Still further to the west of the area of the States and foreign district will be great drill grounds, capable of accommodating at one time ten thousand troops in drill. Foreign nations will send their crack cavalry and infantry to participate in the maneuvers and trials of skill. Encircling the drill grounds, will be a race track where international speed and harness races will be held. Many large prizes will be put up; one racing association alone has guaranteed a purse of $25,000 for a two-year-old trotting race.

Marking the extreme western limit of the exposition structure will be the stock pavilions and the buildings devoted to live stock, poultry, domestic pets, and other displays. The Government Life Saving Service display will also be located here.

Throughout the entire exposition the illumination will be such as to bring out the colors of the courts in their proper tones, to sharpen and intensify the color effects. The illumination of the colonnades will be accomplished through purple lights; the windows of the exposition palaces will diffuse a golden ray. Giant batteries of colored searchlights will be anchored in the harbor before the site and will play against huge jets of steam and smoke that will be liberated high in the heavens. Searchlights 500 or 600 yards out in the water and before the main axis of the exposition will direct batteries of light over the exposition palaces, going through more than three hundred evolutions in colors.

Old French excavator, which has been set aside for exhibition at the Panama-Pacific International Exposition.
Probably not one in a dozen people realizes the scope and extent of the preparations San Diego is making for her Panama-California Exposition—huge frame and great concrete structures under construction, men laying foundations for more, buildings going up in every portion of the great park.

At the Administration Building on the Exposition grounds, where are housed the officers of the Exposition, is found a complete organization, departmented and correlated in such a manner that every part of the work of preparation,—a work that has proceeded steadily for over three years, goes along like clockwork.

San Diego is creating one of the most beautiful parks in the world, and building simultaneously its Exposition, using the latter as a means to beautify the park.

Ground was first broken for work July 19, 1911, and the grading has been finished nearly a year. A great plant propagating yard was established in 1911, and now contains millions of trees, ferns and vines for decorating the grounds, park ways and buildings. Visitors see great trees being hoisted over the sides of the huge viaduct to the slopes below for planting in holes already prepared; trees that will never be cut or moved again.

Surrounding the Administration Building is the steel and lumber yard where is stored the great quantity of steel rods for use in the concrete bridge across Cabrillo Canyon, and the lumber for the buildings. The bridge is 900 feet long, 130 feet high, and now about 30 per cent complete. Of buildings, three are finished and there are four others now under construction,—that known as the Home Science Building being most advanced.

The Arts and Crafts Building is being rushed, as are the Science Building and the Building of the Counties of Southern California. These four are in various stages, from foundation to roof covering. The great concrete bridge is probably the most spectacular piece of construction going forward in California today. When the California State Building is finished it will be connected with the bridge, and the two will form one architectural composition nearly 1,200 feet long and over 375 feet high, the top of the tower on the State Building lifting its dome over 500 feet above the sea.
The site of the exposition could not have been more happily chosen. Balboa Park, a magnificent fourteen hundred and fifty acre tract, lies on a high table land in the heart of the city. To the western gate of the site is about fifteen minutes' walk from the business center. From any portion of the Exposition grounds, the visitor enjoys a splendid view of the city and harbor. The eastern boundary of the Exposition site is marked by another deep canyon, and the grounds are bisected here and there by small ravines, all of which lend themselves admirably to the work of the landscape gardener and the exposition engineer, both of whom are taking full advantage of the fact to enhance and beautify the plans for the Exposition. From the end of Cabrillo bridge to the eastern gateway, stretches the main thoroughfare of the Exposition, named the "Prado." Twice in the distance it is enlarged by plazas. The first Southern California Counties' Building of these is known as the Plaza de California, and the second almost midway between the gates, as the Plaza de Panama. At the eastern gateway the visitor turns to the north, to what is named the "Isthmus," along which are situated the sites of the amusement concessions, many of which have already been allotted. The offering has been so great, that the Department of Concessions, under the directorship of H. O. Davis, assistant to President D. C. Collier, has been compelled in self defense, long since, to resort to a policy of elimination. The "Isthmus" will enclose, on its course to the northern gateway, the concessions, the villages of the North American Indian tribes, the Little Landers farms, the U. S. Reclamation Service, and its large acreage of demonstrating farm lands, and the outdoor exhibits of the seven Southern California Counties. President D. C. Collier believes that the world has tired of the antiquated and obsolete method of exhibiting "products" as such. He believes that these teach the beholder practically nothing beyond the fact that man's transportation
facilities are adequate to the task of collecting them, and his means ample to defray the expense; otherwise there is nothing to be learned from such exhibits.

In searching for a theme for the San Diego Exposition which would teach the visitor something worth knowing, and therefore leave a lasting and useful impression, President Collier hit upon the plan of presenting a synopsis of man’s evolution through a demonstration of the myriad processes marking the present acme of civilization, and embodying the history of man. It was a brilliant conception, and its great merits have been recognized by the countries of the world, in that a great many more than were expected to do so, have arranged to become participants in the San Diego celebration of the opening of the Panama Canal. Under the plan of President Collier, products will be seen as adjuncts to the exhibition of processes which call them into being.
After San Diego had sent her invitations to the various states of the Union, and to foreign countries, and these had responded in so much greater number than was at first deemed possible, it was found necessary to greatly enlarge the scope of the Exposition. To this end the city has voted an additional $850,000 bond issue, making the third million dollars raised for Exposition purposes, by the city of San Diego alone.

As a matter of strict recognition and governmental approval, the San Diego Exposition is in exactly the same position as that at San Francisco; both Home Economy Building expositions have "recognized" by the Federal Congress, the invitations to each have been transmitted to foreign chancellories by the Department of State, and the customs and immigration laws are suspended by act of Congress, with the usual restrictions and bonding privileges granted in such cases.

The Smithsonian Institution and the National Museum are co-operating with the Division of Exhibits to secure exhibits of ethnology and archaeology from all over the world, and Congressman Kettner will soon introduce a bill authorizing the departments of the government to place their exhibits here as well as at San Francisco. Enough exhibits have already been secured to make good on all the promises of the Exposition, but there will be no rest until every conceivable exhibit that will go to make a complete exposition of the history and achievement of the human race in America are secured, including the great government department exhibits.
The last two steam shovels at work in bottom excavation in Culebra Cut were withdrawn on September 10, 1913. These were shovel No. 204, manned by H. S. Hayes, engineer, and A. E. Alexander, craneman; and shovel No. 226, manned by Al. Geddes, engineer, and W. I. Hudson, craneman. The last trainload of material was drawn out of the Cut by engine No. 260, with E. C. Bean, as engineer, and E. A. Donnelly, as conductor. It was 10:30 a.m. when the last dippersful were loaded. In the hurry to get one more dipperful on the cars as the train got under way the craneman of shovel No. 226 dumped its load on the coal tender of the locomotive, completely filling it. The train proceeded a short distance, but was forced to stop until the dirt could be shoveled off the coal before continuing the trip. The very last shovel out of the Cut was on the following day, September 11, when shovel No. 210, manned by Frank Loulan, engineer, and S. H. Bryan, craneman, which had been working to keep the track around Cucaracha slide clear, was withdrawn. Thus the reign of King Yardage on the Canal, which had continued with but one interruption for a period of over 31 years, came to an end so far as excavation in the dry was concerned.

DESTRUCTION OF THE DIKES

On May 1, 1913, there existed four dikes in the Canal prism, all used at one time or another in keeping water out of dry sections. Two of these dikes were situated south of Miraflores Locks, one north of Gatun Locks, and the last and most important was known as Gamboa dike, which prevented the waters of Gatun Lake from entering Culebra Cut. The first dike to be dynamited was that which kept the waters of the Pacific from entering a section of the channel which had been partly excavated by hydraulic monitors. The event took place at 10:38 a.m., on Sunday, May 18, and was witnessed by a large crowd of people. The charge consisted of 32,750 pounds of 60 per cent. dynamite, and was distributed among 120 holes, some as deep as 70 feet. The blast flattened
out one end of the dike but did not admit the water at once. The ladder dredge Corozal, the largest in the Canal service, was put to work on the remainder of the dike and soon had a passage through.

The blowing up of the sole remaining barrier between Miraflores Locks and the sea, which occurred at 9:30 o’clock on Sunday morning, August 31, was a much more interesting spectacle. In this dike there had been placed 37,500 pounds of 45 and 60 per cent. dynamite, distributed among 541 holes at an average depth of 30 feet, concentrated in about the center. The blast tore a gap in the barrier, but as the water in the channel outside was at low tide, it did not flow over. Gradually, however, the tide crept up until at 1:35 p. m. it was nearly even with the top. At this moment, a man seized a shovel and made a trench across the top of the gap through which a rill began to flow. This soon increased to a good-sized stream, then to a river, and lastly to a raging torrent, carrying away sections of the dike each succeeding moment, until at 3 o’clock, when, with the pit 5,000 feet long, 500 feet wide, and 46 feet deep completely filled, the gap had widened to 400 feet. The end of this barrier signaled the practical completion of a sea level channel deep enough for ocean-going steamships all the way from Miraflores Locks to the sea, a distance of 8½ miles.

Gatun dike was a barrier that at one time kept the water in the Atlantic channel cutoff the forebay of Gatun Locks. It was also used as a crossing from the east to the west bank. Two pipe line suction dredges began the removal of this dike, which was eight feet above sea level, and 75 feet wide across the top, on September 2, 1913, no dynamite being necessary. On October 1, ocean-going steamships were able to navigate the Atlantic channel to Gatun Locks.

The last and most momentous event of the kind was the destruction of Gamboa Dike on Friday, October 10, and while the waters of the two oceans did not join on that day, it presaged the near approach of that long looked for occasion. Gamboa Dike was built in 1908 to protect Culebra Cut from inundation by freshets in the Chagres River. During the flood of December, 1906, the river rose to 81.6 feet at Gamboa, but this was before the dike was built and before the Bas Obispo section of Culebra Cut had been completed. During the flood of November, 1909, the water rose to a height of 72.6 feet, and came so close to the top of the dike, which was then at 71 feet above sea level, that sluice gates were opened to fill the Cut with water to the level of the river to avoid heavy washing in case a break occurred. Since that year the safety of the dike has never been menaced. When Gatun Lake rose to over 50 feet in the latter part of 1912, the dike was widened to an average of 50 feet by dumping clay on the side toward the Cut, and raised to an elevation of 78.2 feet above sea level. It contained about 90,000 cubic yards of material, and in mining for its complete destruction, a total of 1,277 drill holes were sunk, which if placed end to end would equal 41,166 lineal feet. Two hundred of the holes were made by tripod drills, the balance by well or churn drills.

LETTER WATER INTO CULEBRA CUT

Culebra Cut, between Cucaracha slide and Gamboa dike, contained 22.7 feet of water when the dike was destroyed on October 10. It was early decided that it would be unwise to allow the Cut to fill from the full head of the flow from
Gatun Lake, and October 1, therefore, the valves in five 24-inch pipes extending into the lake beneath Gamboa dike were opened. Subsequently a sixth pipe was brought into service, and all were continued in use up to the day of the explosion, filling the Cut to the depth above stated.

"GAMBOA IS BUSTED"

"Gamboa is busted!" are the words President Woodrow Wilson is credited with having used, when he pressed the button at the White House in Washington at 2 p. m., on Friday, October 10, setting off the blast which destroyed the last artificial barrier in the Canal. According to the local official timing it was exactly 2:02, when the thousands who were watching an insignificant embankment on which the eyes of the world has been fastened for weeks, with bated breath, saw a giant puff of smoke, the hurling of rocks, mud, and other debris high in air, and heard the muffled roar of the explosion, always a few seconds behind.

Colonel Goethals had planned to blow up the dike at 9 a. m., on October 10, and had already announced the hour, but a message was received from Washington shortly afterward, asking if it would be agreeable for the President to fire the charge, and if so, if the change in time to 2 p. m. would be convenient. The Colonel replied that he would be pleased to have the President fire the blast. The spark that made the water bridge of the Canal practically continuous was sent over 4,000 miles of telegraph and cable lines, from Washington to Galveston, Texas, by the Western Union Wire, and from that point to Gamboa dike by way of the Central & South American Cable Company’s cable. At the dike, it was connected to a local circuit, which, in turn, operated the switch that fired the blast.

While not a holiday on the Isthmus, yet everyone that could get excused from his work was present, and a crowd of people, probably 3,000 in number, lined the banks of the Canal, or sought a more commanding position on the nearby hills. Only a portion of the dike was dynamited, but the shot was a perfect one, making a comparatively clean opening 125 feet in width, through which water from the lake flowed in sufficient volume as to bring the water already in the Cut to lake level within two hours’ time. When the dike was destroyed the stage of water in the lake was 67.7, and that in the Cut 61.7, a difference of only six feet. The explosion was not a large one, as compared with some of the others shot off in connection with the Canal work. Only eight tons of explosive were used, the charges being planted in 400 holes from 20 to 35 feet in depth. The remainder of the dike, which included a hard rock section, was blown up on October 17. Dredge No. 5, which was passed through Gatun Locks on October 9, began work soon after the blast of October 10, removing the remainder of the obstruction.

Gamboa Dike was mainly important from its position as it kept the water in Gatun Lake from entering the 9-mile section of Culebra Cut, and was the only remaining artificial bar to a continuous waterway from Gatun Locks to Pedro Miguel Locks. This fact was heralded around the globe, and the interest of the world on October 10 centered on the small embankment of rock and earth. Its destruction was attended with much rejoicing in all parts of the United States; celebrations were held in a number of cities, and the press of Europe
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reflected the following sentiment expressed in the London Times, "The final stage today is an event in the history of mankind of which the whole human race has reason to be proud."

GATUN LOCKS, THE FIRST IN ACTUAL OPERATION

The first passage of a vessel through a set of the Canal locks occurred on September 26, 1913, when the tug Gatun was lifted from the sea channel to the Gatun Lake level, using the west flight. This date was chosen, because of the departure from the Isthmus of Maj. James P. Jervey, who had charge of the masonry construction of Gatun Locks, and of Maj. George M. Hoffman, who had charge of the building of Gatun Dam, as assistants to their chief, Lieut.-Col. William L. Sibert.

The filling of the lower lock was completed at 4:45 p. m., when the sea gate was opened, and the Gatun with flags flying and whistle blowing steamed up the approach channel and past the entrance to the lower lock, amid the cheers of the assembled spectators. The lower operating gates were then closed, and the tug came to a stop alongside the center wall. The process was repeated in the middle lock, and at 6:15, just as the short tropic dusk was falling, the vessel entered the upper lock for the last lift. This was accomplished at 6:45 p. m., when the two last gates were swung open, and the tug passed out on the gently heaving bosom of Gatun Lake, the entire passage occupying one hour and 51 minutes. In order to save time on the ascent the short length of lock was used, bringing the intermediate gates into play. The total lift was approximately 64.70 feet, divided between the three locks, as follows: Lower Lock, 11.2 feet; Middle Lock, 23.7 feet; Upper Lock, 29.8 feet.

The Gatun, which possesses the honor of having been the first boat to pass any of the locks of the Canal, is a seagoing tug, with a length of 101 feet, beam 22 feet, and a draft of 12 $\frac{1}{2}$ feet. It was built by the firm of Neafie & Levy of Philadelphia, and was first named the H. B. Chamberlain. It was purchased by the Canal Commission and brought to the Isthmus in 1906. In its passage through the locks, it was commanded by Capt. F. F. Stewart, while Mr. W. G. Comber acted as chief navigator. It carried as passengers on this memorable trip, Col. H. F. Hodges, Lieut.-Col. W. L. Sibert and family, Maj. James P. Jervey, and Mrs. Jervey, Maj. George M. Hoffman, Lieut. Geo. R. Goethals, and Mrs. Goethals, Mr. Henry Goldmark, Mrs. Edward Schildhauer, Mrs. E. E. Lee, Capt. B. Corning of the steamship Panama of the Panama Railroad Steamship Line, and Mr. Frank Thompson of the Panama Railroad.

On the following day, September 27, the Gatun was returned to the Atlantic channel, the lockage occupying one hour and 37 minutes.

THE FIRST PRACTICAL LOCKAGE

On October 9, 1913, three groups of dredging vessels and a floating piledriver, in tow of tugs, a total of 13 vessels, were lifted at one time from the Atlantic entrance channel to the surface of Gatun Lake, using the entire 1,000-foot length of each chamber. This performance more nearly demonstrated the utility of the locks in commercial and naval use than the passage of the lone tug on September 26. The first group entered the lower lock at 9:50 a. m., and the rear group passed into Gatun Lake at 12:40 p. m. The first group consisted of the tug Bohio, with a tow of one 600-ton barge loaded with piles and

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500 tons of coal, and two old cement barges loaded with 250 tons of coal each. The second group comprised the tug Gatun, with suction dredge No. 86, several pontoons, and a fuel oil barge in tow. The third group consisted of the tug Empire, with French ladder dredge No. 5, two dump scows, and a floating piledriver. A motor launch and several native canoes followed in the rear. After entering upon the lake the dredges and auxiliary equipment were towed south to Gamboa dike, to begin dredging operations in the Culebra Cut section. Probably the most practical illustration afforded by this lockage was the cheapness at which 1,000 tons of coal were conveyed to destination, as compared with the cost of getting it to the same point by rail.

On October 22, fifteen more vessels of the Atlantic dredging fleet were passed through Gatun Locks, to be in readiness to begin operations in Culebra Cut.

**FIRST LOCKAGE AT PACIFIC END**

On October 14, the tug Miraflores, with three barges, old French clapet No. 6, and the steam launch Birdena, made the first lockage at the Pacific end, and were raised together through the west flight at Miraflores Locks to the surface of Miraflores Lake, an elevation of 38.62 feet. As in the case of Gatun Locks, the gates and operating machinery worked perfectly, the operation lasting one hour and 30 minutes. The locks at Pedro Miguel were in readiness to pass the vessels into the Cut, but owing to an insufficient depth of water south of Cucaracha slide, this step was postponed to a later date. The tug, clapet, and launch returned to the Pacific entrance, and were passed through the locks on the downward trip in 45 minutes. While the blowing up of Gamboa dike was a feature that appealed to the popular mind, the fact that the locks and their huge, but delicate mechanism, passed the tests with flying colors, was the source of greatest pleasure to the men on the job.

**FROM THE SEA TO CULEBRA CUT**

The passage of both of the Pacific Locks was successfully accomplished on October 24, when dredge No. 85, towed by the tug Miraflores, and accompanied by the steam launches Birdena and Louise, towing a fuel oil lighter, a lighter for repair parts, and clapet No. 9, and steam launch No. 26 towing discharge pipe for the dredge on pontoons, was lifted through Miraflores Locks to Miraflores Lake, and through the east chamber of the single lock at Pedro Miguel for the lift to the surface level of the water in Culebra. The tows entered the lower lock chamber at Miraflores at 9:04 a.m., the upper level at 9:45, and Miraflores Lake at 10:20. Passing across Miraflores Lake, the foremost vessels entered Pedro Miguel Lock at 11:10 a.m., and passed into Culebra Cut at 11:52. The dredge was then towed to the foot of Cucaracha slide, and began its work of excavation on October 26.

**EARTHQUAKES**

It was an extraordinary coincidence that the day water was admitted to Culebra Cut there should occur the hardest earthquake shock that has been experienced on the Isthmus since September 7, 1882. That it was more than a coincidence none but the superstitious will allow, although there are some that
have tried to establish a connection between it and the Canal enterprise, possibly having in mind the admonition of the Spanish friar delivered when the project was first given serious consideration, which was "What God hath joined together, let no man put asunder." To the more practical, however, it afforded an excellent test of the stability of the Canal locks and their equipment, and demonstrated that it will take a much greater shock than any hitherto experienced on the Isthmus to make an impression on the lock structures.

The first tremor in the series occurred at 1:48 p. m., on October 1, 1913, and passed unnoticed, although registered on the instrument at the Ancon seismograph station. The heavy shock came at 11:25 that night, and continued for the space of about 25 seconds. It brought nearly everyone out of their beds and into the streets, especially in the cities of Panama and Colon and the interior towns. The movement registered Force IV on the Rossi-Forel scale, I to X, and was the strongest shake experienced in the history of the Ancon seismograph station. Despite alarming reports first sent out, no damage was done to any part of the Canal work, or to buildings in Panama, with the exception of a few slight cracks which developed in the concrete walls of houses. The seismograph indicated the epicenter of the disturbance as being 115 miles to the southwest, which established it at a point off the coast of Los Santos province. Reports from towns in this province on the day following the first severe shock indicated that the maximum force of the movement was felt there; several houses were damaged in the villages of Los Santos, Las Tablas, Macaracas, and Tonosi, and in two or three towns church towers were overturned. At Tonosi, near the seat of the trouble, landslides occurred in the nearby mountains, and cracks opened in the ground. The Central and South American Cable Company's cable broke at a point about 15 miles off the coast of Los Santos province, and in repairing the break it was ascertained that the bed of the ocean, formerly about 1,000 feet below the surface in that vicinity, is now 4,800 feet, indicating that the ocean bottom had sunk. The cable was found buried beneath a huge submarine landslide. History of the earthquakes local to this part of the Isthmus shows that in nearly every case the maximum intensity has been felt in Los Santos province. As proof of this, it is stated that the tower of the church in the village of Los Santos has been overthrown three different times, and that this is the third time the cable has broken since it was first laid. It was broken on the night of October 1 at the splice made after the break of September 7, 1882. It would also appear that the earthquake zone of the Isthmus is separate and distinct from that of Costa Rica, for the great Cartago quake of 1910 was not felt in Panama, nor was the recent disturbance here felt in Costa Rica, although there is less than 400 miles of distance between. A commission, consisting of Mr. D. F. McDonald, the Canal geologist, and Mr. W. C. Johnston, the assistant chief engineer of the Republic of Panama, was sent to the province of Los Santos at the instance of the Panama Government to make a complete investigation of the disturbances. After the hard shock of October 1, the tremors continued at irregular intervals, and during the month of October upward of 40 were recorded, only four of which were pronounced.

The report of the special board of engineers, consisting of Messrs. Frederic P. Stearns, Arthur P. Davis, Henry A. Allen, James D. Schuyler, Isham Randolph, John R. Freeman, and Allen Hazen, appointed by ex-President Roosevelt to investigate certain features of Canal construction, which was submitted
to Congress on February 16, 1909, has the following to say on the possibility of damage to the Canal by earthquakes:

"It has been suggested that the Canal region is liable to earthquake shocks, and that a sea level canal would be less subject to injury by earthquakes than a lock Canal.

"We have seen in the city of Panama the ruins of an old church, said to have been destroyed by fire, containing a long and extremely flat arch of great age, which convinces us that there has been no earthquake shock on the Isthmus during the one-hundred and fifty years, more or less, that this structure has been in existence, that would have injured the work proposed.

"Dams and locks are structures of great stability and little subject to damage by earthquake shocks. The successful resistance of the dams and reservoirs supplying San Francisco with water, even when those structures were located near the line of fault of the earthquake, gives confidence in the ability of well-designed masonry structures and earth embankments to resist earthquake shocks.

"We do not regard such shocks as a source of serious damage to any type of Canal at the Isthmus, but if they were so, their effort on the dams, locks, and regulating works proposed for the sea level Canal would be much the same as upon similar structures of the lock Canal."

The hardest shock which the Isthmus has experienced since its discovery is believed to have been that of September 7, 1882, but the famous flat arch passed through unscathed, although the façade of the Cathedral fell in, and the old Cabildo, or town hall, was badly cracked. Fissures also opened in the...
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ground at that time at Colon, and along the bank of the Chagres River, and the stone church at Cruces was destroyed. The flat arch above alluded to has stood in the ruins of Santo Domingo church for 206 years. This arch has a span of over 40 feet, and a rise of two; and it would not require a terrific shock to bring it down. The church in which this arch is found was built by the brethren of St. Dominic. History relates that when the arch was first built it fell. It was rebuilt and fell again, and also a third time. The fourth time it was built its designer, one of the friars, stood beneath while the supports were being removed, saying that if it was well made he would not be crushed. It did not fall.

**MAKING A PASSAGE THROUGH CUCARACHA SLIDE**

But for Cucaracha slide, Culebra Cut would have been navigable for boats drawing 25 feet of water all the way from Gamboa Dike to Pedro Miguel Locks, immediately after the blast of October 10. This slide, which has proved the most troublesome of any on the Canal, entirely blocked the Cut on October 10 up to the 73-foot level, so that when the Cut between the dike and the slide was at lake level, the water was still about six feet below the top of the barrier at Cucaracha. An effort was at once made to pass the water through to the section of the Cut between the slide and Pedro Miguel Locks by digging a trench with pick and shovel. The attempt proved futile as the material slid in and filled the ditch almost as fast as it was removed. Sluicing then resorted to, aided by blasting, did not give much better results, so that on October 20, dredge No. 86 was taken through the Cut from Gamboa and set at work pumping water over the slide.

**SECRETARY GARRISON’S VISIT**

Secretary of War, Lindley M. Garrison, paid his first visit to the Canal work on October 28, 1913, remaining on the Isthmus one week. On October 30 he was lifted through Gatun Locks from sea level to Gatun Lake level in French clapet No. 4, continuing the trip through the lake section and Culebra Cut as far as Cucaracha slide in a tug. Before leaving the Isthmus, he gave out an official statement, which, in part, was as follows:

"I think the canal is a work of magnificent import, magnificently done. I have seen everything susceptible to inspection, and, literally, it is an instance of one marvel succeeding to another. The people of our country are justified in feeling the utmost pride in the successful accomplishment of this most remarkable work."

**THE OFFICIAL OPENING**

The Panama Canal will be officially opened to the commerce of the seven seas on January 1, 1915, although both commercial and naval vessels will probably have used it many times before then. A great naval display in celebration of the event in which the fleets of foreign countries will be invited to participate. The fleets will probably assemble at Hampton Roads, Va., and after paying their respects to the President at Washington, will sail for the Isthmus to arrive in time for the opening day. It is improbable that all the
vessels taking part in the pageant can be locked through on the official day, but the representatives of different countries present may be taken through on specially selected vessels, and the remainder of the ships can follow later, proceeding to San Francisco, where they will take part in the festivities attending the opening of the Panama-Pacific Exposition on February 20, 1915.

**FIRST BOAT THROUGH THE CANAL**

The sending of the first boat through the Canal depended, at the time this book was published, on excavating a channel through Cucaracha slide, which might take weeks or months, according to the slide's future activities. The Polar ship Fram left Buenos Aires on August 14, 1913, and arrived at Colon on October 3, 1913, on its way to San Francisco, by way of the Panama Canal, where it expects to outfit for its projected trip to the Arctic region. It will probably be one of the first vessels to make the trip from ocean to ocean, although it is reasonably certain that one of the Commission's vessels will make the initial voyage. A battleship will likely be passed through soon after January 1, 1914.

The following thirty-five pages of views show the last steam shovel work in Culebra Cut, the successful operation of all the locks and the present dredging work at Cucaracha Slide, the last barrier to a passage through the entire Canal.
Last dipperful of dirt taken out of Culebra Cut by Steam Shovel No. 226.

This and the following three pages show the last steam shovel work in Culebra Cut before the water was turned in.
Next to the last large rock delivered by Steam Shovel No. 226, Engineer Geddes; Craneman Hudson.

Tower G, from which Operator Kimball issued orders moving last train out of bottom of the Cut.
Steam Shovel No. 226, which loaded last dipperful of dirt on last train out of the Cut.

Last train of material out of bottom of the Cut.
Engine No. 260 which pulled the last loaded train out of the Cut.

Engine No. 229, which pushed last train up incline track. Engineer and conductor on tender.
Blowing up the first dike at Miraflores on May 18, 1913. This let water into a completed section of the Canal about 1,000 feet long.

Miraflores dike before the blast of August 31, 1913.

The dynamite blast at Miraflores dike on August 31, 1913.

This and the following four pages show the blowing up of Miraflores dike and the filling of the last part of the sea level channel from the Pacific to Miraflores Locks, the entire distance being about eight and one-half miles.
Views showing the water rushing into the channel after the dike was blown up.

1. Man making a trench to let the first water in.
2. The opening as it appeared 30 minutes later.
3. The dike crumbled away under the mighty rush of water.
4. The opening momentarily widens.