong, such as the episode where someone took a glass of water into the studio and inadvertently poured it into the primary beta recorder, or the Marine radio man who for some unknown-but-very-stupid reason elected to save his rifle and powder instead of the radio when he fell into a creek—wasn't too bad. Every Murphy incident caused rules and procedures to either be amended or created. But the ability of people and situations to act outside of those rules and procedures was

ever astonishing.

John rubbed his eyes again.

Bottom line—the local cable TV team, the communications team and the Voice of America team all had enough up-time resources to keep going for a few years, more or less, unless a major disaster occurred. The problem was preparing for what would happen when those up-time resources began to burn up, blow up, or otherwise quit functioning and the spares were used up.

John fingered the screwdriver he kept in his shirt pocket, thinking hard. Everything depended on tubes. Everything. The sniping and the infighting at the staff meetings was starting to move from sarcastic to vitriolic. If they didn't make some real progress soon, he didn't know what he was going to do, especially since his only real tube-head, Gayle Mason, was stuck in the Tower of London.

Opening a drawer, John rooted around until he found his aspirin. Dry swallowing three of them, he looked at the clock on his desk. Six p.m. Time to leave. Maybe something would happen tomorrow... correction, maybe something *good* would happen tomorrow.

Canst thou lift up thy voice to the clouds, that abundance of waters may cover thee? Canst thou send lightnings, that they may go and say unto thee, Here we are?

(King James Bible, Job 38:34-35)

Claude Yardley had been a power plant operator for a lot of years. He had torn apart his share of alternators and put the pieces back together. But he had never seen anything like this.

He pushed back from the paper and debris covered table. "I'd say Murphy got to you again, John."

John snorted. "Yeah. He really got behind us on this one. This design should have been a non-starter. Look at this stuff." John gestured. "Wires stretched beyond their breaking points, coils ripped from their armatures, and we got what? 1000 Hz out of it?"

"Something like that." Claude looked at his notes. "3600 RPM router feeding a sixteen lobe alternator gives 960 Hz."

"We need seventy-five times more."

Claude pointed at what was left of the radio team's latest creation. "You won't get it this way. I understand why you came to me. Bill Porter and I probably know more about alternators than anyone else in the world at this point." He chuckled. "Not that that's saying much. But you need something like no alternator we've ever heard of. I think it was fictional."

John pushed the photo of the Brant Rock installation across the table.

Claude shook his head. "I don't care, John. Look, walk through it with me one more time. That thing is what? Five feet across?"

Nod.

"Okay. That makes it fifteen feet eight inches around. Times twelve is a hundred eighty-eight inches. Assume one inch coils around the rim. There's no way to modulate the coil less than its full width, so if you assume that they alternate north and south, then you have eighty-four sine waves per rotation."

Nod.

"So, to get eighty thousand waves per second, you have to rotate the thing a thousand times per second, or sixty thousand RPM."

Nod.

"So, any one coil is going around a fifteen foot circumference a thousand times a second, or traveling fifteen thousand feet per second, or call it three miles a second, or something in the neighborhood of eleven thousand miles an hour. Just under mach twenty, in other words. And they say it was done in 1906?"

Nod.

"It's impossible." Claude shook his head. "It must have been a fake."

John pushed the photo across the table again.

"I don't care. I don't believe they had materials that would handle those stresses, and we definitely don't."

The room was quiet.

"John, I'm sorry," Claude said gently, "but I'm fresh out of ideas. I'm going home."

His lightnings enlightened the world: the earth saw, and trembled.

(King James Bible, Psalms 97:4)

Father Athanasius Kircher watched as John Grover wandered from one empty table to the next. For once, it wasn't that crowded in the Thuringen Gardens. John banged each table with his pewter mug. Curious, Father Athanasius began following him. Once he got close enough, he heard John mutter, "Too hard."

Now Father Athanasius was really intrigued. Most of the tables in the Thuringen Gardens were quite new, solidly built against the general gaiety of a popular tavern. Sturdy was

not a description that did them justice.

John hadn't noticed the priest. He drained his mug and looked around the Gardens.

"There!" He headed for a table in one of the back corners. Father Athanasius trailed behind.

The table was one of the up-time folding tables, matched up with metal folding chairs that were also up-time in origin. Having been around Grantville for some little time now, Father Athanasius was certain that they represented an unauthorized loan from a school, or church, or one of the "civic organizations" of Grantville.

John sat carefully in a chair and banged his mug against the table top. The priest saw that it was that strange wood-like substance called "masonite." Unlike the other tables in the room, it was not sturdy, and when struck by the mug, it flexed and boomed.

"Perfect." John carefully set his cup down on the floor, and centered his chair on the table. He pressed the center of the table firmly with the heel of his hand. It flexed.

"Yes." John leaned forward, and banged his head against the center of the table.

Shocked, Father Athanasius stepped forward and grabbed John by the shoulder. John stopped in mid-bang. "No, John!"

John looked up at him. "Oh, hi, Father A."

"Let me buy you another round, John." Father Athanasius sat down across from John.

"We'll talk it through. Whatever the problem is, it should not drive you to self abuse."

"I've been beating my head against a wall at work," John said, somewhat truculently. "I might as well do it here as well. Maybe it will break an idea loose." Father Athanasius reserved comment, and just looked steadily at one of the men he thought of as a friend.

John slumped a little. His voice grew quieter. "You're a good man, Father." He sighed and his hand crept toward his shirt pocket. He started stroking the screwdriver he kept there.

"But you can't bring Gayle back from the damned Tower of London, you can't bring all those jewelers back from Prague, and you can't push skills I don't have into these hands."

There was a moment of quiet. John shook his head. "It isn't Mike Stearn's fault. Gayle Mason is the best QRP CW operator in the world. I agreed that she had to go to London. But that means that the best source of knowledge about radio tubes is hundreds of miles away."

Father Athanasius picked up John's mug, and waved at a waitress.

"It isn't Morris Roth's fault that every jeweler in the world wants to be near the world's only source of knowledge about faceted gems. But that means that the people with skills in working with very small wires and parts that I need don't come to Grantville anymore.

"It isn't my fault that I have an associate's degree in business, not a masters in electronic engineering. I'm the best available for running VOA, but I don't know the background of the history and development of radio. No one in Grantville does."

The waitress arrived with two fresh mugs. John took his without even noticing it.

"It's nobody's fault. But you put it all together, and Murphy has arranged the world so that we cannot get Gustav's Radio station on the air. And I have to. Mike is counting on me."

"We have talked about this Murphy before, John," the priest said gently. "Most would blame Satan when faced with such adversity."

John shook his head. "It isn't evil I'm dealing with, Father. It's just perversity. It's like the bread always falling butter side down. If things can go wrong, they will. Wasn't that true when you built your water organs?"

Father Kircher nodded firmly. "It was. It is." He thought back to those days, and grimaced. "Everything that could go wrong did. Indeed. We just did not express it so compactly."

"Imps, daemons, gremlins... name them as you will, Father. But Murphy acts in the world as sure as God does. But he isn't evil." John took a swallow from his mug. "The best decisions have been made. I know that. Gayle being in London, Morris being in Prague, are absolutely for the best. Godly. But Murphy arranges that the Godly best causes something else to go wrong. We have the Voice of America running, but we can't make the tubes for Gustav's station."

Father Kircher nodded. "I know. The station manager has asked each religious leader in town to give the morning invocation before the dawn news broadcast. Yesterday was my turn! It is amazing to have your words carried by the lightnings across the heavens to say, 'Here I am!' "

John smiled at the nod to Job. He remembered using the line himself when defending his interest in getting his Ham license to his Baptist pastor thirty years earlier. *My sword*, John thought.

John heaved a big sigh. He took his screwdriver out of his pocket and fidgeted with it. "The worst is the alternator."

"Alternator?" Father Kircher prompted gently.

"That's the most perverse of all, Father. It's a tease. We know that Reginald Fessenden and Ernst Alexanderson built an RF alternator in 1906. We *know* they broadcast voice to crystal radios without tubes. We *know* they were heard over a hundred miles away. We know all that. We even have a picture. A poor, dark, grainy picture, but a picture nonetheless. We can look at that picture of Fessenden's alternator at Brant Rock, Massachusetts. But that's all. We have no idea what was inside that round case. Just that it was 'an alternator.' I can't build a photo. It's a tease. We have to invent an alternator. And so I started, thinking, 'Gee, we have all the alternators out at the power plant, every car has an alternator, how hard can it be?' " John looked

back towards the folding table. He looked back at Father Kircher. "So we pulled most of the people off Gunter's team, since working on tubes without Gayle was very slow going, and started in on the alternator. I know now how hard it can be. It can be very hard."

Father Kircher's hand made the beginnings of a gesture that he knew would be of no comfort to his Protestant friend. "I know, John. I will think on it. Perhaps we can find someone to help. Perhaps we can find a way to put Murphy behind us."

John shuddered. "No! Never behind you, Father. You always have to keep Murphy in front of you. Dead in your sights, never allowing him a moment to screw anything up. Out of sight, out of mind. We need a way to keep Murphy before us."

"A talisman, then. Something to help you remember to focus on the possibilities both good and bad, to keep at the work."

"Yes, exactly. Well, that and a jeweler with an interest in radio who can help with the wire and the forms and the work on the damned alternator."

"I will think on it, John, and I will pray."

"No one can ask more, Father." John drained his cup and stood. "Thanks for listening."

"You're welcome." Father Athanasius' "my son" was unspoken, but heard nonetheless.

The vision of dreams is the resemblance of one thing to another, even as the likeness of a face to a face.

(Deuterocanonical Apocrypha, 3 Sirach)

"Nick? Is that you?"

Nicholas Smithson froze. God in Heaven, how could this happen? How could it be that

there would be someone in Grantville who knew him?

"Nick? Nicholas Smithson!" The voice was insistent. Nick slowly turned around, and almost groaned. Of all people. Father Augustus Heinzerling. What was Heinzerling doing here, and why hadn't that information been given to him? There was no possible way that he could convince Augustus that he was someone other than Nick Smithson. They had spent too much time together at the English college in Rome.

"Hello, Gus."

"It is you!" Heinzerling looked delighted, but then suspicion began to creep across his face. "It is you. What are you doing here?"

"I..." Nick hesitated, torn between telling the truth and concealing his mission. "I cannot tell you that, Gus."

Now Heinzerling's face took on the appearance of a thunder cloud. "What do you mean, you cannot tell me?"

"I have orders."

Heinzerling's jaw tightened. He took a firm hold of Nick's arm. "You will come with me and explain yourself to Father Mazzare, then." He started off, and Nick perforce went with him. Father Gus in a mood was no one to trifle with.

Father Lawrence Mazzare looked at the young man accompanying his curate with some confusion. Father Kircher watched from the back of the room. "Okay, Augustus. What exactly is your problem again?"

"Where do I start?" Father Heinzerling ran his hands through his hair. "I see this man at the radio station this morning asking for work. I knew him when he was at the English College of the Society in Rome studying. We spent many hours together in Rome attempting to find an Italian who knew how to brew beer. I thought he was my friend." Heinzerling glared at the young man.

"Go on."

"I greet him as brother of the Society and as a friend, calling him by his name, and he refuses to tell me what he is doing. He is dressed in common garb, had not come to see you. I say he's a spy for the Jesuits!" Heinzerling looked confused for a moment, then surged on. "Or a spy at least for someone in the Society. I am the official spy for the Society in Grantville, not some upstart impudent Englishman!" His frown was truly impressive.

Larry repressed a grin. No wonder Gus had looked confused. He turned to the young man. "And you are?"

Nicholas looked at this up-time priest, Father Lawrence Mazzare. What little he had been able to find out on his way to Grantville indicated the man was very well educated, and could give lessons to a saint in propriety, probity and rectitude. However, no one had mentioned his gaze—that calm, straight gaze that seemed as though it could see through four inches of oak, much less his own flimsy pretenses. It reminded him very strongly of the Father General of the Society. Nicholas abandoned all hope of dissembling; forthrightness was the only course with a man like this.

"I am Father Nicholas Smithson of the Society of Jesus, late of London."

"Nicholas? Are you named after Father Christmas or Saint Nicholas Owen then?" Larry calculated in his head. "You look a little old for it."

"*Saint* Nicholas Owen?" Nicholas exclaimed.

Larry walked over to the bookshelf and took down a volume of the Catholic Encyclopedia. "Here." Turning the pages, he found Saint Nicholas' entry. "In 1970, Nicholas Owen was, umm, will be, umm," Larry made that vague hand gesture that had come to indicate the other world. "Would have been canonized by Pope Paul VI among the Forty Martyrs of England and Wales. Their joint feast day is kept on October twenty-fifth."

He handed the volume to Nicholas who looked it over with astonishment, reading of the events and the names that rang with meaning to English recusants. Margaret Clitherow, Edmund Campion, Henry Walpole, and then... "Edward Ambrose Barlow? But I know Edward! We were at St. Gregory's in Douai together. He's alive. Or at least he was three months ago, chaplain to the Tyldesleys in Leigh."

Father Mazzare laughed. "Yes. Things like that happen a lot here. Remind me later to tell you the story of the name of this church." He put the book back on the shelf, then resumed his seat.

"But we were talking about you," Mazzare continued. "Are you named after Saint Nicholas Owen, then? And what are you doing in Grantville?"

"I am named after 'Saint' Nicholas Owen. I suppose I will have to change my feast day." Nick smiled. "My mother was reluctant to name me after a dwarf, but father insisted that Nicholas Owen did the work of three normal men and was a great champion of God. He met Owen while he was building some of his secret rooms at homes of customers of my fathers."

Larry lifted an eyebrow. "And your father was?"

"James Smithson. He is a jeweler, a specialist in fine metal work and elaborate braided wire pieces. He trained me and my brothers to follow in his craft." Nick shrugged. "That is

why the Society sent me to Grantville. We have heard of the call for jewelers and metalworkers to work on the Radio. And we know that this Radio is planned for King Gustav's use, for his 'Voice of Luther.' Thus my disguise. It is highly unlikely that a Lutheran king would want a Jesuit learning the secrets of his Radio."

"Nicholas, you have a lot to learn about Grantville, and not just our list of saints. Father Kircher will introduce you to John Grover, the head of Voice of America. Unless I miss my guess, he will be absolutely delighted to meet you. If you can make the coils he needs, no one here will care about your religion.

"You can also resume your priestly functions. Fathers Heinzerling and Kircher and I can use the help. You can stay here, and in return you will take your turn for the morning and evening masses.

"Father Athanasius will introduce you to the director of the radio project in the morning. For now, let Augustus find you a place to put your things, show you around the church, and you can try the local beer. It's not English ale, but I suspect it's better than anything available in Rome."

Father Mazzare stood and held out his hand. "Welcome to Saint Mary's."

Yet a man is risen to pursue thee, and to seek thy soul: but the soul of my lord shall be bound in the bundle of life with the LORD thy God; and the souls of thine enemies, them shall he sling out, as out of the middle of a sling.

(King James Bible, 1 Kings 25:29)

John presided over this weeks' staff meeting in a much better frame of mind than last

week. The interminable list of reports didn't faze him. Even the bickering between Ken Butcher, Andrew Rogers and Jennifer Hansen didn't bother him. The final report was from Gunter Klein, the only down-time team head.

"The vacuum pump works, but is not yet good enough. We get a glow, we get a pretty light bulb, we do not get a tube. It is slow, but each week is better. You will have tubes before you need them. I swear it."

Ken opened his mouth to say something, but John forestalled him. "Drop it, Ken. They're doing the best they can, especially with Gayle gone." Ken sat back, and sullenly nodded.

"One last item. I need to introduce a new staff member this morning. This is Father Nicholas Smithson. He is not our new chaplain. Father Nick is a trained jeweler specializing in fine wire work. He is going to be starting on the alternator project with us immediately, so if he asks you for information or assistance, please try to make yourself and your folks available.

"That's about it for today, folks. No one ever got any engineering done sitting in a staff meeting." John stood up. "One last thought. We do have to think of everything. We're stretched way too thin. We need something to help us focus. We need some way to keep in our minds that we have to bust the problems before they happen. Father Kircher said the other night that we need a talisman. I think he's right. When you have a minute, try to think of something, a talisman, a touchstone, something to keep our minds on the goal and on the nitty-gritty at the same time."

John knew his people would try. He knew he would try. Still he thought it slightly unfair that Father A had arranged for his special table to be returned to the Moose Lodge. He didn't belong.

Nicholas Smithson sat at the kitchen table in the St. Mary's parish house and looked at the collection of items spread before him. There was a coil of very fine wire, a magnet, a voltmeter, and a textbook.

He waved the magnet in front of the coil of wire. As the magnet approached the coil, the meter moved left. As the magnet retreated the meter moved back to the center and then to the right. He waved the magnet back and forth and the meter waved back and forth.

"Eighty thousand times per second. No one can move a magnet eighty thousand times a second."

He sat the magnet down and picked up the coil of wire. He waved the wire over the face of the magnet. The meter waved too. He set the coil down. He picked up the magnet again and spun it in front of the coil. The meter waved back and forth as the magnet spun, right-left-right-left for each rotation.

"Eighty thousand waves per second." He looked at the piece of paper where he had done the geometry. "If I spin this forty thousand times per second, I get eighty thousand waves, and the outside of the magnet is only going"—Nick looked down—"seven thousand miles per hour. I think not."

Nick picked up the "thing" John had given him. Eight magnets soldered together in the center. He spun it in front of the coil. The meter waved, but less. John had assured him that this was because the individual magnets were smaller, and that made sense. But still, eight flicks per rotation. The outside would be going only eighteen hundred miles per hour.

"I think not."

Moving the coil, of course, was worse. Coils are fragile things. And large. Much bigger than the magnet.

"Such a simple thing. August would understand it. My mother could understand it. Magnet back and forth, make electricity. Magnet and coil move, make electricity. Magnet and coil sit there, nothing gets made."

He picked up the drawing he had made of the Brandt Rock transmitter from the photograph, and reviewed his calculations.

"Thousands of miles per hour. Murphy would destroy it."

Nick thought about John's introduction to Murphy's Law. Everything that can go wrong, will. The son of a goldsmith used to working with heat and molten metal and thin wires and fluxes and solders knew all about Murphy and his imps even if he had not named them so. He sat, spinning the magnet.

Father Kircher came in. "Hello, Nicholas. How went your first day with the radio team?"

"I learned much." Nick waved his hand over the objects on the table. "I learned why John was banging his head." He spun the magnet again. "I may have to go find this 'Moose Lodge' to borrow their special table back."

"Now, Nick. None of that! And I have news, and an idea!" Athanasius removed a book from his habit and sat it in front of Nick. "Who are you named after?"

"Saint Nicholas Owen. Saint at least, here in Grantville."

Athanasius opened the book to a marked page. "And who is this?"

"Saint Elizabeth Seton, the first American saint."

Athanasius nodded. "Who will never be born, nor sainted by a Pope who will never be

born nor elected to the seat of Peter. And yet, here, in Grantville she is a Saint."

Nicholas looked up. "So?"

Athanasius gestured to the volumes of the catholic encyclopedia. "What of all those other Grantville saints in their dozens or hundreds? Are they less saints because they will not live? Are they less saints because they were proclaimed so by popes who will neither live nor serve? I do not know. But I know that I have agreed that here, in St. Mary's, and in Grantville, we honor their days."

"Yes, Saint Nicholas Owen and the Forty Martyrs—a third of whom are perfectly well alive—is a mass I intend to celebrate myself."

"So, it isn't their realness that makes them saints here is it? Or who proclaimed them?"

"No..." Nick agreed cautiously.

"Then I offer you your talisman, and your protector for the radio team." Athanasius laid another book on the table. *The Warlock Unlocked*.

"I offer you Holy Saint Vidicon, patron saint of the Cathodian order of the church. Martyred in 2020 in service to the Church, sainted in 2030 by Pope Clement. Those of his order are dedicated to reducing the action of Murphy's imps and the control of the perversity of technology. His feast day is February twenty-ninth."

"February twenty-ninth? That's, that's..."

"Perverse?"

"A fictional saint?"

"A saint, who will never be born, named so by a Pope who will never be born, nor elected. Read the book. Then, we will talk again. In the mean time, I offer you this as well."

He handed Nicholas a wooden handled tool.

"What is it?"

"Your talisman. The same one John carries. The same one most of the 'techs' carry. A little yellow screwdriver.' "

"No. You may not form an order dedicated to a saint invented by a science fiction writer in 1982." Larry Mazzare looked most firm.

"But..."

"Which part of *no* didn't you understand?"

"But..."

"You may distribute the talismans. You may use the story from the book as the inspiration for the talisman. You should use the terminology. God knows that Murphy certainly is perverse and acts in the world. If that weren't true then several of the parishioners' cars would quit breaking for no reason."

Nicholas saw Larry's look become stern. "However, if you need to call on a saint to assist you, I urge you to look to the saint most closely related to your talisman, not some fictional construct of an unchurched Episcopalian."

"Who?"

Larry picked up one of the screwdrivers from the box. "I note the appropriateness of the cross at the tip. I'm glad you didn't get flat bladed ones." He paused. "You ought to know who I mean. He was canonized not ten years ago. A man known for his sense of humor. He ought to be able to help us laugh in the face of Murphy's perversity."

"But the talisman?"

"Oh, come now. He would have appreciated the appropriateness of it. By all accounts, he would have had the entire congregation laughing."

Nicholas just stared at Larry.

Father Mazzare opened a reference to a painting of a man. He grinned as he showed it to Nicholas. The man in the painting wore half a beard and was kicking a ball while leading a rag-tag group of people who carried household goods through a street. "Come now. The pun is even in your native tongue." He spun the book around. "Saint Phillip."

*Thy life hast thou ordered in wisdom, and hast called understanding thy mother.
(Deuterocanonical Apocrypha, Esdras 2:55 (Ezra 4:55))*

The hallowed halls of the Grantville National Research Library were far from Nick's idea of what a library was. First, there were far too many books. What had started out as the Grantville High School library had changed over the last months. Now, with the ceiling tiles removed and the shelves extended up to the metal ribs holding the roof, with more shelves tucked into every nook, and tables and chairs in every cranny, Nick felt that the services of his name saint would be well used. No master carpenter had designed this place.

And the books! There were more titles in this one room than existed in the rest of Europe. Books, pamphlets, magazines, broadsheets, newspapers. Surely the answer would be here.

It amazed him that the Americans had not tried this. He had asked John for the results of

the library search and their notes. One page of notes, and one magazine article. It simply wasn't possible that there was not more information than that. He looked at the room again. There was a sign. Library research orientation class: 09:00. He saw someone standing in front of a small group of what appeared to be down-timers, and joined them.

"Welcome to the Grantville National Library. My name is Gladys Wood. I'm a senior researcher here. This brief orientation will help you to begin to find material in the library. We will cover several basic areas: Our fee structure, collections, indexing, annotation mechanisms, physical access..."

"Dictionary form. They organize information alphabetically. It is insane! Related material may be completely separated. Related people are not listed together. Related places are not listed together. It is completely arbitrary and utterly brilliant." Nicholas looked at his long list of words taken from the article he had. Dictionary form. "I can do this. It was what I was trained to do. They don't need a jeweler. They need a scholar."

Nicholas tapped his screwdriver on the table as he looked out across the desk, contemplating. "Brother Johann, Melville Dewey was a very great man."

"Yes, he was."

"The index, the 'card catalog,' was a work of genius. The subject coding, clearly the work

of inspiration. But these..." Nicholas waved his hand over the pattern of three-by-five cards carefully arranged on the desk. "These are brilliant. Without them, glossing this library would have been the work of years. But this... this is wonderful. I make a note of the source, I list a topic, a comment and so on, and I can re-arrange, I can move the gloss from place to place. Cross references. Dictionary Form. Brilliance."

Brother Johann nodded. "I know." He looked at the cards, with a bit of irritation showing. "I only wish the stationer we ordered them from had not been so literal when we said we wanted him to duplicate the sample we provided. The "Recipe" printed across the top, and the drawing of breads doesn't actually assist in the work. But, we have only fifteen thousand left. They'll soon be gone, and we can get more. Plain ones this time."

Nick nodded. "That will help. But it is really no matter now. I just use the plain side."

"So," Johann asked, "have you found it yet?"

"No, but we are getting closer. I can feel it. With each additional source, with each additional reference, the quarry is that much closer to us. It won't be long."

With that, the two men bent their heads back over the books they were reading, and continued in pursuit of the alternator so desperately needed by their friends.

Nick's eyes widened. He sat back in his chair with a sudden jerk, and his chair screeched on the floor.

"Those idiots." Softly whispered. Brother Johann looked up in surprise.

"Those idiots!" No whisper now, but full voice and almost yelled.

"What is it, Father Nick?"

Nick turned to his fellow researcher.

"Brother Johann, have you heard the word 'sophomore' here in Grantville?"

Johann nodded. "Of course. They use it to identify a rank of their children in school."

"The word is Greek in origin, you know." Johann nodded again. "It means 'wise fool.' And I've just decided that it should be applied to all of Grantville. To have all this wisdom and knowledge available to you," Nick waved a hand to take in the stacks of books, "and not know how to use it makes one a fool, indeed."

"You found the answer?" Johann began to show excitement.

"Yes, I found the solution to problem of the alternator. It doesn't move."

"What?"

Together they bent over a volume from the Encyclopedia Britannica 1911 edition.

"So, I understand congratulations are in order." Nick looked up to see Father Larry and Father Athanasius approaching him.

"Not really, Father. I just found something they had lost, is all."

"Nonetheless, Father Athanasius tells me that John's ecstasy almost approaches hysteria. Good job. It will make a lot of people very happy. So, how long did it take you to find the answer?"

"The alternator? With Brother Johann's help, I had that in a little over two weeks. It merely took careful work, word after word from the encyclopedia, then more lists of words, and

more encyclopedia articles. I cannot build them, you understand, neither the alternator nor the frequency doubler. That will take mechanics and such. But the solution was simple enough. John's team has the information and they have started building a model."

Nicholas laughed. "Saint Phillip be praised." He reached up to his breast pocket and touched his screwdriver. "The solution is both funny and perverse. It will require careful attention, and it will be difficult, but it can certainly be done. The Americans would never have thought of it."

"Why?"

"Because the secret of the alternator is in not *doing*. The alternator does not spin! It just sits there. The coils, the magnet, all of it, just sits there. It is very unAmerican. What spins is a plate of iron with holes that occasionally let the magnetic field through to the coils. The plate, unlike the coils or the magnets, can be made quite strong, and large, and can spin fast enough to make the waves many, many thousands of times per second. Alexanderson was very clever. And the irony is, the Americans will not see the irony in it."

They all laughed at the joke, and the irony of the joke.

Father Mazzare surveyed the stack of papers and the mass of note cards scattered over the surface of the table. "So, what are you doing here—designing it for them?"

"No, I turned over everything we found to John a few days ago."

"So what's this, then?"

Nick waved a hand over the table. "I'm writing a guide to the study of up-time documents. A guide to the exegesis of up-time texts, and the application of their techniques to our writing and publishing. The Dewey Decimal System of course, the APA standard form for citations, the concept of 'Encyclopedia' and the differences between those and 'Dictionaries' and

'Gazetteers.' The power of organizing information. Why did we not think of it? Alphabetical organization is an insane way to arrange topics—except of course, that it works. Rules for sorting. Rules for indexing. All the tools that the up-timers have that they seemingly have not learned how to use."

Nick shook his head. "The alternator is a good example of why it is needed. The up-timers, most of them, simply do not think like scholars. Most of them, like John, tend to be doers, not thinkers. Do you know? Everything they needed for the radio alternator was in the encyclopedia. They simply didn't know how to look. They spent a half a year winding coils and breaking wires trying to spin the coils or the magnets because their first inclination when faced with a problem is to *do something*. They even have an aphorism about it. 'Those who do not know history are doomed to repeat it.' They all know this, but few of them grasp it."

"Yep." Father Larry nodded. "You missed the other saying, though. That one goes 'Don't just stand there, Do something.' I wouldn't want to say that no one in Grantville understands what you're talking about. Most of the folks just have never had to learn it. They're thinkers, but not scholars. If things don't work out the way they would expect them to from their experience, they can generally figure and tinker a way out of it. Heck. *I do that. We all do.*"

"And thank God for that! But it means that we who have been adopted by them will have to be their link to what they know." Nick waved his hands at the stacks again. "Even their teachers are not scholars by trade. The Americans managed to make teaching into a job separate from scholarship. I, for one, would never have believed it, but it is true."

Nick tapped the papers in front of him. "So, I have been writing a guide."

"Do you have a title, yet?"

"I am still looking for a title. I am considering," Nick coughed, "*How Not to Think Like a*

Redneck."

Father Larry looked amused, but his voice was very dry. "As one who would wear half-a-beard, I'm afraid you're not authorized to use that term. You're not a member of the group."

Nick grinned, and reached into his satchel. He pulled out a yellow Cat hat, which he firmly placed on his head. "John made me an honorary redneck, and told me to go for it."

THE END

***Rick Boatright** has been a part of the 1632 team since early 2000. In addition to being the 1632 tame geek, and head geek for Jim Baen's Universe, Rick is a ham radio operator (n0oxf), a professional software developer specializing in unusual database applications, and an active member of the Topeka Kansas Baha'i community. In his ample spare time he tries to deal with a spouse, two cats and a Pomeranian puppy princess. Rick has been writing for the Grantville Gazette since Volume One, mostly non-fiction.*