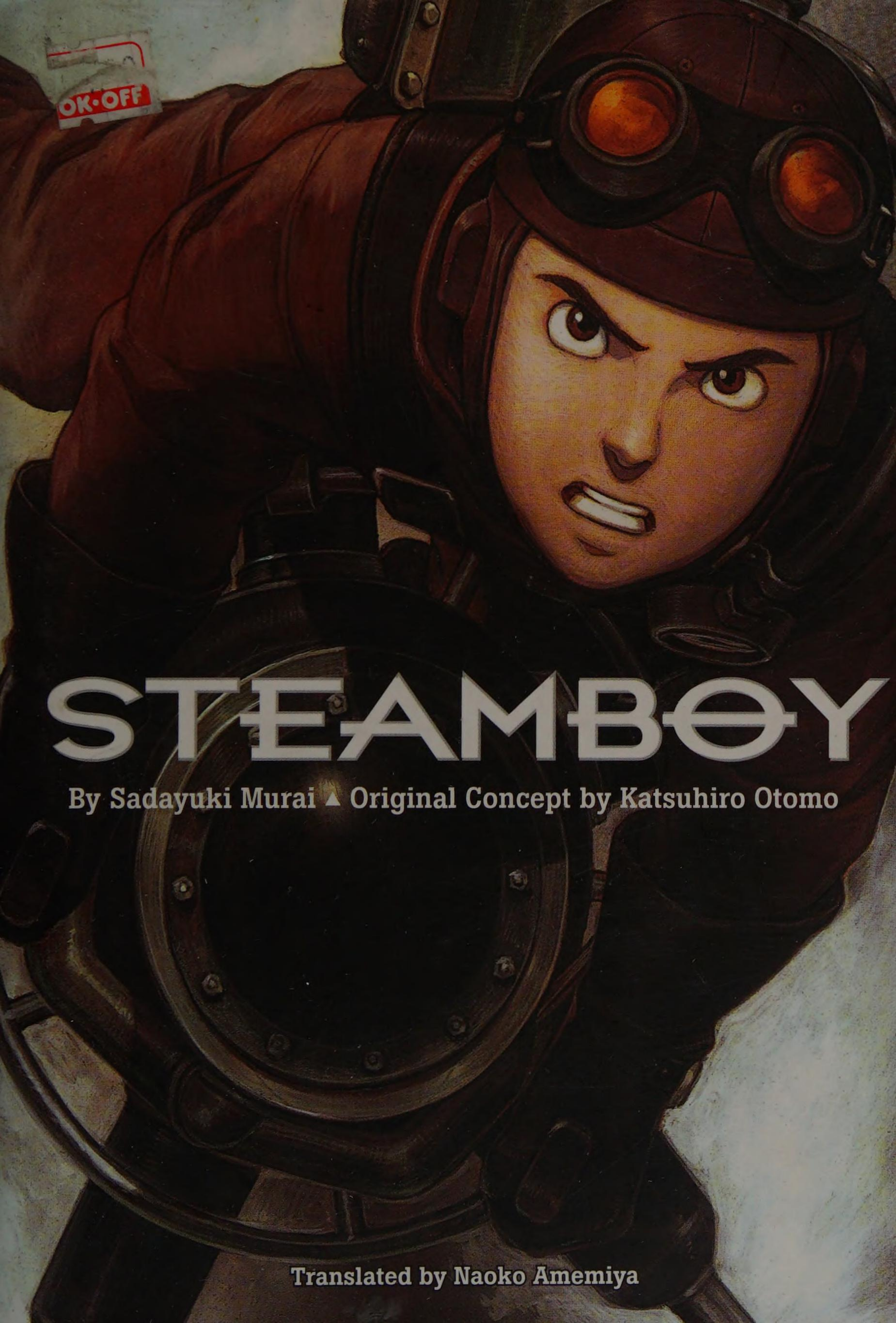


STEAMBOY

By Sadayuki Murai ▲ Original Concept by Katsuhiro Otomo

Translated by Naoko Amemiya

Based on the hit motion picture from Katsuhiro Otomo, director of the animated epic *Akira*, STEAMBOY is the story of Ray, a plucky young inventor caught between his father and grandfather in their struggle for control of the steam ball—a power that could either revolutionize the world or destroy it. Pursued through a reimagined Victorian England, Ray finds himself in a race against time as the steam ball threatens to fulfill its promise as an instrument of mass destruction.

Relive the excitement of the movie in this vivid novelization.

Includes black-and-white and color illustrations by Shinji Kimura, art director of the STEAMBOY movie.

an adventure story of

STEAMBOY

STEAMBOY

WRITTEN BY
SADAYUKI MURAI

ORIGINAL CONCEPT BY
KATSUHIRO OTOMO

TRANSLATED BY
NAOKO AMEMIYA

VIZ MEDIA
San Francisco

© Sadayuki MURAI/Katsuhiro OTOMO, MASH ROOM 2004
© 2004 Katsuhiro OTOMO • MASH ROOM/STEAMBOY COMMITTEE
Originally published in Japan in 2004 by KADOKAWA SHOTEN PUBLISHING CO., LTD., Tokyo.
English translation rights arranged with KADOKAWA SHOTEN PUBLISHING CO., LTD., Tokyo.

Front cover illustration by Tatsuya Tomaru
Back cover illustration and interior artwork by Shinji Kimura

English translation © VIZ Media, LLC.

No portion of this book may be reproduced or transmitted in any form or by any means without written permission from the copyright holders.

Published by
VIZ Media, LLC
295 Bay Street
San Francisco, CA 94133

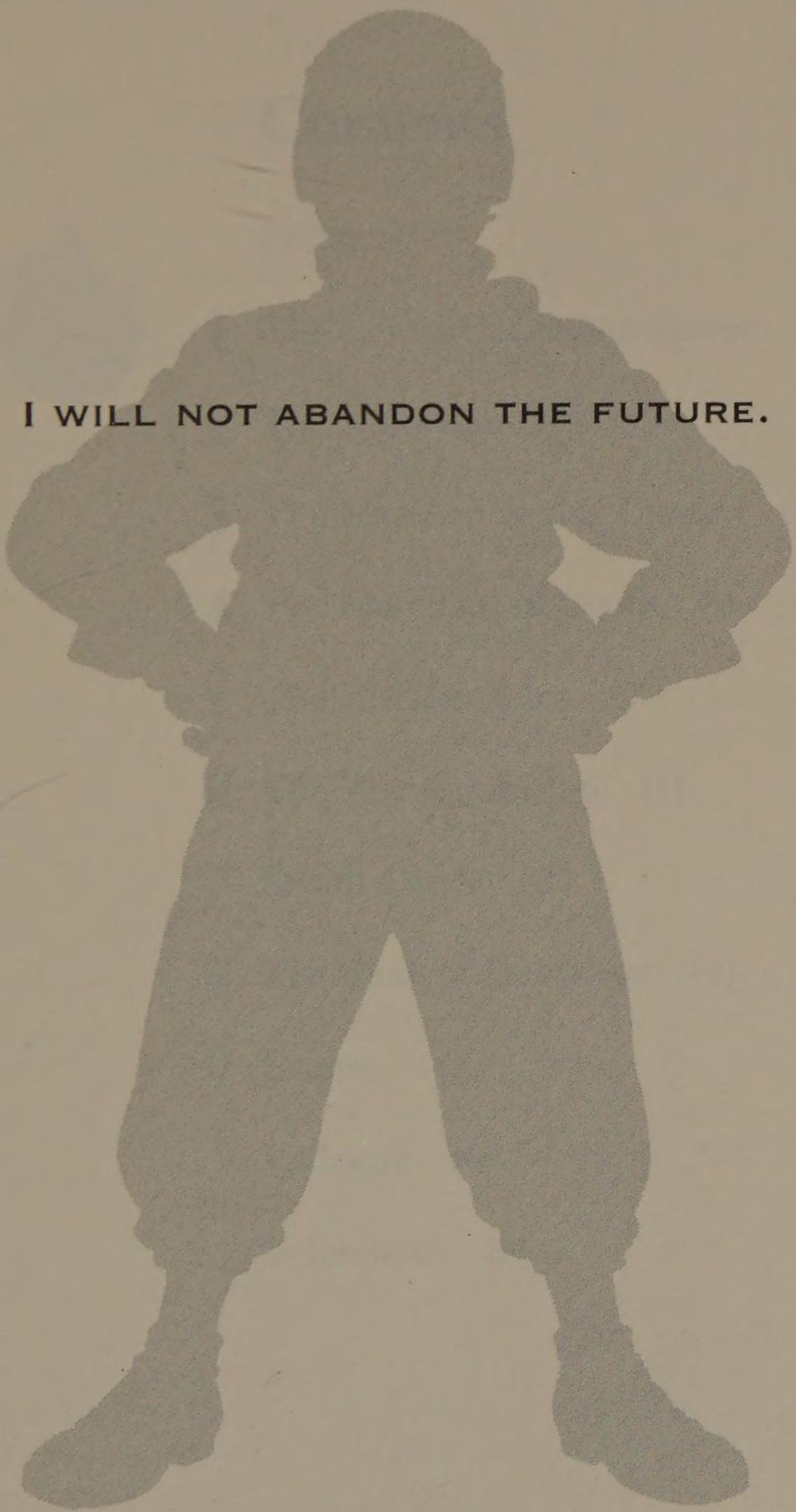
www.viz.com

Library of Congress Cataloging-in-Publication Data

Murai, Sadayuki, 1964–
[Suchīmu bōi. English]
Steamboy / written by Sadayuki Murai ; original concept by Katsuhiro Otomo ; translated by Naoko Amemiya.
p. cm.
Includes bibliographical references.
ISBN-13: 978-1-4215-0145-1 (hardcover : alk. paper)
ISBN-10: 1-4215-0145-7 (hardcover : alk. paper)
I. Ōtomo, Katsuhiro, 1954– II. Amemiya, Naoko. III. Title.
PZ49.31.M7613 2005

2005027369

Printed in Canada
First printing, November 2005


I WILL NOT ABANDON THE FUTURE.

Contents

Prologue 9

1 The Century of Steam Power 17

2 The American Girl 43

3 The Monster on the Thames 63

4 The Merchant of Death 77

5 The Curtain Rises 97

6 The War Exhibition 111

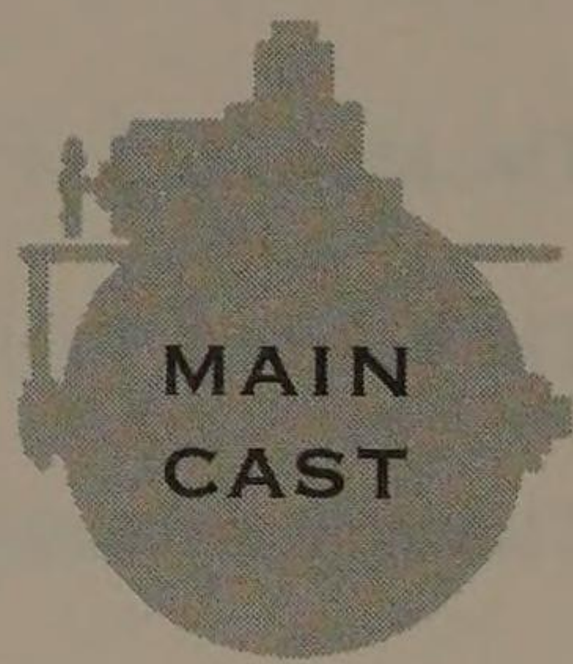
7 Steam Castle 127

8 The Birth of Steamboy 143

9 Escape 163

Epilogue 185

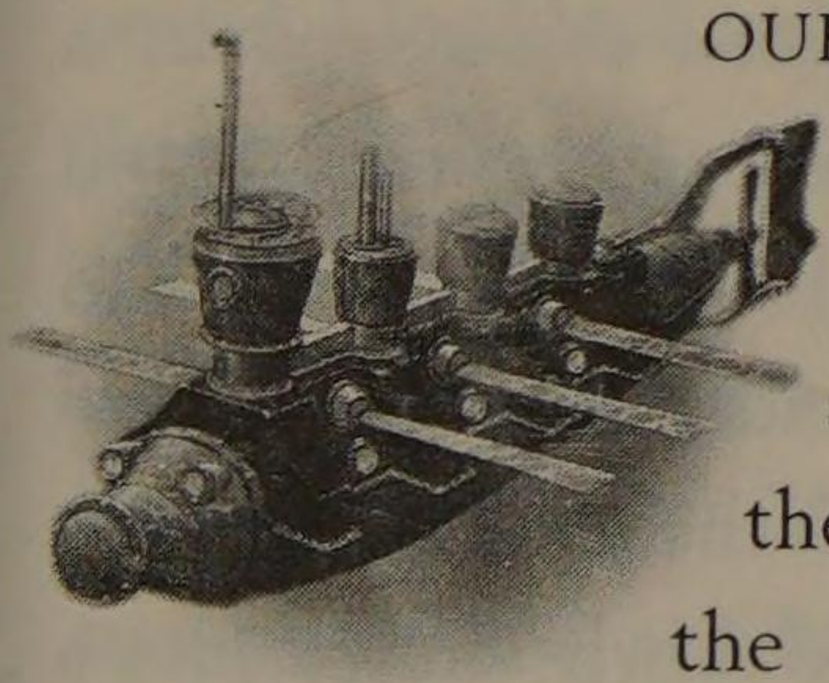
References 191



Ray	The main character. Age 13. A boy who likes inventions and machines.
Scarlett	The granddaughter of the chairman of the O'Hara Foundation. Age 14. A capricious and spoiled girl.
Lloyd	Ray's grandfather. Age 65. The inventor of the amazingly powerful steam ball.
Eddie	Ray's father. Age 45. Lloyd's assistant. He was seriously injured in an accident during a test run of the steam ball.

STEAMBOY

Prologue



OUR STORY BEGINS on the westernmost edge of Europe, in early spring of 1863. The O'Hara Foundation's prized steamship was exploring a fjord on the northwest coast of Iceland, near the Latrabjarg cliffs. The oar-propelled submarine was searching for underwater coal mines when it wandered into a cleft and came upon a massive underwater limestone cave. The crew found the pure mineral water they were looking for here, in this remote natural fortress.

The Foundation's chairman, Charles O'Hara St. Johns, lay on his sickbed when news of the happy discovery reached the O'Hara family's mansion in Detroit. The elderly gentleman beside him with the long beard and monocle could barely

suppress his delight. Those who knew the man called him a "genius" and a "marvelous inventor." He was the mad scientist, Dr. James Lloyd Steam.

Lloyd read the crew's report and sprang to action much like a man who had found his long-lost love. Within three days, he had summoned water collection specialists and was boarding the now-returned submarine with his son, Edward. The pair crossed the Atlantic, carefully avoiding the glaciers drifting south. When they arrived at the limestone cave, Lloyd exclaimed, with more wonder and heartfelt admiration than he had felt in his life, "God has provided me with the ultimate water!"

Edward silently made preparations beside his boisterous father. The pure mineral water had been discovered in a steaming volcanic belt. After some investigation, they found a small pool of the water deep inside the cave, where it had dripped slowly from the stalactites. Slender hoses connected to a rotating water scoop were inserted in the pool. As workers rotated the scoop's handle, water poured slowly from it into a glass container.

When their task was almost complete, Lloyd eyed the rock face high above him and turned to his son.

"How long before we can get more of this water in a pure state like this?" he asked. "What do you bet, Eddie?"

"I dunno. I'd say fifty years, maybe."

"No. At least a hundred, perhaps more."

Lloyd corrected his son like a teacher. His son wasn't

stupid, however. In fact, Eddie excelled as a technician, but, to Lloyd's mind, something was missing. Creating something new required a new way of thinking, but Eddie didn't have that ability.

Lloyd mulled this over as the submarine headed westward across the moonlit ocean, toward the northern coast of Canada. Only ideas that broke from convention could lead to a new creation. Determination wasn't enough, and neither was careful calculation. An inventor had to have drive—a desire to invent that welled up from the soul, an irrepressible, primal urge that pierced the whole body.

The world's first underwater navigation ship plowed through the ocean. It had six oars, like an ancient seagoing vessel. Lloyd had designed the submarine after seeing a model Roman galley ship at the British Museum. He enjoyed this kind of creative thinking, but Edward had made the improvements needed for the ship's practical use. Where Lloyd had wanted three rows of oars like the galley ships, Eddie reduced them to a single row, and he improved the stern screw joint as well. Edward Steam outshone his father when it came to the careful consideration of details.

The two scientists did not return to Detroit. Instead, they went directly to a secret factory in Alaska. There, they quickly prepared the mineral water and got to work on the final stages of the invention of the century.

Rows and rows of massive boilers rumbled.

"Number one and number two valves, open! Number three

and number four valves, open!" Lloyd called out.

Many workers pulled levers and turned handles as directed. Outside, it was already night. Lightning flashed across the cloudy sky as if announcing a coming storm, illuminating the imposing factory in the darkness.

"What's the matter? It's not coming yet," Lloyd said angrily.

Countless pipes led from the boilers and snaked through the premises. There were handles that opened and closed valves, and levers that controlled connections, and each location was equipped with a pressure gauge. Steam whooshed out in spurts, and clouds of hot white vapor filled the air.

The pipes wound through the factory to a cylindrical furnace, where all of the pressure was directed. Inside was a ball small enough to be held by two hands.

"It's no good, Eddie. Increase the pressure! It's never going to work at this setting."

Lloyd peered through the small furnace window at the ball, which was vibrating quickly. His eyes grew bloodshot from the excitement.

"Father, it's too dangerous! The main valve can't take any more pressure!"

Eddie's warning was useless.

"You want to give up now and throw it all away? Open all the valves! Every one!" Lloyd cried.

The entire factory rumbled noisily at his words. Pipes shook and moaned. Bolts popped out of the valves. The needles in the pressure gauges flew into the red zone.

"He's gone mad. That's enough! Shut it down!"

But Eddie's grasp of the situation did nothing to calm his father.

"From risk comes progress. There's no turning back."

Lloyd felt possessed by a god—a god of invention who was willing to sacrifice everything for the sake of bringing something new into existence. Nothing could temper this exhilaration, not his son's scolding nor the sight of Foundation board members, who had gathered to witness the birth of an invention that would bring them fabulous profits.

"A little more. Just a little more," Lloyd said.

Steam leaked from the valves behind him and blasted at the workers, sending them flying. Eddie gave frantic orders to close the valves, but the bolts kept flying—pop, pop, pop. The workers screamed as they tried to dodge them.

Just as Eddie began closing valve number one, a massive pipe directly above him strained from the heat and bulged ominously. The workers called out to him, but in that moment, the pipe ruptured and Eddie was swallowed up in a white cloud of steam.

Eddie's desperate cries finally brought Lloyd to his senses.

"Eddie, are you all right?" he asked.

By the time he had turned around to survey the scene, the situation was beyond saving. Workers had abandoned their stations and were scampering in all directions. The board members in the second floor gallery had made a hasty exit, while his son had vanished in a violent burst of steam. The blood drained from Lloyd's face, and so did the madness that had seized him.

"Eddie . . ."

The next instant, the swollen pressure tank groaned and exploded, throwing Lloyd forward.

Lloyd rolled a couple of times on the floor and clambered to his knees, fixing his gaze on something beyond the pressure tank.

Moments crept by.

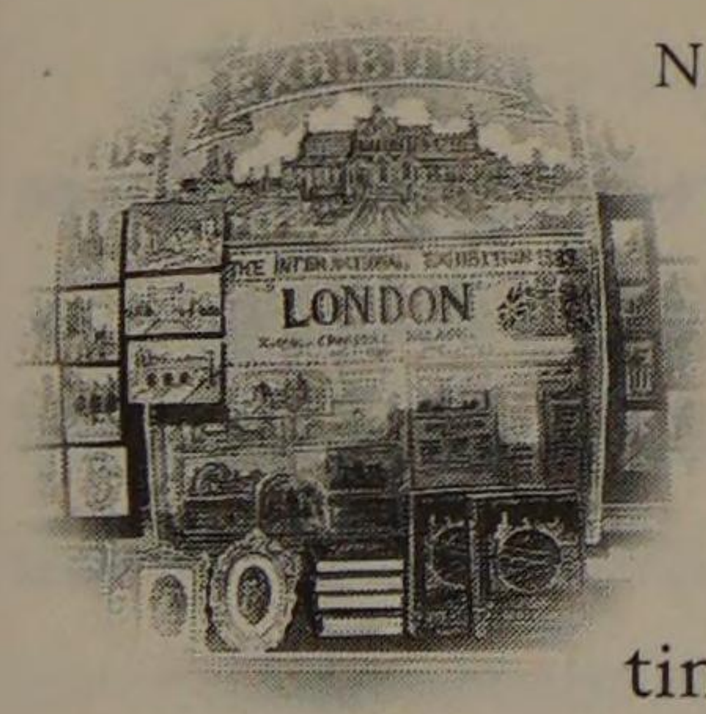
When the smoke had cleared, the only sound that could be heard was the ball rattling inside the broken pressure tank.

And thus, Dr. Lloyd Steam sacrificed his loyal, mild-mannered son to produce a marvelous invention with the power to overthrow the world.

CHAPTER

1

The Century of Steam Power



NOW WE MOVE to 1866. Black smoke spewed from Manchester's smokestacks, darkening the sky with a haze that obscured the sun.

Before the industrial revolution, sometime around 1760, Manchester was a town of just 17,000 people. Its only manufactured good was fustian, a sturdy blend of cotton and linen used to make worker's denim. The town's road network made it the center of trade for the Lancashire area, but Manchester was really nothing more than a country town.

And then the world changed.

Watt invented the steam engine in 1765. Some twenty years later, steam power replaced water and other sources of energy

to drive spinning machinery and power looms. The great development of Manchester had begun. Machine operators and other skilled laborers arrived, while factories sprang up everywhere with the production of spinning machines. By 1835, Manchester was home to 84 percent of England's cotton mills. By the time the boy James Ray Steam sat on the rail yard wall, watching the smokestacks as the sun began to set, the population of Manchester and the surrounding areas had swollen to one million, and the factories were producing at an astonishing rate.

"What an amazing invention one could make if all of this steam power could be harnessed," Ray mused. He felt all unpleasant thoughts vanish from his mind as he gazed over a city where humans controlled nature.

Nothing had gone well for Ray that day.

Two of the steam engines at the Gilbert cotton mill where he worked had spun out of control from poor maintenance. When the speed regulator failed, the engines, nicknamed Ellen and Helena, started racing at high speed. It was only a matter of time before the boiler would explode.

Ray had saved the day, but it had been quite an effort. He had climbed down beneath the floor, removed the valve cock from the water heater, and closed the valve. With the steam supply cut, the runaway horses soon settled down. Ray had emerged triumphantly from below, only to have the factory manager fly into a rage when he learned that Ray had broken off part of the water heater to fix the problem. The manager threatened to deduct the damages from the wages of all the mechanics, including Ray. All of his efforts had been for

nothing. Ray made up for the loss, however—he had found his own reward.

On his way home he had stopped by a shop window to look at a poster announcing the London Exhibition. Cliff, the newspaper boy, lost no time in teasing him.

"Hey, Ray. Heard about the factory. Everyone's talking about it. You did everything you could, and all you get is docked pay? Ian told me. After saving the lot of 'em, the tightwads dock your pay? All that for nothing, eh, chum?"

Ray just shrugged his shoulders.

"Not quite. I nabbed this gimmick."

He showed him the water heater valve that he had filched. It was made of brass.

After the day's commotion, the sight of the sunset tugged at something in the boy's heart.

"Oh, the London Exhibition. Wish I could go," he sighed.

At the Great London Exhibition inventions from all over the world would be displayed in one enormous hall. The best inventions would receive awards, and their inventors showered with honors. For a boy like Ray, the pull was irresistible.

While he thought back to the fascinating illustrations in the poster, he heard trouble behind him.

"Hey, Alex, look here! If it ain't the great inventor, Ray Steam."

It was the brats Alex, Henry, and the rest of them. They were all sons of newly rich men and looked down on the working class.

"Inventing rubbish, just like his old man and his granddad!"

Alex called out.

Ray glanced their way, then stood up and walked along the wall, ignoring them.

"And now here he is nickin' stuff from me dad's rail yard to build his dodgy inventions," Henry joined in.

"Then he's an inventor *and* a thief!"

The pair taunted Ray from behind until he snapped. Shrugging his shoulders and making a little sigh, he jumped off the wall and gave them a look that said, "Come on."

"Get him, get him!"

His tormenters seized the opportunity to beat him, but it was Alex who ended up being clonked on the head by the water heater valve. Everyone recoiled at the sight of the unexpected weapon.

"Alex!" cried Henry, at the sight of his friend crouched with his head in his arms.

Another boy, John, abandoned his friends and took to his heels the moment Ray looked at him. Then Ray turned back to Henry and scowled.

"It wasn't my idea! Let me be!" Henry blurted out some feeble excuses and made off.

Only Alex was left.

"Ow . . . ow . . . It hurts," he whimpered through his tears.

Ray clenched the bronze valve in his hand.

"Me dad and granddad happen to be working on a new invention. In America."

"'Cause everyone in England thinks they're balmy!" Alex said.

This just made Ray angrier.

"Shut up!" he shouted. There was another clonk.

"But Mrs. Steam, that Alex is a rotter. Everyone says so. You know what he did? He whistled at me right on the street. It was vulgar!" Emma said at supper as she gulped down her stew.

"They were slagging off on Father, and Granddad as well. Anyway, it was them that came after me," Ray said.

"That's no excuse for violence!" his mother said.

Ray wore a dunce cap and was slouched on a chair in the corner of the room. He watched miserably as Emma and the others enjoyed their mutton.

"Ray! We're staying here for the week, sleeping over and all that!" Thomas exclaimed, oblivious to it all. He was Emma's little brother and loved locomotives.

"What for?"

"Because Emma's mother is accompanying her employers on holiday. The Chadwicks have gone to Blackpool for a week. We'll be watching Emma and Thomas while their mother's away."

"They were loaded with bags and baggage. You should have seen it! I thought they were moving!" Thomas said, polishing off Ray's portion of mutton and rubbing his stomach contentedly.

Ray's stomach rumbled.

"Mother, I'm hungry."

"More's the pity as there'll be no supper for you tonight.

The way you injured that boy, he nearly needed stitches!"

"That's a lie. I barely tapped him."

"How hard you hit him is not the point. You have to atone for your misconduct and repent!" His mother knew her role. Like any good mother at the dawn of the Victorian era, she was severe with her son when he sinned.

Mrs. Steam took pride in running the household single-handedly, ever since her husband, Edward, and her slightly batty father-in-law, Lloyd, had gone to America. The house was decorated in a tasteful Tudor style that was common to England's rural towns, with the typical steep gable and crisscrossed wooden facade. Inside, brick, plaster, and wood created a warm space equipped with all the essentials of a happy home.

On the mantle above the fireplace were two dog figurines, a silver candlestick, and a clock placed square in the center. Beside the fireplace hung a photo of Mrs. Steam with three generations of Steam men. The grandfather was seated and staring nervously ahead. His son stood by disinterestedly. And leaning back in his grandfather's lap was Ray, looking timidly at the camera. The only one smiling was Mrs. Steam.

She worked hard all by herself to maintain the household. Why did the Steam men neglect their families so? She wondered if all men were like that. Ever since Eddie and Lloyd had left for America, obsessed with an invention that might not amount to anything, they had sent money but never any letters.

Perhaps all men had this tendency to some extent. They

wanted to devote themselves to work that would win them fame and fortune. In their heart of hearts, this was more precious than the humdrum experience of family life. Even so, this tendency seemed far too strong among the generations of invention-crazed Steam men.

Let us take this opportunity to review the Steam family history.

The first of the "mad" Steam scientists was James Lloyd Steam, who was born in a windmill shed on New Year's Eve at the turn of the eighteenth century. It happened one stormy night in a small village three kilometers south of Nottingham, or so the story goes. The windmill's sails flapped furiously in the strong winds, the gears and shafts creaked as they turned the millstone. Beside it, Charlotta, the midwife who had come running from the neighboring village, struggled with the other farmwives to pull out Lloyd's lodged head.

A strange chorus of creaks and grunts went on for some three hours. When the baby finally emerged, a sail is said to have broken in the strong wind and flown off, landing nearby in the McGregor's yard and killing three chickens. In the distance, bells rang in the new century, their peals echoing in the chilly night. The future inventor didn't cry out once, but rather frowned at the exhausted adults sitting around him. This could be a made-up story, but, in any case, the birth of this scientific genius ushered in the nineteenth century and all its violent upheavals.

Lloyd's father was originally a member of the Sheffield

yeomanry, but he lost his land in the so-called enclosure movement and became a vagrant. In the fourteenth century, during the Dark Ages, the Black Death raged throughout Europe and killed much of the population in the farming villages. The loss of labor disrupted the running of the lords' manors and led to the emancipation of serfs. The yeomanry consisted of peasants who had escaped from feudal jurisdiction and taxes by paying a small land fee.

In England, Wat Tyler's peasant revolt of 1381 accelerated the enclosure movement, and, by the end of the Middle Ages, the nobility had fallen into ruin, impoverished by the War of the Roses. The result was the end of the serf system. Although the yeomanry gained its independence, it was split in two from the sixteenth to the eighteenth centuries. The comparatively wealthy class bought rights to become gentry or capitalist tenant farmers, but the majority of small farmers lost their land to the enclosure movement and migrated to cities to work as wage laborers. This huge source of labor became the foundation for England's industrial revolution.

The Steam family was swept along in history's flow. They eked out a living grinding flour on the outskirts of Nottingham. By the time Lloyd was three, his family had moved with the help of relatives to the large town of Birmingham. There, his father found work at an ironworks shoveling coal into a furnace, but he took to drink after ruining his health. The stouthearted mother took a job sewing trousers to support the family, but her wages were meager.

The Steams didn't have the means to give their son a decent education, but their move to the city proved fortunate for the young inventor. Near their flat were factories that made machine parts, and clockwork shops, as well as publishers and used bookstores. The city breathed the new era. Having learned to read and write from a Quaker instructor, Lloyd read illustrated books on mechanical engineering in bookstores and then observed its application firsthand at the neighboring factories.

Some years later Lloyd's parents died from illness, leaving him alone in the world. Not long after, rumors sprang up around Birmingham about a skinny boy named Lloyd Steam, who astonished people on the street with his unusual inventions.

At the time, he was immersed in the workshop of the Harrison Clock Shop. By improving clock movements, he managed to make pocket watches accurate to within a minute per day. The delighted shop owner soon turned over a section of his workshop for the boy genius's research. Lloyd's knowledge of mechanical engineering grew beyond books as he added his own ideas, and he conceived one new gadget after another—an automated secretary doll, a desktop water fountain, and a self-playing organ, among other things. Though none were practical, they entertained city folk who wanted to be amused.

A turning point came when Lloyd was thirteen. A lord with a fief near Coventry had heard the rumors of the young inventor. When Lord Randolph paid a visit to observe him, Lloyd was hard at work on his automated ascending and

descending stairs and, apparently, paid little attention to the elderly nobleman. Nonetheless, the lord admired the boy's intelligence. He offered to become Lloyd's guardian and took the boy away. The young inventor had acquired a patron.

Lloyd spent the next six years at Lord Randolph's castle. Many talented people were there, too, from poets to artists, and even a quack alchemist. In his reminiscences, Lloyd declared them a useless lot, but during this time he was, in fact, able to study a variety of subjects including physics, mathematics, and thermodynamics.

One rumor had it that Lord Randolph belonged to an occult religion that was secretly practiced among the nobility, and that the inventions were for performances at his silly nightly banquets. Whatever the reason, the usually boastful inventor hardly ever spoke about his work from that time. One piece, however, remained in existence until quite recently. On the twentieth anniversary of Queen Victoria's accession to the throne, a newspaper journalist who was visiting Lord Randolph's castle reported seeing an automated machine set in the center of the banquet hall—a Venus lying on her back spouting water suggestively.

In 1819, Lord Randolph died from illness, and Lloyd impulsively left the castle to embark on a trip around the world. That was just like him. Regrettably, the story of his great adventure wouldn't fit these pages, so a simple overview of his route will have to do, with the details left to the reader's imagination.

First, he built himself a small steamboat in Liverpool and

set off triumphantly on a westward course across the Atlantic. Although he veered considerably to the north along the way, he reached the east coast of Canada in little more than twenty days. Alas, he ran his boat full steam to make a showy arrival and crashed into a reef. Wrecking his boat, he lost his chance for glory as the first person to cross the Atlantic by steamboat.

Lloyd then headed south to the United States. After bouncing around the East Coast, he continued farther south to South America, where the independence movement was in full swing. There, he encountered Simon Bolivar's army and traveled with them for a time. It seems that the armor he made for them was heavy and impractical for war, but his curious inventions did much to comfort the battle-weary soldiers.

When they eventually reached Ecuador, they parted ways. The army was reluctant to let Lloyd go, but he built another small steamboat and pushed on to the vast Pacific Ocean. He set sail from the port of Guayaquil, on the west coast of Ecuador, and narrowly missed the chance to witness the historical meeting of Bolivar and San Martin.

Unfortunately, the steamboat was dogged by a storm, and the fuel tank badly damaged. After drifting for twenty days, Lloyd reached an island of Polynesia where the inhabitants were fearful of him. Once again, he used his genius for invention to amaze them, and by the time he left the island he was worshipped like a god, or so the story goes. From there he went to India, where he met and grew close to the daughter of a director of the East India Company. Faced with her parents' violent opposition, the two eloped before sailing round the

Cape of Good Hope and returning to Liverpool in 1821—the year Edward Steam was born.

There is little that is noteworthy about James Edward Steam's early life. After traveling around the world, his father settled in Manchester, where Eddie spent his first few years. He was a silent child. Unlike his father, he thought deeply about matters before acting on them, giving some the impression that he was dull-witted.

The one incident worth mentioning took place when Eddie was four years old and George Stephenson had opened the world's first public railroad between Stockton and Darlington, in northeast England. Lloyd took Eddie to Stockton station to see Stephenson's steam engine, the Locomotion. On September 27, 1825, a crowd of spectators gathered beside the train tracks to see it. Arriving late, Lloyd lifted his son onto his shoulders and peered from the back of the crowd.

The steam engine eventually appeared behind a horse, puffing smoke from a narrow smokestack. It lumbered slowly toward the crowd, pulling a line of small wagons that stretched more than 400 feet and was tightly packed with finely dressed ladies and gentlemen. None of them uttered a word of complaint, however. Instead, they delighted in being a part of this historical moment. When a cheer rose from the crowd, Lloyd merely snorted.

Eddie observed carefully from his father's shoulders. He studied the boiler and the coal being shoveled into it, the cylinders that moved up and down, the squeaking rail, and each of the bolts that held it all together.

After the train had passed, Lloyd lowered Eddie and asked him what he thought.

"It needs springs," he replied, and the four-year-old genius was right. In fact, a wooden spring was later inserted between the wheels and the chassis to absorb the shocks from the rails. Lloyd paid no attention to his son's remark, too absorbed as he was in his own thoughts of improving the steam engine.

In Camborne, Cornwall, in 1801, the brilliant inventor Richard Trevithick unveiled the world's first steam engine and successfully carried passengers up a hill on his steam road locomotive. Tragically, the boiler caught fire later that night as he and his friends were merrily toasting his success.

Undaunted, Trevithick went on to build a steam locomotive that traveled on rails, which made history on its first run on February 13, 1804. The locomotive had significant problems, however, because Trevithick had tried to use parts from a horse carriage directly on the rails. He continued to make improvements, but nothing he made could withstand practical use. Other inventors eagerly took up the challenge, including Lloyd, who had returned from his world trip.

He had no time to lose. He was, in a sense, born too late. Just twenty-four years old, he was twenty years younger than George Stephenson, who had already been working on the steam engine for more than a decade.

Needless to say, the opening of the public railroad left Lloyd frustrated and filled with regret. The moment Stephenson's train passed by, he grabbed his son's hand and marched over to Stockton's ceremony hall, which was alive with the Locomotion's arrival.

Lloyd ducked into the crowded room and sidled up to Stephenson, whom he had spotted drinking toasts with one foreign dignitary after another.

"Congratulations, Mr. Stephenson," he said. "Your steam locomotive is splendid, indeed. But carrying any number of boxes is hardly an interesting way to utilize steam power."

Stephenson's face clouded over briefly at the young man's rudeness, but the worldly inventor recovered quickly.

"Is that so, young man? And what would you move with steam power?" he asked politely.

"Well, I would . . . "

Allow me to relate Lloyd's response later.

Besides Eddie Steam, whose father dragged him everywhere, the only other person privy to the conversation was Stephenson's son, Robert, who was already working as an engineer. This meeting was the first encounter between the Steams and Stephensons, soon to be rivals.

Lloyd abruptly stopped working on rail-guided steam locomotives after this meeting. He spent his days in a workshop behind his home, creating a string of useless inventions. Neighbors dismissed him as an eccentric. In 1837, the year Queen Victoria ascended to the throne, he left for the United States at the sudden invitation of an American capitalist, Charles O'Hara St. Johns, the man who built what would later become the O'Hara Foundation. The two men had, in fact, met before when Lloyd had visited the United States on his world trip. Back then, Charles had been running a tea trade on the East Coast. He never forgot the young man he had met on

a wharf in Savannah, Georgia.

Lloyd had been preparing to sail the Atlantic on his newly built steamboat, filled with plans to amaze the world with his inventions. Later, when Charles had amassed a fortune and was seeking a partner for a new venture, he sent someone to England to find the young genius.

Two years later, Robert Stephenson traveled to the United States to expand his rail business. While there, he was introduced to the Steams, who had built steam-powered amusement parks. Robert recognized the man who had once tried to pick a fight with his father, and he also remembered the boy who had been with him. The boy had grown into a man, one who was well built, reserved, and had a quick mind. Robert stayed in the United States for a time, conducting research with the Steams. He genuinely admired their originality, but at the same time they made him anxious. *If history had been on the Steams' side,* Robert thought, *he and his father probably wouldn't be enjoying their glory.*

But that wasn't all. A sense of foreboding had begun to stir in Robert's heart.

Eventually, the Steams returned to England, where Eddie married in 1845. Ray Steam was born five years after that. Lloyd and Eddie then received a second invitation from the O'Hara Foundation, now a giant financial group, and they left again for the United States, which brings us to the present.

"Mother! Emma! It's finished," Ray's voice rang out the next morning. He had connected the bronze valve from the factory

to the invention he had been building in his workshop.

Ray had been toiling over the one-wheeled vehicle for months. He had encountered obstacles from the start. Building a body that could withstand steam power had been difficult, and the machine had collapsed many times even before it had moved. He had drawn and redrawn the diagrams, going back and forth between reinforcing the body and reducing the weight.

"I bet things will go well today. Luck just wasn't on my side yesterday," he said.

His mother heard him as she washed clothes out back.

"I swear he's got valves and pistons in his blood. He'll burn down the house one day," she said with a wry smile. "Mark my words."

Just then there was a knock at the front door.

"Mrs. Steam! Parcel." It was the postman.

Emma had been helping her mother with the laundry by turning the handle on the clothes wringer. She let go and was walking from the back entrance to the front door when she saw Ray heading to the sitting room with a wooden box.

"Hey Mum! It's a crate from Granddad!" he said to his mother, who came into the main house wiping her hands on her apron. In the sitting room, the children began prying open the lid with a crowbar.

"Ray, keep it tidy if you please," his mother said, joining them. The lid popped off, and Emma yelped as she fell backward.

There was oilpaper under the packing straw. Under that, they found several pages of diagrams.

"This is Granddad's writing," Ray said, looking at the pages.

Peering into the box from behind, Emma saw a mysterious round object under still more packing straw.

"Whatever could this be?" she asked.

Just as she lifted it up, someone rapped at the door again.

"Perhaps he forgot something," Mrs. Steam said, thinking the postman had returned. She went to the front door and found two men in black suits. One was tall and thin, with a skinny moustache, the other one bulky and dull-looking.

"Pardon me, ma'am. Would this be Dr. Steam's residence?" the thin man asked politely.

"Yes. That is correct."

"I'm Alfred, and this is Jason. We're from the O'Hara Foundation in America."

"Oh! Thank you for everything you've done for my husband and father-in-law."

"It's we who should be thanking *you*. They have both greatly enhanced our enterprise."

"As it happens, we just received a parcel from Grandfather."

The men broke into unfriendly smiles upon hearing this.

"You don't say? That is very fortunate timing on our part."

Mrs. Steam led the men into the sitting room. Alfred's attention went straight to the children and the empty box beside them. He narrowed his eyes and smiled when he saw the object on the table in front of them.

Then he asked an odd question.

"Would the doctor happen to be at home at the moment?"

What is he talking about? thought Mrs. Steam. Why on earth would that old geezer be at home? After all, these were the men who had whisked him and Eddie off to America.

Suppressing her thoughts, Mrs. Steam began, "Oh? But I thought he was still in . . ."

The men were not listening. Jason had quietly slipped from the room in search of Lloyd, and Alfred was moving slowly for the ball.

"You must be Ray," he said. I've heard a good deal about you from your father and grandfather."

"Ray, there's been a mistake. It seems the parcel was meant to be delivered to the Great Exhibition in London," Mrs. Steam said.

"That's right," Alfred added. "A minor mix-up."

Ray set aside his grandfather's letter and glared at Alfred.

"Are you really from the Foundation?" he asked.

"That's right, Ray."

"Then you won't be getting this!" Ray said, grabbing the ball.

"What in heaven's gotten into you, Ray?"

"Grandfather wrote not to give it to anybody till he comes back."

"That's right, Ray," the thin man said. "It's a very important object. That's why he sent us in his place."

"It says 'Don't give it to anyone, especially if they're from the Foundation.'" Ray glared at Alfred again. Just then, he

heard a loud bang from upstairs, as if someone had kicked down a door.

"Emma?" Thomas called out, half-asleep.

Jason stomped into the boy's room.

"What exactly is going on here?" Mrs. Steam asked, hearing the racket.

"There is a simple explanation for this," Alfred said, a smile playing on his lips.

Then Ray, his mother, and Emma heard a familiar voice boom.

"Indeed, there is!"

Standing in the sitting room doorway was none other than Lloyd Steam himself. What a turn of events!

"Granddad!" Ray shouted.

"On your toes, lad. Don't let them place a finger on that ball!"

"But it's Foundation property, Lloyd," Alfred said.

"Because of that ball, Eddie—" Lloyd stopped himself mid-sentence and gazed at the faces of his grandson and daughter-in-law.

"What happened to Dad?"

"Eddie is . . . Ray, your father is dead."

"What? Dad? Dead?"

Mother and son were speechless from shock.

"Jason, Dr. Steam's here! Come down at once!" Alfred yelled, pushing them aside.

"Ray, run!" Lloyd said. "Take the ball to Robert Stephenson! Hurry!"

"Robert Stephenson?"

Alfred leaped at Lloyd, and the two struggled.

"Don't let the ball get to London!"

Hearing his grandfather's words, Ray stuffed the diagrams into his shirt and grabbed Emma's hand. Together, they crawled under the table and escaped to the hallway.

"Hey!" Jason said, coming down the stairs. He saw the children heading for the back door and ran after them, but was suddenly blocked by Mrs. Steam, who smacked his face with a cushion as hard as she could.

"Ray! Call for help!" she cried behind them as they ran into the backyard. Instead of going to the road, Ray went to his workshop.

"Ray, wait!" Emma followed him and saw Ray pushing the bizarre hoop that he had been working on for so many months. The giant hoop would act as the wheel, and Ray would sit inside it as it rolled.

"What are you doing with that? This is no time for your contraptions," Emma said impatiently.

Ray paid no attention to her as he rolled the machine to the front of the house.

"You know that thing's never worked, Ray!"

"Stop gibberin' and give it a push!" *That's just like a girl to complain without understanding the situation,* thought Ray. He suddenly felt closer to his father and grandfather.

Jason had recovered in the main house. Getting up, he took a gun from his pocket and pointed it at Mrs. Steam.

"No!" she screamed.

"Move!" he said, pushing aside the plump, middle-aged woman and firing a signal flare at the window. The glass shattered, and pink smoke curled into the sky. Two other men from the O'Hara Foundation, both dressed in black, were waiting on the road.

"Oh, it's trouble then, is it?" said one when he saw the flare. He lifted the tarp covering a cogwheel steam locomotive.

The other man started the engine. The neighborhood children who had been crowded around the unusual machine cried out in alarm and backed away. Steam whooshed from the cog machine as it began to move.

Meanwhile, Ray straddled his one-wheeler by the front entrance. He attached the ball to his belt and prepared to take off.

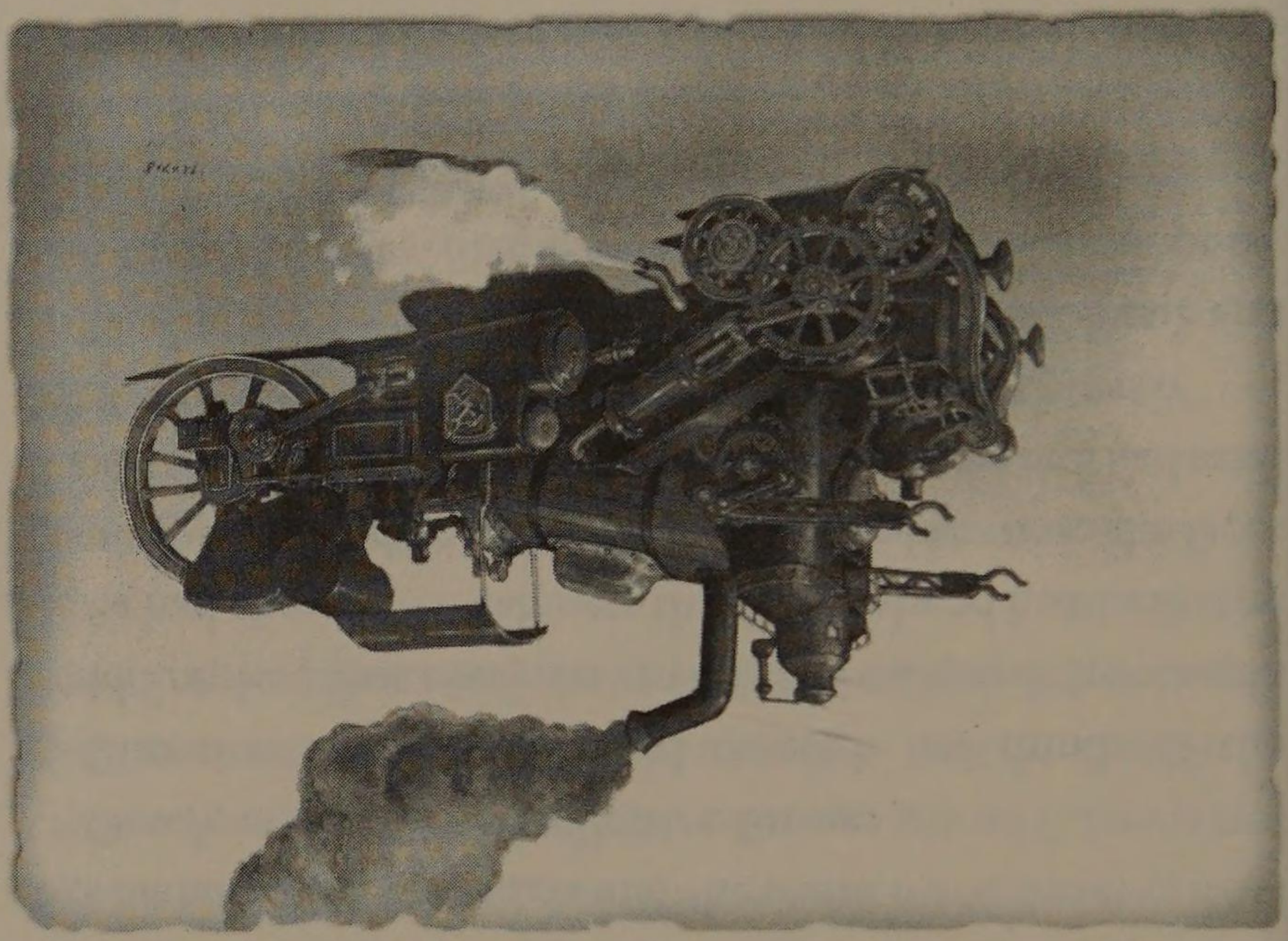
"Hold it steady now, Emma!" He was about to move when he saw the monstrous cog machine coming toward them, puffing steam from its smokestack.

"What's that thing?"

The cog machine charged at them with a thundering roar. Ray and Emma barely had time to get out of its way. The iron monster kept on coming, however, and smashed through the front door of the house. It destroyed part of the entryway and the sitting room and gave Ray and Emma a clear view of his mother standing aghast in the hallway, and of Jason as he fired the signal flare.

"Mother! Granddad!"

"There he is, over there! That brat's got the steam ball!" Jason shouted.



The cog machine's driver looked back and turned the steering wheel. The giant steam engine changed direction, its cogs demolishing the pillars and the stairs.

Ooooh, my house! thought Mrs. Steam.

Countless memories flashed through her mind: of the grand fireplace that everyone envied, the wallpaper her cousin Maria had chosen, the cabinets that her husband had built, the couple's wedding day, and the envious expressions on the faces of Jody and Rosemary, who lived in rented houses and had said, "Well, it's not as if owning a home guarantees happiness."

The memories seemed to freeze for a brief moment and then shattered. Mrs. Steam stood there pale, unable to move, but Ray couldn't afford to look back.

"Ray! It's coming!" Emma shouted.

The cog machine turned around and headed in Ray's direction.

"Emma! Give it a shove! Hurry!"

"Just run away, Ray! You'll be killed on this thing!"

The next moment, the small steam engine attached to the back of his seat gave a rumble, and as Emma pushed from behind the one-wheeler began to roll forward. But the machine didn't work according to plan. The seat should have remained static and horizontal, but instead it rotated with the wheel in wide circles.

Ray yelled out as he spun in the seat.

Just as I said, thought Emma.

But when it reached the road, he managed to put the one-

wheeler into gear while it was rolling and got himself upright again. The cog machine was closing in behind him.

Ray raced down the country road, passing the stone walls at top speed. The cog machine rumbled even louder in pursuit.

Ahead of Ray, a farmer driving a horse-drawn carriage clip-clopped slowly down the road. Ray caught up to him in an instant.

"Look out, old timer!" he shouted, narrowly missing the farmer.

"What?" cried the farmer, turning at the sound of the boy's voice and finding the surprise of his life. One second, a boy riding a strange contraption hurtled by. The next, an iron monster loomed before him.

Instinctively, the farmer pulled the horse over to the side of the road, but the cog machine bore down on them mercilessly.

Ray sped along comfortably in his invention, a pleasant breeze caressing his cheeks. He heard the crash of the carriage and the farmer's shouts behind him. Farmhouses and fields flew by on either side at a speed he had never experienced before.

Ray thought back to the first time his father had taken him to ride a steam engine. From the window of his car, he had seen the houses streaming by, as if by magic. He felt in his heart the same excitement now.

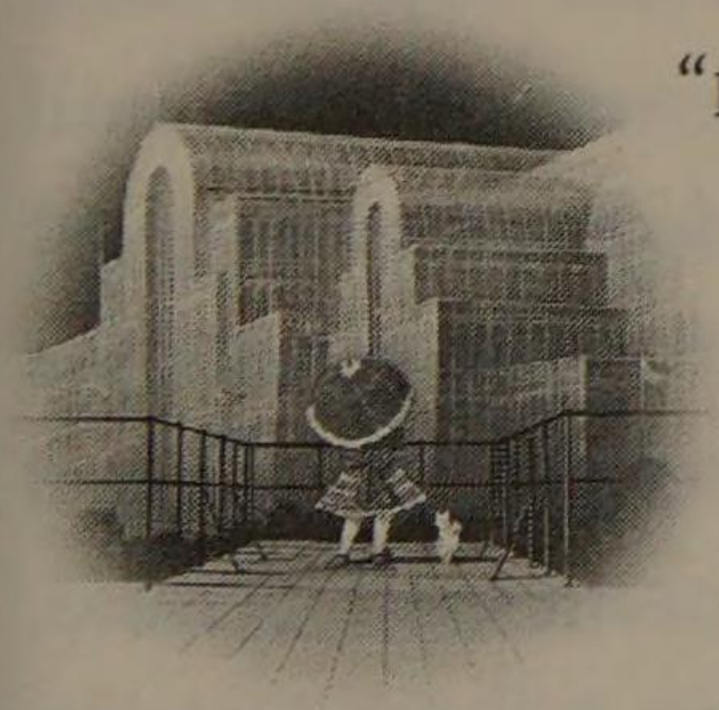
The one-wheeler and the cog machine kept up the chase

until they entered urban Manchester, where they met up with a train of well-heeled passengers who were speeding toward Manchester's central station. The three steam-powered machines ran side by side in a peculiar race, puffing smoke as they headed straight for an iron bridge that spanned a canal.

CHAPTER

2

The American Girl



"I WONDER how Mother and Granddad are," Ray said to himself. He was seated at the end of a long, narrow table in a room so opulent it looked like the inside of a castle.

Were Emma and Thomas safe? And what about that farmer he had so narrowly missed?

Ray sat alone, dressed in a party suit and a bow tie. Behind him servants came and went, setting the table with plates and glasses.

Were they working for those other men? he wondered. Or were they just hired help? Ray saw nothing shifty in their appearance. In fact, they seemed kind.

Ray spoke up timidly. "Please help me. Some bad men

kidnapped me. I'm not making this up."

The waiters acted as though they hadn't heard him. They went wordlessly about their business and disappeared.

Near the center of town, Ray had hopped onto the tracks. As the train bore down on him from behind, the cog machine swung around and approached him from the front. Caught between the two, Ray found himself in a desperate situation. The one-wheeler couldn't hold up under the strain and collapsed. Ray managed to grab onto the front of the train in the nick of time, but the cog machine was still closing in.

Ray was saved from this fix by two men on the train. One of them had seen the steam machines jump onto the tracks ahead of the train and knew what had to be done.

"That boy needs help," the young man had said, climbing onto the roof of the train and working his way along it until he reached the engine room. He climbed down and pulled the brake, ignoring the stunned engineer. For a moment, a gap opened between the cog machine and the train. Then the young man released the brake and the train sped forward, slamming into the cog machine and sending it flying into the canal, where it gurgled and sank.

The train finally came to a stop, and Ray met the men who had saved him.

"Are you thick?! You could've killed me doing that!" he shouted ungratefully.

"Sorry, but I had to stop that steam engine," the young man said. "Splendid that it runs without tracks, eh?"

"No tracks. Oh, I see." Ray was surprised to hear him

talking about the monstrous cog machine in such a familiar way.

A gentleman approached the young man. "Nicely done, David," he said.

"This is Mr. Robert Stephenson," David said to Ray. The young man who had operated the locomotive and destroyed the cog machine turned out to be an engineer. Ray gasped when he heard the other man's name.

"Robert Stephenson!" Ray had heard the name often from his father and grandfather. He recognized the man's face from photos. When Ray's grandfather had entrusted him with the steam ball, he had been told to deliver it to this very man.

"I believe these diagrams belong to you. Tell me, what's your name?"

"It's Ray, sir. James Ray Steam, Mr. Stephenson, sir."

Stephenson gazed at him intently. *So, this boy is the third-generation Steam inventor,* he thought.

Stephenson had often found himself in fierce competition with the father-and-son team, even after parting with them in America. Their return to England had threatened several of his company's patents. Yet he had to admit that there were times when their inventions were of great use to him.

Looking at the lad now reminded him of the first time he had met the Steams, especially Eddie, who had been very young. He saw that Ray had his father's kind eyes. And like his father's eyes, they hid a keen ability to see the cause of things.

The two men returned with Ray to their first-class car,

and the train began moving again toward Manchester's central station.

"We received a letter from your grandfather and came to Manchester to meet him. But to encounter you unexpectedly in this way . . . " he trailed off. "Mr. Stephenson, it appears there's more to this affair than we thought. Do you agree?"

"Yes," Stephenson murmured.

"What 'affair'? Is it those men from the Foundation?" Ray asked.

"I can't say much at this moment. It involves secrets vital to our nation. It has to do with a new invention by your father and grandfather."

It must be the ball, thought Ray.

"Mr. Stephenson did research with your father. They were colleagues for more than twenty years. It might be more accurate to call us rivals. In '39, you see, your father and I were both in America and we . . . "

Stephenson didn't finish his sentence, but Ray could sense that the man respected his father. Ray, who was used to being frustrated when people didn't acknowledge his father and grandfather's work, felt proud that someone of Stephenson's stature would consider his father a rival.

"My grandfather told me to give you this, Mr. Stephenson," Ray said, about to hand over the steam ball.

Metal pincers suddenly shattered the windows on both sides of the car and grasped the ceiling.

"What's that?" said one of Stephenson's men.

The pincers tore off the roof, revealing a zeppelin against

the blue sky. A net shot out and caught Ray and the ball.

"Ray!" David leaped onto the net.

"David, hold fast!"

Alfred was standing over the pincer controls. "We don't need the boy. Just get the ball from him!"

Hearing this, his partner tried to wrest the ball away from Ray.

"Stop it!" A valve on the ball opened for an instant.

Out came a whooshing sound.

Stephenson and David watched in amazement as a thin burst of steam shot from the ball and destroyed a factory wall completely.

"You fool! Grab it and shut it off!" Alfred thundered.

Ray managed to close the valve, and the steam stopped. By then Manchester's central station was looming before them. Alfred realized where they were and abandoned his plan. He called out orders to raise the zeppelin.

"What are you doing? Let me go!" Ray struggled in vain. The zeppelin carried him, and the ball, high into the skies above the city.

Where on earth could this be? The airship had flown for several hours, and the cabin had rocked Ray to sleep. The next thing he knew, he was inside what looked like a castle. Was this their secret base? But the place seemed too grand for that.

Had he really been kidnapped by the men from the O'Hara Foundation?

Ray still hadn't come to grips with what his grandfather

had said. In the first place, didn't his grandfather and his father work for the Foundation? And what about the news of his father's death?

"Father . . ." Ray was lost in thought when a tiny dog scampered into the room. He had never seen such a strange breed before.

A girl stomped in after the dog.

"Columbus! Columbus, come back here!"

She didn't even glance at Ray. Spotting the dog, she ran after it, scolding.

"You're such a naughty boy! Now I've got you!"

Columbus gave a sharp cry when his owner hit him.

Eventually, the girl noticed Ray, who was staring at her in surprise. She turned to study him carefully.

The girl wore a bright red dress with white frills, and her blond hair was tied back with a ribbon. The petticoat under her skirt had a cage-like frame that kept its rounded shape, even while she moved. The fabric was obviously of very fine quality. To Ray, it looked nothing like the rustic dresses that girls like Emma wore in Manchester.

"So I guess you must be Dr. Steam's son."

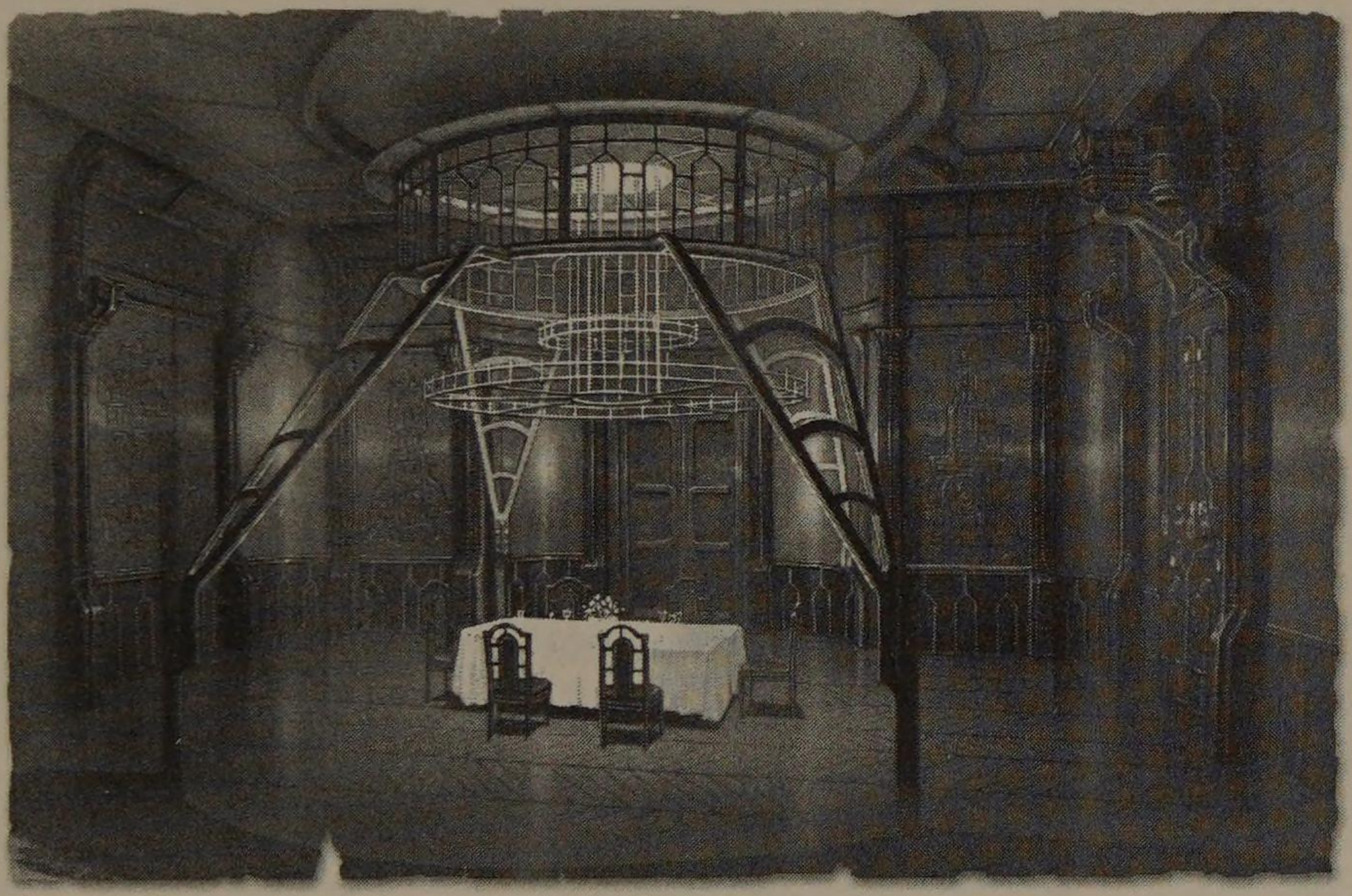
"How do you know my father's name?"

Just then a portly man with spectacles entered the room.

"Ah, Miss Scarlett, here you are," he said in a dutiful tone. "Just in time for dinner. Very good, very good."

He was the man who had dressed Ray in proper clothes and ushered him into the room.

"And young Master James Ray Steam, welcome. Sorry to keep you waiting."



"Where's the ball my grandfather gave me? What did you do with it? And who are you people . . . ?"

A waiter interrupted, placing a dish in front of Ray.

"I beg your pardon. I'm the president of the O'Hara Foundation, Archibald Simon. And this is the granddaughter of our chairman, Mr. Charles O'Hara St. Johns, who also founded the O'Hara Foundation. You may call her Miss Scarlett."

Ray watched as Scarlett set the Chihuahua down in an urn at the far end of the table. The dogs had been bred only recently on the American continent.

Ray jumped to his feet and glared at Mr. Simon, who was calmly eating his dinner.

"And that makes it all right to smash our house? You think you can get away with that?"

Then the unbelievable happened.

The wall behind Ray suddenly hissed loudly and split down the middle. A dense cloud of steam came pouring out and a figure appeared. It was a monster—half-human, half-machine. The creature's feet clanked when it entered the room.

"Really, can't you find some quieter shoes, Dr. Steam?" Scarlett asked.

Ray winced at her words.

The machine man seated himself. "What is it, Ray?" he asked.

Stunned, Ray stared at the monster that had said his name.

"Father?"

"It's been a long time."

Ray was too shocked to speak. The monster with the balding head and a metal plate covering half his face was unmistakably his father.

"Well, we can talk later. Let's eat before the food gets cold. It should be delicious. Ray, have a seat."

Ray couldn't stop staring at his father, who laid his left hand over his metallic one as if to hide it.

"I heard the story. None of this would have occurred if Father hadn't been so stubborn. That's why things got out of hand as they did."

"We'll have your house fixed up in no time. In fact, it'll be better than before," Simon said.

"There've been a good many mistakes and misunderstandings in all this, Ray. But I am pleased you've come."

"It's not as if I had a choice, is it?" Ray said finally.

"Simon, this liver pâté stinks," complained Scarlett, ignoring the conversation. "Everything here stinks, just like that river!"

Straightening his machine-encased body, Eddie turned to Ray. "I was planning to send for you in any case. And your mother, as well. I wanted you to see my work."

"Your work?"

"Ray, come with me." Eddie stood up, leaving his food untouched. He pulled a lever that opened the door in the wall.

"Doctor. You haven't finished eating yet," Simon said.

"That is so rude!" Scarlett called out. "Wait just a darn minute!"

She followed father and son through the wall.

Beyond it was a corridor lined with metal walls. The air was heavy with steam.

"Father, can you tell me what's going on? Grandfather said you were dead. And he said to keep the ball away from the Foundation people. And your body, what happened to you?"

Eddie slowly explained matters as they walked.

"Your grandfather and I were searching for a stable liquid of exceptional purity. That was the key to producing extreme pressures. Three years ago we found it in a cave in Iceland."

"So, you used that liquid in the ball that . . ." Ray knew the principles behind steam-powered engines and grasped the liquid's importance immediately.

The history of the steam engine was closely tied to the understanding of the properties of water. The beginning of the eighteenth century saw the invention of the Newcomen engine, an atmospheric pressure engine that was a forerunner of the steam engine. It had a cylinder filled with steam that was then cooled by water. The vacuum that was created when the steam changed into a liquid state sucked the piston downward.

The Newcomen engine was inefficient, because the cylinder had to be heated and cooled in turns. James Watt later improved on this design. Watt was at Glasgow University, producing and selling educational materials when a friend, a

Professor Black, told him of his research on latent heat.

Latent heat is the heat that a substance absorbs when it changes from a solid to a liquid (or from a liquid to a gas) at a constant temperature. When Watt learned of this property, he came up with the idea of attaching an external condenser to the steam engine's cylinder. He calculated the precise exchange of latent heat and worked out an efficient way to change steam to water before circulating the water back to the boiler.

After the Watt engine, the race to perfect steam engines focused on how much pressure could be created in the cylinder. This brings us back to Richard Trevithick, inventor of the steam train. The high-pressure steam engine that Trevithick developed used steam that had seventeen to twenty times the pressure of Watt's engine. To achieve this, he had to use steel that could withstand high pressures and extremely pure water that would not damage the cylinder. In other words, the purity of the water would greatly affect the engine's performance.

At the end of the corridor, Ray and Eddie entered a wagon that ascended and descended automatically, called an "elevator." Scarlett reached it just as the doors were closing and pried them open.

"Phew," she said getting in.

"What's wrong with you, girl? That's dangerous!"

"Mind how you speak to me. I am a lady. Calling me 'girl' like that is very stupid. It so happens my name is Scarlett. But you should address me as *Miss* Scarlett."

She was one intolerable young lady.

"Please hold on to the railing, Miss Scarlett. Here we go, Ray."

It annoyed Ray to hear his own father talk to the girl so politely.

The elevator made a clanking noise and began to ascend.

"In 1863, our efforts bore fruit at last. We succeeded in containing a new kind of steam at extreme densities and extreme pressures."

"Extreme densities and extreme pressures?"

The mineral water that Lloyd and Eddie had discovered may have been a supernatural liquid that surpassed anything that was known at the time. The principles behind the steam ball remain unclear, but it was created when a steam hammer compressed the steam from liquid form into solid form. The ball held an extraordinary amount of energy in the form of latent heat.

A door opened in the ceiling, and they emerged in an open space with pipes stretched across it and a giant rotating flywheel. Steam hissed here and there. The strange space looked more like the inside of a giant clock than a factory.

"Ah." Ray and Scarlett opened their eyes wide.

"It's amazing."

"Do you always gawk like that? Why, this is nothing compared to Niagara Falls!" Scarlett said, even though she had been just as amazed as Ray. Annoyed, he ignored her and stared ahead. Through the steam he could see through the small window into the central power room, and what he saw inside made him cry out.

"The ball!" Attached to the walls was the ball that his grandfather had entrusted him with in Manchester.

"That's it, Ray. It's the first steam ball we created," Eddie said solemnly. "There are three of them now. We built them in Ireland. Together they provide all the power for every piece of machinery here. Many have tried in vain to create the extreme pressure inside the steam balls."

"Steam balls?"

Although the experiment at the factory in Alaska had been a success, the building had collapsed and Eddie had been severely injured. The Foundation had then moved operations to a factory in Ireland, where they managed to construct three steam balls with the leftover mineral water.

"There have long been steam engines capable of high output, but all of them need enormous boilers and many cylinders, all of which absorb energy. At each step, the system loses pressure, so the output is severely limited. But look about you, Ray. This system transmits pure power. Do you know what this means?"

"It was all created with my family's money, of course," Scarlett interrupted.

Eddie ignored her and went on. "We mortals can take to the skies. The heavens themselves will be ours!"

"Take to the skies, indeed. I already have *two* hot-air balloons with my name written on them, *and* my grandfather owns a zeppelin."

"Can't you quit your prattling for one minute, girl?" said Eddie.

"The skies, the depths of the ocean, and farther yet, to space! Places mankind has never been able to go. Soon, we will reach these frontiers and open up new worlds."

While Eddie spoke, the ceiling opened and the elevator reached its final stop. The doors opened and the children ran out. Clouds drifted by outside the windows.

"Look," Scarlett said.

They were in the observation room at the building's highest point. In the center was a strange-looking control panel that resembled a pipe organ. From the terrace outside one could enjoy the view.

"What's this?" Ray asked.

"The control room of Steam Castle," his father replied.

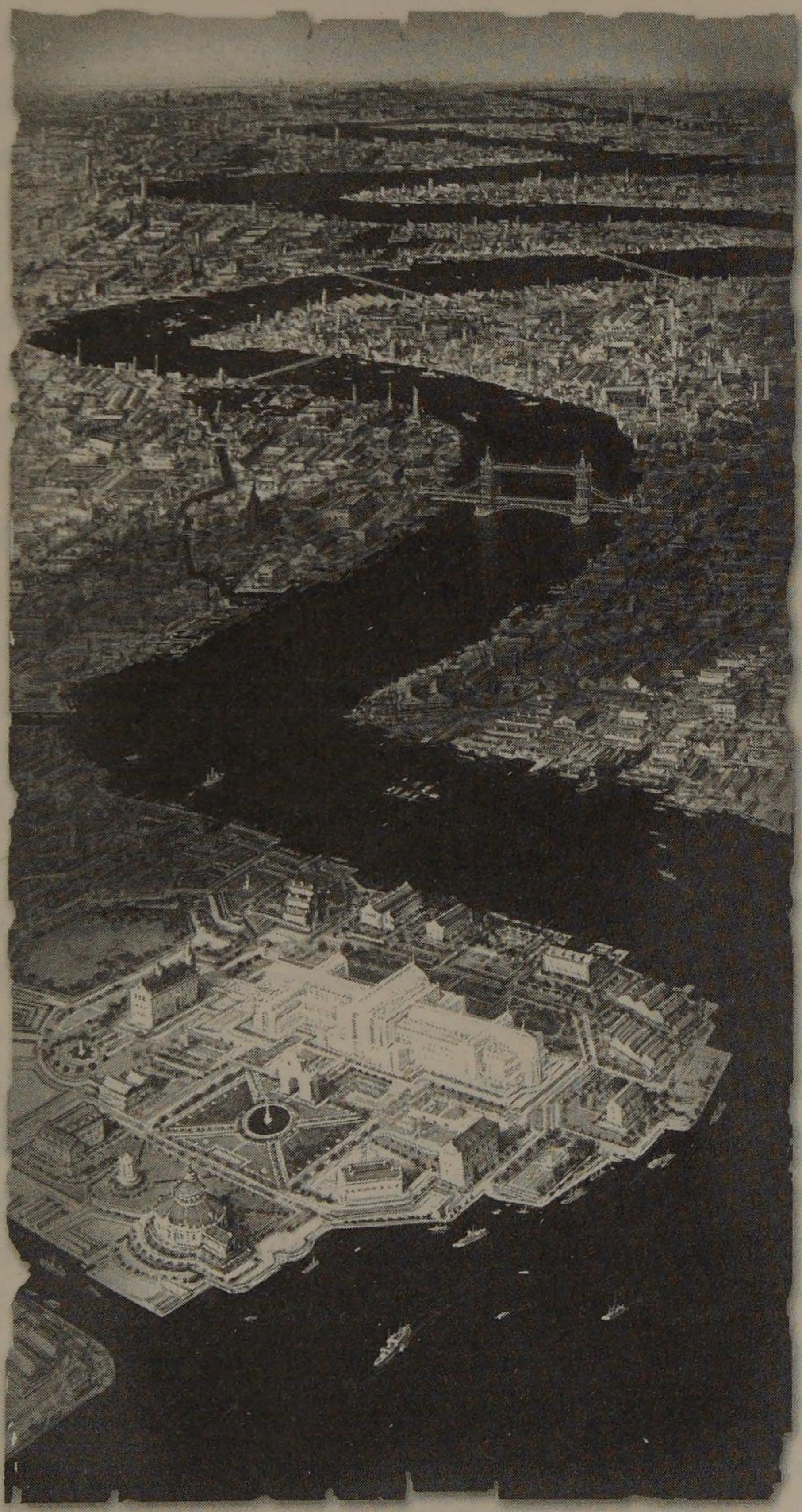
"Steam Castle?"

"Ray, you have to look at this! You can see the whole Exhibition from here!"

"What? The Exhibition?"

Ray looked down from the deck amazed. A marvelous panorama stretched all around him. Below him were people and carriages the size of peas traveling between the newly built pavilions. Beyond them, the city spread in all directions, with factory smokestacks and church steeples poking up here and there.

Next to the Exhibition site flowed a large river—the Thames. The stink that Scarlett had complained about during the meal came from this river. Docked on the banks alongside Steam Castle was the *Scarlett,* an enormous steam catamaran



that had recently carried its "princess" all the way from America. In front of the castle was the Crystal Palace, which Ray recognized from the posters. The Great Exhibition he had longed to see was right here in front of him.

"So, we're in London?"

"Honestly, you really are stupid! Where would they have the London Exhibition except London?"

"That's amazing! It really *is* the Exhibition!" Ray said jubilantly.

The sight of the scenery whipping by his one-wheeler had been a first for him, and now too was this bird's-eye view. It wasn't until the Victorian era that people even saw such views, which were popularized in the early nineteenth century by a form of visual entertainment called a "panorama." The photographer Nadar took the first bird's-eye photo of Paris from a hot-air balloon shortly before this moment, in 1858. The awe-inspiring views that began appearing around this time vastly changed the way in which mankind saw the world.

"It's true that the Exhibition is quite wonderful, Ray. But it might as well be a pile of junk compared to Steam Castle," Eddie said.

"I don't understand, Father. What exactly is Steam Castle?"

"Don't you know? How stupid!" Scarlett said.

"Stop calling me stupid! It's not stupid to ask questions when you don't know something!" Ray blurted out, put off by the interruption.

"The power of Steam Castle will soon change form. Divided into smaller units, it will be used in every conceivable application. In a single stroke, mankind will be released from toil. Fires, floods, and earthquakes will be conquered and controlled. *We* are the ones who shall bring the power of science to all humanity, like a shimmering gift of the gods!"

"Under the O'Hara trademark, of course," Scarlett added.

His father seemed changed, and not only in appearance. Before, his father had never talked about his thoughts at such length. Although Ray was genuinely glad that his father was alive, he couldn't help feeling uneasy. This man was not the father Ray knew.

"The world is watching. It all begins here. And in time, Steam Castle shall be passed on to you, Ray."

"*Me*? Why?"

"Yes, why him?" Scarlett echoed.

"Because it was my father, your grandfather Lloyd, who originally designed it. It's been ten years since I joined him, and we are now within sight of completion. Help me, Ray. You will do it, won't you? We can finish Steam Castle together, side by side. There's not much time before the Exhibition opens. If it wasn't for your grandfather, it would have been finished by now."

"Why isn't Grandfather here helping you?"

"A difference of opinion. Someday you'll understand. Science isn't sorcery, like alchemy. It's not for nobles and royals to practice secretly in their palaces, or for monks in their cathedrals. Science is power that we can put to practical

use. But what use is it if we don't bring its power to everyone? Mankind everywhere is in desperate need. They are waiting for the blessings of science."

His speech may have been too much for the two children, who stared at him agape. Eddie, for his part, wasn't fazed one bit. He raised both arms to the heavens.

"The world awaits Steam Castle!"

Robert Stephenson was sitting in a two-horse carriage, confronting Navy Admiral Frederick Burgess.

"I've heard of the O'Hara Foundation. During the American civil war, they made a fortune selling guns to both the North and South. They still sell the latest arms to clients around the globe. Needless to say, we were unaware of this when we accepted their application for a pavilion at the exhibition. A lamentable oversight and rather embarrassing."

"Their technology is becoming a threat to our nation and our empire."

"Perhaps, or you may just be trying to frighten us into providing yet more money for your own rather costly inventions. In any case, wars are neither won nor lost by machinery."

Stephenson was disappointed that even a war hero awarded the Order of the Garter could be so narrow-minded. He wanted to say, "Admiral, the world is about to transition into an era where wars are waged through machinery."

Instead he said, "Much as I hate to admit this, I've underestimated them and their technological advances."

"And when you say 'them,' do you mean those two fellows from Manchester?"

"Yes, the doctors Steam."

"Really? Am I to tremble in fear of two chaps who couldn't even gain admittance to the Royal Academy of Science, Dr. Stephenson?"

"They are ingenious."

"Ah," the admiral said, amused. "Well, ingenious or not, we can't have them selling armaments at an exhibition dignified by the Queen herself. It wouldn't do, would it? National pride and all that."

Stephenson knew in his heart that no one understood the terrible power of the Steam family better than himself.

Both the boy and the ball had been taken from him shortly after he had met Ray in Manchester. He and David had then gone to visit the Steams' home on the outskirts of town. Arriving at the half-demolished house, they found Mrs. Steam in the hallway, bewildered and pale. She was in such shock that she didn't hear their calls at first.

In the workshop behind the main house, they came across an unusual pressure gauge that they assumed had been left behind by Lloyd Steam. The levels on the pressure gauge display were troubling, as they measured levels so high as to defy common sense. Was the boy carrying a ball that could contain such pressure? Stephenson remembered how, just before Ray was snatched away, a powerful blast of steam had

escaped from the valve in the brief time it was open.

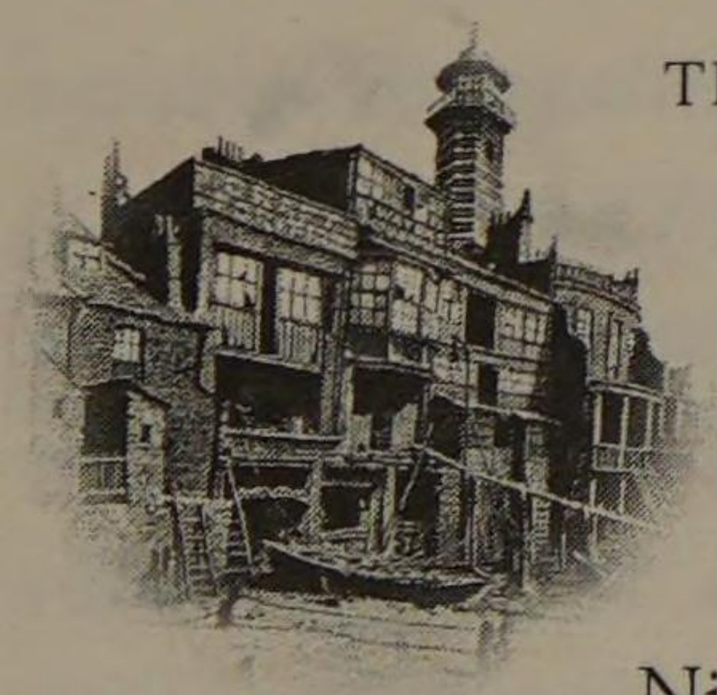
Had Lloyd Steam called them to his house to demonstrate the steam ball's power? If that were the case, then the Foundation now rivaled the indomitable British Empire in military might.

Long ago, Stephenson had felt a sense of foreboding about the Steams. Now that foreboding was becoming reality, and he couldn't help but tremble.

CHAPTER

3

The Monster on the Thames



THAT SAME EVENING Nicky Tigg and Paul Cunningham rowed out on the Thames to go fishing. They would deliver their catch to the hotel kitchen in the morning.

"The stench! I'm right sick of it, I am," Nicky said.

"Don't say that. It's thanks to this stinky river that we can manage to earn a living for at least another day," Paul said somewhat bitterly. He couldn't feed his family on the pay he earned as a longshoreman during the day, so he pulled nets at night.

"Here I am, a husband enduring this stench to earn some money, and what do I get from the wife? She complains that the stink of the river won't come off me, and she won't come

near me. It's been going on for a month now."

"Ha! So that's why your woman's always casting sheep's eyes at tailor Gibbons."

"What? Is that true?"

"Well, 'tis a pity about this river. Wasn't always like this." Paul owed the tailor a shilling or two from poker, so he quickly changed the subject back to the river.

"Back when me granddad was a lad, he spent the summertime swimming in this river. Now look. It's a cesspool of London's sewers."

"Hey, so what's this about my wife?"

"'Monster soup.' That's what we called it. But in all seriousness, I wouldn't be half surprised if a monster did live in here."

"Come to think of it, Marianne did yell something at me about the tailor being so kind. So that's it! That's why."

Indeed, the Thames was terribly polluted in those days. People joked about the monster that surely lived in the murky brown water. An anecdote dating from 1855 told of the time Michael Faraday, famous for his law of electromagnetic induction, traveled on the river. As his boat approached London Bridge, Faraday was so disturbed by the stench and pollution that he tore up white cards and tossed them into the river. He had meant to watch them sink, but the pieces are said to have vanished within an inch of the surface. Faraday reported the incident in a letter to the Royal Institution.

London's inhabitants had always lived off the river. Fruits and vegetables were scarce here, compared to the countryside, but the plentiful seafood caught from the Thames helped

supplement what little provisions the city dwellers had. The children in London would boast that no river in Europe could match the bounty of the Thames.

The river was a unique place in other ways, too. It had its own rules, and anyone could shout abuse there without restraint. People hurled indecent insults back and forth daily as boats passed each other, saying things like, "You little prick!" or "What did you say, you half-breed? Your mother lay with the devil!" At times, even members of the British royal family weren't spared.

The Thames was a place where people could unleash their daily frustrations and anger. Then "Father Thames" would placidly swallow up Londoners' discontent. But now rapid industrialization was overwhelming the environment and blackening the waters with the city's sewage. Unsanitary conditions gave rise to contagious diseases, like cholera, typhoid, and dysentery—all of which could be traced back to the Thames. This was the other face of the industrial revolution.

The rowboat drew alongside a castle. It had been built for the Exhibition by an American foundation and filled with amusing contraptions. *The bourgeoisie must have it easy,* Paul thought. *Poor folks like us have to work their whole lives until their bodies crumple. People die every day in the East End slums, and today there's another girl who's not yet fifteen, selling her body to feed her younger brothers. To put on with an international exhibition at a time like this—what were the organizers thinking? There's nothing for it, but to empower the populace and overthrow the privileged classes. It's the . . . what's it called, again? The*

proletarian revolution? Listen, I'm not a bad person. To be honest, I'm just repeating what Jebbons from the union said. But what's that Nicky been muttering on and on about?

"Damn that tailor!" cursed Nicky over and over. "I'll kill him, kill him! Beat him to death. Marianne, too!" Paul felt shivers run down his spine when he saw the crazed look on Nicky's face. Just then, he heard the soft ripple of waves.

He looked behind the boat and saw something dark below the water's surface.

"Hey!" Paul called. When both men looked over the edge of the boat, they saw a large, darkening shadow in the water floating slowly toward the surface. Paul imagined a terrifying monster that had grown immense from feeding on the river's pollution.

There was a splash.

The monster finally showed itself, sending large ripples across the water. It had a round, reddish-brown body, topped by four cylinders that looked like elephants' trunks. They blasted a cloud of white air.

The men shouted out.

But what surprised the two even more was the round window in the monster's belly. Inside was a boy who must have been swallowed up, waving and grinning at them.

"You see that?"

"Nope. Didn't see nothing."

The two men looked on speechlessly as the small submersible sank once more into the foul-smelling river.

"Venting, complete. Let's get back to work, Ray," Edward Steam said.

"Yes, Father."

The submersible moved slowly forward, shining a light ahead of it through the dark, polluted waters. When it reached the base of Steam Castle, Ray extended a mechanical arm and continued making repairs on the tank intake.

He felt happy working the controls. This was the first time he had worked alongside his father. Neither his father nor his grandfather was ever home for very long. They were always shuttling between Manchester and America. And even when they were home, they would bury themselves in their work.

They never let Ray join them, telling him that it was too dangerous for a boy to be in the workshop. Instead, Ray grew up tinkering with a child's mechanical set that his grandfather gave him. Lloyd Steam had devised a set of standard machine parts so that Ray could exercise his creativity and skills by assembling them into various automated machines.

Ray felt proud to be helping his father. Although he had misgivings about the way he had been brought here, the happiness he felt now was enough to wipe away the bad feelings. Furthermore, the fact that this work was related to the London Exhibition only boosted his sense of pride. Not only were inventors dreaming of the Exhibition, his father was confident that Steam Castle was exceptional even among the other inventions. When Ray thought about his own contribution, he found that the events that brought him here didn't seem terribly important.

Ray had written a letter explaining the situation to his mother in Manchester. As for his grandfather, he thought there must have been a misunderstanding. And anyway, his grandfather had lied to him, hadn't he? Why would his grandfather scare his mother and him like that by telling them his father was dead?

It wasn't long before Ray and Eddie completed their work. The submersible was hauled up from the water by a chain and lifted onto a dock inside the castle. The upper hatch opened, and Ray and Eddie climbed out.

"The tank intake has been repaired. Commence flooding!" Eddie told the workers.

Ray climbed the ladder into the castle and found Scarlett waiting for him in a corridor on the upper floor.

"I put Columbus on his treadmill and it broke."

Ray ignored her as he pushed a lever and reported, "Submersible, retracted and secured!"

"Didn't you hear what I said? Columbus has his own self-turning treadmill, but now it's broken, so fix it."

"Why should I fix some silly thing you've got for your silly dog?" Ray said frowning.

"Your grandfather built that 'silly thing,' that's why," she answered, as if that explained everything.

"My grandfather?"

Ray wasn't sure why this meant that he had to fix the thing, but Scarlett was so matter-of-fact that he accompanied her reluctantly to her room. Besides, he was curious to see his grandfather's invention.

Inside the pretty, rococo-style room, a poor Chihuahua whined while it ran a sad marathon in an enclosed wheel, like the kind found in mouse cages. The cam that regulated speed had come off, and now the wheel was stuck at high speed.

"If we don't stop the wheel, your dog isn't long for this world. The name's Columbus, eh?"

"That's right."

"Here it is . . ."

Ray rotated the handle and opened the door to the wheel. A cloud of steam came out, and Columbus flew out of the wheel and rolled onto the floor. Scarlett waved away the steam and complained, "Tell me before you blow steam all over!"

Ray examined the malfunctioning part. From behind him Scarlett blurted out, "Your grandfather's stupid, isn't he?"

"What?"

"Well, all he makes is useless junk. Breaks easily, too," Scarlett said, glancing at the wheel. "Of course, it sounds good if you call it an 'interior dog-walking machine,' but from the dog's point of view, it's more like a torture device."

Unlike mice, dogs don't keep running in place if they aren't getting anywhere, which was why Lloyd had built an enclosed wheel that rotated automatically and forced the dog to run.

"What are you talking about? My grandfather's the one who designed this castle!" Ray protested.

"But Dr. Edward actually built it. And it's not even finished yet, is it? You'd better have it finished before the Exhibition starts. Otherwise, the credibility of the O'Hara Foundation could be tarnished. It's my grandfather who'd lose face!"

"Father will finish it."

"My grandfather built the Foundation all in one generation, you know. Now he's ill and can't take long trips, but when he was young he traveled all over the world and made lots of money. He's very inspiring."

Ray continued working, fed up with her prattle.

"Well, anyway, are you going to be able to fix it?"

"I don't think so."

"My, so your whole family is useless."

"The cam on this gear is cracked. You'll be needing a new one," Ray said angrily.

"Fine, put one in then."

"We don't have parts like this. Steam Castle uses American standard sizes. This is English. It won't match up."

"We're in London and you can't find English parts?" Scarlett turned on her heel and walked toward the window. "You should be able to find a part like that anywhere."

"Well, I guess if we got one I could file it down."

"Let's go look for one then."

"Huh?"

Scarlett smiled mischievously at Ray's surprise.

It was a moonlit night. The magnificent columns of Steam Castle shone bluish-white in the moon's cold light. Ray poked his head out from behind a column. Making sure that the night watch had passed by, he trotted to the next column and hid again. Scarlett strolled behind him. Ray grabbed her arm impatiently and pulled her toward him.

"Let go!"

"Shhh! They'll see us! I'm not to go outside. They've forbidden it!"

"Oh, have they? Isn't that a pity."

"I was kidnapped and brought here by force."

"Really, you make it sound so awful."

They walked toward the main pavilion, trespassers now that they had left the grounds of the O'Hara pavilion. Scarlett strode confidently, unlike Ray. The cool air filled the glass palace, wrapping itself around the exhibits.

"Look!" they cried. "Amazing!"

Ray's eyes shone with delight at the collection of inventions from around the world.

"Rather like someone collected junk from all over the world," Scarlett said.

"A steam automobile! This is a brand new model!" Ray fell in love with several of the inventions.

"This one's an automated weaving loom that uses steam. Amazing! It's set up so you can put in different punch cards to get different patterns."

"Well! You seem to know enough about these things."

Scarlett felt strange emotions tugging at her heart. She was impressed by Ray's knowledge of inventions, and she enjoyed his boyish enthusiasm. But, at the same time, she felt a flash of anger and loneliness as he abandoned her in his excitement. She had never felt anything like this before.

What a rude way to treat a lady, she thought. Turning her head with a sniff, she walked alone toward the back of the palace.

Moonlight shone through the glass ceiling, and drifting clouds cast dreamy patterns on the floor. In the center of the Crystal Palace, Scarlett suddenly noticed her shadow on the floor and stood still. Mysterious refractions of light through the glass created overlapping shadows of her on the floor.

"How lovely," Scarlett said as she twirled and danced with her shadows. She looked up, catching sight of something even more lovely.

"Ray! Hey, come here!"

Startled, Ray tore his attention away from the marine steam engines. He hurried over to her.

"Shhh! Keep it down! If they find us, we'll get nicked for sure!"

"Look! Look!" Scarlett said, paying him no mind. She pointed at the wall.

Ray looked at the glass that was positioned at various angles. He saw countless Rays and Scarletts reflected there.

"Isn't it curious?"

"What? It's just a reflection in the glass."

"Look closer. They're all a little different. Some of them bend and bulge."

"I don't see that."

"Look. See how they're all looking right at us?"

"Well, because . . . "

Without warning, Scarlett grabbed Ray's arm and pulled him down. It looked as if they were bowing to the images.

"What are you doing?"

"I'm bowing to our guests, of course."

"Guests?"

Scarlett nodded respectfully, like an actress acknowledging her admirers.

"Now, Ray. Which 'me' do you like best?"

Ray took a closer look at the images of Scarlett and himself.

"I don't know which one I . . . "

Suddenly he noticed Scarlett's face close to his, watching him expectantly. Their eyes met. He looked into her eyes. Her face slowly moved toward his, as if she were peering into its depths. The pale pink nightdress she wore gave off a sweet fragrance.

Flustered, Ray turned away.

"Uh, yes, it truly is astonishing," he said awkwardly. He looked around at the unusual displays. "If only my mother could see all this, eh?"

Scarlett sniffed. "A real mama's boy? I get the picture," she said with part anger, part scorn.

"I am nothing of the kind!"

"Do most children here in England want to see their mothers all the time?"

She didn't say this out of spite. It was her honest response. But to Ray, it sounded as if she was making fun of him.

"Who said I want to see my—"

"I have five mothers, did you know that?" Scarlett broke in.

"What?"

"None of them are terribly special to me."

"Oh."

It sounded like a complicated household. Ray imagined

Scarlett's family sitting around the dinner table: a grandly dressed father with a moustache, five different mothers, and Scarlett, all silently sipping soup.

"There's the mother who cooks my food for me, the one who goes shopping with me for clothes, and the one who teaches me and helps me with my lessons," Scarlett said, counting on her fingers with her back to Ray.

"Those aren't mothers. They're just, you know."

"The one who takes me horseback riding, and the one who tells me bedtime stories at night. So there!" she spat out, turning toward him again.

For a moment, Ray saw an expression on her face that pierced his heart. He thought he had glimpsed her loneliness.

"You don't see me writing to my mothers saying, 'I want to come home soon,' do you?"

"What? How do you know about that, Scarlett?"

Her remark brought Ray back to himself. He had given that letter to his father to send to Manchester. How could she have seen it?

Scarlett twirled again and began walking. "How indeed? You threw the letter away, didn't you?" she said curtly.

That night there was a small explosion under Steam Castle, at the end of a dark stone corridor dripping with water. With a boom, it blew away the door to an underground jail cell, and a half-naked old man walked out, coughing and gasping as he waved away the smoke.

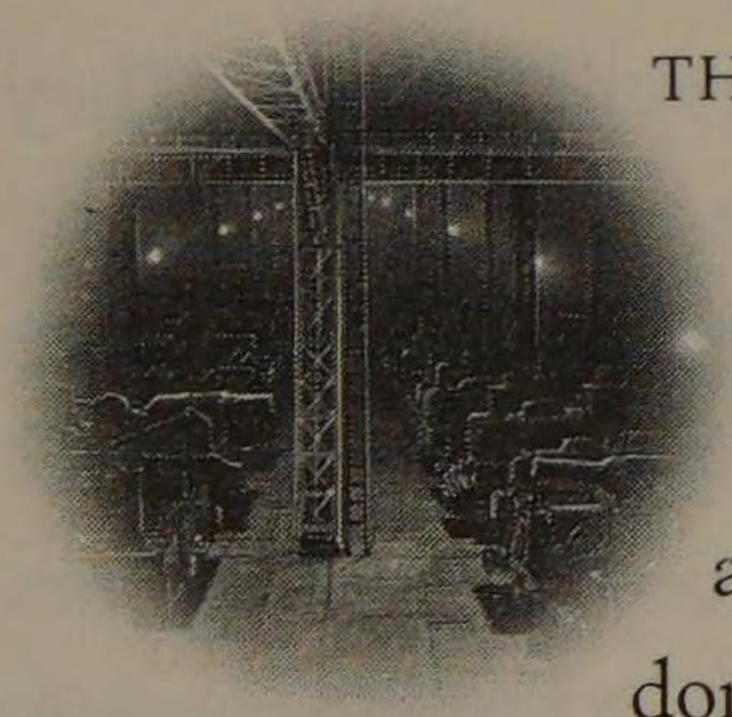
"You'll never finish Steam Castle. I won't let you, Eddie!"

It was none other than Lloyd Steam, who had freed himself by improvising an explosive from some nitrate that he had hidden in his bushy hair. He hadn't been seen since he and Ray were separated that day in Manchester.

CHAPTER

4

The Merchant of Death



THE NEXT DAY, Ray searched for his father among the workers in the mess hall. He spotted him and ran over.

"Father! That letter I wrote to Mum, I asked you to send it for me. You remember, don't you?" he said.

"Yes, I'd also written your mother a letter, so I had them sent together."

"You wrote her a letter?"

"Yes. I write her one letter each month. I've always done so."

There had been no such letters. For the past three years, the only source of news about his father and grandfather had been the thank-you letters from the O'Hara Foundation that

accompanied the money. The letters always read the same way: "We deeply appreciate the important contributions that your husband and father-in-law are making to the Foundation. We, therefore, thank you in advance for your gracious understanding with regard to the further postponement of their return to Britain." And so on.

Ray's heart filled with distrust for the Foundation. He was about to confront his father with his doubts when the foreman came running.

"Doctor, we have a pressure leak in Area 1. It's serious," he reported tensely.

Ray had lost his chance to ask his father about what was going on.

"We inspected it yesterday. It was fine."

"Your father broke out of confinement last night. They can't locate him. This could be his work."

"What the devil were the guards doing?" Eddie stood up and started walking away, and the foreman followed. "Do not let him shut down the main valve!"

"I understand, sir. But the entire castle is losing pressure. At this rate there won't be enough . . . "

Ray was left behind alone. Watching them leave, he grew more confused.

Father was sending letters to us all along, one a month? And what was that about Grandfather?

A few minutes later, Eddie's angry voice boomed through the central engine room.

"Reroute pressure to Area 8, and mind 6 and 7 as well!"

Workers hurried about. Having nothing else to do, Ray came to the engine room, too, and watched his father from behind.

"Ray!" his father shouted suddenly.

"Huh?"

"We need to shut valve 53. Will you do it?"

"It's up in Area 7," the foreman said, addressing Ray just like one of the workers.

"Right," Ray answered firmly, swallowing his doubts about the Foundation.

When he got to steam-filled Area 7, he shone his headlamp on the maze of pipes, searching for the valve.

"Number 53 . . ."

The light of his headlamp fell on a human figure, barely visible through the steam, at the end of a narrow passageway. With a start, the figure disappeared into the shadows. Ray followed behind and caught a clear side view of the figure as it cut across the corridor ahead. He saw thin arms and legs and a disheveled head of hair. He had seen the person before.

"Is that you, Grandfather?"

Lloyd stopped and turned.

"Ray?"

As Lloyd approached Ray, the light from Ray's lamp shone brightly into his face.

"Douse the light, eh?" Lloyd said, squinting.

Ray quickly turned off the lamp. "Grandfather, what are you doing up here?"

"What about you? What are you doing here?"

"Weren't you in Manchester?"

"How in the devil did you come to London?"

Lloyd's eyes lit up.

"The steam ball! You were supposed to take care of it!" he howled.

"A zeppelin came and plucked me off the train. They got it."

"They pinched it from you?"

"Yeah."

"This is a disaster! Everything I went through to get it to Manchester, all for naught! Blast you, Eddie! We'll have to be quick, now."

Lloyd walked away and started turning handles connected to the pipes.

"Grandfather, wait!"

As Lloyd released one valve after another, Ray followed behind, turning the handles to close them again.

"What are you doing, Ray?"

"If you leave this open, all the pressure will pass through and concentrate at the main valve."

Concentrating such high pressure would destroy the engine.

"Oh, bloody hell! So your father's got you on his side! Well, he's lying to you, Ray."

"You told us he was dead, but you knew he was alive all the while!"

Lloyd gave his grandson a worried look. Ray stared back defiantly.

Lloyd didn't notice. Instead, he announced rather cryptically, "When a man crosses the line into pure evil, he is as good as dead!"

Then, as they ran down the passageway, Ray explained his father's theory.

"The world's waiting for this?" Lloyd blurted out. "This abomination? This work of the devil?"

"But, Father told me that it will—"

"He's a fool! He sold his soul to capitalists who care nothing about science. They worship money! Do not listen to him!"

"But he says people are waiting for the benefits of science."

"Right. The shareholders are waiting for their profits. An invention made for such a low purpose can only bring misery to the world. We must take back the steam ball at all costs."

Lloyd eyes grew wild. Once he got started with his theories, he became more and more excited until his passion consumed him—a Steam family trait. Lloyd threw open the valves.

"Stop it! You'll wreck Steam Castle!" cried Ray.

Valve 53 began to shake until it burst at last. The other valves in front of him were also leaking steam, and a series of explosions went off.

Back in the main power room, Eddie was busily turning handles when he heard them.

"Damn," he shouted angrily. "We have no choice. Shut the main valve and vent the pressure at once. There's a rupture

somewhere. Find it! The opening ceremony is tomorrow. We must settle this quickly."

Of course, he knew who was responsible. Eddie's eyes took on a determined look. He knew the time had come to part with his father.

Lloyd and Ray walked through the castle's maze of corridors.

"Where are you going now, Grandfather?"

"Stop your blathering and follow me."

They emerged from the castle, walked across the roof, and then re-entered through the ceiling of a vast storage room. Lloyd climbed down a ladder, and Ray had no choice but to follow. Here, arranged in row upon row, was what Lloyd had brought his grandson to see. The boy's father may have duped him, but this would open his eyes to the truth.

"Amazing."

Tanks, cannons, and a slew of killing machines were enshrined in the packed room.

"This is what your father's dreams are really made of. Do you want to know what this castle's really for?"

"What is all that?" asked Ray.

"Armaments. Built for one purpose—to kill your fellow man by the trainload. They are inventions of the devil!"

"Magnificent! You could stop your enemies cold with these!" Ray said enthusiastically. There were steam-powered tanks and self-firing cannons, and new types of infantry armor, too. That was just the sort of thing that would impress a boy.

"You bloody fool!" Lloyd exploded. "Just who are these enemies you would kill? Are they German? French? Or English?"

"That would depend on who attacked us," Ray said. "You can't tell until a war starts."

Ray's confusion was only natural. Waging war obviously meant defeating the enemy, but it was too much to expect a boy in Victorian England to be a pacifist.

It had only been fifty or sixty years since the Napoleonic war. Of course, that war brought great tragedy, but wars of that time weren't as brutal as later wars. The cannons and firearms back then weren't very powerful, and they didn't kill large numbers of civilians.

However, much had changed in the last fifty years. One factor was improved firepower. Rocket arms were first introduced to the military around this time. A British military officer, William Congreve, invented a rocket that was used in the French Revolution. It could be equipped with either an explosive or an incendiary head at the end of a pole, and its destructive power dramatically changed the battleground.

There had also been revolutionary advances in small firearms. The Minié-type rifles that were introduced in the 1850s had improved accuracy. Spiral grooves in the rifle barrels added a spin to the bullet that stabilized its flight path. This effect had been known from ancient times and was used in the hunting guns of the aristocracy. However, the Minié principle made it possible for it to be put to use in handy, inexpensive rifles for the infantry. Minié-type small arms soon replaced

the smoothbore musket.

As weapons were able to kill and maim more and more people, the atrocities of war grew more conspicuous. This was true of the Crimean War from 1853 to 1856, in which Britain and France became embroiled in a dispute between the Russians and the Turks. It was in this horrific setting that Florence Nightingale came to be called "the Angel of Crimea." And the great writer Tolstoy wrote *War and Peace* after witnessing the fierce fighting of the siege of Sevastopol as a Russian soldier.

On a side note, the Earl of Cardigan invented the cardigan while serving in the British military in the same war. The garment was designed to be easy for wounded soldiers to put on during the cold Russian winters.

The testing ground for the developing armaments was the American Civil War. That war lasted from 1861 to 1865 and used more new weapons than any war in history, drawing the interest of military personnel worldwide. Landmines, depth charges, and breech-loading rifles were among them, as were repeating rifles, hand-powered machine guns, and the like. The O'Hara Foundation raked in enormous profits by taking advantage of the arms race.

"Listen to me, Ray. We invent enemies through our own arrogance and selfishness," Lloyd said. In his mind he had an image of Charles O'Hara St. Johns, the Foundation chairman and a man Lloyd once considered a true friend.

"Our forefathers knew neither enemy nor ally! Isn't that so, Ray?"

"I guess," Ray agreed hesitantly, taken aback by his grandfather's passionate speech. He didn't entirely understand what his grandfather meant.

"These people profit off human ignorance and folly."

"But Father would never . . ." Ray began. "Hey!"

Among the rows of weapons, Ray spotted a cogwheel machine painted bright red.

"That's the thing that smashed our house!"

"Ah, I call that one 'Giant Despair.' It's the first steam engine to run without tracks. The Foundation claimed it was meant to be used for improving barren land."

Ray remembered the machine crashing through the walls of his house in Manchester. He didn't understand everything his grandfather had said, but he knew all too well how this machine worked. He thought of the injustice of having one's childhood home destroyed, and the terrifying iron claws that had swooped down on Mother and Emma. He understood then that war meant overwhelming violence on a scale many thousands of times greater.

Ray stared at Giant Despair, filled with hate.

Night fell. It was the eve of the opening of the Exhibition. Pleasure boats floated on the Thames, and people oohed and aahed over fireworks.

Inside Steam Castle, Lloyd and Ray continued with their demolition plans. They pulled the levers lining the passageways, turned switches on, and rotated handles to open and close valves. Breaking into the engine room, they tried to stop the

distribution of steam at the source. Lloyd went about waving his wrench and tightening nuts. Ray watched for a moment and then stopped to think.

"Ray? Why aren't you helping me?"

"What Father's trying to do, can it really be so wrong?" Ray asked.

"You know it is. Think, Ray!" Lloyd raised his voice.

"I think Steam Castle is wonderful beyond words. But it's changed Father somehow. He's not what he used to be. Perhaps he's been taken in by these Foundation people."

Ray was thinking of the letters. He couldn't believe that his father would deliberately do something wrong. The father he knew was kind, dependable, and loved his family.

Lloyd watched his confused grandson quietly and laid his hand gently on Ray's shoulder.

"In the end, you must see and judge for yourself whether or not your father is wrong, Ray," he said gravely.

Ray looked at his grandfather and nodded.

Just then, one of the giant pipes in the main power room gave way from the buildup of steam.

"Agh!"

"Oh, no!"

"Come on, this way!"

The power room was soon filled with steam and workers yelling to each other as they scurried pell-mell. The steam couldn't be stopped, so the workers evacuated, unable to endure any more.

Lloyd and Ray crept into the central area leading into

the power room and made their way to the corridor over an enormous flywheel.

"Hurry, Ray! Now's our chance!" Lloyd cried.

The power room was located in a tower that rose up through the center of Steam Castle. The room was divided into several levels, and the steam ball was set in the middle of it all.

Lloyd climbed down the steps from the corridor and stood in front of the power room tank, staring at his invention inside.

If only he hadn't made such a thing, he thought. But no, it wasn't the invention that was bad. It was the way it was being used. Still—

"Science . . ." came a voice. Lloyd and Ray both turned toward it.

" . . . must contribute to all of humanity's advances!"

Ray saw a figure walking slowly toward him down the corridor.

"Father!"

"Eddie!"

"Are weapons not part of that, Father?" Eddie asked.

"Rubbish! Science can reveal the deepest truths of the universe. It must not be used to aid humans in their folly!"

"The deepest truths of the universe, Father? Do you mean that kiddie amusement park you included in the first design for this place? Is that what inventions are good for? Is that what science is for?"

Lloyd was in front of the lever that released the steam ball.

Eddie continued, "The era in which science serves only as a diversion for the elite has ended."

This was clearly a jab at Lloyd for the amusements he had invented for his patron, Lord Randolph.

"Science will make all men equal. Isn't that so, Father?"

"Don't abuse the word, Eddie. This has nothing to do with equality. It's about money and greed!"

Ray looked back and forth between his father and grandfather.

"It was the accident, Ray," his father explained. "The same event that disfigured me also transformed me. When those violent swirls of steam swallowed me whole I saw and felt the overwhelming power of science. Yes, science is power. Pure power."

So that was it. The accident had changed mild-mannered Eddie.

Feelings of remorse welled up in Lloyd. The day the first steam ball was completed in the secret factory in Alaska, he himself had changed as well. Unlike his son, he knew the dangers of science and realized that his mission was to keep it from being used recklessly. Ironically, from that day forward father and son held beliefs that were the opposite of the ones they had held before.

"Delusions!" Lloyd shouted as he pulled the lever.

The cover to the steam ball opened up with a loud burst of steam, revealing the ball inside.

"Steam Castle is the ultimate expression of science and its overwhelming power!" Eddie said.

"What's overwhelming is your arrogance. To say science is power . . . " Lloyd began.

A metallic clang rang out beside him. The sound of the gunshot echoed throughout the room.

"What?"

"Who's there"?

Eddie scanned his surroundings in alarm. He saw Alfred, one of the Foundation thugs who had come to the Steams' house in Manchester, in a corridor on an upper level, holding a gun. Alfred looked down and asked in his usual, respectful tone, "Dr. Steam, please move away from the steam ball."

"You see, Ray?" Lloyd said. "That's what these people are like!"

"He shot at Granddad! The dirty bludger!" Ray shouted to his father.

"Fool! If you fire a gun in a place like this, you could puncture a pipe!" warned Eddie.

"Go ahead, shoot! I'd sooner die than see my invention put to God-knows-what-horrible use!" Lloyd replied defiantly.

While Alfred was pointing the gun, Simon, the Foundation's president, appeared from behind him dressed in pajamas.

"Now what are you doing, Alfred? Shoot him already," Simon ordered.

"Right."

Alfred narrowed his eyes, found the target, and pulled the trigger.

Lloyd fell with a low groan.

"Granddad!" Ray ran to him.

"I said, stop!" Eddie ordered, but whether it was out of concern for his father or the machinery was unclear.

"Your leg's hit. It's bleeding!"

The bullet was lodged in Lloyd's left thigh.

"Bugger that. Just turn the wheel, lad! Turn it!"

Lloyd called on the last of his strength to reach up and grab the handle that would release the steam ball. There was a thud. It was Jason, the other thug, who had climbed up from below. Ray scowled at Jason and then turned the handle.

Steam whooshed out, and the ball came loose. For an instant, Jason recoiled from the fierce blast of steam.

Ray removed the steam ball and turned to his grandfather.

"That's it! Take the steam ball and get out of here!"

"What about your leg?"

"It's all up to you now."

The steam dissipated, and Jason began moving toward them.

"Run, Ray!" Lloyd shouted.

Jason pounced in Ray's direction. Ray jumped quickly over his grandfather and fled down the corridor. A pipe beside him made a clanging sound. Alfred was aiming for Ray now.

"Hold it! Don't hit the boy for God's sake!"

"Uh, right."

The giant flywheel slowed to a stop, perhaps because of the missing steam ball. The puffs of steam in the area were clearing up as well.

Eddie looked around and moaned, "What in the world are they doing?"

Ray ran behind him with the ball.

"Ray! Give me the ball! Please!"

Ignoring his father, Ray leaped over a rail and fell onto a pipe below.

He rolled down the pipe and landed on a lower level. There he ran into the workers who had evacuated earlier, and they jumped back in surprise. Jason came falling right behind him.

Ray hurriedly got back on his feet and took off again, leaping over and ducking under the giant pipes. Jason followed him doggedly. Bumping into workers, Ray switched directions only to see Jason's legs appear in front of him. Jason then blocked Ray's path by kicking a lever down in his way.

Jason laughed, certain that he had won, but he was too hasty. The lever he had kicked down turned on the portable boiler behind him. It began moving with a series of clanks and puffs, then sped up, heading straight for Jason's back.

"Huh?"

The boiler pushed Jason over. Ray took the opportunity to slip by him and escape. When he reached the end of the level, he gasped. It was a dead end. He was still in the middle of the central power tower. Peering down below, he saw all the way to the bottom of the castle, over a hundred feet down.

"No more games, you brat. Hand over the ball." Jason was back on his feet and inching toward Ray.

"Ray, open the valve all the way, then throw the ball, hard!" Lloyd yelled from above, where he had been watching his grandson's predicament.

"Fool! That would cause a huge explosion," Eddie shouted,

climbing down a ladder and heading toward Ray.

What will I do? Ray thought, eyeing Jason. *Think! There's got to be a way.*

He looked around for anything that might help. Then he saw one of the wires stretched between the central power tower and the surrounding walls. It ran diagonally downward from the level he was on.

He had an idea, but would it work? It was a dangerous gamble.

Ray's brain worked furiously, calculating factors such as Steam Castle's layout, the distance to the bottom floor, the strength of the wire, and his own weight. *It'll work!* he concluded.

He slipped off his jacket.

Jason watched him suspiciously.

Ray tied the arms of his jacket together to create a bag and placed the steam ball inside. Yanking the bag tight, he looped it twice around his wrist so that he wouldn't lose hold of it. Then with a final glare at Jason, he climbed onto the large handle next to him and looked over the railing.

"Give up," Jason said. "You've got nowhere to go."

Ray swung the bag forward.

"What are you doing?" Jason said, lunging forward to grab Ray.

But before Jason could reach him, Ray used the momentum of the swinging ball to launch himself into the air.

Everyone gasped.

Ray flew screaming through the air. The wire he had aimed

for was getting closer, and he managed to twist his body so that the bag caught on the wire. He felt a strong tug as the bag whipped around the wire and kept him from falling. Hanging like this, Ray slid easily to the bottom of the chasm.

Jason was flabbergasted, much like a frustrated hunter whose prey has escaped. "He's down there! Go after him!" he shouted.

Ray reached the ground and ducked into an enormous water pipe. He kept running. When he came to a dead end, he searched for a handle to open the door. He finally found it and gave it a turn.

The handle was stuck fast and the door wouldn't budge.

Ray stopped, sensing something behind him. He heard a roaring in the distance getting louder. Turning to look, he saw a torrent of water gushing toward him. He thought he would drown, but then the door opened automatically, letting out the water.

Outside Steam Castle, a hole opened up in the wall. Ray shot out through the hole along with the water, still carrying the ball. When the water spray had died down, Ray popped his head up from the murky river.

He looked around to make sure he had escaped.

It was not yet dawn and the sky was still dark. He could make out the *Scarlett* and the pier. From the deck of the ship he could hear voices.

"There he is!"

Alfred's henchmen, the men in black suits who were the Foundation's muscle, had come down the gangway.

Gunshots echoed through the air and sent water shooting up near Ray. He panicked and started swimming away. Then the castle wall opened up to reveal Alfred.

"Come back here, you brat!"

Behind him, a crane with enormous claws rumbled ominously.

Hearing the commotion on deck, Scarlett came out of her room in her nightgown.

"What in the world's all this racket about?"

"Excuse us, Miss Scarlett. It's just that Edward Steam's son has run off with the steam ball."

"What do you mean?" Scarlett shrieked.

"There he is! Bring the rifle! Hurry!" Jason shouted.

With the rifle in hand, Jason took aim and fired. A column of water splashed up beside Ray. Jason quickly reloaded and aimed for another shot, but Scarlett shoved him from behind.

"Hey!"

"Put that down! What if you hit him for God's sake?"

Alfred watched the exchange between Scarlett and Jason.

"Fine then. Go!" he ordered to the crane behind him. With a metallic groan, the iron claws reached out toward Ray. Just then, a ship down the river tooted its horn.

What's that? Ray thought.

The outline of a huge ship loomed into view in the morning mist. Ray watched, bewildered. The sound of steam blasting from the smokestacks came closer. When the enormous hull emerged from the mist, he saw a Union Jack flapping from its tip. It was a British naval battleship.

"Damn it," Alfred muttered, retreating behind the castle wall. He and the crane disappeared from view.

Ray was still afloat in the smelly river, holding the ball. As he looked up at the stately battleship, a small boat approached him.

He soon saw who was standing at the bow. It was Robert Stephenson's engineer, David, grinning down at him.

Scarlett stood rooted to the spot. She wasn't sure of her feelings for Ray, but she couldn't deny he had been on her mind, ever since the night they had sneaked into the Crystal Palace together.

Since she was a little girl, she had never had any friends. The only people in the family mansion besides her grandfather and her five "mothers" were the servants. There were the children of board members who were occasionally invited over to play, but they always fawned over her.

She had never met anyone like Ray who would talk back to her. In the beginning, she had thought him incredibly rude, but somewhere along the way she began to enjoy their exchanges.

Sadness filled Scarlett's eyes as she looked out toward the departed British warship.

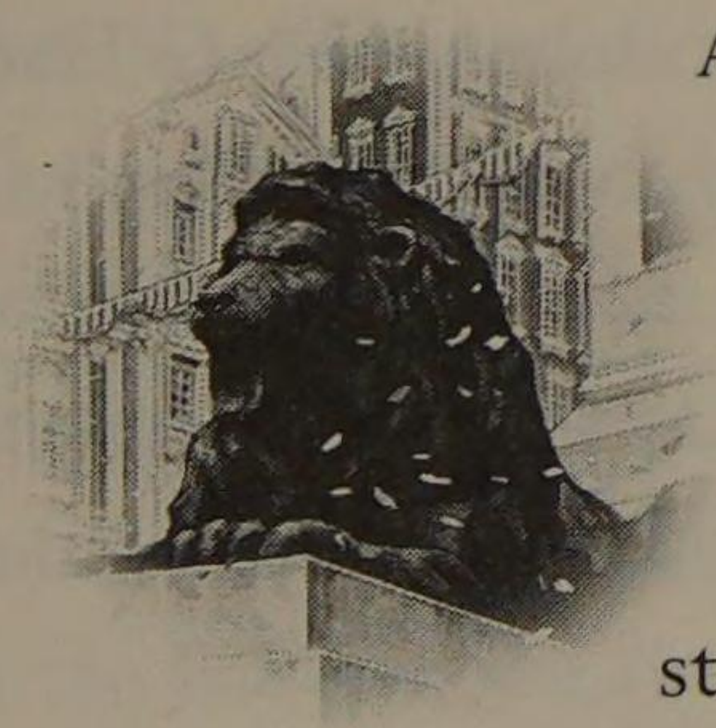
"Ray . . ."

His name slipped off her lips with a sigh and vanished into the morning mist.

CHAPTER

5

The Curtain Rises



A WHARF in Savannah, Georgia, 1819. The ocean sparkled in the blinding May sunlight, casting a glow on the two men's faces. Nearby, freight was being loaded onto the *Savannah,* the first steamship on record to cross the Atlantic.

"Look there, lad. That ship is going to cross the entire Atlantic."

"What's so special about that, mister?"

"Why, it's no ordinary ship. It's powered by steam. Amazing, eh?"

"Not really. I've already crossed the ocean on a steamboat I built for myself."

"That's a good one. I see you like telling tall tales."

"If you don't believe me, that's your business."

"Oh. Well, I beg your pardon. You're an inventor, are you? Traveling around the world making inventions? Wonderful. I like your spirit, young man. What do you say to inventing something for me?"

"All right, why not? What do you want?"

"What can you make?"

"I can make anything."

"Anything?"

"I can use steam power to make anything move on its own. Someday, I'll amaze the world with my inventions."

"Well, well. Then I'll use commerce to move the world."

Lloyd felt mixed emotions as he remembered his first meeting with Charles O'Hara St. Johns, the O'Hara Foundation's chairman. Was that truly how the man had wanted to influence the world?

He looked at his son. Eddie was deep in thought, staring at the spot where the steam ball had once been.

Simon approached Eddie.

"Well, what do we do, Doctor? The buyers will be arriving soon."

"So much for that scheme. Give it up, Eddie," said Lloyd, who sat where he had fallen when the bullet hit his leg.

Eddie ignored him. "All right. Restart the pressure feed," he ordered.

"What are you doing?"

"Just watch, Father."

Lloyd saw a glimmer of madness in his son's eyes. In Alaska, three years before, he had shared the exact same glimmer.

A British naval warship passed beneath the Tower Bridge. Meanwhile, a solemn procession made its way to Hyde Park, bearing Her Majesty the Queen in a horse-drawn carriage. Confetti fluttered above the bronze lions in Trafalgar Square. Even beggars in the back alleys laughed with delight at the sight of the colored paper. Opening day of the Exhibition had finally arrived.

Ray was watching the fireworks from the deck of the warship. David was beside him, peering through binoculars at the O'Hara pavilion.

"There they are, military leaders and advisors from around the world. Americans, Germans, French, Russians . . ." Through his binoculars David could see foreigners walking down a gangplank in single file. It was easy to guess who the military leaders were. One just had to think of the skirmishes going on in the world.

In Europe, the Austro-Prussian War was being waged over Germany. Four years later, Prussia would go on to fight France in the Franco-Prussian War. France, for its part, had fought Austria a few years before in Italy's war of independence. And now that the Crimean War was over, Russia was eyeing the Balkan peninsula and picking battles with Turkey.

Asia was in turmoil. The Arrow affair in China and the Sepoy Rebellion in India had left both countries politically unstable. In South America, Paraguay was warring with

Uruguay, Brazil, and Argentina to expand its borders. And in Japan, relations between the government and the feudal states of Satsuma and Chôshû were strained and volatile. Counting these smaller conflicts, the entire world seemed to be at war, and the demand for powerful weapons was ever increasing.

So, Granddad was right, thought Ray. The weapons he had seen in the storeroom were intended for sale to foreign armies. And they were going to be demonstrated here at the Exhibition.

Stephenson and the admiral entered the rear deck, where sailors saluted them and escorted them to Ray.

"Over there, sir."

"Ah, Ray! You're all right, then!"

"Mr. Stephenson . . ."

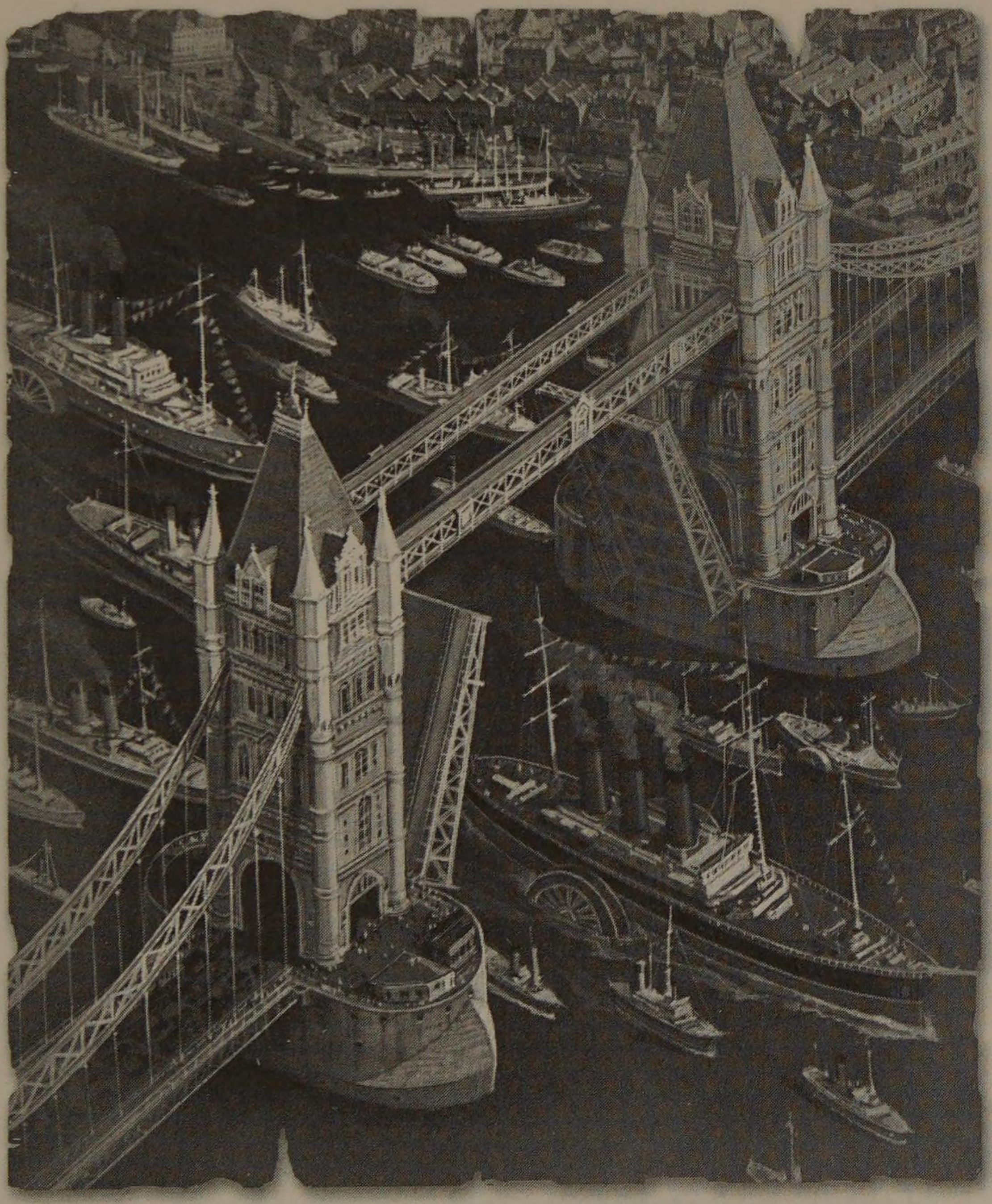
Ray stood up. He loosened his grip on the blanket, and it fell open, revealing the steam ball. Stephenson stared at it.

"Thank goodness. I was so worried. Oh, and you've got the steam ball as well."

"My grandfather's injured, and he's being held in the castle. They had him locked up."

"By 'castle,' he means the O'Hara pavilion," David explained. "The arms dealers you were expecting have just gone inside."

"I took the steam ball, so they can't finish the castle now. But there are still weapons of war in there, great gobs of 'em. So many new inventions you've never seen the like of, I swear. And they'll be used to wreck the Exhibition. If we don't hurry,



something awful will happen," Ray said.

"Are they new types of weapons? Is that it?" Stephenson asked.

"Self-propelled war wagons and zeppelins, and God knows what else they've hidden away in there," David said excitedly. He put a hand on the boy's shoulder. "So, Ray. We'll take care of the steam ball for you."

Ray looked down at the ball, then intently at Stephenson.

"Mr. Stephenson . . . "

"What is it, son?"

"What's the purpose of inventions—and of science itself?"

Stephenson straightened his body and looked up at the sky as he gathered his thoughts.

"Well, science . . . "

Ray held his breath.

"Science exists to make people happy. Got that, Ray?"

His father had said that science was power. His grandfather had talked about how it revealed principles. Stephenson's reply was different. Looking into the man's gentle eyes, Ray thought it sounded like the right answer.

"Here."

"I thank you," Stephenson said.

The instant the ball was in his hands, Stephenson turned and nodded to the admiral.

"Right! Prepare the assault! Arm the police as well. Tell them they have full authority to use their weapons. Quickly!" the admiral shouted.

Sailors leaped into action. From downriver, naval fighter

boats rumbled loudly as they approached the Exhibition.

What is happening? Ray thought, looking around.

"You see, Ray . . . " Stephenson began. "It is quite true that science exists to make people happy, but people can't benefit from science unless they are secure. The nation provides that security."

"Huh?"

Behind Stephenson, Ray saw a group of armed warships speeding toward Steam Castle.

"Take a look over here, Ray. Without a strong nation, there is no happiness."

"At last, they're taking action," David said.

"And we shall take action as well," Stephenson said, nodding at Ray to follow.

"What do you mean?"

"We've prepared a few things ourselves."

"Come, Ray."

Puzzled, Ray followed the two men.

Outside the O'Hara pavilion, Simon was slipping past champagne-bearing waiters to greet military leaders from around the world.

"Welcome, welcome! It's a pleasure and a privilege to welcome so many distinguished guests on the opening day of the Great London Exhibition. General! Admiral! Right this way. On behalf of the O'Hara Foundation, I sincerely thank you for taking the time—"

Simon saw police clambering over the riverbank and

snorted. Smiling broadly, he ushered his guests inside Steam Castle and closed the door. The police rushed for the door, but were a moment too late.

"Simon! Simon, where are you? Why were they shooting at Ray out there?" Scarlett's angry shouts echoed through the central engine room. The workers turned around, surprised by the intruder.

"You!" she said, grabbing the nearest worker. "Where's Simon? Stop cringing and speak up!"

"I saw him down in the main boiler room. That was a while ago though, Miss," the worker answered hesitantly.

Scarlett found a speech tube that connected to the rooms below.

"Simon, it's me. Come up here and explain yourself at once. I'm waiting!"

Just then, two security guards arrived carrying a frail old man.

"Step aside, gents, we're coming through! Step aside now!"

"Dr. Steam!" Scarlett said.

The workers gazed at the old man, struck by the sight of him being held captive with a bullet in his leg.

"Doctor! What are you doing back here?"

"Is that you, Miss Scarlett?"

"You're hurt. What happened?" Scarlett looked at him curiously.

The guards carried Lloyd to the end of the corridor.

"Around here okay?" asked one guard.

"Yes. Tie him up," replied the other.

They left the old man tied to a pipe, his hands behind his back.

Suddenly, the emergency alarm went off.

"Emergency pressure vent! Man your stations!"

The workers scattered, leaving Scarlett and Lloyd alone.

"What is it now? Where are they all going? Does this have something to do with Ray running away?"

"So, he got away, eh? Nicely done, Ray!" Lloyd said gleefully.

"Doctor, what happened to Ray?"

She doesn't know a thing, thought Lloyd, seeing her wide eyes.

Back when Lloyd had first been invited to America, the O'Hara Foundation was known as the St. Johns Company, an energetic one-man show run by Charles O'Hara St. Johns. The future chairman dreamed of improving the lives of Americans and would describe, in lively detail, his vision for the country. Lloyd had gone to work for Charles, because he shared those ideals.

When Lloyd returned to America after being in England for a time, the gentleman he knew had vanished. The company had since grown and was being run without him. Charles himself was older and seemed to have forgotten his ideals entirely. Now a stubborn, stingy old man, he only worried about the size of the fortune he could leave his granddaughter.

Scarlett was intended as window dressing for the Exhibition. Simon, the Foundation's president, was responsible for the company's dark dealings, which were most likely being

carried out without the chairman's knowledge. Lloyd was disappointed that his own son had been duped by Simon's schemes, but this girl offered a ray of hope.

Yes, he would tell the girl everything.

"The Foundation is abusing science, building pernicious weapons of war!"

"What?"

Good. She looked shocked.

"Ray found out. That's why he left."

"Really?" Scarlett said in a small voice.

"Now you know what this Foundation's up to."

Lloyd thought his words had made an impression on her by the look on her face.

"Now untie me," he said confidently, turning to show her his tied hands.

"What's wrong with that?" Scarlett demanded, glaring at him.

Lloyd stiffened, his hopes dashed.

"Every country has weapons. We make lots of money from them. And why shouldn't we? You did this, didn't you? You filled Ray's head with foolish ideas. He would never have taken the ball if you hadn't got him all mixed up!"

Lloyd gaped at her.

"Now, where is that Simon?"

She left the inventor and wandered off in search of him.

"Open up! Scotland Yard! We're here to inspect the exhibit!" shouted a platoon leader outside the pavilion's front entrance.

The door remained shut, and all was silent.

"All right!" he said, signaling to the police, who scurried to the door armed with axes and mallets. The door creaked open suddenly.

The men stepped back a few paces nervously. Hearing nothing, they entered cautiously.

Beyond the entrance, they caught sight of a human figure.

It wore a suit of iron, much like medieval armor. The figure puffed steam from its joints and shook slightly with a steady vibration, but otherwise it made no sign of moving. It looked more like a doll than a living person.

"What is it?" someone asked.

The platoon leader pushed some officers aside and peered ahead. Reassured that the figure didn't seem about to attack, he signaled to the officers in the rear to advance.

Police swarmed into the castle.

"All right! Start here on the ground floor!"

The officers had split up to search the building when they heard a noise.

The figure began to move.

"What's going on?" someone said.

The figure stood still, hissing steam from its joints.

Simon watched the scene from the second-floor gallery.

"Ah, excellent. Gentlemen, it appears we have a perfect

opportunity for our little demonstration," he announced brightly to the foreign dignitaries.

Stephenson and David took Ray down to the pier, which was downstream from the Exhibition Hall, on the opposite riverbank. They passed through a dark hallway, then crossed a bright courtyard, heading to a lot beyond it.

"Where are we going?" Ray asked.

Eventually, they arrived at an airy building with a tin roof.

"Right here," David said.

"Here? Where? Oh . . . " Ray was surprised to see the room filled with many machines.

"This is Mr. Stephenson's workshop. Your father and grandfather are not alone, you know. There are other inventors besides the O'Hara Foundation."

Ray saw an iron box mounted on caterpillars. It had an artillery turret and puffed steam from its exhaust pipe, as if about to move.

"This is our work. Take a look around."

"What's that?"

"A steam-powered battle-wagon. Our second prototype."

The ground rumbled as the battle-wagon began to move. It circled around them and came to a stop.

"It's quite good on level ground, but it can't climb hills. Not enough vigor, you see. However, with this ball to provide power, I'm certain—"

"David, there's no time for lectures. Let's hook it up, shall we?"

"Yes, at once."

On one side, the battle-wagon was equipped with a pressure dispenser that would hold the steam ball and feed the wagon with steam power from the ball. As David ran toward the dispenser, Stephenson gave commands to the other workers.

"Watch the regulator on the right-hand side. When it vents, attach the ball."

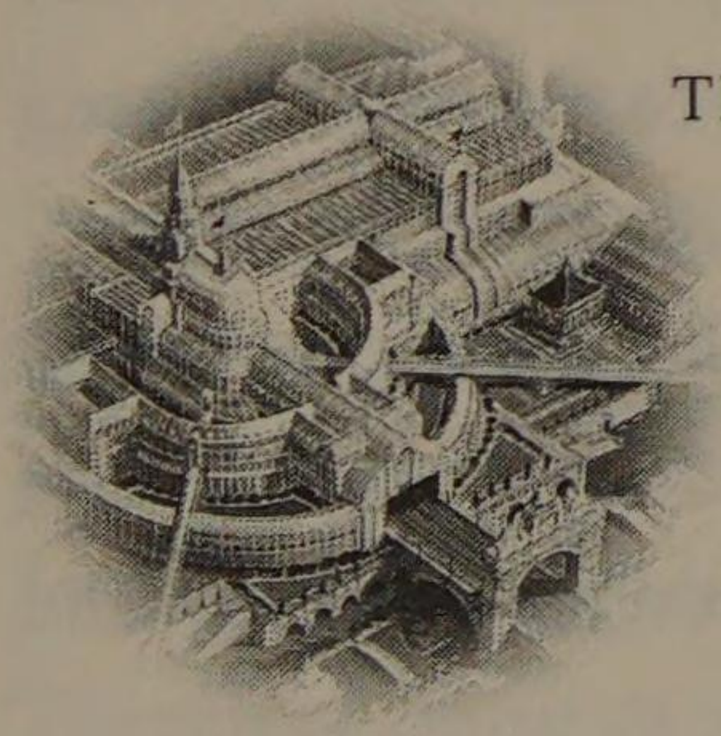
"Be quick about it!" David shouted.

Ray was no longer needed, now that the two men had the steam ball. He stood by, watching the busy preparations uneasily.

CHAPTER

6

The War Exhibition



THE CRYSTAL PALACE was a glass structure built on an iron framework, a new development in construction that represented not only the Exhibition, but the age as a whole.

First, consider the use of iron. The industrial revolution was truly the age of iron. Just as wrought iron was indispensable to the practical application of steam engines, so too were the iron materials used to construct the Crystal Palace.

Now, consider the use of glass. The palace's glass exterior directly reflected society's maturity and transformation into a consumer society. The Crystal Palace was, in other words, a heightened form of window display.

The world s first general department store, Le Bon Marché, opened in Paris in 1852. The store's founders, the Boucicauts, put careful thought into showing off its merchandise. Products were displayed in beautiful glass cases meant to draw the attention of consumers, a practice that was new at the time.

The same era saw the emergence of a new lifestyle that was epitomized by *flâneurs,* people who strolled the streets of Paris. The activity of strolling about town came to be appreciated as an activity in itself.

A similar thing was happening in London. Products needed to be displayed for capitalism to arouse consumer desire. The London Exhibition was essentially the same thing, but on a national scale.

And now, the Queen herself was about to give the opening speech at this monument to window shopping.

Ladies and gentlemen looked on as the royal procession made its way up the red-carpeted stairs. Finally, the Queen reached the podium. She gazed at the crowd graciously and began reading aloud in a high, clear voice.

"It is with the utmost pleasure and satisfaction that we declare this grand science exhibition now open. It is Great Britain's sincere wish that what transpires here may benefit science and the whole of mankind."

The crowd applauded, the band burst into a lively tune, and guards lifted their rifles into the air and fired ceremonial shots that echoed in the sky.

At that moment, the police were being chased from the O'Hara pavilion by steam soldiers.

"Fall back!" the platoon leader shouted, fleeing with the police in fear.

In the front gardens, the infantry lay waiting. Seeing the police running away, they aimed their firearms at the pavilion, but the steam soldiers fired first with a trench mortar that exploded among the police officers.

Men screamed.

Steam soldiers poured out of Steam Castle. Once outside, they grouped into formations and marched forward, setting off trench mortars as they walked and scattering the infantry as it tried to fight back.

The guests in the main hall hadn't noticed the commotion outside. After the Queen's opening speech, the Archbishop of Canterbury took the podium and gave a lengthy sermon.

"For all Britannia, I consecrate this glorious pavilion as a sacred site, a new cathedral. Here we lay the fruits of science at the feet of God Almighty and humbly seek His blessing, for so sayeth our Lord Jesus, 'The kingdom of God is at hand. Therefore, raise ye a church and await His coming.'"

A messenger ran toward the royal family, which was sitting behind the podium. He spoke a few words to the Gentleman at Arms, who relayed the news to the chamberlain.

The Queen and her family slipped out quietly. The archbishop droned on to the unsuspecting audience.

An explosion in the garden caught the eye of a man on the second floor, but he thought that fireworks were the cause. And so, far from raising a cry, he turned his attention back to the sermon.

The steam soldiers continued to fire, aiming at the sculptures in the garden and destroying them. Meanwhile, Simon was boasting to his guests on the second-floor terrace of Steam Castle.

"These are our newest models. We call them 'steam troopers.' As you can see, even a few can put a formidable enemy to flight. However, imagine a regiment or full battalion of steam troopers set loose upon the foe. Then you can calculate their full potential! Of course, the price is dear, but your victory is that much more assured."

Suddenly a door flung open, and Scarlett stepped onto the terrace.

"Simon!"

"Yes, Miss Scarlett?"

"Why were you shooting at Ray? You could've hurt him! It was his grandfather who talked him into taking the steam ball. Couldn't you figure that out? Speak up!"

"Perhaps now isn't the best time for this," Simon said.

Scarlett was a nuisance to him. He couldn't carry on business for the O'Hara Foundation without her, but the child also had no business sticking her nose into Foundation affairs. He usually gave her only vague answers, but he didn't think that would work now.

As he was pondering his dilemma, Scarlett noticed the uproar in the gardens.

"What's going on down there? Are we fighting someone?"

"It's just a little war with Great Britain."

"What are you saying?"

"Combined with a demonstration of O'Hara products."

"Simon!"

Scarlett scowled at the portly, middle-aged man.

"Ah, yes, Miss Scarlett, what is it?"

Scarlett, who would one day inherit the O'Hara Foundation, took a good, hard look at the activity around the Exhibition Hall and said curtly, "Make sure we win."

"Yes, Miss," said Simon respectfully, bowing to his young employer. Scarlett turned on her heels and walked back inside Steam Castle.

"Where are you going, Miss Scarlett?" Simon asked.

"I'm going to find Ray and clear things up."

Stephenson and the admiral were on the rear deck of a battleship headed for the Exhibition Hall, chatting while they enjoyed an elegant tea. Beyond the railing they could see the battle being waged in the distance.

"Indeed. They do have some ingenious ideas," the admiral remarked, watching the steam troopers. He could have been at the opera, commenting from the comfort of his box seat.

"And? How will you respond, dear boy?" Stephenson asked.

"I stand ready to give our answer, Admiral. What of Her Majesty?"

"She is safely out of the Exhibition Hall."

"Good, then it's time. Now we can engage them without restraint."

Tugboats on the river were pulling the steam battle-wagons from Stephenson's workshop. As Stephenson spoke, the wagons aimed their gun turrets toward the battlefield at the Exhibition Hall.

"Fire!"

The cannons fired at the admiral's command.

The steam trooper units that had overwhelmed the police and British infantry were stopped dead in their tracks by the string of explosions.

"What's that?" Simon asked. He scanned the river for the source of the attack.

By then, the tugboats had reached the riverbank on the Exhibition's side, and a convoy of steam battle-wagons had begun rolling ashore.

As if in response, Foundation tanks emerged from Steam Castle. Ray had seen them before in the castle's storeroom.

The British Navy fired.

The Foundation tanks were hit, but they were able to fire back.

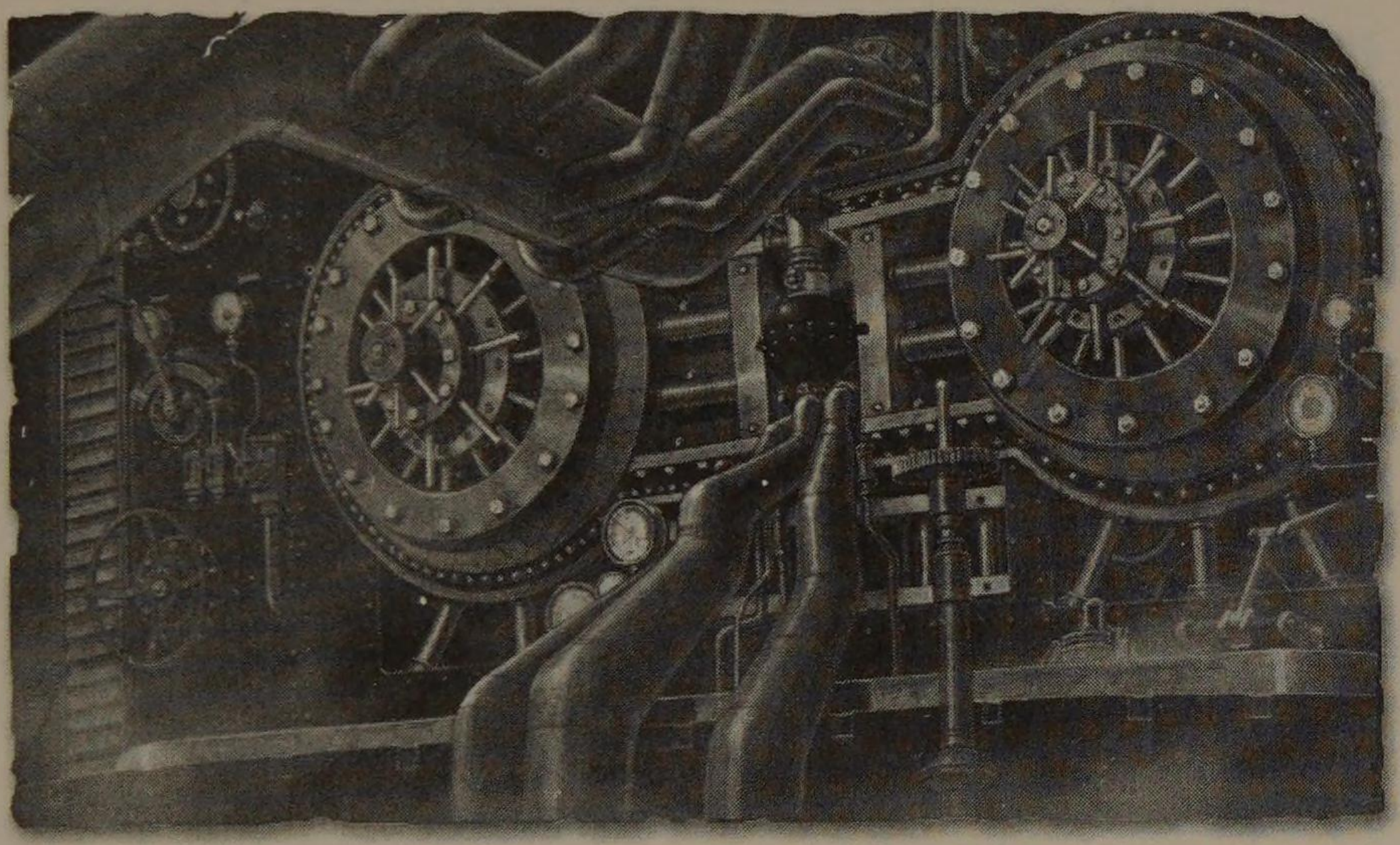
Both Foundation steam troopers and the British infantry were caught in the blasts and knocked to the ground.

The scene at the Exhibition Hall had become a bloodbath.

Simon lowered his binoculars and turned to Alfred, who had been standing in the back. "It has to be Stephenson. Alfred, muster the Aero Corps and send them out."

Then he addressed his guests with outstretched arms.

"Well, gentlemen, now things are getting interesting!"



Back at Stephenson's workshop, steam was pouring into the murderous weapons through the pressure dispenser that was attached to the steam ball. As each battle-wagon was filled, it rumbled toward the battlefield, ready to fight.

David checked the gauge on the pressure dispenser.

"Ray, can you see the gauges? It's splendid!" he shouted.

Ray watched in silence. When he had taken the steam ball from the castle, he hadn't planned on it being used like this.

"The gauge is still hitting maximum, even after releasing all that pressure! Just how much pressure does this ball have?"

David was like a child in his excitement. Ray stared coldly at his back.

Inside Steam Castle, the two remaining steam balls were being prepared to compensate for the missing steam ball.

"All right! She's holding steady!" the foreman shouted.

From the steam balls, the sound of an unstable rotation gradually settled into a rapid vibration. Surplus steam began to hiss from the exhaust pipe.

"It's not enough. Keep pushing, we can go higher yet!" Eddie said, watching the steam balls.

History was about to be made on the castle roof.

A corner of the roof flipped open and a winged bird-man emerged.

No record of his name was ever found. Wearing Edward Steam's combat flight suit, the man would become the first human in history to fly the skies wearing a powered machine.

Egged on by Alfred, the man had gone out onto the roof

where a gusty wind was blowing. He looked down. The steam troopers fighting on the battlefield looked like ants.

"No, I can't do this. It's impossible!" The man was almost in tears.

"You coward. You are not turning back now!" Alfred ordered. "All of your training has been for this moment. You know what to do, now do it. Go!"

As it happens, his training had consisted only of bungee jumping to get him accustomed to heights and indoor gliding above a safety net. The man had never actually flown before.

He hesitated, so Alfred gave him a flying kick.

The man cried out and began to run. His momentum carried him to the edge of the roof, from where he kicked off into the air.

The earth rushed toward him.

I'm going to die! he thought.

An image flashed through his mind of the wife and children he had left behind in America. But then by moving a lever, he managed to right himself. His body began to lift, and he flew up into the sky.

A guard on the ground noticed an odd shadow on the ground and looked up.

"I'm . . . I'm flying!"

The trooper must have felt a surge of excitement. That feeling couldn't have lasted long, though, because he was headed straight for the Crystal Palace. The glass walls of the pavilion caught his reflection.

The guests in the second-floor gallery, still unaware of the

fighting going on outside, broke into applause when they saw the flying figure.

"Magnificent!"

"A victory for science!"

They gave cries of delight, believing this to be part of the Exhibition. But their cries quickly turned to screams when the trooper collided with the pavilion and smashed through the glass.

Shards of glass rained on the guests. The trooper lost his balance and plummeted toward the crowd. He landed on top of a display booth, raising a cloud of dust.

The guests looked on from a safe distance. A bomb rolled from the trooper's hand, dropping onto a booth one storey below.

Click . . . boom!

The display exploded.

The explosion engulfed the people nearby and caused a panic.

"It's a war! A real war!"

The crowd clamored for the exit, finally realizing what was going on.

The Exhibition Hall may have displayed the power and progress of the industrial revolution, but the exhibits on display could hardly have been what the planners intended. Combat units, battle-wagons, and now an air battle.

This truly was a war exhibition.

David was still in Stephenson's workshop, supplying pressure to his equipment, when he heard a worker report on the battle.

"What? A flying army?" he asked.

"That's what I said. The sky's full of them all round the Exhibition!" the worker replied.

"You're mad. Must be large birds or some such thing."

David leaped from his station and followed the worker outside. Ray began to follow, but then glanced behind him. The steam ball was still attached to the pressure dispenser. Glancing anxiously in David's direction, Ray sneaked toward the ball.

David walked out of the warehouse and looked up at the sky. All the workers also came out to watch the spectacle.

"Blimey!"

"There! Look there!" the men shouted.

David looked toward the Exhibition Hall and could hardly believe his eyes. There, indeed, was a flying army—an army of winged humans.

"Sky soldiers. What an idea!" he said, stunned.

Meanwhile, Ray was staring at the steam ball.

For what purpose had his grandfather invented this?

Ray thought about Stephenson's answer. He had said that science existed to make people happy. But was this making people happy?

Ray thought some more and came to a decision.

He climbed onto the pressure dispenser and began turning the handle to disconnect the ball.

A red parasol twirled round and round, while on either side soldiers from both forces fell one after another.

Simon remained oblivious on the second-floor terrace, where he continued his sales pitch.

"If you look overhead, you'll see the quintessence of progress! We call it the 'Aero Corps.' Fully patented, of course. They can support your infantry and survey the battlefield from a safe—"

A stray bullet whizzed past him.

"Perhaps that's enough from this vantage point. It's getting a bit nasty. Why don't we repair to the upper viewing deck for comfort?"

Simon glanced back at the battlefield below. This time the twirling red parasol caught his eye.

"What? Miss Scarlett!"

Indeed it was Scarlett, who had changed from her skirt into bloomers for walking. She was strolling leisurely through the Exhibition grounds, heedless of the flying bullets and troopers.

"Now what is she doing?"

If anything happened to Scarlett, the enraged chairman would dismiss him. In fact, he would be lucky if he were merely fired.

"Someone! Someone go get her!" Simon shouted, mopping sweat from his brow.

Scarlett was headed for the Crystal Palace.

"I've got to clear up Ray's misunderstanding. The Foundation hasn't done anything wrong. I'm going to complain about this to the Queen."

A cannonball fired from a battle-wagon flew by. It almost grazed Scarlett's head, and the rush of air turned her parasol inside out. Soon after, a bomb exploded just behind her.

Scarlett screamed.

A new formation of steam soldiers appeared through the flames and began to fire back. A steam trooper beside Scarlett fired a trench mortar. The thunderous blast rang in her ears.

"J-Just a darn minute! I happen to be going to see the Queen. I'm going to fetch Ray back! Stop it!"

The steam troopers didn't hear her. A cannonball landed on the Crystal Palace, shattering the windows in all directions.

"Oh . . ."

Scarlett saw in the glass an image of herself with Ray the night they sneaked into the Crystal Palace. They were holding hands as if to dance. The reflection of that memory then crashed into pieces.

"It's horrid," she said angrily. She bit her lip and turned back. "Simon!"

There was a thud. A steam trooper landed beside her, thrown her way by the last explosion.

Scarlett gave another scream.

A part broke off the trooper and rolled by her feet. She looked timidly at the trooper. The mask had fallen off his face, revealing the bloody face of a Foundation employee.

Scarlett was horrified.

"What? There's a man inside this thing!"

She watched the other steam troopers marching steadily toward the enemy. So, there were living human beings inside each of them. That shouldn't have been so surprising to her, but she had to see the disastrous scene with her own eyes before she really understood what was going on.

"Simon! Stop it this instant!"

Scarlett turned and ran back to the castle.

Inside Stephenson's workshop, Ray was struggling with all his might to remove the steam ball from the dispenser. He was having trouble turning the handle that would cut off the steam supply.

David returned just then, flushed with excitement.

"To get that much lift with that much mass, it's nothing short of miraculous. That requires more than just steam. It's about uncovering the first principles of flight. Even when I studied the blueprints, I didn't fully under—"

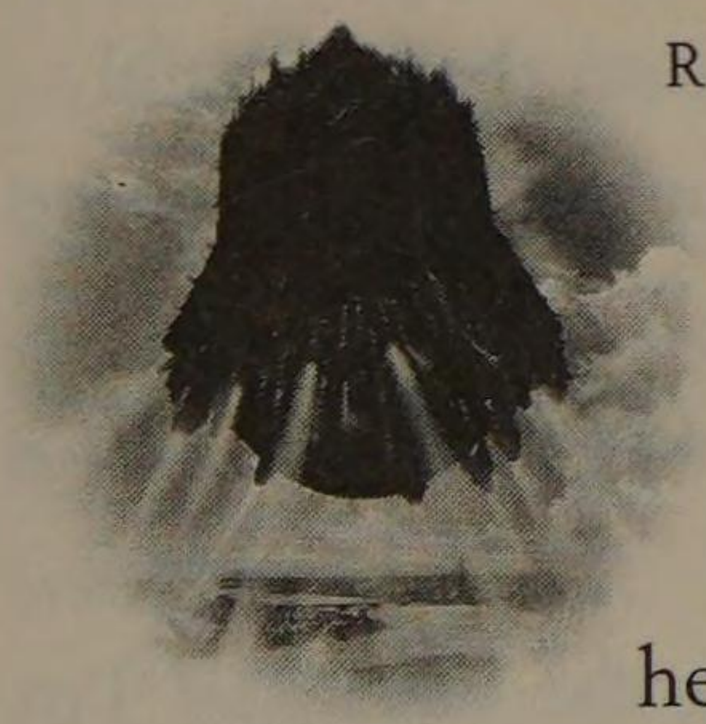
David stopped in his tracks. His expression changed when he saw Ray pushing the handle of the pressure dispenser.

"What are you doing there?" he growled in a low voice.

CHAPTER

7

Steam Castle



RAY GLANCED BACK when he heard David's voice.

"Taking the ball back," he answered. He kept pushing the handle and managed finally to cut off the steam supply. Then he lowered the lever to disconnect the ball from the machine.

David laughed.

"And why in the world would you do that, Ray?"

"You just wanted Granddad's blueprints. You've been studying them."

"Of course. They were scattered all over the railroad tracks. I got quite muddy slogging through the heath, but I found every last one."

"I bet my granddad never wrote you to come to Manchester. You've been playing me for a bloody fool."

Ray was right. These were the men who had approached his grandfather. They had learned from a British intelligence report that Lloyd had left the Foundation and taken the steam ball with him. These men wanted the invention and its creator on their side, so they had arranged to meet Lloyd in Manchester using a cleverly worded letter.

Lloyd himself needed help in stopping the Foundation's diabolical plans, but he had never intended to reveal the basic principles of the steam ball to Stephenson. If the Foundation hadn't interfered, Lloyd would have demonstrated the steam ball to Stephenson at his workshop in Manchester. He would also have asked Stephenson if his company would build the necessary equipment to remove pressure from the ball safely.

"We've been watching the O'Hara Foundation for some time. And your family, too."

The steam ball detached from the apparatus, letting out a whoosh of steam.

"Stop it right now! I can't let you have the ball, Ray. I'm sure you understand that."

The steam finally cleared. David saw Ray holding the ball, glaring at him.

"My grandfather invented this. And he doesn't want it to be used like this!"

David realized it was useless trying to reason with Ray and tackled the boy.

"Give it to me!"

David punched Ray's arm as he tried to seize the ball. Ray fell to the ground, and the ball rolled away.

"Oh!" Ray cried out.

David scooped up the ball.

"I didn't enjoy that, Ray. I'm sorry, but the Exhibition has become a battlefield. If we're defeated, Robert will be blamed. They'll shut down our workshop, and the technology of this nation will fall behind. Do you understand?"

"I don't care!"

"Listen, Ray. So long as the British Empire has this ball, it will truly be without rival. Not even the most barbarous nation will have the will to oppose us. Indeed, it will be peace through strength. We will achieve world peace through Britain's superior standing. Understand?"

"I don't get your reasoning at all!" Ray shouted, getting back to his feet.

Just then an aero trooper passed by the window. Ray heard him first, then saw the man circle and crash through a window.

"What was that?" David asked. He didn't have time to think before an aero trooper landed at the back of the warehouse. Suddenly, there was an explosion. The blast sent David flying.

Ray was caught in the blast, too, slammed backward into a steam wagon. Luckily, he escaped with fewer injuries than David.

"Ray . . . the steam . . . ball . . . "

Ray tried to drag David to safety.

"Hey! David's hurt! Can you get him outside?" he called to the workers.

"Fire! Someone get a fire extinguisher!"

"Carry the injured out first! Hurry!"

Some workers ran over to Ray and carried David outside. Ray was left alone with the ball.

Outside the O'Hara pavilion, a fierce battle was still being waged. Suddenly, a new fighting unit appeared from the depths of the Thames. The soldiers had crustacean-like steel bodies shaped like inverted triangles, and were equipped with two manipulator arms.

"And, now, to complement our Aero Corps, we bring you our Aqua Corps! With our three weapons groups at your disposal, you'll control land, air, and sea!"

As Simon spoke, his guests were busily dodging stray bullets that whizzed toward the second-floor terrace.

"If you purchase all three together, there's a 25 percent discount! And as a special incentive, we'll include a free, ninety-day voyage around the world!"

That last incentive was unplanned. Flustered, Simon had just thrown it in.

The Aero Corps reached the stairs cut into the riverbank but ran into problems. Because of their heavy helmets, they couldn't look down. Not only that, their leg joints were stiff, and they stumbled and fell to their knees. The lead fighter hit his head on the edge of the stairs and slid clumsily into the river.

"Oh, dear," Simon said.

Ray stood watching from Stephenson's workshop as a steady stream of battleships set out toward the Exhibition.

Over Steam Castle, the sky was alive with fireworks, or rather, steam trails from the aero troopers and explosive attacks from the battle-wagons.

Now, I have to get Granddad out of there, thought Ray. But he didn't have a plan.

"Come on, think, Ray! There must be a way!"

Think, Ray.

Those had been his father's words. If you thought things through, you were sure to make a breakthrough. Ray's father seldom spoke to his son, but he had taught Ray this one lesson.

Ray then noticed an aero trooper who had fallen to the ground after crashing into a wall. His gear's wings were broken and some of the interior parts were exposed.

That's the one that flew by us and crashed, Ray realized, walking up to it carefully. He had an idea.

"All right. I can use this."

He gave a firm nod.

Lloyd was on the second floor of the engine room, tied to a pipe that ran the length of the corridor. A clanking noise approached him, mechanical footsteps that turned out to be Eddie's.

"Sorry we dressed your leg so quickly, but the wound isn't bad. Everyone is occupied at the moment you see," Eddie said.

"You need all three steam balls! Two won't be enough. The strain is much too great!"

"I had to do it."

"What are you saying?"

"I wanted you to see Steam Castle. You, above all others, will appreciate it when it is complete."

"Complete?"

"These Foundation people can only see its value in a limited way. They don't really understand it as a scientific achievement."

Lloyd stared at Eddie.

"And they have no idea of the stark terror it will visit on the next century."

His son did not look mad, which made Lloyd feel all the more afraid of what Eddie had said.

"Aren't you forgetting someone in all this?" Lloyd asked.

Eddie smiled.

"Of course I wanted Ray to be here for this as well. However—"

A worker interrupted him.

"Sir, the pressure's decreasing in Areas 12 and 15!"

"Areas 12 and 15? All right, close the valves in those areas. As soon as they're shut, prepare to launch!"

"Launch?" the worker said, flabbergasted.

Workers on the floor below heard him and began to panic.

"Launch?"

"Dear God!"

"Hurry, let's go!"

The mood in the room changed in an instant.

"Stop it, Eddie! Two steam balls aren't enough!"

"From risk comes progress. You're the one who told me that, Father."

"But . . ."

Lloyd was at a loss for words. To think that the words he had uttered three years ago could be thrown back at him now.

"I shall be in the control room. Notify me when you reach the final stage," Eddie said and headed for the elevator.

"Eddie, don't do this! Listen to me!"

All of a sudden, the entire castle shook. Steam hissed out from everywhere.

"What? What was that?"

The battleships on the Thames had begun their attack.

Stephenson and the admiral watched the war from the deck of the admiral's ship. The bombardment from the warships was overwhelming. Clearly, it was only a matter of time before they would gain control of the castle.

"This will do it. They won't resist long."

"I pray you are correct, Admiral."

Stephenson understood the implications of this battle better than the admiral: the victor would reign over the next century.

The British Empire was the greatest in the world, while America was still a developing nation. World supremacy was at stake in this war, and the whole world was watching. Britain had no choice but to use overwhelming firepower and win

a decisive victory. But would the Steam scientists keep the secret of steam power to themselves?

Stephenson felt a sudden tightening in his chest. He furrowed his brow and watched the castle on the opposite shore.

Ray was building a flying machine, hurriedly assembling the machine parts when the cannons rang. Even in the workshop, he could hear the fleet begin attacking Steam Castle.

"The pipes' diameters match up, but will they hold?"

His mind was racing. He was completely absorbed as he examined the machine, just like an inventor.

Eddie took the elevator to the observation room and climbed the steps to the organ-like control board. He sat down and started fiddling with the switches on the console. The enormous lens of the control board's telescope magnified his face.

Gears began to grind. Huge rings that encircled the telescope rose up around him, moving various lenses. Eddie fiddled with the controls some more, and the rings rotated and positioned two lenses in front of his face.

Through the telescope, he could see the fighting outside the Exhibition Hall. He brought the image into focus by adjusting the distance between the two lenses.

"Let's get the image right side up, shall we?" he murmured, correcting the image with another lens.

"That's it."

He set the controls so that he could see in the direction of the Thames. The Royal Navy came into view.

"As I thought. That blast was from the Royal Navy. Robert must be down there."

He zoomed in on the warship just as its main battery fired.

Eddie jumped up in alarm.

The cannonball hit a corner of the roof and shook the castle.

Eddie mopped his brow, sat down again, and shouted into one of the speech tubes.

"Attention, boiler room. Do you hear me? Launch now!"

The voice of a flustered worker came back. "What? But, sir! We don't have enough pressure built up. It won't work!"

"If we don't do it now, it'll be too late! We can't sustain this. Merge pressure from Areas 10, 30, and 40, then activate!"

Eddie flipped a series of switches one by one.

Steam billowed out from Steam Castle and gears turned.

"Now, let the world see my invention unleashed!" he bellowed.

He rolled up his right sleeve, exposing his iron-plated arm. A little door in the metal popped open, from which gears emerged.

A gearbox opened on the right side of the operator's seat. Eddie placed his arm inside, and the gears interlocked with a clack.

"Launch!" he ordered.

The gears inside the castle sparked as they rotated.

The steam balls rumbled loudly.

Pressure built up in the pipes, causing them to swell.

Steam gushed from every joint. The enormous flywheel spun quickly, and steam output reached its peak.

Eddie had spoken to Ray about his marvelous invention, Steam Castle. Now its true form was about to be revealed.

It was no longer possible to tell whether the castle was shaking from the cannonballs or from the steam blowing inside. Small pieces of rubble began falling from the ceiling, making the foreign dignitaries uneasy.

"Calm yourselves, gentlemen," Simon said, wiping away his sweat. "This is all part of the demonstration. We're perfectly safe. That's right, just keep walking straight ahead. This tunnel leads to the observation deck."

He swore under his breath. *That blasted Edward Steam has no idea what I have to go through. Everything had better turn out all right.* Even Simon was showing his discomfort now. He kept shooting annoyed looks toward the control room.

Meanwhile, Lloyd sat helplessly by. Then he noticed the castle transforming.

"The bloody fool! God help us all, it's starting."

Scarlett was riding the elevator up to the observation room. When she reached it she called out, "Simon! Simon! Are you in here? If you're here, answer me!"

Then she saw a strange sight.

Edward Steam was sitting at the control board in the center of the room. He was attached to the machinery around him, as

if his body had merged with the entire castle.

"Oh, Dr. Steam, look at you! Your hand's in there. Simon, this is horrid! Dr. Steam needs help!"

"There's no need to worry, Miss Scarlett, I'm all right. This is my method for piloting Steam Castle. I become a part of it," Eddie said calmly.

The admiral watched white smoke pour from the O'Hara pavilion as his fleet attacked it.

"What a flimsy structure. Two or three cannonballs, and look what state it's in," he laughed.

"Wait. What's that?" Stephenson looked through his binoculars.

On closer look, the white smoke was not the result of explosions. It was steam. The entire castle was sending out clouds of steam.

Stephenson stared. His face grew pale.

The white outer wall of the castle began to crumble away, exposing a black iron wall behind it.

A steel cog broke through the castle's green roof.

Until now, the pavilion had resembled a medieval castle, fitting in well with the design of the rest of the Exhibition. Now, before everyone's eyes, it was changing into a black mechanical monster.

"What? Don't tell me that . . . " Stephenson's voice trailed off.

"What do you mean, 'pilot' a castle? Castles don't go anywhere," Scarlett said.

Then she heard a voice through a speech tube. It was a worker who had been watching the gauges in the boiler room.

"Pressure's up to 92 percent! We're going forward. Launch!"

As he heard these words, Eddie began pounding on the keyboard of the console as if playing music. The gears in his right arm turned furiously, relaying his commands to the other parts of the castle.

All at once, the needles on the gauges flew into the red zone.

"Observe. This is Steam Castle!" he said.

Stephenson saw the castle shoot out violent jets of steam and lift its black iron hulk off the ground.

The riverbank beneath it cracked, causing water from the Thames to surge out.

The warship began to creak and tilt. Stephenson and the admiral were tossed about on the swaying deck.

The iron castle kept slowly rising, spewing vast quantities of steam from giant ducts. A group of children watched the spectacle from London Bridge. When the enormous castle finally lifted off the ground and floated into the sky, they all began shouting at once.

"By our lady of Waltzingham!"

"What is it?"

"Is it part of the Exhibition?"

Steam troopers in mid-battle turned to look.

The police troops gaped.

The panicked Exhibition guests paused to look as they fled.

All of the carriages in the main streets stopped. Passengers and coach drivers alike watched the scene unfold. Young punks loitering in the street, beggars rifling through garbage in the alleyways, prostitutes, postal carriers, washerwomen, aristocrats, and soldiers—all of London witnessed this astonishing event.

"So that's Steam Castle!" Stephenson marveled.

He thought back to his youth and the first time he had met the Steams.

It was in Stockton, in 1825, at the inaugural celebration of the world's first rail line. A young man with a child had rudely accosted the great George Stephenson.

The elder Stephenson had asked, "And what would you move with steam power?"

"Well," the young Lloyd began. "I would move anything, even a castle. In fact, I'd make it fly in the sky."

A castle. Lloyd was thinking of his patron, Lord Randolph, and that crazy castle of his filled with automated machines.

Later, Lloyd had no memory of this conversation. It was Eddie, who was only four at the time, who remembered hearing all this by his father's side.

How much thought Edward Steam gave to this memory no one knows. However, when Lloyd designed a pavilion that would serve an amusement park, his son was the one who had

redesigned it as a flying castle and made it possible.

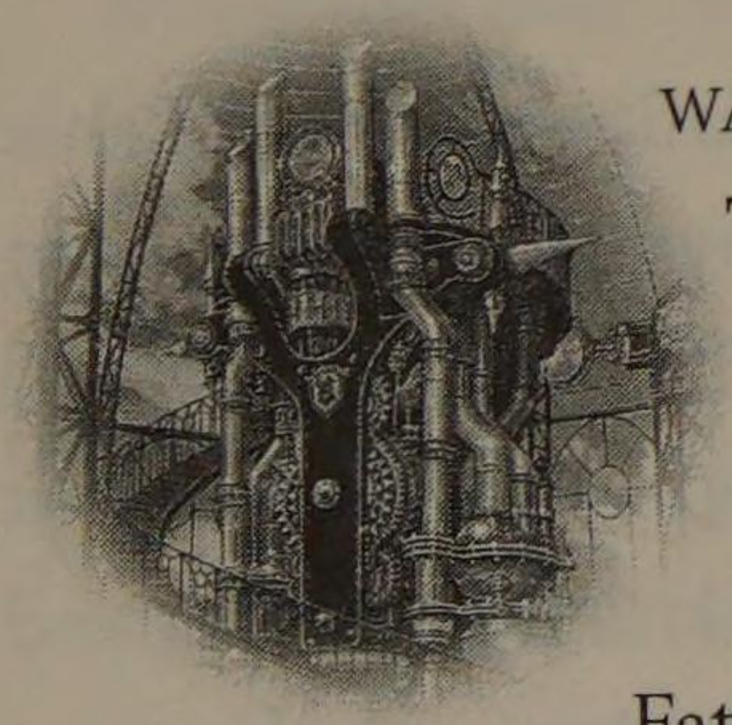
Robert Stephenson had followed in his father's footsteps and worked for Great Britain's progress. Likewise, Eddie had realized his father's dreams. Perhaps it was fate that these father and son teams would become fierce rivals.

Stephenson looked up at the flying castle. For some reason, he thought of his father.

CHAPTER

8

The Birth of Steamboy



WAVES RIPPLED on the surface of the Thames. Through the shimmering heat, Ray looked up at Steam Castle's monumental form on the opposite bank.

"It won't work! It's going to explode! Father, no!" he cried.

"Splendid!" David shouted. "A truly magnificent spectacle."

Ray turned and saw David walking toward him with a cane.

"From this day, the world will bow down before science!"

"What are you going on about? That thing's unstable. It could explode over London! We've got to warn everyone!"

"Forget about them! We've still got one steam ball here."

"Stephenson had his chance. I'll not give it to him again."

"Of course not. The rise of Steam Castle is Stevenson's end. He'll be dishonored now and shunned. However, I shall not fall with him."

"Eh?"

"You and I, Ray. We'll build a workshop together. What do you say to that?"

"A workshop?" Ray didn't understand.

"Just so. This is like a proclamation telling the world of a new kind of power. Money will seek us out. Investors from America or perhaps France, and the British royal family. Yes, even they will join the frenzy to buy stock in our company. And besides, oh, why didn't I realize this before?"

David paused, staring at Ray.

"It's true enough that the steam ball is a remarkable invention, but we have one of the Steam family geniuses right here with us."

Ray stared right back. David had not let all the excitement go to his head. He had coolly assessed the situation and determined that it was to his advantage to invite Ray to join him. Realizing this, Ray grew angry.

"A boy who can understand an intricate flying machine at a glance. And repair it. And improve upon it! That is splendid, Ray."

David pointed at the machine Ray was building. It was a compact, one-person flying machine shaped like a saucer. Five steam jet pipes were attached to the base of a bucket-sized cylinder. Around the cylinder was a ring of iron pipe and a grip

that controlled the direction of flight. As soon as Ray had seen the aero trooper's steam jets, he had thought of this design and attached the steam ball to the middle.

"My father and grandfather are inside, along with lots of other people from the Foundation. They're in danger and I'm going to warn them. Now get out of my way."

Ray was furious.

"And if I say no, Ray?" David asked.

"I've no time to argue!" Ray turned back to the flying machine.

"Too bad. I don't enjoy doing this, but I'm not about to lose you or the steam ball."

David brought down his cane, aiming not for Ray, but the flying machine. The impact of the cane forced steam to erupt from the flying machine.

"Stop it!" Ray jumped on David.

The steam ball then gave off a powerful burst of steam. As the two wrestled, the jets swung around, hitting David squarely in the face with steam.

He screamed and tumbled to the ground.

Once the steam had left the ball, the difference in pressure had a magical cooling effect. Half of David's face was covered in frost and his glasses had fogged up.

"Serves you right!" Ray said.

The flying machine shook as steam continued to pour from it. There was so much steam that Ray had trouble approaching it.

What can I use to stop the flow?

He looked around him and saw the aero trooper's protective suit.

The battleship continued bombarding Steam Castle as it rose into the sky.

Suddenly, a blast threw Scarlett up against a handrail, and she let out a scream.

The military advisors saw what was happening from the windows of the observation deck below her. They crowded around Simon.

"What is the meaning of this? Are you trying to kill us, too?"

"Get us out of here, at once!"

"No need to worry. We guarantee that you are absolutely safe. Our escape system is scientifically designed. Steam Castle was built with a foolproof—" Simon said.

"Stop stalling and show us the escape system now!"

"Just follow me," Simon muttered, leading them higher into the castle.

"Why are those people shooting at us like that? They're horrid!" Scarlett said.

"It's too late to prepare a counterattack. I'll reverse course."

As Eddie's hands played the control board, steam rose from the corresponding pipes.

The castle veered toward the Thames.

The British naval ship, the *Andante*, fired at the approaching castle. But something happened as Steam Castle headed for the riverbank, all the while emitting jets of steam.

Fiercely cold air coursed over the area beneath the castle, forming giant pillars of ice instantly on the river.

The *Andante* crashed into one of the ice pillars. Its prow rode up onto the ice and froze there, stranding it like an enormous sculpture in the middle of the Thames.

"What the devil? The whole bloody river is frozen!" the admiral shouted to Stephenson.

"If you compress gas at ultra-high pressures, then allow it to regain its original volume, it draws heat from its surroundings so that everything freezes," Stephenson explained calmly.

When pressurized gas expands, and no heat is added or taken away, the temperature of the gas decreases in proportion to the increase in volume. This results in heat being removed from the gas's surroundings, a phenomenon called "adiabatic expansion." The same principles are at work when air that is heated by the earth's surface rises to the sky and forms clouds. When steam burst from the steam ball, the sudden change in the gas's volume was so great that it caused this unexpected reaction.

"That could easily be transformed into a weapon," Stephenson said. Fascinated as he was by the spectacle of Steam Castle, he was ever the inventor, turning ideas over in his mind. But he was quickly forced to break off his thoughts.

As Steam Castle moved, the giant ice pillars began to spread with a loud creaking noise. It wasn't long before the ice

had stretched as far as the admiral's ship.

"Run!" someone shouted.

The ship's crew ran frantically down the gangway and fled across the riverbank.

Ray put on the protective suit and walked slowly toward the flying machine, which was shuddering and giving off clouds of steam. The thick layer of leather shielded Ray from the steam enough that he was able to shut off the valve with a wrench.

"Now, if I can just regulate the pressure and direct it."

Behind him, Steam Castle was steadily approaching.

"Oh, it's coming this way."

David looked up from where he lay.

It was an incredible sight. As the castle floated through the air, the steam pouring from beneath it froze everything it touched. The castle appeared to glide effortlessly. *If this continues,* Ray thought, *all of London will soon be a world of ice.*

"I'd better hurry."

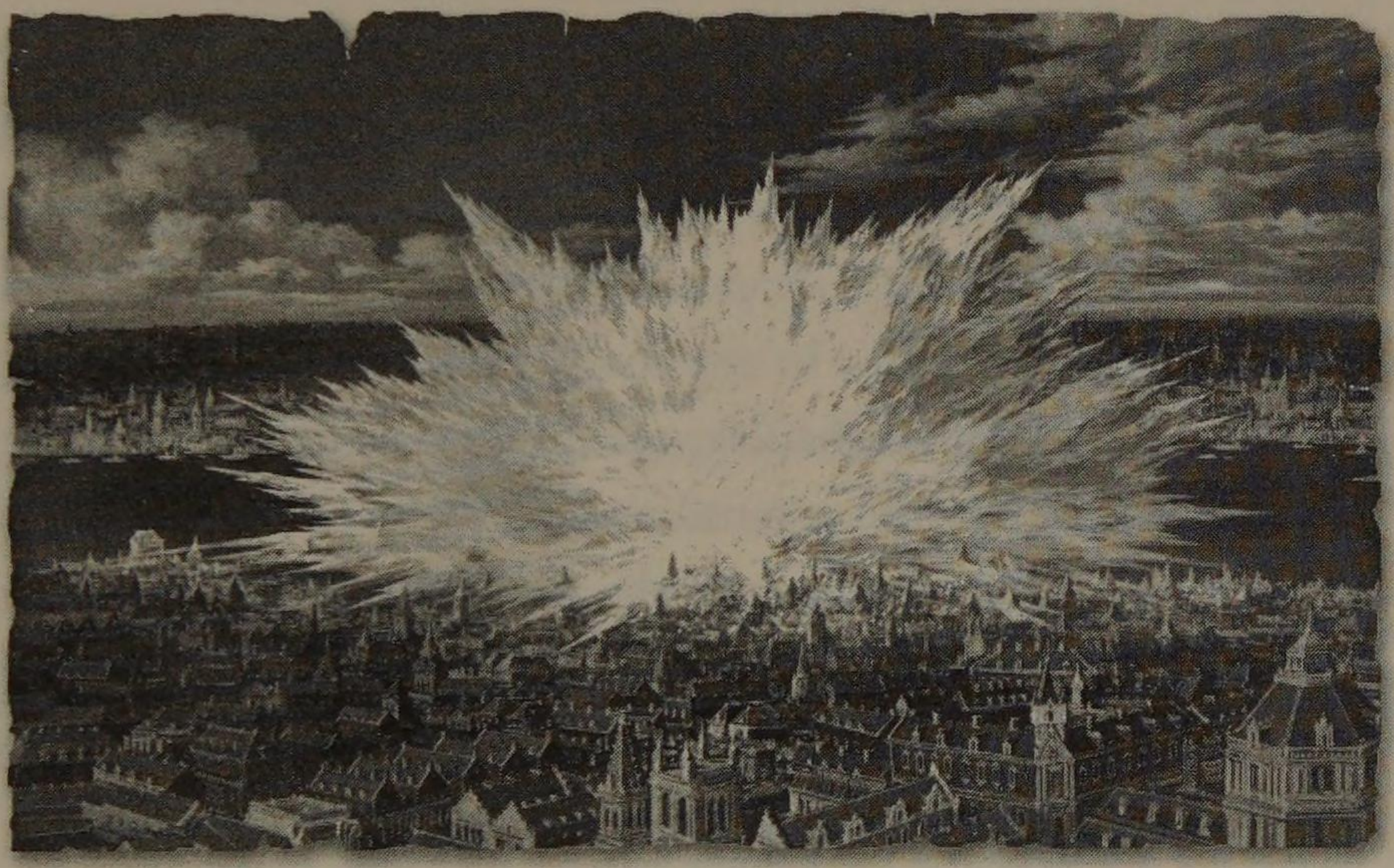
Ray climbed onto the flying machine and let out some steam. It gushed toward the ground, and the flying machine rose into the air.

"Now I've got it under control!"

Ray put on the aero trooper's goggles and adjusted the grip to increase the flow of steam.

But the machine went flying sideways, grazing David.

Ray managed to change direction inches before smashing into one of the workshop's walls. He righted himself and



floated straight up, leaving behind a long steam trail.

Ray cried out as he looked down at the ground.

The streets of London sprawled below him. The city looked even smaller than when he had seen it from the top of Steam Castle. People and carriages were no bigger than black specks.

"I'm flying!"

At first he had difficulty controlling the machine. He plummeted toward the ground and nearly crashed, but then he reversed the steam flow at the last minute and regained control. With several loud bursts of steam from the jets, he climbed into the sky once more.

"All right, I've got it now."

Ray's excitement grew as he looked down at London.

At his feet were St. John's Cathedral, London Bridge, and Trafalgar Square. Beyond them, he could see the Houses of Parliament and even Buckingham Palace.

Suddenly, he realized with a start that Steam Castle was right beside him. Ray swooped around it.

"Ray!"

Scarlett was in the castle's control room when something strange flew by and startled her.

"It is. It must be him! Who else would rig up a whatever-that-thing-is and fly it around?"

While she scanned the skies for the flying object, Simon and the dignitaries appeared from behind her.

"Ah, Miss Scarlett. I'm so relieved to see you. You had me

quite worried, you know!"

"Simon!"

"Now, this is the control room, the heart of Steam Castle. It can maneuver your troops over a battlefield, then land, creating an instant fortress right before the enemy's eyes. The psychological impact and destructive military power allow you to obtain the maximum fruits of war at minimal cost."

The dignitaries were no longer listening.

"Drop the sales pitch and get us out of here now!"

"Ah, but I still haven't demonstrated everything," Simon said, retreating a few steps from his guests. Noticing the speech tubes, he yelled into one of them.

"Jason, bring it out! I want to show it to everyone. Hurry!"

"Simon! That's enough. We can make money later. People are getting hurt out there. Some of them work for us, you know! Are you trying to get us massacred?" Scarlett yelled.

"Rest assured that—" Simon began.

"And those lovely pavilions are being smashed all to pieces. It's horrid!"

As Ray flew, he searched for a way into the castle. He was about to fly around the back when police troops opened fire.

"Over there! Fire!" they shouted.

"Crikey!" Ray had no choice but to flee from the machine guns. As he circled back he discovered a landing strip.

If I can only get there! He eyed his target, cut off the steam, and glided downward. Just before touching down, he reversed the jets for a smooth landing.

He was looking around for the entrance when a hidden cog began to turn, raising a door in front of him.

A heavy-set man with a remarkably large flying machine strapped to his back stood in the doorway.

"You won't get away, brat! Not this time!" Jason said.

On Simon's order he had been standing by, ready to take off.

"Oh!" Ray said, hurriedly working the controls of his flying machine. He took off into the sky once more.

Jason swooped after him with ease.

They zoomed past each other again and again, dog-fighting in the sky.

Steam Castle destroyed one of the Thames River bridges as it tried to navigate downstream. Stephenson gave the order from the pier opposite.

"Fire!"

Several harpoons launched toward Steam Castle and hooked themselves into the castle's underside, their chains splashing loudly into the river.

"Now pull!"

The ends of the chains were fastened to a group of steam locomotives parked far from the river.

"Pull!" said the messenger, who relayed Stephenson's command.

Workers opened the furnace of each car and loaded coal by the shovelful. The center of the furnaces burned red.

Then the locomotives all started at once and pulled the chains taut.

"What's that?"

Up in the castle's control room, Eddie groaned as if a harpoon had pierced his own body.

Lloyd felt the castle suddenly sway in the central machine room.

What's going on? he wondered. Something exploded behind him, and his arms came loose.

"I'm free!" he said. He stood and looked up in the direction of the control room.

At that moment, Edward was glowering at the steam locomotives.

"Trying to drag me down again, are you, Robert? Well, let's see you do it now, if you dare!" Eddie shouted. "Increase the pressure!"

"Doctor, it's too dangerous! Please stop!" came a worker's voice through one of the speech tubes.

"Don't be a fool! We can't stop now! Bring up the pressure!"

The workers heard the order and shrank in fear. One man, then another, abandoned his station until there wasn't a single employee left.

Ray and Jason were fighting in the sky. Jason switched his sights when he saw what was happening to the castle.

"So, it's Stephenson now!"

He circled and flew toward the locomotives. The platoons guarding them aimed at Jason and fired.

"So you think you're so clever?"

As Jason swooped downward, chain saws emerged from beneath his wings. He managed to sever several chains with

them, and they snapped and fell to the ground, waving wildly in the air. Stephenson howled when one of them grazed his head.

Freed from their chains the locomotives ran helter-skelter, like kites without their strings, before they crashed into each other and stopped.

Steam Castle's balance shifted, and it began floating toward the opposite shore and the streets of London. The castle was still chained to a couple of locomotives, which it dragged along until they fell into the river.

Stephenson watched, stunned.

"You'd've been smart to stay out of this, Stephenson," Jason murmured smugly.

He didn't notice that he was plummeting dangerously close to the Thames himself. Then he realized that Ray had been pushing him downward.

"Brat! You could hurt someone like that!" he shouted.

Then he screamed. When he hit the water his wings broke off and his flying machine crumbled into pieces and sank.

Ray waited until Jason's head bobbed up before flying back toward Steam Castle.

The castle was rapidly approaching the densely populated parts of London. It cast an eerie shadow as it passed over the slums, where the residents looked up and stared.

When the castle reached the center of London, it tilted dramatically and fell. The ground shook on impact.

The glass in the control room shattered and fell on Simon and Scarlett.

"Ah, that's the end of the demonstration! This way everyone! Miss Scarlett!" Simon said, making a beeline for the elevator.

The dignitaries hurriedly followed.

"Simon!" Scarlett called out. She stopped and looked back at Eddie.

"We can't just leave him!"

Simon left Scarlett behind and took the elevator down. He rushed to the boarding area for the evacuation airship, which had been folded up like an accordion until now. It inflated and docked at the boarding gate.

"As the poet said, gentlemen, 'Quick to attack, quick to retreat,' and that is our motto. Wise generals always have foolproof escape plans. Thus we built this zeppelin for any emergency."

The foreign dignitaries shoved Simon aside as they ran to board the airship.

"Of course, it can also be used for reconnaissance. Seventy percent of the gas it utilizes is hydrogen gas, so . . . "

Nobody was listening. Simon stopped talking, realizing how silly he sounded. He sighed.

Who cares about this old castle?

In the first place, it was his rival, the director, who had proposed dealing arms at the Exhibition. Simon had long feared the director, whose faction was seizing far too much power. Simon had dismissed his idea at the time, saying that weapons alone wouldn't bring in a profit. He boasted that he could achieve greater success, then plagiarized the plan. The

Exhibition demonstration had been part of it.

Taking control of the Exhibition Hall was only supposed to take a few minutes. After demonstrating their overwhelming firepower, the Foundation would extract a promise that everything would be overlooked, before returning the grounds to the Queen. Britain would be grateful to the Foundation, and the Foundation would withdraw from the Exhibition in fine form.

That plan had been made possible because of the doctors Steam and their flying fortress. But the disagreements between the father and son had taken matters in a different direction. And then there was the grandson.

Simon's frustration grew as he thought about their arrogance.

"Lloyd and Edward think inventors can change the world, but they're wrong. It's the power of capital—like the power of our Foundation—that changes the world. Science and its inventions are nothing but tools for us capitalists," he muttered bitterly.

He was pulled out of his unusually solemn mood by a horde of Foundation workers who were running toward him.

"What are you doing?" he asked.

"Just gonna cut out and leave us, were you?"

"Hurry! Get on board!"

"No! Stop this at once!" Simon shouted.

"Push! Push!"

"You're all fired!" roared Simon.

Eddie's voice boomed from the speech tubes in the central boiler room, but no one was there to hear it.

"Boiler room, report! Answer me at once!"

Scarlett stood near him in the control room. She was not pleased.

"We've crashed into the ground, do you realize that? Oh, get out and do something about this. Don't just sit there!"

"Boiler room! Why isn't anyone answering?"

The elevator doors opened and Lloyd Steam's voice preceded him.

"You won't get an answer. There's no one there."

"That's not true. How did you get free?"

"Dr. Steam."

"It's over, Eddie. Give it up. The castle is about to explode! Our dream is dead."

"It certainly is not! Steam Castle belongs to our family! You can't just wreck it. Father! You're wrong about our dream!"

"And why is that?"

"Because the dream was realized the moment Steam Castle left the earth and rose into the skies."

"That's how you see it, eh?"

"This is no time for your philosophical jabbering! Just do your job and get us moving again!" Scarlett said.

She tugged at the controls that encircled Eddie, trying to pry him loose.

"Steam Castle cannot be destroyed now, because the world has seen it," Eddie said. "Mankind has witnessed its power."

Lloyd looked at his son incredulously.

"Once revealed, a marvel of this kind exists independently. Even if it were destroyed and every speck obliterated, someone would reproduce it. They'd find a way. And why do you think that is?"

Eddie paused.

"Because this is the ultimate beauty, Father!" he proclaimed.

Lloyd climbed up to the control board. Just then, he glimpsed a flying machine streak by.

"Ray . . ."

Ray flew around to the back of the castle and landed skillfully on the terrace.

Eddie went on.

"In the next century and those that follow, science will continue to advance. Mankind will be mesmerized by its awe-inspiring power!"

Seeing. That was all that people needed to have their thoughts and beliefs stirred. Eddie knew how overpowering the sense of sight could be. Steam Castle's commanding form would forever be etched in the minds of all who saw it, making them want to see it again.

No one would forget the thrill of seeing Steam Castle for the first time. Someone was sure to bring it to life once again. In Edward's view, compared to a sight this dazzling, half-hearted friendships and humanitarianism were worthless.

Lloyd understood this well enough, for he was a mad inventor himself. His son's words sounded sadly familiar.

"That may well be true, just as you say," he said. "But the

heart of man is not ready for this science. What will they do with such power? Plunge the world into war and chaos!"

"And that very chaos will transform us. The heart adapts to reality," Eddie said. He was startled to see his father beside him. Lloyd pointed a gun right at Eddie.

"The heart comes first, Eddie!" Lloyd put his finger on the trigger.

"Father! You're being naïve, just like the child's funfair you tried to build!"

"Silence!"

Scarlett grabbed Lloyd's hand.

"Stop it, Dr. Steam. Give me that right now!" she said.

Ray came running from the terrace. Seeing his grandfather and father, he gasped.

"Let go of my hand!"

Lloyd shook off Scarlett, who stumbled back a few steps.

"Shoot me, and you'll set back science fifty years."

Ray ran up the steps to the control board.

Lloyd cocked the gun. Eddie reached out his left hand to operate a switch.

"Forgive me," Lloyd said and pulled the trigger. Steam began blowing from under the control board.

"Grandfather! No!"

The gunshot echoed through the room.

"Father!"

"Ray!"

"Was that gunfire?" Ray asked.

"He shot him, Ray. He shot him!" Scarlett screamed.

Lloyd's shoulders sagged, as if he'd lost all his strength. He turned to Ray and put a hand on his shoulder.

"Ray. Hurry, take the girl and get out of here."

"Why did you—"

Ray strained to see the control board through the steam, but couldn't see his father.

"You just shot Father! Why would you do that?"

"I set my son free. Free from his madness. And delusions."

The steam cleared, and Ray saw the slumped figure of his father. The next moment, the entire control board began to rumble as it slowly descended into the floor.

"Look! It's the end of Steam Castle."

Ray stared at the disappearing control board.

"No, I won't leave Father this way!"

"Listen carefully now, Ray. Your father and I will both share the fate of this castle."

"What do you mean?"

"It is we who built Steam Castle, and, by God, it was a grand vision. But we weren't strong enough. Our hearts weren't pure enough to hold onto that vision and keep it from becoming a monster. I must perish with it, just as your father did. Do you understand, Ray?"

"But . . ."

"You are the Steam family's heir. You know right from wrong. Never let go of that! And do not give the treasures of science to the wicked or the greedy. You must preserve the future for us all."

Ray looked into his grandfather's solemn face and nodded.

"Now, go, Ray."

Lloyd lifted his hand from Ray's shoulder and slowly retreated. The steam quickly obscured his figure until he was barely visible.

"Grandfather!" Ray called after him.

"Go, Steamboy!"

Lloyd disappeared into the steam.

"You don't understand. Listen! If the castle explodes here in the middle of the city, it'll take half of London with it!"

"What's going on?" said Lloyd, startled. He hurried back.

CHAPTER

9

Escape

"WE SHOULD be over the Thames! I thought everything would flow safely out on the river!"

"No! We're not at the river!"

"Where are we, then?"

"In the dead center of the city."

Lloyd hurried to the terrace outside.

It was true. They were surrounded by rooftops.

"How the devil did we get here? Take us back to the Thames, for God's sake!"

"But how?"

Lloyd, Ray, and Scarlett looked back at the control board.

It was no longer there, having descended to the depths of the castle through the opening in the floor. Now that the

opening had closed, it was impossible to see where the controls had gone.

"Where did Father go?" Ray asked.

"The controls are sealed. There's no way to get to them now."

"What do we do then?"

Lloyd thought for a moment.

Steam was pouring from the underside of Steam Castle onto St. Paul's Cathedral. The cold air swirled around the statues of angels and froze them instantly.

"I'll climb down to the old machine room, shut the main valve, and cut off the steam at the source. You go to the boiler room and hook up the steam ball. When it's connected, we can open all the valves. With a bit of luck, I'll steer us back to the Thames."

Lloyd and Ray hurried to carry out their plan. Ray got back on his flying machine; this time he would be flying inside the castle. Lloyd opened up a pipe conduit and Ray descended into it. He headed for the boiler room, passing machines with monstrous gears.

Lloyd climbed slowly down after Ray, gripping the pipes as he went. Scarlett was left on her own.

"Doctor! What am I supposed to do up here?"

Ray kept bumping into machine parts as he made his way downward. Finally, the boiler room tower came into view.

Just then, some red iron claws came after him.

Ray recognized them. He had seen the claws stirring behind Alfred when he had escaped the castle with the steam ball.

Lloyd, meanwhile, had reached the old machine room and gone straight for the controller.

"Back to where it all began. They've changed all else about the castle, but not this chamber. 'Tis the very core of Steam Castle."

He quickly turned the handle and shut off the steam supply. Putting his hand on the lever that controlled the castle's movements, he leaned into a speech tube.

"Ray, I'm in position. Get the steam ball hooked up!"

There was no reply. Ray was struggling against the iron claws, which made an eerie whining sound as they attacked.

"Ray! What's wrong! Are you there?"

Ray dodged the claws while he looked for a hiding place.

"If I could get there!" he said, spotting a landing high up on one wall. Surely the claws wouldn't reach him there.

He made it to the landing and found a speech tube.

"Granddad! It's me, Ray! Grandfather?"

"Is it hooked up yet? What's taking you so long?!"

"There's a huge metal hand trying to crush me! It's some kind of machine, but I didn't see the plans for it."

"What the devil could that be? Wait, it's the Iron Hand, one of the construction cranes! But those cranes were all shut down when we finished the structure. They're meant to be a part of the walls now. They shouldn't work anymore."

"This one is working just fine! And it's trying to kill me!"

"Use your head! Cranes don't move by themselves! Someone's running it. Find the controls!"

Just then, the Iron Hand swiveled and tried to attack Ray from behind.

It ripped out the speech tubes instead.

Ray leaped away in the nick of time. He flew around the machines, looking for the crane's control booth.

"Ray! Are you there? Are you there? Answer me, Ray!" Lloyd shouted.

Left behind in the control tower, Scarlett felt uneasy. She heard a creaking noise. The opening in the floor appeared again.

She saw the control board return to its former position.

"Dr. Steam?" she asked.

But she saw no sign of him. She looked at the now empty seat.

Alfred was in the control booth of the Iron Hand, hidden between two gears. He flung the iron claws out haphazardly as he searched for Ray.

"Where'd the little scrounger go? Did he smash into the wall?"

When he had yanked out the speech tubes, a chunk of the wall could have struck the boy and sent him falling. Or maybe the boy got scared and fled the castle.

Alfred doggedly pursued Ray out of loyalty to the Foundation. He also had no idea that the castle had crashed into the center of London or that it might explode in a matter of minutes.

It was Alfred's job to do the Foundation's dirty work. Because he worked under Simon's orders most of the time, he

couldn't run away at a time like this, like the other workers. If and when Simon gained control of the Foundation, Alfred would then be in a good position, knowing what he did of Simon's schemes. On the other hand, if Simon should fail, then all of Alfred's hard work would have been wasted.

"Remain in Steam Castle to the end and make sure to get the steam ball back from that boy."

Those were Simon's orders. Naturally, Alfred would execute them.

There was another reason for the man's persistence: he hated children.

"That rotten brat!" he muttered, looking through the crane's periscope.

Behind him, he heard a hiss of steam and turned to see his quarry flying straight for him.

"There he is!" shouted Alfred.

He gripped the manipulator gloves that he wore on each hand and threw out his arms, so that the Iron Hand reached for Ray. Alfred was thrilled by the idea that he had grown to a monstrous size.

Ray glimpsed an iron claw swiping at him from the left.

"Whoa!" he said, speeding up.

For a second, it looked as though the Iron Hand had grabbed hold of Ray's flying machine. But Ray had slipped through a gap in the claws and was still headed for Alfred.

He's mocking me, Alfred thought angrily and waved his arms again. "You're dead, you brat!"

But when he looked into his periscope again, he saw not

Ray, but a pair of bright red iron claws.

Alfred lifted his head to look at them directly. He saw Ray grin before veering off in another direction.

Alfred moved his hands apart in a hurry, but it was too late.

The Iron Hand crushed the control booth with its claws.

"That's why I hate children!" Alfred roared.

Still clutching the control booth, the Iron Hand and its base plummeted to the underground depths of Steam Castle.

Ray sighed with relief. He flew off again toward the boiler room.

When he arrived, he quickly removed the ball from his flying machine and pulled the lever to open the ball tank. With the ball in place, he pushed the lever back and turned the valve.

The three balls steam started vibrating in unison. The steam supply was back on.

In the machine room, Lloyd saw the gauges fly up all at once.

"Ray, you did it!" he gloated.

But the gauges weren't going as high as Lloyd had expected. They wavered just before the red zone, failing to go higher.

"What's wrong, Ray? The pressure's not coming through."

Ray's voice came back through a speech tube.

"Running on only two steam balls strained the system. Now the pressure's backed up in the ducts. I could purge them from the control room, but not from down here. I can't tell which valve to open."

Ray and Lloyd both thought of the control room and worried about the missing control board.

"Which one of these things would I have to push, Ray?" came an unexpected voice from a speech tube near Ray.

"The controls are back up, but Ray, can you hear me?"

Scarlett was seated at the control panel.

"I don't know where your father has gone, but I'm sure I can help if you tell me how," Scarlett said.

Ray's face lit up for a moment, then hardened.

Would she be able to figure out the controls? What choice was there? *She's our only hope!*

Ray got as close as he could to the speech tube and slowly explained what had to be done.

"All right, Scarlett, listen carefully. Look for the control panel for the main boiler room. Open the valves in order from the lowest number to the highest."

"The control panel for the main boiler room?" Scarlett looked for the right levers.

"Here it is!"

The levers were all in the lowered position. Scarlett raised them one by one.

"Sixteen . . . 17 . . . There's no 18. Ray, there's no 18!"

"Eighteen is this wheel right here!" he said, grunting as he tried to turn the handle beside him. It moved slowly.

"Ray! What's wrong? What in God's name is going on?" Lloyd asked.

Unable to hear the conversation between Ray and Scarlett, he had no idea what was happening. Just then, he heard heavy

metallic footsteps behind him and turned around.

"You shouldn't play with guns, Father. Someone could get hurt."

Eddie walked toward him through a cloud of steam.

"If the bullet had entered elsewhere, I would be dead. I was saved because my body is like this, you see."

Eddie pointed to his half-mechanized body.

"So, my son. Have you awakened from your delusion?" Lloyd asked, his voice full of affection.

"'Delusion'? And what delusion would that be, Father? Take a look around you. We are standing in my delusion!"

Eddie gestured with his arms outstretched as steam began filling the room.

"Yes!" Lloyd said.

Ray had managed to open valve 18.

"The line is purging and the pressure's coming through. Good work!"

"That's superb, Ray. It means you've managed to fathom nearly 30 percent of the castle's form and function," Eddie said.

"Rubbish, he's grasped at least 70 percent of it! Now, make yourself useful and turn the wheel, Eddie!"

"What wheel?" Eddie turned and found a handle. "Well, this will all be gone soon. We may as well show the world the part that you designed."

"Of course, people might snicker," he sneered. He reached out and grabbed the handle.

"Ray, do you hear me?" Lloyd said through the speech tube.

"Grandfather! I've got all three steam balls connected, but there are cracks in the building everywhere. The whole place is about to cave in. Could be ten minutes more, could be five."

"Good, Ray. Now don't waste a second getting out of there. Get Scarlett out of the control room, and the two of you evacuate the castle, quickly!"

"All right!"

Ray ran to his flying machine, then stopped short.

"I used the ball to get here! How do I get back!?"

His steam ball was now powering the castle. Was there another way to reach the control room?

"Think! There's got to be a way," he said to himself.

Ray searched his surroundings for something he could use.

Back in the machine room, the two inventors were turning handles.

"All right! Let's take her up!" Lloyd said.

Lloyd and Eddie pulled levers simultaneously. The cogs inside the castle creaked in response and started to rotate. With a low rumble, metal parts shifted and reconnected, transforming the structure of the castle.

The immense bulk of Steam Castle, which had fallen on its side, began to rise. Two giant legs sprouted from its base.

And with a loud clank clank, the castle stood up.

Wooden carousel horses emerged from panels along the exterior wall and began circling the castle as a melody played,

like the sound of a broken music box.

This was Lloyd's contribution to the castle's design.

Hearing the amusement park music, curious children crept out of their damaged homes to stare at this wondrous sight.

It was like a fairy-tale castle. There was even a golden-haired princess on the roof.

"My my!" Scarlett said, spying a Ferris wheel and a toy band. "What is this?"

"The timing is vital. We must be precise. The moment I pull this lever, the pressure will vent and the castle will begin to drop. That's the crucial moment," Lloyd said.

"Go ahead, Father. I'm ready when you are."

The moment had come when father and son could move beyond their differences and work together.

Lloyd chuckled before looking down at the lever. He pulled the switch.

Steam Castle began walking slowly. Lloyd and Eddie took turns moving their levers, guiding the castle a step at a time. The castle plodded toward the Thames, kicking apart the flimsy houses in the slums as it went. The warped music continued to play as the carousel horses circled the castle. It was like a scene from a bizarre dream that blended terror and amusement.

At the top of the castle, Scarlett grabbed onto a railing as the structure began to lurch.

"Ray! Where are you?"

Ray was in the boiler room. He had removed an exhaust pipe

and was transferring steam pressure to his flying machine.

"I should be able to fly a little on this," he muttered.

When he had finished, he closed the valve on the exhaust pipe and got back on his flying machine.

"Scarlett! I'm coming!"

Steam shot from the machine, and Ray took off into the air.

He raced upward in the direction of the control room, while all around him the castle crumbled.

On the bank of the Thames, Stephenson watched the walking castle in awe.

"Good God," he marveled. The ingenuity of the Steams was far beyond anything he had imagined.

He stood fixed to the spot, his carefully pomaded hair disheveled by the wind.

Steam Castle began showing signs of its destruction moments before reaching the Thames. Steam leaked from the interior valves, causing cracks and then explosions.

Squeezed tight aboard the evacuation airship, Simon, the foreign dignitaries, and the workers complained loudly. As the airship tried to take off, it became caught in the shutters at the entrance and ended up dangling awkwardly in the air. Several people fell onto the roof of a church below.

"Almost there!" Ray said.

He was flying at top speed toward the narrow corridor that

led to the control room, dodging debris as he went. All of a sudden, there was an explosion. A huge pipe ahead of him ruptured.

A violent burst of steam came straight toward him. There was no escape.

The steam swallowed up Ray and his flying machine. It was a monstrous whirlwind, just like the one that had disfigured Eddie three years ago.

Ray lost consciousness in the intense heat and pressure. His sight quickly faded, and then all sound ceased for him as well.

A meadow.

A hill near their house in Manchester.

A toy airplane, with a tiny spring-powered propeller, that flew into the air for a second, only to lose balance and fall into the prairie.

"It's no good."

A small hand picked up the plane. It was Ray's, back when he was a little boy.

"Tell me, Father."

Eddie smiled gently.

"Think it through for yourself, Ray."

"But . . ."

"Think, then try again. If it doesn't work, think some more."

"And if still doesn't work?"

"Think again. That's how mankind makes history, Ray."

Eddie looked serious as he laid his hand on the boy's head.

Ray felt his father's strong hand and gave a small nod.

Ray and his flying machine came hurtling out of the white cloud of steam. He landed in a corridor.

He groaned, struggling to get up. Luckily, he had been going so fast that he had only been in the steam for an instant. The protective suit had helped him, too.

What was it he had seen inside that crushing steam?

Ray ran to the flying machine. He was shocked to find that all of the steam had leaked out. There was barely enough left to fly a few more yards.

"This is useless! Now what?" Ray felt like giving up, but he heard his father's voice again.

Think, Ray.

Right. He could still take the machine a few more yards.

He looked around again and tried to think.

Where could he go?

Elsewhere in the castle, there was another explosion, which shook the control room violently. Scarlett clung to the railing for dear life. She watched the elevator door in vain.

"Where are you, Ray?"

She heard the elevator rising and thought she saw him.

"Ray?"

But just as the elevator arrived, a pipe near the doors exploded. Steam came pouring out of the elevator.

Scarlett shielded herself from the blast with her arms.

Then she heard something roll out from the steam cloud. It was a round flying machine—and Ray.

"Hurry! We have to get out of here, Ray! The whole place is coming apart. It could explode any minute! How does this thing work?" The words tumbled out of her.

"It doesn't. There's no pressure left in it. We need to find another way."

"What? But, then how do we get away from here?" Scarlett was wailing now.

The building wobbled, and the control room lurched to one side. Scarlett ran down the sloping floor and collided with Ray.

Glass rained down on them. Ray had on the protective suit, so he tried to cover Scarlett's head with his arm.

The castle reached the Thames and sank one foot into the water, sending the building teetering in the opposite direction.

The two children were tossed back and forth like a boat on a stormy sea.

A voice came through a speech tube.

"Ray, can you hear me? Ray!"

"Father!"

"Listen. There's a lever with a red handle beside the control seat. On the right-hand side. Pull it. It'll open my emergency escape box. Use it, Ray, and get out of there!"

This was probably Eddie's last present to his son.

"What about you and Grandfather?" Ray asked.

His grandfather's voice came on.

"Forget about us, lad. Just get out of there!"

"Be well, Ray," his father said.

"No, wait!"

The speech tubes went silent.

After his parting words, Eddie took one last look at his steamy surroundings. He straightened his clothes and slowly released the lever.

"Well then, Father."

"What is it?"

"Take care of yourself, eh?" Eddie didn't look back as he walked into the steam-filled corridor.

"What's that supposed to mean? Where are you going?"

Eddie disappeared into the mist.

Lloyd hurried to complete the self-destruct sequence. One by one he lowered the levers.

Giant cogwheels turned, leading the castle through its final steps.

"I know you, Eddie! You've got something up your sleeve! But I won't let you! Wait! Wait!"

Lloyd finished his task and ran after his son into the steam.

Ray and Scarlett followed Eddie's instructions. They pulled the red lever to the right of the booth and found the evacuation tools.

"What?"

"That's it?"

There was only a bright red suit.

"Looks like something you wear," Scarlett said.

"Who . . . ?"

The castle suddenly pitched to one side. Ray and Scarlett went flying in different directions.

The base of the castle split, and an explosion of steam followed.

"Ray!"

Scarlett was thrown over the control board and began to free-fall. She managed to grab onto a railing, not a second too soon.

"Whoa!"

Ray reached for the suit and put it on. He strapped the portable steam engine to his back and secured the belt. Now, he had two steam jet-pipes on his back.

The castle could hold no longer. Small explosions kept occurring in different areas, and the walls were crumbling. The flag of the O'Hara Foundation fluttered as it fell. The castle then collapsed with a long, low rumble.

Scarlett let go of the railing and fell screaming, along with large chunks of broken glass from the roof.

"Ra-a-a-a-y!"

"Sca-a-a-rlett!" Ray called out.

Water from the Thames sprayed upward as the rubble from the control room hit the water. Scarlett had fallen with the rubble, but just before she hit the water, Ray grabbed her. The steam jets were strong enough to flip the two of them back into the air.

"We're flying! Ray, we're flying!" Stunned, Scarlett held tightly onto Ray.

Behind them they heard one last explosion.

Massive pieces of the castle went flying everywhere. As they splashed into the Thames, huge columns of water spouted into the air.

The tank in the boiler room broke. Fissures appeared in all three steam balls.

There was a sudden flash.

The balls burst in a tremendous explosion.

The huge flash was visible from the city streets through a gap in the clouds of steam. Even the iron outer wall of the castle was blown away.

Once the steam was no longer enclosed, it expanded rapidly. It stole heat away from its surroundings. The chilled air undulated like a dragon, creating enormous ice pillars before dispersing.

Giant columns of water shot up along both banks of the river and promptly froze into jagged pillars of ice. Stephenson witnessed the whole thing by the Thames as several spears of ice shot past him.

Gusts of freezing air blew through the city streets. Several ice columns loomed above the slums.

Ray flew, holding onto Scarlett as they wove their way through the multiplying towers of ice.

Below, the city was rapidly transforming into a silvery world.

The evacuation airship managed to get into the air just in time, but it became trapped between the pillars of ice that stretched into the sky.

"We're not going anywhere," Simon said, mopping his brow.

It was as if the whole world had frozen, and time itself had stopped.

Into the stillness, an enormous ice castle had emerged.

Children stuck their heads out of their crushed homes and saw a giant pillar of shimmering ice next to them. They poked at it carefully, causing the iridescence to scatter and then disappear.

Here and there, shards of ice floated up into the air, casting rainbows. It was as if little broken rainbow crystals were dancing, whispering a secret melody.

A white line of steam appeared in the sky.

Children cried out as they looked up at the flying figure.

"What's this now?"

"Someone's flying!"

It was a boy shooting through a blue sky filled with sparkling rainbows. He held a blond girl in his arms.

A young boy with blue eyes looked out of a broken window and saw two people swooping across the sky.

"Hang on tight now. We're coming down," Ray warned Scarlett.

"Where?"

Ray circled gracefully then headed toward the rooftop of a building.

They landed on the green roof of St. Paul's Cathedral, taking a few running steps before coming to a stop in the center.

"We did it! Ray, we're alive!" Scarlett hugged Ray.

"Crikey!" Ray nearly lost his balance.

The two looked at each other and smiled.

Scarlett felt an odd sensation. Hadn't she been fighting with Ray until just yesterday? *What's happened to me?*

Scarlett decided not to think about her feelings. She just wanted to revel in the comfort of knowing they had escaped.

A soft breeze caressed her hair. She glanced over at Ray, who was standing beside her. Looking at his profile, she noticed how strong he looked—so different from her first impression of him.

Ray also felt a twinge in his chest as he looked down at the city. He didn't have the luxury of feeling relieved. He thought of his father and grandfather. Their dream was a soaking wreck in the middle of the Thames River.

Did he understand the final thoughts they had entrusted him with? What was he to do now?

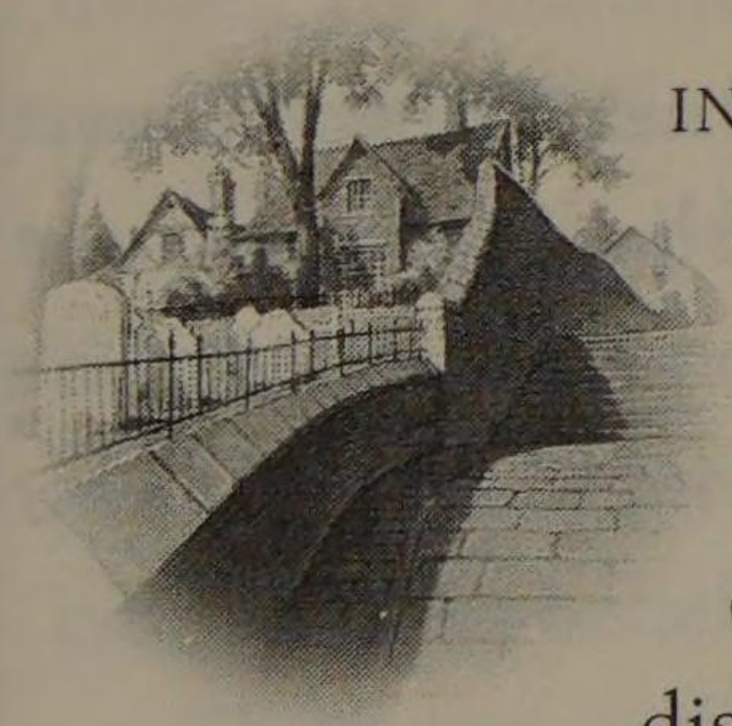
Down in the streets, the carriages of policemen and firemen were starting to arrive.

The remains of the castle glowed. Ray gazed down at it.

"Granddad. Father," he said softly.

Then, the ice castle came crashing down, releasing thousands of sparkling rainbow crystals into the air.

Epilogue



IN THE STREETS of Manchester, smokestacks spewed black smoke as they did every day. The gray sky hid the sun in a haze.

The roads were littered with special edition newspapers that had been distributed twenty days ago. Now they lay tattered everywhere.

The commotion at the Exhibition was the talk of the town in Manchester as well, but due to a settlement between the governments of the United States and Britain, the reported facts were greatly distorted. The incident was explained as a subversive act spurred by the push for independence in the colonies. The O'Hara Foundation paid exorbitant damages, which it more than recovered through its arms sales. The era

was moving ahead, just as Eddie had predicted.

A bell rang, signaling the end of the workday. Workers came out of the factories. Ray ran out, too, threading his way through the crowd.

"Later, Ray!"

"See you tomorrow!"

Walking along the road behind the train station, he encountered some boys with their hands stuffed in their pockets. It was Alex and his gang.

"Well look here! If it ain't the great inventor and thief, Ray Steam!"

Ray glanced in their direction and ran off with a smile.

"What's with him?" Not getting the reaction he wanted, Alex simply shrugged.

The boys kicked at the twenty-day-old newspapers lying at their feet. None of them noticed the small boxed article about a mysterious boy who had saved London from the castle's explosion, or the illustration of a boy flying through the air with a girl in his arms.

"I'm home!" Ray said.

The Steams' house was under construction. He tossed his things in the front of the house and ran straight to his workshop.

Just then, an automated steam car came huffing and puffing to the front gate. It was a luxury car with hand detailing. The door opened and a visitor from the United States got out. Opening up a large red parasol, the guest looked around.

"Is this Ray's house?" The guest, a young lady, offered her honest opinion. "It's certainly small."

Ray was in his workshop tackling a curious-looking machine. A complex arrangement of gears were attached to a row of axles.

"I've got to increase its calculation speed or it's useless," Ray said to himself, adjusting the teeth on the cogs.

He pulled a lever and transferred steam into the machine. The whole thing began to rattle and groan.

"Ray? Answer me if you're here! Ray? Oh!" Scarlett arrived at the workshop and gave a cry of surprise.

Steam billowed everywhere.

The gears locked together and began emitting strange music. The machine looked a little like a giant music box, but it seemed to hint at being something more.

Since he got back to Manchester, Ray had been thinking deeply about the nature of science and of inventions. He also reflected on the difference between his father's and grandfather's beliefs.

There were still many things he didn't understand, but he resolved to keep inventing.

This machine was meant to be an answer of sorts to his father and his grandfather. Though it wasn't conclusive yet, Ray thought the machine might even change the world. And the change wouldn't come about violently, as it would in a war. But he had a feeling the machine might be an epoch-making invention.

Scarlett couldn't help being impressed as she took in the

jets of steam and the gear movements. She took a step closer to the machine.

"It's amazing! What kind of machine is it?"

Ray looked at his invention and began confidently, "This is . . ."

The machine's rumblings drowned out the boy's voice. No doubt the girl heard his words perfectly. Her eyes sparkled at his reply.

In the little steam-filled workshop, the boy and girl gazed together into the future.

References

Beckmann, Johann. *Beiträge zur Geschichte der Erfindungen.* 5 vols. Leipzig: 1786–1805. Translated by the Japanese Patent Office Research Group for the History of Technology as *Seiyou jibutsu kigen* (3 vols. Tokyo: Diamondsha, 1980–1982).

Black, Jeremy. *The Historical Atlas of Britain: The End of the Middle Ages to the Georgian Era.* Thrupp: Sutton, 2000. Translated by Yukiko Kanehara as *Zusetsu chizu de miru Igirisu no rekishi: Daikoukai jidai kara sangyou kakumei made* (Tokyo: Hara Shobo, 2003).

Comment, Bernard. *Le XIXe Siècle des Panoramas.* Paris: A. Biro, 1993. Translated by Masato Nomura as *Panorama no seiki* (Tokyo: Chikuma Shobo, 1996).

de Vries, Leonard. *Victorian Inventions.* London: J. Murray, 1971. Translated by Shigechika Honda as *Zusetsu: Souzou no majutsutachi: 19 seiki hatsumeika retsuden* (Tokyo: Kougakutosho Ltd., 2002).

Diagram Group. *Weapons: An Illustrated Encyclopedia from 5000 B.C. to 2000 A.D.* New York: St. Martins, 1980. Translated by Yuu Tajima and Kouichi Kitamara as *Buki: rekishi, katachi, youhou, iryoku* (Tokyo: Maarsha, 1982).

Jones, Steve. *Through the Keyhole*. Bulwell: Wicked Publications, 1991. Translated by Jun'ichi Tomonari as *Kagiana kara nozoita Rondon* (Tokyo: Chikuma Shobo, 1995).

Kashima, Shigeru. *Zekkei, Pari Bankoku Hakurankai: San Shimon no tetsu no yume* [A Splendid View, The Paris World Fair: Saint-Simon's Dreams of Iron]. Tokyo: Kawade Shobo Shinsha, 1992.

Kenmochi, Kazumi. *Igirisu sangyoukakumeishi no tabi* [Traveling along the History of the British Industrial Revolution]. Tokyo: Nippon Hyoronsha, 1993.

Tanita, Hiroyuki. *Zusetsu: Buikutoria choo hyakka jiten* [Encyclopedia of the Victorian Age]. Tokyo: Kawade Shobo Shinsha, 2001.

Tsunoyama, Sakae and Minoru Kawakita, eds. *Rojiura no Daieiteikoku: Igirisu toshi seikatsu shi* [Back Alleys of the Great British Empire: The History of Life in England's Cities]. Tokyo: Heibonsha, 2001.

Yoshimi, Shunya. *Hakurankai no seijigaku: Manazashi no kindai* [Politics of the Exhibition: The Modern Age of Looking]. Tokyo: Chuokoronsha, 1992.

A STEAMBOY COMMITTEE PRODUCTION

STEAMBOY

Conceived & Directed by KATSUHIRO OTOMO

Screenplay by SADAYUKI MURAI, KATSUHIRO OTOMO

Chief Key-Animation Supervisor TATSUYA TOMARU

Effect Key-Animation Supervisor TAKASHI HASHIMOTO

Art Director SHINJI KIMURA

CGI Director HIROAKI ANDO

Animation Director SHINJI TAKAGI

Technical Director SHINICHI MATSUMI

Digital Composite Chief MITSUHIRO SATO

Editor TAKESHI SEYAMA

Music STEVE JABLONSKY

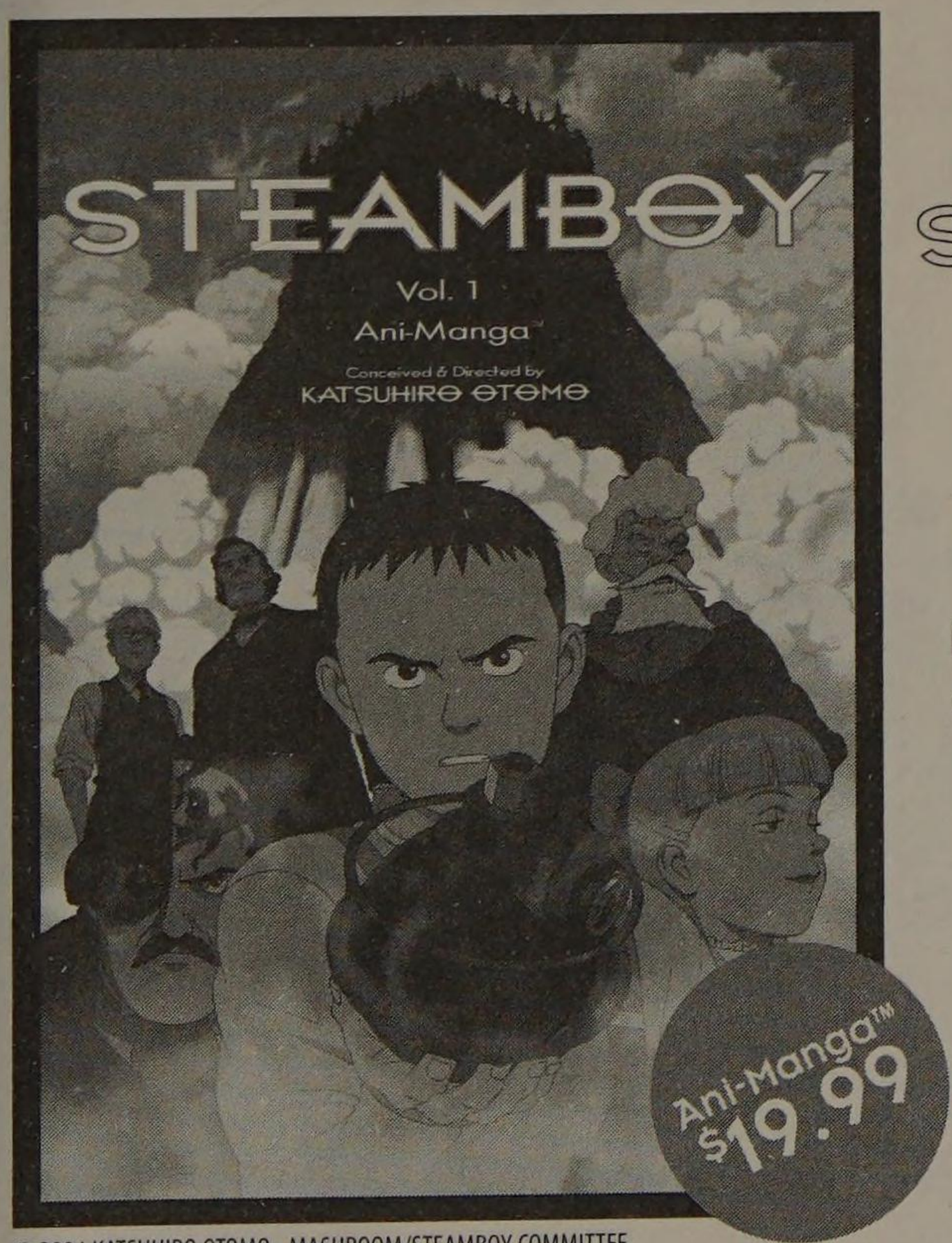
Sound Director, Supervising Sound Editor KEIICHI MOMOSE

The Evolution of Science... The Downfall of Man?

Based on the hit movie from Katsuhiro Otomo

STEAMBOY

Meet Ray Steam, a resourceful young inventor whose father and grandfather have harnessed the ultimate energy source that will transform the world for better or worse!



STEAMBOY
Ani-Manga™

Two-volume series features FULL-COLOR artwork that mixes hand-drawn illustrations and digital technology!

Buy yours today at store.viz.com!

viz media™
www.viz.com

© 2004 KATSUHIRO OTOMO • MASHROOM/STEAMBOY COMMITTEE.
© 2005 TOKUMA SHOTEN PUBLISHING CO., LTD. Editorial copyright
© YAMAOKA YUKO

STEAMBOY

FROM THE DIRECTOR OF AKIRA

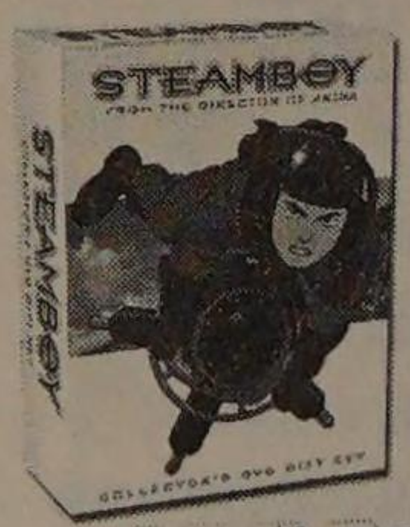
"AN INSTANT CLASSIC."

—Jay Carr, AM New York

DIRECTOR'S CUT DVD LOADED WITH SPECIAL FEATURES WHICH INCLUDE:

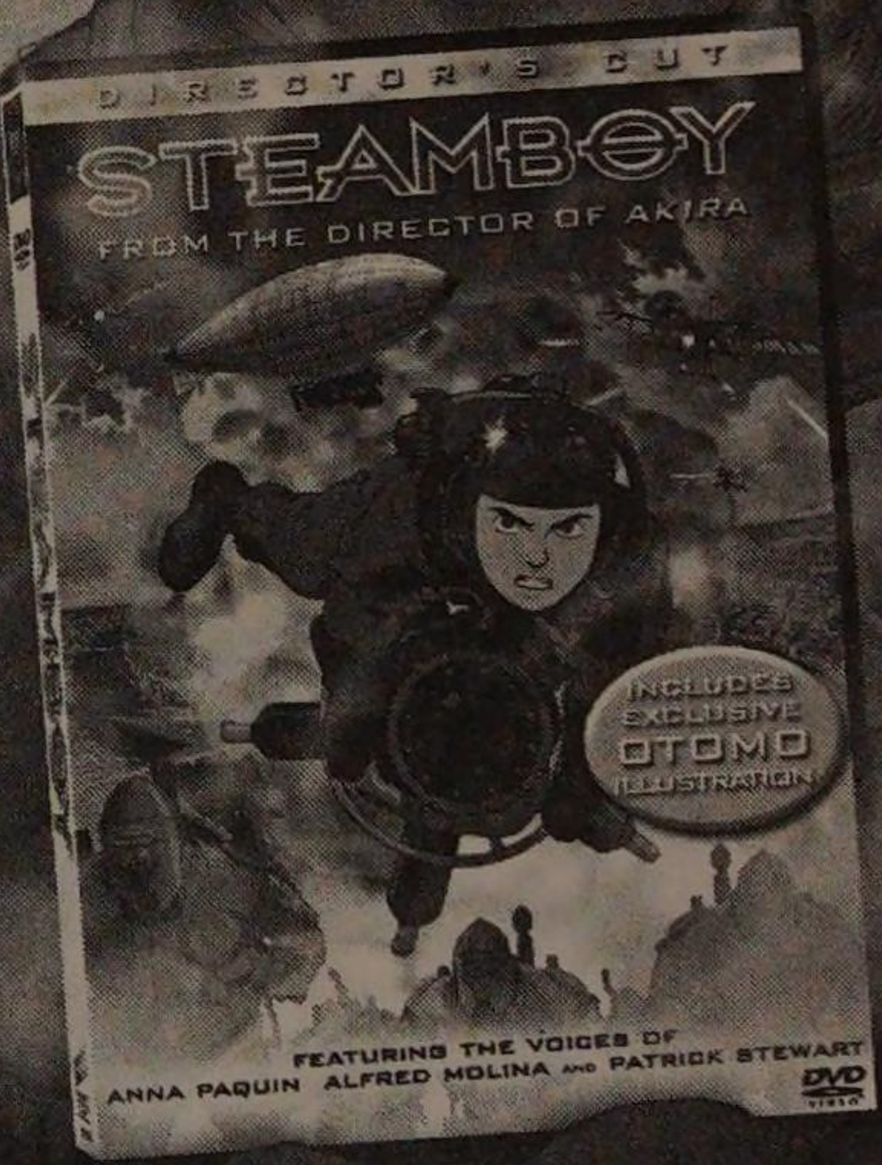
- Director's Cut of film with both original Japanese audio with English subtitles and the English Dubbed version
- "Re-voicing Steamboy"
- Interview with Katsuhiro Otomo
- Multi-screen Landscape Study
- The Adventure Continues featurette
- Production Drawings
- Animation Onion Skins
- Includes Exclusive Otomo Illustration Postcard

ALSO AVAILABLE:
LIMITED EDITION STEAMBOY GIFT SET



DVD GIFT SET INCLUDES:

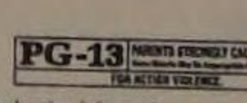
- STEAMBOY DIRECTOR'S CUT DVD
- 166 PAGES BOOKLET CONTAINING CHARACTER DESIGNS, MECHA DESIGNS AND SELECTED STORYBOARD SEQUENCES
- 10 COLLECTIBLE STEAMBOY CARDS
- 22 PAGE MANGA



AVAILABLE NOW
ON DIRECTOR'S CUT DVD
AND UMD™ VIDEO FOR PSP™

www.SonyPictures.com/steamboy

©2005 Layout and Design Sony Pictures Home Entertainment. All Rights Reserved.
"UMD" and "PSP" are trademarks of Sony Computer Entertainment Inc.



For Additional rating information, go to www.filmratings.com

Born in 1964 in Nara Prefecture, Japan, Sadayuki Murai began his career as a television scriptwriter. In 1993, he won the 6th Fuji Television Young Scenario Award for *Tobenai Otome no Jugyou-chuu* (The Girl Who Cannot Fly in Class). He has written for both live-action and anime, in genres ranging from drama to science fiction and fantasy. In addition to the screenplay for *Steamboy*, he has written scripts for many other works, including *Boogie Pop wa Warawanai* (Boogiepop Doesn't Laugh) and *Perfect Blue*.

Based on the long-awai
picture from Katsuhi
the director of A

BOOK·OFF
$5.00
List Price:$17.99
Released 12/2005
RK3,020,057
Steamboy
A7/24/16
Sadayuki Murai, Katsuhiro Otom
195
JUVENILE FICTION/Fantasy & Maq

11.30.2005
LEE'S COMICS
(650) 965-1800
$1799

viz media

$17.99 USA/$24.95 CAN

ISBN-13: 978-1-4215-0145-1
ISBN-10: 1-4215-0145-7
51799
9 781421 501451

ALL MD
44