COULD YOU RAISE A BOY GENIUS?
THE STORY OF RYAN PATTERSON

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by Robert Ison on March 4, 2004
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I suspect for many of us the process of searching for and deciding upon a topic for Athenaeum papers is as difficult as preparing and writing the paper itself. I know it is for me. And so, some months ago, I began my search for a suitable topic. I considered all manner of issues: historical, humor, literary works, all worthy and all still in my memory bank for future papers. But all of those ideas were pushed aside when I happened upon a fascinating article by a gentleman named Andrew Corsello about a remarkable boy genius, Ryan Patterson.

The title of the article, The Electric Boy Genius, in the December 2002 issue of GQ caught my eye, but nothing like the subheading below the title which read,

> Before Ryan Patterson went off to kindergarten, he was wiring his family's house. By the first grade, he was building robots. Thanks to a mentor who engaged his outrageous curiosity, the boy invented gadgets that would change people's lives. Smart kid.

Now I was really hooked. As I read the article, I was immediately struck by

the tone of the article. It was not cold and presented in a "just the facts ma'am" manner. Mr. Corsello breathed life into the history of Ryan Patterson's young life.

Ryan's amazing affinity for electricity began while he was still in diapers. He could not even walk, but became interested in something on the wall, primally interested, uncannily so. Ryan spies a butterknife on the floor near the kitchen table, grasps it in his pudgy little hand and crawls to the electrical outlet on the kitchen wall. He manages to wedge the thin tip of the butterknife under the plastic socket protector and pries it off. He selects one of the slots and inserts the knife. He doesn't get far. Apparently, he needs better equipment. Because his father is a welding fabricator, a man of many tools, it is not a problem for young Ryan. Inevitably, he locates a screwdriver and, inevitably, the screwdriver grazes the knife.

Ryan's mother is in the next room and does not see the flash. She does, however, catch a glint of light off the butterknife as it zings through the first floor of their home. She flies to young Ryan. There is an acrid haze and a great black scorch mark encircling the socket (almost every outlet in the house will eventually have one) and a trickle of blood on her boy's right hand. He looks up and in a mild voice says, "Ow?" What Ryan's mother has suspected

for sometime is now quite clear: Ryan is a curious, curious boy.

The next year at Christmas, Ryan, age two, visits Santa Claus at the Patterson's church. Ryan is more interested in examining the thick black cables that lead to the stage rather than the old man sitting on it. When it is finally Ryan's turn to sit on Santa's lap, what do you suppose, at age two, he asks Santa Clause for? Yep, you got it, an extension cord.

Now are any of you thinking the same thing that I'm thinking? All of us here are parents. Would you even consider giving a two-year old child an extension cord, a strangling hazard to a child who is already obsessed with wall sockets? Well, I don't know about you, but I would have had trouble with that one. Ryan's parents, however, didn't. Ryan, at age two, became the proud owner of an eight-foot green extension cord. He would sleep with it under his pillow. He would carry it from one room of their house to another.

Later, at age three, Ryan's curiosity turned to the Patterson's electric can opener. Sherry and Randy Patterson returned to their house to find that their babysitter's attention had wandered and Ryan has dissected the family electric can opener. It lays in two halves, the screws, levers and gears neatly sorted, with the wired motor precisely in the center.

Now, again, I ask you, how, as a parent, would you react to that kind of

behavior? Apparently the Pattersons, by all reckoning an ordinary family, do not react with anger but with curiosity of their own.

Ryan soon moved on to bigger and bigger items. Soon the family stereo was disemboweled on the living room floor.

Ryan constantly questions his parents, "How do power plants work? How do generators work? How do they turn power into electricity?" The boy's questionings dominate his waking hours. His questions soon branch and evolve beyond his parents' knowledge, and they can only wonder what is driving their son's curiosity. The Pattersons, through what I can only term incredible foresight and wisdom, decide that stifling their child's need for knowledge will ultimately prove more dangerous than feeding it, and they decide to give him a gift: the gift of non-interference. They will let his knowledge and curiosity grow. His toy box will become an appliance graveyard.

His father, Randy, is not a college graduate but is someone who has a practical knowledge of what makes things work. Ryan's father built the Patterson home in Grand Junction, Colorado from scratch with his own two hands. He turned a V-8 car engine into a log-splitter. The parents permit the boy to drill holes in the house in order to install a personalized door bell that

rings only in Ryan's room. His father teaches Ryan everything he knows about electricity. The two discuss leads, alternators, poles, conductors, fuses. Ryan learns to use a soldering gun, a power saw and even a blow torch. And at bedtime, he snuggles into bed with his extension cord. Now, once again, I ask you...would you allow a 3 or 4 year old child even near such tools, much less use them?

Two years later, Ryan shows up in the kitchen and asks his mom to prepare him some soup and hands her the reassembled can opener to use to open the can. Not long after that, an electrical inspector appeared at the Patterson's house to inspect the wiring on Randy's latest addition to the house. The child, who has not yet entered kindergarten, trails the inspector from socket to socket. "Is it okay?" he asked quietly at each terminal. "Did I do it right?" "Sure, kid", the man chuckles thinking it's all make-believe, "All up to code."

It soon becomes apparent, however, that Ryan doesn't just want to know; he wants to create. By the time he enters first grade, he begins to tape written instructions to the steering wheel of his father's truck. A typical order, "I need a piece of galvanized (misspelled, of course) steel and I need three feet of it. And one inch wide, and I need it .22 gauge. Bring home by Friday."

With blowtorch and saw... keep in mind this child is in the first grade... Ryan fashions the metal plates and rods his father brings him into limbs and heads. He solders the body parts to the axles of small motors and then nestles them in sockets carved into the side of milk cartons. Ryan has created his first robot.

However, his robots don't just raise their arms and swivel their heads, oh, no. They do things. He arms one, he dubs "Scorch", with a working claw and a water cannon. The water cannon, an old windshield washer pump, ranges up to 20 feet. Several years later, Ryan's elementary school principal learns that Ryan is not only creative, but that he has a sense of humor as well. Scorch's successor, "Chip", armed with dual water cannons and a claw arm that rotates on three axes, is directed by Ryan to wheel and fire on the principal as he walks in to check on the annual talent show.

Ryan's mind, like many savants, is very narrowly focused. In Ryan's case, on all things electrical. However, he hides behind the curtains when company comes to the house. Sherry and Randy wonder if extra-curricular activities might help and sign him up for Little League. Ryan, not being a star athlete, is consigned to the outfield and soon he is drawing diagrams in the outfield dirt and baseballs skitter by only to be retrieved by other boys.

By the time second grade rolls around, Ryan no longer wants to attend school. He only wants to stay home and make robots. He begs his mother to not make him go to school but to allow him to stay home and make robots.

This plea, and all of the incidents leading to this time, convince the Pattersons that desperate measures must be taken. It leads his mother to call John McConnell, recently retired from his post at Los Alamos, where he ran the injector on a half-mile particle accelerator. "I understand that you are a physicist and know about electronics, and that you've done some mentoring," she says. "I've been helping out a kid over at Mesa State College," he offers. "Well, sir, I have this boy, and he's very curious." "How old is your son, ma'am?" "He's in the third grade." "I see..." She offers hopefully, "He's just so very curious."

John McConnell agrees to come over on Saturday and spend a half an hour with Ryan Patterson. McConnell was actually looking forward to his retirement and doing a bit of volunteering, however, babysitting was not an activity he looked forward to. When John McConnell and Ryan are introduced, Ryan says very little. They retreat to the garage and Ryan's workbench. John begins with a few of the cute kinds of questions one tosses to a typical third-grader whose parents are nudging him to get involved in electronics. "What's

your robot's name? What can he do?" And Ryan answers. And then John raises the ante a bit. "What's his power source?" Ryan shows him how he juiced the robot with a motorcycle battery. John goes a bit father, "How do his switches work?" As Ryan quietly answered each of his questions, John began to experience something inside. You have to understand that Ryan, at this time, had a speech impediment. The robot "gwips with his cwaw". But McConnell would note that the boy had a distinct look of inquiry and he suddenly found himself saying things one has no business saying to a third-grader. "Perhaps you should replace your switches with hexfits, Ryan." "Perhaps you should build a DC-to-DC adjustable voltage regulator onto a circuit board, Ryan." That first half hour passed, then an hour, then two, then three. In the house, Sherry Patterson is worried sick for her son, and she is just hoping that John McConnell likes her son, Ryan. Late in the afternoon, the older man walked back into the house and declares that he has never seen another human being, much less a child, with such focus, and he further declares that he must work with the boy.

Ryan stays in school but he and John meet on Saturdays. Ryan is anxious to move beyond rudimentary switches and relays. He wants to get into transistors. In their second meeting, he builds a functioning voltage

regulator. The meetings soon move to the McConnell's house with its shop and machine tools, and McConnell also realizes that Ryan will require far more than a couple of hours each week. The task will alter his life and his plans, but John McConnells sees that there is a need to be met and he made his decision.

Almost from the beginning, the sessions run for eight hours and more. The sessions seemed as one long conversation, questions and answers. "What is electricity? What are electrons?" Ryan is amazed and stimulated that John knows the answers.

John and Ryan begin to create. It is Ryan's sole decision as to what it is he will build.

Now in the fourth grade, after a Valentine's Day box decorating contest is announced, Ryan decides to kick it up a notch. He decides to build a Valentine's house. Except for a Radio Shack voice chip, Ryan builds the device from scratch, from its mechanical trigger levers to its board components. When that February 14th rolled around, Ryan's classmates quickly cast aside their own decorated shoeboxes to line up and drop their valentines in Ryan's house. As each one drops their cards through the roof, its windows would light up, its windmill began to churn, and then, from within the living room,

Ryan's voice could be heard saying, "Thank you very much, have a happy Valentine's Day."

The Saturdays slip by and the intensity of the boy's questions grow. For every answer John supplies, two, three and four more questions sprout. McConnell sometimes finds himself dropping Ryan off at his home and thinking – you have got to help this kid! John's role involves not only Ryan's education, but also his preservation. At age eight, Ryan's mind has somehow not fallen into any of the grooves most children's minds fall into, in part, because his parents don't believe much in movies, much less Nintendo. Ryan hasn't tuned into any frequency other than his own. He still has the idiosyncratic brain he was born with, a brain whose default mode is not be entertained but to learn and to create. John comes to see that his job is to keep Ryan's mind in its original mode and to show by example that cool people dig science.

As their friendship grows, Ryan begins to have as much effect on John as John is having on Ryan. John finds that in fact he wants more. He becomes evangelic about teaching. So he lobbies the school system in Grand Junction, Colorado for space, lobbies private sources for grant money, and with as much focus as he ever used at Los Alamos, he builds the Western

Colorado Math and Science Center. You can access the Center's website and see what a magnificent job John McConnell has done with it. School kids come by the classfuls. They see Cheerios, excited by static electricity, floating in mid-air...holographic pigs floating above tabletops...a kind of backlit spackling on a television screen and then learn it's the magnified surface of a Dorito. The kids "dig" what they see. Very much like Ryan, John McConnell himself has become electrified.

Ryan Patterson is no nerd. He is voraciously competitive. Before entering the 8th grade, Ryan began brainstorming for the coming year's science project and tells John he will build a robot that can compare human and artificial neural networks. He tells John that he will need a micro controller. It was at this point that Ryan was ready to relinquish analog technology, John's domain, and step into the digital realm. From that point on, in technological terms, John McConnell will just be along for the ride. The robot wins the State Fair, the highest award an 8th grader can take. But it's not enough. Ryan vows that the next year, he will go farther.

The following year, Ryan, now 14, tells John that he will build a robot that can reason its way through a maze. It is Mazebot, and it thinks. Its artificial brain links to a TV screen that shows Ryan's algorithms at work,

transforming the maze walls it sees through its camera eye into geometric solids and negative spaces. The robot wins State in the engineering category and then a special prize at the International Fair in Philadelphia...but not the coveted "Best in Category" award. Ryan is devastated. He vows that next year, he will win "Best in Category" at the International Science Fair. Ryan's mother cautions against getting his hopes up, knowing that Ryan is up against much older competition at that level.

That spring, after the Columbine shooting incident, Ryan suffers nightmares about the shooters, Eric Harris and Dylan Klebold, and about the school where his mother works as a kindergarten teacher's aide.

He tells his mother, "I am going to build a robot that can search buildings. It will be cheap, so every school can have one and people like you won't be in danger."

It is Sleuthbot. In terms of code, circuitry and workmanship, it is an order of magnitude beyond Mazebot. It is essentially a surrogate skull that allows an operator to search a building remotely, at up to 15 m.p.h., with day or night vision and stereo hearing. It is both ingenious and practical.

When it comes to science fairs, Ryan's psychological preparations stand out as much as his machines. Just as there are fanatical and tyrannical tennis

parents, baseball parents, soccer parents and the like, there are tyrannical science fair parents. Ryan and John stand idly by and watch, as all around them, adults seize their children by the shoulders and drill. John, for his part, simply pats Ryan on the back, smiles, nods and says, "Give it your best shot, Ryan," and leaves.

Sleuthbot wins State and goes on to win Best in Category at the 2000 Intel International Science and Engineering Fair...an astonishing feat for a high school sophomore.

He tells his mother, "I didn't win all I could win." There are awards beyond Best in Category. One award pays $50,000.00. Another reserves a guest of honor place at the Nobel awards in Stockholm. Ryan vows, "Next year, I will take them all." But to do so, he needs a project that will make Sleuthbot look like a piece of cake.

Ryan is 16 years old now, with friends who "get" him and respect what he does. Ryan endured tough times during middle school, taunts and jeers from bullies and punks. But with the love and concern of his parents and John McConnell, he was lucky to avoid much of the negative side of public school.

But August, the time during which Ryan usually decides on a project, comes and goes. Summer turns to fall. He and John brainstorm for hours,

days and weeks, and still, Ryan has no idea what he will create.

Several days later, Ryan Patterson walks into a Burger King and sees a terrible thing: a girl his age, deaf, trying to order while a crowd looks on. Ryan reflects on this and on a deaf schoolmate he has seen traveling the halls with an adult chaperone, a translator. To be a teen and to have to walk around all day with an adult Ryan thinks is humiliating.

So he works while his family sleeps. He thinks of his circuit board with its grooved intricacies beaming from his computer screen. On weekends, he sometimes works for 30 hours straight. He does not eat or even alter his posture in his chair while working. When tiny resistors, 1/500th of an inch long, pop from his tweezered clasp into his eye, as they would do with surprising frequency, he would work for hours and finish what he's doing before going to the bathroom mirror to coax out the synthetic fleck floating around his eyeball.

Ryan is building a glove. The deaf girl will use it. From now on, when she walks into a Burger King, she will slip on the glove and hand the cashier a small liquid crystal display, a wireless device, no larger than a cell phone. The glove will translate the shapes she draws in the air into text.

Ryan learns sign language as well as new computer language. John

McConnell's wife sews ten sensors, flexible strips of carbon-coated plastic that act as variable resistors into the glove's fingers and palm. The sensors transmit data via radio frequency link to a tiny computer attached to the back of the glove. Before using the glove for the first time, a user executes a sign and then presses a button to tell the computer that, "this is my letter A, and this is my letter B," and so on. The meaning of this is that the glove adapts to each user's signing "accent". Once the computer learns a user's "voice", it can print his words as fast as he can sign them. The prototype's components cost roughly $200.00.

The glove sweeps the Regionals in March and then the State in April. And then in May, it's on to the Intel Fair in San Jose, California. Ryan's high school principal shows up, skipping a crucial baseball game in Denver where the school team is playing for the State Championship. The convention center, filled with some 7,000 attendees erupts when Ryan wins Best in Category.

Ryan has won one of the grails, the $50,000.00 Intel Young Scientist Scholarship Award, and then, the other grail, the Nobel Prize visit. Ryan is going to Stockholm. Ryan wins nine other special awards and takes home $216,000.00 in cash and scholarships.

Back at his high school, the principal convenes a special assembly. He's not sure how the school's 1,600 students will react. The stage is a flood of flowers, the cheerleaders are in uniform, and there is even a red carpet. Then the school band kicks in, the cheerleaders start kicking, the doors open, and there, strolling down the red carpet, is that little science dude. Gloveboy. And the kids go wild. They give Ryan a standing O and start screaming, "Ryan rocks! Ryan rocks!"

At age 19, Ryan looks younger than his age and is very pale. He has been announced the winner of the Intel Science Talent Search (yet another $100,000.00), but he's a boy that also has a sense of humor. One morning, after ringing NASDAQ's opening bell, he goes on "Good Morning, America" to show off his glove. The producers instruct him to sign, "Hello, Charlie," to the show's host, Charlie Gibson. But when the time comes, Ryan, who knows his girlfriend, Tiffani, is watching back in Colorado, he comes up with something different. With a puzzled look on his face, Charlie Gibson says, "Prom, Tiff?" reading from Ryan's liquid crystal display. Pretty nervy for a 19-year old science geek, asking your girlfriend to the Prom on national TV.

Ryan will tell you matter-of-factly that he despises literature. He despaired when his teacher would give him poems to read that made no

sense. In Ryan's mind, if he wants to write how something works, he says how it works. He reasons that if an author wants to say something, he needs to say it.

Universities across the nation began recruiting Ryan Patterson as aggressively as they would any All-American football player. Ryan tells them that he shouldn't have to take core engineering courses that cover ground he and John McConnell covered when Ryan was in the 5th grade. He tells recruiters he will need a quiet, alcohol and drug-free dorm, with a room that is "not small" and that a friend from Grand Junction will be joining him. Ryan also tells them that he will need dedicated lab space to continue development of the glove. And because the University of Colorado says yes to all of it, Ryan matriculates there. Even before he enrolls in school, Ryan has amassed more than $400,000.00 in cash and scholarships. Ryan has been written-up in numerous magazines such as Newsweek, and, of course, GQ, but also in a number of professional journals, some of which my wife, Pam, an audiologist, routinely receives. Seventeen magazine dubbed Ryan Patterson one of its "hottest boys of summer".

At one demonstration of the glove, Ryan is approached by a Temple University professor who tells him, "I want you to know I worked at Bell Labs

in the 70's. We had at least half a dozen scientists working on this very technology. And they weren't even close to what you're doing now." Ryan thanks her and suggests that the technology has improved so much, but Ryan knew better, as did another computer scientist who was nearby. "No, Ryan," he said, "the technology didn't exist until you invented it."

We have reached the point at which the article ended concerning Ryan's brief career. Interested about his success at the University of Colorado, I logged onto the internet and did an internet search for Ryan Patterson. Interestingly, there are a number of Ryan Pattersons, including a highly-touted football player, but there, on the first search page, is Ryan's own web page. Going to his web page, you can learn about his class schedule and other activities.

I wrote to Ryan and asked him what his perceptions of college were. He responded that it's the way to get the piece of paper required to set you ahead of people who don't attend college when seeking employment and advancement. But he added that he doesn't particularly enjoy it. He looks forward to getting finished so that he can get into the workplace, where he believes he will actually "learn" the applicable knowledge needed for a successful career. He admits that he is very challenged at school, even more

than he expected. His class schedule is predominantly mathematics or engineering-related. He is currently working on a project through Colorado University called, "Lifelong Learning and Design." Ryan is helping to design the hardware for a device to help people with daily tasks who have cognitive disabilities. He presently has various projects in the works, but he cannot discuss the specifics of them at this time. Ryan and John McConnell remain very close. They talk on the phone at least once a week, and John visits Ryan about every other month. John remains very involved in the Math and Science Center, spending about 60 to 70 hours a week as Director. As an aside, I asked Ryan if he had ever had any IQ testing, and he told me that he had not.

I can only wonder how Ryan Patterson might have turned out differently had his parents not allowed Ryan to be curious, not allowed him to explore those things about which he was curious, and had they not contacted John McConnell. I also thought about my experiences as a parent and how many times I've told my son, Brad, not to do something because of fear that he might be hurt, or even sometimes because it would simply be inconvenient. In doing so, do we, as parents, somehow stifle some measure of genius? It is a question we, as parents, wrestle with every day.

I don't know if I could have allowed Ryan Patterson the freedoms that

his parents allowed. In doing so, would I have robbed the world of a boy genius? Luckily, we'll never know.

And what if John McConnell had chosen not to mentor Ryan? He may well have still achieved great things in his life, but who knows? As I look around this room, at the members of this society, I am struck by the knowledge, the experience, the intelligence of those gathered here...and also of the skills each of you have to offer as a mentor. I hope, that if approached, you will give of your time and talents and knowledge...you never know when you may have a genius on your hands.