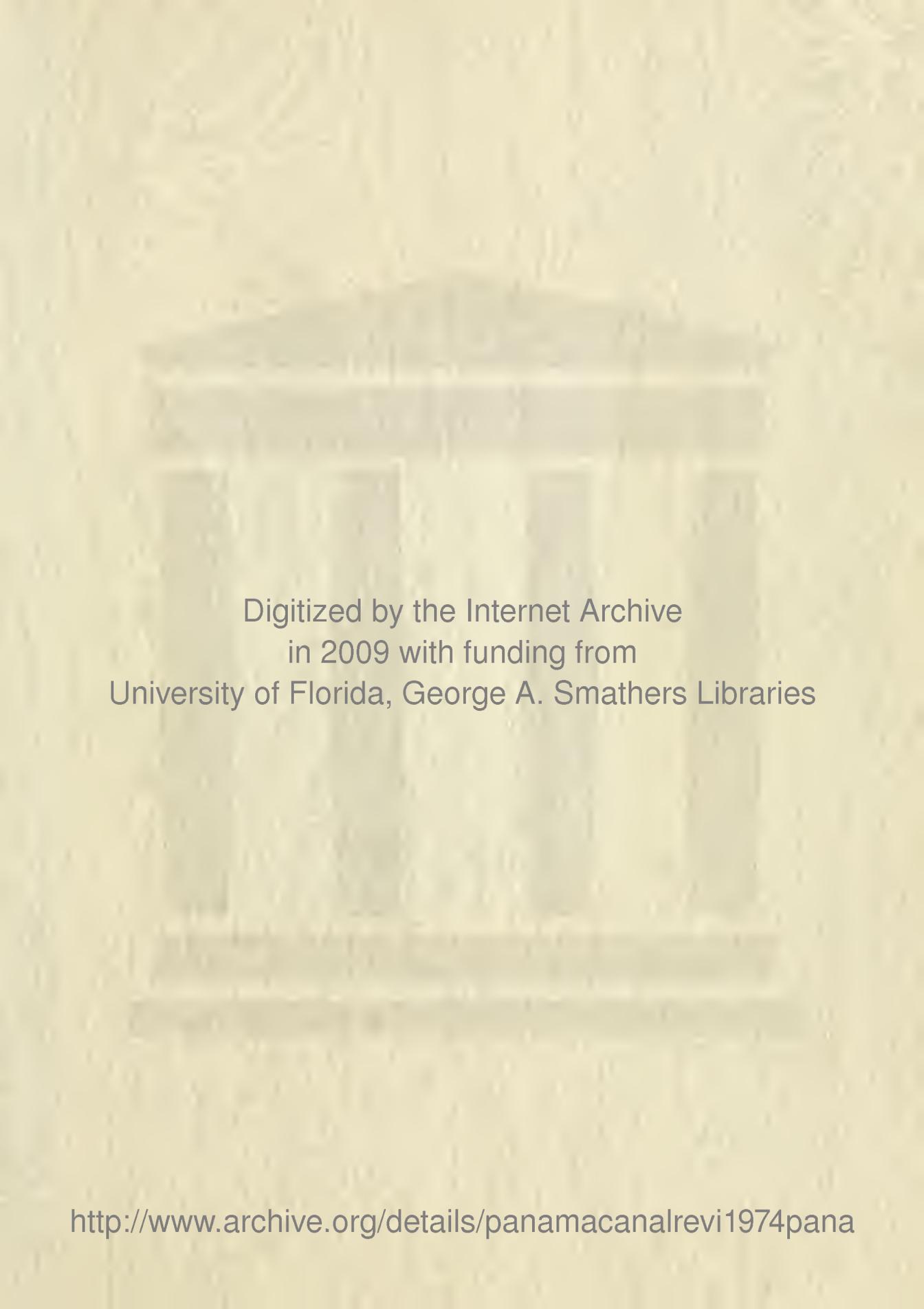




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PANAMA  CANAL
REVIEW

FALL 1974



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From the Governor of the Canal Zone

On the Sixtieth Anniversary of the Panama Canal



Governor David S. Parker at Pedro Miguel Locks.

Sixty years ago, this month, the maritime nations of the world hailed an event that provided a new link in the lanes of international commerce. The Panama Canal, one of the outstanding engineering feats of the century, opened on August 15, 1914.

The establishment of an avenue of access between the Atlantic and Pacific oceans was the fulfillment of a centuries-old dream that started in 1502, when Columbus explored these coasts.

The determination, talent, and technical skills of the men who realized that dream set a standard of excellence that has served as an inspiration to all who were to be associated with the operation of the Canal in succeeding years.

Grey thunder clouds gather over the dipper dredge Cascadas hard at work clearing the Canal of silt and debris as a freighter makes a southbound transit. Along with the widening of the Canal, the constant dredging has resulted in more dirt being removed from the waterway since it opened than during its construction.



Now, as we reach another milestone in the life of the waterway, I think we can all take pride in that association. During the last sixty years nearly half a million ships of many nations have transited the Canal, carrying a wide variety of commodities to every corner of the world.

Improvements have been made and new techniques developed to enable us to handle larger ships with greater efficiency. Projections indicate that with further improvements, we could nearly double the present capacity of the waterway.

More than 15,000 people with a wide variety of skills and professions are engaged in running the Canal and its many supporting facilities. To all these men and women, Americans and Panamanians, must go the credit for maintaining the high standards of efficiency that have characterized the Panama Canal from the beginning. And whatever the future needs of world shipping, I am confident that those standards will be maintained.

David S. Parker

*David S. Parker
Governor of the Canal Zone*

David S. Parker
Governor-President

Richard L. Hunt
Lieutenant Governor

Frank A. Baldwin
Panama Canal Information Officer

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Sixtieth Anniversary of the Panama Canal

A Profile in Paintings

“The scale, the immensity of the whole may be judged by the size of the engines and figures. I have never seen such a magnificent arrangement of line, light, and mass, and yet those were the last things the engineers thought of. But great work is great art, and always was, and will be.”

This was the way Joseph Pennell, an artist well known for his lithographs of the construction of the Panama Canal, expressed his impressions of the waterway in 1912. He was writing specifically of the lock gates under construction at Gatun, but that is the way an artist might describe the Canal as it is today.

An engineering triumph of mammoth proportions, the Canal continues to stimulate a feeling of awe and respect and is considered one of the most impressive and dramatically picturesque waterways of the world.

Though often photographed, it has seldom been the subject of visiting artists because of the time required to travel its length and sketch its many aspects.

But this year, Al Sprague, who probably knows the Canal better than any artist of today, has produced a series of paintings which show the busy waterway in operation with a certain subtle emphasis on the people who make it work—the men who pilot the ships, operate the locomotives, handle the lines, and dredge the channel.

On the 60th anniversary of the opening of the Panama Canal, these paintings are being reproduced in the Review as a special salute to the employees of the Canal and to world shipping.

Sprague, who was born in the old Colon Hospital on the Atlantic side of the Isthmus, is an art instructor at Balboa High School. The Canal has been one of his favorite subjects for many years and his series of paintings showing all phases of the locks overhaul is on display in the Board Room of the Administration Building at Balboa Heights.

His work is popular in the United States, where it is found in many private collections and is on permanent display at the Eric Schindler Gallery in Richmond, Va.

He lives in Balboa with his wife, Barbara, also an artist, and their three children.

—The Covers—

The front: Two ships pass in Gaillard Cut where the Canal passes through the Continental Divide between banks which exceed 300 feet in height in some areas. The back: The metal sheathing on the massive gates at Gatun Locks stands out in stark detail as a Norwegian ship is locked through.

Photographs by Arthur L. Pollack



At Miraflores Locks, ships are raised or lowered 54 feet in a two step operation. This freighter, which has just been locked into the upper chamber, towers over the control house, from which the massive gates are operated.



ARTIST AT WORK—Standing on the crosswalk atop the lock gates, Al Sprague makes preliminary sketches for a painting of Miraflores.

The Panama Canal

Sixty and Still Serving

With multi-colored containers shining brightly through a heavy tropical rainstorm, a super ship moves into the Cristobal anchorage to prepare for an Atlantic to Pacific transit. Container ships, the biggest innovation in shipping in recent years, are an important part of Canal traffic.



As they have since the opening of the Canal in 1914, men in small boats row out to throw the lines up to the ship for attaching the cables to the towing locomotives. Even in an age of automation and giant ships, this continues to be the most practical method of doing the job.



“ACD 2 this is South 3 . . .
is North 6 a super? . . . over . . .

“Affirmative South 3, he
passed Gamboa at 0950.”

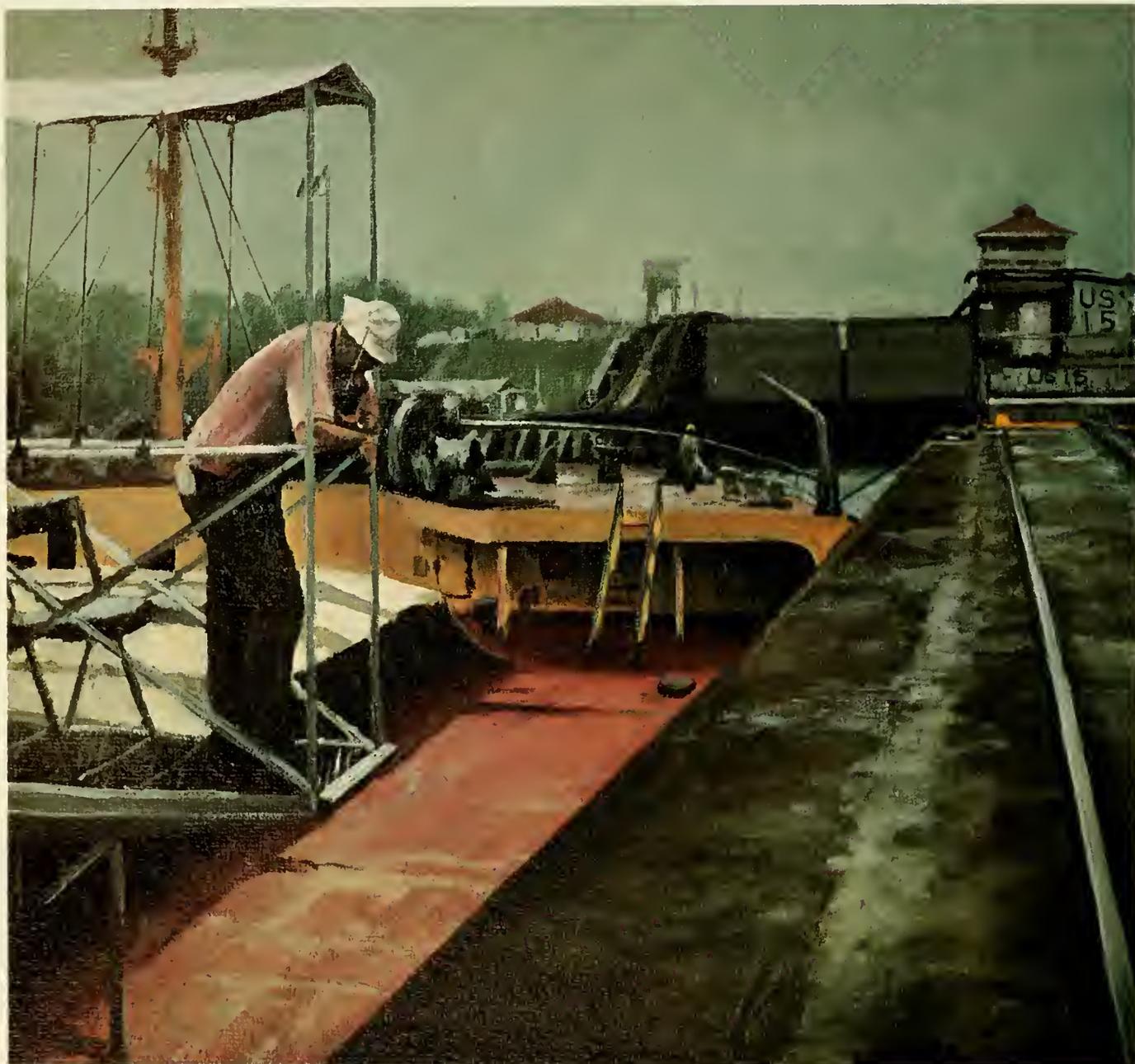
Conversations like this come crackling over the radios at the Marine Traffic Control Center of the Panama Canal 24 hours a day. Communications are vital to the efficient operation of the Canal and traffic controllers are in constant touch with pilots of transiting vessels, locks operators,

and their counterparts on the opposite end of the waterway.

In this particular exchange, the pilot of the ship making the third southbound transit of the day wanted to know whether the sixth vessel to transit in the opposite direction was one of the large superships.

The transit controller gives a point of reference that will allow the pilot on the southbound vessel to calculate just where in the

A Panama Canal pilot talks on his radio as he leans out to check the bow clearance of the wide beamed ship being locked through the 110-foot chamber of Gatun. As many as four pilots may be assigned to such super ships, with a senior control pilot in charge.



Canal he might encounter the larger vessel. He can then adjust his speed so that this happens at a convenient location for both vessels.

Ships have been transiting the Canal in very much the same manner since the SS Ancon made the inaugural transit on August 15, 1914. But things were a little

different in the early days. There were no super ships to worry about. And traffic was a mere trickle compared to today's. During the first fiscal year of operation, there were only 1,108 transits, an average of three ships a day. Today, controllers, pilots, locks operators and other Canal workers are kept busy handling about 40 ships a day. In fiscal

Oblivious to the warm tropical rain, a line handler watches a ship as it waits to enter Gatun locks with the help of a tug. Raincoats are seldom worn during the hot and humid rainy season. (See center fold)

year 1973 there were 15,109 transits.

Ships are requested to radio the US Navy communications station at Farfan, on the West Bank of the Canal at least 48 hours before arriving in Canal Zone waters for transit. If they are transiting for the first time, they are asked to provide such information as length and beam, destination, type of cargo they are carrying and any special characteristics of the vessel.

The information is then relayed by teletype to the Marine Traffic Control Center and the ship is scheduled for transit. Preliminary schedules are prepared 36 hours in advance.

In the case of regular Canal customers, all pertinent information is already stored in the Ship Data Bank, a new computerized system which was put into effect in 1973.

The Ship Data Bank stores two broad categories of information—ship characteristics and ship activity.

Ship characteristics include dimensions, tonnage, capacity, warping and mooring equipment and special handling characteristics.

Activity data, which is collected each time a ship transits the Canal or uses Canal Zone port facilities, consists of detailed



Ships, water and sky form a scene of tranquil beauty against the jungle covered hills surrounding Gatun Lake as ships lie at anchor waiting their turn to complete their transit of the busy waterway.





transit times, the pilot's evaluation of the ship's maneuvering equipment and ability, tolls paid, customs and quarantine data and cargo statistics.

Each ship is assigned a permanent identification number, which remains constant regardless of changes in name, ownership or flag.

When the Marine Traffic Center receives word of the impending arrival of a ship, the card is pulled and the scheduler can determine at a glance how many locomotives will be required to assist it through the locks, whether tugs will be needed and whether one, two, or four pilots should be assigned to take her through.

Pertinent information about the

ship is written with a grease pencil on a "paddle", a strip of heavy plastic, which is then placed on the "due" board.

Once the schedule is made up, Marine Traffic controllers assign pilots and work crews and arrange for tugs if needed.

On the day the ship transits, the information goes onto the transit board and her transit times through each of the locks are recorded.

Ships making the southbound transit, from Atlantic to Pacific, usually lay at anchor inside the breakwater in the Bay of Limón, within sight of the twin terminal cities of Cristobal and Colon, to wait their scheduled turn.

At Gatun Locks, largest of the three sets, they are lifted in three



A Panama Canal deckhand comes down a jacob's ladder as others await their turn to descend into a launch from the deck of a Japanese ship.

His green helmet glinting in the sun, a line handler keeps an eye on the cables while a crew member watches the transit operation from the deck of his ship as it moves into the lower chamber at Miraflores.



steps to the level of Gatun Lake, 85 feet above sea level.

Following the old Chagres River bed, vessels wend their way through the island-dotted lake for 23½ miles, to the northern end of Gaillard Cut, which lies at the townsite of Gamboa, headquarters of the Canal's Dredging Division.

This is home base for the heavy equipment used in the never ending job of maintaining the channels and harbors clear for shipping—giant floating cranes, suction and dipper dredges and a drill boat for underwater blasting operations.

Gaillard Cut, formerly called Culebra Cut, was renamed as a posthumous tribute to the man responsible for digging it,

Col. David DuBose Gaillard. Sailing through this portion of the Canal, one is impressed with the magnitude of the project. The Cut is eight miles long and most of it was built by blasting and digging through solid rock. Before the ship reaches the next set of locks, Pedro Miguel, it passes the promontories which mark the Continental Divide. On the left, is Gold Hill, which at 662 feet above sea level, is the highest along the channel. On the right is Contractor's Hill, which originally rose to a height of 410 feet, but was shaved down to 370 feet in 1954 as a precaution against the slides that have plagued the Canal since the beginning.

Gaillard Cut was originally excavated to a width of 300 feet.

Filling the chamber almost wall to wall, this large cargo vessel appears to be a part of the locks. Up forward on the deck, a Canal pilot watches the stabilizing cables attached to the towing locomotive. Bow pilots are used when the bridge of the ship is located aft.



During the 1930's and 1940's the straight section immediately north of Gold Hill was widened to 500 feet to provide a passing section for large ships. Between 1957 and 1971 the entire Cut was widened to 500 feet to permit more efficient and safer passage. Though some of the super ships still require a "clear cut", which means that no other ship can meet them in this portion of the Canal, widening of the Cut has

made the scheduler and pilot's job a little easier.

At the south end of Gaillard Cut, ships enter Pedro Miguel Locks to be lowered 31 feet in a one step operation into Miraflores Lake, a small artificial body of water separating the two sets of Pacific Locks.

Sailing a mile further south, the ship reaches Miraflores Locks, to be lowered the remaining 54

feet down to sea level on the Pacific side. At Miraflores there are two chambers in each lane, so that lifting or lowering of vessels is done in two steps.

Miraflores is one of the top tourist attractions on the Isthmus. Here, an average of more than 3,000 visitors a week come to watch the parade of ships from a specially constructed observation platform. Canal Zone Guides

provide a running commentary of the operation over a loud speaker system and offer slide briefings and film showings to special groups at a theater within the lock area.

As ships sail out into the Pacific they pass under the imposing steel arch bridge that spans the entrance to the Panama Canal and is an important link in the Panamerican Highway.



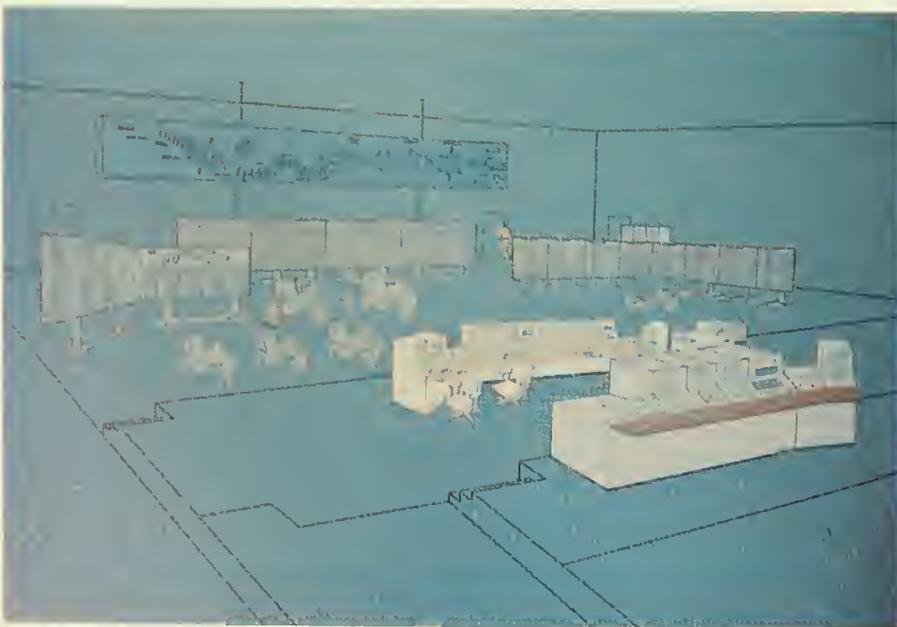
The lights on the bridge over the Panama Canal come on at twilight as a ship that has completed her transit moves out into the Pacific and continues her journey.



An architect's drawing of the new Traffic Control Center located at the Pacific entrance of the Panama Canal.

For Better Traffic Control

Schematic drawing of the computerized operations system to be installed in the new building.



Scheduling and controlling ship traffic through the Panama Canal soon will be streamlined through the magic of modern technology.

Monitoring the progress of ships as they transit the waterway will be made easier and more efficient with computers and vastly improved communications when a new Marine Traffic Control System (MTCS) goes into operation in October, 1975.

Though marine traffic controllers and schedulers will be doing essentially the same job they are now doing, they will be performing faster, more efficiently and in more comfortable surroundings.

The new MTCS will be housed in a new facility located in La Boca overlooking the Pacific entrance to the Canal. All ship transit and harbor movements will be coordinated and monitored from this facility which will also serve as the headquarters for the Marine Bureau's Transit Operations Division.

The new system will include a Direct Data Network (DDN) consisting of 23 remote communication stations located at key points along the Canal. Using telephone circuits, the teletype-like stations will provide instant communications between the new Marine Traffic Control Center and every element concerned with ship movements, bunkering and stevedoring operations, admeasurement, customs and collection of tolls.

Information can be directed selectively to one or more of the stations or transmitted to all simultaneously, thus sharply reducing the number of phone calls and radio transmissions that now must be made to accomplish the same objective.

The MTCS will provide timely information on the status of ships in the locks and in the waterway. Ship progress within the locks will be telemetered automatically. Vessel progress in the waterway will be approximated by the computer based on position and speed reports from pilots.

A 48-foot by six-foot ship position display board in the Traffic Control Center will permit traffic controllers to view at a glance the traffic situation in the Canal. Lighted numbers representing ships in transit according to their order in the schedule will show their approximate position in the canal—orange lights for northbound traffic, amber for southbound vessels.

Each of the two transit controllers on duty at all times will sit before a battery of six CRT's (cathode ray tubes) which will

The Panama Canal passed another milestone this year when the 400,000th oceangoing commercial vessel transited the waterway.

The vessel that made the memorable transit was the Liberian bulk carrier Pennsylvania Getty, a 799-foot ship with a 105-foot beam. She was en route from Hampton Roads, Virginia, to Japan with 51,686 tons of coal.

It took 43 years, from the time the Canal first opened in 1914 to 1957, to reach the 200,000 mark but the second 200,000 oceangoing ship came only 17 years later, pointing up the increased role the Canal has played in international commerce. (Photo on page 18 and 19)

display all the information now entered by hand and displayed on a schedule board. This includes scheduled events and those which have already taken place.

Schedules and schedule changes will be disseminated automatically at fixed-time intervals. Each remote terminal will receive a message which is especially designed for the user. Remote stations can request and receive additional data by interrogating the computer at any time.

Pilots will receive individually tailored reports with schedule and transit information at the launch landings before leaving to board their assigned ships.

The spacious operations room in the new traffic control center will have three floor levels to afford watch supervisors, schedulers, controllers and clerks an unobstructed view of the ship position display board.

The new MTCS will employ standard computer techniques. It is designed to automate as many of the menial tasks as possible, but decision-making will still be left to experienced marine traffic control personnel.

The system will perform logical switching, data handling, display driving, query generation, and generation of reminder messages whenever tasks fail to be performed on time. Critical elements of the system are duplexed to insure maximum reliability.

A contract for procurement of the entire MTCS was awarded to The Boeing Company last February. Under the contract, Boeing will complete the detailed design, furnish and install all hardware, provide all programming and coding, integrate and test the new system, and provide maintenance for a one year period.

Construction continues on the Traffic Control Center building which is scheduled for completion in November of this year. The small structure in the foreground will house the utilities for the main building.













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