

LATEST TYPES OF CRUISING POWER BOATS.

In the first-page illustration of this number of the SCIENTIFIC AMERICAN are shown three of the latest types of cruising power boats. The two shown in the upper part of the illustration are "La Mascotte III." and the "Dixie," the first of which was designed by Mr. H. J. Gielow for Mr. F. C. Havens, of San Francisco, and the latter by the Electric Launch Company.

"La Mascotte III." is 84 feet over all, 75 feet 9 inches on the waterline, with a beam of 13 feet, and a draft of 3 feet 6 inches. On deck forward are a pilot house and a cabin, provided with the usual transoms, table, lockers, and buffet. The staterooms, which contain berths and lockers, are arranged on each side of a passageway leading to the engine room.

Each of the staterooms connects with a private toilet room. The quarters of the crew are aft, and provide accommodations for two men. In the engine room are two berths, seats, lockers, etc., for the members of the engine-room staff.

The vessel is driven by two 75-horse-power Craig gasoline engines, and it is provided with the necessary lighting, ventilating, and other auxiliaries. The fuel supply—620 gallons at a maximum—is carried in tanks located in water-tight compartments. The vessel is steered from a bridge aft of the pilot house, and is equipped with a single military mast and a stack.

The "Dixie" is 93 feet over all, 85 feet 9 inches on the waterline, with a breadth of 13 feet 6 inches, and a draft of 4 feet. Her accommodations consist of a forecabin, finished in quartered oak with brass air ports for light and ventilation. The owner's quarters, which are also forward, and are finished in African mahogany, contain two Pullman berths equipped with regular Pullman car fittings with drawers for storage. There is also a bureau with plate-glass mirrors and extra wide and deep drawers. The owner's private bath is adjoining and contains a porcelain tub, shower bath, basin, and a large closet. The windows in the owner's quarters are of plate glass, protected by Venetian blinds, while additional ventilation is secured through a large skylight.

The galley is situated aft of the engine room and extends the full width of the boat. A large range burning either coal or wood is provided, together with a roomy ice box, having a capacity of 650 pounds of ice, a sink, cupboard, dresser, and closets.

The main saloon is 19 feet long, finished in mahogany, and contains a large Chippendale sideboard with glass doors, drawers for silver, linen, etc. There are also four standard Pullman berths, and a toilet room opening into the saloon on the port side forward. The windows in the saloon are protected by Venetian blinds, as in the owner's quarters, while a large skylight furnishes additional light and ventilation.

The engine room contains two 110-horse-power 6-cylinder Standard reversible engines and an 8-horse-power gasoline engine direct connected to a dynamo for supplying electricity throughout for lighting, searchlight, fan motors, heating and cooking.

The yacht will be steered from the bridge and will also be equipped with military mast, stack, one 14-foot dinghy, and a 15-foot 6-inch power tender, with a 2-horse-power engine; an awning covers the entire yacht.

The hull has been very substantially built, having an oak keel and frame and yellow pine planking, all copper or yellow metal fastened.

The craft illustrated in the lower engraving is the "Hawk," which was designed and built by Mr. C. Du Poix, of New York city, for a gentleman residing on the Isle of Pines. It was intended for use both as a pleasure yacht and as a passenger carrier during the busy season of commerce. The conditions of service necessitated a seagoing power yacht of fair speed and wide cruising radius for operation in and around the Caribbean Sea. Weather conditions in that part of the world often put the craft plying those waters to the severest possible tests, and the question of seaworthiness was a factor of the greatest importance in the design of the "Hawk."

The vessel is built entirely of steel, with six watertight compartments, and the construction is one which offers great strength of hull. The deck is flush, with but a single companion way, that leading to the owner's quarters. All other openings are either watertight torpedo hatches or watertight steel skylights. There are two engines, each of 75 brake horse-power, using gasoline fuel. The latter is carried normally in four tanks placed abreast, each in a watertight compartment and provided with a water seal. Extending forward from the engine room bulkhead for 14 feet is a double bottom, the space within which is adapted to be used as a reserve fuel tank, or otherwise as a ballast tank. The full tank capacity totals 2,000 gallons.

Most of the auxiliary power devices are electrically driven. They include the lighting plant, the fire and bilge pumps, an ice-making plant of the Brunswick Refrigerator type, and the ventilating system. The ice machine compressor is driven by a 1½-horse-power motor in the engine room. The cold storage and ice com-

partments are located in the galley. Twenty pounds of ice are manufactured per day, while at the same time two refrigerating compartments are cooled. The cooking is done upon an electric range, an auxiliary oil stove being provided for emergencies.

A system of forced draft provides ventilation. An electric blower is placed aft of the conning tower, where it is shielded from breaking seas. This forces air through lines of pipes, one on each side of the boat, just above the cabin floor. Each room contains proper regulating apparatus for use in connection with the ventilation system. The air is withdrawn from the various parts of the craft through flat pipes located near the gusset plates on each side of the hull. These pipes unite in the engine room and communicate with an exhaust blower, which expels the air through a ventilator.

The conning tower is located well forward, and not only provides a place for the steersman in bad weather, but is also a chart room and smoking den. It is provided with a large, comfortable leather divan, adapted for sleeping purposes in case of necessity. Two sets of steering gear are provided in the conning tower, as well as an engine-room telegraph, a telephone to all parts of the vessel, and the usual bell signal system and speaking tubes. The electric masthead and side lights have telltale lights showing in the conning tower. The lights, as well as the searchlight and the siren, are controlled from within the latter. An auxiliary steering gear is provided on the platform aft of the conning tower for use in fair weather.

The accommodations and living arrangements are all of the very best. The toilet and bath rooms are of the latest design. The main saloon is large, airy, and comfortable, and is provided with two transom berths, a self-playing piano, buffet, bookcases, lockers, etc. Accommodations are provided in the forecabin for a crew of four, and two berths are located in the engine room for the crew of that department.

The joiner work throughout is of composition fire-proof board painted with white enamel. Interlocking rubber tiling is used in the saloon, bathroom, passageways, and in the pantry and galley. The upholstery is of dark green leather. Two boats are carried in patent folding davits—a power dinghy and a whaleboat. The deck is of teak, with all deck fittings of steel.

Aeronautic School in Germany.

Arrangements have just been completed to establish at Chemnitz a training school for aeronauts and constructors of airships. A similar school has been in operation in Paris for a year past. The Chemnitz institution will be the second enterprise in this new pedagogical field. A one year's course is contemplated for the present, the school to be opened in May, 1907. This course, at the outset, is limited to the construction and use of balloons. It will be enlarged so as to include aeroplanes, as soon as practical working types have been developed.

The successive divisions of instruction during the year's course are as follows: Calculation of volume of balloons; methods of cutting the material; methods of rendering the material impermeable; construction of nets; gases used for inflation; the general theory of balloon construction and use; scientific instruments used in balloon ascensions; meteorological observations; ascents alone; ascents with passengers; special instruction for passengers; methods of landing, and the application of airships. The tuition for a year's course is 600 marks, or \$143.

The Current Supplement.

The current SUPPLEMENT, No. 1625, opens with an article by Dr. Alfred Graevenitz on the Southwestern African Railway, which is probably the longest road of its kind in the German colonies. Good pictures accompany his description. Mr. Walter J. May tells how unusual castings can be made. The mechanical design of ball bearings and roller bearings is ably discussed by W. S. Rogers. The first installment is given of a series of articles on plaster-of-Paris. Mr. W. E. Parsons contributes a well-considered forecast of our manufacturing industry. Mr. F. P. Fish's admirable elucidation of the ethics of trade secrets is concluded. The purchase by the British Admiralty of a gasoline, motor-driven torpedo boat is an official indorsement of a new type of fighting craft. For that reason the SUPPLEMENT'S illustrations of these new types, together with an article, will be of interest. The flights of Zeppelin's airship on October 9 and 10, 1906, are described in detail by Prof. Hergesell and Capt. von Kehler. Electric sleep or anesthesia is a subject of which we are bound to hear more in the future. Dr. G. H. Niewenglowski's brief review of his experiments and those of Prof. Leduc should, therefore, be read with interest. In an article entitled "Theory and Action of a 100-Mile Wireless Telegraphic Set," A. Frederick Collins tells something of the theoretical action and the practical working of the instruments employed in the 100-mile wireless telegraph equipment which is described in SUPPLEMENT, No. 1605.

INFLUENCE OF THE AUTOMOBILE ON LAUNCH DEVELOPMENT.

BY W. P. STEPHENS.

Following closely on the Automobile Show comes the Motor Boat Show at Madison Square Garden, marking a new era in launch and gasoline-engine building. As the Automobile Show had its germ in the great bicycle shows of the late nineties, so the gasoline launch has served as an incidental attraction to the annual Sportsmen's Show until the present time, when it takes its place as one of the great yearly show attractions of New York.

Though antedating the automobile by nearly a dozen years, the marine gasoline engine was at the time of the first Automobile Show in 1900 but little advanced beyond its early primitive stage. Its manufacture was regularly established, it had found a limited market among yachtsmen and to a certain extent among fishermen and other workers, and, mechanically, it had reached a point where it was sufficiently reliable and economical in operation to justify its use in spite of many serious defects; but it was found in only one very heavy type, built almost entirely of cast iron, which made it bulky. Its design was such that it was limited practically to the low speed of about 300 revolutions per minute. Besides this it was weak in its respiratory organs (the primitive vaporizer or carbureter of the day), and was fitted with an ignition system of the make-and-break type that had hardly passed the experimental stage. Its possibilities being unknown to the yachting world, the only demand was for this ordinary heavy type of engine for cruising launches or working boats, and there was no inducement to the builder to invest large sums in the development of lighter and more efficient engines. Even the most progressive builders of the day aspired no higher than the improvement in detail of the heavy launch engine.

In England and France the development was even more backward, launches being few in number and mainly propelled by kerosene, in every way inferior to gasoline as a fuel. The awakening came, however, in the latter country, where in 1900 the new type of light, high-speed, automobile engine was first tried in a launch hull. The experiment was successful. New hulls of special design and construction were soon afloat, driven by the leading makes of automobile engines; the vocabulary was enriched by a brand-new term—"canot-automobile"—and the new sport of high-speed motor-boat racing was fairly launched.

From the start the "auto-boat" or "canot-automobile" all but rivaled the motor car in popularity. Races were held for valuable prizes; the cleverest of naval architects were called on for designs of lighter and faster hulls, and all the resources of automobile engineering were called into play for the perfection of the new type of "auto-marine" gasoline engine. The fever was by no means confined to the Seine and the Mediterranean, but found its way across the Channel and even across the broad Atlantic, meeting a hearty welcome from American clubs and yachtsmen.

The high-speed auto-boat has proved to be little more than a costly and useless toy; the hull, designed solely for the highest possible speed, gives neither comfort nor accommodation, while the passenger, even in smooth water, is drenched with a cataract of spray thrown by the razor-like bows. The extremely light construction makes the boat useless except for racing; the light and delicate engines require the highest possible skill for their care and manipulation, and they are always liable to derangement and breakdowns. The first excitement over, the sport has proved far less fascinating than at first promised, owing to the great number of failures of entered boats to start, or, having started, to finish the course.

In spite of its own defects, however, the auto-boat has been a blessing to yachtsmen and to engine builders alike, in that it has forced in less than five years a development that, to all appearances, would in its natural course have taken twenty years. To put it briefly, where the average speed of the pleasure launch was well under ten miles per hour half a dozen years ago, the effort to attain a speed of thirty miles in the auto-boat has raised the average speed probably 50 per cent, while there are staunch, strong, and seaworthy launches that run regularly over twenty or twenty-two miles in the hour.

One of the most generally useful and popular of the many new types is that called "the ferry launch," of 50 to 80 feet length, fitted with at least a cabin for bad weather, if not with conveniences for a meal and a bed on occasion, with large comfortable cockpit, and having sufficient power to carry the owner and his family or friends from his home on the Sound or the Hudson to some New York pier at a regular speed of eighteen to twenty miles an hour or even higher.

The first step in this development has been through the engine. In France all the resources of the automobile builder—the highly-skilled engineer-designer, the chemist and metallurgist, the maker of fine steels and bronzes, the expert machinists, and fine machine

(Continued on page 170.)

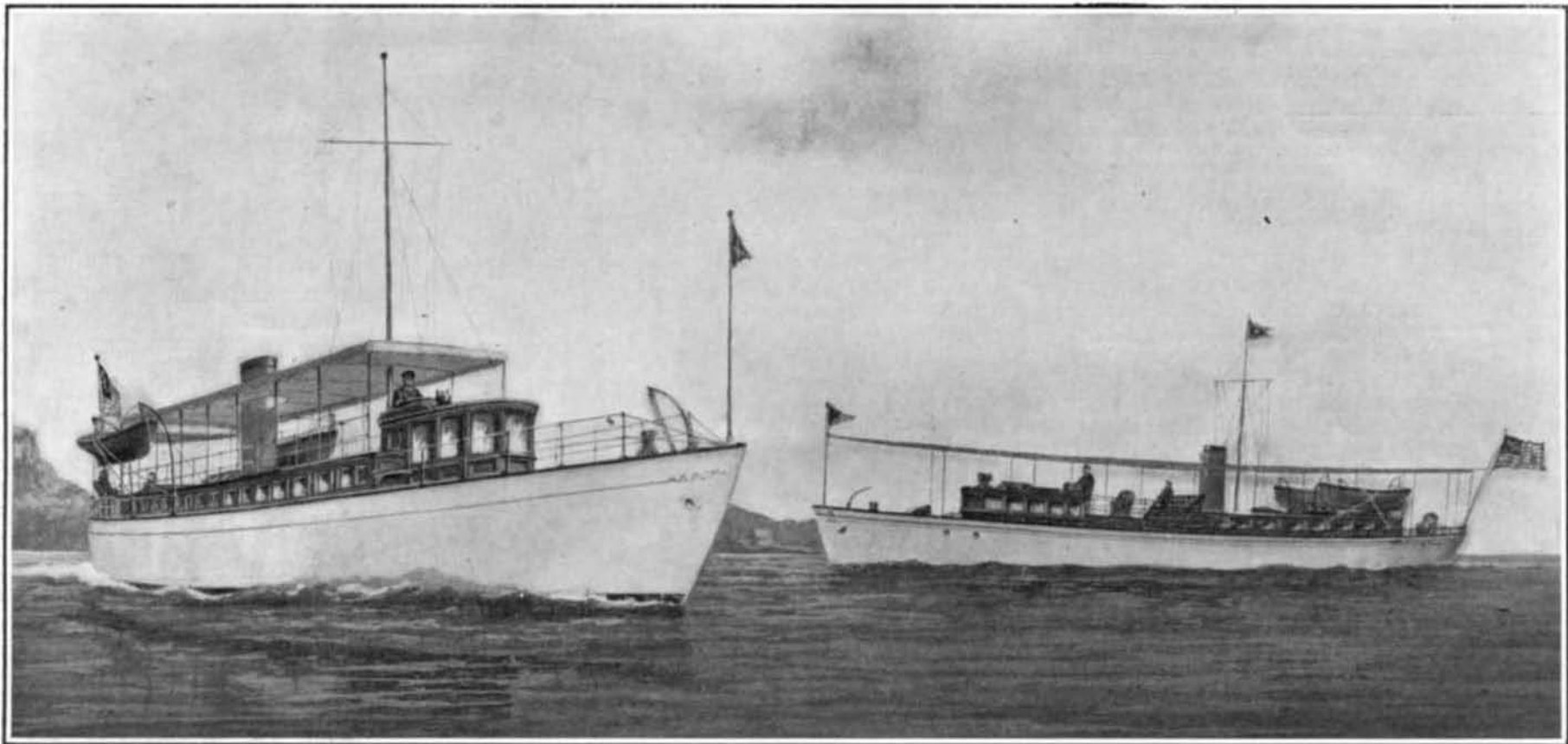
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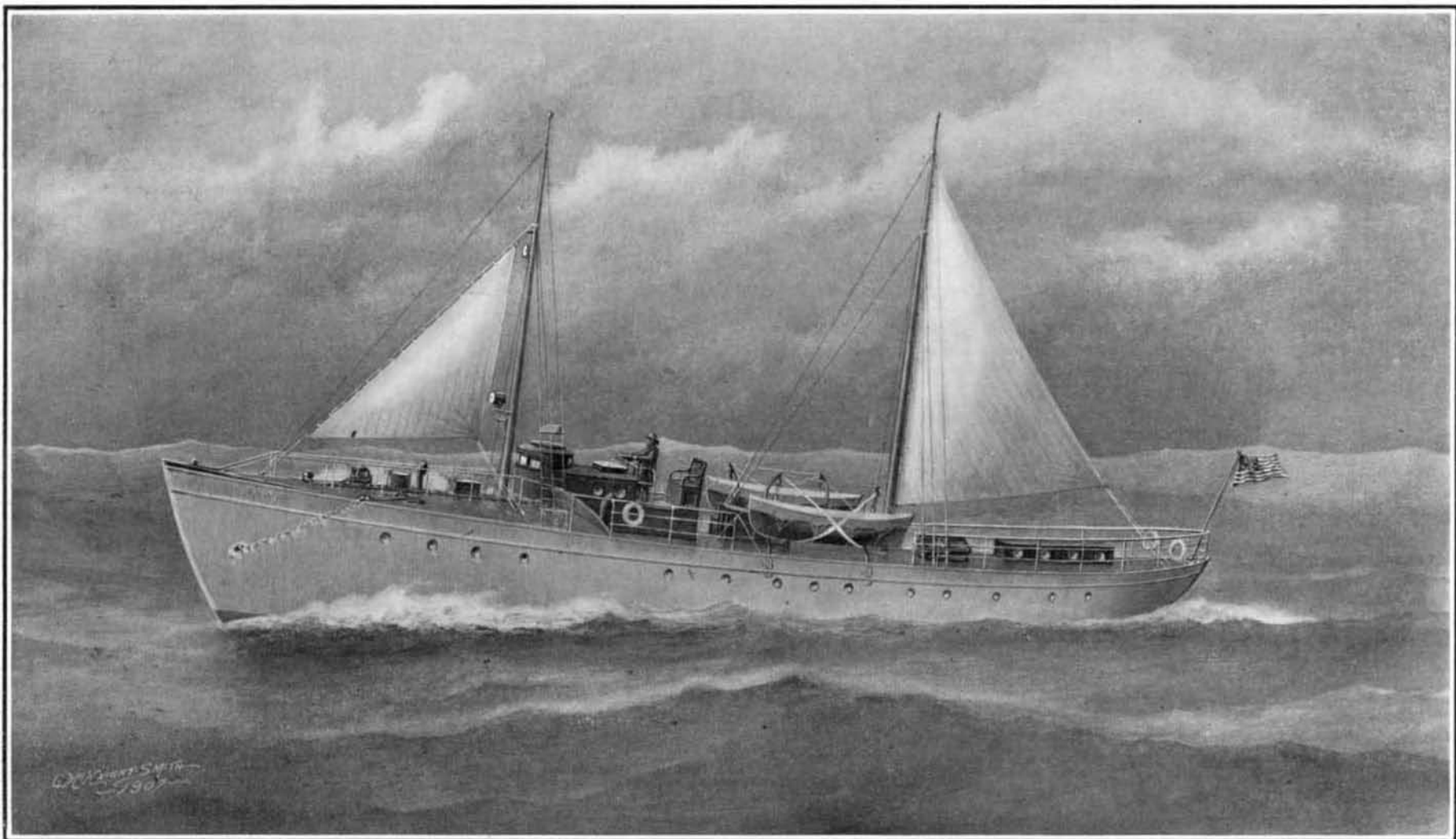


"LA MASCOTTE III."

"DIXIE."

Two of the Popular Modern Types of American Power Cruisers.

"La Mascotte III." is 84 feet in length over all; "Dixie" is 93 feet over all. These yachts have comfortable accommodations for passengers and crew, and have a wide cruising radius at fair speed.



The Ocean-Going Cruiser "Hawk," Built for Service in Caribbean Waters.

The "Hawk" was designed for long journeys about Cuba, the Isle of Pines, and Porto Rico, and for this purpose carries a maximum fuel supply of 2000 gallons of gasoline.

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