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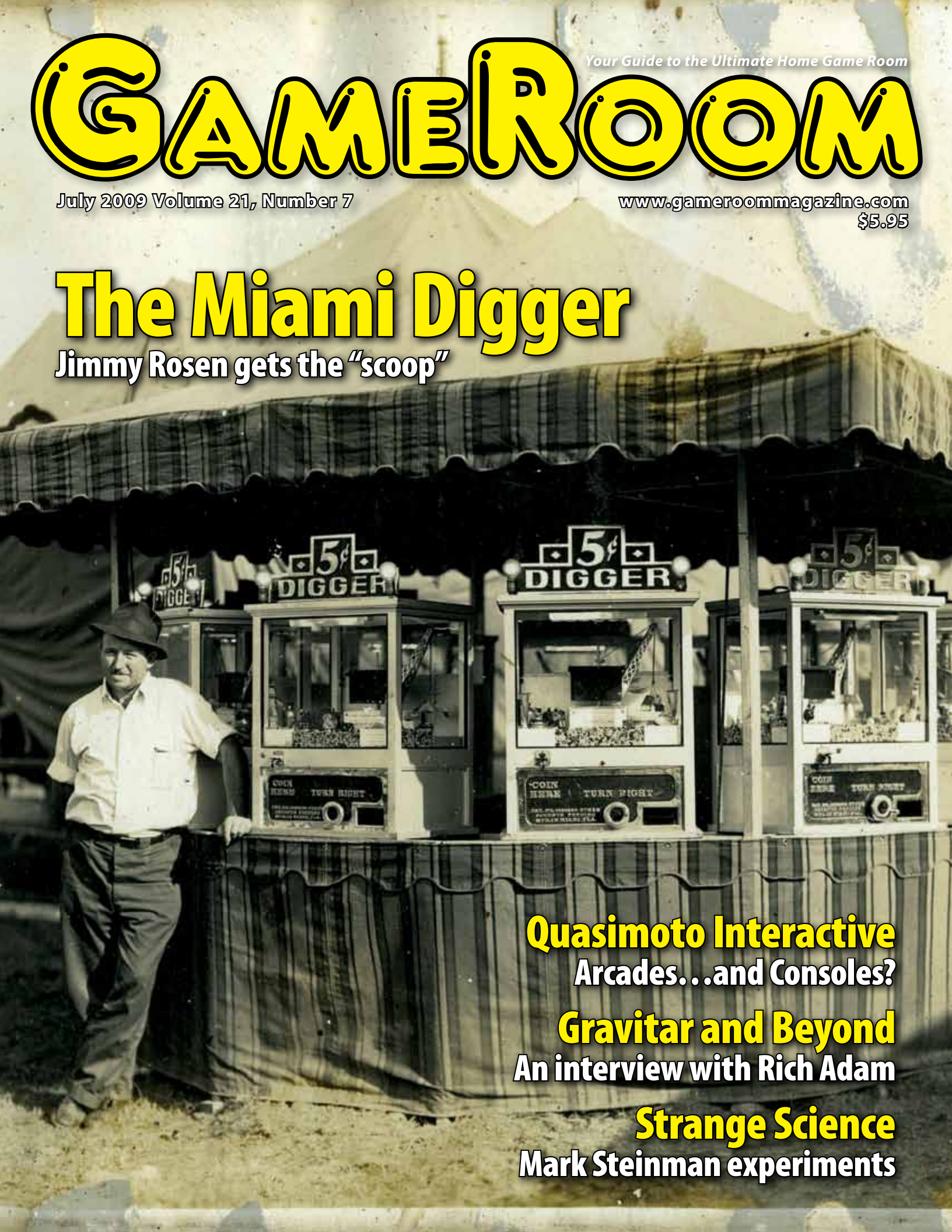
Your Guide to the Ultimate Home Game Room

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What I Learned from *Strange Science*, by Mark Steinman

My eyes were blurry from the haze rising out of the ashtrays dotting the bar. The foosball table had a long line of quarters queued up in front of people waiting to play. The pool table was in use. The seats at the tables were taken. It was a typical night in a western Pennsylvania bar until my brother, Byron, reached into his pocket and pulled out a small bag.

"Take some," he handed me a purple Crown Royal pouch, "I'll be over in a second."

I reached into the bag and found a pile of quarters. While he was at the bar, I dropped a few coins into an *Elvira* pinball machine because it was the only game available to play. Byron came back, and we stood looking over one another's shoulders for the rest of the night, flipping the silver ball around the playfield one after the other, trying our best to avoid people pushing in and out of the nearby doorway.

We had both grown up during the video game boom and played *Donkey Kong* and *Ms. Pac-Man* for hours, but neither of us had ever taken pinball seriously. It didn't take Byron long to start a multi-ball and teach me. I learned how to start a different mode and taught him. We slowly got drawn into the sounds, lights and rules. There was something inherently gratifying about having to physically nudge or flip a ball to make it go where we wanted. There was no memorizing strict patterns or glitches to exploit. When the foosball table opened, we gave up our turn and spent the rest of the night with *Elvira*.

It wasn't long until we started searching for more bars with different pinball machines. We called operators to see if they had a list of where their machines were located, but

sadly none did. We kept searching on our own, and within three months, Byron had found a pinball league on the Southside of Pittsburgh and signed us both up. The league is www.coinball.com, and I later found out it has members from all over the country and a ranking system that would rival calculus in complexity. Thankfully it's all automated.

"On my first night at the league, I acted like I knew what I was doing ... I quickly found myself in conversations about 'flipper skills' and 'deep ruleset strategies' and all kinds of things I had never considered."

On my first night at the league, I acted like I knew what I was doing, though the truth was I had never played *Attack from Mars*, *Spider-Man* or any of the other games they had waiting for us. I quickly found myself in conversations about "flipper skills" and "deep ruleset strategies" and all kinds of things I had never considered. One of the kids in the league started jumping up and down and yelling at the DMD when a multi-

ball started. In the back of my mind, I had thought I was coming down to this league to show these kids a few tricks I had picked up at the bar, but it didn't take long for me to realize they had already taken pinball to a whole new level. I kept my mouth shut. I was a newbie, and after watching some of the top players work the machines, I was fascinated. By the time my brother and I left that night, we knew the only way we would ever be able to compete is if we owned a machine and were able to practice.

The First Purchase

I found a 1986 *Strange Science* on Craigslist and decided it would be a great Christmas present for my brother. He is a scientist for the University of Pittsburgh, which fit the game's theme well, and through our travels into different bars and bowling alleys in search of pinball machines, we had developed an affinity for Greg Freres' artwork. When I discovered Greg had designed *Strange Science*, the purchase was a lock.

Byron's girlfriend, our third brother, Alan, and his wife, and our parents all chipped in to make it a joint gift. On that cold evening, two days before Christmas, my wife and I drove a U-Haul van ninety miles to the seller's house. The game looked like it was in decent shape, but I really didn't have any idea what to check. It was filthy, but the flippers moved, and most of the lights still worked. As I quietly looked over the machine, looking as serious as I could to act as if I knew what I was doing, all I could think about was what would happen to me if I told the seller "No," and I had just made my wife drive ninety miles in a U-Haul truck on the snowy Pennsylvania Turnpike for nothing. With that thought firmly in mind, I paid the seller



his money, loaded the pinball machine into the truck, and headed home.

I cringed every time we hit a bump. Balls rolled around the bottom of the cabinet. I had done it all wrong, and I was learning the hard way. Upon arriving back at the house, I plugged the game into the wall, and as is always the case in situations like this one, nothing turned on. “How’s it working, dear?” my wife called. “Great,” I answered, staring at a lifeless cabinet. “I’m just checking on something.”

I flipped the power switch a few more times with no results. I pulled the glass off and felt the anxiety beginning to swell in my stomach. She watched me, saying nothing. The true moment of panic came, however, when I lifted up the playfield and checked underneath. Wires hung loose and dangling. Multitudes of screws were laying at the bottom of the cabinet alongside used and broken parts. I looked over the complicated jumble of pieces and felt my heart sink. I had just spent a number of other people’s money on a gift two days before Christmas, and I didn’t have the slightest clue how to make it work.

I didn’t know how to solder. I didn’t know how to use a multimeter. And I didn’t have

any clue where to begin the repairs. The biggest problem, the power, was solved when my wife stood behind me and casually flipped a light switch to turn on the wall socket. I turned to look at her, and she smiled back with a look only a wife can give. “Have fun,” she said and left the room. I turned back to the machine, now partially lit up, and felt a small glimmer of hope.

The first step in refurbishing the game was to make a list of everything that was wrong. The second step was to attack the problems one at a time. Staring at a busted machine is overwhelming for a beginner. Focusing only on a cracked ramp, or single bad socket, makes the adventure seem a little less daunting. I decided I would work for the first two days cleaning, waxing, and fixing issues that didn’t require dismantling too much of the machine. After Christmas, my brother had to leave town for work, and I would have more time to go through the game piece by piece.

Modifications

When I worked on *Strange Science*, three resources I could never have done without were other members of the league coinball.com, the newsgroup rec.games.pinball, and my father who was recovering from shoulder

surgery and simultaneously suffering from cabin fever during a Pennsylvania winter. My job as a photographer is seasonal, so I worked on the machine every day for a month, and my father stood nearby and worked on me. He wasn’t capable of doing much because of his shoulder, but he offered instruction and tips on basic things like wiring and electronics. He also double-checked my work from time to time to make sure I wasn’t about to electrocute myself.

Lights

All of the burnt out lights were fixed by replacing SCR’s in the circuit board in the backbox. I downloaded the schematics from ipdb.org, and for every light that was out, I found the associated SCR and prayed to the Lords of Pinball that I didn’t destroy the circuit board while soldering. The end result wasn’t pretty, but it worked.

For the extra light modifications, I turned the lights off in the room and rolled balls around the playfield to check for dark spots. I wired all of the extra lights in parallel with other nearby sockets and changed all of the bulbs to LED’s to make sure I wasn’t drawing too much current.

Upon replacing several of the bulbs



with colored 555 LED's from Pinballlife.com, the difference in the level of brightness was amazing. Next, I replaced the two white strings of lights spelling STRANGE SCIENCE on the playfield with a rainbow of bulbs. Third, I replaced all of the lights underneath the slingshot plastics with blue LED's, which caused the entire lower section of the playfield to glow blue. The atom smasher and pop bumpers were similarly colored with red LED's, and the bulbs in the back corners of the machine were replaced with purple LED's. Each area of color on the playfield is distinct and causes the reflections on the pinball to shift from blue, to red, to purple as it bounces around the targets.

One other nice touch for the game was to use color-changing LED's from BCS Pinball (www.bcsinball.com) to illuminate the ball saver and shoot again inserts. This type of LED changes color at random and, in these two locations, is just enough to get your attention without being overbearing.

Extra Light Modifications

The dimmest spot in this game is the center of the playfield. I used an LED that didn't require a socket and wired it in parallel with the GI lights behind the ball trough. I then

slid the LED underneath the apron plastic. This way the actual LED is mounted underneath the plastic out of sight, but the light is pointing directly up the playfield between the two lower flippers. I chose blue to match the slingshots. Depending on the color of LED you choose, it will cause your flipper bats to turn a different color as well.

The upper flipper gets a lot of action, so it was a perfect spot to put another spotlight.

The best location for mounting the socket is on the underside of one of the screws used to secure the atom smasher ball lock. The wires for this light can be run through the hole directly beneath the ball lock and wired in parallel with one of the GI lights underneath the atom smasher.

The Green multiball bonus multipliers on the left side add a nice accent color between the blue lower section of the playfield and



An extra LED in the apron illuminates the bottom of the playfield near the flippers



the red atom smasher. I recommend color-matching these inserts and placing a green LED in the socket behind them. The wooden rail on the left side of this lane is also a perfect location for a green spotlight wired into the GI circuit and aimed at the center of the playfield. There is a plastic piece that typically covers this lane, but I liked the look of the lights without it. I removed the plastic and drilled a small hole through the wooden railing on the side of the playfield in order to run the wires. It's important to note the actual playfield is never drilled, just the small piece of railing that normally holds the plastic.

The two-level plastic on the right side of the playfield above the "collect bonus" hole is a perfect location for an accent light. I wired a socket into the GI lighting below these plastics and ran the wires behind the three standups that score the SCIENCE inserts. The socket is mounted on an already existing screw hole between the two levels just above the habitrail, making it virtually invisible for the player. The lamp is aimed toward the upper right corner of the playfield and really brings out the color in the lightning bolt artwork when fit with a blue or purple LED.

The light modification of which I'm most proud are the two sockets mounted underneath the backbox to the sides of the playfield. This modification required drilling a 1 inch hole into the bottom of the backbox and running wires in parallel with the flasher located beneath the atom smasher. When drilling this hole, be careful to avoid the metal supporting the display.

The parts I used for the light were the basic dome receptacle and socket found at pinball-life.com. These lights also require a 1N4004

diode similar to all of the other controlled lamps in the game. When finished, the two lamps underneath the backbox flash in unison with the flasher that illuminates the atom smasher after a ball is locked or during multiball. Locking balls in this game can be a chore at times, and this bit of extra lighting to let everyone around you know you've locked a ball is a nice touch. And what pinball player isn't a fan of more flashing lights?

Williams Flippers

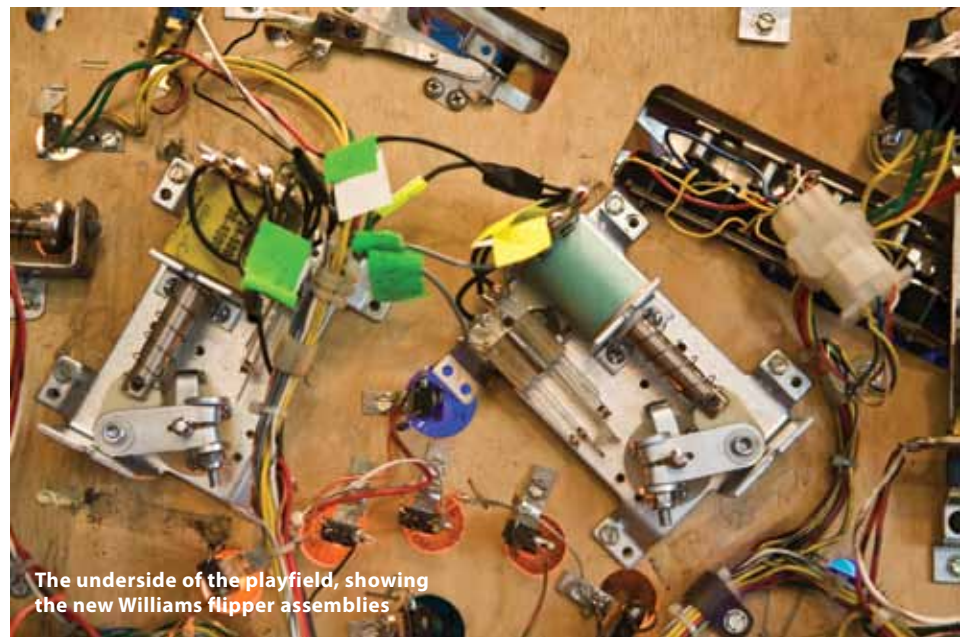
This modification may be blasphemy for some pinball collectors, but I couldn't stand the feel of the original Bally flippers. They seemed too loose and were hurting the gameplay. Since I knew I was going to have to replace the entire flipper mechanism anyway, I chose to install the full Williams System 7

assembly from Pinballlife.com. The Williams baseplate was shorter and wider than its Bally counterpart, but luckily the flipper area on the bottom of the Strange Science playfield isn't too cluttered. The screws for two lamps needed to be moved, so I just flipped the mounting screws to the other side of their respective inserts.

Once the baseplate was in place, the most difficult part in making the upgrade to a Williams flipper assembly was fitting the double end of stroke switch onto the right flipper. This double EOS switch can't be purchased, but luckily it's just a combination of a normally-open switch and a normally-closed switch stacked on top of one another. With the Bally baseplate, the double-EOS switch can be screwed on without any adjusting. With the new Williams baseplate, the double EOS switch has to be split apart and mounted as two single switches with one on each side of the metal EOS mounting arm that extends off of the baseplate.

After getting the baseplate and EOS switches in place, I made the newbie mistake of trying to use the 28 volt coils that came in the pre-made Williams assembly when the correct Bally coils draw 43 volts. The Williams coils became extremely hot after a few seconds of playing even though the flippers still appeared to work, which could have turned into a disaster had it gone on for too long. I was lucky enough to catch my mistake before any damage occurred and swapped the Williams coils out for Bally A-24-570's.

In the end, the modification immediately made the game faster and more playable. Standing shots from the left and right flippers can now make it completely around the



The underside of the playfield, showing the new Williams flipper assemblies



The "Atom Smasher" shot

upper ramp, the anti-gravity ramp sends the ball around the volt-meter, and clean shots to the lower section of the ball lock will knock balls back out of the atom smasher with ease for a quick two ball multi-ball. When you get that two ball multi-ball, don't forget to bang one of them back into the atom smasher to release all of the others still sitting in the lock.

Loading the Atom Smasher

The key shot in Strange Science is loading the atom smasher with the third flipper. The problem with this shot is a successful lock often has little to do with skill and more to do with how the ball comes out of the volt meter onto the third flipper. If the ball rattles around too much, it will often bounce away from the flipper before you can hit it, and no matter how well you timed the shot, it just won't go in.

Aside from upgrading the flipper with a Williams assembly, a quick trick to getting more clean shots is to use two rubbers around the volt meter posts. The upper rubber should fit snugly into the grooves like it normally would, and the lower rubber should be directly beneath it, held in place by the upper rubber. The lower rubber should also be black to help reduce bounce. The goal with this modification is to reduce the area in which the ball can bounce around. If done correctly, the ball will almost settle to a complete stop before dropping onto the third

flipper for a clean shot at the ball lock. With the flipper upgrade and this simple trick in place, balls lock into the atom smasher with ease. I have personally locked over twenty balls in a game with the only shots not making it having been poorly timed, a huge upgrade over the previous situation.

Vacu-Forming Ramps

There are a number of places to buy new pinball ramps, but unfortunately if you're not looking for a popular Williams title, the correct ramp can be hard to find. Strange Science is one of the many games where nearly every ramp in existence has been cracked, including the few that show up on eBay. No one sells new replacements. I'm not an expert at working with plastic. I'm sure there are better methods out there, but I didn't have a big budget and needed a new ramp. After doing research online, I was able to create two near-perfect, fully functional reproduction ramps for Strange Science. Both ramps, I'll proudly note, look and play far better than the twenty-three year old originals that came with the game.

The step-by-step instructions I used to vacu-form my ramps, including pictures, can be found online here: <http://marvin3m.com/vacuum/index.htm>

When following these instructions, I can offer the following tips:

- Be sure all of the cracks on the broken ramps have been covered with tape and secured. For the anti-gravity ramp, coat the inside of it with a thin layer of vaseline and fill it with plaster of paris. When it hardens, pull the finished mold out with a corkscrew. The vaseline will keep the mold from adhering to the ramp.



The Anti-Gravity Ramp



Another shot of the Anti-Gravity Ramp, showing the new blue LED illumination

- The particle separator ramp is slightly more difficult. Since it's not a "bowl" like the anti-gravity ramp, cardboard walls have to be taped around the openings to keep the plaster of paris from leaking out. I recommend building a two-inch wall around the entire ramp with cardboard and filling the whole thing with plaster of paris to create the mold. Be sure to coat the inside of this one with vaseline as well. When the mold has hardened, just peel away the cardboard walls, remove the original plastic ramp, and you're ready to move to the next step.
- When your vacuum box and molds are finished, place a small piece of wood underneath the mold to lift it about an inch or two off of the box. Whatever item you use to lift the mold has to be smaller than the actual mold and not stick out beyond the sides. By lifting the mold off of the box, air can pass underneath it and the plastic will be pulled tightly around the edges of the mold, creating a perfect ramp.
- I used several different types of plastic, but none of them were worth anything compared to PETG. Whatever you do, find a nearby plastic shop or order online from: <http://k-mac-plastics.com/petg-sheet.htm>

and get a sheet about .125 thick. PETG is easily moldable at low temperatures and far more resistant to bubbling than other types of plastic I've tried.

- I recommend drilling several small air holes into your vacuum box as opposed to



The custom sideart is a huge improvement over the stock Bally logo

the one large hole the instructions suggest. Having many small holes on all sides and underneath your mold helps the suction when the vacuum is turned on.

Sideart

In 1986, Bally was cutting costs and decided not to produce sideart for Strange Science. The result was a generic Bally logo printed onto the side of the cabinet. After working for so long on all other areas of the machine, I decided to make use of my day-job talents with Photoshop and make some decals for the machine. Greg Freres did an amazing job when he designed the playfield and backglass, so I knew I wanted to incorporate his talent into the finished product to stay true to the game.

To begin, I took high-resolution photographs of the backglass and certain sections of the playfield. Any scuffs on the paint were touched up on the computer. The images were then layered onto a pinball art template from www.localarcade.com and arranged to my taste. I erased any sections of the art that didn't look right and added background lightning from public-use photographs on the Internet. After sharpening the sideart, I had it printed at mamemarquees.com and applied using their instructions. The photoshopped file I used to print the decals on my machine is currently available for free download at www.ballsofsteel.net. For any of you bored by the generic Bally-Midway art, the new decals are a big improvement in the cosmetic appearance of the machine.

Results and Thanks

Like a true pinball enthusiast, I'll never stop tinkering with the machine. I still have to find the correct Bally siderails, and I'll probably throw a few more lights in there at some point. A game like *Strange Science* will never be considered in the same class as the newer DMD games, but when cared for properly, it can turn just as many heads and offer just as much fun for the family.

In looking back on my first journey into the pinball world, I can honestly say I've learned more about electronics, wiring, and plastic than I ever thought possible. My skill level has improved too, though I still have a long way to go before catching my brother or the rest of the coinball.com players.

To those of you who have big ideas for your games but think the jumble of wires underneath the playfield is too confusing, take it from me, you'll never learn if you don't try. All of the resources you need to get started are only as far away as the closest computer. The pinball guide at www.marvin3m.com/fix.htm is a fantastic place to start, and the helpful people at rec.games.pinball are an invaluable resource. Ask questions. Learn. And most of all, have fun and remember to play a few games while you're learning.

I would like to thank my wife, Anastasia, for helping with so many strange requests, and my brother, Byron, for letting me come close to ruining his first machine so many times. I would also like to thank my mother for allowing me to use so many power tools in her living room. **GR**



Strange Science and Mark Steinman, by Rob Craig

When I first discovered pinball collecting, I began to seek out machines that I had never played but looked interesting enough to put on my WANTED list. At the time, there were minimal places online that hosted libraries of pinball photos. Through my random pinball surfing, I stumbled upon *Strange Science*. After logging all the machines Bally had produced with the 6803 CPU board, only *Strange Science* and *Blackwater 100* really stood out to me. I am blessed in having owned both of them, and most of the not-so interesting 6803 Ballys too.

One of the things that really make *Strange Science* pop out from the 6803 pack is the Greg Freres art package. Everything on the playfield and backglass really sells the theme well. The playfield design by Dan Langlois, like his other titles, is loaded with "things to do." *Strange Science* features a unique multiball mechanism with the ability to unload 5 balls for a real multiball frenzy. The use of neon in the topper adds much to the electric theme. It still suffers from the same things most Bally 6803 machines do; horrible sound, poor cabinet materials, and generic cabinet art. Still, it's one of the few lampposts in this last chapter of Bally pinball.

I stumbled upon Mark Steinman while searching rec.games.pinball for an obscure *Strange Science* part. Mark, a pinball restoration rookie, has taken his brother's *Strange Science* to a whole new level. For me, the most refreshing part about this article really is his fresh angle on making a good game better. I think you will agree that Mark's approach, while not purely unique, is quite the breath of fresh air. He showed no fear it seems as he added lighting, molded plastics, and created new cabinet artwork. Not bad for his first restoration.

I'll see you next month after I finish installing new side art and a few LEDs on my very own *Strange Science*. Think I'm kidding? Bug me for photos in 4 weeks ☺ – Rob Craig



Byron and Mark Steinman