



THE ART OF
IRONCLAD
TACTICS



FOREWORD

When we started working on the game that eventually became Ironclad Tactics, I had just left Microsoft (with the success of SpaceChem) and was working out of a windowless, 100 square foot office with Keith. Two years later, when the game was released, we had grown to a team of seven full-time developers with a network of talented contractors, a much larger office, and consistent access to actual sunlight. In that time we've improved in many ways, but the most important change in my mind is our growth in artistic potential.

I wear many hats at Zachtronics, including programmer, designer, and executive, but there is one role that forever eludes me: artist. Although SpaceChem is not an unsightly game, we were greatly limited in what we could accomplish having only one artist working on the project for three months. With Ironclad Tactics, though, we were able to build a strong, dedicated art team and create a game that is more visually stunning than any game I've ever worked on. This book was written to showcase their work, along with facts and stories about the process that produced Ironclad Tactics. I'm very proud of what we've created, and am excited to share it with you!

Zach Barth
Founder and Creative
Director of Zachtronics

THE ZACHTRONICS TEAM

Collin Arnold | Hillary Barth | Zach Barth | Derek Blair | Steffani Charano | Keith Holman | Kyle Steed



FACTIONS



THE ARMY

The Union and Confederate Armies

The story of Ironclad Tactics begins in late 1860, when the Bureau of Steam Engineering develops the ironclad, a steam-powered military robot, for the Union army. Soon after the start of the American Civil War, it is revealed that the Confederate army is correspondingly armed, spurring an investigation by the protagonists of the story.

In many respects, the army faction is the quintessential faction of Ironclad Tactics. Its cards represent the infantry and ironclads of the Union and Confederate armies; as such, all of its units swap palettes from blue to gray depending on the side of their controlling player. It is the largest faction in the game by card count, and features many of the game's simpler cards, as they are the first cards that a new player unlocks.



INFANTRY

Scout

Those who move quickly can turn the tide of battle.



Rifleman

Blank as a slate. Green as grass. Eager as hell.

If you watch closely, you can see the rifleman occasionally look from side to side, nervously.

Veteran Rifleman

His gruff mumbling was incomprehensible, but revered.

The veteran rifleman was the first infantry unit created for the game, and has more health than any other infantry unit.



Zouave

The Zouave's secret: ducking.

The zouave's uniform was a real uniform worn by some soldiers in the American Civil War. In addition to fancy pants, they sometimes received advanced infantry training.

Technician

The technician is only available for the South, and only on the mission in Baton Rouge, but is very similar to another mercenary unit, the Mining Engineer.



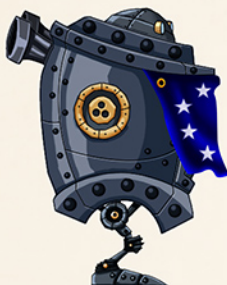
IRONCLADS



Prototype Chassis



Union Auxiliary Chassis



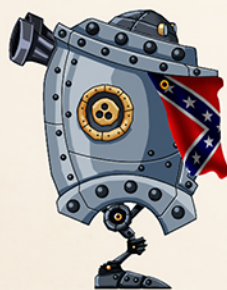
Union Light Chassis



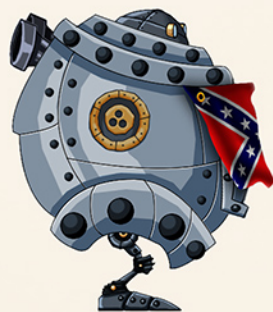
Union Heavy Chassis



Confederate Auxiliary Chassis

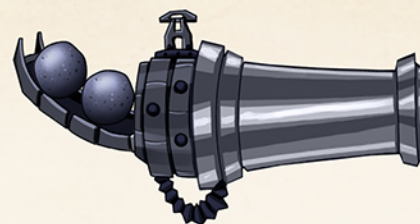


Confederate Light Chassis



Confederate Heavy Chassis

PARTS



Light Cannon



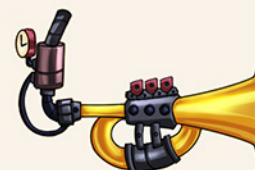
Carbine Musket



Revolver



Rifled Musket



Trumpet



Officer's Saber



Cavalry Saber



Confederate Battle Flag



Union Battle Flag



Mk. II Upgrade Kit

The **Light Chassis** was the first unit designed for the game, and is the starting point when deciding whether or not an ironclad is balanced.

The **Prototype Chassis** was created to better connect the gameplay and story of the first mission, but ended up being a useful unit for blocking.

The **Trumpet** was only added after the creation of Maxwell's "**Trumpet**", a flamethrower from the experimental faction that is built out of an old trumpet and a barrel of high-proof whiskey.

FACTION

EXPERIMENTAL

Jetpacks, Flamethrowers, and Cats!

If you could put a jetpack on a giant robot, why wouldn't you? That's what the experimental faction is all about. The main characters of the game's story, Maxwell Prosser and Joseph Ashdown, are engineers who enjoy concocting improved, albeit sometimes impractical, designs. Many of the cards of the experimental faction are the result of their tinkering.

Most of these cards upgrade or reinvent cards from the army faction. The **Jetpack Chassis** is an upgrade of the **Light Chassis** and features a jetpack that allows it to leap over enemy units. **Maxwell's "Trumpet"** changes the infantry-boosting **Trumpet** into an infantry-incinerating flamethrower!



INFANTRY



Union Assault
Pioneer



Confederate Assault
Pioneer

IRONCLADS



Armored Chassis



Jetpack Chassis



Pop-up Chassis

PARTS



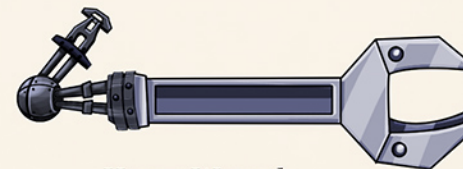
"Improved" Musket



Maxwell's "Trumpet"



Zebulon's Cat



Heavy Wrench



Redundant Systems

Early in the development of Ironclad Tactics, the game featured "traps" that could be deployed to squares of the battlefield to sabotage units that moved there. The **Assault Pioneer** was special in that he automatically disarmed traps when walking over them. When traps were removed from the game, this ability was replaced with barricade-building.

Zebulon's Cat is the only character from the story that exists as a card in the game; interestingly enough, it is as a part and not a unit!

The trumpet on **Maxwell's "Trumpet"** uses the same art as the **Trumpet** part from the army faction. Similarly, the scope on the **"Improved" Musket** was "borrowed" from the **Scout**.

FACTION CATALOG

Distributor of Fine Goods and Other Things

Peabody & Prosser is the *Sears and Roebuck* of the Ironclad Tactics universe. Run by Maxwell's father, a discerning consumer can buy just about anything from the catalog for delivery. The catalog faction is about fun, quirky cards that may or may not be useful to the player, all straight from the Peabody & Prosser catalog. It contains fancy hats that do absolutely nothing, a tonic that will cure almost everything, and, of course, explosives.

Originally, the cards of the catalog faction were unlocked by finding and clicking on hidden Peabody & Prosser catalogs in the game's graphic novel. When this idea was abandoned, the cards were repurposed as rewards for the quick-skirmish multiplayer mode, which is now "sponsored" by Peabody & Prosser.



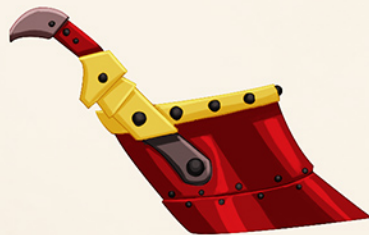
Industrial Frame



Top Hat and Monocle



Hunting Cap and Pipe



Plow



Dynamite



Banjo



FACTION

NATIVE

Speed, Surprise, and Adaptation

While chasing Dmitry across the American west, the protagonists of the story enlist the help of Pakota, a Native American tribe leader in the southwest. The native faction consists of the soldiers and weapons available to Pakota at this point in the story.

The native faction focuses on speed, surprise, and adaptation. The **Fox Runner**, an infantry unit, initially acts like a **Scout** and moves two spaces per turn, but can transform into a unit that is comparable to a **Rifleman** and is capable of attacking. The **Skirmish Chassis** is nearly identical to a **Light Chassis**, but draws a replayable maneuver card into your hand when played.



IRONCLADS



Concealed Chassis



Skirmish Chassis

PARTS



Arrow Barrage
Launcher



Camouflage



Tomahawk

At one point in the development of Ironclad Tactics, the **Tomahawk** chained to a **Throwing Tomahawk**, which could only be used once but added range to what was otherwise a short-range weapon. Like many other cards in the game, though, it was removed because it didn't work; in this case, the two parts were indistinguishable.

INFANTRY



Fox Runner



Fox Ambusher

The **Fox Runner** is the only transforming infantry unit in the game, and transforms into the **Fox Ambusher** through the use of a chain card. The native faction originally contained two units, a scout and a soldier, but when neither was interesting we combined them in a way that suited the native faction - as a surprise for your enemy!

FACTION

MERCENARY

Outlaws, Ruffians, and Drifters for Hire

Dmitry could not have taken over the American west and set up his industrial empire without a little help from men like the Derp Brothers and other mercenaries. The mercenary faction represents these men, in addition to mercenaries “persuaded” to fight on the player’s side.

Of all the factions in the game, the mercenary faction has the largest quantity and variety of infantry units. Additionally, the ironclads and weapons you’ll find here are unlike any you’d find in the army faction, and are often “sidegrades” with distinct strengths and weaknesses over more conventional weaponry.

The infantry units of the mercenary faction were inspired by classic westerns. This faction allowed us to play with the humorous character tropes and clichés of westerns, and create characters like the mysterious sharpshooter and the drunken shotgun mercenary.



INFANTRY

Raider

The raider was the first unit to receive a chain card, which were added to the game to give units abilities without adding too much complexity.



Sharpshooter

The sharpshooter is the tallest infantry unit in the game... not that it matters.

Musket Mercenary

"How come there are so many hired guns here, but no good tailors?"

- Victoria



Shotgun Mercenary



Lumberjack

"What do politicians and lumberjacks have in common? The tales they tell are never quite true."

- Madame Millie



Mining Engineer

Gunslinger

Stop twirling your gun and shoot!

- Jed Derp



Mining Engineer

He is the only reason the Hulks are still standing.

IRONCLADS



Overpressurized Hulk



Saboteur Hulk



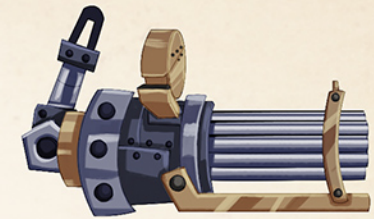
Earthmover Hulk

The **Failing Hulk** was a mercenary chassis that, well, failed to make it into the game. It only had two health, but when destroyed would leave behind a barricade with six health. It was the inspiration for the **Assault Pioneer's** barricade-building ability.

PARTS



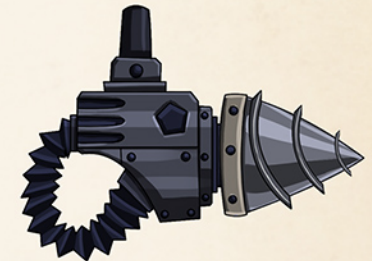
Grapeshot Cannon



Gatling Gun



Woodchipper



Mining Drill



Supplemental Armor

The idea for the **Woodchipper** came from Collin in an early brainstorming session. At first we thought the idea was ridiculous, but then we realized how good it was!

The **Gatling Gun** is the only mercenary part not unlockable in the game.

FACTION

DMITRY

The Suit Makes the Man

Dmitry, the main villain of the Ironclad Tactics story, has his own faction filled with fiendish ironclads and weapons. The Visionary Shell, his signature chassis, transforms from its initial form into one of four different ironclads, each with a distinct purpose and strength.

Dmitry's faction was tricky to design because his units are the final challenge the player faces in the game's campaign. We wanted him to be tough, yet not unfairly overpowered; he needed to scare and intimidate the player, but still allow them to win. The bizarre, semi-futuristic appearance of his ironclads does the trick visually.



IRONCLADS



Visionary Shell



Onslaught Shell



Entrenched Shell



Victory Shell



Generator Shell



Dmitry's Chassis

The **Visionary Shell** transforms into one of four other ironclads: the **Onslaught Shell**, the **Entrenched Shell**, the **Victory Shell**, and the **Generator Shell**. The **Visionary Shell** was originally armored, but made the last levels of the game incredibly difficult!

The **Generator Shell** is the only ironclad in the game that can generate Action Points.

PARTS



Assault Saber



Inferno Cannon

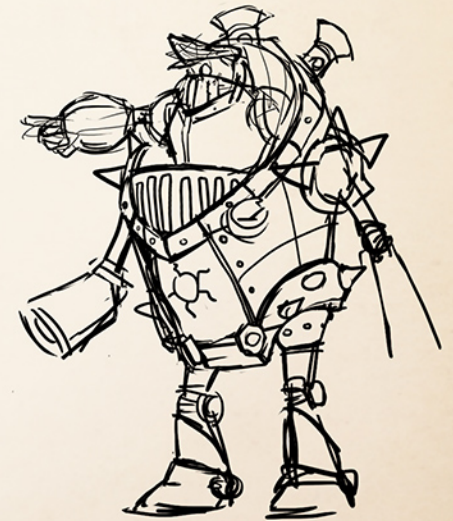
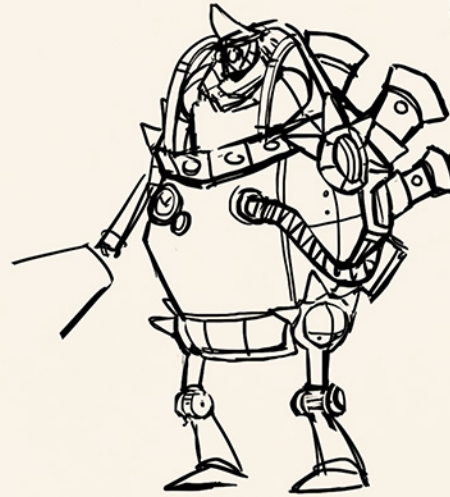
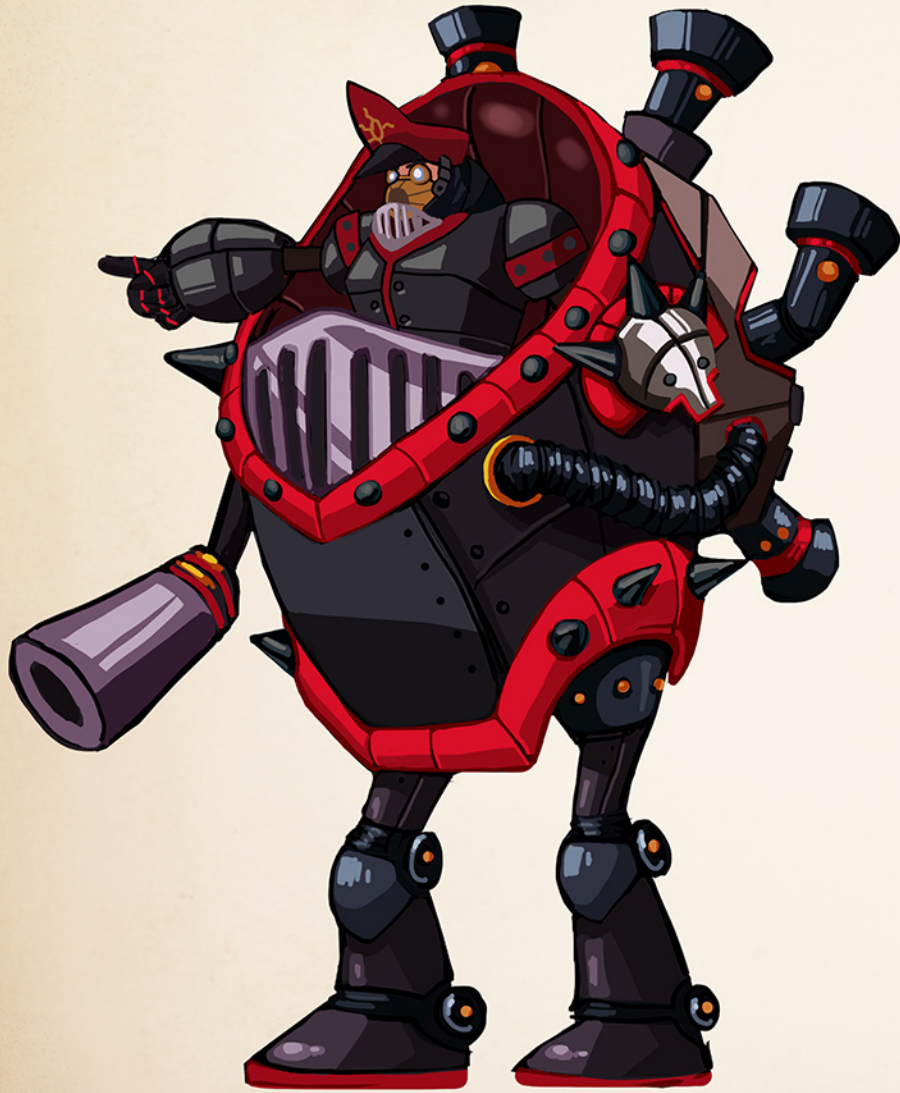


Symbol of Authority

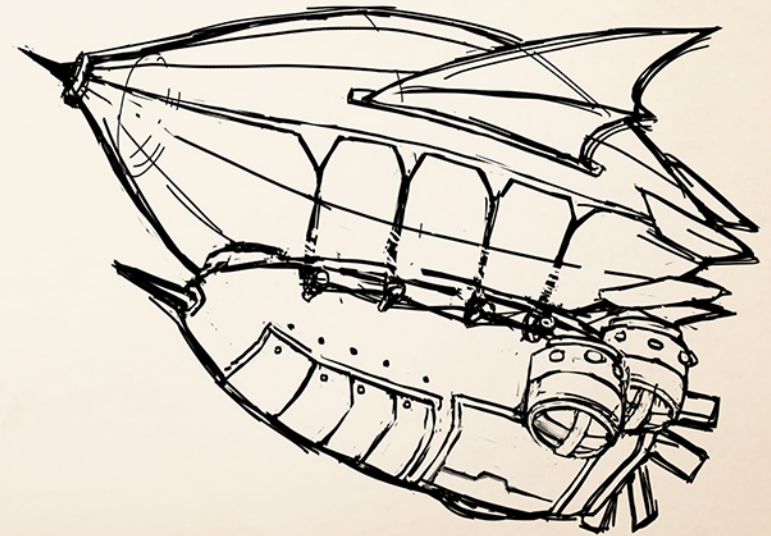
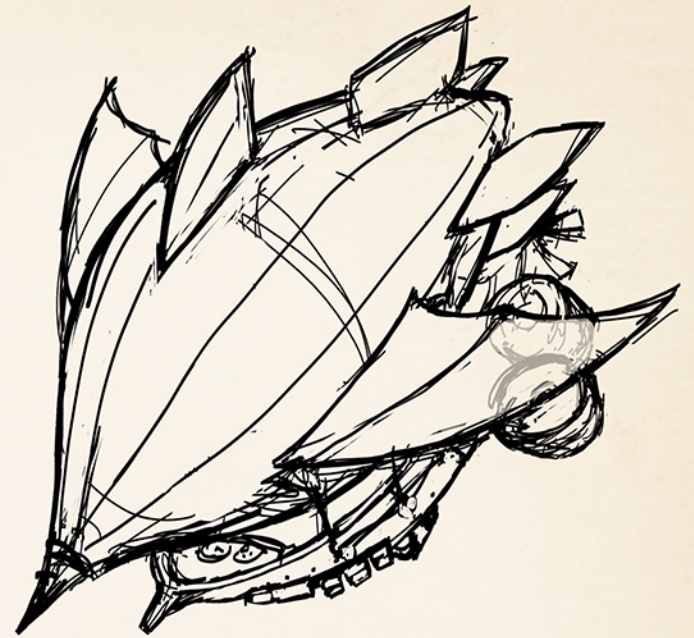
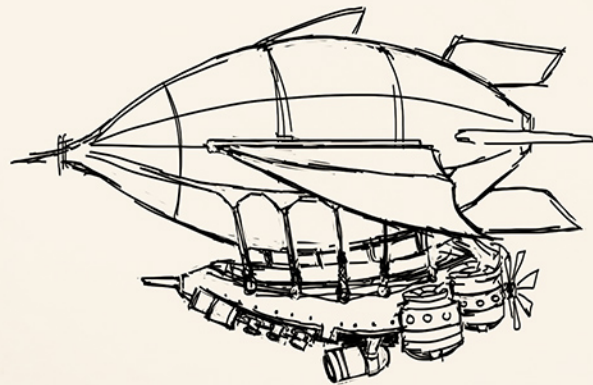
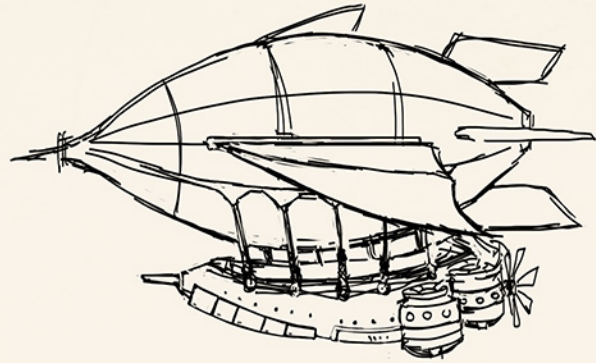
Early in the development of Ironclad Tactics, Dmitry's faction included a weapon called the **Ray of Terror**. With flavor text stating that "the future is blinding!", it was essentially an electric flashlight that disabled enemy infantry. Unsurprisingly, it wasn't very useful.

Dmitry puts his hat, the **Symbol of Authority**, on nearly everything: himself, his ironclads, and even his factories. Its resemblance to the Zachtronics logo is purely coincidental.

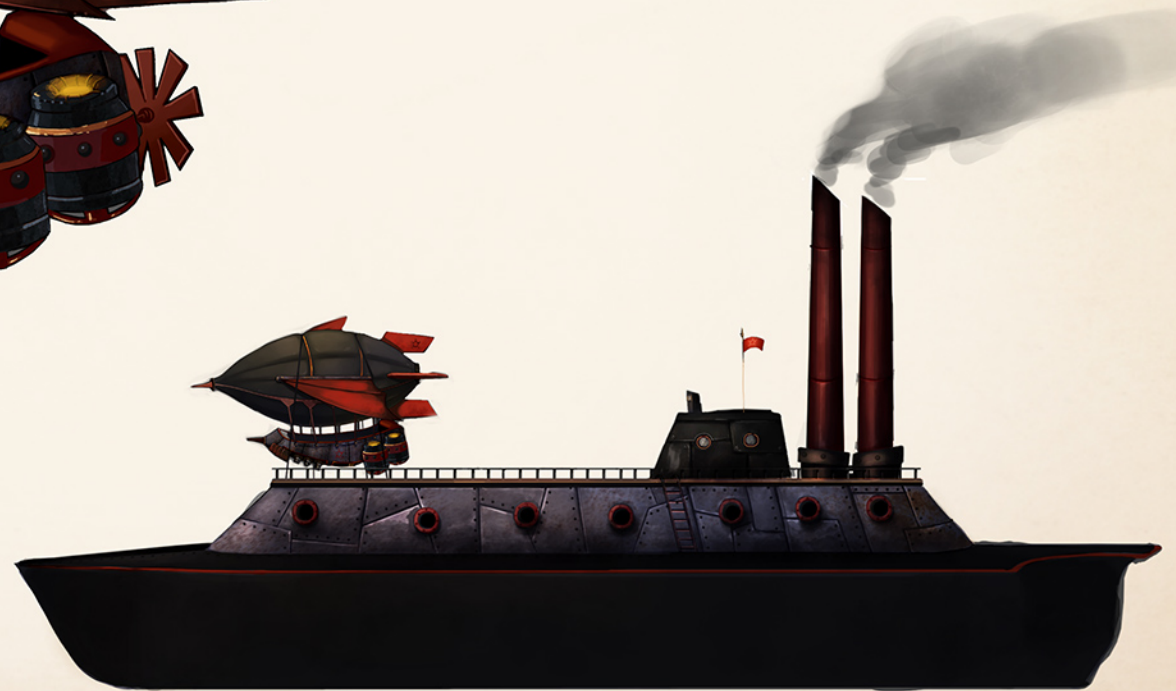
DMITRY'S CHASSIS



DMITRY'S AIRSHIP



DMITRY'S SHIPS



INFANTRY UNIT CREATION

Step 1

Concept Art

Our veteran is grizzled, broad-shouldered, and has a moustache that strikes fear into the hearts of men.



Step 2

Sketching the Asset

Proportions like the upper body, head, and hands are exaggerated to be visible when the asset is scaled down to the in-game size. Like many units, the arms and legs are the same on each side.



Step 3

Creating the Asset

The veteran rifleman is drawn as many individual pieces, so that they can be connected together like a puppet and animated.



Step 4

Animating the Asset

The finished pieces are assembled and rigged in After Effects, so that they can be animated using inverse kinematics to create realistic motion.

ANIMATION FRAMES

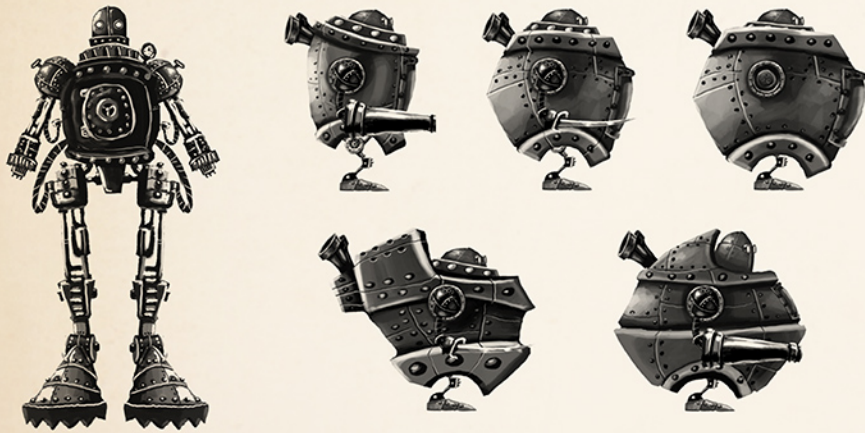


IRONCLAD UNIT CREATION

Step 1

Concept Art

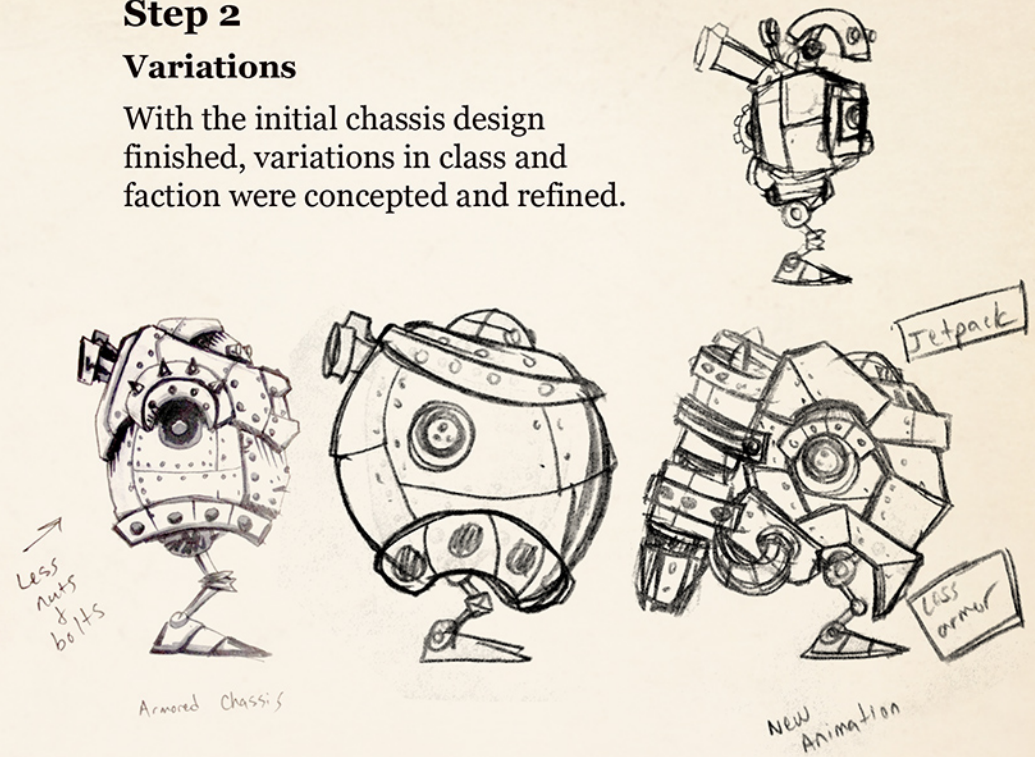
The first step in designing the ironclads was to explore possible shapes and styles. Some of our concepts, like the one on the left, were radically different from the style we ultimately settled on.



Step 2

Variations

With the initial chassis design finished, variations in class and faction were conceptualized and refined.



Step 3

Final Assets

As the final assets were created, faction flags, colors, and textures were added. As was the case with infantry units, the ironclad assets were drawn in separate pieces so that they could later be animated.



CARD ART: TACTICS



Maneuver



Field Repair



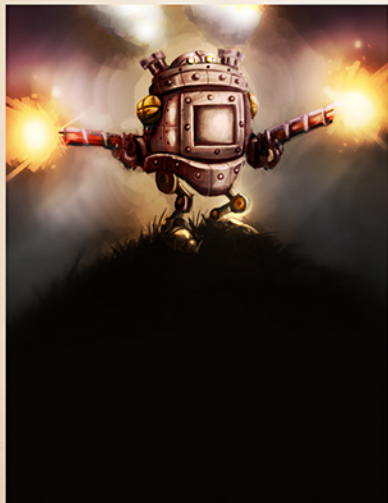
Full Steam Ahead!



Engage Jets



Load at Will



Tactical Advantage



Goliath Squad



Detonate



Dodge



Slip Through

CARD ART: TACTICS



Mercenary Ambush



Economic Victory



Artillery Barrage



Plow



Chain of Command



Airship Bombardment



Vin Vitae



Prospect



Rocket Automaton

CARD ART: BACKGROUNDS

Infantry and Ironclads



Union/Confederate



Native



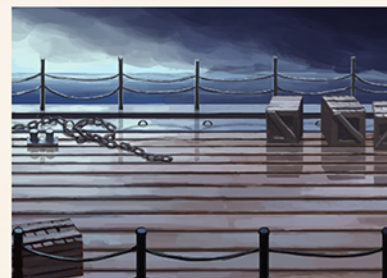
Mercenary



Experimental

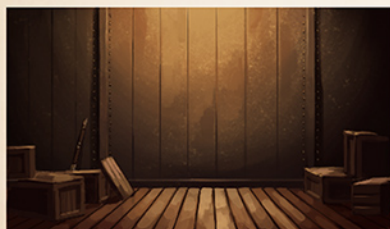


Peabody & Prosser



Dmitry

Parts



Union/Confederate



Native



Mercenary



Experimental



Peabody & Prosser



Dmitry

2 AP
INFANTRY

SCOUT

Speed 2
Those who move quickly can turn the tide of battle.

HEALTH 2

3 AP
PART - ARM

MINING DRILL

Allows the equipped ironclad to activate Gold Veins like an infantry unit.
The intersection of power and profit.

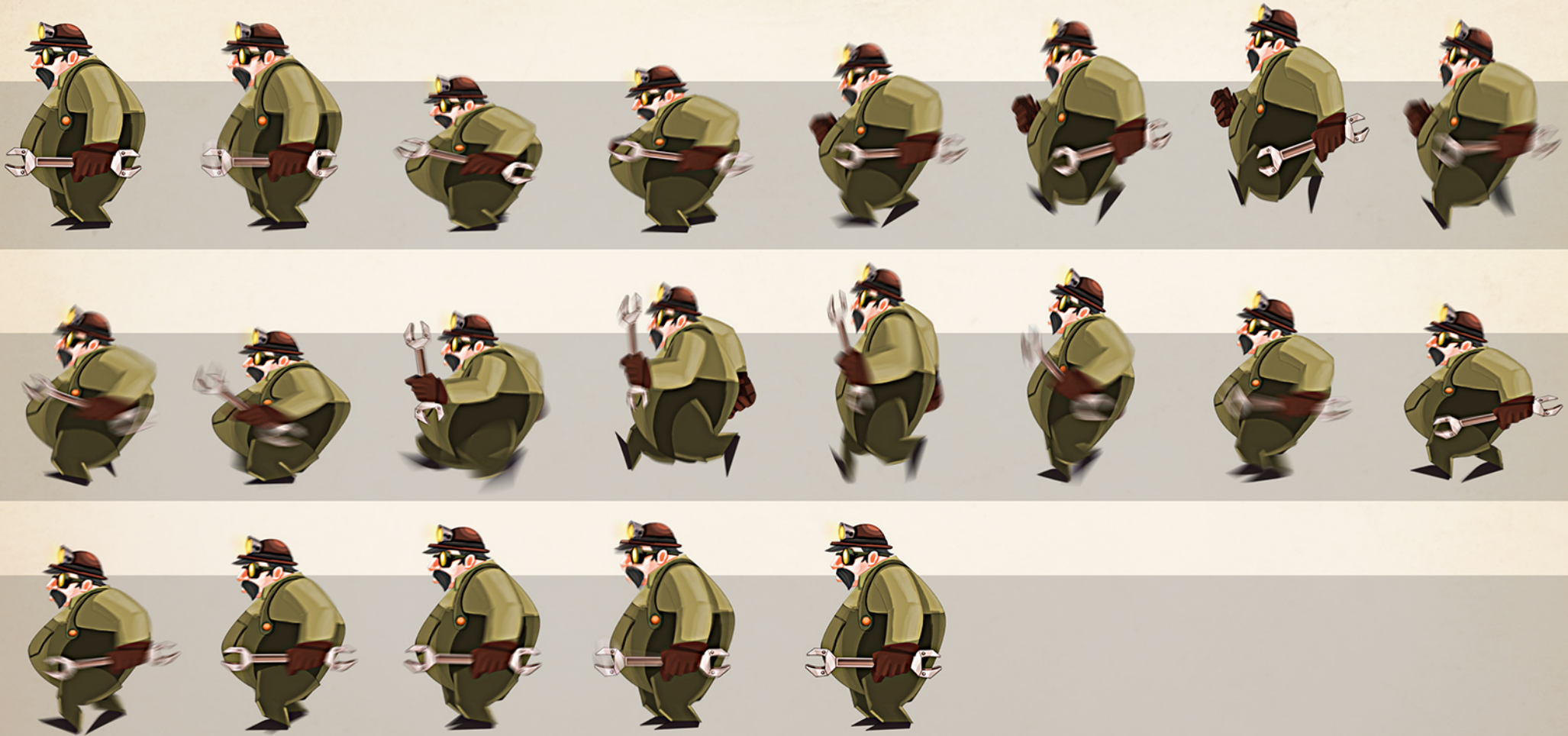
DAMAGE 3 **RANGE**



ANIMATION



MINING ENGINEER



A MINOR DREAM

Jerry had always dreamed of a job in the mines.

Everyone always told him, “Jerry! No! The mine is so dangerous! What about an office, Jerry? You would fit right in there. Maybe in the mailroom? You would like that, wouldn’tcha Jerry? The mine is no place for a portly fellow such as yourself.”

Jerry never paid them any mind. He loved the egg scent of sulfur that seeped from the glistening, wet walls. He adored his chartreuse overalls with their shiny gold buttons. And oh my god, the mining hard hat, with its gleaming yellow light, that protected his soft noggin from falling stalactites. No. No mailroom could ever compare.

ZOUAVE



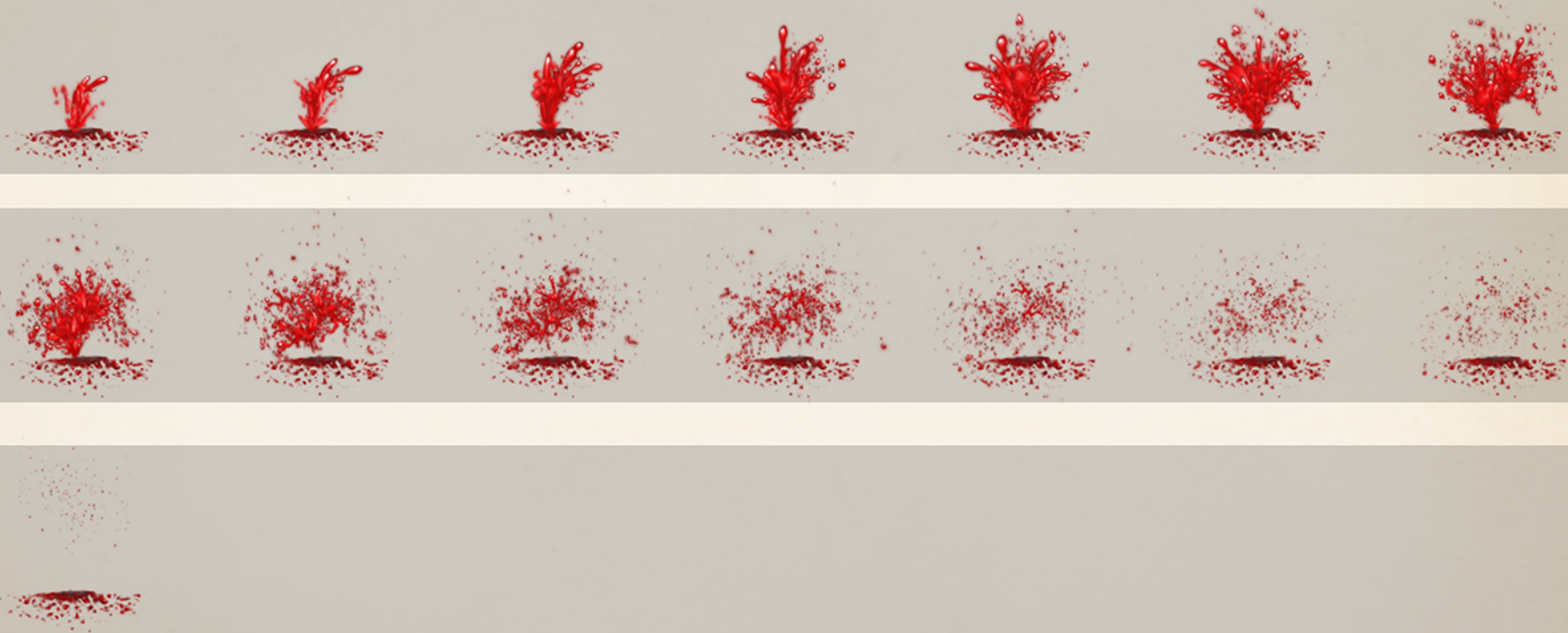
PAUVRE FREDERIC

Frederic aligned his fez and flipped the tassel to the opposite side. He gazed at himself in the mirror, a smile creeping out from his manicured mustache. He pulled and prodded his bright red poofy pants, carefully tucked into his goldenrod leggings.

“You look ridiculous,” said a droll female voice from behind him.

Frederic started to feel self-conscious. It was his mother.

BLOODSPLOSION

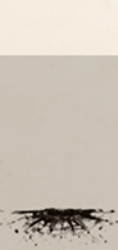


UNNECESSARY FACT

Did you know that the amount of blood inside of a human adult is equal to approximately 7% of their body weight?

The more you know.

CHASSIS EXPLOSION

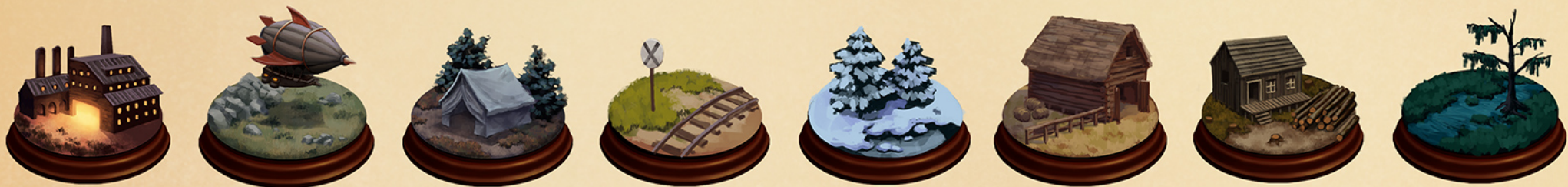


ARTILLERY EXPLOSION





LOCATIONS





SCHENECTADY, NY **BSE Proving Ground**

Ironclad Tactics begins in upstate New York at the Bureau of Steam Engineering's proving grounds, where engineers test their inventions, like Zebulon Wright's prototype ironclad.

For the first level of the game, we wanted to create a whimsical and charming environment that would feel immersive and connect to the game's story while introducing one simple mechanic: playing cards. The purple and blues and small details, such as the frozen creek and dusted branches, add life to what would otherwise be a barren snowy field.



Zebulon reveals the ironclad robot - his greatest creation - to Maxwell and Joe.

Schenecta-what?

Several Zachtronics developers attended college in upstate New York. The region became a source of inspiration for the characters and settings of Ironclad Tactics.



The Prototype

Originally, a standard Light Chassis was used for this level, but we wanted a unique ironclad that looked and felt as though it had been cobbled together in Zebulon's workshop.



ALBANY, NY

North Albany Railyard

The North Albany Railyard serves as the departure point from the ordinary for Maxwell, the protagonist of the story, and introduces the first fully equippable ironclad, the Light Chassis. Maxwell and Zebulon depart upstate New York on a trip to Washington, DC to attend a weapons exhibition where Zebulon's new ironclads will be demonstrated.

We encountered a problem with our tutorial levels: how do you give an otherwise non-descript rail yard character and detail? We did so by paying attention to the details in the patches of dirt and grass and the rail cars.



Joseph and Maxwell, at the Bureau of Steam Engineering offices, working hard. Or, in Maxwell's case, hardly working.



Dalhousie

Edgar Dalhousie, Maxwell's boss, is introduced in Albany. Although he is one of the most often referenced characters, mentioned later in the story and in card flavor text, he only appears in this chapter.

Mutant Butterflies?

Butterflies once fluttered in grass on this level. However, making the butterflies large enough to be visible meant that they would be the same size as a soldier's head. We decided it would be better to remove them from the level.



BOSTON, MA

Beacon Park Railyard

The next stop on the way to Washington is the Beacon Park Railyard in Boston, where Zebulon demonstrates the destructive power of an ironclad, much to Maxwell's amazement.

A challenge that emerged with each background was accurately representing the time of day without showing the sky. There is no moon or sun unless it is reflected in the foreground elements, such as a puddle of water. The use of purples and blues in this level and small details, such as the glowing lights with flitting moths, indicate that it is nighttime.



A minor snafu temporarily strands Maxwell and Zebulon.

How Did That Even Happen?

Maxwell and Zebulon stop on their trip through Boston due to a catastrophic accident blocking the tracks. The level itself, however, does not match in severity of the wreck shown in the story. Zebulon's proposed solution doesn't make much sense either; shooting at wreckage with a musket would not, in fact, clear it out of the way or extinguish the fire.

The "Pretty Pass"

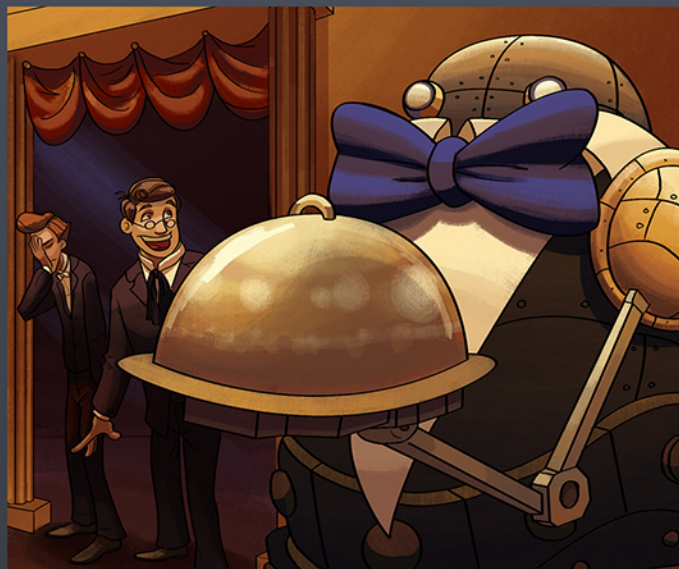
In the final weeks of development, we decided to add more life to the level backgrounds by inserting microanimations such as flickering lights, rippling water, and falling leaves. These add movement to what would otherwise be static scenes.



WASHINGTON, DC State Dining Room

At the exhibition, Maxwell and Joe attend a reception dinner, held by the Bureau of Steam Engineering in the State Dining Room. To add that special touch, the Bureau introduces a new ironclad: the Serving Chassis.

This level features the most intricate background of the entire game. The kitchen bustles with activity as the chefs chop vegetables and prepare dishes. The empty hallway is dimly lit, contrasting with the warmth of the hectic kitchen. The dining room, illuminated in candlelight, is welcoming with golden and red hues.



A proud Serving Chassis readies itself to carry a platter to a group of esteemed guests.



Robot Butlers

This level was cut from the game, not once, but twice. What kept it coming back? The idea of a meal served by adorable robot butlers!

Dinner by Candlelight

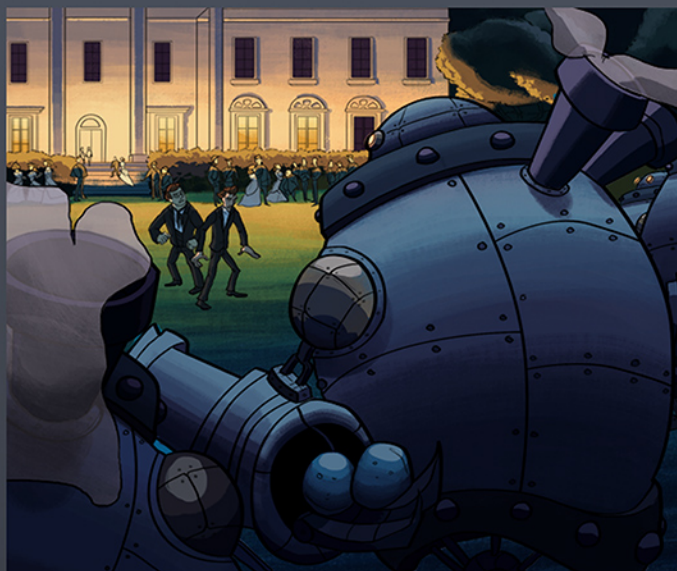
Lighting for this level and corresponding chapter in the graphic novel was inspired by the natural lighting effects used in the Kubrick film *Barry Lyndon*.



WASHINGTON, DC The North Lawn

While the politicians and engineers enjoy the feast, Confederates arrive with their own ironclads and launch an attack. Maxwell and Joe rush out of the dining room to defend the White House. Unfortunately, this battle will ruin the well-manicured lawn.

As the first real level, players must build a full deck and apply the lessons from the previous tutorials. Initially, the enemy deck contained only Light Chassis, but this made the level much too difficult. We added Scouts into the enemy's deck both to slow the attack and so the player could not avoid trampling the Scouts.



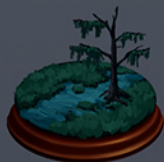
As the Confederate ironclads mob the North Lawn, spectators gather to watch.

Protect the Statue!

This level includes the Jefferson statue in the middle of the lawn. Originally, the statue was merely a part of the background. We liked the statue so much that we added it as part of the level itself and tied it to a challenge.

Adding Camera Shake

One of the final steps in finishing the game was adding special destruction effects to each level. When an ironclad is destroyed or scores Victory Points, it triggers different animations, including camera shake and small microanimations like falling leaves or ripples in standing water.



SUFFOLK, VA Great Dismal Swamp

After the Confederate ambush, Maxwell is sent on a mission to Charleston with Colonel Crane. While en route, Maxwell is confronted by a brash and fiery woman, Victoria, and the train is stopped by a brigade of ironclads and soldiers.

The swamp is a foggy night scene with the moon hanging high overhead and glimmering in the water. If you look closely, you can see that the water ripples every time a chassis explodes or scores Victory Points.



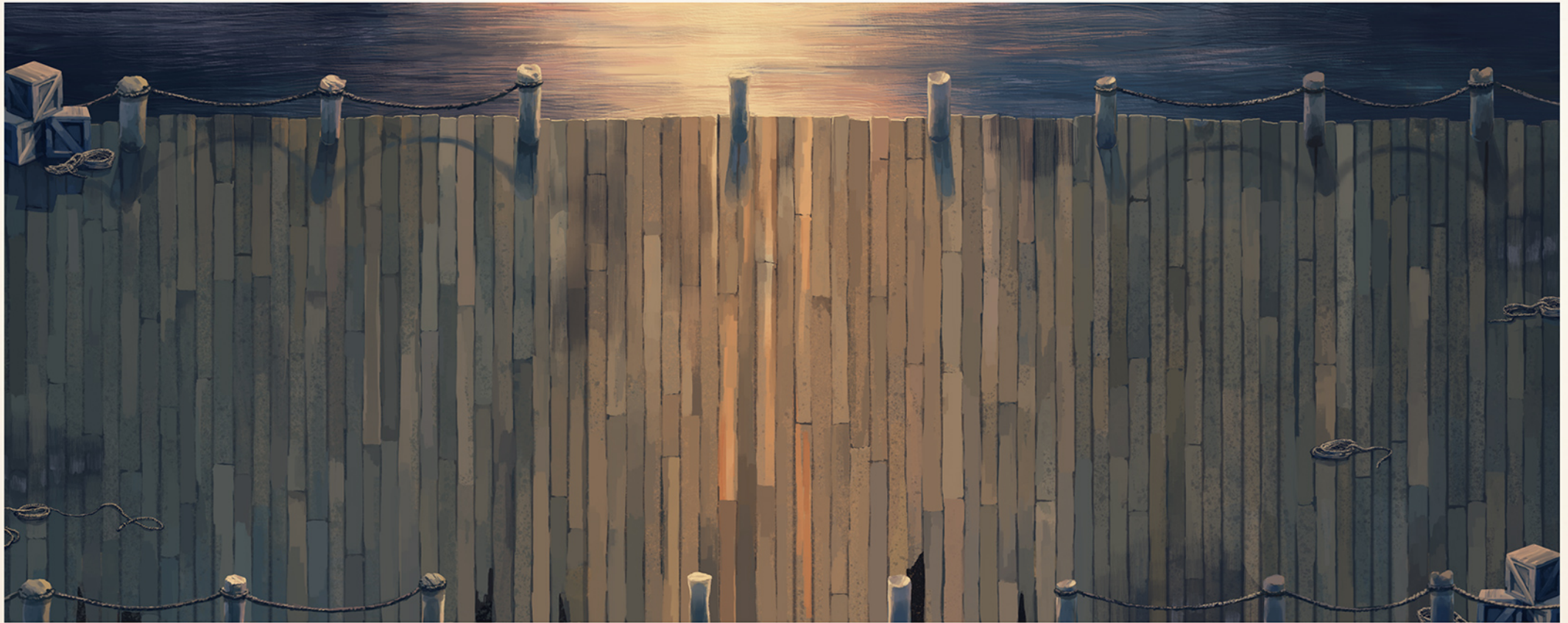
Victoria Roebing introduces herself to Maxwell and Joe while en route to Charleston.



An early version of this background.

First!

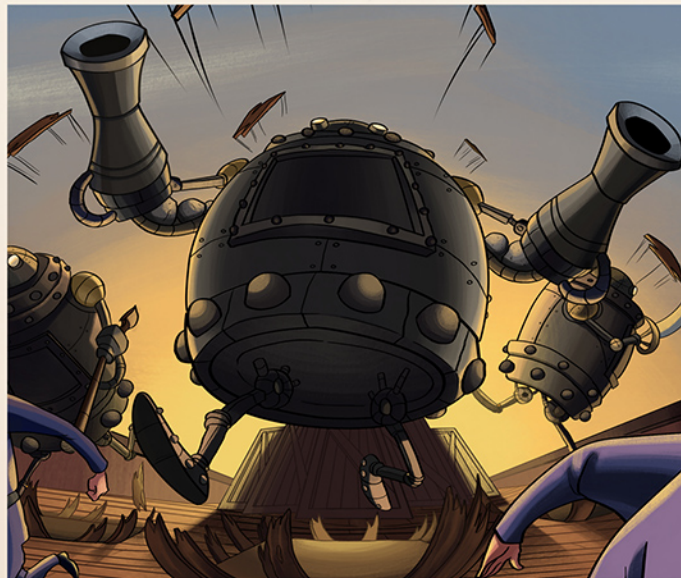
This was the first level that we created a background for, long before we had actually established our final, painterly style.



CHARLESTON, SC Charleston Harbor

As the situation at Fort Sumter intensifies, the Union army descends on Charleston Harbor with soldiers and ironclads. Meanwhile, Colonel Crane finds trouble when a trader, Rufus, docks with a small ship carrying ironclads.

One of the difficulties of creating this background was making sure the docks looked like a flat surface and not a vertical wall, a challenge caused by the game's flat, head-on perspective. To fix this, we adjusted the boards to recede slightly into the distance and added elements to the background that were clearly vertical, like the posts and hanging ropes.



Ironclad robots burst out of crates and send soldiers running for cover.

Victory from Afar

The Charleston level introduces mortars, which allow players to score Victory Points by simply occupying and protecting a spot on the battlefield with an infantry unit. This shifts the balance of the gameplay, allowing players to play with defensive strategies that wouldn't work on other levels.

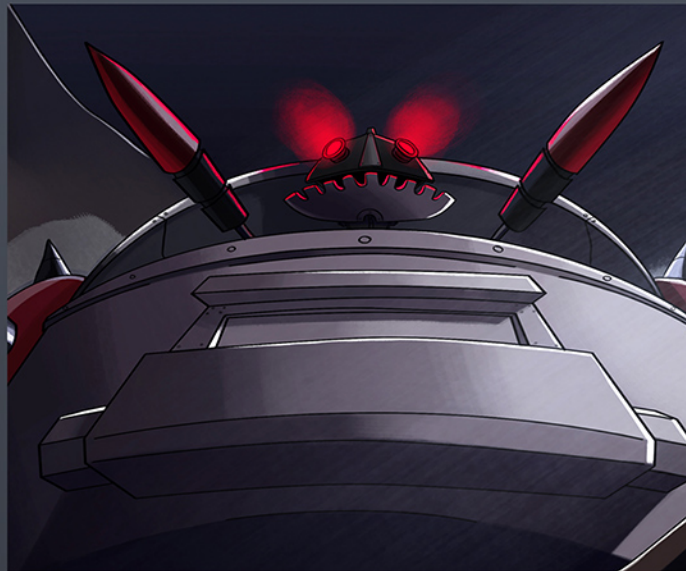
The mortars that made it into the game fire actual projectiles, which move slowly and can be seen crashing into a player's side of the battlefield. Earlier in development, though, this was only implied by an explosion, which made the gameplay difficult to follow.



SAVANNAH, GA Abandoned Warehouse

What awaits you in Savannah? An empty warehouse, a forgotten note, and a sinister sentry, lingering in the darkness. Rufus brings Maxwell and the group to the warehouse where he received the crates he brought to Charleston.

This background was inspired by old textile and garment factories with dark wooden floors, brick walls and tall windows. The obstructed windows create irregular beams of light and shadow. The patchwork of light and dark contribute to the menacing atmosphere, which is perfect for the game's first boss level.



The Warehouse Sentry, one of Dmitry's many creations, as shown in the graphic novel.



Like a Boss

The warehouse sentry is the first major boss in the game, of which there are really only two. Failed ideas for other bosses include a giant robot scorpion (the level was ultimately cut) and a giant Confederate ironclad (the level, Baton Rouge, was later revised).

A New Villain Emerges

In this level, Dmitry is first identified as the supplier of ironclads to the Confederates.



TALLADEGA, AL Talladega Forest

As the journey continues toward Texas, Maxwell and the gang enter the Talladega forest, where they come across an abandoned Union army camp, formerly occupied by Lieutenant Lonsdale and what remains of his regiment. Before Maxwell can get any explanation, he and Lonsdale are taken by a surprise attack.

The bruised color palette shows the broken and dilapidated camp in the forest. A pathway of fallen trees and cracked branches shows where ironclads rushed into the camp earlier, while embers still glow in the camp fires.



A broken ironclad blocks the path and forces Maxwell to stop and investigate.

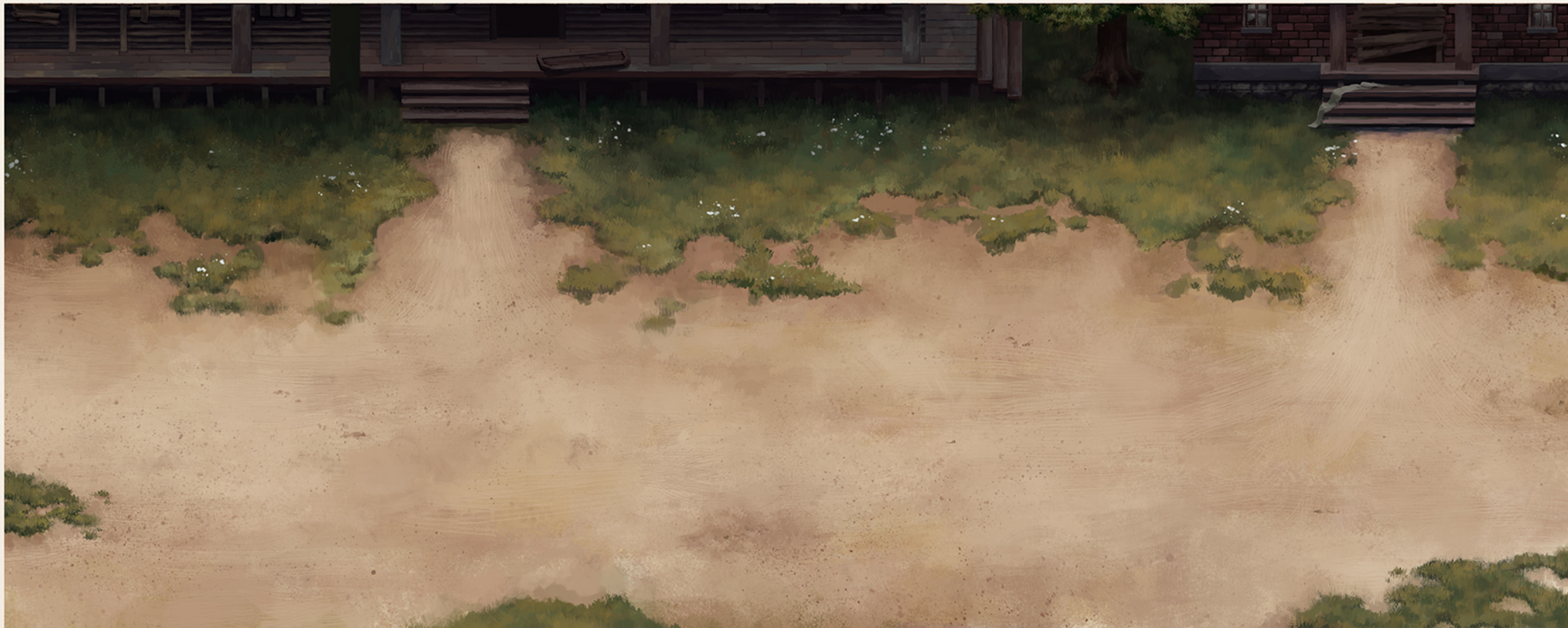
Lieutenant Lonsdale

Lieutenant Lonsdale, much like Colonel Crane, was sent into the South to battle against the Confederates. However, things went awry; Lonsdale's commanding officer and fellow soldiers were slaughtered in battle, forcing the remaining Union soldiers to scramble and flee.

Lieutenant Lonsdale's experience is explored in the short story "Ironclad Tactics: Boiling Point", which is included at the end of this book.

Aglow at Night

This level contains microanimations of fireflies hovering across the battlefield and embers glowing in the remains of the fire pits.



BATON ROUGE, LA North Boulevard

In Baton Rouge, one of Dmitry's many ironclad factories is seen across the street from a chapel in an abandoned neighborhood. Victoria discovers her mother in the chapel, who reveals that the manufacturing of ironclads has made the citizens sick and has scared many residents away.

The main challenge in developing this level's setting was identifying the right architecture for Baton Rouge and then creating a deserted and derelict version of that scene where life has left the city.



Mrs. Roebing, Victoria's mother, gazes out on the factory across the street.



Hoo, boy!

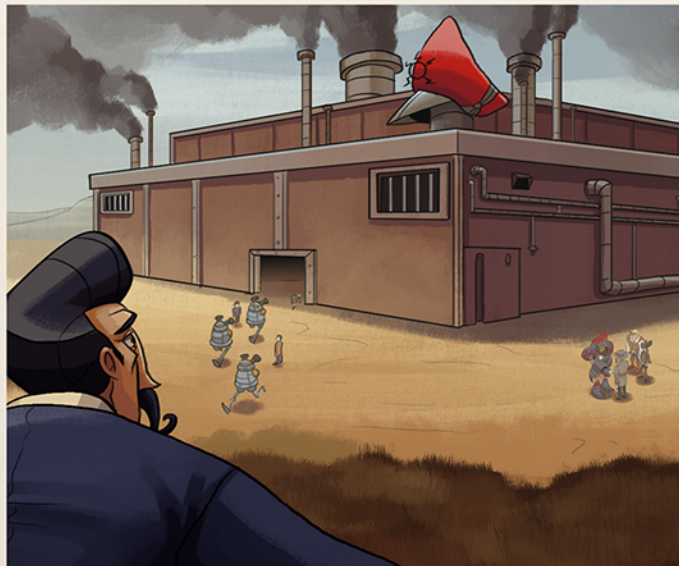
The Confederate Technician makes his debut in Baton Rouge. There is no Union Army equivalent of this unit, though the player can access the uncannily similar Mining Engineer in the mercenary faction later in the game.



HOUSTON, TX Factory-Fort Endicott

Outside of Houston sits another one of Dmitry's factories, where Dmitry executes a deal with a Confederate general while the heroes catch sight of him and the Derp brothers. When Maxwell is spotted by a Confederate scout, Rufus rigs a distraction so that they can escape.

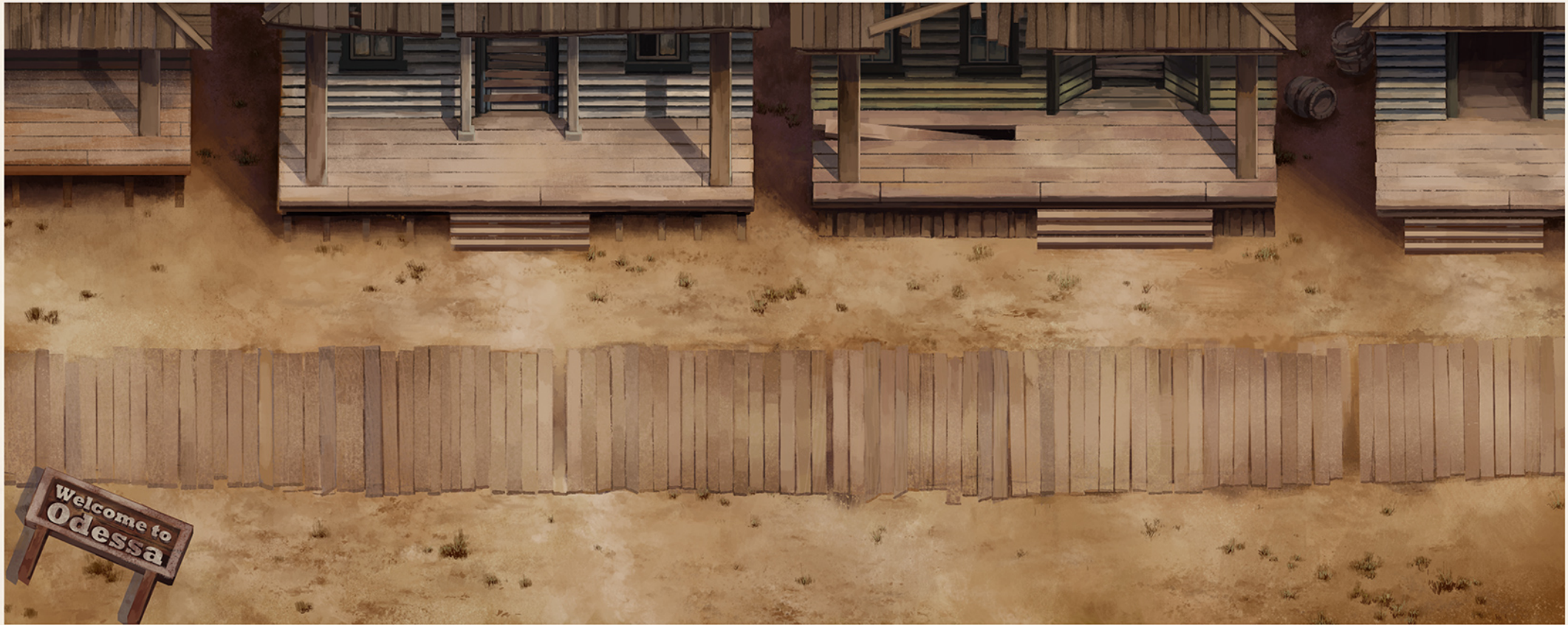
The background for this level is the first in a series of western themed desert settings. Like the last level, this is another factory, but one reinforced to also serve as a fortress. The story heads to the American west, where life and society aren't quite as developed – or civilized.



Factory-Fort Endicott sits on the outskirts of Houston, Texas.

Lessons Learned

When we first planned out the level progression, we intended for this to be a boss level. One lesson we learned early, though, was that levels featuring a single “boss unit” were hard to balance and tended to be uninteresting to play. Instead, we created a defensive level requiring the player to hold out against an unrelenting swarm of enemy forces, in order to give Rufus enough time to create a distraction.



ODESSA, TX Main Street

In pursuit of Dmitry, Maxwell and the crew stop in the frontier town of Odessa to help Sheriff Lyons with a pest problem – Frank Derp. The mercenaries, led by the Derp brothers and acting as Dmitry’s personal army, make their first appearance as a faction in this level.

This level was heavily inspired by showdown scenes from classic Western movies and ghost towns. Gunslingers swing down from the rooftops as tumbleweeds roll past boarded up buildings on Main Street.



The desert outside of Odessa, Texas.



The Gunslinger

The gunslinger is a special unit featured only on this level. He is unique in that he deploys from the rooftops along the top of the battlefield, and is the only unit that shoots vertically.

Limited Options

This is the only level, other than the North Lawn, that uses three lanes on the battlefield instead of the typical four.



SILVER CITY, NM

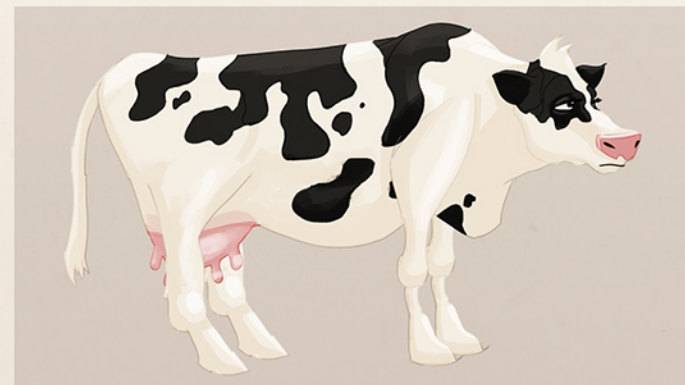
Madame Millie's Ranch

In Silver City, Rufus meets up with an old friend, Madame Millie, and helps her reclaim her ranch from Frank Derp in exchange for information about Dmitry. Silver City is a frontier mining town where outlaws and entrepreneurs thrive in the laissez-faire atmosphere.

Unlike the other desert scenes of earlier levels, Madame Millie's ranch is on a dry pasture, brimming with yellow grass, fences, and hay bales. Originally, cows were included in the background beyond the fence, but we decided, once again, to turn the cows into an in-game unit instead.



In Silver City, Rufus meets up with an old friend, Madame Millie.



How A-moo-sing

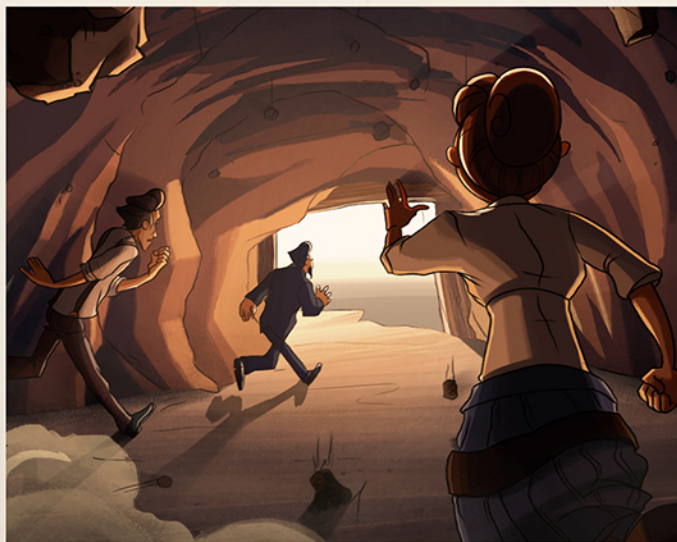
The cow is another level-exclusive unit that is player controllable and is also tied to a challenge. It is also the only infantry unit that can score Victory Points, by reaching the other side of the battlefield like an ironclad.



WICKENBURG, AZ **Hassayampa Gold Mine**

Arizona is home to the Native American faction in Ironclad Tactics. As Maxwell heads further into the southwest, he joins forces with Pakota, leader of a local tribe, to help reclaim their mine from the hands of Jed Derp and Dmitry.

This level is fought near the mouth of the mine. Daylight floods in through the entrance while the mercenaries emerge from within the depths of the tunnels. Carts, barrels and shovels line the dirt walls, while dust and debris fall from the ceiling whenever an ironclad explodes or scores Victory Points.



Maxwell, Victoria, and Rufus escape the collapsing Hassayampa Gold Mine.

Gold, Gold, Gold!

Gold veins, which generate Action Points, are first featured on this level. In early development, gold veins could only be activated by a specific infantry unit, the Miner.

We quickly removed this limitation, as it dramatically reduced the range of decks that could be used on levels with gold veins.

Similarly, we also removed a card called Prospect, which could create a gold vein on any level. Not only was it bad for gameplay, but it didn't make sense on levels like Charleston Harbor, which takes place on wooden docks!



LAS VEGAS, NV

Las Vegas Steamworks

With help from his new friends, Maxwell heads to Dmitry's stronghold in Las Vegas. The Steamworks is the largest of Dmitry's fortresses scattered throughout the southwest and serves as his depot for ironclads and weapons.

The Steamworks is a "steampunk" Grecian temple with riveted iron struts as pillars and burning barrels as flaming torches. Because this is Dmitry's greatest fortress, we needed to give it a malevolent touch. The battle takes place near sunset, which casts red light on the ground and the fixtures.



This panel was inspired by The Battle of Glorietta Pass as depicted by painter Roy Anderson.

Fire the Mortars!

In an early version of this level, the enemy would play defensively and retaliate by occasionally drawing a "Fire the Mortars!" card from their deck, instantly gaining a Victory Point.

Unfortunately, the randomization of cards in the deck created highly irregular pacing; sometimes the mortars would fire immediately and repeatedly, while sometimes they wouldn't fire at all. We solved this with a solution that's obvious in hindsight: replacing the special mortar cards with the same mortar mechanic used in Charleston Harbor and Baton Rouge.



DEATH VALLEY, CA Mojave Desert

Death Valley – hot as hell and full of robots. After his daring escape on an airship, Dmitry continues west and Maxwell follows, hot on the madman’s trail. Tensions rise between the characters in the story and the player must face off against a new type of robot, Dmitry’s transforming ironclad “shells”.

This level allowed us to paint a new kind of desert landscape. As the sun sets, the cacti cast their purple shadows across the desert floor. The shapes of the brush and cacti glow, illuminated by the setting sun. A Gila monster lounges on a rock in the background and flicks his tongue.



Photograph by Jimmy Thomas

The Gila monster, a lizard native to the Mojave, was used as a microanimation in the background.



Cacti-tacular

Cacti painted in the level background are Cholla cacti, which are common in the Mojave Desert.

Photograph by Quinn Dombrowski

Entering the Final Phase

From here on out, Dmitry’s faction becomes the main opponent. The Mojave level is the last “normal” stage before the final levels, which crank up the difficulty and intensity.



SAN FRANCISCO, CA **San Bruno Mountain**

Welcome to California! In San Francisco, Maxwell and Crane rush to catch Dmitry, but are thwarted in the mountains by an airship bombardment and mercenaries on gliders.

San Francisco was a major change in scenery from the arid, orange and yellow desert of the southwest. The mood in the story also takes a dive, becoming more downtrodden and serious. The muted color scheme and temperate, wet weather complement these differences. The scenery was inspired by weather in Scotland and photographs of the mountain forests outside of San Francisco.



From a hill, Maxwell watches as Dmitry's airship escorts his large steamship out of the bay.

Dmitry's Airship

This level features Dmitry's infamous airship, introduced in Las Vegas. It periodically flies overhead, firing a cannon to bombard the player's units.

A Little Fine Tuning

During play testing, this was the most difficult level; it took an average of 46 attempts for players to beat it. We had to recalibrate the level multiple times to make it winnable.



PORTLAND, OR **Baldwin Logging Camp**

In Portland, Joe returns and joins up with Maxwell at a train station. It is not a happy reunion, though, as Joe comes bearing unsettling news for Maxwell. In the story, there are no references to a logging camp or lumberjacks, as the chapter in the graphic novel is set entirely on the train.

This level includes details characteristic of a 19th century lumber camp, such as the wheel ruts gouging the mucky earth, strewn logs, and a large tree stump with a two-person saw. We added a light rain effect to emphasize the dismal mood.



Rain drizzles as Joe rejoins Maxwell and the gang in Portland.

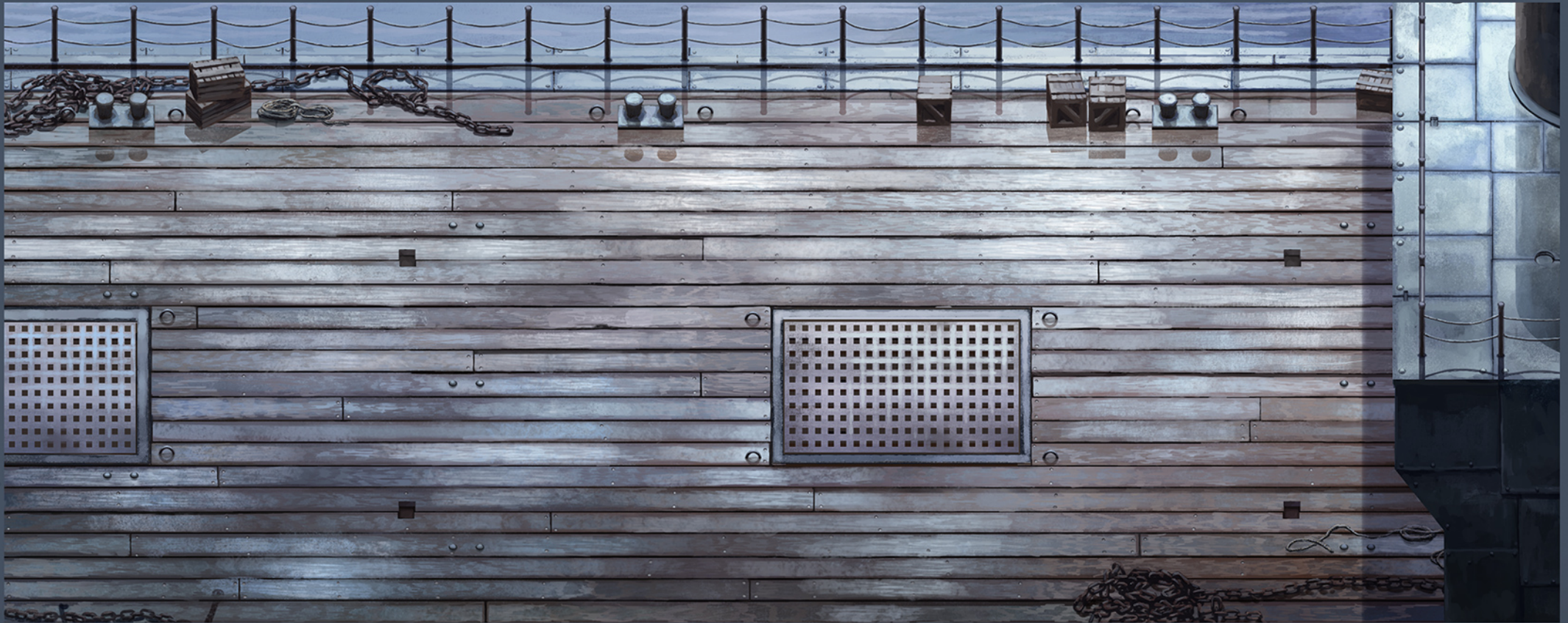


The Lumberjack

This gruff logger is introduced in Portland. The Lumberjack is part of the mercenary faction and is the most powerful infantry unit in the game. His attack causes a staggering three points of damage.

That Pacific Northwest Flavor

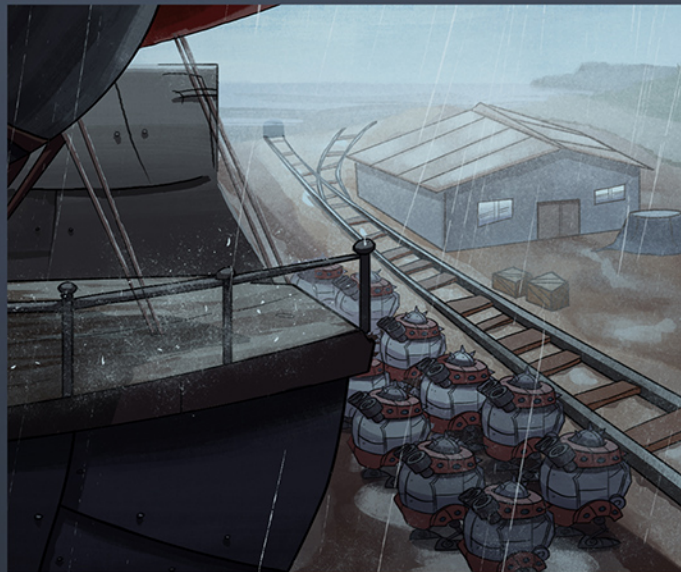
Portland without rain? Never! Weather effects, such as fog, drifting snow, and rain, were added to the game late in the development process to make the game feel more dynamic.



SEATTLE, WA Port of Seattle

Maxwell finally tracks down Dmitry in the Pacific Northwest, where they face off on the deck of Dmitry's great steamship in the city of Seattle. This is the final boss battle of the game and the only other level in which a player must destroy a single boss unit to win.

The level takes advantage of environmental effects by incorporating rain, thunder and lightning with audio and visual effects. Dmitry's ship is covered with crudely welded metal plating and grates, but is still a technological marvel in this era.



Rain pours down at the Port of Seattle.



Dmitry's Robot Suit

Much like a nesting doll, the heavily armored Dmitry rides inside a heavily armored robot suit to face the player in the final battle. Until his shields are disabled, he is invincible.

Creating the effect for Dmitry's invincibility shield was challenging, as it had to convey the idea that he wasn't being damaged without looking too futuristic. In the end, we settled on an "electrical" effect that was inspired by electric reactive tank armor.



CHARACTERS



MAXWELL PROSSER

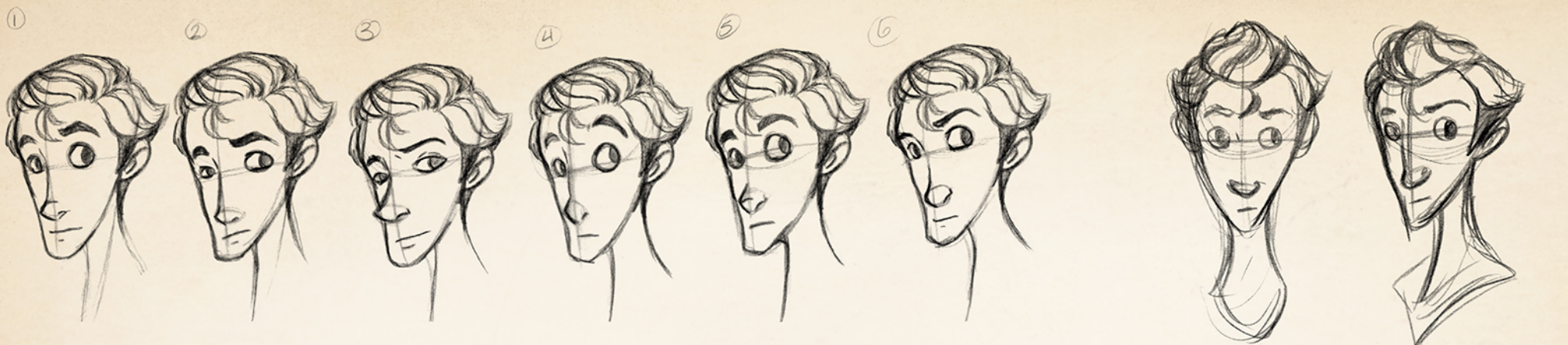
Hotshot Steam Engineer

A tinkerer since childhood, Maxwell is a brash and inventive engineer at the Bureau of Steam Engineering in Albany, New York. Maxwell finds the bureaucracy and paperwork of the Bureau stifling and prefers to build his own contraptions under the guidance of his mentor, Zebulon Wright. His sloppy record-keeping is a thorn in the Bureau's side.

Maxwell is a bit snarky, but also intelligent and curious. He greatly admires Zebulon and, though he doesn't always appreciate Joe, considers Joe to be almost like a brother. He is an only child and the son of a well-to-do business man. In fact, his father is the proprietor of the Prosser and Peabody catalog which provides fine goods for commercial purchase.

What's in a name? Maxwell's name is a reference to physicist and mathematician James Clerk Maxwell, famous for formulating the eponymous set of equations.







JOSEPH ASHDOWN

Loyal Best Friend

Joe is Maxwell's childhood friend and colleague at the Bureau of Steam Engineering. Mild-mannered and humble, Joe strives to one day become a senior engineer. Unlike Maxwell, Joe embraces the rules and regulations. His meticulous records and drawings make him a favorite of their boss, Edgar Dalhousie.

Joe has always been in Maxwell's shadow during their childhood. Maxwell excelled in almost any competition, whether it was fishing or school. After graduating from college, though, the tables are turned; Joe thrives in the structured environment at the Bureau of Steam Engineering while Maxwell flounders.

Joe is an all-around kind young man who lacks self-confidence. However, as the story progresses, Joe becomes more self-assured and stands up to Maxwell. Ultimately it is Joe who starts the process to bring Dmitry down by returning to Washington, DC and spearheading the Bureau of Steam Engineering's investigation into Zebulon's ironclad project.





ZEBULON WRIGHT

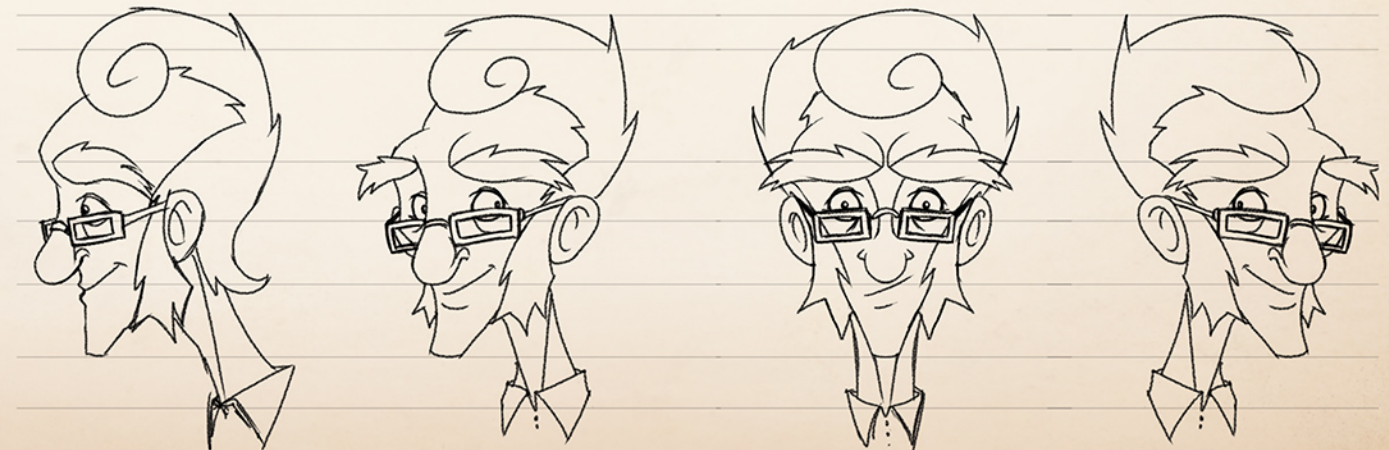
and Chester

Zebulon, renowned for his genius, is a longtime engineer at the Bureau of Steam Engineering. After decades of toil, Zebulon has grown weary of politics inside and outside the office and spends most of his time with his pet cat, Chester, in his workshop.

Maxwell looks to Zebulon for guidance as an engineer. Therefore, we wanted Zebulon to have a kind demeanor, much like that of a grandfatherly mentor. Zebulon's most distinctive feature is his "cinnamon bun" swirl hair. As the story progresses and Zebulon unravels, so does his hair! Long after we began the graphic novel, we realized that Zebulon bears a resemblance to Isaac Asimov, which was entirely unintentional.

Chester is Zebulon's pet cat. Zebulon rescued Chester from a nasty fight and restored his damaged vision with a specially designed monocle. Chester has stayed at Zebulon's side ever since. Beneath his spitting and hissing exterior is a loving companion protecting his best friend.

When we started making Ironclad Tactics, one of our colleagues insisted that we needed a mascot. We begrudgingly agreed and added the clichéd steampunk cat with a monocle. With the increase in feline popularity in recent years, we felt that a cat would be the most appropriate choice as a companion for Zebulon. Despite these beginnings, we've come to love Chester!



VICTORIA ROEBLING

Federal Mystery Agent

Victoria is a headstrong federal agent working for an unspecified organization. Her investigations border on unorthodox and she has a knack for being where she is not supposed to be. Originally from Louisiana, Victoria moved north with the intent to marry; much to her mother's dismay, she got a job instead.

Victoria is a fiery woman, but also a spinster by 19th century standards. As a woman, she is out of place among Maxwell, Rufus, and Colonel Crane in the graphic novel, but she seems not to mind. She has more important things on her mind, such as finding Zebulon Wright and disentangling the complicated truth about the ironclads and the factory in Baton Rouge.

Victoria has a unique character design, mainly due to her distinctive round head shape, which she shares with her mother. She is a bit of a tomboy and wears little to no make-up.

Victoria is one of the few characters designed years ago for the game's spiritual successor, *The Bureau of Steam Engineering*. Her art, however, was never used. The surname Roebling was taken from Emily Roebling, who contributed to the completion of the Brooklyn Bridge after her husband, Washington Roebling, developed caisson disease.





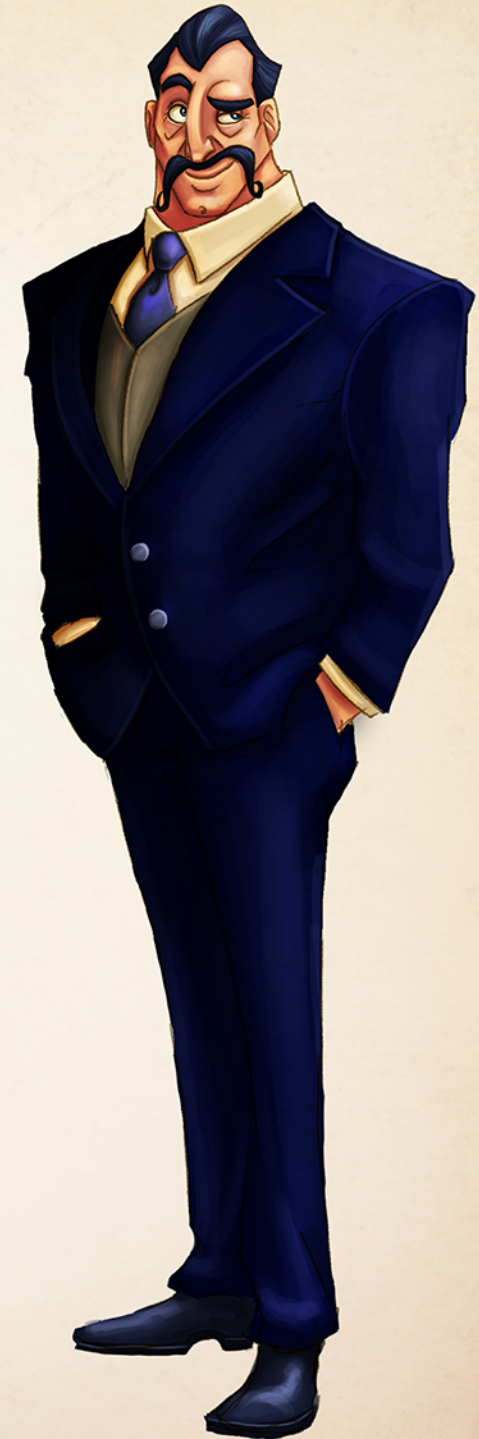
RUFUS MITCHELL

Rogue Trader

Rufus operates a covert shipping service out of Charleston, specializing in a range of unspecified tasks for unspecified clients. His charm and wry sense of humor make him a friend to nearly everyone, including men, women, and cats.

Rufus is, at the very basic level, a merchant for hire. He is confident and suave, but also level-headed; he often serves as the voice of reason between Maxwell and Victoria. Madame Millie is one of his closest confidants, who he visits whenever his work takes him near Silver City. For many years he has romantically admired Millie, but he remains unable to pursue more than simple business ventures with her. He is quick to make friends with Maxwell and Victoria. After Zebulon leaves Chester behind, Rufus becomes the cat's favorite new person.

His character design was partly inspired by George Valentin, the main character of the film *The Artist*.



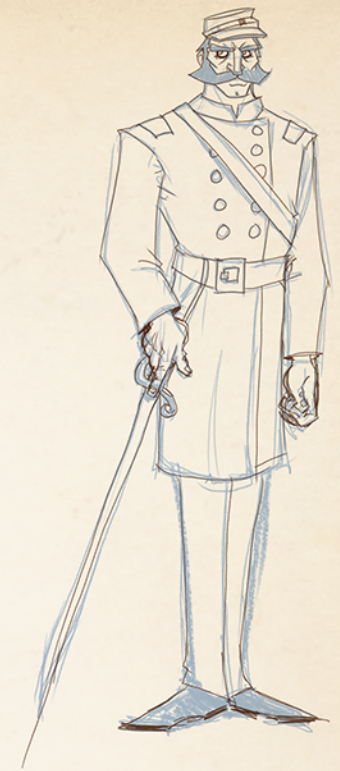


COLONEL CRANE

A career military man and model commander, Crane is disciplined, intimidating, and virile. He is unimpressed by the ironclads and prefers various forms of hand-to-hand combat. In his off-hours, he enjoys fencing, cleaning his guns, and grooming his moustache. He considers himself to be a true soldier. His troops consider him to be intimidating. Crane reluctantly accepts Maxwell and Joe as attachments to the mission to Charleston, but later comes to appreciate Maxwell's engineering talents on the battlefield.

Colonel Crane's moustache, as one artist put it, is awesome. Inspired by the cutting edge facial hair of Ambrose Burnside, Crane's hair, sideburns, and moustache merge into a single diabolical mass of facial hair.

Crane started off as a more rigid and flat character, but his personality evolved through the development of the story. He is rather blunt and reticent when he first meets Maxwell and Joe, but, after fighting battles with Maxwell, he becomes an important member of the team. For our ending credits, we felt that Colonel Crane deserved his own song, entitled "Colonel Crane's Fighting Train", for all that he's been through.



TELEGRAM BOY

The Nameless Wonder

Telegram Boy's real name and age is unknown. He appears to live at the Atlantic Pacific Telegraph Company office, despite efforts by the community to contact his parents. His only goal is to deliver messages, even in the most inopportune of moments.

Telegram Boy was very much inspired by newspaper boys and the classic Dickensian street urchin. With his much too large hand-me-down coat and gap teeth, Telegram Boy is like an annoying younger sibling, always showing up at the wrong time with an earnest smile. Though Telegram Boy functions as a comic relief character, he also comes as the bearer of somber news and can be serious when necessary.





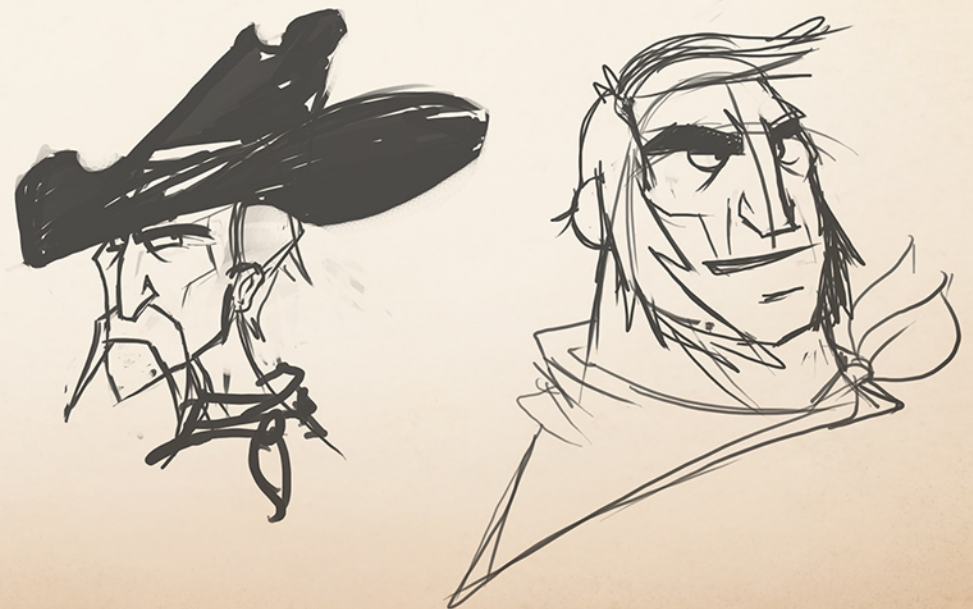
FRANK AND JED DERP

The Infamously Incompetent Outlaw Duo

The Derp Brothers are a pair of infamous gunslingers, renowned for their incompetence and their disparity in appearance and personality. Jed, the smaller of the two, is known for his elaborate plots and enthusiasm for explosives. These schemes never quite come to fruition, though, due to Frank's bumbling execution. Frank, baby-faced and eager, is always trying to live up to Jed's expectations.

The Derp Brothers are a reference to the famous Earp family of the American Old West. However, unlike the Earp family, Frank and Jed are neither lawmen nor heroes; long before they are hired by Dmitry, the pair was known for stealing cattle and horses and wreaking havoc on frontier towns such as Odessa, Texas.

During the creation of the Derp brothers, we wanted to highlight their differences and make them seem menacing, but still humorous. After all, their surname is Derp. Frank is much larger and warmer in both his colors and personality while Jed is very angular and dark. Jed, as the more arrogant and intelligent brother, also indulges in fanciful accessories such as his ivory gripped pistols and his large black hat. Their common genes can be seen in their eyes and brows.









MADAME MILLIE

Not Your Average Entrepreneur

Madame Millie is the bawdy owner of the ubiquitous Madame Millie brothel chain with locations in more than fifteen states. Millie began her career as a waitress at a tavern, but soon learned she was better at running the business than serving drinks. Millie has known Rufus for many years and has turned down his romantic designs in the past, preferring to keep their relationship strictly business. He remains one of her closest friends.

We wanted to make Millie sultry, but also reflect her independence and entrepreneurial spirit. She knows exactly what her business is and cares greatly about her employees and business. As the sexiest character ever featured in a Zachtronics game, we had to make sure that her more revealing outfit was both period and body appropriate without being silly. Her dress is very structured with a corset so we had to pay attention to how it fit and molded to her body for the graphic novel.

Madame Millie was loosely inspired by a woman with a similar name.





MM
Low
earrings



curvy but sharp

lace mesh
gloves

mind how
chest is
positioned
(because of
garments)

daintier hands
than Victoria's

hips



DMITRY BAKLOVICH

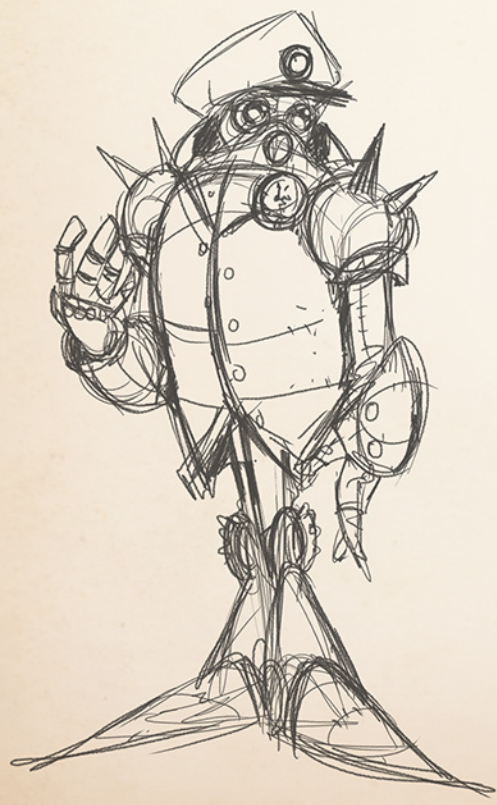
Not Actually Russian

Very little is known about this mysterious individual except for his unusual metal suit and large hat. Rumor has it he suffers an affliction of the lungs requiring such an elaborate outfit and breathing apparatus. Lately he has become infamous for destroying plantations across the South in fits of rage.

Dmitry sells ironclad robots to the Confederates, outlaws, and almost anyone who is buying. He conducts his affairs by proxy through outlaws such as the Derp brothers.

The most integral part of Dmitry's design was his suit. Inspired by bosses from games such as Mega Man and Sonic the Hedgehog, we created an elaborate and outlandish suit that would befit a megalomaniacal madman, complete with his iconic hat. The suit served two purposes: to hide Dmitry's identity and to protect him from the effects of Belgian Anthracite.





SHERIFF LYONS

Sheriff Lyons is an honest man just trying to keep the peace in the troubled town of Odessa. Plagued by constant bandit attacks, Odessa's inhabitants fled town in search of peace and quiet. Lyons seeks to drive the Derp brothers from the streets and restore the town's bustling main street.

Sheriff Lyons has a long history with the Derp brothers. It is only after the Derp brothers begin working for Dmitry that they run Sheriff Lyons and his citizens out of town using ironclad robots. This forces Lyons to seek out Maxwell's help.



PAKOTA

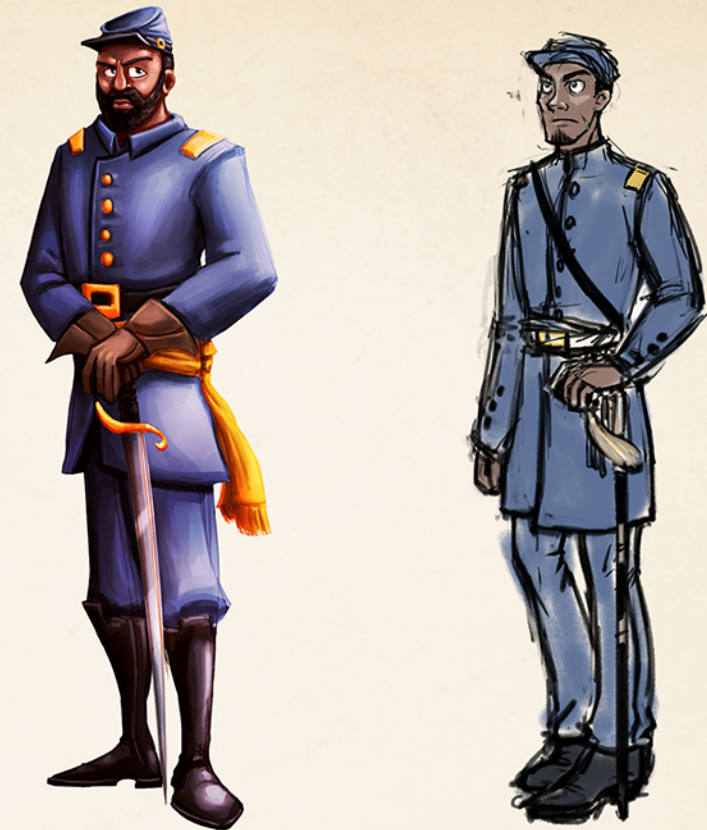
Pakota, a local band leader, has fended off assaults from bandits on his land near Wickenburg by using his enemies' weapons against them. After acquiring his own fleet of ironclads, he and his tribe have customized them to suit their needs. The ironclads have helped in his fight against the Derp brothers and Dmitry.

We designed Pakota in the image of Yavapai and Apache band leaders, particularly Geronimo. As a leader, he has a lot of charisma and strength. He is also intelligent and practical as he is able to modify his own ironclads.

MRS. ROEBLING

Mrs. Roebing is Victoria's mother. She worries about her daughter becoming a spinster, but, as the sole remaining medical practitioner in her Baton Rouge neighborhood, she has more pressing problems. After seeing the effects of Dmitry's ironclad factory on the city, she feels she cannot leave and must use her skills to help the remaining sick citizens.

As Victoria's mother, Mrs. Roebing had to resemble her daughter, but look older and more mature. The most important aspect of her character is her sense of duty and the exhaustion she endures, carrying the weight of the neighborhood on her shoulders. She carries a leather bag containing morphine, the only small comfort she can offer her patients. In her original design, her apron was covered in blood.



LIEUTENANT LONSDALE

Lonsdale is a member of the 3rd New Hampshire Mechanized Infantry. The son of a freedman, Lonsdale joins the Union Army to help preserve the country, but he is relegated to noncombat support functions. He struggles with the racism of his fellow soldiers, but, despite this, takes his military career seriously. When his regiment is ambushed in Alabama, Lonsdale loses his commanding officer. The attack leaves Lonsdale as the highest ranked officer and new commander of the unit.

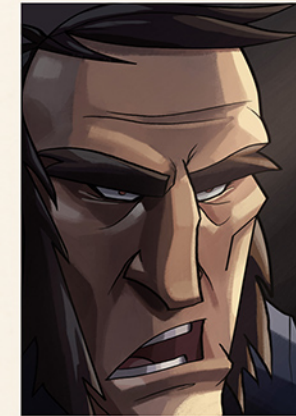
Historically, black men were not permitted to enlist in the Union Army during the American Civil War until after the Battle of Antietam, when President Lincoln issued the Emancipation Proclamation. Early in the war volunteers wanted to enlist, but were turned away for fear of raising already high tensions. In the Ironclad Tactics story, however, these volunteers are accepted for support roles and as combat engineers to help with the ironclads on the battlefield.

EDGAR DALHOUSIE

Senior Engineer

Dalhousie is an engineer at the Bureau of Steam Engineering, second only to Zebulon in experience and knowledge. He is a stickler for adhering to the instructions outlined in the Bureau of Steam Engineering's Standards of Engineering, a set of rules he himself devised.

Dalhousie is the boss that never lets his employees catch a break. He is strict about following the rules and always keeps a watchful eye on his underlings, especially Maxwell. His character design was inspired by the Walrus of "The Walrus and the Carpenter" by Lewis Carroll. His large beard makes up for the lack of hair on his head. He was originally described as a rotund man with rosy cheeks, a quick temper, and a much too small overcoat. Also, he sweats profusely.



POSTMASTER GENERAL

The Postmaster General upholds the sanctity of the postal service and all post-related activities. A reclusive figure, he is rarely seen and rumored to dabble in espionage. He works with the US Marshals to bring postal justice. Victoria greatly admires him.

The original concept for the Postmaster General resembled Colonel Sanders. This sketch, however, went unnoticed until after the game shipped. His actual appearance in the graphic novel is based off of the real Postmaster General at the time, Montgomery Blair.



THE STORY



THE STORY

One frigid winter evening on a snowy field in upstate New York, Bureau of Steam Engineering inventor Zebulon Wright reveals his greatest invention – a steam-powered robot – to his protégé, Maxwell Prosser. The ironclad, as Zebulon calls it, is a wonder of technology and quickly becomes a weapon of great power for the Union military.

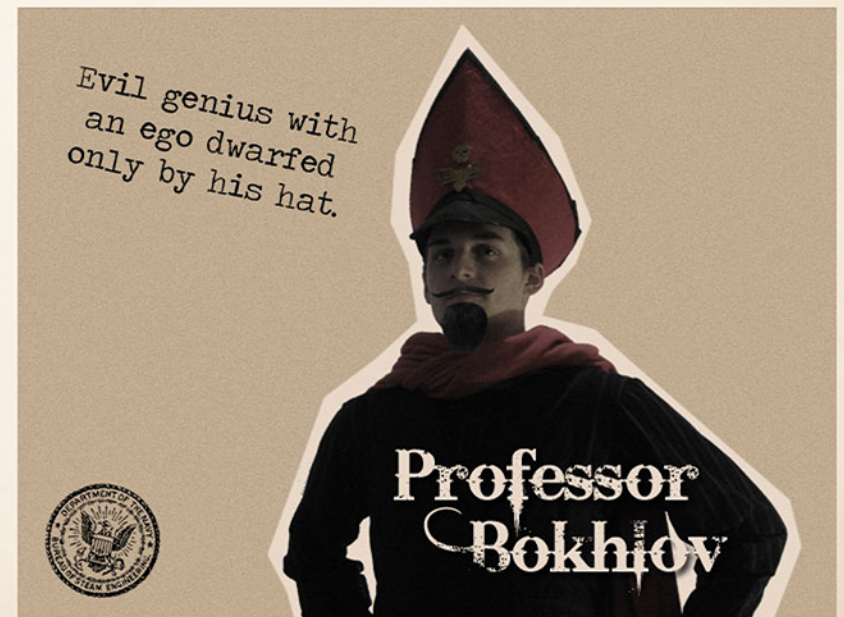
As tensions rise and the nation fractures, the Bureau of Steam Engineering perfects the ironclad for use on the battlefield. When Zebulon is called to Washington on urgent business, Maxwell finds himself thrust into the heat of battle at the side of the automatons and soldiers. Soon he unearths a stunning discovery that sends him on a journey across the country to discover the truth about the ironclads.



THE ORIGINS OF IRONCLAD TACTICS

Ironclad Tactics is the spiritual successor to an earlier Zachtronics game, **The Bureau of Steam Engineering**. In the game, the player is an American steam engineer at the beginning of an alternate history American Civil War, who must design and duel with steam powered robots to defend the Union.

Though the Bureau of Steam Engineering did not contain a full-fledged story, the villain, Dmitry, and the premise, was revived and expanded for Ironclad Tactics. The game was originally going to feature live-action video sequences to tell a short story, something we later decided against.



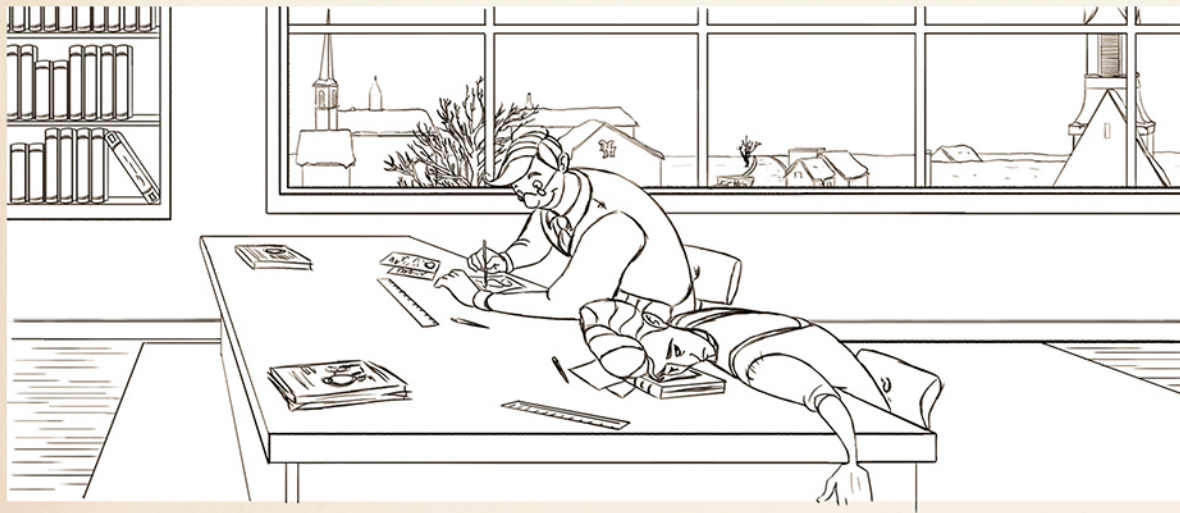
Character concept for Professor Dmitry Bokhlov for the live-action video from the Bureau of Steam Engineering (2008).

THE GRAPHIC NOVEL



The story of Ironclad Tactics is told through a fully illustrated in-game graphic novel. We decided to pursue this format for storytelling because it was both expressive and economical when compared to adding cutscenes or text excerpts. Full-fledged cutscenes were not within our reach, yet we felt that we could create something greater in scope and more engaging than SpaceChem's text-only approach.

Creating the accompanying graphic novel for the game was a complex and challenging undertaking that would not have been possible without the talent and dedication of our comic team. This story could not have been told in such rich detail without their contributions.



THE TEAM

Layout/Pencils

Lisa Price
Derek Blair

Inks

Beverly Heath

Flats

Chris Balcom
Mayang Sari

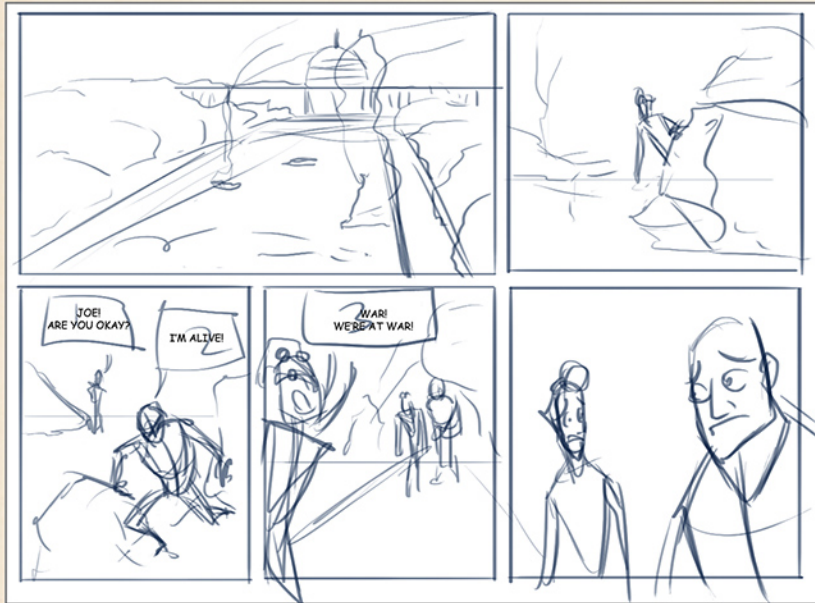
Colors

Steffani Charano
Kieran Lampert
Kyle Steed
Aimee Zhou

Writing

Hillary Barth

COMIC PAGE CREATION



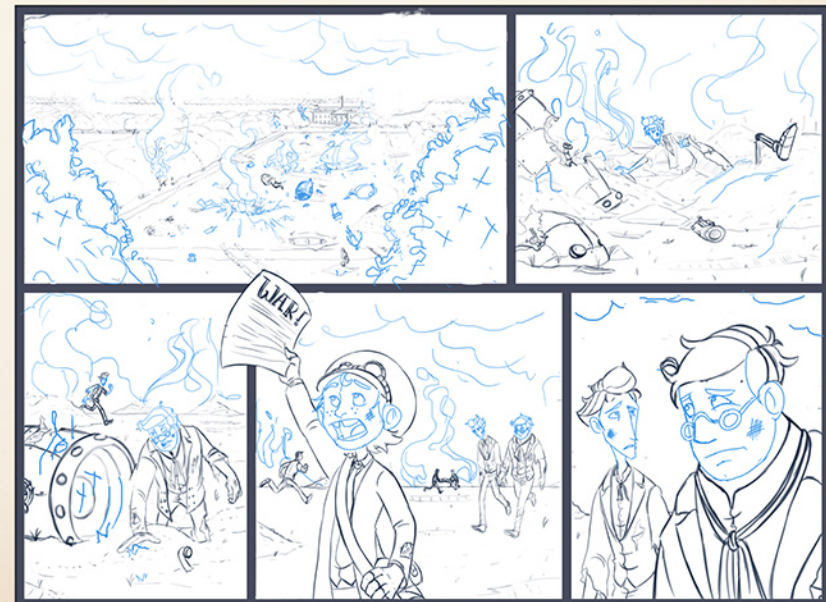
Step 1: Layout



Step 2: Rough Pencils



Step 3: Revised Pencils



Step 4: Finalized Pencils

COMIC PAGE CREATION



Step 5: Inks



Step 6: Flats

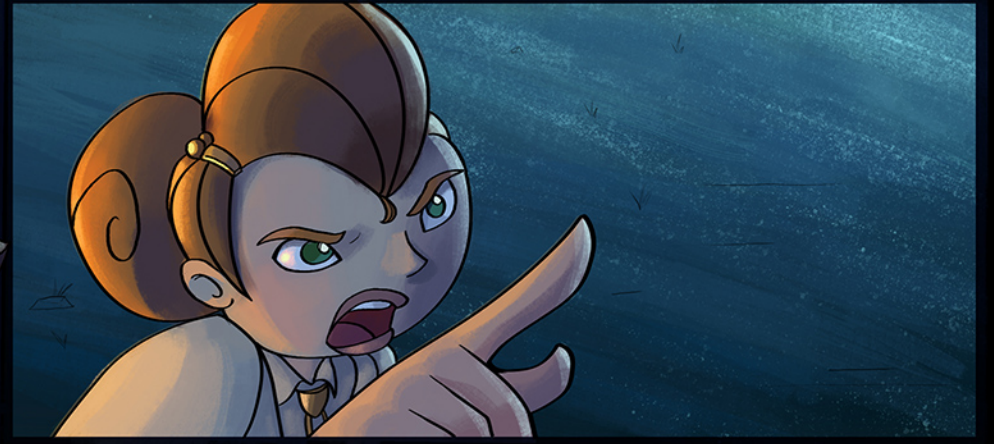
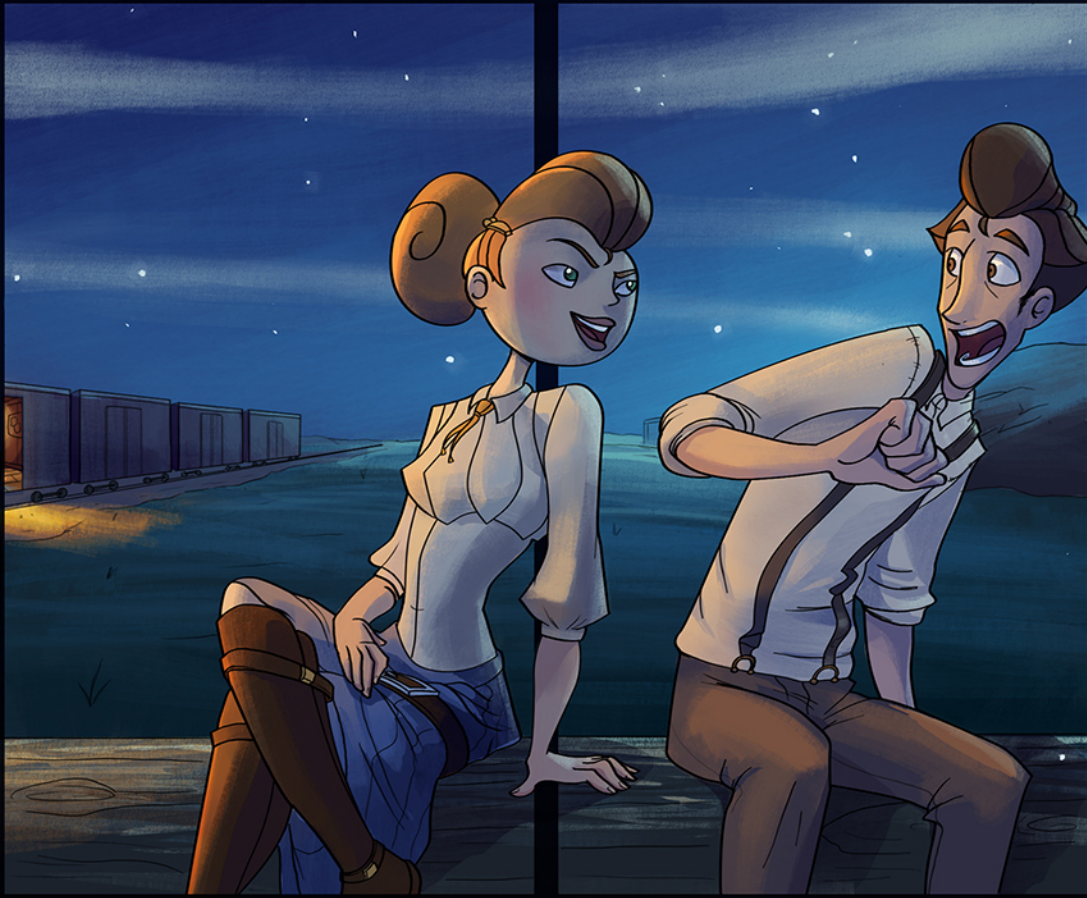


Step 7: Colors

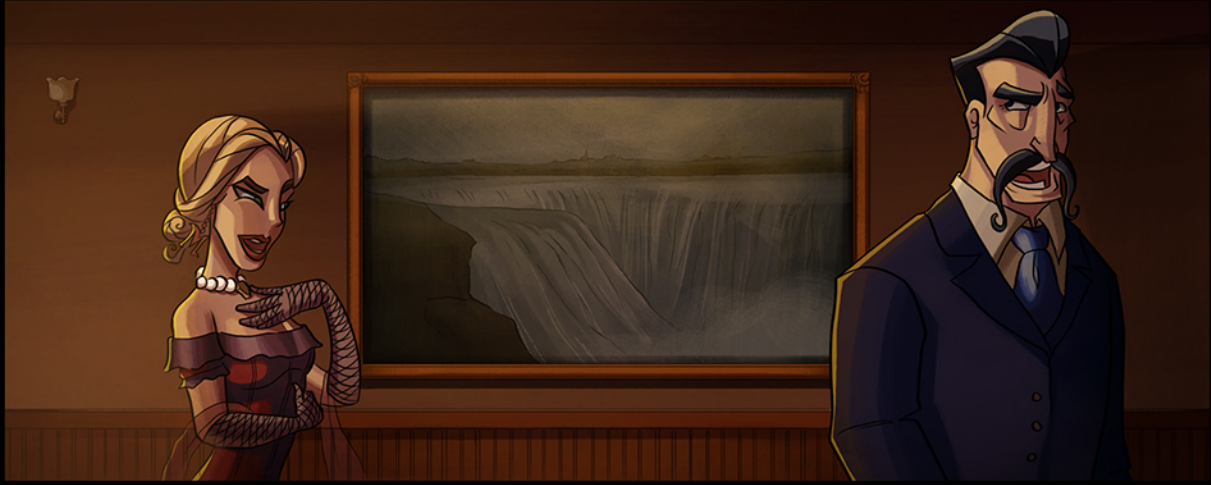
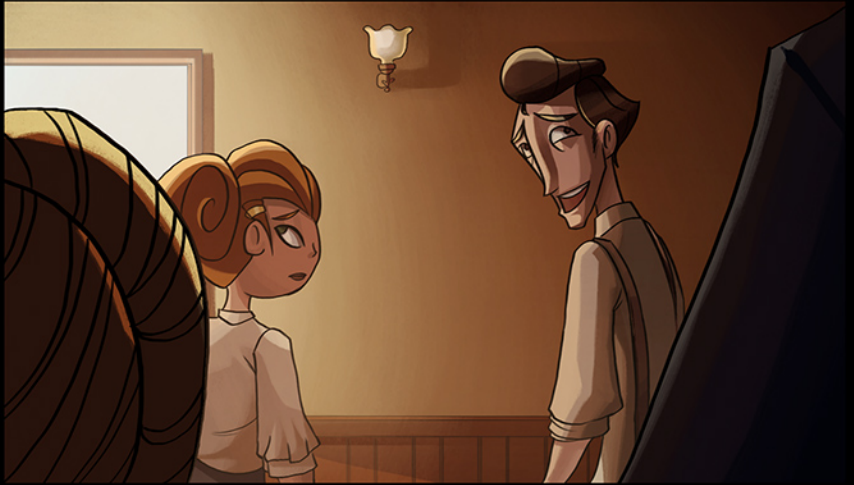


Step 8: In-game



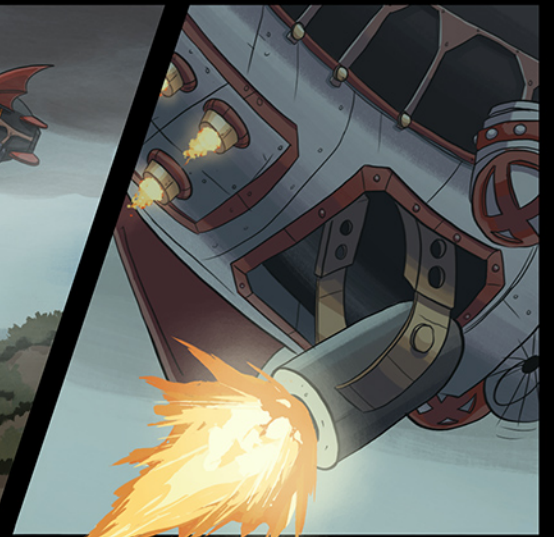
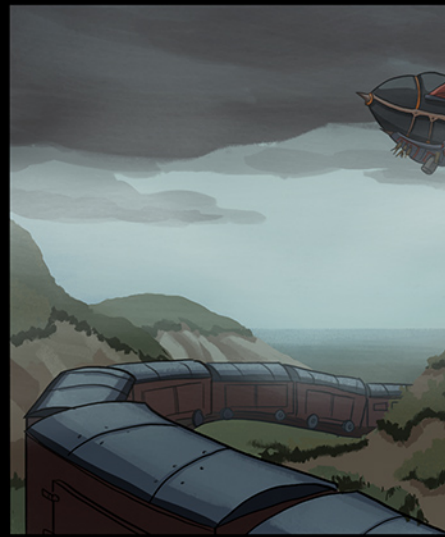












BOILING POINT

The Story of Lieutenant Lonsdale



When Lieutenant Lonsdale left his tent that morning, he was greeted by the stare of a massive metal automaton. Its shadow gave refuge from the heat and sun. Lonsdale checked his reflection in the machine's metal hull and wiped the sweat from his brow.

The ironclads, as the engineers called them, resembled oversized boilers with iron struts for legs and arms. It had only been two weeks since Lonsdale was introduced to the new machines and given a rudimentary course in their mechanics. The soldiers didn't know what to make of them. Colonel Ramsey, leader of the 3rd New Hampshire Mechanized Infantry and Lonsdale's commanding officer, referred to them as 'clockwork toys', though a single machine stood over twelve feet tall and weighed more than a ton. Ramsey used them as pack mules to carry ammunition and supplies rather than for their intended purpose as weapons.

The regiment had set up camp on the western outskirts of Atlanta two days before. Lonsdale led his company, composed of black men, freedmen, and a few infirm soldiers, in erecting barricades and digging trenches while the other companies smoked cigarettes and played cards in their tents. The ironclads were arranged in a wall behind the artillery line, but were otherwise ignored. Beyond the barricades was a dry field with an empty gully that once flowed with water. Over the hills was Atlanta, where the Confederates were likely preparing under the leadership of Colonel Stanfield.

Lonsdale made his way through rows of fabric tents to the Colonel's shelter, nodding to the soldiers he passed. The grass rustled under his boots as though he were walking through parchment. Bradley and Lasseter, two white officers a few grades up the command line, glanced away when Lonsdale passed and pretended to wipe dirt from their guns.

Lonsdale ducked into Colonel Ramsey's tent. The other man sat behind a table with a cup of coffee in his hand. Dirt dusted the brass

buttons of his formerly blue coat. Maps and telegrams covered the pocked pine table before him. He waved to a second cup of coffee on the other side of the table. Lonsdale sat down on a stool.

Ramsey was a Maine man with a body as thick as a tree and a long black beard that made Lonsdale look like a schoolboy. Quite a few of the men in their company were probably still schoolboys, Lonsdale mused.

"Fine morning, isn't it, Lieutenant?"

"As fine as it ever was, Colonel," Lonsdale said. "Did Dixon make a report?"

"Stanfield's gone invisible. Dixon couldn't make heads or tails of it." Ramsey creased his brow.

"What do we do?"

"Well, if we can't see him, we can't fight him."

"Sir, has Major Greene prepared the ironclads for the fight?"

"We don't need them. They'll just slow us down."

"Colonel, the ironclads are more powerful than any cannon we have."

"They're too finicky. Good for hauling supplies, but that's it."

"Sir, I'm well acquainted with them. Lasseter and Franklin have worked with them as well."

"Lonsdale," Ramsey sighed. "I appreciate your skills. There is no question you are a capable officer. But we don't need those things in the front when we have horses and trained men. If Greene wants, he can bring up the rear with them. With your company."

Lonsdale glanced away from Ramsey and stood, leaving his untouched cup on the table.

"We'll be ready, don't you worry about that. Just make sure you're prepared back there in case it gets out of hand." Ramsey drained his coffee in one gulp.

"Yes, sir. Thank you for the coffee."

"Come tomorrow it'll be whiskey and cigars."

Lonsdale lifted the tent flap and left.



The morning went quietly. Men rose, dined on sour water and hard biscuits, and drilled in the dry fields. The ironclads, still burdened by crates and wagons, stood in front of the tents. Lonsdale wiped down his sword and cleaned his gun in their shadows.

A trumpet wailed in the distance. A scream came from across the wide gully. It was Dixon, the scout.

"Ironclads!" came the cry. Confused, Lonsdale glanced to the line of inert machines at his back.

Another strangled tone broke through the air. The men stopped in their paces mid-drill. Lonsdale took out a pocket telescope and peered through the lens. A thick line of ironclads, at least two units deep, marched toward them through the haze from the outskirts of Atlanta. They were rigged with massive sabers, guns and, most noticeably, Confederate flags. Men in gray uniforms followed behind.

The first cannonball crashed through a wooden barricade before Ramsey had mounted his horse. Soldiers scrambled into formation, and gunners readied the cannons at the harsh cry of his voice. Lonsdale's stomach tightened as Ramsey called the men into formation. He knew his orders: stay back, with the machines. The cavalry took off with Ramsey in the lead.

Sun glinted off the hulls of the Confederate ironclads as they came down the hill. Lonsdale moved behind the artillery line as gunners scrambled to the cannons. He peered through the telescope to find Ramsey. Ramsey brandished his saber and yelled, but his voice was lost in the charge. His white horse strained under him as he closed the distance to the front of the enemy line. The earth shook under the undulating rush of the ironclads.

Ramsey's men fired their guns, but the bullets bounced off of the ironclads' hulls like rain drops. The machines continued to charge and opened fire. A hail of shots came down on Ramsey and his men as screams filled the air and their horses toppled.

Between the tufts of smoke and fire was Ramsey, his horse and his men gone. He stood, clutching his bleeding chest, and gazed up at an ironclad. The machine's orange eyes glowed with the burn of coal and it surged forth with a heavy clank. Ramsey's body bent and broke under its iron foot in a burst of blood. Lonsdale dropped the telescope.

Chapman and Turner, two privates in the cavalry, called out to Lonsdale from fifty yards away. They had been thrown from their horses. The formation had broken and the Confederates were upon them. Gunfire ravaged Lonsdale's ears. He searched the morass for Major Greene. The older man huddled behind a barricade and clutched his knee. Lonsdale sprinted toward him.

"Sir." Lonsdale glanced to Greene's mangled leg. Greene's knee was a mess of frayed blue fabric and blood.

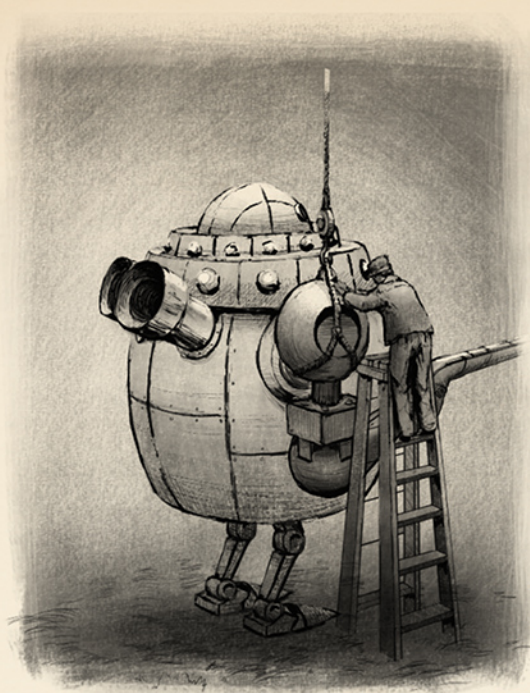
"It's nothing serious. What's going on?" Greene wheezed.

"Sir, they have ironclads."

"How in the hell?"

"Our scouts were wrong."

Greene sighed. "Well, you can only place so much faith in one man's eyes. That Stanfield's a slippery man."



"He's a coward," Lonsdale spat.

"Probably." Greene leveled him with a wry stare. "But he's winning. What are we doing? We need to get our ironclads out there."

Lonsdale hoisted Greene's arm over his shoulder. The older man winced as they moved to the next set of barricades, but made no sound. When they reached the artillery line and the ironclads, Greene collapsed on a nearby crate. A young medic appeared with a skin of water and a white cotton bandage.

"Ramsey's dead. You're in charge now, sir," Lonsdale said.

"He was a good man," Greene said. A one second eulogy.

"Stanfield is using the machines as a shield and sending his soldiers in behind."

"We'll do the same." Greene turned to the engineers. "We need to get out there. Now. Get those carts and wagons off! Guns on!"

Men, engineers and untested recruits, rushed around the metal giants, strapping in weapons and tightening bolts. They fiddled with the levers on the backs of the machines. Steam began to pour out of the ironclads.

Greene pushed the medic away from his bloody knee. "Lonsdale. Get every man you can find behind the line. We're going to charge."

The machines began to lurch forward. Lonsdale ran ahead and disappeared into the fog of the battle. He passed the slumped bodies of his comrades, their dead horses, spent shells, and lost guns scattered on the ground. Lonsdale pressed his lips into a flat line. Stanfield's ironclads had made messy work of Ramsey and the cavalry. He stumbled toward the gully where he had seen Chapman and Turner taking refuge. One of them yelled out to him.

"Never thought I'd be so happy to see your face," Chapman said. Lonsdale almost smiled.

"Are you injured?"

Chapman shook his head.

"How many men are left?" Lonsdale asked.

"There's about twenty of us," Chapman said.

"We lost our horses," Turner added.

"We don't need horses anymore."

Turner and Chapman's eyes went wide and the other men hooted as the Union ironclads stomped across the field. Their guns blazed, sending a volley of bullets over Lonsdale and into the lines of the Confederates. The bullets ripped into the hulls of the Confederates' machines, sending jets of steam into the air.

"Go now." Lonsdale pointed west toward the encampment.

"Wait- Franklin and Sam are still out there," Chapman said.

"I'll get them. Now, run! Take your guns!"

Chapman and Turner took off with the twenty men at their heels. Lonsdale continued across the ridge as cannonballs and musket fire blasted overhead. Sam and Franklin ducked in a ditch a hundred yards away.

Lonsdale made his way to them. They were unharmed, but when Lonsdale asked if there was anyone else, Franklin shook his head. What did that make them? Two or three dozen? A bullet cut into the ground at Lonsdale's boots. Franklin pointed to the converging lines of ironclads and, without a word, they ran. The heavy march of the enemy followed them. The Union ironclads came toward them with the barrels of their guns aimed forward and sabers, sharp and massive, stabbing toward the sky.

"Down!"

Lonsdale dropped into a roll and dove into a narrow gap between two of their ironclads. He glanced to his left, then his right. Sam and Franklin were in the mix of machines, smoke, and dust. The second line approached. Lonsdale steadied himself and slipped between two ironclads once more and emerged among lines of Union riflemen. He took his gun off his back and followed.

The pounding of the stampede and blasts of guns and cannons filled the air. The two lines of ironclads met across the gully with their sabers swinging and scraping, metal against metal in a shower of sparks.

Greene followed close behind at the front of the line. He sat atop one of the few remaining horses, his bloody knee red through the white cotton bandage. His skin shone a sickly green as sweat poured from his face.

A Confederate ironclad fell under the blade of a Union machine with a heaving screech. Greene raised his fist in triumph, and the soldiers by his side hollered. Lonsdale met Greene's gaze and shouldered his gun.

Then fire blossomed from the fallen ironclad and an explosion rocked the field. Scraps of metal flew through the air and rained down in a storm of iron and brass shards. Lonsdale dropped to the ground. A second blast knocked him on his side, his ears ringing and eyes stinging. He patted the ground, searching for his gun. A body, clad in a gray uniform, lay next to his weapon.

Half a body.

The man's skin had been burnt black. His legs were gone, cut clean off, likely by an ironclad's saber. His intestines hung from his abdomen like wet ropes. The smell, fleshy and burnt, filled Lonsdale's nostrils. He turned away. He struggled to stand and, when he did, he could barely breathe. The air was thick with soot and ash. He wiped his eyes, but it did no good. He saw only the halo of a great fire and a black stream of smoke curling up into the clouds.

"Lonsdale!"

Dixon ran up beside him. The scout's skin was ashen, and his uniform was slashed across the belly. Lonsdale smiled wryly and brushed a bit of ash off of his shoulder. The boy had gotten lucky.

"Greene's dead," Dixon said.

"Where's Bradley? Lasseter?"

"Gone, sir. They were close in with Greene when that ironclad exploded."

Lonsdale said nothing. First Ramsey. Now Greene, Bradley, and Lasseter. He hadn't gotten along with all of them, but they were fine soldiers. Now, there was no one else. Just him.

"You're in charge now, sir." Dixon gazed at him expectantly.

Lonsdale glanced to the large fire. The assault had stopped. The Confederates were probably fumbling to contain the damage and withdrawing to the city. He could use this lull to return to the encampment, gather their supplies, and retreat.

Lonsdale followed Dixon down through the scorched and gouged field to find the rest of the men. His men. The smoke was still heavy and thick. Their ironclads stood unmoving in front of Franklin and a group of resting soldiers. The machines were pitted with bullet holes and nicks. Franklin waved to Lonsdale.

"We're going back," Lonsdale said.

"We're retreating?"

"It's the only choice. We can regroup back at the camp and repair the ironclads." Lonsdale looked to the soldiers, injured and exhausted.

Franklin sighed and leaned against one of the ironclads. "I'll need everyone's help if we're going to turn all of these things around. They only move forward, you know."

It took five people to turn each ironclad back toward the encampment. When they reached the camp, Lonsdale sent Franklin to load up the guns and weapons and Chapman to retrieve medical supplies. Franklin took the engineers and rigged the ironclads with carts and crates once more. The machines did make good pack mules, Lonsdale had to admit. Poor old Ramsey.

Lonsdale stood outside Ramsey's tent for a moment before lifting the flap and stepping inside. The air still smelled of burnt coffee and

cigars. He took one of the letters from the pile of letters and telegrams; it was from Ramsey's wife, Sarah, back in Maine. Lonsdale bowed his head in silence.

"Sir?" Franklin peered into the tent. "We're ready to head out."

Lonsdale set the letter on the table and turned to leave. He stopped by the wooden chest next to Ramsey's cot. Lonsdale opened the chest and pulled out a silver flask with filigree carvings.

"Sir?" Franklin gave him a puzzled look.

"Ramsey wouldn't want it to go to waste." Lonsdale tucked the flask under his arm. "Let's go."

The two men ducked out of the tent.

