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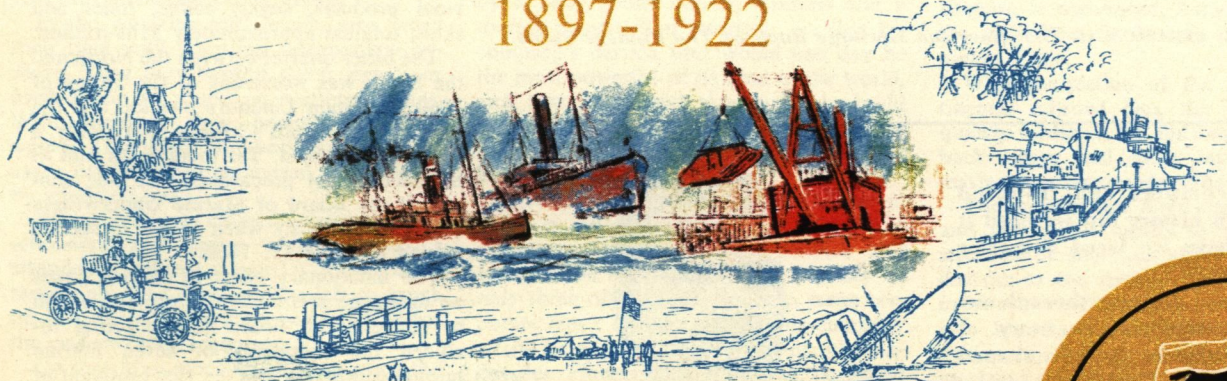
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Advertisement

1860-1897



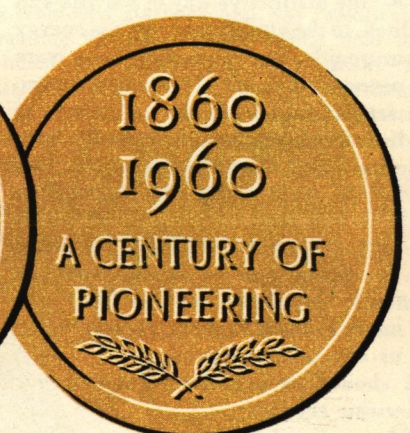
1897-1922



1922-1949



1949-1960



MERRITT-CHAPMAN & SCOTT CORPORATION

"There was something that literally drove men westward...It was vision, it was courage, it was at times the sheer joy of overcoming fantastic obstacles. And it was also the conviction that what they were doing was different from anything that had happened before, that nothing would ever be quite the same again, and that the world would be a better place for what they had accomplished."

RICHARD M. KETCHUM in *The American Heritage Book of The Pioneer Spirit*

HISTORIANS and philosophers ascribe the unique quality of America, the distinctive way of our life and outlook, to the vitality and restless energy of our people. These qualities stem from the pioneering spirit of the early American settlers and from the influences of the frontier through our history. We have inherited the venturesome spirit that drove the early pioneers across the ocean to this land, enabled them to subdue a continental wilderness, to establish a nation and to bring about an economic abundance such as the world has never known. Pioneering has created for us our past and present prosperity, and should ensure the future of our American economy.

What is the American economy? It is a restless, shifting force with dynamic strength that, despite slight interruptions, has moved forward over the years to higher and higher levels of productivity and accomplishment.

Symbols of its strength and landmarks of its progress surround us . . . smokestacks leaning against the Pittsburgh sky . . . derricks grunting under the strain of lifting diesel locomotives outward bound from the Port of New York . . . pipelines from Texas snaking across rivers and through mountain chains . . . wheat fields stretching across the western plains . . . a mile-long string of boxcars lumbering past a grade crossing outside Des Moines.

These landmarks exist today only because they were first envisioned, however dimly, by pioneers. Curiosity and courage, initiative and knowledge, produced the pioneer, "one who goes before, preparing the way for others."

Pioneers are not necessarily shadowy heroes of the past. Pioneering is a concept of many meanings. It typifies the settlers of yesterday and the scientists and technologists of today and tomorrow. It also characterizes leadership thinking and action in every phase of modern life. Today's frontiers are everywhere, awaiting exploration.

On continued pioneering depends our future national growth and safety in an

increasingly complex and troubled world. Never in history did we need it more. Never have we faced a greater threat.

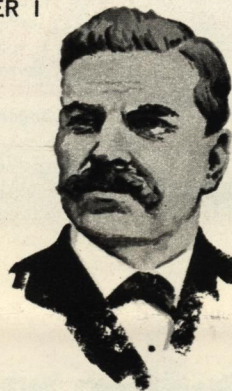
The progress of pioneers through our frontiers of history is the story of America and the forces that have shaped its economic growth. These pages tell a hundred years of that story through the eyes of one business enterprise, Merritt-Chapman & Scott Corporation.

In 1860, when the Merritt-Chapman & Scott story began, the Company's physical resources could be counted at one marine salvage schooner. Less easily counted were the intangible assets of ingenuity and vision possessed by Captain Israel Merritt, who at 15 served at sea and at 20 commanded a schooner. He later joined hands with William E. Chapman and Captain Thomas A. Scott, pioneers of the same mold in the derrick and construction fields.

As illustrated on the cover of this section, the Merritt-Chapman & Scott story is told in four chapters of time. The first runs from 1860 to 1897, when the Merritt Wrecking Organization merged with the Chapman Derrick & Wrecking Company. The next closes in 1922 with the Merritt-Chapman organization joining with the T. A. Scott Company. The third covers the period from 1922 to early 1949 and the entry of Louis E. Wolfson, who was to launch the Company on a new era of pioneering. The fourth and current chapter traces the expansion of the Company's construction, marine salvage and derrick operations to include shipbuilding, chemicals, paints, metallurgical products, fuel and building materials.

The evolution of Merritt-Chapman & Scott during these past one hundred years from a fledgling marine salvage operation to a diversified industrial organization is a paragraph in the history of the American economy. As a cross section of American enterprise, it is a story less important in terms of past history than in terms of the pioneering demanded of all American enterprise if we are to meet the challenges ahead.

CHAPTER I



CAPT. ISRAEL J. MERRITT

Pony Express of the Beaches

IN THE SPRING OF 1860, wagon trains rolling westward across the nation's raw frontier ran a series of grave risks, from Indian ambushade to perilous weather. But those "Prairie Schooner" trains were safe, compared with schooners sailing the Atlantic under the flag of the United States.

A Table of Wrecks compiled in 1860 showed an average of 35 American ships coming to grief every month. Most of them piled up on the coasts of the U. S., England and France, storm-blinded in uncharted, unmarked waters or battered helpless by pounding seas.

Although the fabulous GREAT EASTERN had already proved the practicability of steamships made of iron, an overwhelming majority of vessels carrying the world's commerce in 1860 were wooden-hull windjammers. Because Samuel Plimsoll's campaign in the British Parliament to stop dangerous overloading of vessels had not yet won through, many of them were sent to sea groaning under great weight. For



this and other reasons, a sea voyage was a perilous gamble.

The annual loss of American lives at sea was estimated at 1,500, while the value of ships lost averaged \$1.5-million monthly. Despite these appalling losses, the nation that year exported \$192-million worth of cotton, \$19.5-million of wheat and flour, \$16-million of tobacco and nearly that much oil and oil products. Total export value was approximately \$300-million. Imports, principally manufactured cotton and wool products, sugar, coffee, hides and skins, totalled approximately \$168-million.

The bitter quarrel between the North and the South was worsening in the Spring of 1860. Abraham Lincoln's election and the secession of South Carolina were only a few months ahead. Yet there is no hint in the record that preparation for war concerned the Board of Marine Underwriters of New York City when it met in special session on May 11, 1860.

The inflationary effect of marine losses on insurance premiums was reason enough to convene the Board. The meeting included the presidents of seven marine mutual companies and the vice president of an eighth. The immediate reason for the special session was the intolerable situation in the field of marine salvage.

As matters stood in early 1860, "salvage" hardly described that freebooting field. Professional salvors — men who combined sound seamanship and a knowledge of mechanical and hydraulic principles with responsibility, experience and judgment — were scarce. The marine salvage field was dominated by self-appointed amateurs whose methods were sometimes larcenous, sometimes ghoulish, and, paradoxically, sometimes humanitarian.

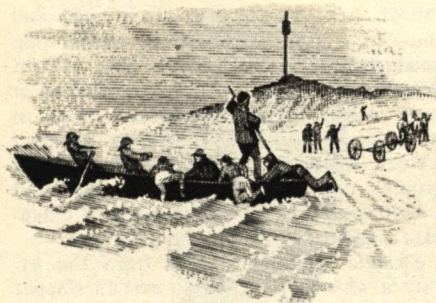
Settlements dependent upon the spoils of shipwrecks for their livelihood dotted the East Coast. The best estimate was that there were 4,000 free lance "wreckers" on the alert from Maine to Key West. There were tales of ships being lured on the rocks by false lights, and even of sailors who survived such wrecks only to die at the hands of wreckers who wanted no witnesses.

The coastal pocket formed by Long Island and New Jersey was choice territory for wrecking colonies, some of whose huts lay half-buried in sand. A few of the settlements operated small schooners and sloops that prowled their beats in search of business. Their crews received no wages, but shared in the spoils after a predetermined amount for the "flag," or vessel.

A journalist, reviewing the situation in 1869, described these crews as "hard characters . . . old salts who had found life before the mast unendurable in consequence of the discipline . . . by nature brave and daring to an extent bordering on recklessness, careless of the present and indifferent

Merritt-Chapman & Scott Corporation has prepared this special advertising supplement to mark the Company's Centennial Year. It relates the story of Merritt's growth since its original founding in 1860.





to the future . . . easy of conscience. . . Yet, not wholly hardened in feeling, they will spring as readily to rescue life without reward as to save property for pay."

Their business was brisk. Aids to navigation were scarce and primitive by today's standards. According to a contemporary critic, harbors and coasts were dark and the coastline between the scattered lights was never patrolled. No lookout to sea was kept for endangered vessels, and nobody checked the lighthouse keepers to make sure they lit their wicks at sunset.

In the wrecking settlements, men bided their time until whistling storms blew onshore. Then they hoisted storm signals or fired a gun to round up scattered hands. With lifeboats they brought survivors ashore. That done, they heaved all floatable cargo overboard to be carried to the beach by wind and wave.

When the sea calmed, the wrecker's schooners and sloops closed in on a stranded vessel and stripped it of everything removable. The skeleton was left to break up or rot. On shore, cargo was stacked for the underwriters' appraiser.

On that May morning of 1860 when the Board of Marine Underwriters called a special meeting, the first objective was to organize salvage operations on a business-like basis. The second was to set up in business the man who could do this.

Every member of the Board knew the man they wanted. He had already proved himself as their salvage agent for seven years. Israel J. Merritt was a 31-year-old sea captain and salvage master, with an outstanding record gained during 16 years of experience. He was as dependable as the tides, as hard-driving as a 15-foot wave. The members unanimously agreed to establish the Coast Wrecking Company with Merritt at the helm.

IN THE BEGINNING, Coast Wrecking consisted of Merritt, his crew, and a Gloucester mackerel schooner converted for stretcher-bearing at sea. Above and below decks, the vessel carried \$8,000 worth of salvage equipment.

As surely as the schooner had been born to sail, Israel John Merritt had been born for the sea. A native of New York, grandson of a Revolutionary soldier, he started work at the age of 10 as a mule driver on the Raritan Canal.

When the boy was 12, his father was lost at sea. He tested his independence by trying a variety of odd jobs until, at 15, he found work aboard a wrecking vessel operating off Long Island and Manhattan.

He received his first gold medal from the Lifesaving Benevolent Association in 1856 for the mid-winter rescue of an entire ship's crew on New Jersey's Barnegat Shoals. Three years later, he was awarded \$500 in gold for saving a 65-man crew off Rockaway, N. Y.

When he came to the helm of Coast Wrecking Company, Merritt was a seasoned salvage expert. Prematurely gray, chunky, strong, with a windburned complexion, he was a methodical business man. If retained on a per diem basis, he charged \$30 an hour for towing, \$35 a day for the steam pump and \$30 a day for the schooner.



In good part, however, the rewards of salvage were and still are governed by the principle: "No Cure, No Pay." Under this principle, the salvor receives nothing for his effort unless he succeeds.

It is conceivable that in 1860 Capt. Merritt could imagine that his small, tightly-organized venture would become the foremost salvage operation in the Western Hemisphere. He could not have imagined then, however, that within his lifetime his company was to be augmented by a heavy hoist derrick business and a marine construction business . . . that his company's derrick fleet would one day be the most powerful of its kind in the world, and that its construction business would ultimately help change a good part of the face of the United States and also extend around the globe.

Certainly, he could not have dreamed that, in the march of the American economy, Merritt's salvage, derrick and construction operations would one day be only three of the branches on a large corporate tree . . . that in 1960 his company would be engaged in a variety of other industries. Pioneer though he was, he would have found it impossible to believe that his name would be associated with construction of the world's first nuclear-powered passenger-cargo vessel, with the manufacture of chemicals, paints, metallurgical products, plastics, massive steelwork for bridges and atomic powerhouse components, and that his company would be engaged in thermo-electric energy research and the development of new materials for an era called the Space Age.

It is rarely given to pioneers to see the fruits of their plantings. Nor would they be likely to understand or believe them if predicted in their lifetime. Progress eventually belittles the richest imaginations that exist in any given point in history. Certainly,



Capt. Merritt could not have visualized in 1860 that a century later his name would be the first of three — Merritt-Chapman & Scott — identifying a diversified corporation that ranked 105th among the 500 largest corporations in a 50-State nation with a population of 180,000,000.

SCARCELY HAD THE Coast Wrecking Company been organized when a novel means of communication burst upon the 1860 scene. This was the Pony Express, a high-speed, horseback relay of the mail from St. Joseph, Mo., to Sacramento, Calif.

With completion of the first transcontinental railroad line, the Pony Express quickly vanished. But the idea of fast horseback relays had more lasting value to marine insurance underwriters in the East.

The underwriters hired coastal fishermen and farmers as agents to watch isolated stretches of shoreline and report ships in distress to the underwriters' headquarters in New York City. They were instructed to ride horseback to the nearest telegraph station or, if that was too much for one man and one horse, to ride with the news to the next agent. Agents stationed close to New York often galloped into the city.

As a tribute to this "Pony Express of the Beaches," Capt. Merritt broke out on the

masthead of his schooner a flag that not only symbolized the new shoreline alarm system, but identified the Coast Wrecking Company to mariners up and down the Atlantic Coast. It was a rectangular flag with a galloping black horse on a field of white, and to all at sea it quickly came to signify: "Help Is On The Way."

Throughout the Civil War, maritime losses ran high. In that war, Capt. Merritt was appointed as an advisor to President Lincoln.

In 1865, the year the war ended, 502 American ships were wrecked with a loss of nearly \$34-million. Two years later, Capt. Merritt pioneered a new approach to marine salvage with a patented device (Patent No. 72,066) for raising sunken vessels. It was a "dry dock", a floating structure equipped with chains and levers for girdling and lifting ships to the surface.

Coast Wrecking Company prospered and grew through the 1860's and 1870's, which meant that Merritt himself prospered. By 1880, he was ready to buy Coast Wrecking Company outright. In 20 years he had built it from modest size to what was, in that field, a large company. Merritt then brought his son, Israel J., Jr., into partnership with him and changed the name of the company to Merritt Wrecking Organization.

Within five years, the Merritt Wrecking Organization had bases at Stapleton on Staten Island, N. Y., and Norfolk, Va., and general offices at 49 Wall Street, New York. It employed 200 men and was rapidly expanding its salvage fleet, which then included two steam tugs — the ISRAEL J. MERRITT and the J. D. JONES. The latter was named for the president of Atlantic Mutual Insurance Company, one of the initial sponsors of Coast Wrecking.

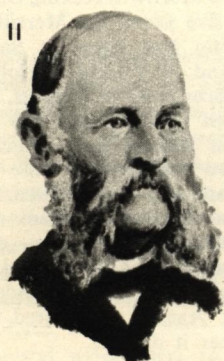
Although the company made no profit in its first year, it was geared to prosper, and prosper it did.





The Port of New York, 1872 (Currier & Ives)

CHAPTER II



WILLIAM E. CHAPMAN

Chapman's Floating 'Muscles'

ONE LIMITING FACTOR has always hampered ethical sea salvors. They cannot create new business, as did a few unscrupulous freebooters of the early nineteenth century. Salvage is directly linked to the unpredictable frequency of accidents at sea. According to laws of probability, salvage should prosper when the economy prospers, because there are more ships at sea in good times than in bad.

Accidents, however, do not arrange themselves accordingly. A neighborhood fire company may respond to 15 alarms one month and only one the next, although the number of homes remains constant.

For 300 days of the year, a modern salvage vessel may lie at dockside, fully provisioned and fueled for 60 continuous days at sea, her crew of specialists standing by on full salary. But what she accomplishes in the remaining days makes her indispensable in terms of life and property saved.

This was true in the days of Israel J. Merritt. Salvage was always unpredictable. More reliable as an index to the state of the spiralling economy in the 1880's and 1890's was the traffic in Merritt's front yard, the Port of New York.

Civil War demands on the North's pro-

ductive capacity had quickened the industrial pioneering of the nation. New England's tinkerers had become self-taught tool and die makers. Mills and factories had sprouted. Thomas Edison's marvelous incandescent lamps glowed in parlors and store windows. The promise of unlimited energy for manufacturing lay in harnessing this revolutionary force called electricity.

A growing network of steel rails had gradually pulled the nation together. Gold from the Comstock Lode provided new capital for eastern industries. Oil, textiles, machinery and machine tools, iron and steel products, lumber and wood products, king cotton—all these and more were for sale in increasing abundance. The wealth created was expendable for goods that foreign nations had to sell: coffee, tea and silk, wool, sugar, tin, rubber, furs, paper, furniture, and hundreds of other products.

New York Harbor was the hub for much of America's burgeoning trade and a good part of it was handled by the Chapman Derrick & Wrecking Company. Amid all that activity, it was small wonder that the paths of Chapman and Merritt often crossed in the 1890's. Everywhere Merritt looked, Chapman's floating derricks and lighters bustled about their business of lifting heavy cargo in and out of ships' holds, shuttling from railhead, to shipside, to dockside; moving the freight.

William E. Chapman, the man behind the derricks, was cast in Capt. Merritt's mold. He began his career with small capital, large ideas, and an enormous capacity for work. The year that Merritt bought out the Coast Wrecking Company, Chapman was going bankrupt in his brickyard on the Wallabout Canal in Brooklyn. Fortunately, a debtor gave him a cargo lighter in lieu of cash. In 1881, with the lighter as a nucleus, he and two of his three sons went into the lighterage business as the Chapman Derrick & Wrecking Company.

Those burly Chapman derricks, with booms of Oregon pine, helped build the ports they served. Their gangling arms, later made of massive steel, were and remain to this day the mobile muscles of American ports along the Eastern Seaboard. Like many another unglamorous workhorse, the Chapman derricks performed their routine chores with plodding success, but with none of the derring-do that frequently made Merritt's open-sea exploits front-page news.

In the midst of their routine grind of daily chores, Chapman's derricks one day suddenly found themselves famous. In 1882, P. T. Barnum, the great showman, bought *Jumbo*, an African elephant, from the London Zoological Gardens for an exhibition tour of the U. S. On Sunday, April 9, 1882, *Jumbo* was met at Jersey City by the *RELIANCE*, queen of the Chapman fleet.

Before a large gathering of reporters and Sunday picnic parties, the *RELIANCE* raised the six-and-one-half-ton cage containing the six-ton *Jumbo*. With scarcely a break in the rhythm of the *RELIANCE*'s hoist, the derrick swung the 12½-ton package out over the river and, gentle as a feather, set it down on the lighter.

Dockside superintendents cheered. A tugboat shouldered its way through river traffic and took the lighter to Pier 1, at the lower tip of Manhattan. There the *RELIANCE* again lifted the cage and beast, this time placing them on a huge wagon pulled by 16 horses. It was a convincing display of the power and precision of the floating derrick.

CHAPMAN'S SONS DEVELOPED a knack for making derricks profitable. William L. Chapman was a chip off the pioneering block. Dissatisfied with the status quo, he kept designing changes until he had evolved a mammoth derrick capable of lifting 250 tons. This behemoth, with a three-legged, steel "A" frame, a 90-foot steel boom and a potent new engine, was appropriately named the *MONARCH*.

Capt. Merritt not only saw more and more Chapman activity in the harbor. Late in the 80's, he began to feel it in his earnings. It started when the Chapmans lengthened a harbor tug and fitted it out for salvage work in direct competition with the Merritt Wrecking Organization. A lively skirmish for business followed.

The competition came to a climax on the foggy morning of January 25, 1896. At one o'clock that morning, the American liner *ST. PAUL* was speeding through pea-soup fog off the Jersey Coast. Her 260 passengers were sleeping. She carried cargo valued at \$700,000, and a shipment of what the courts and press later referred to as "treasure." Whatever that was, it was reportedly worth \$1.3-million, or almost half the value of the *ST. PAUL* herself. Sometime between 1 and 2 A.M. the *ST. PAUL* plowed ashore at Long Branch, N. J.

Patrols from a lifesaving station spotted

the *ST. PAUL* in the gray-black night and sounded a local alarm before telephoning headquarters in New York. The Merritt Wrecking base in Stapleton was notified at 3:15 A.M. and the Chapman office in Brooklyn immediately thereafter. By four o'clock, the salvage tug *I. J. MERRITT* was groping down the Jersey Coast, followed a half-hour later by the flagship of Chapman's fleet, the *WILLIAM E. CHAPMAN*.

Despite bleating signals from the *ST. PAUL*'s whistle, the *I. J. MERRITT*'s skipper passed south of the stranded liner. Instead of trading whistle blasts with the *ST. PAUL*, he had stayed mute to avoid giving away his presence and position to the Chapman tug. The prize for the tug that put the first line aboard the *ST. PAUL* was worth any fair strategy.

Too late, the Merritt skipper now heard the distinctive whistle of the Chapman tug exchanging signals with the *ST. PAUL*. He realized that he had overshot the mark and lost the advantage. Coming about, he churned back, only to find the Chapman boat already alongside the liner.

Capt. Israel Tooker, Chapman's salvage master, was Merritt's brother-in-law, but he was not family-minded when he boarded the *ST. PAUL* from a surf boat. In a brief conference with the *ST. PAUL*'s captain, he got permission to start salvage operations. Half an hour later, Capt. F. R. Sharp, the Merritt salvage master, came aboard by breeches buoy, soaking wet from a dip in the waves. He was humiliated to learn that Chapman's man had snatched the contract and secured a line to the liner's stern. It was the first line aboard and, according to salvage tradition, that first line entitled Chapman to the salvage job. Infuriated, the Merritt salvor threatened to chop the cable, but was somehow dissuaded.

The issue of who was legally in charge of salvage was finally settled when insurance underwriters in New York passed along instructions that, in view of its magnitude, Merritt and Chapman were to share the job.

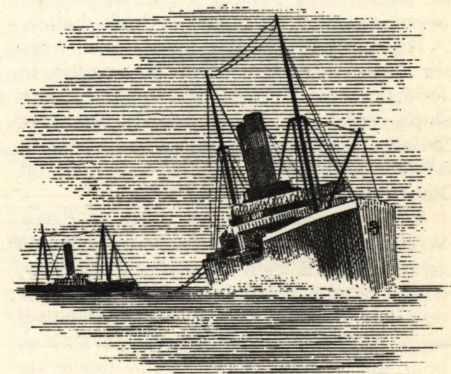
During the nine-day struggle to dislodge the *ST. PAUL*, crowds gathered daily. The Central Railroad of New Jersey ran excursion trains, jammed with sightseers.

Despite rumors of dissension, the salvage competitors worked smoothly together. On February 5, the *ST. PAUL* was hauled clear, and proceeded to port under her own power, escorted by the *WILLIAM E. CHAPMAN* and *J. D. JONES*.

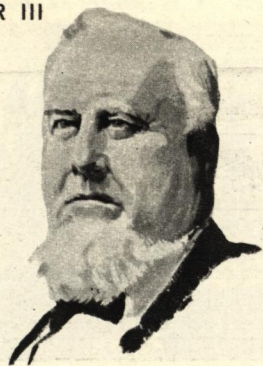
What started in bitterness was to end in a happy corporate marriage. A few months after the *ST. PAUL* mission, the *NAUTICAL GAZETTE* published a waterfront tip: "Merritt and Chapman are working in harmony, if not already consolidated."

Early in 1897, the *GAZETTE*'s hunch proved correct. The Merritt-Chapman Derrick & Wrecking Company was formed, an amalgam of two durable, hustling rivals under the Black Horse Flag.

ST. PAUL aground off New Jersey Coast



CHAPTER III



CAPT. THOMAS A. SCOTT, SR.

The Third Man

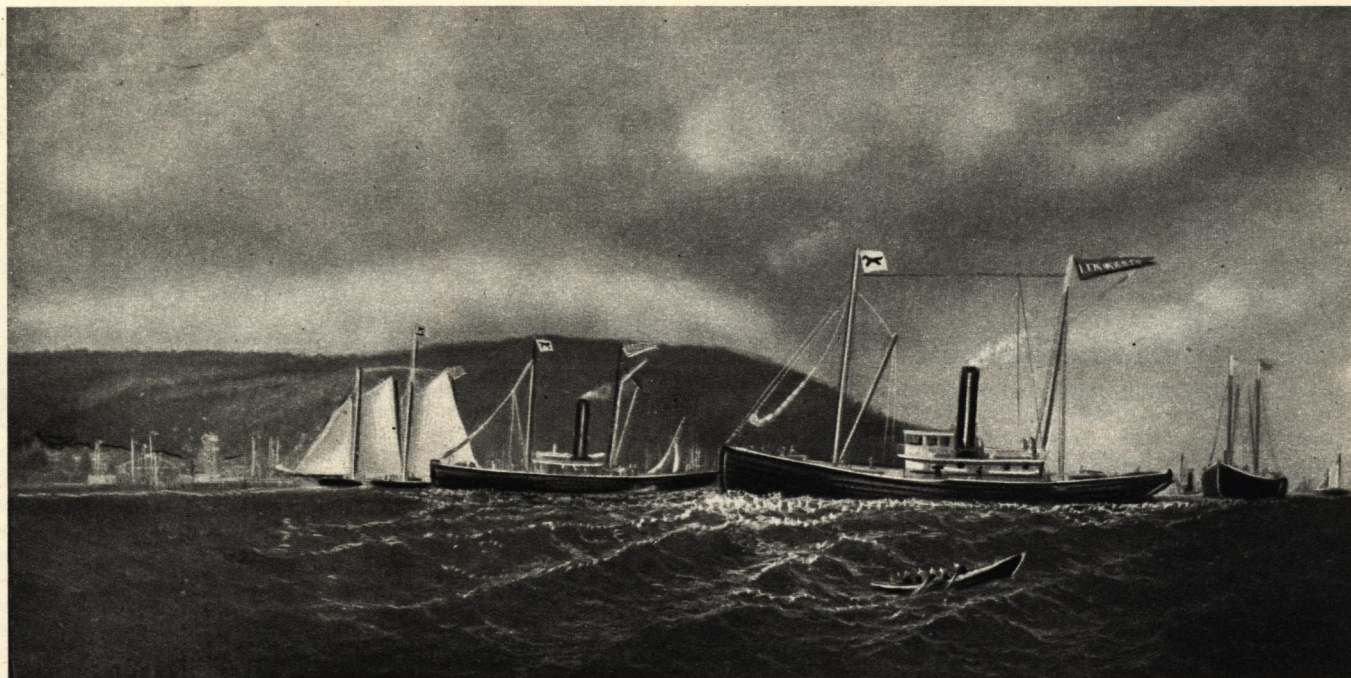
ECHOES OF THE MERRITT-CHAPMAN merger had hardly died away when the nation's attention was focused on a marine disaster that carried forebodings of war. The battleship MAINE blew up in the Harbor of Havana and sank with heavy loss of American lives. Merritt-Chapman was ordered by the U. S. Navy to carry out a triple underwater mission. They were to determine whether the explosion had been inside or outside the hull, to recover bodies and demount the MAINE's guns.

Captains F. R. Sharp and I. M. Tooker, now shipmates under the Black Horse Flag, undertook the assignment. The source of the explosion was never determined because the Government abandoned the project on the eve of the war with Spain.

In July, 1898, the Spaniards, hoping to block the channel against U. S. men-of-war, scuttled a dismantled cruiser, REINA MERCEDES, in the mouth of Santiago Harbor. After the war, the Merritt-Chapman "wreck book" shows this entry:

"REINA MERCEDES. Sunk, Santiago, Cuba. Our offer to Navy Department: No cure, No pay. Commenced work January 1, 1899; Floated vessel March 3; Delivered to Norfolk May 27. First job for steamer RESCUE. Assisting steamer MERRITT to tow vessel. Contract, \$75,000." The REINA MERCEDES eventually was towed to the Naval Academy at Annapolis, where she served as a station ship for 45 years.

In 1901, the Company returned to the Caribbean to expand its salvage operations by opening a station at Kingston, Jamaica. A converted, sea-beaten fruit freighter, the PREMIER, served as Merritt's first salvage vessel there. Her first skipper was Capt. Walter N. Davis who, during more than half a century under the Black Horse Flag, was to become known around the world as the outstanding authority on marine salvage. In a 1958 letter, reminiscing about his first command, Capt. Davis still vividly



Staten Island base of the Black Horse fleet in 1890's

recalled how it had almost come to grief as the PREMIER started south to take up station at Kingston.

"I had a tough time on the PREMIER for a while," he wrote. "Just after leaving, she leaked badly and the salvage officer wanted to return. I felt that if I put back on my first command I would be ruined. The gang all wanted to go back, discharge the coal, and reload. I crawled over the coal to the side, listened for water running, tunneled down and stood on my head in the coal and stopped the leak."

With the years, Merritt-Chapman men pioneered many new salvage techniques. As iron ships pushed wooden ones toward oblivion, the Company's crews tackled increasingly difficult jobs. Divers became increasingly expert in their role as "the eyes of the salvage officer." They measured holes in a submerged hull by touch, and fitted over them wooden patches carpentered on the deck of the salvage steamer. They used air jets to blow a trench through the silt under a foundered vessel so that lifting slings could be threaded beneath her keel.

Once the ship was made watertight, portable pumps sucked it nearly dry. Where possible, compressed air was forced into compartments to restore buoyancy.

DESPITE NEW TECHNIQUES, old hazards were occasionally encountered. On July 19, 1904, after the freighter BOSTON CITY had been raised, a Merritt-Chapman salvor went into her hold to clean out the last of her spoiled cargo of grain. He was swiftly overcome by gas and lost

consciousness. Capt. Sharp went down to help him out. A few minutes later, Sharp's son went down to get both of them. All three died.

Meanwhile, the Chapman side of the house was more than adequately equipped to meet the heavy hoist demands of the growing Port of New York. Few iron freighters could lift more than two tons with their own booms. Chapman's derricks were the answer to this problem. Though it would never be suspected from reading the bareboned entries in their logs, those derricks sometimes played key roles in the drama of the times.

One day in 1904, the derrick MONARCH was ordered to Prince's Bay, near Sandy Hook, to "hoist a 130-ton boat to the deck of a steamer." The MONARCH's crew was curious as to why they had been ordered to report after dark, but took it as all part of the day's work.

At the rendezvous, supposedly carrying coal from Norfolk to Russia, the steamer FORTUNE lay waiting. The "130-ton boat" was nowhere visible. Suddenly, dripping wet, it rose from the depths, like a whale up for air. It was the submarine PROTECTOR, the world's first even-keel submarine, designed and built by Simon Lake.

The PROTECTOR had been launched at Bridgeport in 1901 and successfully tested. But the U. S. Navy and Congress rejected it in favor of a Dutch-built submarine. In 1904, when the Russo-Japanese War flared, Simon Lake received offers for his submarine from both sides, then sold it to Russia. Lake had deliberately waited until

all Government offices had closed for the day so that his "shipment" could slip away without Federal interference.

The Merritt-Chapman crew aboard the MONARCH followed orders. They snugged the sub in slings and swung it to the deck of the FORTUNE, where the steamer's crew covered it with tarpaulins. The submarine reached Russia safely and Lake received orders for five more. However, the war ended in Japan's favor before any of them could be used.

THE YEARS ROLLED ON. Eleven days before Christmas, 1911, a telegram from New York reached Capt. Davis in Key West, where he was now salvage officer of the RELIEF. He read it and ordered half-masting of her flag. Capt. Merritt had died at 82. His son, I. J. Merritt, Jr., was elected to succeed him as president.

Nearly all the economic facts of life that faced the new president of Merritt-Chapman were encouraging. Throughout the nation, the hum of industry was rising to a crescendo.

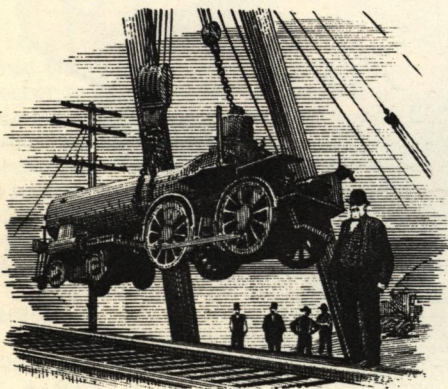
The derrick business, keyed to trade and transport, was growing fast. The kind of cargo the Merritt-Chapman derricks hoisted told part of the story of the nation's industrial upsurge: locomotives, streetcars and steel rails outbound for South America; printing presses and generators for Asia; Italian marble inbound for proud new buildings.

Just as Chapman had earlier given stiff competition to Merritt, so now their combined forces faced aggressive, vigorous competition from T. A. Scott Company, of New London, Conn. Thomas Albertson Scott, Sr., founder of the company, was a contemporary of Capt. Merritt and William E. Chapman. He was a living example of the iron-fisted, salt-water boss that fascinated authors like Joseph Conrad and Herman Melville.

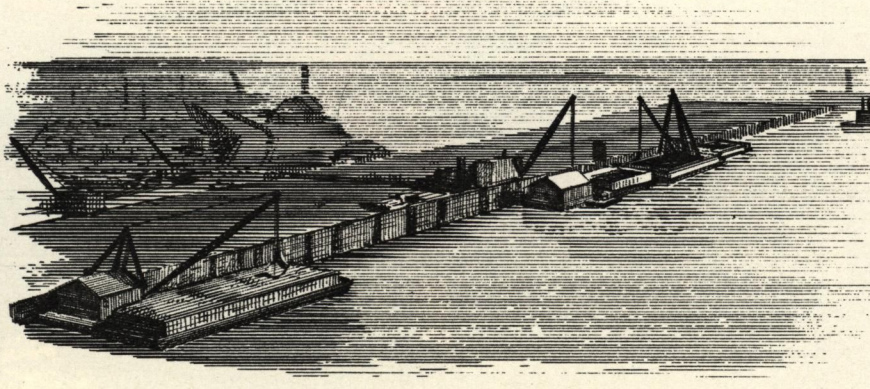
Like Merritt and Chapman, Scott was a pioneer who started with more curiosity, ambition and brains than money. Born in Snow Hill, Md., about 1830, he took to sea at 22, shipping out as a seaman aboard the schooner JOHN WILLETS. At 25, he was master of another schooner, the BLACKBIRD.

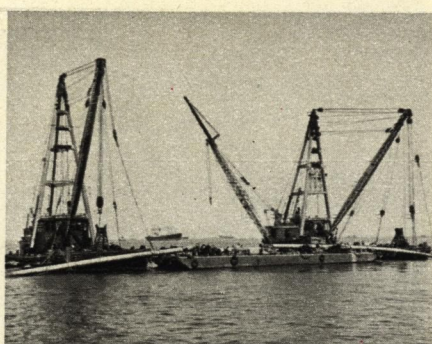
Scott was a natural diver, a fact he demonstrated while commanding the WILLIAM HONE. On one assignment, he was ordered to lay alongside a sunken schooner and take aboard her cargo of iron as divers sent it up. Scott grew impatient with the pace of

Capt. Scott on heavy-lift job



"Dredging, Pile-Driving, Dock and Bridge Building"





Sea-going Workhorses: On salvage mission...Transporting 233-ton boiler...Repairing pipeline across Narrows...Hoisting cargo of every type

the job. Challenged to do the work faster, he put on a diving suit, stayed down longer in rough water than the professionals, and retrieved more iron than any of them.

In 1869, he went to work for a company in New Jersey, and was promptly put in charge of a critical job — removal of the wrecked steamer SCOTLAND. She was an iron vessel that had sunk in six fathoms of water in the main ship channel off Sandy Hook, a menace to navigation on the busy sea lanes leading to New York.

The SCOTLAND had already resisted attempts at breaking her up before Scott appeared on the job. Explosives such as we have today and high-power waterproof cartridges were unknown.

After crawling over every foot of the SCOTLAND in his diving gear, Scott decided to blast her apart with 30 powder-filled wine casks. He connected them with rubber-coated copper wire, then twisted the strands of wire into one cable. Towing this makeshift cable away from the SCOTLAND in a rowboat, he hooked it to a battery and ducked.

The SCOTLAND broke open like a watermelon dropped on the sidewalk. While picking up the pieces, Scott broke all existing records for professional diving by remaining underwater for seven hours and forty-eight minutes.

ONE OF SCOTT'S most dramatic experiences occurred a year later. It happened as the Hoboken-Manhattan ferry UNION was crunching through ice floes on a routine trip across the Hudson on the morning of January 30, 1870. She was heavily laden with passengers, horses and wagons. An ocean-going tug crashed into her port side, cutting a deep gash below the waterline. The ferry reeled and began to capsize.

Two hundred yards away, Scott, then captain of the wrecking tug RELIANCE, was on the foredeck of his vessel. He scrambled to the pilot house, ran the RELIANCE's nose along the rail of the ferry. He jumped to the latter's deck and ordered her fear-crazed passengers to the starboard side. The UNION slowly righted herself.

Working at a demon's pace in icy water, Capt. Scott stuffed the ferry's wound with blankets and clothing. At one point, he forced his own body into the gap until more could be gathered. Ice, smashing into the hull, pinned his right arm to the planking and ripped it open from shoulder to wrist.

An hour later, the UNION was safe in her slip. Capt. Scott was lifted from the deck, semi-conscious, in shock from loss of blood and long immersion in the Hudson's ice water. Later, a doctor bending over him heard him plainly:

"Was any of them — — babies hurt?" Scott demanded. A month went by before he could put his coat on and go back to work.

Two years after the ferryboat accident, F. Hopkinson Smith, a New England author, artist and lighthouse builder, won a con-

tract to build a lighthouse on a reef west of Fishers Island in Long Island Sound. He hired Scott as his construction foreman.

Race Rock Lighthouse was a project for the brave. The job called for creation of an artificial island of heavy stone, lowered rock by rock from schooners held steady against the seven-knot current. On this man-made island, Scott was to build a granite cone 60 feet in diameter. On top of this was to be a dwelling house, capped by the lantern and lens.

Scott shared the dangerous underwater chores with his divers, placing heavy rocks in position against the tidal forces that plagued the job from start to finish. The top rocks of the island, weighing from three to seven tons, projected jaggedly above the low water mark. These had to be blasted level so that the first course of masonry could be laid true. To protect his men during blasting, Scott made trap doors of heavy oak planks. Crouching between rocks in water up to his neck, a worker pulled this door over his head until all rock had fallen.

Storms and surf repeatedly smashed shanties, platforms and every movable fixture Scott could build on the turtle-backed base of the lighthouse. But after six years of work, the job was finished in 1878, the construction marvel of its time.

At the start of Race Rock Lighthouse, Scott had moved his family to New London, Conn. His house on Pequot Avenue, overlooking the Thames River, eventually became headquarters for the T. A. Scott Company. After Race Rock, the docks on the Thames River in front of Scott's home grew longer. He built new sheds, bought new tugs, invested in dredging equipment, heavy scows, barges and lighters. He was ready for

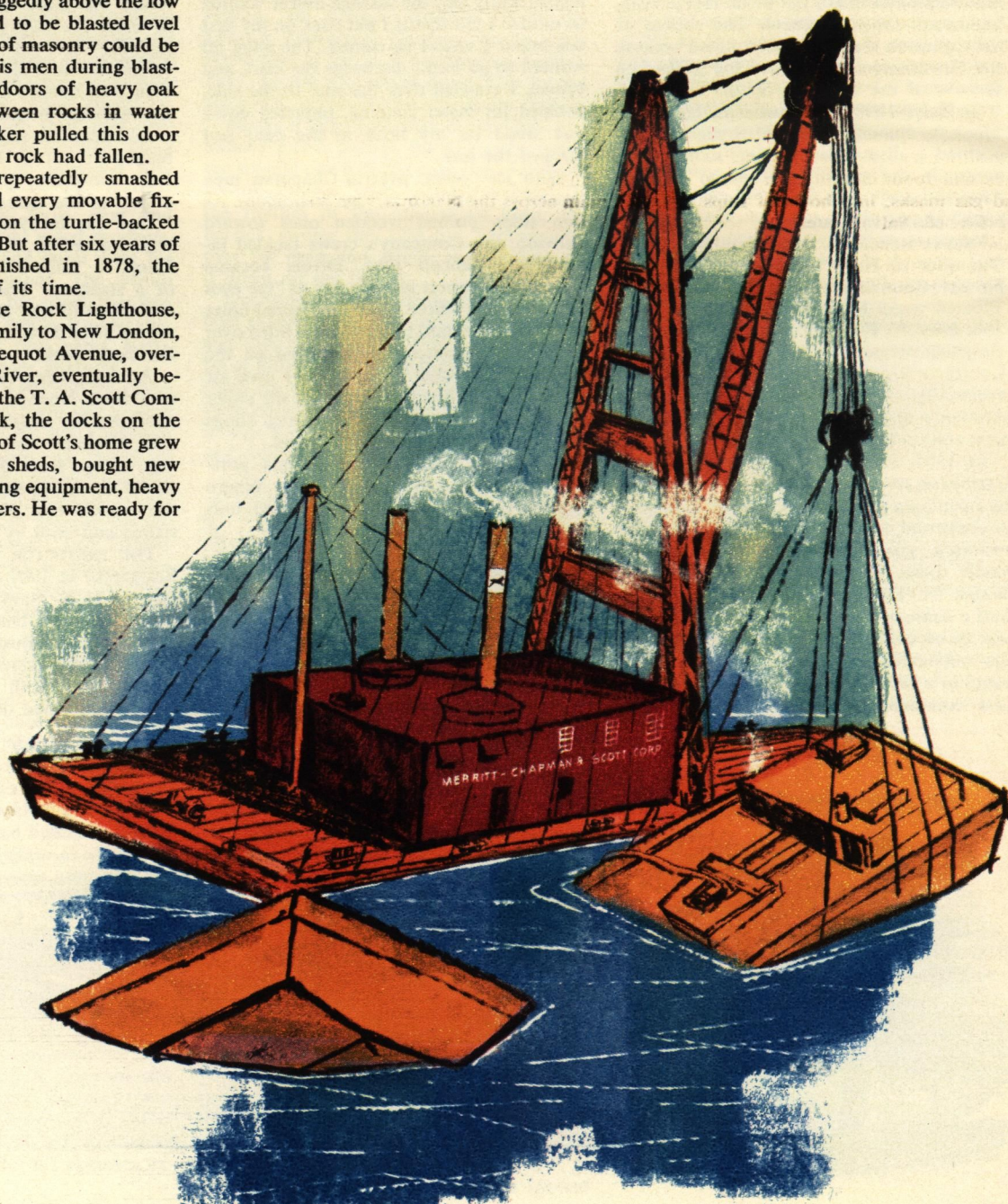
any kind of heavy work, afloat or ashore.

Scott grew restive if he had to spend time in his office, which he seldom did. He trained his son, Thomas A. Scott, Jr., by example, and together they planned, supervised and pitched in with their workers on a growing number of salvage and construction contracts.

In 1903, father and son incorporated as the T. A. Scott Company, with the son as president. The firm's first advertisement, about two inches square, ran in the New London DAY: "Dredging, pile driving, dock and bridge building; For any kind of foundation, we have experienced men and plant large enough to do the work satisfactory to you, both in time and money."

The DAY had other news for its readers in 1903. Orville and Wilbur Wright brought off the first successful flight of a large, heavier-than-air machine at Kitty Hawk, N. C. On reading this news, little did Merritt and Chapman realize that 57 years later a major subsidiary of their firm would be constructing the world's first super-aircraft carrier to be armed with guided missiles, named for that little stretch of Carolina beach.

In 1904, the Scotts took a step prophetic of much to follow. Their activities spread ashore when they designed and built a Jersey City plant for the manufacture of bichromate of potash and soda. The client was the Mutual Chemical Company. In 1909, Scott's company completed a nitro-



cellulose plant at Afton, N. Y., for the Anso Company.

In the midst of the financial panic of 1907, the elder Scott died in New London. But his dynamic spirit lived on in his son, T. A. Scott, Jr., whose activities extended along the busy shoreline from New York City to Massachusetts.

In 1911, Scott absorbed the Boston Wrecking Company so that he could compete for salvage in the North Atlantic. Activities continually broadened. In 1914, his company successfully bid for construction of the Connecticut State Pier at New London, a half-million-dollar structure. A year later, Scott added a warehouse on the pier to handle cargo brought in by commercial U-boats from Germany.

An ironic preview of German-American naval clashes was provided at the pier in 1916. The U-boat *DEUTSCHLAND* unloaded a shipment of drugs and chemicals and then started out of the harbor behind the tug T. A. SCOTT, JR. Approaching the swift currents of the outer harbor, the tug stopped. But the U-boat, following too closely, ploughed ahead, rammed her guide and sank the tug with her five-man crew.

Scott was no stranger to the Merritt-Chapman Derrick & Wrecking Company before World War I, and the two rivals became even better acquainted during the conflict. The Navy drafted the entire Merritt-Chapman and T. A. Scott organizations as the civil arm of the Navy salvage service. The peacetime rivals were now wartime shipmates. Scott was a lieutenant commander in the U. S. Navy, directing all World War I salvage of naval and commercial shipping in American waters and, to a large extent, in European waters.

The Port of New York became the nation's main funnel of supply to the Allied Expeditionary Forces. Derricks loaded guns and food, clothing and shoes, mules and gas masks, into holds of ships bound for France. Salvage steamers roamed the Atlantic, retrieving war-damaged shipping.

There was also salvage work to be done right at home. The ill-starred *ST. PAUL*, which had played so large a part in bringing together the Merritt and Chapman organizations, again entered the picture. On April 25, 1918, as she was being berthed between Piers 60 and 61, North River, New York, she suddenly heeled to port and settled on her side in 54 feet of water. Her salvage was an engineering epic, and foreshadowed an even more famous Merritt-Chapman operation of World War II.

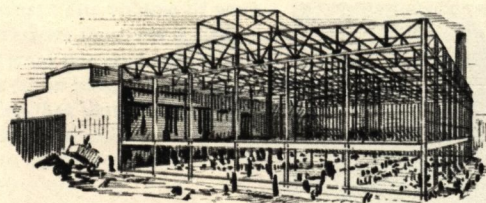
THE WAR OVER, Merritt-Chapman and T. A. Scott again went their separate ways. But not for long. In 1922, a merger of the two companies was suggested. Both had substantial investments in heavy marine equipment and had demonstrated how their combined resources could serve in any future emergency.

It was also a good business move for both companies. Scott needed Merritt-Chapman's derricks, tugs, lighters, workboats, salvage steamers and warehouses. Scott's equipment, in turn, dovetailed perfectly into Merritt-Chapman operations. The widening field of construction that Scott had opened could be a good economic anchor to windward for Merritt-Chapman, dependent as their operations were upon the unpredictable rewards of salvage and the fluctuating winds of foreign trade. And so it happened that, in 1922, with the blessing of marine insurance underwriters, the two companies joined forces and became the Merritt-Chapman & Scott Corporation.

The question of leadership was quickly settled.

"I'm too old," said I. J. Merritt, Jr., "and Chapman is too tired. I'll vote for Scott." T. A. Scott, Jr., became president.

CHAPTER IV



The Building Years

RECOVERING QUICKLY from the economic letdown that followed World War I, the nation swung into the Roaring Twenties with unparalleled confidence. Mills and factories hummed. Towns and cities mushroomed to the sound of rivet guns and pile drivers. Their tattoo was the song of the pioneer.

With the 1922 merger, Merritt-Chapman & Scott led the marine salvage field and was spreading out in other directions. The Company had become so much an American institution that a newspaper columnist celebrated its rescue exploits in a poem which carried as its refrain:

*"The crew's in the riggin',
twixt sea and sky,
But Merritt and Chapman
are standing by."*

During the war years, derrick and wrecking operations, seldom in the limelight, had quietly proved adaptable to national emergencies. Now, in peacetime, they proved themselves equal to the needs of the booming Port of New York.

As far back as 1915, Merritt-Chapman derricks had broken out of their conventional cargo lifting role. In that year, the Chapmans turned a neat engineering trick by using their derricks to lay a 36-inch water main across the Narrows from Brooklyn to Staten Island. To do this, William L. Chapman had devised an improved flexible pipe joint and designed a curved skid of structural steel which, suspended from the stern of a derrick hull, reached to the bottom.

As the derrick nudged forward, each new section of pipe, joined to the one before it, slid down the skid and was bedded into a dredged trench at depths up to 74 feet. The idea saved untold diving time.

Their muscles strengthened by merger, Merritt-Chapman & Scott took on progressively larger construction jobs. Early among them were a long stretch of boardwalk for Brooklyn's famous Coney Island, a concrete bridge over the Thames River in Connecticut, a concrete arch bridge and approaches connecting Providence and East Providence, R. I., and the piers for a half-mile bridge over Lake Champlain, the only crossing between New York and Vermont.

By 1929, the Black Horse Flag was flying in several sections of the United States. During the Twenties, the Company, as an experiment, had organized a chain of subsidiaries to provide a continent-wide construction service on a regional basis. Jobs by one M-C&S subsidiary in California included the Hyperion outfall sewer for Los Angeles, a seven-foot-diameter pipeline reaching a mile out into the Pacific.

California's golden age of expansion called for more than sewer outfalls, however. Oil prospectors were combing the coastal areas and Merritt's subsidiary built many of their well foundations. California industry called for industrial buildings and for steel piers. Merritt built both. At Elwood, the world's longest pier, a 2,300-foot all-welded peninsula into the Pacific, was a Black Horse project.

Other subsidiaries had been established in the Great Lakes region, in Baltimore and in New Orleans. One of the strongest

of these was Ohio-based Merritt-Chapman & Whitney, so named because it was Merritt-Chapman's policy to continue at least part of an acquired company's name.

FROM OCTOBER, 1929, when investments with a paper value of \$30-billion were washed out in the stock market, until the end of 1938, was the most gruelling time for America's industrial pioneers. As economic pressures mounted, the number of Merritt's regional subsidiaries was whittled away. There were 13 of these "branch" construction companies in 1932, only two in 1937. Many derricks were laid up as trade dwindled in eastern ports, and salvage fell off as shipping was cut back.

Construction contracts—many of them in the field of public works—carried the Company through those lean years. In

variety and size, they covered a broad range: highways in Utah and California; 28 miles of railroad bed and 40 timber bridges between Las Vegas, Nev., and the site of Hoover Dam; a stone breakwater at Santa Barbara, Calif.; a seven-span reinforced concrete bridge at Petoskey, Mich.; twelve of the Memorial Highway bridges between Washington, D. C., and Mount Vernon; the Jamestown Bridge over Rhode Island's Narragansett Bay, and the Potomac River Bridge at Dahlgren, Va.

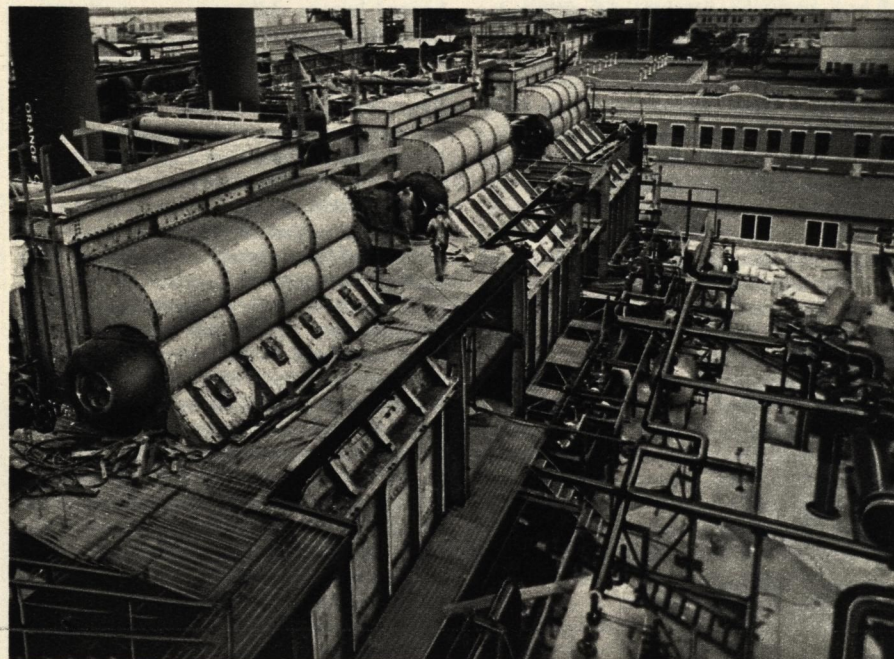
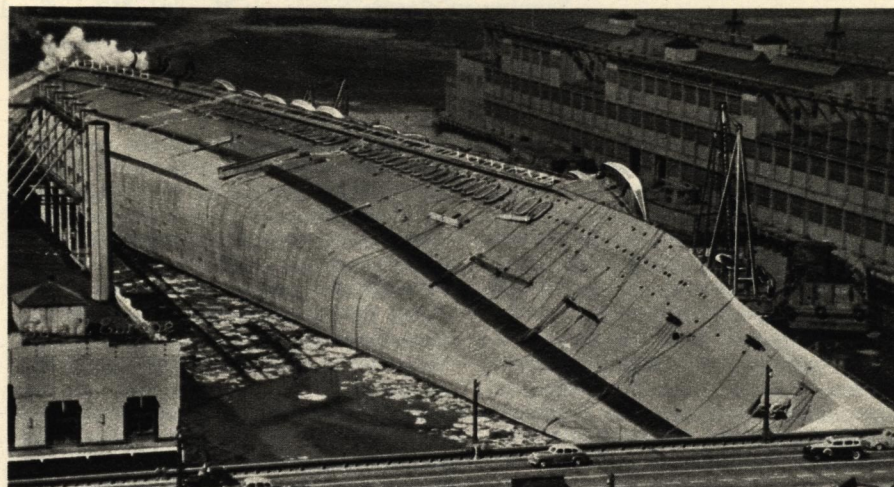
Simultaneously, the house flag of Merritt flew over a growing number of inland industrial projects. Paper manufacturers discovered the industrial potential of the South. Their needs for industrial building brought Merritt engineers and equipment into Florida, Texas, Georgia, Virginia and other states, primarily to construct paper mills.

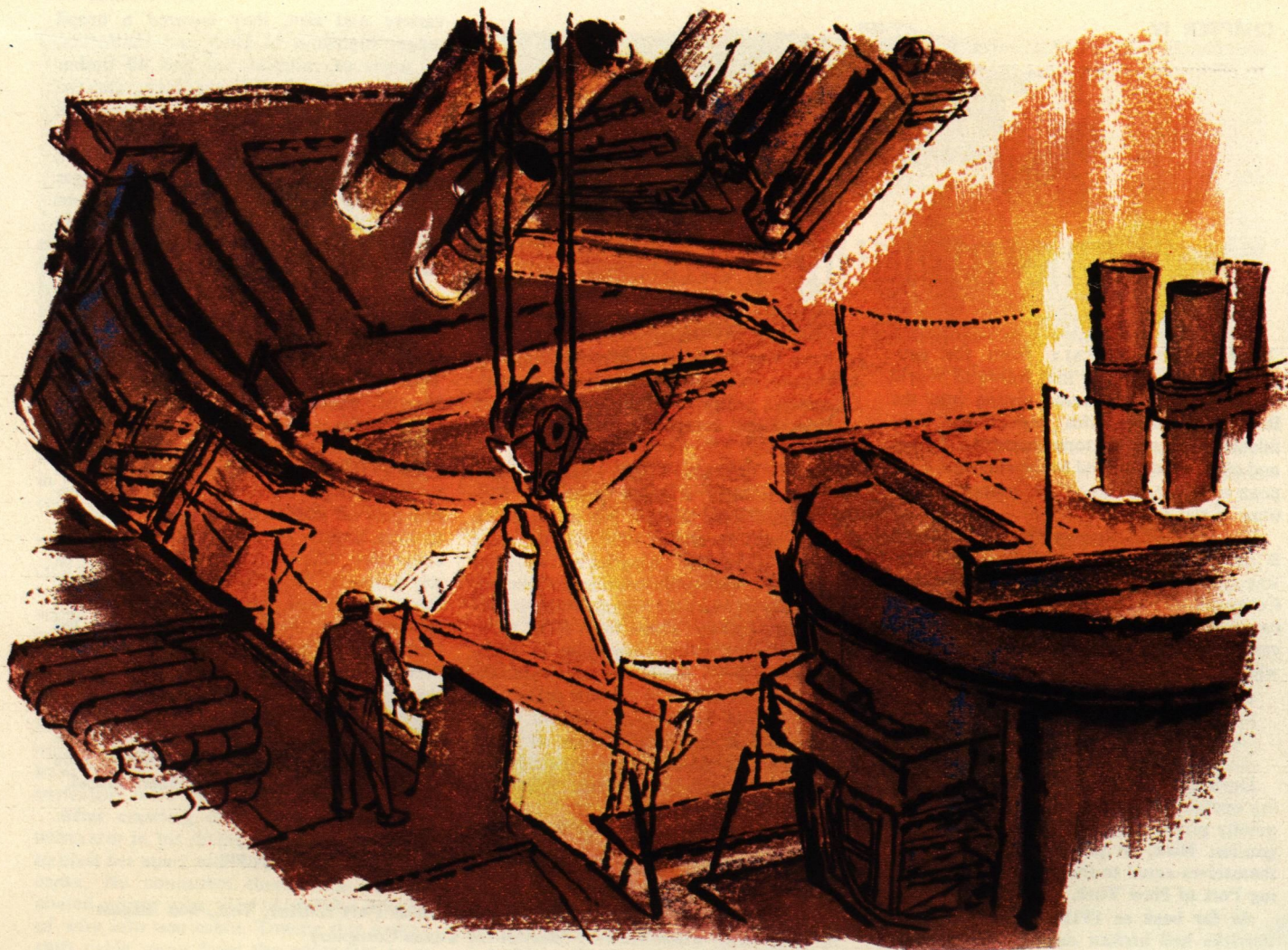
In 1936, the accumulated experience of the Company in heavy and marine construction paid off when it got its first opportunity to work directly on a major dam. As a subcontractor, Merritt built the foundation of the Imperial Dam across the Colorado River near Yuma, Ariz. The steel industry's rebound from the depression similarly led into another field of construction when Merritt, in a joint venture, built a 15-unit steel strip rolling mill in Pittsburgh.

Important though they were, these depression-period projects were to be dwarfed by the magnitude of the construction jobs Merritt would tackle in the years ahead.

TOP: Capsized *NORMANDIE*: "A great steel whale stranded on the city's waterfront"

BOTTOM: Three-unit outdoor boiler plant at Port Arthur, Tex., was largest of its kind when built by Merritt for Texas Company





Tapping an electric furnace at Merritt's Milton Steel Division

While construction activity mounted after World War I, Merritt's salvage vessels continued true to their traditional role as "Lifeguards of the Sea." Among front page missions of that era was the refloating of the MORRO CASTLE after the luxury cruise ship caught fire and ran aground at Asbury Park, N. J., in 1934 with a loss of 130 lives. Salvage procedure in that difficult instance included the use of hydraulic jacks to help nudge the liner into deep water.

On December 6, 1941, Merritt's officers signed a contract authorizing the U. S. Navy to use the services of the Black Horse salvage stations and facilities on a cost-plus-fixed-fee basis.

THE INK HAD SCARCELY DRIED on the contract when bombs started to thunder down on Pearl Harbor. On December 7, 1941, the Black Horse was a warhorse once more!

Five days after Pearl Harbor, the U. S. requisitioned the blue-ribbon Atlantic passenger liner NORMANDIE from a willing France, and started frantically to convert her to a troop transport. By February 9, 1942, the conversion was almost completed. In her grand lounge, more than a thousand bales of kapok-filled life preservers lay stacked for stenciling. The best estimate of what happened that day is that a blow torch touched off one of the bales.

What happened thereafter was tragically clear. Flames filled the lounge and licked along the corridors. New York firemen poured tons of water into her in a desperate bid to control the blaze. As the water cascaded into her hull, the NORMANDIE began to heel. Then she rolled over on her port side and settled down heavily in acres of black mud, a great steel whale stranded on the city's busy waterfront.

The Navy's Supervisor of Salvage called in Merritt's salvage officers. The first move

was quickly agreed upon — to prepare the trapped giant for removal by cutting away her entire superstructure. Never had man tried to refloat so much helpless mass. The job, estimated to require nearly two years and \$5-million, called for sealing hundreds of submerged openings in the ship. Mud had oozed through these openings and lay as much as 20 feet thick inside.

When all openings were sealed, the plan called for the NORMANDIE to be split into watertight compartments and then to pump these out to produce carefully controlled buoyancy. Many salvage experts said the job was impossible. They argued that, because the ship was so enormous and was virtually wedged between two piers, the degree of split-second control required was beyond human ability.

An estimated 15,000 tons of mud had to be sucked out of the NORMANDIE by air-lift pumps before divers could get down to the liner's inside skin. Fresh mud slithered through broken portholes almost as fast as it could be pumped out. That problem was solved by a circular wooden patch, hinged in the middle so that it could be passed through a porthole in folded position. The patch was then opened and screwed tight against the outer hull.

By April 4, 1943, an estimated 100,000 tons of water within the NORMANDIE had been sealed off in 14 watertight compartments. With pumps installed in each compartment, the critical moment had come to start sucking water out of the heavily patched hull. It was an operation requiring the delicacy of a surgeon's hand, for each pump had to work in exact rhythm if the vessel was to be kept under control as the water was pumped out. There was a collective sigh of relief when, at the end of that first day of pumping, the ship had moved almost an inch towards upright.

The fight was far from won, however.

On August 6, the NORMANDIE rolled slightly. A few days later, cracked plates were discovered in one compartment. Frantic days of patching followed. Finally, on September 13, 1943, seven months ahead of estimated schedule, the NORMANDIE floated off the bottom with a list of 25 degrees. She was then brought to an even keel and towed away, to be broken up and serve the war effort as scrap.

The NORMANDIE was but one of the Black Horse salvage epics of World War II. By official count, the salvage service operated and managed by Merritt-Chapman & Scott for the U. S. Navy performed 498 major rescue missions that saved cargoes and ships worth almost \$700-million.

IN JUNE, 1942, in the middle of the NORMANDIE salvage effort, a Navy nightmare came true. A 354-foot freighter, STEPHEN R. JONES, started through the Cape Cod Canal with a cargo of coal. She rammed a jagged rock on the bank, took water through a hole in her bow and began to stand on her head. With the next change of tide, her stern swung across the narrow canal, her mooring line snapped and she capsized and sank.

With the Canal blocked, all ships of any size had to be routed into the Atlantic east of Cape Cod, straight into the favorite stalking ground of German U-boats. Within hours after the JONES came to grief, Cmdr. W. A. Sullivan, Navy salvage head, and Capt. Walter N. Davis, Merritt's senior salvage officer, were at the scene.

They found nothing encouraging. Water raced by the sunken freighter so fast that ordinary diving procedures were impossible. The two experts estimated it would take eight months to cut the ship apart and carry the pieces away. That would give the U-boats eight months of happy hunting.

Sullivan and Davis decided to blow the

JONES apart with explosives and simultaneously bury the pieces in the mud in which she was lying. They realized that the piers of the nearby Bourne Bridge, linking the mainland and Cape Cod, might not survive underwater explosives. It was part of the gamble that Sullivan and Davis accepted.

They called in a crew of crack divers and specialists in the art and science of blasting submerged wrecks into predictable pieces. On the Fourth of July, these hand-picked men packed 350 pounds of explosive gelatine into the hull of the freighter. In the morning, before holiday traffic thickened, they touched off the charge.

The bridge shivered a little, but shrugged off the concussion. The salvors planted heavier doses of explosives until they were safely touching off 1,450 pounds at a time. Within one week, they had cleared a channel through which small vessels could pass. Four weeks after sweating out the first blast, the crew had done its job so expertly that the last fragments of the JONES lay 32 feet under at low tide. The July count of ships through the Canal was 722.

The role of Merritt's floating derricks in World War II was much the same as in World War I, but there were many more of them and the cargo hoisted in and out of supply ships was a good deal more dramatic. Fighter planes, bomber engines, amphibious landing craft, heavy guns and tanks were swung aboard convoys in an endless stream. Beyond these daily chores, they also ranged offshore on dangerous rescue missions. The men behind the booms of the big-muscled derricks worked so effectively and daringly with salvage crews in recovering torpedoed ships and cargo that they, too, earned a Presidential Citation. Captains Scott and Davis were awarded Medals of Merit in 1946.

From Pearl Harbor on, there was never any question as to what the nation expected of the American construction industry. The War Production Board sounded the keynote April 8, 1942, when it called a halt to all non-essential building.

Teamed with another contractor, Merritt completed the \$24-million Naval air base at Quonset, R. I., with eye-opening speed. From there, they went on to build a trans-Atlantic chain of advanced air bases stretching to Londonderry, in Northern Ireland, by way of Argentina, Newfoundland, and Reykjavik, Iceland. Other Black Horse war assignments followed too quickly to list in detail. Outstanding among them were: dry docks for the Philadelphia Navy Yard; fuel tank farms for the Air Force; coastal air bases for the Navy, and ore docks at Escanaba, Mich., for the U. S. Army Engineer Corps.

All told, Merritt's construction work for the Government had totalled nearly \$600-million when the A-bombs dropped on Hiroshima and Nagasaki, ending the war.

WITH PEACE, pent-up demand for all the things that war had rationed or forbidden burst open throughout the nation. The rush was on to produce for peace. Merritt's records of 1946 showed the greatest volume of construction work in its peacetime history. By 1949, construction produced 93 per cent of Merritt's revenue.

But even superlatives can be relative in a dynamic economy. Good as its record was in 1949, Merritt's potential had only been scratched. Capt. Merritt had laid the Company's groundwork in 1860. He and the Chapmans had developed it vigorously from 1897 to 1922, and then the Scotts gave it new direction and force over the long span to 1949. The time had come for a fresh burst of pioneering, and the men who could generate it were waiting impatiently to get started.



CHAPTER V



LOUIS E. WOLFSON
Board Chairman, Merritt-Chapman & Scott

Growth Through Diversification

IN 1949, at the start of a decade that was to prove the period of greatest growth in America's economic history, there were two ways of weighing the future for Merritt-Chapman & Scott — in terms of the Company as it was then, or as it could be if it followed the pioneer's path. It depended on whether the Company's prospects were weighed against the construction industry's past history, or confidence in the future of the American economy.

America was building in 1949. Construction was booming. New construction soared that year to a post-war high of \$24-billion, compared with \$8-billion in 1939 and less than \$3-billion in Depression 1933. The war-shattered countries were rebuilding. The whole earth resounded to the thud and thump of that massive construction effort.

Amid that plenty, there were some, however, who doubted the durable qualities of the post-war economic surge. Remembering the traditional pre-war peaks and valleys of the construction business, they believed the post-war boom would pass and that Merritt-Chapman & Scott was destined to remain a medium-sized company in the marine salvage, derrick and building fields. In that vein, Merritt's 1949 annual report warned shareholders that the construction industry

was subject to cycles: "The volume of work obtained by our various divisions is subject to fluctuations beyond our control."

If the future is to be judged by the past, there was basis for that view. Historically, the pre-war construction industry had been cyclical, subject to periods of high activity followed by relative quiet.

Refusing to accept the past as a pattern for the future, others in 1949 did not believe the industry must necessarily follow a see-saw pattern. In their view, the phenomenal post-war construction boom was an infant compared with its potential. They based their long-term confidence on belief that continuing expansion is inherent in the American economy.

Looking about them, the optimists saw abundant proof of a new era ahead. The construction industry had emerged from World War II prepared to put to peacetime use new techniques and abilities learned under the stress of war. Projects considered impractical — or even impossible — in pre-war years were now taken in stride by an industry that had accomplished "the impossible" time and again in the war effort. The whole economy had changed.

America emerged from World War II with new respect for massive effort, and new confidence expressed in the slogan: "The difficult we do immediately; the impossible takes a little longer."

But it was not in magnitude alone that the post-war construction pattern showed change. The boom simultaneously embraced all types of construction — homes and factories, power dams and airports, highways and bridges — a development which in peacetime was phenomenal.

Yet those who looked back over their shoulders wondered how long it would last. Since Merritt's only operations outside of construction in 1949 were in marine salvage and derrick — activities equally subject to cyclical ailments — they took a dim view of Merritt's prospects for continued growth.

THE OPPOSITE WAY of looking at Merritt-Chapman & Scott in 1949 was Louis E. Wolfson's way. In his view, the Company had exciting and challenging possibilities. He saw the Black Horse on the starting line of its most rewarding race. In 1949, Merritt was 89 years old; Wolfson was 37.

Much like each of the original founders of Merritt-Chapman & Scott, Louis Wolfson started to make his own way early in life. His search for opportunity began in Jacksonville, Fla., where his father's scrap



Merritt pioneered the use of bell-bottom caissons when constructing foundations for the Potomac River Bridge for Maryland State Roads Commission.

metal business provided the family with necessities but few luxuries. In 1932, at the age of 21, with \$10,000 in borrowed capital, he formed the Florida Pipe & Supply Company.

Though not a construction man, Louis Wolfson had rubbed shoulders with brigades of hard-hatted workers at construction sites wherever Florida Pipe sold its wares. Becoming increasingly interested, he studied the construction industry's post-war trend and was among those who foresaw growth potential in the decades ahead.

He first became actively associated with Merritt at the invitation of a group of investors interested in revitalizing the Company. They saw in him a man whose youth, vigor, imagination and talent for work could infuse new leadership. Young Wolfson already was well acquainted with M-C&S as a result of his having been a supplier of mill products on a post-war Black Horse project. When invited to join forces with Merritt, he took time out for intensive research to determine if and why the Company needed him. His research convinced him that the firm was ready to grow, and that he could help. With three brothers, he acquired a substantial interest in Merritt and, in 1949, was elected to the Board of Directors.

CAPT. ISRAEL J. MERRITT, William E. Chapman, Capt. T. A. Scott and Louis Elwood Wolfson had at least one common denominator — rugged individualism.

When he became a director of Merritt in 1949, Wolfson brought to his new responsibilities a mind of his own, and a readiness to speak it. He believes in the interdependence of the three basic components of free enterprise — capital, management and workers. He insists that, for the success of any business, each must demonstrate respect for the other. In his view, "Management without shareholders has nothing to 'manage'; stockholders and management without labor have nothing with which to operate. Merritt has no greater asset than the combined knowledge, experience and skill of its employees, and hence it aims to see that its employees have the best working conditions in the industry."

Wolfson has equally clear convictions about dividends to shareholders: "To the vast majority of shareholders, dividends are a necessary source of whole or partial income, often their only return from an investment of life savings. As such, dividends must be the best possible return for their money that investors can find."

He is convinced that management men

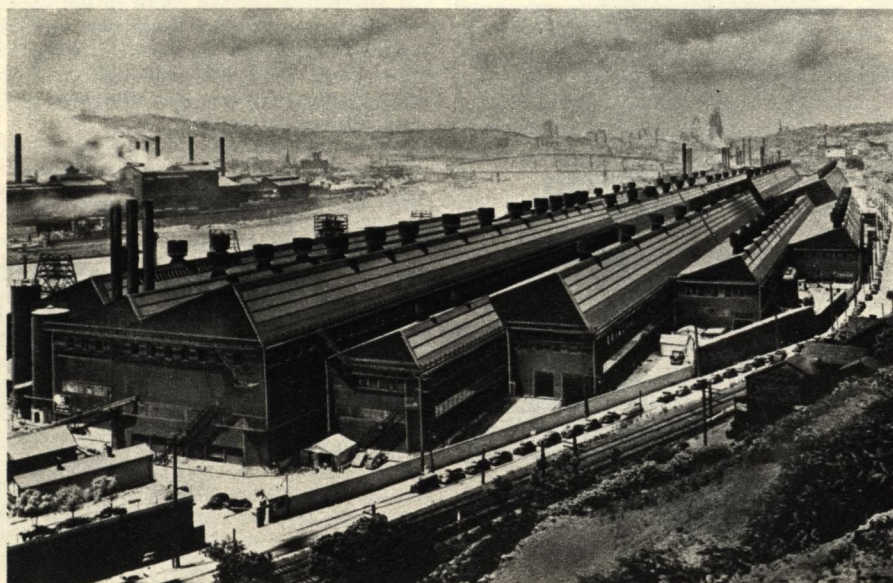
can best appreciate the interests of shareholders by being shareholders themselves. This conviction is backed by the M-C&S policy under which all principal officers own at least 1,000 shares of Merritt stock within two years of their election, purchased at regular market prices without options.

Wolfson's vigorous approach at Merritt-Chapman & Scott advanced him to leadership of the Company after two years' service on the board. In 1951, when Capt. Thomas A. Scott retired from active duty as board chairman after 53 years of continuous service with the T. A. Scott Company and M-C&S, 39-year-old Louis Wolfson was elected to succeed him. Capt. Scott, then 74, was named honorary chairman, a post he continues to hold. Of his young successor, he said: "The need for young aggressive men of ability and vision has never been greater. Having had the opportunity to work closely with Mr. Wolfson, I am confident he represents the type of young, dynamic point of view which can help maintain and expand the position of our Company."

In 1953, Wolfson took full command of Merritt's then accelerating growth program when he was elected to serve as president as well as chairman. He held both offices until early 1959 when, upon his recommendation, the dual posts were separated. Robert E. Harvey, then senior executive vice president, was elected president. As board chairman, Wolfson continues as Merritt's chief executive officer.

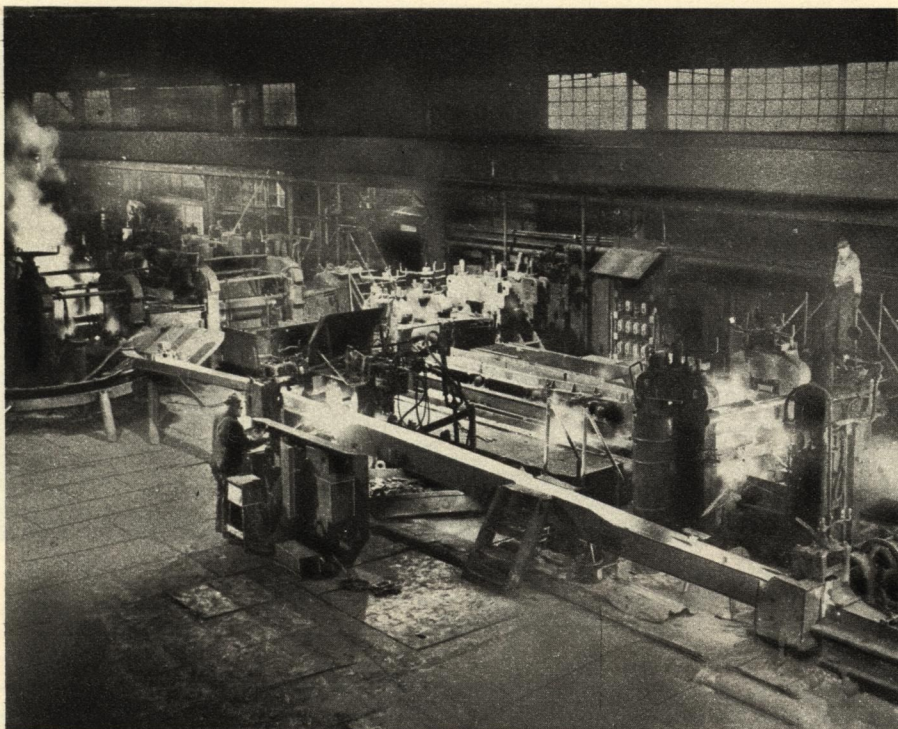
From his research, Wolfson had concluded in 1949 that, by demonstrating the same spirit of pioneering out of which the Company had been born, Merritt could open two new avenues for growth. One avenue was to gear Merritt to gain a greater share of the tremendous construction volume he saw ahead. The other was to pioneer into new fields of business to increase the Com-

Hot and cold rolling strip mill, constructed at Pittsburgh, Pa., for Jones & Laughlin Steel Corp.



CAPT. T. A. SCOTT
Honorary
Chairman
Merritt-Chapman
& Scott





TOP: New tandem roughing equipment installed at Milton Steel Division's rolling mill

BOTTOM: Reinforcing bars from Milton Steel go into construction of Niagara Generating Plant, one of two key portions of vast Niagara Power Project being built by Merritt's Construction Department for the New York State Power Authority

pany's earnings potential and to protect it against any construction doldrums.

The first of these two approaches called for expansion of M-C&S construction activities through a build-up of its own forces and through acquisition of other well-established construction companies. The second approach called for diversifying the Company by acquiring well-established firms in non-construction growth industries.

IN 1949, AS A MEDIUM-SIZED company with a net worth of less than \$8.5-million, Merritt's chances of financing this double-barrelled program through routine channels, at a rate the traffic could bear, were remote. The Company met the problem in part by going to its shareholders. Since it proposed to acquire other companies largely through an exchange of

stock, shareholders were asked to approve a substantial increase in the number of M-C&S shares outstanding. Their answer was a resounding assent. They backed this vote of confidence by over-subscribing three subsequent stock offerings.

As part of its broadened construction activities, Merritt acquired such widely-known contracting firms as Fitz Simons & Connell Dredge & Dock Company, of Chicago, a company that began business in 1872, just six months after the city's devastating fire; C. A. Pitts General Contractor Limited, of Toronto, and the Savin Construction Corporation, of East Hartford, Conn.

While expansion and diversification of its traditional construction operations progressed, Merritt began the second phase of its new growth program. In the early 1950's,

new and exciting areas of industrial effort were opening up . . . the chemical industry was demonstrating that it had only begun to gather the harvest from the researchers' test tubes . . . the metallurgical industries were developing alloys with polysyllabic names and an infinite variety of uses . . . shipbuilding was approaching what proved to be a momentous boom . . . the world of plastics, synthetics, paints and industrial finishes was on the brink of its fantastic break-through to new "miracles."

DETERMINED to be an active partner in these growth industries, Merritt entered these fields by purchasing the physical assets of the Milton Electric Steel Corporation at Milton, Pennsylvania; and acquiring Devoe & Raynolds Company, Inc., of Louisville, Kentucky; Tennessee Products & Chemical Corporation, of Nashville, Tennessee, and New York Shipbuilding Corporation, of Camden, New Jersey.

The Company made other acquisitions during the course of its diversification drive. As the program progressed, however, it became apparent that the long-term interests of Merritt would be best served by disposing of some of the acquired properties that had proved marginal, or offered least promise of development, and devoting the proceeds to expansion of those M-C&S operations showing the greatest potential.

Milton Steel was the first operation to join the M-C&S family. Its products included reinforcing bar steel, the backbone of reinforced concrete. Now operated as Merritt's Milton Steel Division, it has responded vigorously to transfusions of new capital, plant expansion and modern equipment. Since less than 12 per cent of Milton's 1958 sales went to M-C&S construction projects, most of Milton's customers are outside the Industries of Merritt.

Today, six years after the Black Horse Flag was first raised atop the Milton facilities, production has risen 100 per cent. From start to finish, Merritt has highly mechanized the Milton operation. Early improvements included repeaters and automatic bar turners; later came installation of equipment which permits the mill to reduce ingots to bar size in a "straight line" operation. Other new equipment included a "flying shear" which cuts bars into required lengths while the steel is traveling through the rolling stands at high speed. A new avenue for sales was opened by the establishment of a department for the production of fabricated reinforcing steel.

One year after Milton's acquisition in November, 1953, Merritt's diversification program got into full swing. By the end of 1955, through acquisition of Devoe & Raynolds, the Black Horse had added paints and industrial finishes, resins and chemicals for coating and plastics manufacturers and other industries. Through Tennessee Products & Chemical Corporation, it also added ferroalloys, heavy and aromatic chemicals, plasticizers, coal, coke, pig iron and building materials. Simultaneously, through New York Shipbuilding Corporation, Merritt had entered the shipbuilding industry.

Merritt did more than acquire these subsidiaries. In every case, intensive programs were immediately launched to develop their potential. In the past four years, more than \$77-million has been spent on expansion and modernization of the Company's plant and equipment.

In and out of the conference room, Wolfson revealed a habit of speech that had a contagious quality throughout the Merritt organization. In one context or another, he repeatedly said: "Go ahead!"

In 1949, before the program started, the Company's total business volume for the year amounted to \$41.6-million. By 1958, it had risen to \$382-million. In 1949, Mer-

ritt's net worth amounted to \$8.4-million. By the end of 1958, net worth had climbed to \$142-million. Working capital grew from \$5.7-million to \$104.5-million. [1959 statistics were not yet available when this section went to press.]

At Merritt, the concept of integrated management has meant avoidance of rigid, inflexible rules and procedures. Policy coordination and control is directed from the Company's executive offices in New York, but otherwise each unit is encouraged to make its own operational decisions.

Merritt's emphasis on decentralized operational responsibility stems from the basic belief of its chief executive that the most productive man is the man who thinks for himself. In Wolfson's view, the greatest threat to American business is the "robot executive," the rigidly conforming, over-adjusted executive, afraid to pioneer new paths or attempt anything not proved by precedent. Urging creative effort, he points out that the person who has never failed at anything is generally one who has never ventured a new idea for fear of failure. Merritt's 1953 annual report summed that thought up with the reminder: "Growth entails more than mere acquisition of physical plant and mechanical expansion of operations. As in any undertaking, a company's growth fundamentally depends upon people — upon their skills, teamwork and aspirations."

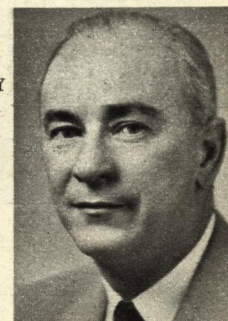
THAT, MOST OF ALL, is the story behind the statistics of Merritt's growth. In back of the production charts, graphs and related data are — people. As the number of industries in which the Company is now a pioneering partner has grown, so too has the Merritt family. In 1949, there were approximately 5,000 employees. Today, there are 25,000. In 1949, there were approximately 900 shareholders of record. Today, there are more than 32,000.

Combined, they represent a cross section of America. Ownership of the Company extends across the country, with shareholders in each State and every walk of life. As with all American industry, Merritt's stockholders reflect the broadened base of investment ownership recently described by G. Keith Funston, president of the New York Stock Exchange, as "a quiet economic revolution which is reshaping America." At last census, half of Merritt's shareholders owned less than 100 shares each.

Matching the broad diversity of interests and occupations of Merritt shareholders are the skills and abilities of its workers . . . construction crews, shipbuilders, engineers, salesmen, chemists, metal workers, production managers, estimators, draftsmen, salvage crews and secretaries.

Behind the vital statistics there is a story of progressive growth, both in the expansion of the Company's traditional activities and in the building up of those diversified operations acquired under the program. Highlights of that story are presented in the chapters that follow.

ROBERT E. HARVEY
President
Merritt-Chapman
& Scott





'The First American Paint Maker'

THE LATTER-DAY DANIEL BOONES of the research laboratories, exploring frontiers of molecular and atomic dimensions, began changing the industrial outlines of the United States in the Twenties and Thirties. They did so even more rapidly in the Forties and Fifties. Challenged during the years of World War II to find synthetic substitutes for natural materials in critically short supply or totally unavailable, the nation's scientists dramatically altered many industries and pioneered new ones.

Petroleum companies found themselves in the synthetic rubber and chemical business; chemical companies in the plastics and synthetic fiber fields. Manufacturers of electrical appliances and related products became the core of a fabulous new electronics industry. Power suppliers turned to nuclear physicists for help in harnessing atomic energy. Builders of ships and planes also began investigating the atom.

Research made dual, triple and quadruple personalities of many of the country's most familiar industrial organizations. Devoe & Raynolds Company, Inc., now one of the industries of Merritt-Chapman & Scott, was a prime example.

Born in 1754, Devoe is now the sixth oldest manufacturing company in the nation. Although known as "The First American Paint Maker," Devoe was as much a chemical business as a paint business when Merritt acquired it in 1955. Under Merritt, it has steadily stepped up its pioneering in that direction.

WAY BACK IN 1754, present-day Devoe & Raynolds was simply William Post's "colour shop," south of Burling Slip in New York, a bustling little town occupying about a mile of Manhattan's East River shore.

Post came of conservative, hard-working Dutch settlers who had no wealth to pass along to him. The savings he invested in his first shop were painfully hoarded over the long period of his apprenticeship as a painter and glazier. It took courage in a working man to declare himself in business at the time, particularly for a young Dutch artisan trained long and hard to be cautious.

When young Post opened his doors, Benjamin Franklin, then 48, was pursuing scientific studies such as his kite-and-key experiment to prove lightning was electricity. The first known political cartoon in America appeared in the New York GAZETTE AND POST-BOY in 1754. It was Franklin's famous cartoon of a snake cut in eight pieces, representing the divided Colonies, with the slogan, "Join, or Die."

Post picked the right business and prospered as New York began to grow. Though wallpaper, an imported luxury, was just coming into favor with the wealthy colonists, most rooms were still painted, usually blue or blue-gray. Post relied almost entirely on imported materials because about the only paint ingredient being produced in the Colonies was turpentine, which came up the coast by ship from the South.

When a sailing vessel from Europe or England arrived, her cargo for William Post was a news item. One typical announcement read:

"White-Lead, Red-Lead, Spanish Brown, English, French, Spruce and Stone Oker, Indian & Venetian Red, Smalt's Prussian Blue, Vermilion, Verdigrase, the whole ground in Powder or in Oil, Limner's & Japanner's Colours, Gold, Silver & Brass Leaf, Painter's Brushes and Pensils, Varnish of all sorts, drawing Oil, Linseed ditto, boiled ditto, Rape Seed ditto, Nut ditto and Lamp Oil, Window Glass of all Sizes."

In the shop beneath his living quarters, Post ground the pigments and mixed his paints, and by 1793 his shop was the best-known place of its kind in the city. He admitted his two sons to partnership seven years before he died in 1800.

One of the two sons, Gerardus, died in 1833, leaving the founder's namesake, William, in charge. William had no sons and, on retirement in 1835, sold out to a pair of long-time employees, Francis Butler and

John E. Barker. The records are not clear as to whether Barker died or sold out to Butler in 1845. In 1848, Butler took into partnership Charles T. Raynolds, who had been a clerk in the business. Three years later, Butler sold out to Raynolds who, after a year, took as a partner another clerk named F. W. Devoe, a live wire who sparked the business into its second century under the name of Devoe & Raynolds Company.

By 1860, the year in which Capt. Israel J. Merritt started his marine salvage business, Devoe & Raynolds were in new quarters on Fulton Street. The move was timed just right to help pioneer prepared paints, marketed in cans, ready for use. Business was so brisk that the partners opened a factory to keep ahead of orders.

The popularity of packaged goods tempted some manufacturers to seek a wider profit margin by using inferior ingredients. Fighting this move, Devoe & Raynolds were the first to paste labels on their paint cans, listing every ingredient used. A money-back guarantee was another distinctive feature about their label.

Devoe, personally, spent much of his time in the Fulton Street store, talking to customers about their needs and advising them on the best use of the company's products. By doing so, he set a pattern of customer relations still followed in the paint business.

EVER SINCE CIVIL WAR DAYS, Devoe & Raynolds has had a vital stake in transportation. In the 1860's, coach body varnish was a Devoe staple. Today, hundreds of thousands of horseless carriages roll off Detroit assembly lines, painted with Devoe finishes the company's founder would have considered magical.

Advertisement

The company also pioneered a specialty line of durable railroad finishes. One of them, "caboose vermilion," was famed wherever freight traveled in those fresh and glorious days of railroading.

When the America's Cup yacht COLUMBIA stood off the British challenger in 1871, her hull wore a sleek coat of Devoe's marine paint. Years later, the company's marine division would provide the exterior finishes for such ocean queens as the S.S. UNITED STATES as well as protect the interiors of many great ships with fire-retardant paint.

F. W. Devoe died in 1913, leaving Raynolds' son to carry on during the years when the horseless carriage emerged from a luxury for the few to a "Model T" for the masses. The company responded to widening demand for its products by building more factories and exploring widening sales areas. As it took on the responsibilities of national distribution, the company turned enthusiastically to research in order to maintain leadership.

In 1929, the company appropriated a quarter of a million dollars to probe the frontier of consumer and industrial finishes. It was a lot of money for research in those days. This marked a turning point in Devoe's long trail through the U. S. economy. It realized that the magic of a name alone was not enough to carry the company forward.

As the years moved along, the molecule jugglers in the laboratories revolutionized production to the point where the term "paint" could be applied to only a few products in the old linseed-oil-and-zinc sense. In the new lexicon, "paint" was only a general term covering a variety of specialty surface coatings. Every type of Devoe paint now has a different chemical com-



Advertisement

position, formulated to meet the specific requirements of the surface for which it is developed.

These specific requirements are many and varied. A few examples: exterior house paints, formulated to withstand regional climatic conditions, from coastal salt spray to tropical humidity or crackling cold . . . stain-resistant finishes for refrigerators, stoves and other appliances, in a myriad of colors to suit the housewife's fancy . . . weather-resistant automotive finishes, in more colors than the rainbow, capable of maintaining their high gloss without constant polishing . . . odorless, fast-drying interior paints—factors of particular economic importance to hotels, industrial plants, hospitals and other heavy traffic areas where "drying out" time was once a costly problem . . . anti-fouling marine finishes, resistant to barnacles and other marine growths whose removal used to immobilize vessels in dry dock for expensively long periods of time . . . vinyl interior finishes, easy to apply and quick to dry.

A high spot in Devoe research came in 1945 with the discovery of an epoxy (epichlorohydrin bisphenol) resin, a member of the plastics family. This resin, tried first in a floor varnish, imparted startling protective qualities against wear.

Devoe obtained basic patents on the new resin, which it named *Devran*. In addition to using it in its own products, Devoe also marketed *Devran* and licensed its production by a number of chemical companies here and abroad.

Further research proved that *Devran* imparted valuable properties to industrial finishes. It became widely used as a protective coating for the lining of cans and the surfaces of appliances, heavy equipment, farm implements and industrial machinery, and in chemical plants and other places where surfaces were exposed to hostile materials. It is also used in casings for electronic devices, for tools and dies, electrical insulation, laminates, adhesives and dozens of other purposes.

Devoe's pioneering role in the development of epoxy resins was one of the factors that caught the eye of Merritt's management. It substantiated M-C&S conviction that the field had enormous potential. Devoe dovetailed into Merritt's program for growth through diversification.

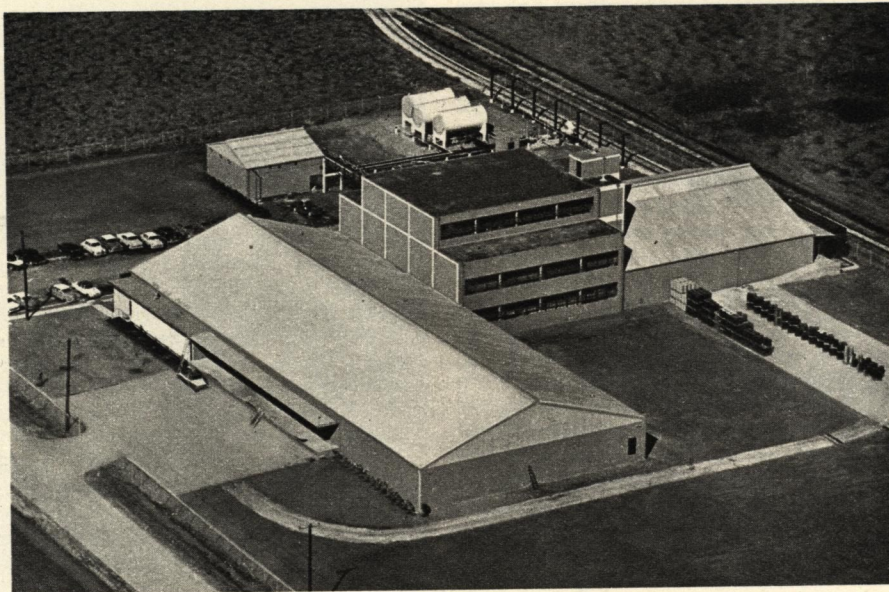
In 1955, Devoe celebrated its 201st anniversary as a member of the Merritt corporate family. Devoe then had nine plants across the country. Two of these plants were located at Louisville, Ky.; two at Detroit, Mich., and one each at Los Angeles and Riverside, Calif.; Newark, N. J.; Malden, Mass., and Princeton, Ind.

AS ONE OF THE FIRST STEPS in a growth program set in motion by Merritt, facilities at one of Devoe's Louisville plants were expanded to house additional processing equipment for the manufacture of epoxy and alkyd resins. Devoe's leadership as a pioneer in the vinyl-base interior paint field also was bolstered by new production facilities to meet increasing demand.

In 1956, Devoe moved steadily ahead under a three-point program emphasizing new product development through research, expansion of plant facilities and acceleration of sales effort. Tacked to the drawing boards were plans for a large, new product development laboratory at Detroit, to meet a rising demand for the company's automotive finishes.

In 1957, epoxy resins got still more plant room in Louisville. Additional company-owned-and-operated distribution units were planned for '57, augmenting four new units which had been completed in '56.

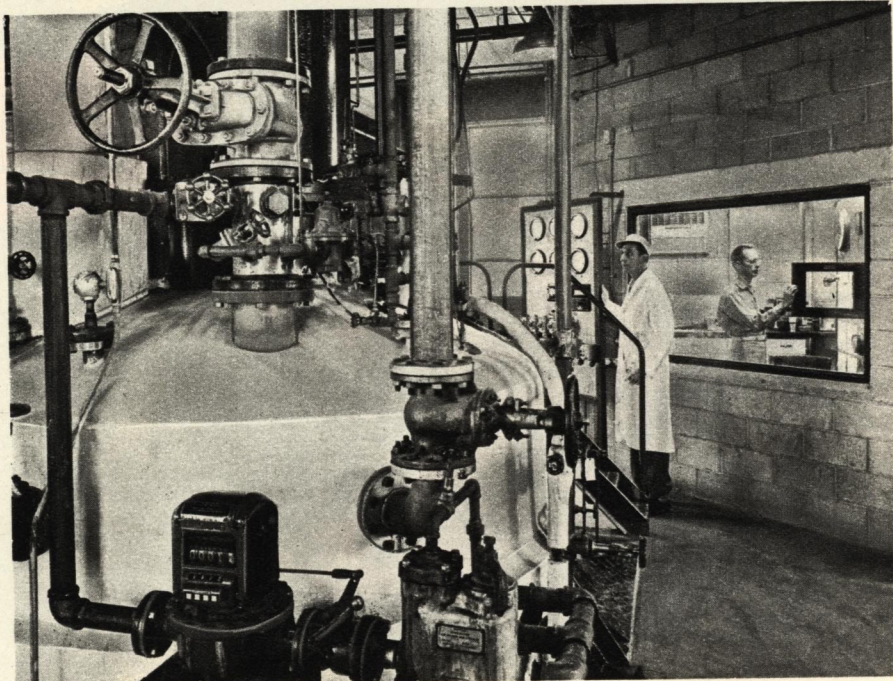
More than ever, Devoe oriented itself to the creative potential of the research labs,



TOP: Devoe's new paint manufacturing plant at Houston, Tex.

CENTER: Section of Devoe's new pilot plant laboratory at Louisville, Ky.

BOTTOM: Additional facilities for production of epoxy resins include this 5,000-gallon capacity Dowtherm kettle



where the chemistry of plastics provided for the present and pointed the way to the future. Epoxy resin facilities were enlarged again as Devoe licensed others in the plastics field to use this versatile material.

Going into 1958, Devoe launched plans for a tenth plant. By early 1959, the Black Horse Flag flew below the Lone Star of Texas over a new paint manufacturing and distributing plant in Houston which has significantly strengthened Devoe's competitive position throughout the Southwest.

Devoe research bore encouraging fruit again in 1958 in the form of a truly universal tinting system. The system consists of a basic set of colorants, adaptable for tinting any type of oil or water-base paints. The development offered a long-sought solution to the inventory problem of dealers and contractors who had to stock duplicate colors for each type of paint.

Crylitex was also one of Devoe's major contributions to the industrial product coating field that year. This thermosetting, acrylic-type enamel is adaptable to a wide variety of surfaces, including glass. It imparts hardness, resistance to both grease and detergents and other durability characteristics previously unobtainable.

Each year since 1955, Devoe production facilities have been systematically expanded. In 1959, construction of a tank farm and pumping station was started at the Riverside plant. At Louisville, capital funds were earmarked to provide for tripling production facilities for polyvinyl, urea formaldehyde and melamine resins.

ON THE SALES FRONT, Devoe in 1959 opened three more company-owned-and-operated distribution units, raising to 21 the number added since 1956. In the same period, 24 other units were relocated and modernized.

Late in 1959, Devoe added a new matching system of interior colors to its product line. Merchandised under the trade name *De-Vo-Ko*, the line consists of an alkyd flat, a polyvinyl acetate flat and a semi-gloss alkyd enamel, all made in the same colors. At the same time, Devoe brought to market a new exterior paint series that provides resistance to blistering, peeling and mildew to a degree never before obtainable. It features a rugged, new undercoat, marketed under the trade name *Devral Blister-Resistant Wood Undercoat*, that is used as a companion product with Devoe's new *Super All-Weather House Paint* or *Vinyl Flat House Paint*.

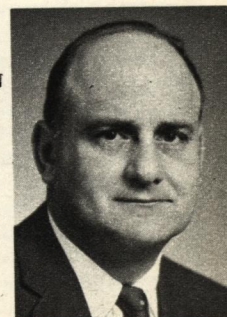
For 1960, the company plans to introduce the *Devoe Library of Colors*, a permanent color system which will not become obsolete as color trends change. The new system, built on bases and colors that can be dispensed either by a color machine or in tubes, will furnish tints varying in depth and hue through the entire spectrum.

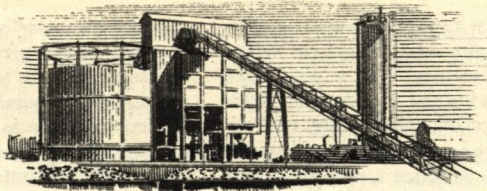
Today, after five years under the Black Horse Flag, Devoe is deep in research for tomorrow.

DORAN S. WEINSTEIN

President

Devoe & Reynolds





'The Touch of Tennessee'

THE SPRING OF 1917, setting its soft green mark on the hardwood hills of Hickman County southwest of Nashville, Tenn., must have seemed a most unlikely time for thoughts of war. Hickman County remembered war, of course. Shiloh, Stones River, Fort Donelson and Chickamauga were not far away, as the crow flies, but Verdun, Belleau Wood and the Marne certainly were.

On April 2, Woodrow Wilson asked Congress to declare war against Germany, because "the world must be made safe for democracy."

In the little settlement of Wrigley, lying in the forests of Hickman County just north of the Duck River, Wilson's words meant it was time to feed new iron to a war machine, to cut wood and make charcoal for the iron-making.

A handful of business men, from Nashville mostly, formed the Bon Air Coal and Iron Corporation. They built a blast furnace at Wrigley and charged it with iron ore dug nearby. The furnace from which the first iron came was fueled with charcoal from forests that once shaded early settlers, fed their fires and formed their cabins.

While Bon Air Coal and Iron hurried preparations for its first production, something was happening in a chemistry laboratory up north that was to have a profound influence on the future of the new company. Nobel Prize winner Irving Langmuir was completing experiments in molecular chemistry, determining molecular measurements so accurately that they were to become models for scientists who followed.

Improbable as it seemed, Langmuir's pioneering research would one day convert to man's use the valuable wealth in chemical by-products that wastefully went up in smoke from coke oven stacks. His work

was to prove that smoke, always regarded simply as a nuisance, actually was the sum of many gases composed of hydrocarbon molecules, arrangeable into countless combinations useful to man.

It was to be some years before this research development was ready for commercial adaptation. Meanwhile, Bon Air's first contribution to the chemical industry was methanol, a solvent derived from the charcoaling process. It quickly found its way to the radiators of automobiles as an anti-freeze.

With the end of World War I, Bon Air's emergency role was ended, but not its usefulness to the peacetime economy. Its products were good and so were its relations with customers. It began to grow.

AN ABUNDANT SUPPLY of hardwood and a steady demand for wood-derived chemicals kept the Wrigley distillation plant humming, providing the company's major source of revenues until 1926. That year, Bon Air bought a 24-oven coking plant from the Chattanooga Coke & Gas Company and a blast furnace producing ferro-phosphorus, at Rockdale, Tenn. This marked Tennessee's entry into the ferro-alloys field.

With this acquisition, Bon Air's "Coal and Iron" label no longer seemed adequate. The company changed its name to Tennessee Products Corporation, a canopy large enough to shelter its growing list of end-products.

A period of growth began in 1938 with Tennessee Products' purchase of the Whitwell Smokeless Fuel Company's coal mining properties in the Cumberland Mountains village of Whitwell, near Chattanooga. Two years later, the company leased two blast furnaces at Rockwood, Tenn., 70 miles

up the Tennessee River from Chattanooga.

Timing its move with the rebound of the steel industry from the lean Thirties, Tennessee Products started production of ferromanganese, an alloy that cleans, toughens and strengthens low-carbon steel.

In 1943, the company ventured into the manufacture of fine chemicals in Chattanooga, realizing at long last some of the by-product potential that lay in materials previously wasted when making coke from coal. A year later, a completely mechanized coal mine, Reel's Cove, was put into operation at Whitwell. By now, the company was producing most of the State of Tennessee's coal and also feeding the maws of 40 coke ovens at its Chattanooga plant.

Since 1944, when Reel's Cove opened to revolutionize methods of coal mining, Tennessee Products' miners have cut out of the rich Sewanee seam millions of tons of coal.

Every day Reel's Cove operates, some 2,000 tons of coal pour through the portal in the mountain. Transported by a mile-long conveying system reaching into the valley below, the coal flows to a screening and preparation plant. There it is loaded into rail cars for the journey to coke ovens, power plants, and other industries. The entire operation is carried out by electric-powered mining machines and coal handling equipment. Reel's Cove can operate with-

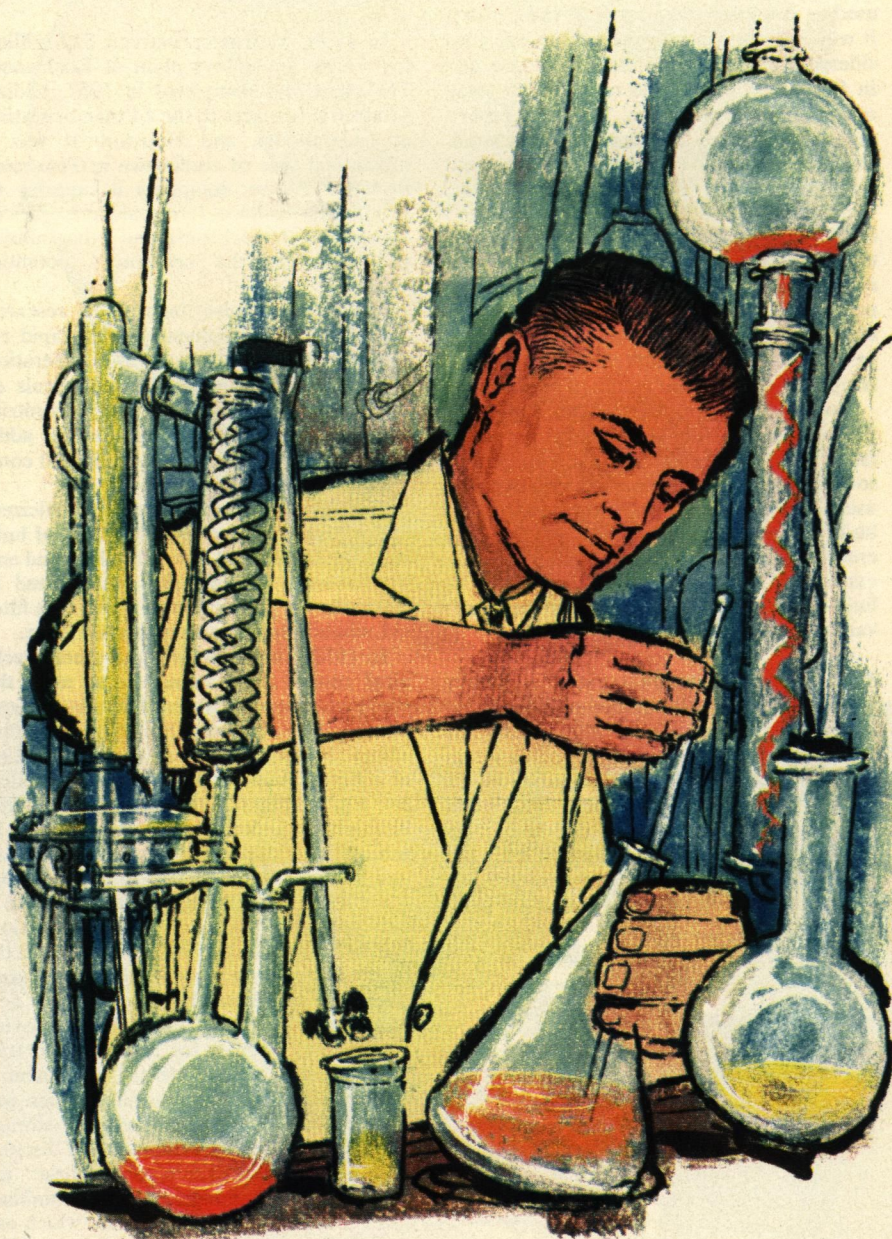
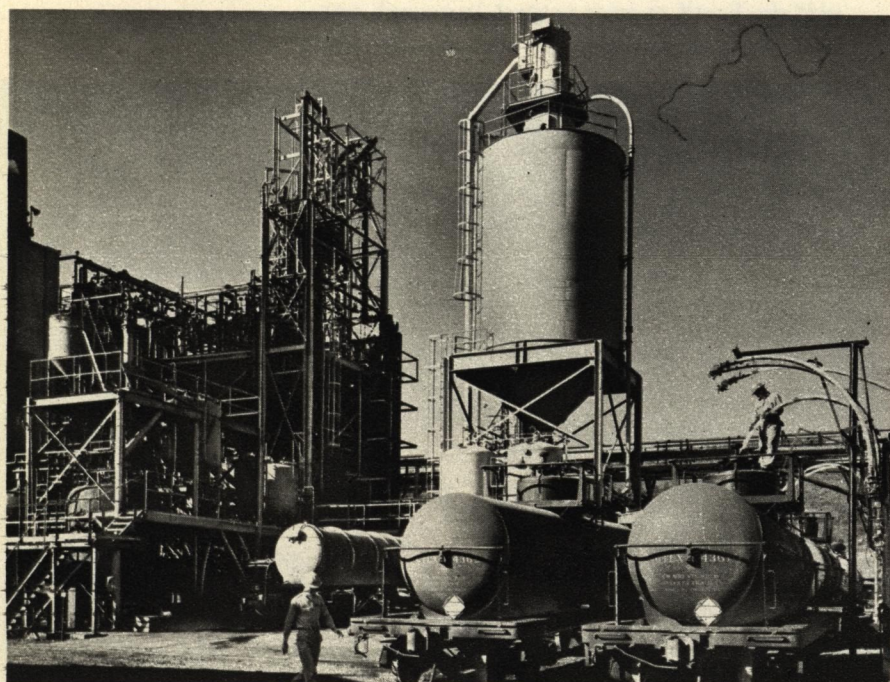
out a man laying a hand on a lump of coal.

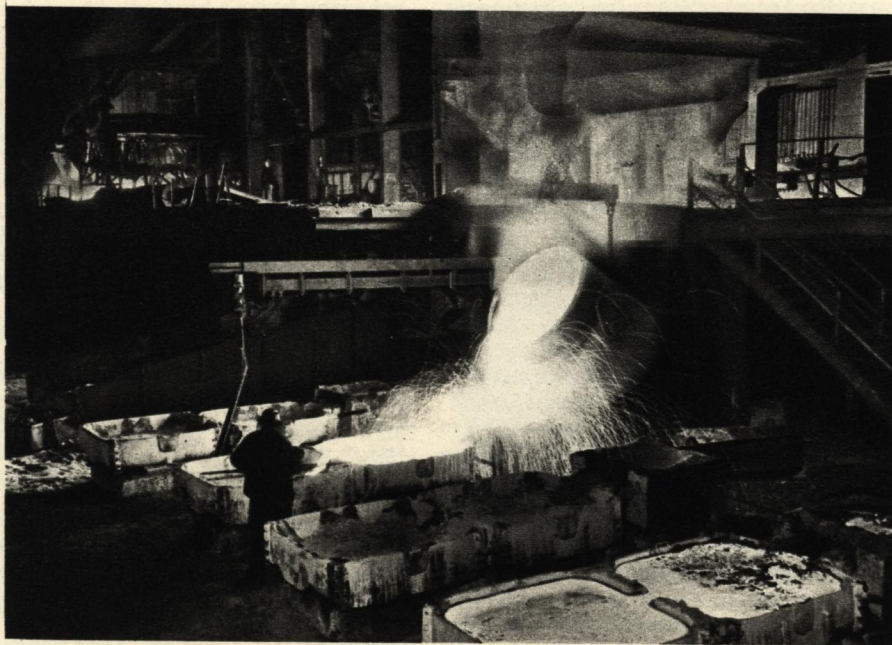
In 1946, Tennessee Products bought the Rockwood blast furnaces it had leased earlier, then purchased a plant at Nashville that produced mineral wool, an insulating material made from furnace slag. In rapid succession, the now well-diversified company bought the Southern Ferro Alloys Company of Chattanooga, with seven electric furnaces producing ferrosilicon products; constructed a new two-electric furnace plant at another location in Chattanooga, and built two chemical plant additions at Chattanooga to make fine chemicals and benzene hexachloride.

As the company had once outgrown the old "Coal and Iron" label, it now was too deep in chemical manufacture to ignore the fact in its name. In 1947, Tennessee Products was changed to Tennessee Products & Chemical Corporation.

The period 1951-1953 was one of particular growth. Spurred by demand in the growing Southwest area, TP&CC organized the Tenn-Tex Alloy & Chemical Corporation at Houston, Tex., and there built an electric furnace ferroalloys plant handy to barge transportation via Houston's Ship Channel. The Rockwood blast furnaces were modernized, and coal production at Reel's Cove was stepped up. Additional electric furnaces were installed at Chattanooga. At Nashville and at Jacksonville, Fla., plants

Tank cars being loaded with chemicals at TP&CC Chattanooga plant





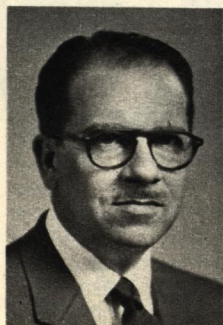
Molten ferromanganese from one of TP&CC's 12 electric furnaces at Rockwood, Tenn.

were constructed for the production of expanded perlite products.

A glassy volcanic lava, perlite has been known to man for thousands of years. Long ignored in its raw state as too brittle to be used as roadbed gravel, and so razor-sharp it will cut shoes to ribbons, perlite was considered worse than useless. Then, one day in 1939, Lee Boyer, who operated an assay office in Superior, Ariz., and was experimenting to find a new insulating material, threw a shovelful of crumbled perlite into a furnace — just to see what would happen. He found out fast. The perlite snapped and crackled while Boyer's eyes popped. Under the high-power lens of his microscope, he examined samples of the heat-expanded perlite. It had a cellular structure with sealed pores, characteristics he recognized would make it remarkably resistant to temperature changes.

Today, expanded perlite from Tennessee Products is used for construction purposes. Its lightweight, thermal characteristics and soundproofing qualities are being effectively used in skyscrapers, schools, hospitals, farm buildings and private homes. Perlite concrete roof decks, for example, are not only extremely lightweight, but also have the built-in insulation and the fire-safety advantages found in concrete.

WHEN MERRITT-CHAPMAN & SCOTT acquired Tennessee Products in 1955, the firm — using raw materials from its own mines and timberlands — was marketing about 50 products essential to at least 45 industries. There was good reason for the company to call itself "An Industry Serving All Industry." In the metallurgical field, Tennessee Products offered a variety of ferroalloys and pig iron.



ROLLAND O. BAUM
President
Tennessee Products
& Chemical

Chemicals ranged a wide front and included coal derivatives, aromatics, agricultural and wood distillates. The firm additionally marketed building materials, granulated charcoal and a filtering aid, to name but a few of its products.

In 1956, Merritt earmarked \$12-million for a new ferroalloys plant at Rockwood. The plant was completed in 1957, adding 12 electric furnaces to the 14 then operating at Chattanooga and Houston. It was a substantial vote of confidence in Tennessee Products' future, equipping it superbly to produce ferrosilicon, ferromanganese, silicomanganese, ferrochrome and other alloys, and widening the company's potential markets.

Merritt's intensive interest in research and product development yielded rapid results in the Chattanooga chemical operation of Tennessee Products. Two chemicals of value to the plastics industry — benzonitrile and benzoguanamine — were among additions to the product line placed in full commercial production.

Distribution for Tennessee's plasticizers was widened through establishment of bulk handling facilities at Newark, Cleveland and Chattanooga. Construction was started in Nashville for production of a new-type filter aid whose sales prospects loomed large.

In 1957, Tennessee set up a special technical center at Chattanooga to meet the needs of other industries through cooperative research. The program moved further ahead the following year with completion of a new pilot plant. In the chemical industry, a pilot plant is the vital step between research and commercial production. In miniature, it duplicates a commercial plant and permits thorough testing and development of manufacturing methods before a new product is put into mass production. Tennessee's new facility also enabled the company to bring together under one roof miniature plants for the production of new products in sufficient quantities to provide commercial samples for research and trial use by customers or potential customers.

A chemical plant expansion program was started late in '58 to increase bulk storage facilities and step up production of Tennessee's Benzoflex Plasticizers. These are chemical compounds that provide combinations of flexibility and toughness which can be tailored to product requirements. Depending upon the formula used, plastics can be turned out in the form of filmy sheets or as rigid structural material, durable as

granite. Their vast range encompasses flexible shower curtains and protective wrappings to tough castings. Plasticizers serve a multitude of industrial uses in such fields as electronics, aircraft, missiles and rockets.

In 1958, the company's charcoal plant at Wrigley began to produce a record volume of *Charkets* as the company launched nationwide consumer distribution to capitalize on the trend to charcoal cooking. This move, incidentally, offers a working example of the resourcefulness demanded of business managements if they are to keep abreast of changing trends. When sales of industrial charcoal sagged in 1957 because of technological changes — in the production of rayon, for example — Tennessee Products switched its output to charcoal briquettes for the barbecue market.

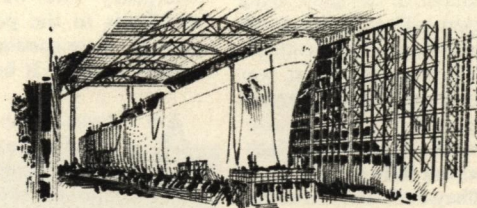
In 1958, a major development in the metallurgical field featured Tennessee's entry into production of silicon metal, an

alloying element that holds special promise because of the greater hardness and wear resistance it gives to aluminum, copper and other "soft" metals. Production also was started of a special grade of ferrochrome, the major alloying element in stainless steel. On another front, Tennessee also introduced that year an improved type of foundry coke, a primary fuel throughout the metallurgical industry.

The search for new products goes on. In Tennessee's research laboratories, future-minded men are investigating new metals for the Space Age. They are probing the potential of thermo-electric energy for tomorrow. The pioneer spirit, never more at home than in Tennessee, carries far beyond that State. Today, the company can say with confidence: "There's a Touch of Tennessee in Everything."

That "touch" is on the pulse of progress in industrial America.

CHAPTER VIII



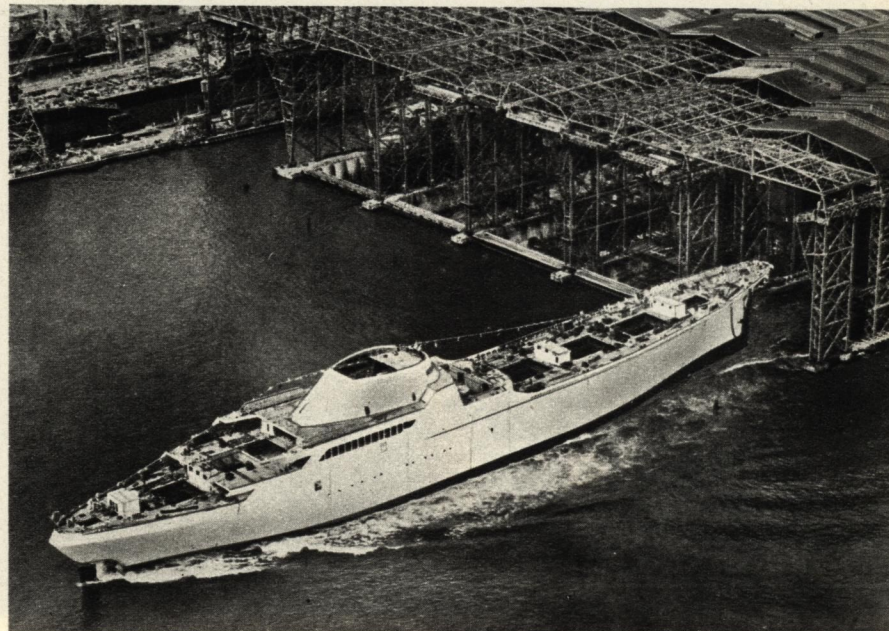
'Builders of the Finest Ships Afloat'

ON MAY 22, 1819, the first American steamboat to cross the Atlantic cleared the Port of Savannah. She was the 320-ton wooden ship SAVANNAH, a far cry from her modern, nuclear-powered namesake in which New York Shipbuilding Corporation, one of the Industries of Merritt, takes such justifiable pride today. The original SAVANNAH's maiden trans-Atlantic voyage took over 29 days, and she had to rely on the wind for all but 89 hours of her trip to Liverpool. Though not an eco-

nomic success, she ushered in the Steam Age in ocean travel. It is fitting that the vessel that is now pioneering the Atomic Age in merchant ship propulsion should bear her proud name.

The Nuclear Ship SAVANNAH, now being completed at New York Ship's Camden, N. J., Yard, is truly a pioneer in the history of merchant shipbuilding. Sent down the ways July 21, 1959, her bow wet with champagne from a christening bottle swung by Mrs. Dwight D. Eisenhower, wife of the

World's first nuclear-powered merchant vessel, NS SAVANNAH, at moment of launching



President of the United States, she will demonstrate to the world America's determination to employ nuclear power as an instrument of peace for the benefit of all mankind. In her mission as a messenger of peace from the U. S. to the world, she will sail the seas as a floating laboratory to experiment in the relationship of nuclear power to the requirements of commercial shipping.

The nuclear heart of this 21,000-ton passenger-cargo ship, once charged, will beat for three years without refueling, or long enough to put 300,000 miles astern under normal cruising schedules.

That New York Ship was entrusted with construction of the world's first nuclear-powered merchant vessel is in character with the pioneering spirit of its own beginnings back in 1899. That was the year when a structural steel expert, with radical ideas about how ships should be built, set about putting these ideas to work. His name was Henry G. Morse.

THE ODD QUIRK of a company named New York Shipbuilding Corporation being located at Camden, N. J., and not in New York, traces back to initial plans by Morse to establish the Yard on Staten Island. When site negotiations fell through, his inspection parties came up with an alternate location on the Delaware River opposite Philadelphia, Pa. Yard construction began in 1899 and the keel of contract Number One, the oil tanker J. M. GUFFEY, was laid in November, 1900.

Morse carefully laid out the Yard with five innovations whose cumulative effect was to make shipbuilding the nearest thing possible to an assembly line operation. As the first of these, he introduced to shipbuilding the idea of a mold loft template system for the fabrication of hull steel. In a huge loft, templates, or wooden patterns, were made to precise, full-scale measurements directly from design drawings. Working from these templates, the Yard's steel fabricating shops knew that the hull components would fit exactly when sent to the ways for assembly.

In laying out New York Ship's Yard, Morse also made provision for the prefabrication of large structural assemblies, and for the continuous routing of materials from the point of arrival on through the fabrication shops and out to the shipways.

His third innovation was an unusually complete overhead crane system, designed

to increase the speed and efficiency of handling prefabricated structural assemblies weighing up to 100 tons, in a coordinated pattern of shipbuilding.

The fourth new step was to build a coordinated series of shops with three large building ways. Each was roofed with glass to permit operations regardless of weather. There was also a covered outfitting basin, served by overhead bridge cranes.

Morse's fifth idea evolved from his crane system. By using 100-ton capacity cranes over all the building ways, he was able to place propulsion machinery and other heavy equipment in a ship *before* its launching. Previously, this equipment had been installed after launching—a cumbersome operation.

When he died in 1903, Morse had secured 20 contracts for New York Ship, and had witnessed delivery of its first nine vessels. Two years later, New York Ship launched the armored cruiser WASHINGTON, the first naval craft ordered from the Yard and the forerunner of many famous fighting ships that were to be born there.

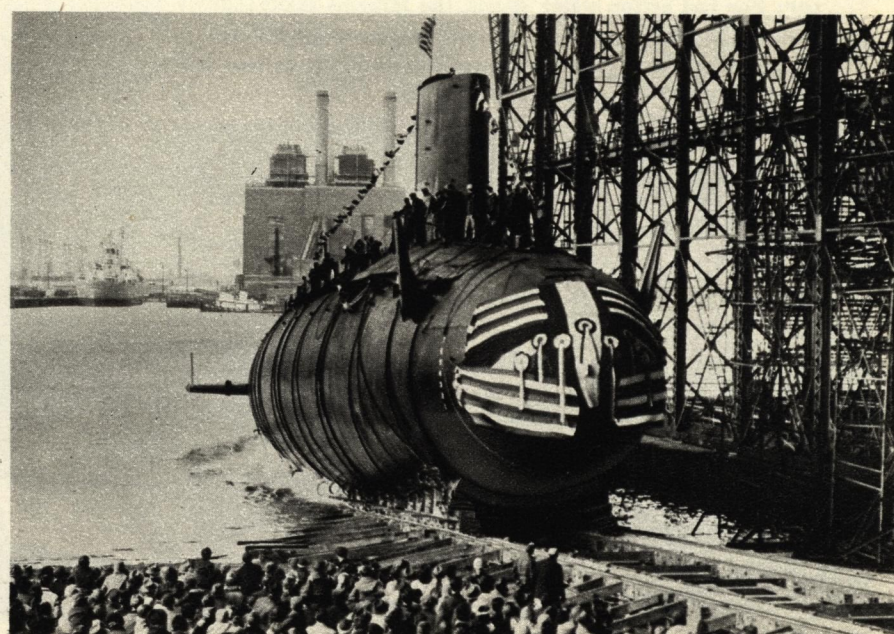
Between 1903 and America's entry into World War I, New York Ship built 200 ships of all major categories. In that period, for example, no less than seven battleships were ordered by the Navy—the KANSAS, NEW HAMPSHIRE, MICHIGAN, UTAH, ARKANSAS, OKLAHOMA and IDAHO. The Yard built its first destroyer, the SAMUEL W. PRESTON, first American vessel to be powered by the then revolutionary Parson turbines. Contracts for 30 more destroyers were obtained between July and December of 1917. Less dramatic, but important to the economy, were the passenger liners, freighters, lightships, car floats, dredges, tankers, oil barges, ferry boats, lighthouse tenders, revenue cutters, mine layers, colliers and tugs built by New York Ship during these years.

To accommodate this burgeoning shipbuilding, the Yard built two additional covered shipways. Completed in 1912 and 1915, they were then and are today the largest covered ways in any American shipyard. Their width was unusual in conception, and only in recent years has their full capacity been used in single ship construction.

Vessels delivered in the years immediately after World War I included 16 transports of the STATE class, all of them 500 feet long. New York Ship later redesigned and converted all of them as first-class

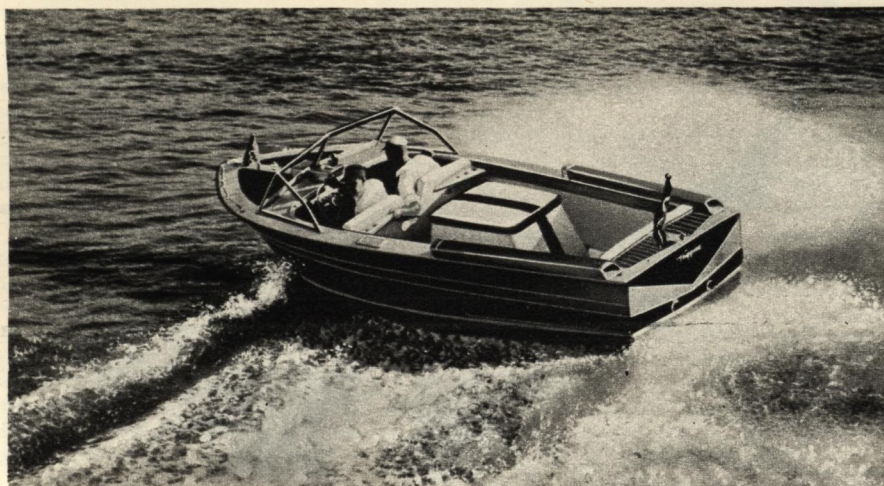
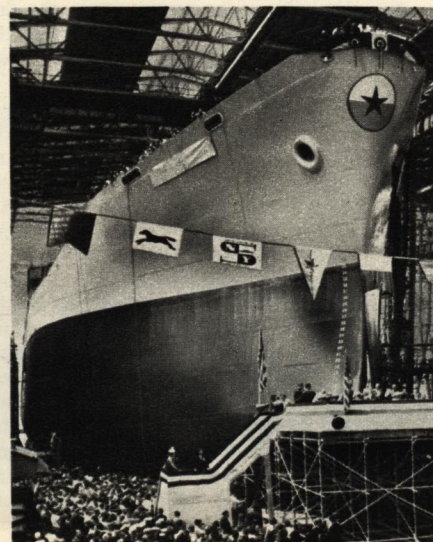
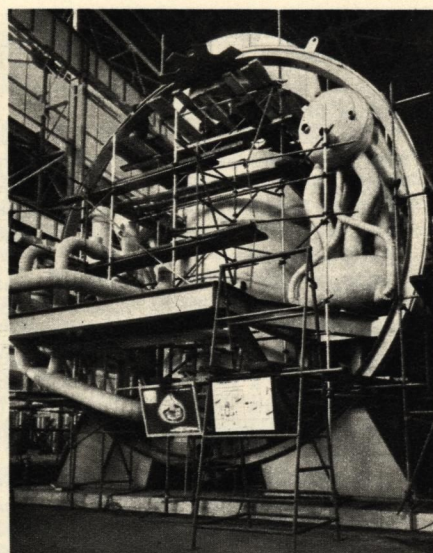


LEFT: Section of drafting room at New York Ship
RIGHT: Attack submarine USS BONEFISH goes down the ways

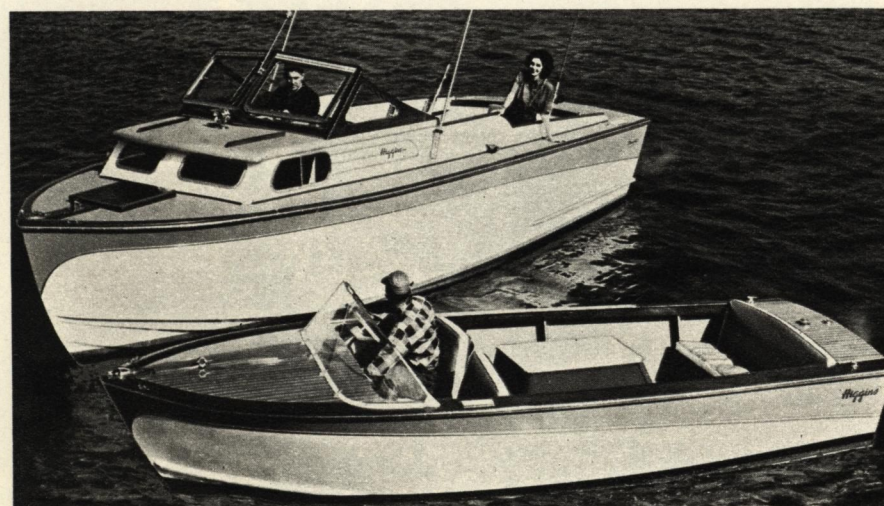




TOP: Center bay of New York Ship's main machine shop.
UPPER RIGHT: Full-size model of containment vessel for NS SAVANNAH's nuclear power plant was built at Ship as guide to exact positioning.
LOWER RIGHT: 35,000-deadweight ton super-tanker ATLAS ready for launching.



TOP: For fast action water sports, the Higgins MANDALAY 18
BOTTOM: Additions to the Higgins pleasure craft line for 1960 include the 17-foot runabout PORT ROYAL and the 24-foot sports fisher ANTIGUA



liners, giving the U. S. Merchant Marine 200,000 tons of representation in the competition for post-war traffic.

With the end of World War I, peacetime American shipping lagged until Congress passed the Jones-White Act in 1928, followed by the Merchant Marine Act of 1936, encouraging rebirth of a U. S. Merchant Marine. The provisions of this legislation resulted in the building at New York Ship of the twin liners MANHATTAN and WASHINGTON, and of four cargo ships for the American Export Lines. The latter were the famous "four aces" — EXCALIBUR, EXCHORDA, EXETER and EXCAMBION.

In World War II, New York Ship's entire facilities were devoted to the production of naval fighting ships. From March 15, 1942, to March 15, 1943, the Yard delivered new naval construction representing an aggregate of 118,000 tons, consisting for the most part of heavy combatant ships ranging from 12,000 to 35,000 tons displacement. All were completed from eight to thirteen months ahead of contract delivery dates. This total output of large naval combatant ships in a 12-month period has probably never been topped by a single shipyard in the history of shipbuilding.

On December 15, 1938, four months after Munich, the contract was signed for what was to become the Yard's most famous ship of World War II. War clouds were gathering in Europe when her keel was laid July 5, 1939. Originally contracted for delivery April 15, 1943, the battleship SOUTH DAKOTA was actually delivered eleven months ahead of schedule.

The SOUTH DAKOTA's first test came in the South Pacific on October 26, 1943, when she served as escort for a carrier in the sea-air battle off the Santa Cruz Islands.

Although her crew had only six months' training, she repulsed wave after wave of dive bombers and torpedo planes, accounting for 32 of them. Three weeks later, the SOUTH DAKOTA was one of the outnumbered task force that surprised and defeated a powerful Japanese fleet bent on reinforcing Guadalcanal.

World War II was a period of unprecedented activity for the shipbuilding industry, but one that was to wane as the industry passed from a wartime peak to a peacetime valley of relative idleness. The drop in ship construction brought some lean years to New York Ship. To make matters worse, administrative problems, outmoded policies and a complicated labor-management situation were handicapping the company's ability to be competitive.

When Merritt acquired New York Ship, a new era of shipbuilding lay ahead, but a program of intensive reorganization and development was required to place the Camden Yard in position to compete effectively. To accomplish a needed rejuvenation, Louis Wolfson brought into play a new application of the same imaginative planning that founder Henry Morse had used during the formative stage of the company. Where Morse had begun with new ideas in shipbuilding methods, Wolfson began by injecting the adrenalin of new ideas and new executive talent.

THE RESULTING TRANSFORMATION at New York Ship was summed up in a "before and after" analysis published in January, 1956, by MARINE ENGINEERING, a leading marine publication. The editors had visited the Yard to determine for themselves how it came about that New York Ship — previously regarded in the industry as a "high cost" yard — had been able, under its new leadership, to outbid a highly experienced competitor for construction of the super-aircraft carrier KITTY HAWK.

Answering their question, the editors of MARINE ENGINEERING said: "Changes were made, involving the shifting of department heads and the advancement of lesser personnel to key positions. Some new faces were added at executive, administrative and operating levels. Methods and procedures were streamlined, past practices were reviewed, policy was altered, and out of these changes came a 'new look' and a new team spirit which is readily apparent to anyone who visits the Yard today."

Merritt's acquisition of New York Ship in 1955 was born of confidence that the Yard had a promising future, not only in shipbuilding but also in utilizing its extensive plant facilities for a variety of industrial purposes, including the peaceful uses of atomic power. New York Ship had gained its initial experience in that field in 1953 when it fabricated the heavy water atomic reactors for the Savannah River Arsenal.

Reflecting that confidence, "Ship" — as the company is called in the Merritt family

EDWARD L. TEALE
 President
 New York
 Shipbuilding



— allocated substantial funds for a modernization program. As a result, the Yard is today prepared to take on assignments of a size and scope beyond even founder Morse's imagination. A case in point is Ship's new graving dock, completed in 1956 at a cost of \$10.5-million. This giant cradle of ships, 1,100 feet long, 150 feet wide and 45 feet deep, is the largest privately-owned facility of its kind in the United States. With the trend increasingly toward larger vessels, New York Ship now has at its command a graving dock capable of handling the biggest ships afloat or planned.

In 1955, Ship's low bid of \$120-million won the Navy contract to build the KITTY HAWK, the nation's fifth Forrestal-type carrier. This 60,000-ton vessel, nearly one-fifth of a mile long, 25 stories high from keel to mast top, with a maximum deck width of 252 feet, was the first vessel to be built by Ship in its mammoth graving dock. Today, the giant carrier is nearing completion. The original contract was amended after start of construction to include installation of guided-missile weapons, making the KITTY HAWK an awesome bearer of the Navy's new armament.

Under Merritt leadership, New York Ship intensified its research into the application of atomic energy to its familiar operations and also to possible new ones. Yard engineers and designers began researching atomic energy for ship propulsion, types of reactors, methods of shielding and design problems inherent in such pioneering.

In 1955, the Yard converted the cruiser BOSTON to serve as the world's first guided-missile warship. Later it converted the CANBERRA. Currently the Yard is at work on conversion of the LITTLE ROCK, is also building six guided-missile destroyers and two guided-missile frigates.

Another milestone was marked by New York Ship early in 1959 with the award of a contract to build two nuclear-powered submarines for the U. S. Navy. Until 1956, when it obtained a contract to build the 2,000-ton conventionally-powered submarine BONEFISH, New York Ship had never built an undersea craft.

In addition to the nuclear-powered SAVANNAH and the Yard's wide variety of assignments for the Navy, commercial shipping currently under construction at Camden includes two dry-cargo vessels and a 45,000-deadweight ton tanker. The latter is one of six super-tankers of advanced standard design developed by New York Ship's engineering staff and recently built at the Yard.

OPERATIONS at the 237-acre Yard at Camden—rated the second largest in the nation—are not confined to shipbuilding. In its extensive shop areas, New York Ship also engages in a diversified range of industrial fabrication, including structural steelwork and heavy machinery requiring extremely close tolerances. Recent projects included huge girders for the New Jersey approaches to the Walt Whitman Bridge spanning the Delaware near the Camden Yard, and structural steel for bridges over the Susquehanna River at Nanticoke, Pa., and across the Harlem River in New York City. Nine giant sections of steel casing were fabricated for the twin-tube vehicular tunnel built by Merritt beneath Baltimore Harbor.

In both its shipbuilding and industrial operations, New York Ship is geared to the Atomic Age. In 1956, Ship's research and training efforts were rewarded with a contract to engineer and construct the atomic reactor pressure vessel for what was to be the nation's largest all-nuclear power plant. Ordered by General Electric for the plant GE was erecting at Dresden, Ill., for Commonwealth Edison Company and Nuclear

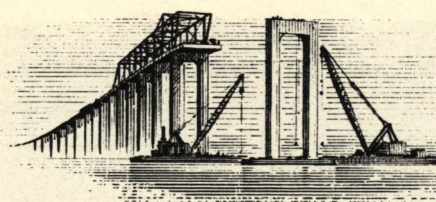
Power Group, Inc., the pressure vessel was 42 feet tall, with an interior diameter of 12 feet and wall thicknesses ranging up to 9½ inches of solid steel. Completed early in 1959, it weighed 325 tons and had to be transported by water in an amazing journey by barge down the Atlantic Coast, across the Gulf of Mexico and up the Mississippi.

In 1959, as part of its plans for greater growth, New York Ship acquired as a subsidiary Higgins, Inc., a Gulf Coast shipbuilding company based in New Orleans. The Higgins yard earned a solid reputation for its P-T boats and landing craft in World War II, and for its non-magnetic minesweepers in the Korean action that followed. Today, this 38-acre yard is equipped to build and repair commercial and naval craft, ranging from tugboats and destroyer escorts to landing craft and drilling rigs for offshore oil operations.

Higgins also is well-known for its line of pleasure craft. In a vigorous bid for an increased share of the small boat market, Higgins new management has extended and completely redesigned its line for 1960 to include a wide selection of inboard runabouts and cruisers, backed by an expanded dealer organization to step up distribution and service. Highlight of many new design and construction features introduced this year by Higgins is a revolutionary polyhedral form hull, providing unique high-speed smoothness and greater stability in rough water.

Today, five years after being welcomed aboard by Merritt-Chapman & Scott, New York Ship is more competitively geared than ever in its history. Backed by 60 years of achievement, New York Ship — "Builders of the Finest Ships Afloat" — is building merchantmen for peace as well as naval power to ensure that peace.

CHAPTER IX



'You Name It, We Build It!'

IN 1949, AT THE START of the Company's expansion and diversification program, Merritt's gross revenues were generated entirely by its construction, marine salvage and derrick operations. Because marine salvage operations are entirely dependent upon the laws of chance governing accidents at sea, they offer scant opportunity for expansion. Planned expansion of derrick operations similarly is somewhat limited, since volume here depends on the flow of heavy-freight shipments requiring the services of floating derricks.

Of Merritt's original operations, the greatest expansion effort was accordingly directed towards construction. In dollar volume, Merritt's gross revenues from its marine salvage, derrick and construction operations rose from a total of \$41.6-million in 1949 to more than \$164-million in 1958. The increase was almost entirely realized in construction work.

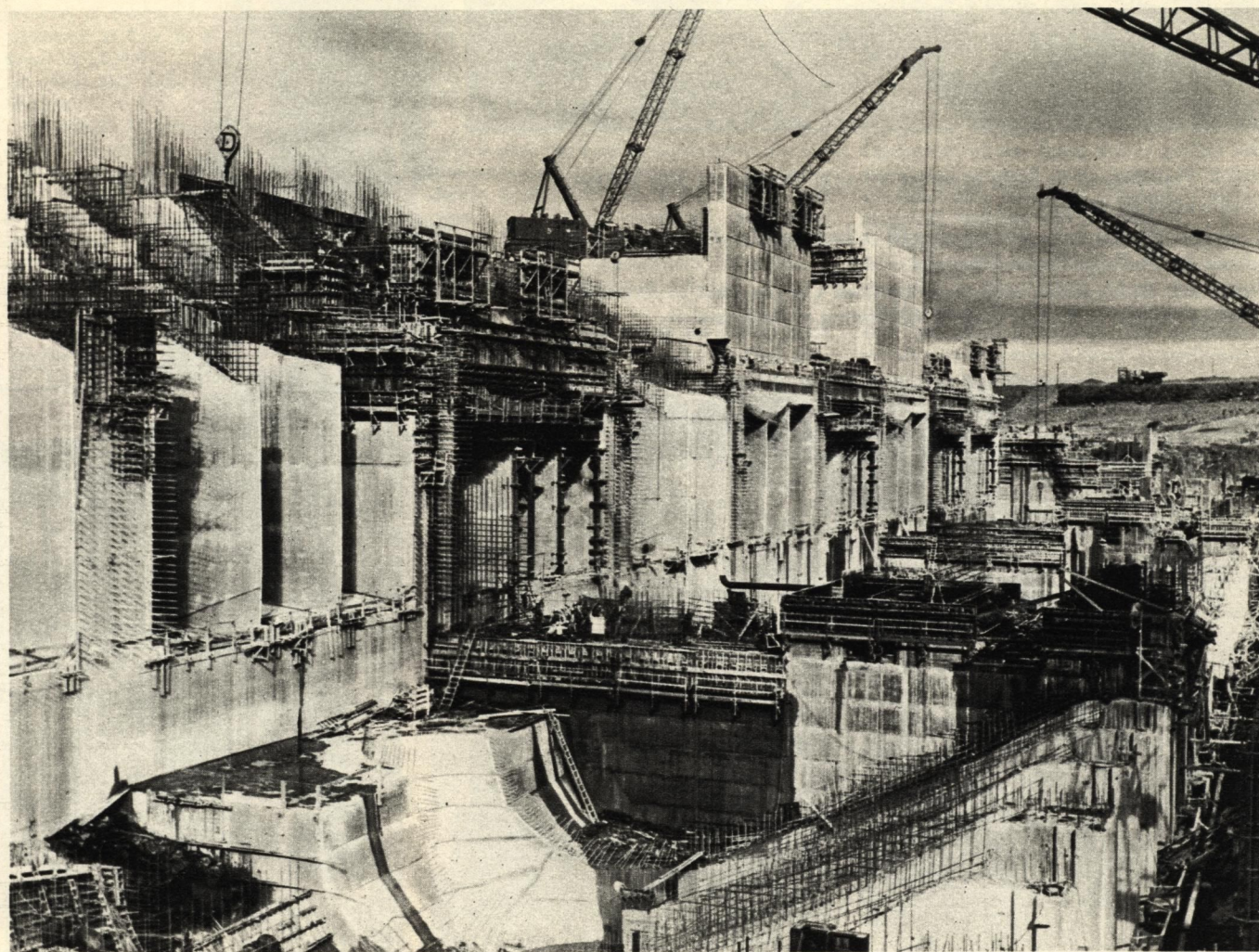
In back of these impersonal statistics is the saga of ten eventful years during which the Black Horse blazed new construction trails throughout the United States and across the wide, wide world. Projects ranged from air bases at the top of the world in

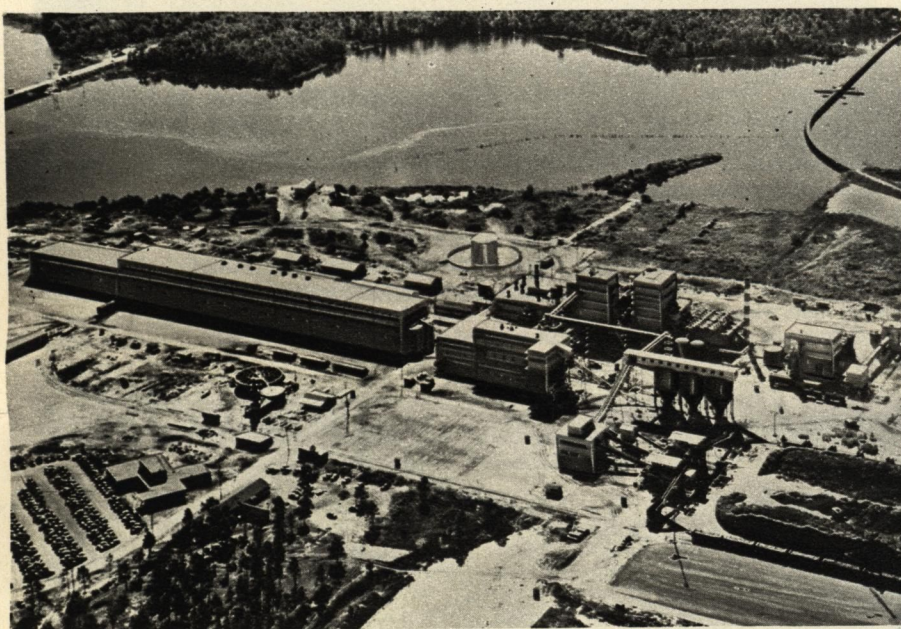
the Western Hemisphere to oil terminals "down under" in Australia, on the opposite side of the globe. Stops in-between included such assignments as paper mills in New Zealand and Israel... pipelines in India, Iran and Spain... a nickel reduction plant and a water supply system in Cuba. Along the way, M-C&S pioneered new construction methods and introduced many construction "firsts." Examples:

One of the great engineering and construction achievements of recent years is Michigan's five-mile-long Mackinac Bridge — "the bridge that couldn't be built." Seventy-five years ago, when the idea of a bridge across the turbulent Straits of Mackinac first was conceived, experts said it was impossible because the more than four miles of open water were too deep and too rough. In 1954, when work on the bridge finally began, there still was many a scoffer.

Construction of the Mackinac's 34-pier substructure — the massive foundations of the world's longest suspension bridge — was entrusted to Merritt's Construction Department. To do the job, M-C&S mobilized one of the largest fleets of floating construction

Priest Rapids Dam, being built by Merritt on Columbia River, started to produce power in October, 1959, sixteen months ahead of schedule. A project for Public Utility District of Grant County, Washington

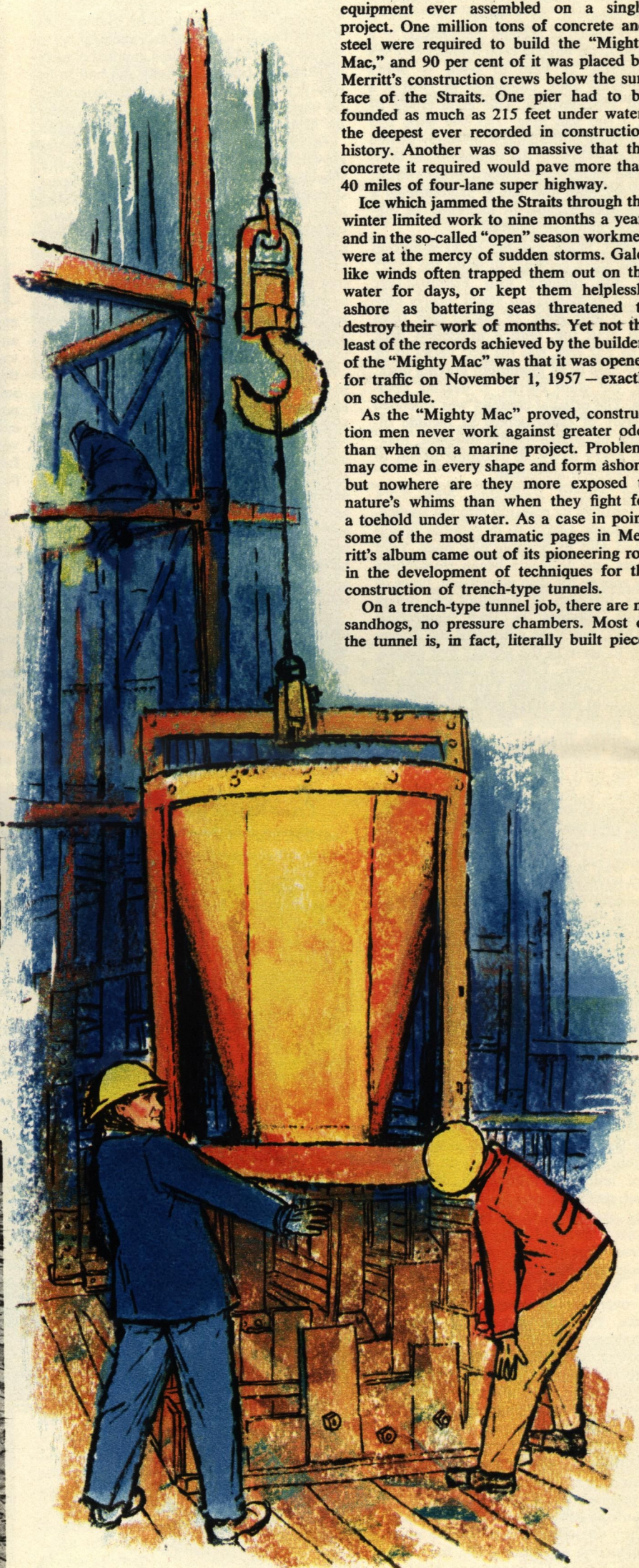
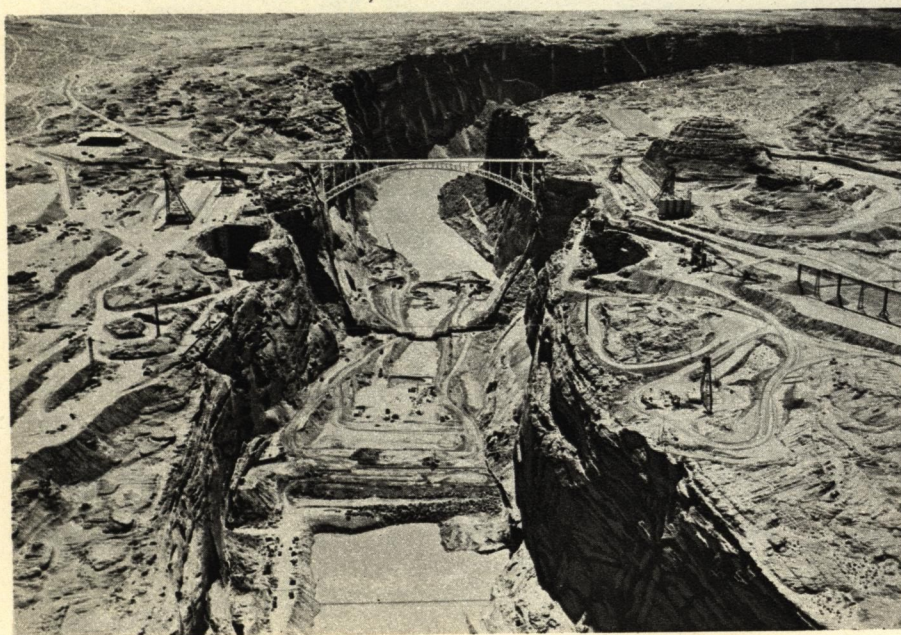




TOP: Thirty-six of 54 main piers for 4.3-mile Chesapeake Bay Bridge were built by Merritt

CENTER: 300-ton pulp and paper mill at Jacksonville, Fla., built for St. Regis Paper Company

BOTTOM: Construction under way on Glen Canyon Dam in Arizona, second highest in U.S. A project for Bureau of Reclamation.



equipment ever assembled on a single project. One million tons of concrete and steel were required to build the "Mighty Mac," and 90 per cent of it was placed by Merritt's construction crews below the surface of the Straits. One pier had to be founded as much as 215 feet under water, the deepest ever recorded in construction history. Another was so massive that the concrete it required would pave more than 40 miles of four-lane super highway.

Ice which jammed the Straits through the winter limited work to nine months a year, and in the so-called "open" season workmen were at the mercy of sudden storms. Gale-like winds often trapped them out on the water for days, or kept them helplessly ashore as battering seas threatened to destroy their work of months. Yet not the least of the records achieved by the builders of the "Mighty Mac" was that it was opened for traffic on November 1, 1957 — exactly on schedule.

As the "Mighty Mac" proved, construction men never work against greater odds than when on a marine project. Problems may come in every shape and form ashore, but nowhere are they more exposed to nature's whims than when they fight for a toehold under water. As a case in point, some of the most dramatic pages in Merritt's album came out of its pioneering role in the development of techniques for the construction of trench-type tunnels.

On a trench-type tunnel job, there are no sandhogs, no pressure chambers. Most of the tunnel is, in fact, literally built piece-



meal ashore and then sunk into place. The core of the tunnel itself consists of massive, watertight, double-walled sections of steel tube, some as much as 300 feet long, that are lined with concrete and then lowered to precise position in a deep trench dredged across the bottom of the waterway.

Sections are joined together by divers and covered with tons of sand, much like a giant pipeline. Working in from one or both shoreside ends of the tunnel, crews later remove the watertight bulkheads between the sections and complete the interior work. Of the nine vehicular tunnels of trench-type construction in the world, Merritt has built five — four of them within the past ten years. Most recently completed were those beneath the harbor of Baltimore, Md., and across the channel of Hampton Roads, Va.

CREATIVE IDEAS born in the violence of war sometimes find their way to productive, peacetime purposes. As witness, there is the unique construction "first" Merritt helped blaze on the New York waterfront in the mid-Fifties.

On the World War II beaches of Normandy, one of the Allies' most successful engineering innovations entailed the use of huge pontoon-type structures that were floated ashore and sunk into position to serve as port terminal facilities. As its first commercial adaptation, this concept of a pontoon-type foundation was written into the design for New York City's new Pier 57, one of Manhattan's major marine terminals.

In brief, it called for construction and placement under water of three giant, watertight "boxes" of reinforced concrete, each longer than a football field and heavier than a cruiser. The one nearest shore was to be linked with the surface by ramps so that trucks and autos could drive in from the street and unload. The hollow interiors of the other two were to serve as storage areas, linked to the deck by elevators.

Merritt and one other contractor received the assignment to translate the substructure design into fact. The immediate problem was a big one — to determine how and where to build the giant "boxes." Too large for any shipway, they somehow had to be built ashore, then floated into place. The builders solved that problem by finding an abandoned, worked-out clay pit on the west bank of the Hudson River, 35 miles above New York. Huge pumps drained the pit of some 350,000,000 gallons of water and converted it into the "world's largest natural drydock." Once the sections were constructed, the pit was reflooded. An exit channel was dredged to the Hudson, and the structures were towed downriver and sunk into position at the pier site. It took six powerful tugs to tow each section.

In an unusual feat of construction ingenuity that opened new horizons for the



Pontoon-type foundation for Manhattan's Pier 57



Section of Cross-Westchester Expressway

oil industry, Merritt in 1952 installed two 20-inch pipelines beneath Michigan's storm-tossed Straits of Mackinac — and set two records in the process. Called "The Deep Inch," the twin four-mile lines were laid to a depth of 243 feet, the deepest and longest ever constructed by the "pull" method. Use of this method enabled the pipelines to be fabricated ashore in giant sections, which then were successively welded together as the lines were pulled across the Straits by cables from the opposite shore. Completion of "The Deep Inch" provided the key underwater link for the world's longest crude oil pipeline, and made it possible to ship Canadian crude oil year-round to the Great Lakes area.

As the record spells out, Merritt's construction slogan, "You Name It, We Build It!" covers a lot of ground, both in geography and scope. In the last decade alone, the Black Horse has been entrusted with projects of every size and description . . . contracts as big as \$108,000,000 and as small as \$4,100 . . . routine jobs, spectacular jobs, and jobs that come once in a lifetime.

On the St. Lawrence River, for example, one of Merritt's recent projects for the Seaway involved cutting a deep draft navigation channel — 1,300 feet wide and 2½ miles long — through the middle of Galop Island near Prescott, Ontario. The biggest earth-moving job on the Seaway, it required the excavation of 10,000,000 cubic yards.

In the spring of 1955 came one of Merritt's most unusual assignments — moving a sidewheel steamboat two miles overland in Vermont. It involved the 220-foot TICONDEROGA, a 900-ton former excursion steamer. She had to be transported from her berth on Lake Champlain to a museum

seven miles south of Burlington. In a cradle mounted on railroad tracks, the 49-year-old "Ti" was hauled through cow pastures, corn fields and a forest, across a brook, highways and railroad tracks. She finally was "anchored" on a foundation of reinforced concrete on the lawn of the Shelburne Museum, a permanent part of the museum's famed collection of Americana.

The list is long, and a story could be written of each. For, with the spectacular, the gigantic and the unusual, have come, of course, a variety of construction "firsts" and records achieved on projects all over the world: New Zealand's first newsprint mill, one of the world's largest, a joint undertaking of M-C&S and two other contractors . . . use of huge buoyant caissons, a bridge-building first, to serve as mid-river pier foundations for the New York State Thruway Bridge across the Hudson . . . the State of Israel's first paper mill, first of its kind in the Middle East . . . placing underwater concrete on the Mackinac Bridge faster than it ever had been placed before — 12,500 tons in 24 hours and 206,200 tons over a 30-day period, both world records . . . completing nearly ten months ahead of schedule the 33-pier substructure for the International Bridge across the St. Lawrence River, a job that was to have taken two years . . . getting power on the line at Priest Rapids Dam, one of the Columbia River's biggest hydroelectric facilities, a full 16 months ahead of schedule.

IN CONSTRUCTION, there is a special pride that comes with knowing that the projects you are building will generate a new economic force. Power projects rank high on any such list. Merritt's work in this field currently includes the three largest

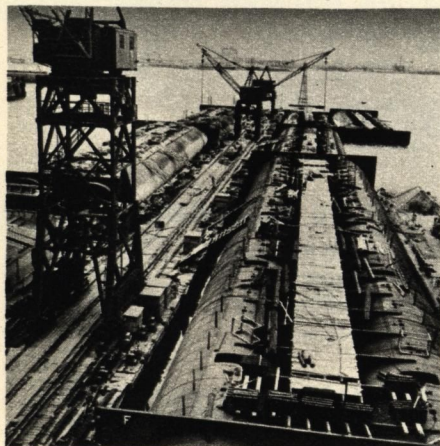
competitively bid construction contracts ever awarded to a single company: one of \$108-million for Glen Canyon Dam in Arizona; one of \$98-million for Priest Rapids Dam in the State of Washington, and the Niagara Generating Plant at Lewiston, N. Y., a \$99-million job. The latter is one of two key sections of the Niagara Power Project under construction by Merritt with a combined contract value of \$165-million.

These pages from Merritt's construction album tell more than the story of builders alone. It also is the story of those men of vision who dream the dreams and put them down as designs for builders to follow — the engineers. Working hand-in-hand, engineers and builders have labored to harness rivers, carve out highways, erect skyscrapers and bring to realization the thousands of meaningful projects that have helped build this nation.

At the start of 1960, Merritt had approximately \$240-million in construction backlog on its books, guaranteeing both a high level of work ahead, and elbow room in selecting the most advantageous uses for manpower, equipment and "know-how." Operations of the Black Horse girdled the globe and covered every phase of major construction — industrial, marine, heavy, chemical, building and highway.

Construction, like all of the Industries of Merritt, had come a long way since that morning in May, 1860, when the Board of Marine Underwriters gave the go-ahead to Capt. Israel J. Merritt. The confidence of Merritt-Chapman & Scott in continuing, long-term expansion had reaped a rewarding harvest. One hundred years later, "Go Ahead!" remains the theme for the future under the flag of the galloping Black Horse.

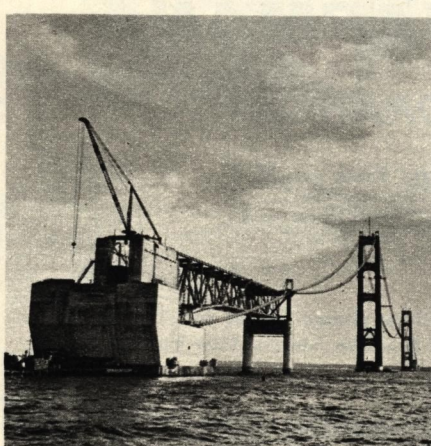
Baltimore Harbor Tunnel tubes



Hampton Roads Tunnel section



Anchorage pier of Mackinac Bridge



475-mile fuel pipeline in Spain



The Summing Up

THE AMERICAN HERITAGE is a rich tapestry, woven on the loom of the years. What the tapestry will look like tomorrow will be governed by the degree to which we encourage continued pioneering on today's frontiers—in business, human relations, education, sociology, arts, letters, science and a dozen more fields of human thought and endeavor.

Age alone is not the measure of success for a nation or a business organization. With every passing year, each must acquire new vigor to keep pace.

Merritt-Chapman & Scott is now 100 years old. Centennial celebrations are traditionally occasions for reviewing the past. This we have tried to do. But most of all, Merritt dedicates its 100th anniversary to the future.

Basically, the success of any undertaking depends on individuals. Objectives

can be realized only when every individual in an organization is infused with the pioneering spirit. To cite two instances from Merritt's recent history: no bridge would today link Upper and Lower Michigan across the Straits of Mackinac—on foundations built by Merritt's Construction Department—if it had not been for men with creative daring who refused to concede that it was "the bridge that couldn't be built." Nor would the world's first nuclear-powered, passenger-cargo ship, the NS SAVANNAH, have been built by Merritt's subsidiary, New York Shipbuilding Corporation, had it not been made possible by men of vision.

Over the span of time between 1860 and 1960, the Company has nourished and, in turn, been nourished by the pioneering spirit. Those who plan Merritt's future believe that the strength and vigor of the nation and its economy depend on keeping alive that same pioneering spirit.

The past ten years have been the period of greatest growth for Merritt since the Company's original founding as a marine salvage organization in 1860. In looking ahead, Merritt regards its Centennial as a pledge to continuing, vigorous growth. The Company's policy for tomorrow continues to be . . . "Go Ahead!"



MCS

Founded in 1860

MERRITT-CHAPMAN & SCOTT CORPORATION

261 Madison Avenue, New York 16, N. Y.

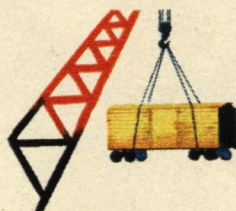
Additional copies of this section are available without charge. Please write to: Merritt-Chapman & Scott Corporation, Department T, 261 Madison Avenue, New York 16, N. Y.

Industries of Merritt



CONSTRUCTION DEPARTMENT

Construction of every type:
Marine, Heavy, Chemical, Highway,
Industrial, Building



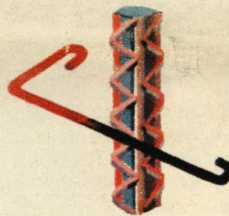
DERRICK DIVISION

Floating derrick operations for heavy
cargo hoists; salvage operations
in harbors and inland waterways



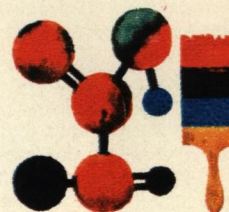
MARINE SALVAGE DIVISION

Every form of assistance to marine property
in distress; removal of navigational hazards



MILTON STEEL DIVISION

Steel Reinforcing Bars, Merchant Bars,
Strip, Bar Size Angles



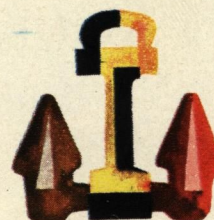
DEVOE & RAYNOLDS COMPANY, INC.

Industrial & Residential Paints & Finishes;
Plastics; Resins & Chemicals for
Coating Manufacturers



TENNESSEE PRODUCTS & CHEMICAL CORPORATION

Chemicals, Plasticizers, Metallurgical Products,
Fuels, Building Materials



NEW YORK SHIPBUILDING CORPORATION

Design & Construction of Merchant &
Naval Vessels of All Types;
Industrial Equipment & Machinery,
Nuclear Reactor Components

HIGGINS, INC., Naval and Merchant Craft, including
Barges, Tugs, Offshore Drilling Structures,
Personnel Boats and Pleasure Craft