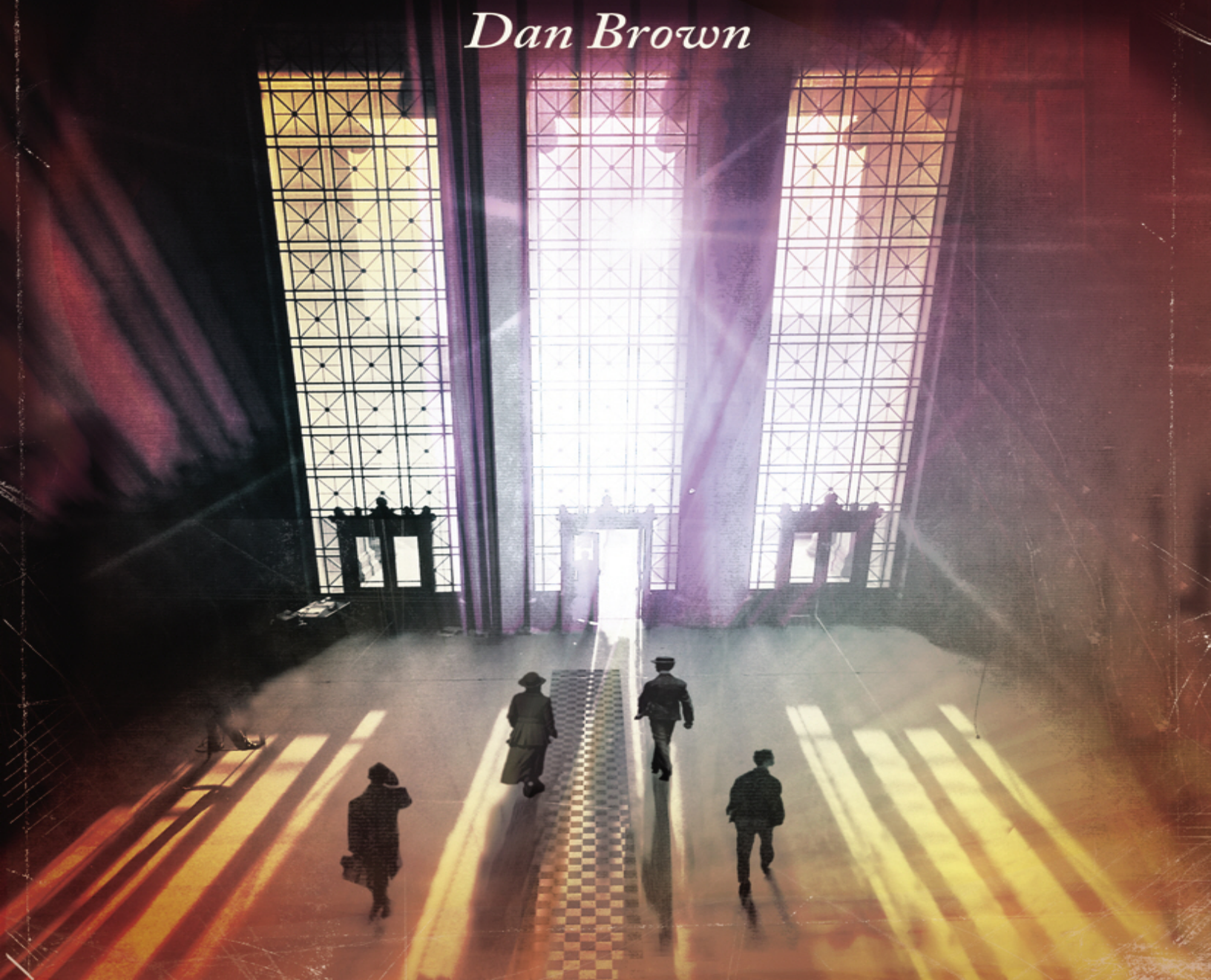


THE TECHNOLOGISTS MATTHEW PEARL

‘AN IMMENSELY GIFTED AUTHOR’

Dan Brown



CONTENTS

Cover

About the Book

About the Author

Also by Matthew Pearl

Dedication

Title Page

Book 1: Civil and Topographical Engineering

I: April 4, 1868

II: Charles

III: The Boston Police

IV: Circuits

V: Positively no Admittance

VI: A Good Morning

VII: Particles

VIII: Entombed

IX: The View from Number 18

X: Resolved

XI: Plymouth

XII: Temple Place

XIII: Man-field

XIV: Mind and Hand

Book 2: Practical Chemistry

XV: The Police Chief of Smith Prison

XVI: Girl from the Galapagos

XVII: Underwater
XVIII: Enter the Technologists
XIX: Mecca
XX: A Study of State Street
XXI: Natural History
XXII: The Watchmakers' Apprentices
XIII: Afire
XIV: Greetings, Fellows
XV: Four Pulls

Book 3: Geology and Mining

XVI: Number Ten
XVII: Theo
XVIII: Steam at Rest
XXIX: Third and E
XXX: Dig
XXXI: Sleep
XXXII: Wake
XXXIII: Satano Duce
XXXIV: The Police Chief of Smith Prison (Sequel)
XXXV: A Hundred Tech Boys
XXXVI: Power
XXXVII: Dirty
XXXVIII: Tempest in a Teapot!

Book 4: Mechanical Engineering

XXXIX: Two Documents
XL: Gatehouse
XLI: May 17, 1868
XLII: Farewell, Boston

XLIII: Pathfinders
XLIV: The Jaws of Hell
XLV: Nil Desperandum
XLVI: Torn
XLVII: Prove Thyself a Mother to Me
XLVIII: Nahant
XLIX: My Flaming Sword
L: Mind

Book 5: Experimental Physics

LI: Class Feeling
LII: In Harness
LIII: What Hath God Wrought
LIV: Witnesses
LV: Thy Sons to the Jubilee Throng
LVI: Babel
LVII: White Whale

Book 6: Building and Architecture

LVIII: Twelve Days Later
LIX: '68 (Forever)
LX: Charley

Afterword

Acknowledgements

Read on for ...

An interview with the author

Questions for discussion

The prequel to *The Technologists – The Professor's Assassin*

Copyright

About the Book

Spring 1868, and the population of Boston is being terrorised by technological attacks: first a magnetic storm causes ships in the harbour to collide in flames, then in another bizarre catastrophe every piece of glass in the financial district spontaneously melts - clocks, windows, eyeglasses.

Nothing in nature can do this: these are man-made disasters. Someone has unleashed the destructive potential of science on an innocent population.

The city's fate relies on four young students of the recently founded Massachusetts Institute of Technology: Marcus Mansfield, a Civil War veteran determined to repay MIT's founder for taking a chance on him, brash Bob Richards, meticulous Edwin Hoyt and the eccentric but brilliant Ellen Swallow, the first woman at MIT, who experiments secretly in a basement laboratory. Together, they are The Technologists.

In a climate of rising hysteria, these four courageous individuals must unite against the forces of darkness to uncover the mastermind before he can stage his greatest outrage.

About the Author

Matthew Pearl is the internationally bestselling author of *The Dante Club*, published in more than thirty languages and forty countries, *The Poe Shadow* and, most recently, *The Last Dickens*. Pearl is a graduate of Harvard University and Yale Law School and has taught literature at Harvard and Emerson College. He lives in Cambridge, Massachusetts.

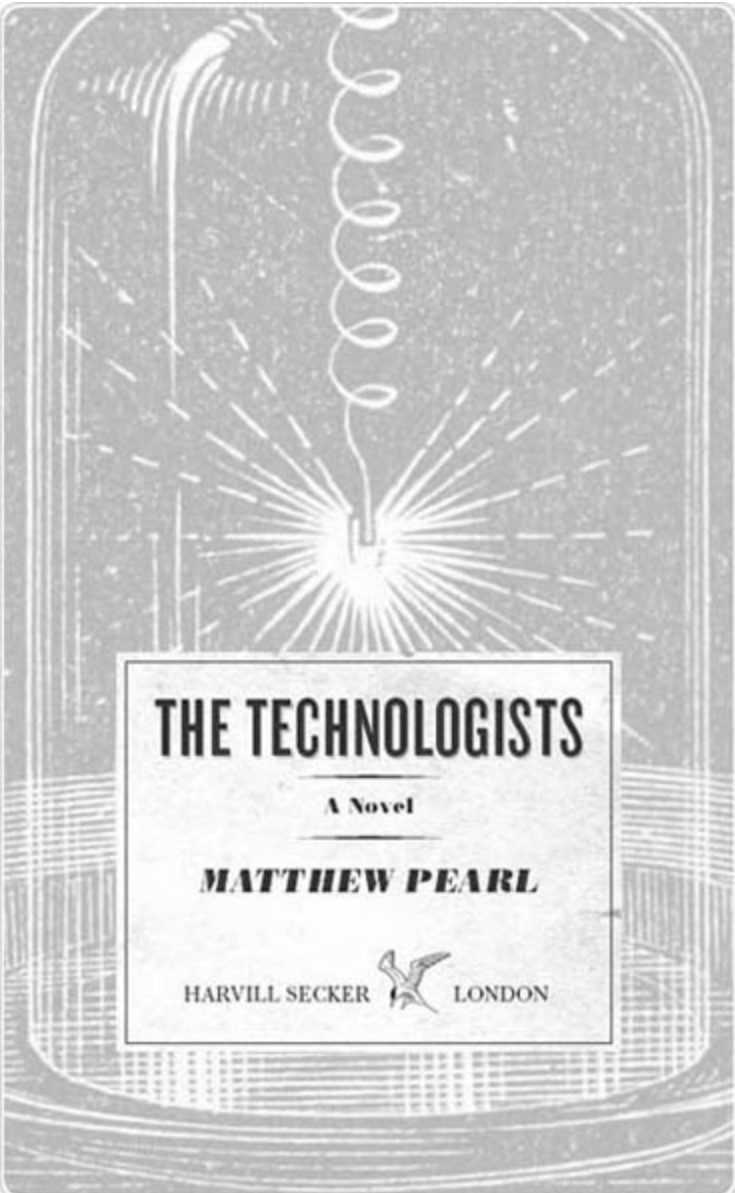
ALSO BY MATTHEW PEARL

The Dante Club

The Poe Shadow

The Last Dickens

FOR MY SON



THE TECHNOLOGISTS

A Novel

MATTHEW PEARL

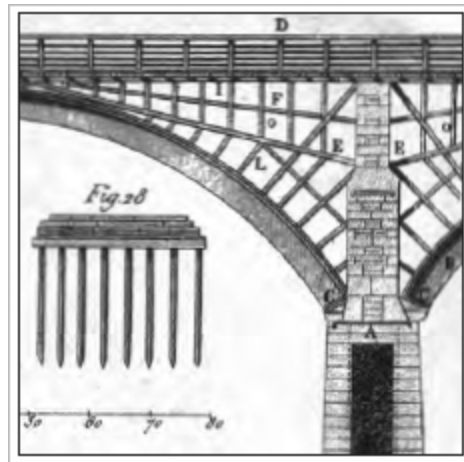
HARVILL SECKER



LONDON

Book 1

**CIVIL AND TOPOGRAPHICAL
ENGINEERING**



April 4, 1868

ITS PROUD LINES intermittently visible through the early morning fog, the *Light of the East* might have been the most carefree ship that ever floated into Boston. Some of the sailors, their bearded faces browned and peeling from too much sun, cracked the last rations of walnuts in their fists or under their boot heels, singing some ancient song about a girl left behind. After wild March winds, stormy seas, dangerous ports, backbreaking work, and all the extremes of experience, they'd be handed a good pay at port, then freed to lose it to the city's myriad pleasures.

The navigator held the prow steady, his eye on his instruments, as they waited for the fog to disperse enough for their signal to be seen by the pilot boat. Although Boston Harbor stretched across seventy-five square miles, its channels had been so narrowed for purposes of defense that two large ships could not safely pass each other without the harbor pilot's assistance.

The *Light's* austere captain, Mr. Beal, strode the deck, his rare aura of high contentment amplified by the giddiness of his men. Beal could envision in his mind's eye the pilot boat breaking through the fog toward them, the pilot dressed like an undertaker, saluting indifferently and relieving Beal—for once—of his burdens. Then would come the view of the stretches of docks and piers, the solid granite warehouses never quite large enough for all the

foreign cargo brought in by the merchants, then beyond that the State House's gold dome capping the horizon—the glittering cranium of the world's smartest city.

In the last few years, with so many men returned from fighting the rebellion, even modest Boston merchants had become veritable industrialists, beset as they were by excess hands. This city had prided itself on its history from the time it was little more than a quaint village, but Beal was old enough to know how artificial its modern visage was. Hills that formerly sloped through the city had been flattened, their detritus used to fill in various necks and bays, the foundations for streets and new neighborhoods and wharves such as the one that soon would welcome them. He could remember when the Public Garden was plain mud marking Boston's natural boundary.

A steam pipe bellowed from some unseen ship launching on its way or maybe, like them, gliding toward a journey's end, and Beal felt a solemn comradeship with all unknown voyagers. As he glimpsed the crescent moon and thought he would soon have enough light even in this nasty fog to lay course, his pleasant reverie was broken by a bright light flashing low in the water. When the captain craned forward, a lifeboat caught in the current, right in the path of their prow, sprang out from the mist.

His lookout cried out while Beal seized his speaking trumpet and shouted orders to change course. A woman's scream floated up. The schooner veered adroitly in efforts to avoid the small craft, but too late. The lifeboat's passengers jumped for their lives as their boat split into pieces against the *Light's* prow, the screaming woman thrusting a small child above the waves. To the shock of the captain, another obstacle broke through the dense curtain of fog on the schooner's starboard side: a pleasure steamer, with its flags flying the signals of distress, and taking on water.

"Clear lower deck!" Beal shouted.

Light of the East had nowhere to go. The side of its hull grazed and then caught the stranded steamship, right through the forward bulkhead: Pipes snapped and scalding-hot steam rushed into the heavy air as the hold of the schooner was ripped open. Now it, too, took on water, fast.

Chaos reigned on and off the ships. Beal snapped an order to throw the cargo overboard and repeated it sharply when his men hesitated. If they didn't unload right now, they would lose not only their profits, but also the ship and likely lives.

"Captain! There!" called his lookout.

Beal stared in astonishment from the railing as a stray breeze parted the fog. The wharf loomed ahead, but it was now clear they were approaching it from the wrong angle, parallel instead of perpendicular. Incredulously, the captain extended his spyglass. A bark flying British colors had wrecked against the tip of one of the piers and caught fire, while another schooner, marked the *Gladiator*, had drifted against the wharf, where its crew feverishly tried to tow it in. As he watched, fiery debris spread to the *Gladiator's* sails, which an instant later were wreathed in flames.

At least half a dozen ships were visible in those few moments of clarity, and all were foundering in various states of distress across the once-orderly harbor, reverberating with shrieking whistles, bells, fog-horns, and other desperate signals.

Beal frantically stumbled and slid on his way to the navigational instruments. The needle of the steering compass, held under glass by the wheel, spun around violently, as if bedeviled, while on his pocket compass the needle was 180 degrees off the mark—north was south. He'd sailed by these navigational instruments—finely tuned with the expertise of nineteen centuries—for his entire life as a seaman, and he knew there should be no way for them to fail all at once.

The pleasure steamer they had crashed into suddenly lurched forward with a boom. In seconds it was entirely underwater. Where it had been, a vortex opened, sucking under those already stranded in the water, and then spitting them out high into the air.

“To the lifeboats!” shouted Beal to his thunderstruck crew. “Find anyone alive and get as far away as you can!”

II

Charles

SUBMERGED. AS THE waves soothed his naked body, his athletic strokes worked in concert with the rhythm of the current. The first week in April had not yet promised any warmth, the water still rather icy. But he willingly endured the chill ripping through his body for the better feeling swimming afforded him. It was a feeling of being alone but not lonely, a sense of freedom from all restrictions and control. Floating, kicking, somersaulting—try as he could to make noise, the water rendered him irrelevant.

Throughout his boyhood in a port town, he'd heard so many people spoken of as "lost at sea." Now it seemed to him the strangest turn of phrase. As long as he was in the water, he could not be lost. He could bask, bathe, disappear, and the water sheltered him as much in Boston as it had back home. Not that he ever felt homesick, as some of the other Institute students did who had come from outside Boston. He still traveled the forty miles back and forth to Newburyport by train every day to keep down living expenses, although it cost him more than an hour each way.

To his mother and stepfather, the Institute remained a strange detour from his good position at the machine shop, and a daily interruption to his help at home. His stepfather, James, had always been unhappy, plagued by a partial deafness in his left ear that made him shun all society and

friends. He worked as a night watchman for a jeweler because he preferred the solitude and uneventful nature of the position. He assumed people were speaking ill of him because he could not hear what they said, which led him to the further conclusion that city life, being loud, was an evil cacophony of deceit. As for his mother, she was a religious zealot of the old Puritan kind who saw danger in urban life and no value to the son's studies in Boston.

Even now, when he was a senior, graduation a mere two and a half months away, they did not accept that he—Marcus Mansfield, of all people!—was a student at a college.

* * *

MARCUS PLUNGED his head back into the cool water, ears tingling as he surveyed the river—a tranquil and forgiving lane that ran between Boston and Cambridge, lined by a gentle, sloping green sward that would shade swimmers and oarsmen from the hot days to come. Unseen behind the thick weather, above the riverbank and the fields and marshes skirting it, there lurked the crowded brick and iron and gold-domed city, propelling Marcus forward with the powerful thrust of a gigantic engine.

At the shallow bend of the river Marcus took another big breath and sank, closing his eyes and relishing the drop. Down below, pieces of debris and lumber had lodged in the muddy riverbed. As he brushed against the foreign articles, he heard a voice beckon, distant, as though issued from the sky:

"Mansfield! Mansfield! We need you!"

Marcus bobbed up from under the water and then grabbed onto the side of a boat.

"Mansfield! There you are! You're late."

"How did you know I was swimming?"

"How did we—? Ha! Because I saw a pile of clothes back there on the shore, and who else would dare plunge into this freezing Styx!" The tall, blond oarsman dangled a suit of clothes above Marcus's head. "Actually, it was Eddy who recognized your clothes."

"Morning, Marcus," said the second, smaller oarsman with his usual open smile.

"And since Eddy and I were both ready," continued Bob, "we pushed out to find you."

"Then *you* were early," said Marcus, treading water toward the bank, "before I was late."

"Ha! I'll take that. Get dressed—we need our third oar."

He shook himself dry on the bank and climbed into his gray trousers and light shirt. His two companions presented a study in opposites as they helped him into their boat: Bob, with the quintessential New Englander's clear skin and crown of handsome curls, standing carelessly at the edge of the shell; Edwin Hoyt, slight and frail-looking, throwing the little weight he possessed to the other side in anticipation of a tragic drowning.

Despite knowing the water and boats pretty well, Marcus had not grown up indulging in such impractical pursuits as rowing for pleasure, with its arbitrary rules and catchwords. Some weeks before, Bob had announced one morning, "This is the day, fellows!" to Marcus and Edwin, their fellow Institute of Technology senior, as he bounded ahead of them on the way to a lecture.

"Which day?"

"Spring is here, Mansfield, and since it's our last one at the college it's time I showed you rowing just as I promised. Why, I hardly knew one end of the oar from the other until I was nine years old. A scrawny boy I was, the smallest Richards ever!" This served to emphasize what a commanding twenty-two-year-old Bob had become. Marcus could not actually recall Bob promising to teach them, but let that pass, given Bob's enthusiasm.

To his surprise, Marcus found rowing not to be the wasted time he expected, and it took his mind away from worrying about the looming future away from the Institute. It was at once calming and exciting, a thrill when the shell launched across the surface of the water as though alive. They tried to recruit more oars among their classmates to join them, but the few willing candidates never did find time.

As their small vessel pushed steadily along, Bob began laughing to himself. "I was just thinking of my brothers," he explained. "They used to warn me about the sea serpent of the Charles. Nearly one hundred feet long, they said, with humps like a camel and a cry like a braying donkey crossed with an elephant's trumpeting. You know how I have to take it upon myself to investigate anything in nature. Well, for three months I searched out old Charley, until I determined that the water wouldn't sustain a sea serpent's diet."

"But how did you know what a sea serpent ate?" Edwin asked seriously.

"Bob, would you mind rowing farther east today?" Marcus proposed.

"A quest! Where to?"

"I haven't seen the harbor since . . ." Marcus did not finish his sentence.

"Better not to, Marcus," Edwin said quickly. "I caught sight of it this morning after it was all over. The whole harbor was up in smoke. It was like looking into the face of a bad omen."

"Eager to see the destruction?"

"Actually, Bob, I was hoping to learn something from seeing how they begin the repairs," Marcus corrected him. "There is already some debris on the riverbed that must have drifted on the current." He stopped when he saw Bob's face narrow as he looked out on the water behind them. "What is it?"

"Just my luck," Bob said. "Faster, fellows! Go! Come on, Mansfield, faster! Well rowed, Hoyt! All clear, come on!"

A forty-nine-foot shell had shot out of the trees sheltering a narrow adjoining channel with the speed of a lightning bolt. Six flashing oars creased the surface of the river in synchronized strokes, throwing off white streaks behind them. The rowers were bare from the waist up, with crimson handkerchiefs wrapped around their heads, and their flexing muscles glistened in the strengthening sun. As Marcus peered back at them, they looked like highly educable pirates, and he knew it would be a lost cause to attempt to elude whatever this boat was.

"Who are they?" he marveled.

"Blaikie," Bob explained as the three of them pulled as hard as they could. "His is the best Harvard six there ever was, they say. Will Blaikie—he's the stroke oar. I'd rather stare into the mouth of the serpent."

Edwin wheezed between strokes, "Blaikie . . . was . . . at Exeter . . . with Bob and me."

The other vessel came on with a spurt too powerful to shake, now just a length behind.

"Plymouth!" cried the lantern-jawed lead rower on the lightning bolt. The boat went by theirs and then reversed and ranged alongside of them.

"Why, it *is* you, Plymouth!" said the stroke oar, Blaikie, to Bob with a gleaming smile. Even seated in his shell, he presented the particular mincing swagger of a Harvard senior. "It's been ages. You're not forming a randan team, are you?"

"We've been borrowing a shell from the boat club," said Bob, motioning for his friends to stop rowing. Marcus could not remember seeing his classmate so deflated.

"Don't tell me you're still dragging your heels over at that embryo of a college, Plymouth?" Blaikie asked.

"We are seniors now, like you."

"Tant pis pour vous," interjected one of the Harvard boys, eliciting chuckles from the others.

"I fear civilizing your classmates into respectable gentlemen will take more than teaching them to grip an oar," Blaikie went on cheerfully. "Science cannot substitute for culture, old salt. I used to agonize, Plymouth, what I would most rather be, stroke of the Harvard, president of the Christian Brethren, or First Scholar of the class. Now I know what it is to be all three." He was reminded by one of his oarsmen not to forget president of one of the best college societies. "Yes, Smithy! But it is best not to speak of the societies to outsiders."

"We are doing things far more important—things you wouldn't begin to understand, Blaikie."

"Just how many of you Technology boys are there?"

Throwing out his chest, Bob answered, "Fifteen men in the Class of '68. About thirty-five in the other three classes, and we expect more than ever in the next freshman group."

"Fifty. Fifty men and it is called a college! I call that cheek!"

"Mock if you like. When we are graduated on that glorious day of June the fifteenth, you can follow us in the newspaper columns as pathfinders."

Marcus was moved to see Bob align himself with his classmates instead of the fellows whom he'd grown up alongside in the snug parlors of Beacon Hill.

"If you're to be graduated," Blaikie said.

"What do you mean by 'if,' Blaikie?" Edwin asked.

"You hold your tongue, grayhead. You had your chance with us."

Edwin slouched in the boat, his hand reflexively moving to touch the light spot in his hair.

"You might want to hold your tongue now and then yourself, friend," Marcus said.

"What did he say to me?" Blaikie turned to his team, then to Marcus, as if noticing him only now. When their

eyes met, Blaikie's shoulders tightened and he subtly recoiled. Marcus had that effect. His muscular frame was well built and solid. His thick brown hair and old-fashioned crescent mustache made his intense green eyes stand out. Most of all, the poise of an engineer clung to him, made him seem in control of any circumstance. "Who is this?" Blaikie asked.

"My name is Marcus Mansfield."

"Marcus . . . Mansfield . . ." Blaikie repeated speculatively, shrugging. He looked back at his men, who returned his shrug. "Sorry to disappoint. Never heard the name. Well, my men have much actual rowing to do, Plymouth. Some of the other sixes are too afraid to take their shells out because of the turn of events overnight at the harbor. They say there was a flash of fire, then ten, fifteen ships were crashing, and burning, sinking. Can you imagine what in the deuce those superstitious fools think of it? Black magic, perhaps."

"The city is in a panic about the whole thing, the industries scrambling to prevent losses. I've never heard of so many ships wrecking at once—the number of arrivals must have been too great in the fog," speculated Edwin.

"Too great!" Bob said. "There are more than two hundred wharves and docks in our harbor that would add up to more than five miles if placed end to end, Eddy. Even in much worse fog than that, our capacity for commerce—"

"Oh, who cares a fig!" broke in the Harvard captain. "It is not my business. But whatever it was, I'm not about to let it stop us from our practice, if we are to whip Oxford like we did Yale. Give me your hand, Plymouth. Godspeed to you Technology fellows."

"Godspeed, Harvard." Bob reached out to shake.

On Blaikie's nod, his team rammed their shell into the side of the Tech boat. As Marcus grabbed their shell's sides to steady it, Bob went headfirst into the ice-cold water with

a splash. Edwin, flailing to stop Bob's fall, followed him overboard.

"Cold day for bathing, Plymouth!" Blaikie shouted, as he and the Crimson pirates exploded with laughter.

Marcus grabbed his oar like a bat, ready to defend their boat from further indignity. Blaikie glared at Marcus, daring him to strike.

After another moment Marcus loosened his grip and let his instincts go quiet.

"Wise fellow," Blaikie said with an approving nod. "Being a gentleman isn't what it's cracked up to be, is it, old salt?" Then, to his men: "Three cheers and a tiger for Harvard Class of 1868! Sixty-eight forever!" A trio of "rahs" were followed by a guttural whoop before their oars swept through the water again. Marcus watched the perfect unison of the other team as the shell took the curve of the river ahead.

"Bob's right—those scrubs will see; we'll be the true pathfinders!" Edwin yelled, knocking water out from his ear.

"Oh, damn what I say, Eddy," Bob said. He shook out his hair as he floated back to their boat. "Come on, Mansfield, stop your gaping and fish us out!"

III

The Boston Police

AT WHAT REMAINED of one of the damaged wharves on Saturday, Sergeant Lemuel Carlton of the Boston Police paced along the cracked piers and the splintered docks. The fog had lifted by now, but it was still cloudy and colder than it should have been at this time of year. The best that could be said was it was a respite from the rain that had plagued the last wretched week in March.

"You!" he said to a patrolman who caught him by surprise. "About time you're back, man. What did the captain of the *Gladiator* say?"

"I've spoken to him, sir."

"I chose the past tense 'did' on the presumption of that very thing," Carlton noted in disgust.

"He testified that . . . well, the very same thing as the others, sir! The very same!"

"That so? He hadn't been on a spree—a bit cup-shot? He mustn't be ashamed to admit being a sot to the police," Carlton added, scratching his strong chin sagely.

"I questioned him thoroughly and he vowed he hadn't had a drop, and I didn't find any liquor upon his person or notice any in his rooms. Nor any of the others who were witnesses."

Carlton bowed his head and sat down on a barrel at the edge of the pier, staring at loose planks that were floating past him below. His head throbbed with the echoes of all

the futile conversations since the morning with his patrolmen, unnerved sailors, angry shipowners, crying passengers. He dismissed his inferior to assist the rest of the men with the debris. The Harbor Police had encircled the wharf with their boats and were steering incoming vessels away, including a small fishing boat weaving in and out with a heavy-duty net, looting lost booty.

Boots thumped aggressively on the planking behind him, and he was rising to attention before he even turned.

"Chief Kurtz," he said, bowing. "I believe you will find we have the situation in hand."

"Indeed!" responded Kurtz with surprise, pulling at one end of his bushy mustache and inclining his head toward the destruction. "Tell me, Sergeant Carlton, what *is* this situation? What I see are two of the most important commercial wharves of our city in tatters."

"Three ships sunk, four others damaged or otherwise destroyed, with losses in excess of twenty-four thousand dollars. Fifteen individuals injured to varying degrees, mostly broken arms and legs, and burns, with loss of life avoided only by the great exertions of several experienced sailors."

"But how?" Kurtz demanded after Carlton finished the report. "How did this happen?"

"That is the very question," Carlton said, raising a single eyebrow, and clearing his throat assiduously.

"Hem! Haw! Go on!"

"Chief. I have spoken to several captains and navigators who were on the vessels involved and have instructed the patrolmen to interview as many others as we can locate. Each one, to a man, reports that their instruments failed—were deranged in their readings—all in the space of the same few minutes."

"How is it possible?"

"It is flagrantly not possible, sir! You need not believe me alone. The captain of the Harbor Police says that it is

emphatically and categorically *not* possible for so many compasses and what-you-will to fail at once."

Kurtz stared ominously into the harbor. "Sabotage?"

"Chief," the sergeant began, then hesitated before going on. "Chief, all the instruments were on ships from different destinations with distinct schedules, some arriving, some departing. How it could be sabotage, well, I have wrangled with that question with the same success Joseph had with the angel."

"Then what, Sergeant Carlton? Necromancy? The devil? That's what some of the sailors are squawking about, and that means ships avoiding our ports, and tens of thousands of dollars lost. If the mayor and the legislature sink their teeth into this, it will touch off a volcano under my feet. What do you propose doing about that?"

"We shall remove the debris as best and as quickly as we can manage, so the city engineers can begin to rebuild."

Jaw clenched, Kurtz took off his hat and tossed it into the harbor. "There's one more piece of debris to fish out, Sergeant!"

"Very well, Chief," replied the officer obediently. "I will have my best man do it straightaway."

Kurtz rolled his eyes. "You can return my hat to me in my office when you know what caused those ships to lose their direction. Until then, I'd rather not see that thunderstruck phiz of yours back at the station house."

"But, Chief, perhaps the Harbor Police should lead this investigation."

"They swallow too much of our funds already, and they would crave any excuse to siphon off more. No. Over my dead body, Carlton."

"Then perhaps I ought to consult with some of the professors at that new college in Back Bay. They are experts in all the new sciences, and if the usual reasons for accidents do not fit, perhaps they could advise us where to turn."

Kurtz pulled him away from the patrolmen who were milling around them. "Have you gone mad, Carlton?"

"Sir?"

"Don't rile me! The Institute of Technology? You know the reputation of that place. Their sciences are seen as practically pagan. Just speaking to them will draw fire against us. Try the harbormaster if you need more help! Try the city engineer!"

"I have! All baffled! We need to find someone capable of understanding how this could happen, or we shall not advance one whit!"

"The single place with the finest intellects in the nation sits just across the river. What about that?"

"Harvard."

"Yes! Go there and find *someone* smarter than you, and without delay! We are here to protect this city. I will not suffer another embarrassment like this!"

"Right away, Chief Kurtz. Chief, wait! You're still . . ."
But there he went without a look back, stomping all the way to his waiting carriage, the chief of police of the city Carlton loved, hatless for all Boston to see.

IV

Circuits

ALMOST ANYWHERE MARCUS looked as he stood outside the splendid Boylston Street building was unused land of the Back Bay, or the “new land,” as it was known. Only a few years before it had been marshland and was still so a few streets west, where rows of steam shovels fed by freight cars of gravel and sand continued the filling. Besides the Institute, there were a few other places—including the asylum for aged blacks and the Catholic academy for girls—that preferred distance from the rest of the city. The area was a perfect setting for the improbable college.

Scholars should be surrounded by quiet, but President Rogers had always said technological scholars should be surrounded by the progress of man. The Back Bay presented surroundings that were grandly artificial, where the pupils would observe the way in which civil engineering could turn malodorous swamp—what had been a bubbling caldron of noxious filth poured out from the city, though they were too young to have seen it at its worst—into a landscape of wide streets that would alleviate the crowding of an old Boston, now flooded with so many new residents from rural towns and foreign nations that one could hardly move. It would be the latest example of modern architecture and commercial and industrial progress—at least, that was the hope for the still young, mostly still uninhabitable Back Bay.

"Come on already," Bob was saying, "at this rate, we'll be graduated before we finish the preparations."

If you're to be graduated.

Marcus was carrying equipment outside with Bob. "Two steps behind you, Bob."

In the five days since, the Harvard stroke oar's taunt out on the Charles River had slowly wormed its way into Marcus Mansfield's thoughts with parasitic tenacity. On the one hand, a sort of childish superstition rose inside Marcus, without any particular legs to its logic, that he would not be graduated. Even after he had swapped the machine shop floor for the classrooms and laboratories of the Institute, he had feared deep down that a man like him had no right to be a college man and would, through the last-minute intervention of fate, be deprived of the title.

On the other hand, Marcus's more practical cause for concern was that he and the other members of '68 were to be the first to be graduated from the Institute of Technology, and until a thing had happened it could not rightly be proven that it could happen. They had been taught that from the first hour at Tech.

No doubt Bob Richards would have laughed away his worries, which was why Marcus did not bring them up with him as they finished preparing the equipment for the evening's public demonstration. Bob seemed to have been born with the ability to sleep off any problem in the way other men sleep off beer. But Marcus's thoughts swirled around and around the stroke oar's venomous jeer. When he should have been entering a stage of intense concentration on his studies as graduation crept closer (*If you're to be graduated*), he instead felt unmoored and a little wild—and for that he blamed the obnoxious Harvard men he'd likely never see again.

Only a handful of students gathered for the demonstration besides Marcus and Bob. This close to the end of term, most of the students raced home after five

o'clock each evening to prepare for examinations and final papers. Marcus noticed Chauncy Hammond, Jr., gazing up at the cloudy sky. Hammie's jet-black hair was parted smartly, impervious to the breeze, but his bulbous forehead and gourdlike chin, inexpertly shaved, overshadowed his otherwise bland facial features, which seemed to have been left unfinished by their creator. A contender, along with good-hearted Edwin Hoyt, for First Scholar, Hammie generally floated along in his own rarefied world of figures and formulas. Standing near the front steps was that busybody Albert Hall, writing in a ledger held in the crook of his arm, maybe recording the names of students present (or, more likely, listing those not present, underlined by his pencil with spite), and next to Albert was Bryant Tilden, arms crossed petulantly across his tree-trunk chest.

Ellen Swallow was on her own at the outer fringe of the gathering. As the only female pupil at the Institute, Miss Swallow was taught separately from the others, so a sighting of her was rare. Her quick eyes darted around and caught his. He lifted his hand to his hat, but she simply looked the other way with a crimson bloom tainting her pale cheeks.

President Rogers was slowly approaching the podium at the front of the building. He was steadied on one arm by Darwin Fogg, the Institute janitor, and on the other by a petite chambermaid. She held on to her employer gingerly but with an unmistakable protectiveness. Marcus looked upon the condition of their college president sadly, remembering him in days of much better health.

Along the way, Rogers removed his eyeglasses from his vest and lost his grip on them; they bounced off his arm and, with one hand, the chambermaid caught them before they could hit the ground and returned them without waiting for any credit.

"Is she dark or blond under that cap?" Bob, sneaking up behind him, asked in a whisper.

“Who do you mean?”

“The pretty little nymph you’re staring at as if her eyes were fully charged electromagnets—the Irish servant girl propping up Rogers. Never mind her. Have I told you this summer there will be dozens of balls thrown by good Boston society where you will make a fine prospect as a college graduate? Those ladies are so well bred they would rather be dead than not make an appearance at a public affair. Do not smooth your mustache like that—I cannot tell what expression you’re wearing. Do you laugh or sneer at my plans?”

“Rogers is about to begin the demonstration. Do you have the circuit ready?”

“Sneer! No, wait. You do laugh!”

“Never at you, Bob.”

“Ladies and gentlemen, welcome,” President Rogers began when the clock reached eight. Despite his weakened condition, his voice easily cascaded through the gathering with authoritative calm. “The people of Massachusetts have always been a mechanical people and our age will see many wonders. At the Massachusetts Institute of Technology, it is our sincerest hope that our zeal for new invention is as infectious outside the college as inside our walls, where we endeavor to invigorate the observing and logical faculties of young minds, by asking each day: What limit of knowledge will man yet reach?” He stopped, put his paper down on the podium, and looked at the sky as he wiped his eyeglasses. “It *is* growing dark, isn’t it? I’m embarrassed, I confess. I can hardly read my own jottings.”

He nodded in their direction—that rugged face with the soft smile. Bob tapped a spring on a box. After about fifteen or twenty seconds, the lampposts lining Boylston Street flickered, then lit up simultaneously in a long procession of softly glowing orbs. At the pop of the lanterns, there was a collective gasp and a palpable excitement.