

OCEANOGRAPHY

Great Coral Reefs in Pacific Have Clams Four Feet Long

Pacific Science Congress Hears Report on Study Of Unusual Formations at Bottom of Ocean

CORAL reefs 1200 miles long, extending as far as 150 miles from the coast line, and sheltering huge clams four feet long and weighing more than a hundred pounds, were described by Prof. C. M. Yonge of England's University of Bristol, speaking before the Sixth Pacific Science Congress at Palo Alto, Calif.

"No ocean contains so rich a growth of coral reefs as does the Pacific," he told the Congress. "Fringing reefs bound the land within the tropics especially along its western shores and atolls are scattered far and wide throughout the South Seas. But the greatest coral formation of all is the Great Barrier Reef of Australia. This immense series of reefs extends along the northeastern shores of Australia from the tropic of Capricorn in the south almost to the shores of New Guinea in the north, for a total distance of more than 1200 miles. It is made up of thousands of individual reefs which extend in places as far as 150 miles from the coast."

Biology Studied

The biology of the corals which form these reefs was examined by the Great Barrier Reef Expedition, which worked for more than a year in 1928-29 on a small coral island midway between the outer reef and the mainland.

"Corals are essentially sea anemones which have acquired the power of forming massive limey skeletons," Prof. Yonge explained. Many grow to a great size, forming colonies which may be rounded and massive, branching and tree-like, or flat encrusting sheets, according to the region where they grow. Corals of the first type are found especially on the exposed outer surface of reefs, those of the second type in sheltered water in the lee of reefs, and of the third type on the summits of reefs where the surf sweeps over when the tide is out.

"Corals are all carnivorous. They feed, usually by means of delicate tentacles armed with batteries of stinging cells, on the minute animals which drift in the

surface waters. Most corals only expand by night when alone; the animal life is abundant near the surface.

"Within their tissues are contained countless numbers of minute plants called zooxanthellae. It had been thought that these contribute to the food of corals, but this was found not to be the case. They do automatically remove the waste products formed by the corals and in this way probably aid in the remarkable rate of growth possessed by corals. These can frequently double the bulk of their skeletons in six to twelve months, and it is this rapid growth which has made possible the formation of reefs many miles in length, of great depth and thickness, which are capable not only of resisting the destructive action of the Pacific breakers, but actually growing out against the full fury of the sea.

"Corals are among the most successful and most highly specialized of all marine animals and different kinds of corals are adapted for life in all regions of the reefs. On and in the reefs live an immense and diverse assemblage of animals and plants of all kinds and many, notably the fish, of great beauty. The most spectacular of all are the giant clams which may attain a length of more than four feet and which weigh more than a hundred-weight. These gigantic 'cockles' are the largest bivalve shellfish ever evolved."

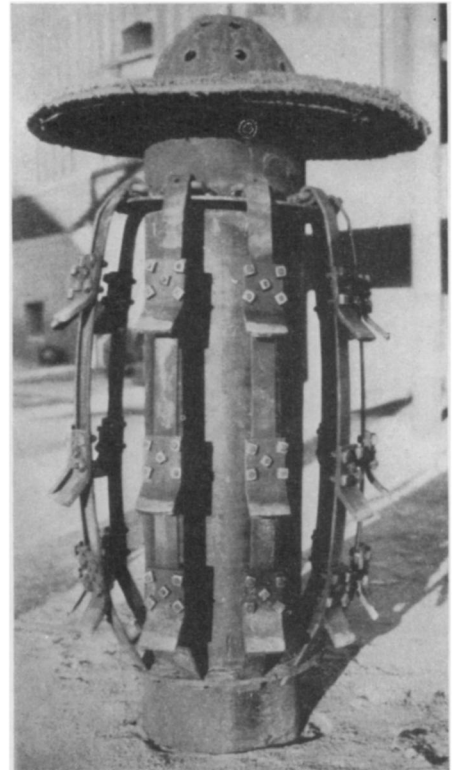
Science News Letter, August 19, 1939

ENGINEERING

Cleaning Long Pipe Lines Is Strange, Tough Task

ONE of the strangest housekeeping jobs in the world is the task of cleaning the huge pipe lines which sprawl over much of the United States carrying gas and oil from the fields of Oklahoma, Texas and Louisiana to the great consuming areas in the midwest and Ohio River basin.

Twenty-four inches in diameter and even larger, the pipe-lines crawl up hill and down dale, under and over rivers



NOT CAMOUFLAGE

It is called a "scarifier," yet is not used to scare folks but for cleaning pipe lines.

carrying precious liquid and gaseous cargoes to markets.

Stretches of 1,200 miles of continuous pipe are no longer a novelty in the land. Over 300,000 miles of pipe are now in use.

When an overland pipe line for high-pressure gas transmission accumulates dirt, getting it out without tearing up the pipe is no mean task. Hundreds of pounds of mud, rust and dust may lodge in a section only a few hundred yards in length where the pipe dips down into a valley. In some known cases the carrying capacity of pipe lines has been reduced 25 per cent. by foreign materials.

Charged with cleaning the pipes is the "go-devil" and his related fellow the "scarifier." The latter is a strong, sturdy mean-looking device with 24 hardened steel blades that scour out caked dust and oily mud. Blown through the pipe in front of a blast of pressure of from 3 to 10 pounds to the square inch, the scarifier cuts into the slime and prepares the pipe for the go-devil.

The go-devil is a four-foot section of 12 and three-quarter inch pipe from whose sides projects row after row of steel "fingers" along the length of the core. At the tail end of the device is a

diaphragm made of heavy ditching machine conveyor belting for a tight fit with a thin, circular iron sheet back.

Materials loosened from the walls are blown out ahead of the cleaner through holes in the "nose" of the device.

Pushed by pressure the go-devil can travel with a speed of from 3 to 5 miles

an hour under ordinary conditions. Continuous sections of $5\frac{1}{2}$ miles have been cleaned successfully.

Two trips with the scarifier and one or two trips with the go-devil make the inner walls of the pipe bright and shiny even in the low spots where accumulations are heaviest.

Science News Letter, August 19, 1939

AERONAUTICS

Patent Describes New Blind Landing System

Four Beams Are Used By New Method Which Gives Both Audible and Visual Signals to the Approaching Pilot

THE NEWEST blind landing system for aircraft, just granted a patent (No. 2,165,256) at the U. S. Patent Office, "talks" a pilot down to safety through four cigar-shaped, but invisible, radio beams that form a "funnel" leading down to the airport.

Invented by Clarence W. Hansell of Port Jefferson, N. Y., with patent rights assigned to the Radio Corporation of America, the new system provides a guide path in space formed by four sharply-directed radio beams.

When on the proper line the pilot hears only a buzz. If he is too far to the right he hears a voice repeating

"left-left-left." If too far up, the voice says "down-down-down." Similar "right" and "up" signals are given for incorrect landings that are too far off to the left or too far down.

Because the four beams are sent upward at low angles with one another the open end of the "funnel" is much larger than the other end which, of course, is a spot on the landing field.

The directions to the pilot can be either audible—as in the voice that repeats up-up, down-down, right-right, left-left, or they can be by visual means on an instrument in the cockpit.

Audible signals are perhaps prefer-

able, states the patent, because they leave the pilot's eyes free to search the fog-covered airport for first glimpses of the landing surface.

Other blind landing systems have quite intentionally gone over to instrument indications rather than voice signals, according to Washington radio engineers.

One method uses the interacting radio fields of two beams to provide a zone of equal intensity of signal that marks a horizontal line passing through the landing field. At the same time a third beam, properly pointed, provides a signal down which the plane can glide to a landing, in correct vertical orientation.

The Hansell system, in contrast, uses two beams to obtain this proper vertical line rather than a single one.

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BOTANY—GENETICS

Dean of Plant Explorers Honored With Medal

DR. David Fairchild, dean of America's plant explorers, is now decorated with the Meyer medal for plant introduction, a surprise tribute from the little group of men who search the world that our fields and forests may be enriched by crops and trees from other lands.

At the U. S. Department of Agriculture's plant introduction garden in rural Maryland, Secretary of Agriculture Henry A. Wallace handed Dr. Fairchild the bit of metal symbolizing the spirit of adventure and service of those who hunted vegetative immigrants fit for our continent.

Just 40 years ago Fairchild, now 70, came to Washington to pioneer the important work of plant introduction. The world became his garden. Many who worked with him in the years that followed joined in the Meyer medal ceremonies.

Many of the pioneers are dead, among them Frank N. Meyer, the USDA's first full-time plant explorer, lost at sea in 1918, who left a fund which makes possible the medal bearing his name. From China Meyer brought soy beans, the Chinese elm, and other living plants now very much at home in America.

Dr. Fairchild, now retired from government service, is still exploring for plants. He is planning another trip to the Spice Islands, sailing in a specially built Chinese junk.

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HONORED

Dr. David Fairchild, left, dean of America's plant explorers, is receiving the Meyer Medal for plant introduction from Secretary of Agriculture, Henry Wallace, with Mrs. Fairchild and P. Howard Dorsett, retired plant explorer, looking on.

The first training school for teachers was started in the seventeenth century.