Culebra Cut, the "Great Divide"

Photos by American Press Association.

1.—Gigantic steam shovels at work. 2.—Negro laborers drilling rock. 3.—A turn in the cut. 4.—Miles of track stretching through the workings.

Necessary Task of Severing a Continent's Backbone—Coping With the Landslides at Panama Has Taxed Human Ingenuity.

By JAMES SCHREIBER.

DE LESSEPS, the French engineer, built the Suez canal, a titanic undertaking. Covered with glory and looking for further fields to conquer, he came to America and commenced digging his way from the Atlantic to the Pacific through Central America. He didn't get very far because of his shortage in funds, but he paved the way for this country, and today we are making preparations for the early opening of the Panama canal.

De Lesseps found his biggest problem in trying to cut his way through the chain of mountains running diagonally across the course the canal was to take. He tackled this impediment—really the lowest section of the Andes chain—and succeeded in considerably reducing the loftiest points, some of which rose to a height exceeding 500 feet.

But the dirt he shoveled was little more than a thimbleful compared with what has since been carted away. It was the stupendous task confronting our engineers at this point, now known as Culebra cut, which made many wonder if Uncle Sam was equal to the occasion of making his way through this great natural barrier. But optimistically he went ahead, and today we are called on to watch the turning of the water into this great gash in the mountains, stretching for a distance of nine miles.

POWER OF THE STEAM SHOVEL

We can thank the steam shovel for what has been done at the Culebra cut. If we are to erect monuments to the men who built the canal or if medals are to be distributed among the workers the giant ironclad diggers will be conspicuously identified with the design. It has been the steam shovel which has dug its sharp teeth into the sides of the mountains and lifted its burden aloft, slowly swinging itself around until suspended over the car ready to receive its load. For a moment the noise subsides somewhat, the engineer turns another switch, releases some hitherto motionless mechanism, the giant jaws open, and, wonder of wonders, the next instant the car is filled! Eight tons of dirt have been taken care of in this one operation. The train is advanced, and another car is ready to be filled. Ten, twelve, fifteen shovelfuls, and the train steams away to deposit elsewhere the earth which has for centuries lain undisturbed, overgrown with dense tropical vegetation.

All day long in the intense equatorial heat we through the distressing humidity and rainy weather to this region throw increasingly greater human machines of man's creation work unceasingly. Their almost monotonous regularity throws a spell over the visitor who comes to look on.

OVERCOMING OBSTACLES

Hard work has been the lot of all who have served in this "Great Divide" the Culebra cut. From the first to the last difficult engineering problems never before dealt with had to be overcome. When the laborers and machines started digging into the ground their efforts were time and time again frustrated by the peculiarities of Mother Nature. They had no more than made an impression in the earth when the holes would fill up again, the weight of the mountains and hills on all sides seeming to bear down on the openings with such pressure that the nonsustaining earth would move together and close up.

Then it was decided to work from the sides toward the center. This method proved best, and gradually the cut has widened and deepened until this marvelous work is presented for our approval. Almost 800,000,000 cubic yards have been dug from the cut. It was necessary for the American engineers to go down 153 feet on the eighty five foot level plan, for the water depth of the cut is forty five feet. As the diggings reached lower and lower water from the hundred and one rivulets and streams flowing down the mountain sides hindered progress, and a canal alongside of the cut had to be shoveled out to give them an outlet. On each side of the cut a miniature canal was dug six miles in length, called in Panama the diversion ditch. In some places these ditches were built not more than 100 feet from the side of the cut. They have been successfully used to divert the numerous streams.

The Obispo diversion on the east side of the canal cost about a million and a third dollars and involved the excavation of 1,250,000 yards and the construction of almost 1,000,000 yards of diversion dikes. Its carrying capacity was 6,000 cubic feet a second, equal to the volume of a good sized river. It was built and completed in 1908.

With the discovery of subterranean streams the pumps were immediately set to work, and their waters were pumped away and the flow directed toward the outlet canal.

LANDSLIDES

When sufficient headway had been gained and a great enough depth obtained the most serious problem, which even now has not been solved, "came on with a rush" to destroy the peace of mind of the canal engineers. I refer to the landslides. These are practically on the same principle as the coming together of the earth during the first diggings, but on a much larger and more troublesome scale. They consist of the hills through which the cut now wends its way, literally disintegrating and sliding down into the finished sections, adding tons and tons of material and thousands upon thousands of dollars to the original estimate.

The slides have come with gradual and with ever increasing frequency, and the only remedy which has been suggested to relieve them is to cut the tops of the hills off and give them a gradual slope, doing away with the pressure on the yielding clay, of which the hills are composed.

The slides have added about 17,000,000 cubic yards to the excavating. The Cucuracha slide was the first to offer serious obstacles to our engineers. It is just south of Gold hill at a point where the strata of rock incline westward, having been tilted thus by the upward intrusion of the mass of volcanic rock which forms the chief part of Gold hill. In 1907 its rate of advance was fourteen feet a day, but this now is greatly decreased. Too soft for steam shovels, the muddy mass was sluiced by water from a high level until a way was cleared through the cut for trains.

When a slide occurred it carried everything in its path before it, burying the giant steam shovels, sometimes completely, while tracks had to be abandoned and new stretches built around the edge of the fallen dirt. Work was at once started to clear away the debris. Men and machinery worked night and day to accomplish this.

COSTLY CUCURACHA

The cost involved by the treachery of the Cucuracha slide was enough to run the canal in full operation for a considerable period. It was first confined to a length of 800 feet, mensured along the line of the excavation, but it extended or expanded to include the entire basin south of Gold hill for a length exceeding 3,000 feet. Originally six acres, the Cucaracha now covers over fifty acres, moving restlessly, irresistibly as the sea.

We are taking big chances with these slides, and no one can say with accuracy when these avalanches of earth may be brought to the desired state of repose, which is so different from conditions that appear to be exactly similar elsewhere.

It is thought that the earth from most of the surrounding hills will eventually slide into the waters of the cut and hundreds of thousands of cubic yards of earth will have to be taken out by dredges. Dredging, though, is a much more inexpensive method of taking out the dirt than steam shoveling, and so it was decided to turn the waters into Culebra without waiting, despite the sliding earth. The 300 foot width of the cut leaves plenty of room for boats passing, even if half the cut should be choked up; 120 feet of clearance, in fact, would be sufficient.

SCIENTIFIC DEDUCTIONS

Colonel Gaillard of the engineering department, who is directly in charge of the Culebra cut, believes the pressure of the water in the cut will give the inefficient banks greater stability. The depth of forty five feet of water in the Culebra cut will be equivalent in weight to about twenty feet of rock, so that the stress from the unbalanced weight of the banks will be reduced to what it was when the bottom excavation was at sixty feet above sea level. But it is also contended that the water may accelerate the rotting of some of the rock, and the chemical action may partly neutralize the beneficial effect of the weight.

All these unforeseen eventualities have not added anything to the original appropriation for the building of the canal.

But, whatever the cost, the labor or the worry, it will all be gracefully borne by Uncle Sam and his workmen. Why shouldn't it be? Haven't the brains and money of this nation made possible the Panama canal, the greatest engineering feat in history? Haven't they accomplished wonders and given to the world an entirely new route for commerce?

ANIMALS THEIR OWN DOCTORS

Provided by Nature With the Means of Ministering to Their Ills.

Nature provides ample remedies for the ailments with which animals are at times afflicted, and with unerring instinct they prescribe for themselves and search out that herb or plant or kind of soil which will quickly make them well, says Our Dumb Animals.

We have been told how the mongoose cures himself when bitten by a cobra by eating a certain plant, and many of us have seen a sick dog bury himself in the dirt thereby to overcome some affection. Animals get rid of their parasites by using dust, mud, clay, etc. Those suffering from fever restrict their diet, keep quiet, seek darkness and airy places, drink water and sometimes even plunge into it. When a dog has lost his appetite he eats that species of grass known as dog grass. Cats also eat grass, catnip, etc., when they feel the need of a tonic. Sheep and cows when ill seek out certain herbs. An animal suffering from chronic rheumatism always keeps as much as possible in the sun. If a chimpanzee be wounded it stops the bleeding by placing its hand on the wound or dressing it with leaves and grass. When an animal has a wounded leg or arm hanging on it completes the amputation by means of its teeth.

It is known that a large number of animals regularly bathe themselves, as elephants, stags, birds and ants. In fact, man may take a lesson in hygiene from the lower animals who instinctively administer the proper remedies to themselves when necessary.

FLOWERS THAT EXPLODE.

Phenomenon Due to Sun's Heat Witnessed at Algiers.

There are certain sorts of flowers that "explode" in order to scatter their seeds about, but these are silent explosions brought about every seeding time by nature. For a flower to actually explode with a detonation that can be heard a long distance is quite another thing and a rarity.

Such a floral explosion occurred in the anical garden at Algiers. It was the spathe or the covering of the bunch of blossoms on a great palm tree. This spathe was nearly three feet long, and when the explosion occurred it was hurled to a great distance, while the shattered blossoms arose like a cloud of golden smoke and covered the top of the palm.

The cause of this was the sun's heat, which was unusual and had actually roasted the flower to the color of rust. The excessive dryness of the air had caused fermentation inside the spathe. A great sirocco or hot wind from Sahara, had just blown over the palm and agitated the fermenting contents of the spathe.

Such explosions are rare, but there are records of several of them, especially in that section of the country, says the New York American. It is said an ostrich egg will explode in the same manner and from the same cause.

The Alphabet In a Sentence.

What is the briefest sentence containing all the letters of the alphabet? Here is one with only eight words:

"Pack my box with five dozen liquor jugs." Cincinnati Enquirer.

Gossip of the Sport World

By "SCORE KEEPER"

The schedule of nineteen games arranged for the Columbia university baseball team by Roland A. Hillas, the manager, includes games with Harvard, Yale and Princeton and two games each with Cornell and Pennsylvania. Several games have been played, and the schedule from this week is as follows:

April 23, Yale at New Haven; 26, Cornell at Ithaca; 30, Princeton at Princeton.

May 3, Lehigh at South field; 7, Pennsylvania at Philadelphia; 9, Cornell at South field; 14, Wesleyan at South field; 17, N. Y. U. at South field; 30, Fordham at Fordham.

June 4, Pennsylvania at South field.

Kuhn to Lead Hockey Team.

Wendell Speers Kuhn, 1914, has been selected captain of the Princeton hockey team for next season to succeed "Hobey" Baker. Baker will be a member of the team next year, but would not be a candidate for re-election. Kuhn has played with the Tigers for two years at center and, with Baker, has been the backbone of the team.

Giants-White Sox Trip.

That the Chicago White Sox and New York Giants will take a trip across the Pacific in the fall is a certainty, according to President Comiskey of the Chicago team. Plans for the journey have practically been arranged.

The trip is not to be one around the world, as was first reported. The clubs will not have the time, so only three countries will be visited. They are Australia, Japan and China. Comiskey declared he would like to take the boys around the world in a short time, but if he did it would deprive them of the opportunity of exploiting the real inside points of baseball.

Twelve players are to be taken by each club. This probably will be the regular set of fielders, with three pitchers. The trip is to have an advance agent.

Football Pays at Chicago.

Football is the only sport which is profitable at the University of Chicago, according to an official report. The game netted $52,000 last year at a cost of $25,000. The total athletic receipts were $67,026 and the expenditures $66,484.

Pinch Hitting.

Years ago, when baseball was far from being the scientific game that it is now, for a club to carry a man who seldom attempted to play in the field, but occasionally was sent in to bat for another weaker hitter in a pinch, was practically an unheard of thing. It was regarded as a useless expenditure of money, if it was thought of at all. But baseball of today demands it, and baseball of the future will see more of it.

Pinch hitting has become a part of the game, just as pitching and fielding have always been part of the sport. The player who can take an occasional turn at bat and produce a hit when a hit means a run or more in a close contest and that run means victory is a player to whom any big league manager willingly will pay a good salary.

Such hitters are scarce. The work is easy, but it is only one in fifty players who can fill the position capably, and that is a conservative estimate. The good man for the job gets good pay. There is Harry McCormick of the New York Nationals, who won more than one game for the Giants last season, and Otis Crandall, who, although a pitcher, has often qualified as a pinch hitter.

Mathewson Still an Idol.

Admirers of Christy Mathewson of the New York Giants are not lacking this season any more than they have been in past seasons. Since old Cy Young passed out of the majors Mathewson has been universally recognized as the "grand old man of the mound."

Photo by American Press Association.

Christy Mathewson, the "Grand Old Man of the Mound."

Matty is far from being an old man, but his twelve years at the head of the heap have racked the wonderful pitching wing and made him a veteran before his years.

Probably the greatest siege that he ever went through was the heartbreaking world's series last season, when he pitched ball that made the youngsters look foolish, but was unable to win a single game. He is expected to pitch twenty-five or thirty games this season.

Stealing a Smile Here and There

The Favored of the Gods.

The Learned Professor. You know, Mrs. Bloogs, it seems a shame to take your boy away from school at such an early age. I myself didn't finish my school education until I was nineteen.

Mrs. Bloogs. Well, some children is quicker at pickin' up things than others.—Punch.

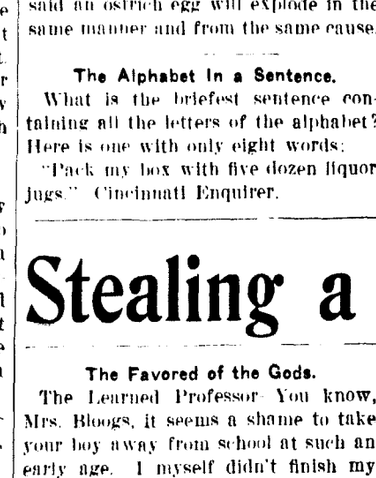
The Bone of Contention.

"People are funny."

"How now?"

"In this Van Million divorce suit they divided $25,000,000 amicably and then scrapped about the custody of a pug dog."—Louisville Courier-Journal.

Overladen.



Mrs. Benham—Man is made of dust.

Benham—You seem to think it is gold dust.—Chicago News.

A Plea For Charity.

Victim of Street Car Accident (glancing at caller's card)—I guess you're an ambulance chaser, aren't you? Lawyer (blandly)—That's rather a cruel name, old man. Why not call me a settlement worker?—Judge.

It's Often Fatal.

He—Do you think kissing is as dangerous as the doctors say?

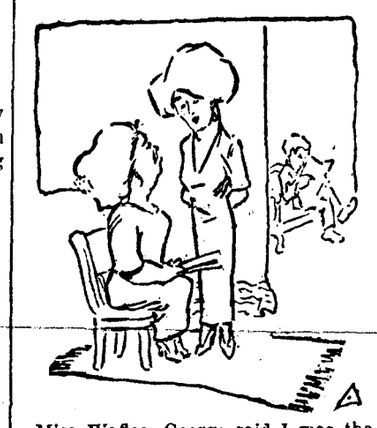
She—Well, it has certainly put an end to a good many confirmed bachelors, at any rate.—Tit-Bits.

Shrewd Deduction.

Madge—That old widower asked me to marry him. He praised my figure and said I resembled his first wife.

Marjorie. I guess that's the attraction, my dear. He thinks you'd be able to wear her old clothes.—Judge.

Jealous Cat!



Miss Waflee—George said I was the best singer he ever saw.

Mrs. Hitt—Wouldn't you rather he the best singer he ever heard?—New York Globe.

A Few Years Hence.

"Well, how's politics among the suffragettes?"

"We threw kisses at Mrs. Wombat, our candidate, for an hour and seventeen minutes."—Pittsburgh Post.

No Alternative.

Clare—Do you think you could bring yourself to marry a man your intellectual inferior?

Lydia—I suppose I shall have to.—London Opinion.

Discretion.

Maud—Does Kitty love Jack well enough to marry him?

Marie—Oh, yes; but Jack believes in letting well enough alone.—Boston Transcript.

No Hot Air About That.

Secretary—Here's a letter from a fresh air mission begging a contribution. Magnate—A fresh air mission? send them a fan.—Boston Transcript.

A Lover's Recollection.

Mr. Oldbeau. Miss Ethel, may I not hope to or some day call you my wife? Miss Ethel. Have you spoken to mamma on the subject? Mr. Oldbeau. Why er yes, I believe I did some twenty years ago.—Boston Transcript.

Why?

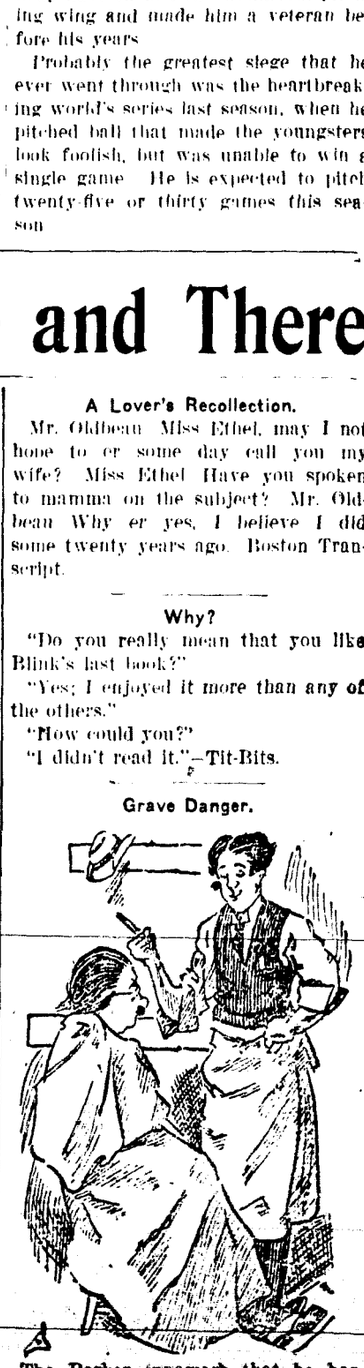
"Do you really mean that you like Blink's last book?"

"Yes; I enjoyed it more than any of the others."

"How could you?"

"I didn't read it."—Tit-Bits.

Grave Danger.



The Barber (unaware that he has the honor of attending Professor Van Blinkbottle, the world famous violinist)—Really, sir, you ought to have just a little more off, or people will take you for one of them fiddlers.—The Sketch.

That's Good Luck.

Mason—Do you think it's unlucky to have thirteen at table?

Brown—Not if the thirteenth is paying for the dinner.—Tit-Bits.

Seeing and Believing.

"Do you believe in love at first sight?" "Oh, yes. But I don't recommend it."—Detroit Free Press.