CHAPTER XIX.

THE GATUN DAM.

The scene changes to a day when the boys had their first view of the mighty Gatun Dam, a work that, as President Taft said, is "as solid as the everlasting hills." Picture a vast valley hemmed in by hills heavily timbered with tropical growth. Across the valley floor the current of the muddy Chagres slowly serpentine, with workmen's huts clustered along its sides, and everywhere preparations being made to hem it in, much as the Liliputians set about harnessing Gulliver, a giant to them.

The floor of the valley, once a trackless jungle and destined within a short time from the moment that the Boy Scouts gazed upon it to become a mighty lake, was crisscrossed in every direction by lines of railroad along which contractors' engines were puffing and hauling long
The boys had their first view of the mighty Gatun Dam.

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winding trains of dirt cars. In places, great steam shovels were at work eating out whole hill-sides, taking great mouthfuls at a time.

"Like Tubby eating pie," laughed Merritt, as he watched one of them.

Across the valley floor, the huge dam, a veritable mountain of concrete, was rising. Busy human ants swarmed everywhere and, at the spot on which the boys stood, with Mr. Mainwaring and some assistant engineers to explain things, hundreds of black workmen were working like beavers on the summit of the great wall. Where they stood the wonderful dam was 100 feet wide, just one-fourth the length of the steamer on which they had come to the Isthmus.

At the base of the dam the width of the gigantic structure is 1,900 feet, and its massive foundations go down into the earth for many feet more.

"Just think," exclaimed Rob, aglow with the wonder of it all, "before long all this valley floor will be a huge inland sea across which vessels can push their way from Pedro Miguel to Gatun."
The roar of an excavating machine drowned his comrades' replies, but their looks showed how deeply they were impressed.

"It makes you feel like a—a fly speck," exclaimed Tubby, when the uproar ceased for an instant.

Up along a line of rails glided a movable steam shovel. On a side track a busy little locomotive had already bunted a train of flat cars. There was a loud clatter of chains; two white spouts of steam leaped high above the shelter which protected the steam shovel's engineer from the burning sun. Down swung the huge steel dipper. Almost like a hungry human being, rather like some famished giant, it swung its iron-toothed jaws apart and bit deep into a bank which had to be moved. In an instant its mouth was closed again and the receptacle was full of rough, broken material. Big rocks were among the earth, but that made no difference to this devouring leviathan.
“Hi!” shouted a big shining negro man on the flat car.

The big steam shovel gave a sharp scream of warning, the steam spurted forth again from the vent pipes and up swung the load. The long arm slowly reached out above the flat car. A mighty scampering of the negro loaders followed.

“Hi!” came the cry of the boss negro again.

The bottom of the dipper opened. There was a roar of falling rock and earth and a flat car was filled. Then the process was repeated till the hillock that was to be removed melted away like a plate of ice cream before a healthy boy.

Thus, amid shouting, seeming confusion, the clanging and crash of metal, the scream of steam whistles, shouted orders and the noise of steam and the fog of smoke, the work went on,—the mighty job that Uncle Sam, contractor, is putting through for the benefit of the civilized world.

Mr. Mainwaring told the boys that there is keen rivalry among the steam-shovel men. Prizes are given every month for the record
amount of dirt that flies. Each shovel is pushed to the limit of its capacity. In an eight-hour day one of the steam shovels excavated and loaded on flat cars 3,500 cubic yards. This means about 160 carloads for the day, or a carload every three minutes.

The boys noticed, too, that the negroes, Italians and Spaniards toiled away at their tasks without appearing to take much interest in their work beyond keeping just hard enough at it to avoid getting into trouble. But on the faces of the "gold-men," as the engineers and American officials are termed, was the stern determination of men animated by a great purpose. Off duty, the gold-men, so called because they are paid in American gold and not in Panama coinage, are a joking, jolly lot of men, who like to play tennis and baseball, and indulge in all sorts of sports. But on duty, clad in khaki and gaiters, with great sun helmets to keep off the baleful rays of the tropical sun, they are like changed men.

The expression the boys noticed on their faces
as they hurried about with blue prints or levels and theodolites was set and stern. They seemed to be, in a way, instruments of a great destiny. Each bore himself as if he knew that the work in hand required the best that was in him.

"It seems to me," said Mr. Mainwaring, "that these great steam shovels and their crews, the activity and all the purposeful bustle and hustle down here, represent more fully than anything that I have ever seen the determined, fearless American spirit that has overridden what appeared to be impossibilities, and is carrying the Canal through to a triumphant completion. It's a great thing for a boy to be able to say that he has seen such a work, and it will be a still greater thing if he takes to heart the lessons to be learned here on every hand."

Here he looked at Tubby who, not paying any attention to this "preachifying," as he mentally termed it, was drinking the milk out of a cocoanut. The fat boy had become very fond of the cocoanut, which can be bought on the Isthmus
for little or nothing. He had slung several around his waist and at intervals, amidst the dust and turmoil of the work on the great dam, he refreshed himself by a copious draught of their cool contents.

At the boys' feet, as they stood on the lofty concrete battlement, lay the cut for the Gatun locks, which will raise and lower vessels eighty-five feet. There are no such locks anywhere in the world. While the boys watched, a steady stream of concrete was being poured into giant moulds for the locks, and rows of arc-light poles, like gaunt trees, showed that under the glare of electric lights the work was pushed forward even at night. Not a minute of time was wasted all through that vast system. They soon had become aware of that.

While the boys stood there an erect, military-looking man came up to Mr. Mainwaring, who greeted him with every appearance of respect. The newcomer was tall, bore an air of authority, and was dressed in a white military uniform.
“Colonel,” the boys heard Mr. Mainwaring say, after a few minutes’ grave conversation, “I wish to introduce to you my son Fred and his three chums,—all, as you see, Boy Scouts.”

Tubby hastened to chuck his empty cocoanut shell off the top of the dam as he saw that a social ceremony was going forward. The shell lit on a negro’s skull far below and bounded off with a loud crack.

“Mah goodness, dem musquitoes is wusser dan ebber to-day,” the negro remarked to the man shoveling at his side, which would have made Tubby laugh if he had heard it.

After a few kind words to the chums, the military-looking man passed on, stopping every now and then to examine the work with every appearance of minutest care.

“Wonder what kind of a boss he is?” remarked Tubby nonchalantly after he had passed on. “Steam shovel boss, concrete boss, dynamite boss, engineering boss or surveying boss,—there are other kinds but I forget ’em.”
"Why, you chump," roared Fred, "don't you know who that was?"

"I didn't catch his name," rejoined Tubby.

"Well, that wasn't anybody more important than Lieut.-Col. George W. Goethals, chairman of the Isthmian Canal Commission, and known as the 'man who dug the ditch.'"

"Oh-h-h-h-h-h!" mumbled Tubby, a great light breaking upon him, "I guess I'll take another cocoanut on that."

And the fat boy selected a fine specimen from the several that adorned his belt like scalps hanging round an Indian warrior.
CHAPTER XX.

A DYNAMITE VOLCANO.

After a while, despite the thrilling novelty of the scene and the significant interest it held for the four American lads, the dust, the heat, the noise and the confusion and bustle became wearisome, and they began looking about, boy like, for something new.

A white man in a duck uniform and pith helmet hastened by in company with a colored man who looked different from any negro the boys had yet seen. The man had straight black hair, long and glossy. He wore a small sort of skull cap and white clothes with odd velvet shoes not unlike those affected by Chinese.

"Hullo, Raynor!" shouted Mr. Mainwaring to the white man, as the pair hustled by along the rampart-like heights of the big dam, "where are you bound for?"
The dark man and his companion came to a halt, the former standing in a respectful attitude and saluting Mr. Mainwaring.

"We're going to shoot a test hole," was the reply.

"Do you mind taking these lads along? As you see, they are Boy Scouts, and anxious to see all that they can."

"I'll be delighted to. I've a kid brother at home whose letters are full of the doings of his patrol. Come along, young men. I'll show you something that will make your eyes open."

"I'll meet you here in time for dinner," said Mr. Mainwaring.

"We'll be here," rejoined Tubby, whose eyes had brightened at the mention of a meal. Although he had devoured the milk and creamy meat of two huge cocoanuts, the stout youth was still ready for another chance at edibles.

Mr. Raynor hastened on, beckoning to the boys to follow him.
"What is a test hole?" asked Rob, as the boys trudged along the top of the dam beside him.

"It is a hole blown in the ground so that we can tell what sort of foundation we are working on," was the reply.

"Blown in the ground?" asked Tubby with round inquiring eyes.

"Yes. Dynamited, perhaps I should have said. Ram Chunda there," he motioned back at the dark man who was trotting along behind, "is the boss dynamiter. He's going to shoot the hole."

"Oh, he's a Hindoo?" exclaimed Rob as he heard the name of the dark satellite. "We thought he was a negro."

"Oh, no. We couldn't trust negroes with dynamite. Almost all the dynamite men on the canal are Hindoos. They are not fit for the heavy work; but we find them reliable and trustworthy around explosives."

"What's that?" asked Merritt presently, indicating a small hut painted a bright red.

"That's a dynamite hut. See, there are sev-
eral workmen waiting to have explosives served out to them."

"Can anybody get the stuff who wants it?" asked Merritt.

"No, indeed. That would never do. They have to bring an order signed by the boss on their particular section."

Ram Chunda, however, appeared to have his supply of explosives elsewhere for they did not stop at the dynamite hut but passed on.

"How much dynamite is stored there?" asked Rob, as they hurried along.

"Oh, enough to blow the whole dam up, I guess," was the careless reply, to which the boys did not attach much significance at the time, although they were to recollect those words with peculiar vividness later.

Before long they reached a place where ladders were stretched from the ground to the top of the dam.

"We'll go down these," announced Mr. Ray-
nor, halting. "Ram, you go first. You boys can follow. All got steady heads, I hope?"

"I think so," murmured Fred, with a vivid recollection in his mind of the scene on the ruined tower of St. Augustin, "two of us have, anyhow."

The engineer did not, of course, understand the allusion nor, to the joy of Rob and Merritt, did he ask any explanation. Neither boy liked to recall those awful moments when they hung suspended in mid-air between life and death.

The ladders were long and steep, but the descent was made without incident. At the base of the dam, however, was a steep sort of embankment of loose sand and gravel. Tubby, who was behind Ram Chunda, looked down and saw this, which appeared to offer a secure "jumping off" place.

With a whoop he jumped from the last ladder while still several feet above the top of the bank. His feet struck it with a scrunch. But the loose, shaly stuff was treacherous. With an alarmed yell the fat boy, the cocoanuts round his belt rat-
ting like castanets, rolled down the bank, revolving like a barrel.

The others looked on in some alarm. Suddenly Tubby struck the bottom of the bank and simultaneously there came a series of sounds like a volley of musketry.

Pop! pop! pop! pop!

"Gracious, it's Tubby," cried Rob, tracing the source of the sounds.

"Is he blowing up?" demanded Fred Mainwaring in genuine alarm.

"Sounds like it!" exclaimed Merritt apprehensively.

The engineer and the Hindoo looked on in amazement. The fat boy continued to pop loudly. Suddenly, still popping spasmodically, he struggled to his feet. What a sight he presented!

He was covered from head to foot with a milky fluid which was flowing down him and on which the gravel had stuck and plastered him with yellow mud.

"Tubby, are you hurt?" yelled Merritt.
“Bob,” shrilled Rob, for once, in his alarm, giving Tubby his real first name, “what’s the trouble? Are you injured?”

“No, but those cocoanuts have blown up!” shouted Tubby angrily. “One after another they busted! I thought I was in a battle for a minute.”

“Well, you look as if you’d been through a hard siege,” declared Rob, who, now that his apprehension was over, joined the others in a hearty laugh and a scramble down the gravel bank.

“What made ’em bust?” demanded Tubby, ruefully, surveying his drenched uniform and brushing himself off as best he could.

As soon as he could speak for laughing the engineer explained. Cocoanuts in their natural state are shielded by great masses of leaves which keep their milky contents cool. Tubby, in his greed, had girded himself about with the succulent nuts and then spent a long morning in the hot sun. This, combined with his activities, had caused the milk to heat up and ferment.
If the fat boy had not taken his tumble down the bank it is not likely that the nuts would have exploded. But the fall was what proved too much for the already fermented milk. Like so much gunpowder it had expanded and blown the "eyes," or thin parts, out of each cocoanut, spraying the unfortunate Tubby with milk, and making the sharp series of reports that had so alarmed them.

Even Ram Chunda’s immobile face bore the trace of a smile at Tubby’s disaster. In fact, the boy got no sympathy from anyone.

“I'll pack no more cocoanuts with me,” he was heard to mutter, “they are as dangerous as Anarchists' bombs and a whole lot messier. Gee, my uniform’s a sight!"

But as the unanimous verdict seemed to be "Serves you right," Tubby had few remarks on his disaster to offer for the public benefit.
CHAPTER XXI.

"RUN FOR YOUR LIVES!"

Ram Chunda approached a small hut painted red like the other dynamite shed, and came out with his arms laden with what were apparently cylindrical tin cans. He selected a number of these, handling them with no more apparent care than if they had been tins of tomatoes, instead of charges of dynamite.

"T-t-t-tell him to be a little c-c-c-careful, won't you?" begged Tubby. "That stuff would blow up worse than cocoanuts if he dropped it."

"Yes, we'd never know what struck us," said the engineer carelessly, "but don't worry about Ram, he knows what he's doing."

He spoke with the indifference of one who has handled high explosives for years, but the boys' emotions were very different. They eyed
Ram Chunda askance as he stumbled occasionally on a rock or hillock of earth.

In this manner they walked quite a distance back from the dam to a point where no tracks or workmen were visible.

“Right here is where, before long, we are going to build a wing dam to strengthen the main one,” explained the engineer.

“Then what’s the use of blowing it up?” asked Tubby stolidly. The fat boy was, to tell the truth, in a state of alarm over what was to come.

“Why, we want to see just what lies underneath before we start to dig a foundation, otherwise it would be so much wasted labor,” was the response.

There were already several test holes drilled in the ground, but the object of dynamiting was to loosen up the soil beneath to ascertain if there was any substratum of water.

“Ever see them shoot an oil well?” asked the engineer, as he peered about looking for a suitable hole to start on.
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The boys shook their heads. They had heard of the operation but had never had an opportunity to witness such a proceeding.

"Now is your chance then," said Mr. Raynor. "Ram," calling to the Hindoo, "we try 'um this fellow number one shot."

The Hindoo nodded and, carrying his armful of explosives, hurried to his boss's side.

"Gee! This is only Number One," muttered Tubby in an alarmed undertone.

"Don't be a scare-cat, Tubby," laughed Merritt, although his own heart was beating a bit fast.

"Scare-cat nothing. I—I guess I'll go home to dinner. Once is quite enough to be blown up in one morning," quoth the fat youth, "besides, I promised my mother I wouldn't get into danger."

"I guess over-eating is the only danger you'll be in," chortled Fred.

Tubby looked pained but said nothing. With round eyes he began to watch the proceedings of the Hindoo "dynamite man."
The latter cautiously lowered into the hole selected several of his tin cylinders. The rest of the operation, as Mr. Raynor had explained, would be similar to that of shooting an oil well. That is to say, a heavy cylindrical iron weight would be dropped on the explosive mass at the bottom of the hole, causing it to detonate.

With as much care now as if he were handling eggs, Ram lowered the final cylinder of dynamite into the hole. Then he attached a long string to the weight and gave a shout.

"Get back to a safe distance, boys," cried Mr. Raynor, running toward them.

They needed no second warning, but beat a rapid retreat toward the great concrete rampart of the dam.

"I'd climb over to the other side if I had the time," Tubby declared, feeling perhaps that he would be safe enough behind that man-made cliff.

At last all was in readiness. Some laborers near at hand, glad of any excuse to drop work, laid down their shovels to see what would happen
when the "Go-devil," as they called it, was set off.

Mr. Raynor gave a look behind him at Ram who was crouching low at quite a distance from the hole.

"All right!" he shouted.

Ram gave the string a jerk and dropped it. Then he too started sprinting toward the boys.

"He's dropped it!" exclaimed Mr. Raynor.

"Watch it now!"

It seemed to the boys as if Ram, swiftly as he ran, would never get to a place of safety. Their hearts fairly stood in their mouths as they watched him running like a greyhound.

Suddenly came a subdued roar. The earth shook. The solid ground trembled as if it had been a jelly. A second later, from the mouth of the hole there shot a mighty column of earth, stones and smoke. It was accompanied by a screaming, whistling sound and then came the detonation of a mighty roar. Up and up shot the column as if it meant to pierce the blue sky.
The workmen shouted and ran for places of safety.

Suddenly Mr. Raynor, who had been watching with hawk-like eyes, gave a sharp, commanding cry:

"Run, boys! Run for your lives! After me!"

For an instant they hesitated. Why should they run? There appeared to be no danger. At the distance that they were from the spouting column it did not appear possible that they would be in jeopardy from it even when it collapsed and came crashing to earth.

"What's the matter?" cried Rob.

"Don't stop to ask questions. Run! Run! Run, I tell you!" roared the engineer.
CHAPTER XXII.

THE BOYS MEET AN OLD ACQUAINTANCE.

The boys needed no further urging. Taking to their heels they ran like so many scared jack-rabbits after the engineer. Tubby, his fat, stumpy legs working like piston rods, was in the lead.

"I knew something was going to bust," he yelled, as he sprinted along, "and it has!"

Suddenly Mr. Raynor, who was heading apparently for a piled-up mass of rocks, stopped and glanced back.

"Too late! Duck!" he shouted the next instant.

Down flopped the boys, but as they threw themselves face downward they felt as if they were being lifted from the ground by a giant hand and then slammed down again. It seemed
almost as if a heavy weight had been hurled down on them.

Then came a terrific, blasting roar and blinding flash as if a huge gun had been set off quite close to them.

The fearful concussion and their lack of knowledge of what was happening scared and shocked them half out of their wits. Gravel and small rocks fell about them. If it had not been for their broad-brimmed Scout hats, which protected the back of their heads, they would have been cut and bruised by the hail of débris.

“You can get up now,” came Mr. Raynor’s voice presently, “but I don’t mind saying that that was about as narrow a squeak as I’ve ever experienced.”

“It sure was a test hole,” muttered Tubby; “it tested me all right and I don’t want any more of it.”

“What on earth happened?” demanded Rob, brushing dirt and dust from his uniform.

“That’s what I’d like to know,” said Fred.
"I thought the world was coming to an end," declared Merritt.

"Or a giant cocoanut was blowing up," murmured Tubby.

At that moment Ram came running up. He looked embarrassed and dabbed at a small cut on his forehead with a handkerchief.

"Him hurte you?" he asked rather anxiously, looking askance at Mr. Raynor.

"More good luck than thanks to you that we were not all killed," declared the engineer angrily. "What made you do it, you rascal?"

"Me very sorry. Ram forget," said the man contritely.

But his repentance had no effect on the thoroughly angry engineer. He told the man that he was too grossly careless to work on the dynamite gang and ordered him to report at his office that night and be assigned to some other work.

Tubby nodded sagely as he heard this. He was confirmed, it seemed, in his opinion that the man
had been careless and he felt like telling the engineer so. But Rob asked a question.

"You haven't told us yet just what it was that happened?" he said.

"Yes, what was it?" put in Fred.

"Oh, nothing to speak of but an explosion of fifteen pounds of dynamite about as close to us as I'd care to have such a thing happen," said the engineer grimly.

"Gee whiz! As bad as that!" exclaimed Merritt looking aghast. "Why we might all have been——"

"Hoisted sky-high. Oh, you don't need to tell me that. That careless fellow Ram left one of his cans of dynamite lying on the ground not far from the test hole. I didn't notice it and he didn't either, I guess, till he shot the well. Then just as that column of stones and stuff was sky-hooting up, I happened to see that can lying there. It gave me a turn, I tell you. I figured out what would happen if a rock ever hit and we standing where we were."
"What would have happened?" asked Tubby innocently, his eyes like two saucers.

"Happened! Why we'd all have had through tickets to Kingdom Come, that's what would have happened."

"But you haven't told it all," exclaimed Rob, who had just comprehended something. "Boys, that weight that fell on us was Mr. Raynor's body. He just shoved us in front of him and shielded us with his own body. He saved our lives."

"That's what I call being a real hero," cried Fred.

"Three cheers and a tiger for Mr. Raynor!" yelled Merritt.

"Pshaw! You drop that now!" protested the engineer. "I just fell on you because I couldn't help it, I reckon."

"We know better than that, don't we, fellows?" cried Rob.

"You bet we do," was the response given with deep conviction and unanimity.
"Well, say no more about it," begged the engineer. "I promised to take good care of you and I was almost responsible for getting you injured, so I guess we're quits."

As Mr. Raynor had to visit other parts of the workings, and also to take samples of the earth blown up by Ram's unlucky blast, the boys bade him good-bye soon after.

"Well, so long," he said. "I hope you'll drop in and see me some time if you are going to be about here long. I may have something else interesting to show you."

The boys said they would. Then up came Ram Chunda, grinning like a monkey.

"Me velly solly," he said, "white sahib no be mad. You come see me some time, eh?"

"Yes, we'll come and see you when you're in your little casket or else get our lives insured first, you—you anarchist you!" sputtered Tubby.

The engineer had advised them not to climb the ladders but to walk along the foot of the dam till they reached a place where a flight of
steps had been moulded in the concrete. Accordingly, after leaving him they trudged along at the foot of the gigantic stone cliff, looking up every now and then to marvel at its height and massiveness.

They found plenty to look at and were in no hurry. That is, none of them was in a hurry but Tubby, who was keen to find out if it was not time to go back to Mr. Mainwaring’s bungalow for dinner.

It was hot work walking, and they paused frequently. At length they came to a place where a small tree at the foot of the dam afforded a patch of shade.

"Let's sit down and rest a while," said Fred. "I'm tuckered out."

"Wish this was a cocoanut tree," said Tubby as they reclined in the grateful bit of shade. "I'd climb it and get all you fellows something to eat."

"Or blow us up," laughed Fred mischievously. "Say, fellows," said Rob presently, "look up
above us on the top of the dam. There's a big concrete mixing machine up there."

"Hope they don't drop anything down on us," said Fred apprehensively.

"Not much danger of that, I just saw a man peeking down at us. They would warn us if we were in danger."

"I don't know, those niggers are none too careful. Remember that fellow Ram; he came pretty near ramming us," punned Fred.

"Look out!" yelled Merritt suddenly.

But he was too late. A bucket full of liquid cement came spattering down on them, going all over their uniforms and making them sad sights indeed. Luckily the stuff was almost as thin as water or they might have been injured.

Rob looked up and gave an indignant shout. A mocking face peered over the edge of the parapet and grinned jeeringly at him. As he saw this countenance Rob gave a violent start and fairly staggered backward.

It was the face of Jared Applegate into which
he had looked. It was his hand that had thrown the bucket of liquid cement over them, ruining their uniforms.

"Fellows!" shouted Rob in high excitement.

But Jared's face had vanished as swiftly as it had appeared.