

WEB OF STEEL

By
CYRUS TOWNSEND BRADY and CYRUS TOWNSEND BRADY, Jr.
 Author and Clergyman Civil Engineer

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THE FAMOUS ENGINEER LEARNS THAT HE MADE THE BIG MISTAKE OF HIS LIFE AND MANY LIVES MUST PAY THE PENALTY.

The Martlet Construction company is putting up a great international bridge planned by Bertram Meade, Sr., famous engineer. His son, Bertram Meade, Jr., a resident engineer at the bridge, loves Helen Illingworth, daughter of Colonel Illingworth, head of the construction company, and they will marry as soon as the bridge is completed. The young engineer questioned his father's judgment on the strength of certain important girders, but was laughed at. His doubts are verified when the bridge suddenly collapses, with heavy loss of life.

CHAPTER VI.

The Failure.

In spite of himself and his confidence in the bridge, Abbott felt a little uneasy the next morning. At bottom he had more respect for Meade's technical knowledge than he had displayed or even admitted to himself. The younger engineer's terrified alarm, his utter forgetfulness of the amenities between them, his frantic but futile efforts to telephone, of which the operator told Abbott in the morning, his hurried departure to New York, were, to say the least, somewhat disquieting, much more so than he was fain to admit to himself.

Although it involved a hard and somewhat dangerous climb downward and took upwards of a half hour of his valuable time, the first thing the erecting engineer did in the morning was to go down to the pier head and make a thorough and careful examination of the buckled member. C-10-R was, of course, a part of the great lower chord of the huge diamond-shaped truss, which, with its parallel sixty feet away on the other side of the bridge and its two opposites across the river, supported the whole structure. If anything were wrong, seriously, irreparably wrong, with the member and it gave way, the whole truss would go. The other truss would inevitably follow suit, and the cantilever would immediately collapse. Abbott realized that, of course, as he climbed carefully down to the pier head and stood on the shoe.

Abbott, as he stood by the member and surveyed it throughout its length, could easily see that it had buckled, although the deviation was slight, about two inches at its maximum in sixty feet. He brought with him a line and, with infinite care and pains, he drew it taut across the slight concavity like a bow-string. He had estimated the center of the bow and the string, at one and a half inches. As he made more careful measurements, he discovered that it was slightly over one and three-quarter inches. In seven hundred and twenty that was scarcely noticeable, and it did not seem very much to Abbott. As he stood there feeling himself an insignificant figure amid this great interwoven mass of steel, again the sense of its strength and stability came to him overpoweringly, so much so that he laughed aloud in a rather grim fashion at the unwanted nervousness which had been induced in his mind by Meade's words and actions.

But he was a conscientious man, so he pursued his investigations further. He climbed up on top of the member, which was easy enough by means of the criss-crossed lacing, and carefully inspected the lacings at the center of the concavity, or sidewise spring from the right line.

He noticed, by getting down on his face and surveying the lacing bars closely, a number of fine hair-line cracks in the paint, surface traceries apparently, running here and there from the rivet holes. The rivets themselves had rather a strained look. Some of the outer rivets seemed slightly loose, where before they must have been tight, for the members, like all other parts of the bridge, had been carefully inspected at the shop and any looseness of the rivets would certainly have been noticed there. But Abbott's obsession as to the strength of the bridge had grown stronger. Lining it out, crawling over it, feeling its rigidity, he decided that these evident strains were to be expected. Of course the lacings that held the webs together would have to take up a terrific stress. They had been designed for that purpose. Largely because he did not find anything very glaring, and because he wanted to believe what he believed, the chief of construction left the pier head and clambered up to the floor with more satisfaction in his heart than his somewhat surprising anticipation which had so unwillingly grown under the stimulus of Meade's persistence, had led him to expect.

The whistle was just blowing for the commencement of work when he got back to the bridge floor. He could not but reflect, as the men came swarming along the tracks to begin their day's work, that the responsibility for their lives lay with him. Well, Abbott was a big man in his way, he had assumed responsibilities before and was perfectly willing to do so again, both for

nothing to Abbott. The bridge was everything. That is not to say he was heartless, but the bridge and its erection were supreme in his mind.

The material was arriving and everything was going on with such a swing and vigor that he would fain have kept them at work an hour or two longer. The men themselves did not feel that way. Some of the employees of the higher grades had got the obsession of the bridge, but to most of them it was the thing they worked at, by which they got their daily bread—nothing more.

Those who worked by the day were already laying aside their tools, and preparing for their departure. They always would get ready so that at the signal all that was left to do was to stop. The riveters, who were paid by the piece, kept at it always to the very last minute.

Abbott had been standing near the outer end of the cantilever and he turned and walked toward the bank. The pneumatic riveters were rattling on the rivet heads with a perfectly damnable iteration of insistent clatter. A confused babel of voices, the clatter of hammers, ringing sounds of swinging steel grating against steel, clanking of trucks, grinding of wheels, the deep breathing of locomotives, mingled in an unharmonious diapason of horrid sound.

Abbott was right above the pier head now. He looked down at it through the struts and floor beams and braces, fastening his gaze on the questioned member. There it stood satisfactorily, of course. Yet, something impelled him to walk out on the nearest floor beam to the extreme edge of the truss and look down at it once more, leaning far out to see it better. He could get a better view of it with nothing between it and him. It still stood bravely. It was all right, of course. He wished that he had never said a word about it to anyone. He did not see why he could not regard it with the indifference that it merited. As he stared down at it over the edge of the truss the whistle for quitting blew.

Every sound of work ceased after the briefest of intervals, except here and there a few riveters driving home a final rivet kept at it for a few seconds, but only for a few seconds. Then, for a moment a silence like death itself intervened. It seemed as if the ever blowing wind had been momentarily stilled. That shrill whistle and the consequent cessation of the work always affected everybody the same way. There was inevitably and invariably a pause. The contrast between the noise and its sudden stoppage was so great that the men instinctively waited a few seconds and drew a breath before they began to light their pipes, close their tool boxes, pick up their coats and dinner pails, and resume their conversation as they strolled along the roadway to the shore.

It seemed to Abbott that it had never been so silent on the bridge before. There was almost always a breeze, sometimes a gale, blowing down or up the gorge through which the river flowed, but that afternoon not a breath was stirring.

Abbott found himself waiting in strained and unwanted suspense for the next second or two, his eyes fixed on the member. The long warm rays of the afternoon sun illuminated it clearly. In that second immediately below him, far down toward the pier head he saw a sudden flash as of breaking steel. Low, but clear enough in the intense silence, he heard a popping sound like the snap of a great finger. Then the bright gleam of freshly broken metal caught his excited glance. The lacing was giving way. Meade was right. The member would go with it—The first pop or two was succeeded by a little rattle as of revolver shots heard from a distance, as the lacings gave way in quick succession. Abbott was a man with a powerful voice and he raised it to its limit.

The idle workmen, just beginning to laugh and jest, heard a great cry: "Off the bridge, for God's sake!"

Two or three, among them Wilchings, who happened to be within a few feet of the landward end, without understanding why, but impelled by the agony, the appeal, the horror in the great shout of the master builder, leaped for the shore. On the bridge itself some stepped forward, some stood still staring, others peered downward. The great sixty-foot webs of steel wavered like ribbons in the wind. The bridge shook as if in an earthquake. There was a heavy, shuddering, swaying movement and then the 600-foot cantilever arm plunged downward, as a great ship falls into the trough of a mighty sea. Sharp-keyed sounds cracked out overhead as the truss parted at the apex, the outward half inclining to the water, the inward half sinking straight down.

Shouts, oaths, screams rose, heard faintly above the mighty bell-like clamor of great girders, struts and ties smiting other members and ringing in the ears of the helpless men like doom. Then, with a fearful crash, with a mighty shiver, the landward half col-

lapsed on the low shore, like a house of cards upon which has been laid the weight of a massive hand. The river section, carrying the greater load at the top and torn from its base, plunged, like an avalanche of steel, 200 feet down into the river, throwing far ahead of it, as from a giant catapult, the traveler on the outward end of the suspended span and a locomotive on the floor beneath.

Wilchings, and the few men safe on the shore, stood trembling, looking at the bare pier head, at the awful tangled mass of wreckage on the shore between the pier and the bank; floor beam and stringer, girder and strut, bent, twisted, broken in ragged and horrible ruin, while the water, deeper than the chasm it had cut, rolled its waves smoothly over the agitations of the great plunge beyond the pier. They stared sick and faint at the tangled, interwoven mass of steel, ribbing in every direction—for in the main the rivets held so it was not any defect of joints, but structural weakness in the body of the members that had brought it down—and inclosing as in a net many bodies that a few seconds before had been living men.

They had seen body after body hurled through the air from the outward end and, as they gazed fearfully in horror here and there dark figures floated to the surface of the water. They caught glimpses of white, dead faces as the mighty current rolled them under and swept them on. And no sound came from the hundred and fifty who had gone down with the bridge. The 200-foot fall would have killed them without the smashing and battering and crushing of the great girders that had fallen upon them or driven them from the floor and hurled them, crushed and broken, into the river.

Meade had been right. Abbott had one swift flash of acknowledgment, one swift moment packed with such regrets as might fill a lifetime—an eternity in a hell of remorse—before he, like the rest, had gone down with the bridge!

CHAPTER VII.
 For the Son.
 The message was received in ghastly silence. No one spoke for a moment. None moved. Colonel Illingworth's face was fiery red. Bertram Meade was whiter than any other man in the room. He was thinking of his father. The girl moved first. Her father and the young engineer were the two most deeply touched. They were both in agony, both in need of her. Unhesitatingly she stepped to the side of the younger. And the father saw and understood even in the midst of his suffering. She had chosen.

"We are ruined," gasped the colonel, tugging at his collar. "We could stand the financial loss, but our reputation! We'll never get another contract. I might as well close the works. And it is your father's fault. It's up to him. The blood of those men is upon his head. Well, sir, I'll let the whole world know how grossly incompetent he is, how—"

"Sir," said young Meade, standing very erect and whiter than ever, "the fault is mine. I made the calculations. I checked and rechecked them. Nobody could know with absolute certainty the ability of the lower chord members to resist compression. But whatever the fault, it is mine. My father had absolutely nothing to do with it. He is—"

"He's got to bear the responsibility," cried the colonel passionately. "It has his name—"

"No, I tell you," thundered the younger man. "For I'll proclaim my own responsibility. The fault is all mine and I'll publish the fact from one end of the world to the other."

"It's a load I wouldn't want to have on my conscience," said Colonel Illingworth.

"The ruin of a great establishment like the Martlet," added Doctor Severance.

"The dishonor to American engineering," said Curtiss.

"And the awful loss of life," continued the colonel.

"I assume them all," protested the young man, forcing his lips to speak, although the cumulative burdens set forth so clearly and so mercilessly bade fair to crush him.

"It was only a mistake," protested Helen Illingworth, drawing closer to her lover's side, and with difficulty resisting a temptation to clasp him in her arms.

"A mistake!" exclaimed her father bitterly.

"You said yourself," urged the woman, turning to the chief engineer, "that you didn't know whether the designs would work out, that nobody could know, but you were convinced that they would."

"Wait," interrupted the father. "Meade, there is one consequence you have got to bear that you haven't thought of."

"What do you mean?"

"Do you think I'd let my daughter marry a man who had ruined me, an incompetent engineer by his own confession, a—"

"It is just," said Meade. "I have nothing further to do here, gentlemen. I must go to my father."

"Just or not," cried Helen Illingworth, "I can't allow you to dispose of me in that way, father. If he is as blamable as he says he is, and as you say he is, now is the time above all others for the woman who loves him to stand by him."

"Miss Illingworth, you don't know what you are saying," said Meade, forcing himself into a cold formality he did not feel. "I am disgraced, shamed. There is nothing in life for me. My chosen profession—my reputation—everything is gone."

"The more need you have for me, then."

"It is noble of you. I shall love you forever, but—"

He turned resolutely away and walked doggedly out of the room. Helen Illingworth made a step to follow him.

"Helen," interposed her father, catching her almost roughly by the arm in his anger and resentment, "if you go out of this door after that man, I'll never speak to you again."

"Father, I love you. I'm sorry for you. I would do anything for you but this. You have your friends. That man yonder has nothing, nothing but me. I must go to him."

She turned and went out of the room without a backward look or another word, no one detaining her. Now it happened that by hurrying down the hill in the station wagon, Meade had just caught a local train, which made connections with the Reading express some twenty miles away, and Helen Illingworth in her car reached the station platform just in time to see it depart. She remembered that ten miles across the country another railroad ran and if she drove hard she could possibly catch a train which would land her in Jersey City a few minutes before the train her lover caught. She told the chauffeur, who scented a romance and drove as he had never driven before.

The girl caught the express and rode to the Hudson terminal in the city. The newsboys on the street were already crying the loss of the bridge. She saw the story displayed in lurid red headlines as she sprang into the taxi and bade the chauffeur hurry her to the Uplift building downtown. The bill she handed him in advance made him recklessly break the speed limit.

Bertram Meade, Sr., had not left the office during the whole long afternoon. He sat alone, quietly waiting for the end. As to the drowning life unrolls in rapid review, so pictures of the past took form and shape in his mind. He recalled many failures. No success interrupted and unbroken. It is through constant blundering that we arrive. He had learned to achieve by failing, as everybody else learns. But failures and mistakes, which were pardonable in the beginning of his career, could not be condoned now; those should have taught him. He realized too late that his later achievement had begun in him a kind of conviction of omniscience, a belief in his own infallibility, bad for a man. His pride had gone before, hard upon approached the fall. He had been so sure of himself that even when the possibility that he might be mistaken had been pointed out and even argued, he had laughed it to scorn. His son's arguments he had held lightly on account of his youth and comparative inexperience—to his sorrow he realized it, too late.

Again came that strange feeling of pride, the only thing which could in any way alleviate his misery or lighten his despair. It was his own son who had pointed out the possible defect. Youth more often than not disregards the counsel of age. In this case age had made light of the warnings of youth. It was a strange reversal, he thought, grimly recognizing a touch of sardonic and terrible humor in the situation.

"Whom the gods destroy they first make mad." Well, he had been mad enough. If he had only listened to the boy. And now there was nothing he could do but wait. Yes, as the long hours passed and the sun declined, and the evening approached, there suddenly flashed upon him that there was still something he could do. He had experienced some strange physical sensations during that afternoon, unaccounted for, some sharp pains about his heart. He forgot them for the moment in the idea that had come to him.

When the bridge fell he would avow the whole responsibility, take all the blame. Fortunately for his plans, his son had refused to writing his views on the compression members, which had almost taken the form of protest, and this letter had been handed to his father. His first mind had been to tear it up after he had read it and had overborne the objections contained therein, but on second thought he had carefully filed it away with the original drawings. It was, of course, in the younger Meade's own handwriting.

He went to his private safe, opened the drawings and found the letter attached to the sheet of drawings. He put back the other drawings and closed the safe without locking it. Then he went back to the desk and considered the document. He had been blind, mad. He laid the paper down on his desk and put his hand to his heart.

Of course he would submit those papers to the public at once. Was there anything else he could do? Yes. He sat down at the desk and drew a sheet of paper before him and began to write. Slowly, tremblingly, he persevered, carefully weighing his words before he traced them on paper. He had not written very long before the door of the outer office opened and he heard the sound of soft footsteps entering the room. He recognized the newcomer. It was old Shurtliff, a man who had been his private secretary and confidential clerk for many years. He stopped writing and called to him.

Shurtliff was an old bachelor, gray, thin, tall, reticent. He had but one passion—Meade, Sr.; but one glory—the reputation of the great engineer. Yes, and as there is no great passion without jealousy, Shurtliff was filled with womanly jealousy of Bertram Meade because his father loved him and was proud of him. Shurtliff knew all about the private affairs of the two engineers, father and son. He knew all about the protest of the younger

Meade. The father had told him. Just what he intended to do with it.

Shurtliff might have been a great man if left to himself or forced to act for himself. But pursuing a great passion so long as he had, he had merged himself in the more aggressive personality of his employer and friend. He had received a good engineering education, but had got into trouble over a failure, a rather bad mistake in his early career, too big to be rectified, to be forgiven, or condoned. The older Meade had taken him up, had been kind to him, had offered to try to put him on his feet again, but his big failure had increased his natural timidity, so he stayed on. He had become a part of the old man's life.

Young Meade had never been able to get very far into the personality of Shurtliff, but he liked him and respected him. He realized the man's devotion to his father, and he understood and admired him. Aside from that jealousy the old man could not but like the young one. He was too like his father for Shurtliff to dislike him. The secretary wished him well; he wanted to see him a great engineer. Of course he could never be the engineer that his father was. That would not be in the power of man. But still, even if he never attained that height, he could yet rise very high. Shurtliff would not admit that there was anything on earth to equal Meade, Sr.

The secretary was greatly surprised as he stopped beside his own desk to hear his name called from the inner office. He recognized his employer's

voice, of course, yet there was a strange note in it which somehow gave him a sense of uneasiness. He went into the room at once and stopped agitated.

"Good God, Mr. Meade!" he exclaimed.

Ordinarily he was the quietest and most unobtrusive of men. There was something soft and subtle about his movements. An exclamation of that kind had hardly escaped him in the thirty years of their association. He checked himself instantly, but Meade, Sr., understood. The day before Shurtliff had left him a hale, hearty, vigorous somewhat ruddy man. Now he found him old, white, trembling, stricken. Meade looked at Shurtliff with a lack-luster eye and with a face that was dead while it was yet alive.

"Mr. Meade," began the secretary a second time, "what is the matter?"

"The International bridge," answered the other, and the secretary noticed the strangeness of his voice more and more. "It's about to collapse. Perhaps it has failed already."

Meade passed his hand over his brow and then brought it down heavily on the desk.

"As we sit here, maybe, it is falling." He added somberly in a sort of dull, impersonal way.

Into the mind of the secretary came a foolish old line: "London bridge is falling down, falling down!" He must be mad or Meade must be mad.

"I can't believe it, sir. Why?"

"There's a deflection in one of the lower chord members of one and three-quarters inches. It's bound to collapse. The boy was right, Shurtliff," explained Meade. "I was wrong. I am ruined."

"Don't say that, sir. You have never failed in anything. There must be some means."

"Shurtliff, you ought to know there is no power on earth could save that member. It's only a question of time when it will fall."

The secretary leaned back against the doorjamb, put his hand over his face, and shook like a leaf. The old man eyed him.

"Don't take it so hard," he said. "It's not your fault, you know."

"Mr. Meade," burst out the other man, "you don't know what it means to me. A failure myself, I have gloried in you. I—you have been everything to me, sir. I can't stand it."

"I know," said Meade kindly. He rose and walked over to the man, laid his hand on his shoulder, took his other hand in his own. "It hurts more, perhaps, to lose your confidence in me than it would to lose the confidence of the world."

How the gods conspire to make complete the wreckage of reputations and how young Meade is cast into outer darkness is told in the next installment.

(TO BE CONTINUED)



"Mr. Meade, What is the Matter?"