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**National Geographic:  
Adventures - Panama  
Canal: The Mountain and  
the Mosquito**

By Unknown

The Panama Canal is completed.  
The Atlantic and the Pacific are joined.  
The most ambitious construction project  
since the great pyramids of Egypt.  
The work has spanned nearly  
half a century,  
and claimed the lives of  
Now it is finished and the world  
is suddenly smaller.  
But behind this epic tale,  
there is another story  
of two unsung heroes.  
One is an engineer from the Rockies  
with the vision to move mountains.  
The other, a soft-spoken  
Alabama physician  
whose enemies are ignorance,  
disease and death.  
Together, they take on a wilderness  
that had defeated the best engineers in the world.  
Without either one,  
the Panama Canal could not be built.  
And yet, one of these visionaries  
will suddenly and mysteriously  
walk away  
before the canal is finished.  
And take the secret of his departure  
to his grave.  
The Republic of Panama,  
Central America.  
A barricade between two oceans.  
With a blanket of jungle.  
And a spine of mountains.  
Today, 14,000 ships sail through  
these peaks and forests each year.  
Their miracle highway  
is the Panama Canal.  
One of the wonders of the modern world.  
A miracle that,  
on a rain-soaked day in July, 1905,  
no one in Panama would  
have believed possible.  
At the port of Colon,  
a new American field boss has

arrived to take control  
of a dying dream.  
At age 52, John Stevens has built  
more miles of railroad than  
any other engineer in the world.  
The Rocky Mountains  
have been his home.  
And spanning them his  
greatest challenge... until now.  
In Panama, yellow fever has killed  
hundreds of workers,  
most of them from the West Indies,  
and terrified the rest.  
The men call it The Great Scare.  
But his orders come directly  
from the President of the United States.  
In his first address to Congress  
Roosevelt vows to chop  
the Isthmus of Panama in half  
and complete The Big Ditch.  
"We must build the Isthmian Canal...  
No single great material work  
which remains to be undertaken  
on this continent  
is of such consequence  
to the American people."  
Roosevelt's motives are patriotic,  
economic and military.  
A canal would trim nearly a month  
from the travel time  
between New York and San Francisco.  
Making the shortest path  
between the oceans a superhighway  
of American commerce  
and the lifeline of  
the nation's burgeoning two-ocean Navy.  
Roosevelt inspires thousands of  
young American laborers  
to set off for Panama.  
But they disembark in  
a steaming hell.  
Soaring heat...  
punishing rains...  
ancient jungles.

Temperatures top 130 and it can  
rain daily for eight months.  
In the unbroken forests,  
lethal predators await the  
innocent arrivals.  
But the most mortal dangers  
are too small to see  
Confused, chaotic, and deadly.  
Teddy Roosevelt's Big Ditch Project  
is a quagmire  
sucking up millions of dollars,  
and hundreds of lives.  
To slice through the  
bureaucratic nightmare,  
Roosevelt authorizes John Stevens  
to ignore any orders  
that do not come directly  
from the White House.  
Stevens agrees.  
And he advises the  
much younger president  
to keep his promise.  
I'm to have a free hand.  
I'm not to be hampered  
or handicapped by anyone high or low.  
And I'm to stay on the Isthmus  
only until success is assured.  
It is no accident that  
Stevens has been recruited.  
For the Canal to succeed,  
it must find a way  
through the mountains  
of the Continental Divide,  
the backbone connecting  
North and South America.  
Roosevelt hopes America's  
greatest railway man  
can save his Canal  
- and ensure his political future.  
Stevens is a railroad man,  
not a Washington insider.  
Day after day he tramps  
through the construction zone,  
focused on every detail of the job.

His cigars are so enormous  
that the men call him "The Big Smoke."  
But they respect him immediately.  
Finally, they have a boss  
who will listen.  
"Mr. Stevens did not talk much  
but asked questions  
and could that man ask questions!  
He found out everything I knew.  
He turned me inside out and shook out  
the last drop of information."  
Frank Maltby, Division Head  
After decades of back-breaking labor,  
workers have slashed a route  
through the jungle  
that the canal is to follow.  
By 1905, excavation is concentrated  
in a mountainous area  
of the Continental Divide.  
Stevens is appalled at what he finds.  
Trains lie rusting off their tracks.  
Steam shovels lay idle.  
Workers have no blueprints,  
no guidance, no hope.  
"I believe I faced about  
as discouraging a proposition  
as was ever presented  
to a construction engineer.  
I found no organization...  
no answerable heads...  
Nobody was working  
but the ants and the typists."  
In Panama, it has been this way  
for more than 30 years.  
For the Americans now;  
for the French in the 1880s.  
Having succeeded at linking Europe  
and the Orient by building  
the great Suez canal in Egypt,  
the French try to repeat their success  
in Central America.  
They believe that slender Panama  
should be an easy target.  
It is a fatal miscalculation.

Disease, accidents, and exhaustion  
take the lives of 22,000 laborers.  
One man must succeed  
where the world's best have failed.  
Workers tell The Big Smoke  
that their greatest worry  
is the treacherous Culebra Cut,  
the mountain pass where the French  
lost the most men.  
At Culebra, they must dig out  
a man-made Grand Canyon.  
A twisting, nine mile,  
water-filled chasm as deep as a  
Like the French, the Americans  
don't know what to do  
with the staggering amount of dirt  
that is being dug out of Culebra.  
It is simply dumped  
wherever space can be found.  
Creating unstable mountains of debris  
that crumble in the continual rains.  
At Culebra,  
the Spanish word for snake,  
John Stevens,  
the great American engineer is stymied.  
Here, the French finally surrendered.  
Here, John Stevens must  
find a way through.  
Topography is only half the problem.  
In the work camps,  
where three quarters of the work force  
are impoverished West Indians,  
the human toll is appalling.  
Even Roosevelt's eager  
American volunteers,  
in their segregated barracks,  
are barely surviving on rations of  
crackers and sardines.  
Crammed into hovels  
with no toilets or running water.  
Tormented by dysentery,  
parasites and fear of yellow fever  
- The Great Scare.  
Desperate to defeat The Great Scare -

to restore the spirits of  
his frightened workers -  
Stevens visits Dr. William Gorgas,  
chief medical officer of the canal.  
In the yellow fever ward of the  
Ancon hospital,  
Dr. Gorgas introduces the victims  
of this horrible plague.  
Like Stevens, Gorgas has been  
hand-picked by the President.  
At 49 years-old,  
he is a light-hearted Southerner  
plunged into a nightmare  
of tropical sickness.  
In Cuba, newly freed from Spanish rule  
by Roosevelt and his Rough Riders,  
Gorgas has succeeded in virtually  
eliminating yellow fever.  
Panama has proved to be a far  
more difficult assignment.  
"When the United States  
took possession in 1904  
the Isthmus was generally looked on as  
...the most unhealthy spot in the world  
Probably it would not be extreme to say  
that there is no other place  
that has as bad a reputation."  
He has been in Panama for  
more than 13 months  
when John Stevens joins him.  
For Dr. William Crawford Gorgas,  
it has been a year of anguish.  
At Ancon, he relates the toll -  
in the past few months.  
Hundreds of other lives claimed by  
malaria, pneumonia, chronic dysentery,  
and, even, Bubonic plague.  
John Stevens knows that his canal  
cannot be built without human labor.  
Stevens has to act quickly.  
He has come to build a canal  
but must fix a disaster.  
In Panama less than a week,  
he knows what he must do.

It is a decision  
that will shock everyone.  
With undiminished energy  
despite the heat and rain,  
John Stevens spends seven grueling days  
inspecting every inch of  
the biggest excavation in human history.  
The men expect Stevens to order them  
to speed up their work  
on the President's Big Ditch.  
Instead, he commands them  
to lay down their tools.  
Hundreds of workers and technicians  
are shipped home to America.  
John Stevens tells them  
that the Panama Canal is unfit  
for further labor.  
In Washington, the new President  
waits anxiously for progress reports  
from his new chief engineer.  
But the news from Panama is stunning.  
The project has been shut down!  
"Regardless of the clamor  
of criticism...  
as long as I am in charge of  
the work...  
and I am confident that  
if this policy is adhered to,  
the future will  
show its absolute wisdom."  
Stevens understands that the canal's  
fatal problem  
is not the mountains, but the men.  
Disease and fear sap their souls  
before they raise a shovel.  
Stevens turns to Dr. William Gorgas  
for help.  
Like the French before them,  
the Americans live in morbid terror  
of catching the disease  
they call Yellow Eyes, Yellow Jack,  
or The Great Scare.  
A horrifying disease.  
Delirium and death can follow within



eight hours of infection.  
Yellow fever patients first complain  
of crippling muscle pain.  
As the aches intensify,  
body temperature rises steeply.  
The skin and eyes turn yellow,  
thirst becomes unquenchable  
and patients lose consciousness.  
Spasms of black vomit  
signal the final crisis.  
Fewer than 50 percent of  
patients survive.  
Gorgas believes in a new theory  
that explains the cause of  
yellow fever - mosquitoes.  
In 1901, scientists have discovered  
that the Stegomyia mosquito carries  
the yellow fever virus  
from person to person.  
In Panama, only Gorgas understands  
the mosquito's deadly secret.  
Dr. Gorgas finds that yellow fever  
mosquitoes live in towns, not jungles.  
To destroy them,  
he will need to fumigate every puddle  
and rain barrel on the Isthmus.  
He envisions the largest, most costly  
public sanitation campaign  
the world has ever seen.  
It is not a vision shared  
by the canal bureaucracy.  
For eighteen months,  
officials scoff at the mosquito theory  
and turn down all of Dr. Gorgas's  
requests for funds and supplies.  
But John Stevens listens.  
Only a healthy work force can rescue  
Teddy Roosevelt's dream.  
He will withdraw his men  
from the mountains,  
and send them to war  
against the mosquito.  
But Stevens does not  
ignore the other war he faces.

The battle against Panama's  
impassable geography.  
Somehow, he must find  
a route beyond Culebra.  
Through the jagged jungles  
to the sea.  
He studies the French plans  
and realizes that  
the millions of tons of dirt  
and rock  
must be not only excavated,  
but removed entirely.  
Simply piling the spoil  
at the side of the cut  
is an invitation to landslides  
and disaster.  
"Efficient transportation  
is nearly always the key to success  
in construction.  
If dirt is to fly,  
there must be a smooth and  
uninterrupted movement of trains."  
Stevens conceives a radical new plan  
for disposing of the dirt.  
He draws on his experience with  
railways in the Rockies.  
Instead of hauling men, in Panama,  
the trains will be used  
to cart the dirt away.  
But to do it, the entire rail system  
must be revamped to handle  
such a heavy load -  
exactly the kind of thing  
Stevens does best.  
"There is no element of  
mystery involved.  
The most important stage in any great  
undertaking is the preparatory stage.  
The digging is the least thing  
of all."  
While Stevens attacks  
the Continental Divide,  
Dr. Gorgas sends out  
his own battalions.

Fumigation brigades burn sulfur,  
clean up sewage, and seal windows.  
"It would be impossible to fumigate  
more extensively than we did... in 1905.  
We had about 400 men  
engaged in this work,  
and they went over the whole town  
three times,  
fumigating every house in the town,  
besides fumigating every block  
each time a case of yellow fever  
occurred in that block."  
Screens are installed and water  
barrels are covered.  
Ditches where mosquitoes breed  
are drained.  
Quarantined clinics treat  
and keep them in mandatory isolation.  
Stylish, sleepless and impervious  
to the heat,  
Gorgas works around the clock.  
He stretches Roosevelt's promise  
of an unlimited budget  
to the breaking point, importing  
America's entire output for a year.  
He orders \$90,000 dollars  
worth of copper screening  
in a single shipment.  
Nearly double his previous  
yearly budget.  
It is the largest  
and most expensive - war  
ever waged against  
tropical disease.  
Meanwhile, John Stevens  
fights his own battle.  
He dismisses the existing  
rail line as  
"two streaks of rust  
and a right of way."  
Using his legendary status  
as a drawing card,  
Stevens lures the best railroad men  
in America to the Isthmus.

Within six months of his arrival,  
he triples the work force to 24,000.  
Stevens constructs the most durable  
railway in history.  
Double-sided tracks of the heaviest  
rails on earth  
allow the world's heaviest freight  
cars to travel in both directions,  
Track-shifting machinery moves huge  
sections of rail line faster and easier.  
A telegraph system, new bridges and  
massive locomotive sheds take shape.  
Stevens thinks big, and buys big.  
He has decided that the French suffered  
because their machinery was too small.  
He will not repeat their mistake.  
Every weapon in his arsenal  
is enormous.  
His coal-burning steam shovels weigh  
Mechanical dinosaurs.  
Three times larger than anything  
used by the Parisians.  
"Now I would like that  
[French] plant  
to a modern one as baby  
carriages to automobiles.  
This is no reflection of the French,  
but I cannot conceive  
how they did the work they did  
with the plant they had."  
But Stevens has learned another  
lesson on the railroads.  
That morale is more valuable  
than machines.  
And the best way to restore morale  
is to keep workers clean and dry.  
There are three diseases in Panama.  
They are yellow fever, malaria,  
and cold feet;  
and the greatest of these  
is cold feet.  
The labor camps built  
during the French regime  
have tumbled into misery.

Unpaved streets are ankle-deep in mud.  
Waste is emptied onto passerby  
from second story windows.  
Stevens wades in like  
a Wild West sheriff.  
Closing brothels,  
demolishing decrepit barracks,  
building a new city of paved streets  
and sanitary dwellings.  
The Canal line begins to look like  
a continuous city  
under construction from one end  
of the zone to the other.  
As 1906 begins,  
five months after being in Panama,  
he feels he has made Panama livable.  
He is ready to begin digging  
at Culebra again.  
A few months later,  
Dr. William Gorgas declares victory  
over The Great Scare.  
"Take a good look at this man, boys.  
For it's the last case of yellow fever  
you will ever see.  
There will never be any more deaths  
from this cause in Panama."  
Panama is busy again  
- healthy... and fearless.  
Along the entire length  
of the Canal corridor,  
the racket of hammers and saws  
and the roar of engines can be heard.  
President Roosevelt's dream  
of splitting a continent  
is being brought to life again.  
As a new railway is pushed through the  
jungles of Panama,  
John Stevens rarely rests.  
It is the summer of 1906,  
Stevens drives himself to exhaustion-  
and expects his men to do the same.  
"I gauge everybody by myself.  
I work from 14 to 18 hours.  
You may make mistakes

but there is only one mistake you can make that will be fatal with me, and that is to do nothing."

Stevens believes his workers are safe from the Great Scare.

But yellow fever has been relatively easy to eradicate.

Now a far more formidable enemy must be confronted... malaria.

"If we can control malaria, I feel very little anxiety about other diseases.

If we do not control malaria our mortality is going to be heavy."

The Anopheles mosquito that transmits malaria is not the same insect that carries yellow fever.

It is an entirely different species and far more difficult to control.

She lives longer, flies further, and thrives in the stagnant waters of the Panamanian forests.

Right where John Stevens's new railway is being built.

The latest arrivals from North America and the West Indies are in gravest danger from being bitten.

Most Panamanians, as Gorgas knows, develop a natural immunity to malaria in childhood.

But nearly every new comer—including Dr. Gorgas and his entire medical staff—become infected within months—enduring recurring episodes of fever, chills, depression, and intense pain.

Gorgas warns Stevens that the new settlements he is building along his railway are placing thousands of American workers at risk.

"I suppose it is no exaggeration to say that any man

who spends a night in one of these villages will contract malaria." John Stevens knows the danger of malaria. But also knows that work must continue if the canal is to be built. All along the line, the pace of construction intensifies. Laborers from North America, Europe, the Orient and the West Indies arrive. Many bring their families, building a new life in a new country. Feeding the masses is an enormous job. Bakeries turn out 40,000 loaves of bread a day. Stevens builds laundries, and recreation halls for the men and their families. An amazing ice house brings the loudest cheers. The very idea of ice-cream in the jungle delights the crews. Music fills the air. They begin to call Culebra "Stevens City." But the deadly plague of malaria is never far away. Dr. Gorgas and his fumigation brigades keep ahead of the track gangs. Cleansing the new villages. Pushing deep into the wilderness. They drain swamps and spray oil on cesspools to prevent eggs from hatching. Stagnant water is routinely tested for the presence of larvae. A modern running-water system as good as in an American city is installed and acres of brush are burned. Daily doses of quinine-made from the bark of a tropical tree - are part of each man's diet. They call the bitter-tasting

drink a "Panama cocktail."  
As Dr. Gorgas battles the mosquito,  
John Stevens battles the mountain.  
This is the ultimate roadblock-  
the Continental Divide.  
Stevens calculates that he must  
dig a channel nine miles long  
and 272 feet deep through  
solid volcanic rock.  
It will require that man  
and machines move enough dirt  
to build the Great Pyramids  
of Cheops 63 times.  
John Stevens has been given command  
of the grandest construction project  
in four thousand years.  
"Even with the finances of the most  
powerful nation on earth,  
we are contending with  
Nature's forces.  
When we speak of a hundred  
million yards  
of a single cut not to exceed  
nine miles in length,  
we are facing a proposition  
greater than  
was ever undertaken in the engineering  
history of the world."  
Making a sea-level canal  
from the Atlantic to the Pacific  
means cutting deep into  
the mountain range.  
The French spent nine years trying,  
and failed.  
Now Stevens wonders  
how he will conquer Culebra.  
The problem is water.  
The tropical rainy season  
arrives in April.  
Massive flooding, daily down pours  
and the constant risk  
of deadly landslides.  
Stevens has never faced anything like  
this in the Rocky Mountains.



He realizes that to build a sea-level canal here will be a deadly undertaking that could take twice as long as anticipated.

And there is another enemy.

When the rain comes, the placid Chagres River swells with anger, rising 20 feet in just one day.

The floods will inundate any canal

Stevens tries to dig through it.

Even if he moves the mountains, he cannot stop the rains.

"The one great problem in the construction of [the] canal is the control of the Chagres River. That overshadows everything else."

Stevens now realizes that a sea-level canal is not possible.

The mountain is too big.

To dig it all the way down to sea-level

and transport it away is beyond their current technological capabilities.

There is, however, another way, one that will use the geography of Panama rather than conquer it.

It is a plan that will change the course of history.

But first he needs to convince the President.

To sell his revolutionary new plan to the President of the United States, John Stevens must sail to Washington. For a man who is chronically sea-sick, the voyage is as forbidding as the destination.

At the White House, Stevens unveils his amazing new blueprint.

He intends to lift the world's largest ships up one side of the Continental Divide, then down the other.

He will dam the Chagres River to create a huge artificial lake.

And build a series of mammoth locks  
to conquer the steep spine of Panama.  
In essence, the mountain won't be  
cut down to sea-level.  
The ships will be floated up  
to the mountain  
and sailed across a bridge of water.  
It is an audacious plan.  
A clear statement that Stevens  
believes that  
the French struggled for nine years  
and lost the lives of 16,000 men  
to a doomed dream.  
But in 1906 no-one knows if Stevens's  
plan will work either.  
Theodore Roosevelt has promised  
Stevens his unconditional support.  
Now he proves it.  
In February of 1906, Roosevelt signs  
a Presidential sanction  
authorizing the construction of  
Stevens' new high-lake lock plan.  
Fifteen months after taking charge  
of Panama,  
Stevens is finally ready to build  
the President his dream.  
Roosevelt must convince Americans  
that John Stevens and William Gorgas  
can conquer nature and geography.  
Convince skeptics that  
a canal can be built.  
To prove his faith,  
the President decides to stage one of  
the 20th century's first media events.  
He and the First Lady will visit  
the Big Ditch themselves.  
It is a decision that  
captivates the nation.  
No American president has ever visited  
foreign soil while in office.  
To grasp first-hand the difficulties  
of the project,  
Roosevelt insists on being in Panama  
during the rainy season.

On the second day of his visit,  
three inches of rain fall in two hours.  
One inch falling in 15 minutes.  
It is the worst downpour in Panama  
in fifteen years.  
With photographers never far away,  
the young President strolls  
through construction camps,  
dines in a mess hall with the men  
and shares meals with John Stevens.  
He visits the Culebra Cut,  
and delivers stirring prep talks  
in the jungle,  
telling workers that they are soldiers  
fighting a glorious war  
for America's destiny.  
The laborers are impressed  
and honored.  
Their applause rivals the thunder  
in the tropical skies.  
"You, here, who do your work well  
in bringing to completion  
this great enterprise,  
will stand exactly as the soldiers  
of a few, and only a few,  
of the most famous armies of all the  
nations stand in history."  
With his signature showmanship,  
the President,  
in his famous white suit  
and Panama hat,  
leaps aboard one of the mighty 95-  
ton Bucyrus shovels.  
The men cheer this icon of American  
know-how, a reminder that,  
for Americans, there is no obstacle  
too formidable.  
But another war is being won,  
far from the spotlight.  
On the second day of his tour,  
Roosevelt quietly slips  
away from the cameras  
and the secret service  
to pay Dr. Gorgas an unannounced

visit.

The two men walk through an almost deserted ward.

It is a quiet moment of proud victory.

Stunning evidence that

the Alabama doctor

has brought health and sanitation

to deadly Panama.

The Great Scare is over.

Roosevelt reciprocates with

the public praise Gorgas

has hungered for since

he first arrived in Panama.

When Roosevelt praises

the miracle in Panama

and cites Stevens and Gorgas by name,

they become celebrities

across America.

"They are doing something

which will redound immeasurable

to the credit of America,

which will benefit all the world,

and which will last for ages to come.

Under Mr. Stevens and Dr. Gorgas

this work

has started with every omen of

good fortune."

While the President boasts

and bellows,

the mountains of Panama

remain unconquered.

Stevens has devised an ambitious plan,

but it remains no more than a blueprint.

To make the plan a reality,

Stevens will begin with the

damming of the Chagres River,

creating the largest man-made lake

in the world.

Dozens of villages must be evacuated,

their residents relocated

to higher ground.

A new city, called Gatun,

must be built from scratch.

Surveying parties outline the contours

of a body of water  
that will cover 164 square miles.  
The entire region must be  
clear-cut by hand.  
This job alone will take almost  
five years to complete.  
And with this new plan will come  
massive concrete and electrical work-  
unlike anything the world  
has ever seen.  
Things that John Stevens has little  
experience working with.  
Such a massive construction project  
will also invite bureaucratic red-tape,  
and increased  
political interference from Washington.  
The very things that John Stevens  
has fought against all his life.  
Meanwhile dynamite crews risk their  
lives and begin blasting into Culebra  
to loosen the mountain  
from its ancient domain.  
Stevens continues his daily routine  
of surveying the work  
in Culebra for himself.  
will be moved by train,  
along hundreds of miles of new track.  
Enough dirt to fill enough hopper cars  
to circle the globe four times.  
The work force healthy and excavation  
well under way,  
Gorgas and Stevens have finally  
set in motion a plan  
to bring down the mountain.  
It is a plan that  
will prove Stevens right -  
and finally get the Canal built.  
But there is one more surprise.  
One of these men will walk away.  
Less than three months  
after President Roosevelt's  
confidence-boosting visit,  
John Stevens quits the project  
and leaves Panama.

It is a mysterious gesture.  
He offers no reason to his workers,  
to Dr. Gorgas, or his own family.  
Not even the President.  
Theodore Roosevelt is deeply angered.  
Publicly, he conceals his anger,  
telling friends that Stevens  
is unable to withstand the  
punishing Panamanian climate -  
that he has become ill and sleepless.  
But privately the president  
feels betrayed.  
Others believe that  
the solitary mountain man  
could not endure the massive  
bureaucracy of the canal commission  
or the contract system  
that was forced upon him.  
It is a secret he takes to his grave.  
"The reasons for the resignation  
were purely personal.  
I have never declared these reasons  
and probably never will,  
as they are private."  
Nearly a century later,  
no one knows why the greatest  
civil engineer of his era  
abandoned the most important project  
of his lifetime.  
Suddenly and without warning.  
Perhaps he sensed that the  
hardest work was already behind him.  
That history had anointed him  
to plan the canal,  
then move on while others built it.  
In eighteen months,  
John Stevens succeeded  
where others had labored in vain  
for generations.  
He provided decent housing and food  
for his loyal workers.  
And pushed through  
a jungle railroad network  
to move huge quantities of earth.

Perhaps most important of all,  
he cast the weight of his prestige  
behind Dr. Gorgas.  
Understanding that fear,  
not mountains,  
blocked the path between the seas.  
In 1914, seven years after  
Stevens's departure,  
Dr. Gorgas silently paddles  
a small wooden canoe  
through the freshly-cut canal.  
He is the first to travel voyage  
through the Canal.  
The official opening of the canal  
won't happen for three more months.  
All around him is evidence  
of John Stevens' vision.  
A magnificent bridge of water  
that lifts ships out of the ocean  
and sails them smoothly  
across the Isthmus of Panama.  
After 30 years and the loss of  
thousands of lives,  
the dream of Columbus,  
has been achieved.  
The union of the oceans.  
And the shrinking of the world.  
It has taken seven years  
to complete the Canal.  
The President asks the Army  
to finish the job.  
And though it would be  
wider and deeper,  
it would resemble almost perfectly  
the lock system  
that John Stevens had convinced  
Teddy Roosevelt  
to build across the Isthmus.  
And it is a spectacular vision.  
The locks at both ends are  
the largest in the world.  
Over 80 feet high,  
they are five blocks long  
and stand as tall as

a six story building.  
Monstrous T-shaped cantilever cranes  
that can be seen from miles away float  
plates of steel through the air.  
More concrete-  
four and a half million barrels-  
than has ever been used in history  
is poured into the locks.  
Six million rivets are needed  
to build the lock gates.  
Gatun Lake, at 164 square miles,  
would be the largest man-made lake  
in the world.  
And Gatun dam, made from the spoil  
of the Culebra Cut,  
is the largest in the world  
to be made of earth.  
It is a mile and a half long  
and half a mile wide at its base.  
The Canal is the work of more than  
from 97 different countries.  
Most would not live  
to sail through it.  
The final bill.  
Over \$600 million dollars.  
In an age when a worker was fortunate  
to earn a dollar a day.  
The single greatest engineering  
undertaking in American history.  
Teddy Roosevelt never returns  
to the Big Ditch  
to see his dream brought to life.  
He leaves office in 1909  
and dies in 1919,  
seven months before  
America's Pacific Fleet  
first passes through the Canal.  
John Stevens finds another mountain  
and another railway.  
In 1917 he is sent to Russia by  
President Woodrow Wilson  
to reorganize the  
Trans-Siberian Railway.  
Not until 1937, at age 83,



does he return to Panama  
to gaze upon his masterpiece.  
He dies in North Carolina  
six years later at age 90.  
Only Dr. William Crawford Gorgas  
sees America's work in Panama through  
from start to end.  
By the time he returns  
to the United States,  
he has completely eradicated  
Yellow Fever  
from the Canal Zone  
and reduced malarial infection  
to rates lower than most  
American cities at the time.  
The physician's work in Panama  
brings him great public acclaim.  
He is appointed Surgeon General,  
a supreme honor for a country doctor  
from Alabama.  
He leads the American Medical  
Services Corps to Europe  
during the First World War.  
In 1920 he dies a hero  
and is given a state funeral.  
One man battled mountains.  
The other, the tiny bearers of death.  
This is their monument.  
The bridging of a continent.  
The union of the seas.