

# Canal Has Big Repairing Plant

## Facilities at Balboa and Cristobal for Ship Work Are Described.

Washington.—The elaborate facilities for the repairing of ships at the Panama canal are given in a bulletin of the Panama canal authorities. The principal manufacturing and repair plant is located at Balboa, the Pacific terminal of the canal. It is adjacent to an inner harbor, which has an area sufficient to permit access to docks, which aggregate 7,500 feet in length, including commercial docks, repair wharves and coaling docks.

A much smaller plant is located at Cristobal, the Atlantic terminal about one and one-half miles from the main commercial docks. A description of the plant at Balboa follows:

The dock has a depth of 35 feet over the blocks at mean tide. High tide varies from 3 to 11 feet above mean tide. It is served by a 50-ton traveling crane with an outside reach of five feet beyond the center of the dock. This crane is also capable of traveling along the face of some of the repair wharves, thus facilitating the work of repairing vessels.

For ships which do not require dry docking there are adjacent to the shops about 3,500 feet of repair wharves. At regular intervals along the coping of the dry dock and the repair wharves are outlets for air, water and alternating electric current. A limited quantity of direct current can be supplied by two portable motor generating sets. Either compressed air or electricity can be supplied for operating auxiliaries on ships on which steam is off. Where refrigerating machinery is shut down, cold storage can be removed from the ship's boxes and stored in the canal cold storage house nearby.

The repair shops are centrally located with respect to the dry dock and repair wharves. Ample track and crane services provide for handling work between shops and ships.

**Huge Traveling Cranes.**  
The main metal-working shops (machine, smithery, and boiler shop) are provided with 60-ton overhead traveling cranes, while the foundry has a 25-ton overhead crane. As all the shops are equipped with as complete lines of power tools as are generally found in an up-to-date repair shop, only the larger tools will be given special mention so to give an idea of the maximum capacity of each department.

The machine shop is provided with a vertical boring mill capable of working 18 feet in diameter, with an open side extension planer 16 feet by 32 feet, and with a lathe 120-inch swing by 65 feet between centers. No ship machinery is too large for the capacity of this shop. This shop has a floor area of approximately 63,190 square feet.

The smithery is provided with a 500-ton forging press with the necessary furnaces to handle any work that the press is capable of. Billets 24 inches square by 19 feet long are kept in stock and can be worked under this press; there are other machinery and tools usually found in a first-class smithery. There is also a department for spring making and a tool-dressing department that includes oil burning and electric tempering furnaces of the latest type. This shop has a floor area of approximately 24,386 square feet.

The boiler and ship-fitting shops have a set of rolls capable of bending plates 3/4 inch by 30 feet, 1 inch by 24 feet, or 2 inches by 6 feet.

Any size of ship or boiler plates or structural shapes can be worked by the other machinery, which includes angle shears, punches, straightening rolls, plate planer, and bending machine. This shop has a floor area of approximately 46,800 square feet.

The pipe shop is outfitted for plumbing work and for pipe, copper and sheet-metal work of the highest classes. The floor area of this shop is approximately 17,144 square feet.

The foundry is equipped with a two-ton tropenas converter and one two-ton and one one-ton cupola, and the usual brass furnaces. There is an efficient sand-blast system for cleaning castings, also gate saws, sprue cutters, and other modern equipment, including annealing furnaces, core oven and mold-drying oven. The foundry can turn out castings as follows: Bronze, brass or composition, 1/4 pound to 1,000 pounds; iron 1/4 pound to 26,000 pounds; steel, 1/4 pound to 10,000 pounds. In connection with the foundry is a pattern shop equipped to handle any and all classes of pattern work. This foundry and pattern shop together have a floor area of approximately 37,738 square feet.

**Woodworking Machinery.**  
The planing mill and joiner shop is outfitted with the usual woodworking machines, including a 72-inch sawmill capable of handling timbers likely to be used in connection with ship work. This shop has a floor area of approximately 49,044 square feet.

The oxy-acetylene plant has portable electric welding and oxy-acetylene cutting outfits capable of handling emergency repairs. The plant develops approximately 400 cubic feet of acetylene per hour, 5,000 cubic feet of hydrogen per day. All classes of boiler welding are done. Large thermite welds can be performed. Main engine cylinders have been welded in place, both high pressure and low pressure, the welds being as extensive and as successful as the welds made in the United States on engine cylinders during the World War. This plant has a floor area of approximately 910 square feet.

An instrument repair shop is maintained in which repairs are made to navigating instruments, clocks, gauges, typewriters and computing machines and other work of a minute character. In connection with this shop there is a plating plant for zinc, copper, nickel, silver and gold. This shop has a floor area of approximately 2,500 square feet.

Located in the same building with the instrument repair shop is an electric shop under the control of the electrical division, the facilities of which are available for the entire Panama canal. This shop is equipped for motor winding, switchboard work and making repairs to practically any kind of electrical apparatus. The floor area of this shop is approximately 3,400 square feet.

There is a car shop equipped with all necessary machinery for the building of railroad cars of all kinds and also the repairing of all the rolling stock of the Panama railroad. In connection with this shop there is a rerolling mill for rerolling bars and miscellaneous scrap material into rounds and flats. This shop has a floor area of approximately 61,819 square feet.

There is located at both the Balboa and the Cristobal shops and connected therewith a roundhouse where general overhauling as well as minor repairs are made to the locomotives of the Panama railroad.

The air-compressor plant and dry-

dock pumping plant at Balboa are located in the same building. There are two 5,000 cubic foot and one 2,500 cubic foot air compressors in use, driven by electric motors and one 2,000 cubic foot steam-driven compressor which is considered only as an emergency unit.

**Up-to-Date Laboratory.**  
There is a laboratory equipped with a 100,000-pound Bliehie testing machine and a Brinnell hardness testing machine and other equipment for making physical tests of all kinds. There are also available in another division of the Panama canal, laboratories where chemical tests can be made of fuel oils, metals, etc.

All shop tools are operated by electricity. The larger tools are provided with independent motors and the smaller tools are arranged in groups and driven from countershafts. The current is obtained from a hydro-electric plant at the Gatun spillway, supplemented by a Diesel-driven plant at Miraflores. The 25-cycle, alternating current is transmitted to the Balboa substation at 44,000 volts. At the substation it is transformed to 2,200 volts and so distributed through underground duct lines to the various shops, where it is further transformed, where necessary, to suitable voltages for use. The various speed tools in the machine shop are driven by direct current from rotary transformers within the shop. All other tools are driven by alternating current, generally at 220 volts. Current at 220 volts is available at all points along the water front for power purposes, and at 110 volts for lighting in the event of ships' generators being out of use.

The storehouses (under the control of the supply department) carry on hand a large stock of steel shapes, pipe, ship fittings, and supplies of every description. Steel plate is carried in stock in all thicknesses up to and including 2 inches. Plates smaller than 1/2-inch vary by sixteenths and plates larger than 1/2-inch vary by eighths. The largest plates in stock are 72 inches by 10 feet by 2 inches thick. A large amount of steel billets is kept on hand in all sizes up to and including 24 inches by 24 inches by 19 feet. Structural shapes are carried as follows: I-beams, all sizes up to 27 inches; channels, all sizes up to 15 inches; ship channels, all sizes up to 12 inches; and angles, all sizes up to 8 inches by 8 inches by 1/2-inch. There are also carried in the storehouses lumber of all sizes and miscellaneous equipment and supplies of practically every description that are used in the operation and maintenance of the entire Panama canal.

**Birds Kill Cat**  
Jeanette, Pa.—Authorities are powerless to apprehend the slayers of Mitzel, killed by a murder gang, 100 strong. Mitzel was a cat, which was literally torn to pieces when attacked by a flock of blackbirds which swooped down upon the pet while she was sunning herself in a yard.

**John Sargent's Ghost Walks, Says Friend**  
London.—The ghost of John Singer Sargent, famous American artist, in his grave these last two years, has returned to haunt the Chelsea studio where he died, in the belief of the present occupants of the house. Frequently his footsteps are heard by Alfred Orr, his American artist friend, who took over the studio 10 months ago, descending from the second-floor workroom to the ground floor, in which he died, and which now is used as a bedroom by Mr. and Mrs. Orr. The latter also has heard footsteps, which she recognized as Sargent's heavy tread.

**Forced to Bob Hair**  
After spending the night in the top of a tree to escape the furies of flood and hurricane, Mrs. Paul Weidenbohm of Terrebonne parish, Louisiana, was forced to yield to her pet aversion and have her hair bobbed. The strands had become so entangled in the treetop that her husband had to break most of them to free her.

**Water to Protect Bank**  
Water will be used as a protector for the money vaults of the Bank of England, which is being rebuilt. When completed the vaults will be capable of being flooded from three sources: from the bank itself, from another point in London and from a third point ten miles outside the city.

**Poisonous in Part**  
A word of warning: Many flowers are poisonous or semi-poisonous. Those of the daffodil, for instance, are powerfully emetic. It is not generally understood that many plants may be poisonous in one part. A striking example is the rhubarb, where only an inch or two at the top of the stem lies between the poisonous leaf and delicious stalk.

**Says Kipling Doesn't Work**  
Rudyard Kipling's achievements are not appreciated by a maid employed at his home, it is indicated by an incident related by Sir St. Clair Thompson, London physician. A friend called to see Kipling, but told the maid he would not disturb the author if he was at work. "Work!" exclaimed the maid. "He don't do no work. He only sits upstairs and scribbles and scribbles!"

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**The Clique**  
Stella Mayhew was talking about other days on Broadway. "I'll never forget the first time I ever saw my name in lights," said the veteran. "I was coming down Broadway in a horse-drawn cab, and suddenly saw my name in huge letters on top of the building where the Anheuser-Busch moving sign was for so long. I got right up in that hack and applauded myself."—Variety.

After a strenuous struggle to acquire fame, many a man finds himself infamous.

## TWO WOMEN MADE HAPPY

**By Women Who Used Lydia E. Pinkham's Vegetable Compound.**  
"I have taken Lydia E. Pinkham's Vegetable Compound and I think it is the most wonderful medicine I ever tried." is the statement made by Mrs. Goldie Shoup of St. Joseph, Illinois. She declares that after taking the Compound she is in better health than before.

Mrs. J. Storms of 23 Lane Street, Paterson, N. J., writes: "I cannot speak too highly of your medicine and I recommend it to all my friends." These statements were taken from two enthusiastic letters which tell of the help that has been received from using the Vegetable Compound. Both Mrs. Shoup and Mrs. Storms were in a run-down condition which caused them much unhappiness. When women are suffering from lack of strength and from weakness, their own life and that of their family is affected. When they feel well and strong and are able to do their household easily, happy homes are the result.

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## Indians Inspect New Buffalo Bill Memorial



Gov. Frank C. Emerson of Wyoming greeting Crow Indian chiefs on their inspection of the new Buffalo Bill Memorial museum at Cody. The museum was dedicated July 4.

Betty Buzz stars in screen comedy

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