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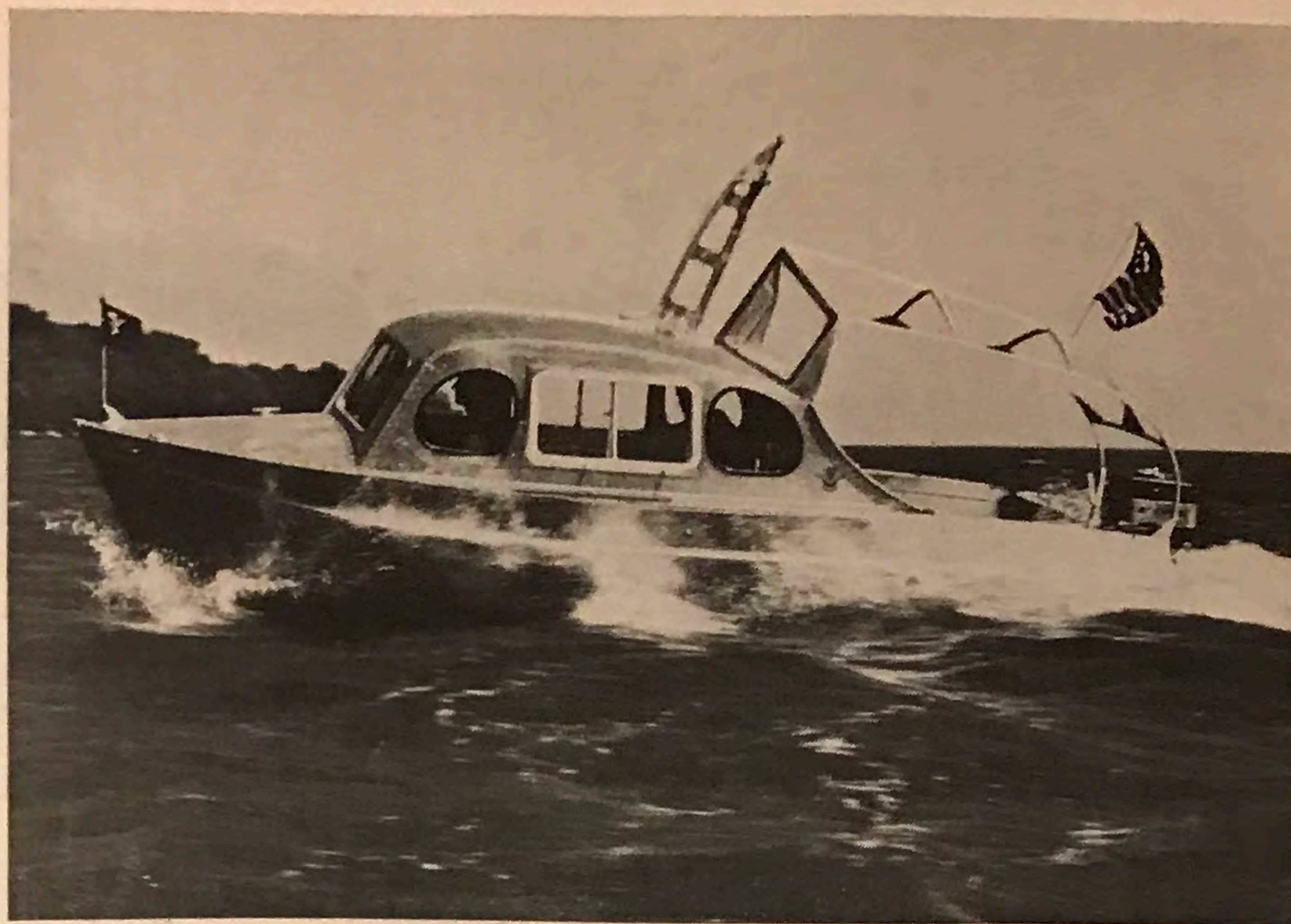
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Rosenfeld photograph

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N. G. Herreshoff and Some of the Yachts He Designed

By L. FRANCIS HERRESHOFF

Part X—Captain Nat's Designs of the Nineties (Continued)

ONE of the amusing incidents told about Captain Nat on this visit to England is the one handed down by Captain Shackford of the Gould's steam yacht Atlanta. It seems that at one time when Mr. Gould was talking with the Prince of Wales (afterward King Edward VII), the prince signified that he would like to meet the designer of Vigilant, so Mr. Gould invited him aboard the Atlanta where Mr. Gould knew Captain Nat was at the time. But Captain Nat saw them coming, hid in the engine room and could not be found. He certainly was a curious combination of bashfulness in personal relations and boldness in engineering designs.

Now I will ask you to bear with me while I tell a short story about Prince Edward which, though well known in yachting circles in England, may not be so well known over here. Both as prince and king Edward was the most fond of yachting of any English monarch since Charles II, but while Queen Victoria was alive he had little money of his own. However several times after an unusually satisfying sail or race on his yacht Britannia he would telegraph Watson, her designer, to come to him. Then the prince would order a much larger and better yacht than Britannia. Watson, of course, had to say, "Yes, your highness," but after he got back to Glasgow he never did anything about it, for he knew the prince could not pay for the yacht. This must have been embarrassing for Watson, and it is pos-

sible that when Captain Nat hid in the engine room he was avoiding a similar interview.

Nevertheless Prince Edward was the principal person who brought yachting in the 1890's to greater popularity than it ever had before or since, for many wealthy English and Scots took up yachting on a grand scale during his life, some even, like Sir Thomas Lipton, who had no particular love for it. Also the prince's nephew Kaiser Wilhelm had started yacht racing and, having money of his own, ordered from Watson Meteor II which proved one of the fastest yachts in England in 1896. Prince Henry of Battenburg owned the 20 rater Asphodel, and titled men from Russia to Spain were having yachts built in rapid succession. At this time yachting was by far the most publicized sport, for automobile racing had not come in, nor had baseball been organized in this country with its big league contests, so the turf was practically yachting's only competitor in public interest. The newspapers at that time often devoted a whole page to a yacht race, and yachting news often got the headlines. Under these conditions it was not strange that the leading yacht designers received great public notice and by this time Captain Nat's only serious competitors were Watson and Fife.

To give an idea how well known Mr. Herreshoff was in those days I will say that when Captain Nat was in England with the Vigilant he wrote a letter to his wife



Fig. 86. *Corona (ex-Colonia) rigged as a schooner*



Fig. 87. *Vigilant with yawl rig*

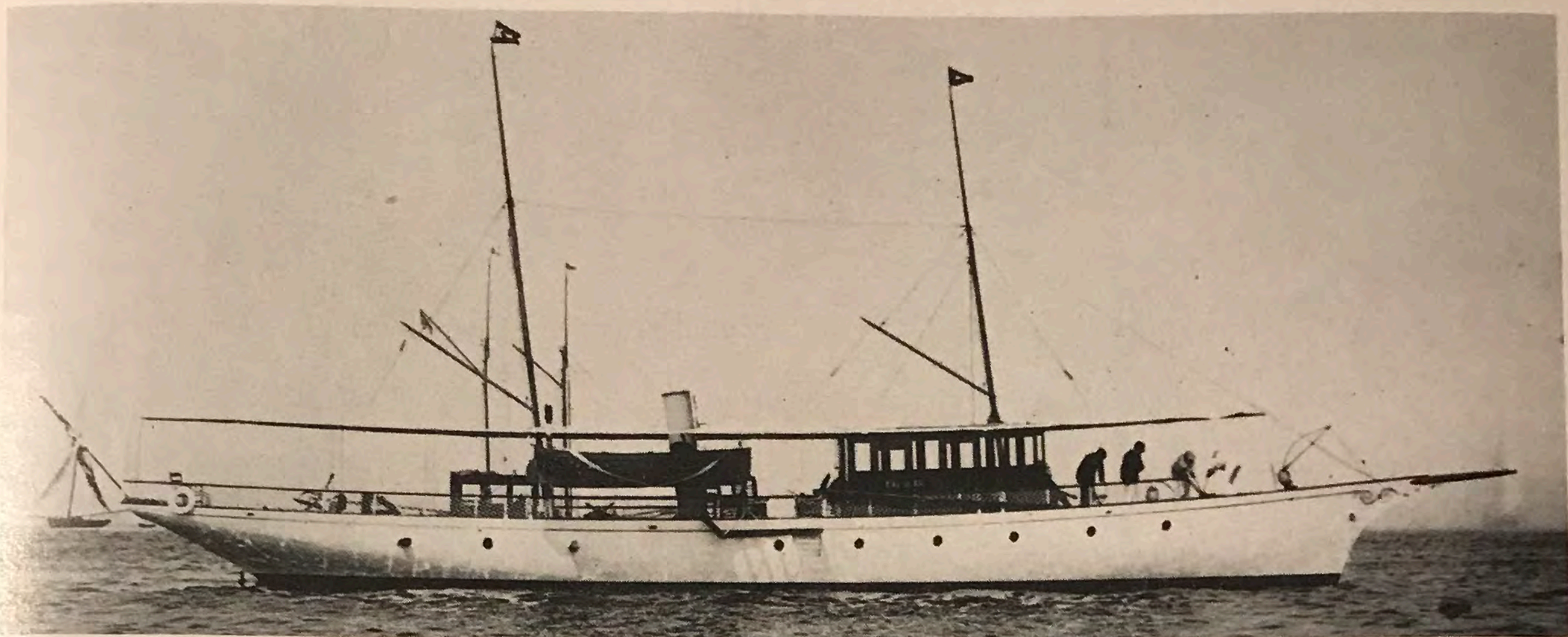


Fig. 88. Small steam yacht of 1890's

and simply addressed it to Mrs. N. G. Herreshoff. No doubt he intended to add further directions, but was interrupted. However the letter went through to its destination without further address. I speak of this only to show how much the principal designers were on the minds of the general public at that time, but in these democratic years the best yacht designers' names are hardly known outside the yachting fraternity. Captain Nat returned to America before the season was half over, for he had much work to attend to at the Herreshoff company.

Now I must finish up with *Colonia* and *Vigilant*, for both vessels had a long and useful life. *Colonia* was changed to a schooner (see Figure 86), her name was changed to *Corona*, and she won many prizes including the Goelet Cup in 1892 and 1896, the Astor Cup in 1900 and 1904. She served as flagship of the New York Yacht Club from 1900 to 1902, and the last I knew of her she was the tender for *Enterprise* in 1930, thus lasting nearly forty years and outliving all the single stickers of her time except *Britannia*, which had been periodically rebuilt.

Vigilant after she came back from England served as a trial horse against *Defender* in 1895. She won the Goelet Cup in 1894, and a great many yacht club runs. After she was changed to a yawl she looked like Figure 87. She was finally broken up around 1910 and many of her fittings and parts were used on the Cary Smith designed schooner *Enchantress*.

During these years, or since Captain Nat had gone into designing the larger racing yachts, he had had trouble with the sails and sailmakers, which had necessitated setting up a small sail loft to recut and alter sails at Bristol. However in 1894 Captain Nat invented the crosscut sail and, as none of the other sailmakers were willing to risk their reputations on such a radical departure in sail cutting, the Herreshoff company enlarged their sail loft and decided to make their own sails. The development of the crosscut sail entailed working out several new problems in the matter of roping, stitching, etc., and as Thomas Ratsey, the famous English sailmaker said, Captain Nat worked out nearly all the methods used

today in his first few years of practice in making crosscut sails.

The Herreshoff company made arrangements with the Lawrence Manufacturing Company, manufacturers of sailcloth, to make especially woven duck to the Herreshoff formula of selected cotton to use on crosscut sails, which was one of the problems that had to be surmounted. Later this and other mills made duck of a similar formula for other sailmakers.

While a sail with the cloth running parallel with the boom had been tried on the sloop *Maria* about 1850, it had been a failure as the strains were across the gore of the cloth, so the sail was discarded. Captain Nat was the first to design a sail with the cloths running at ninety degrees from the leech, and he worked out the formula of the cloth required, etc., etc., which made the crosscut sail a success. It is probable that the crosscut sail has



Fig. 89. *Dacotah*

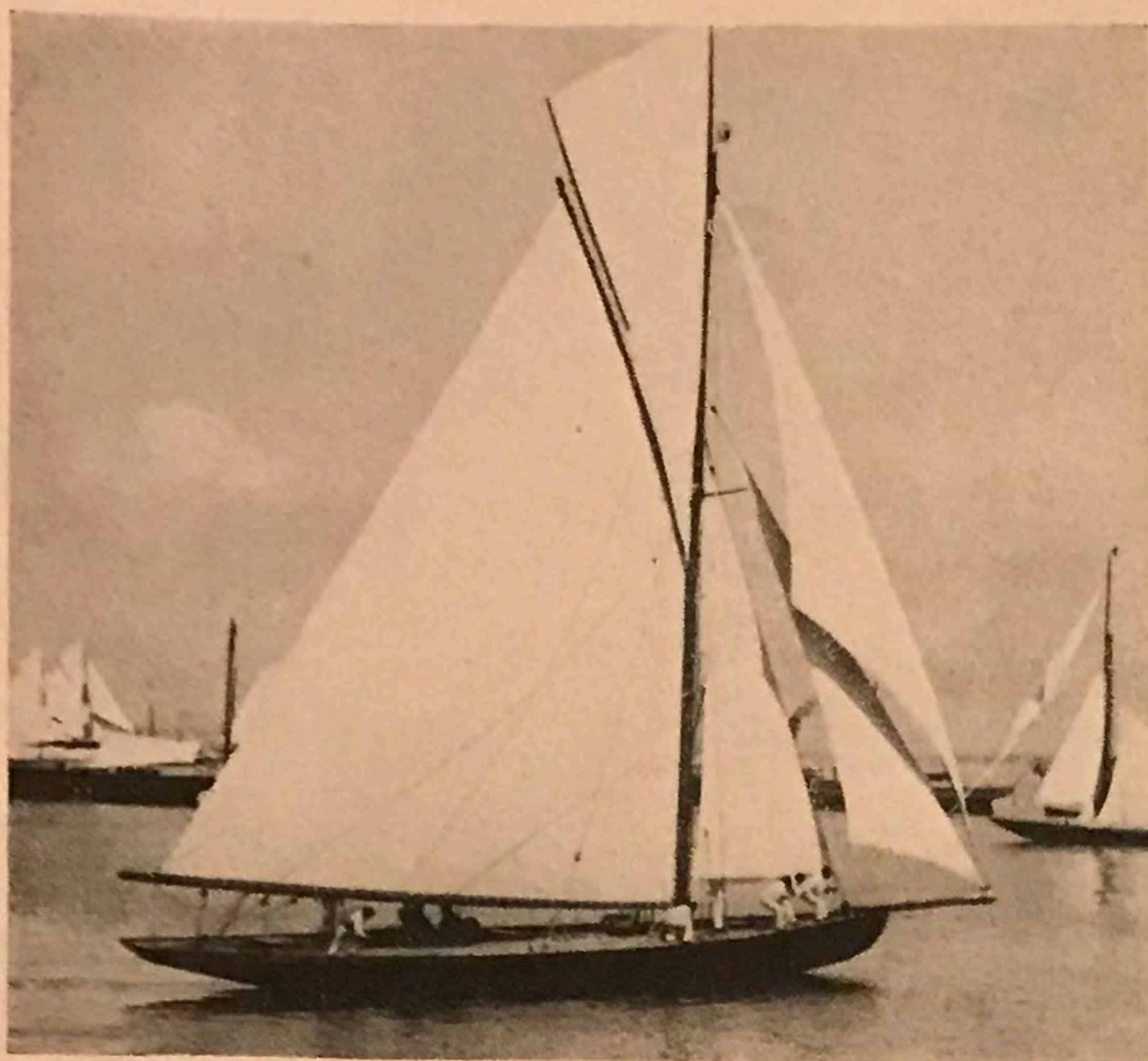


Fig. 90. *Isolde*, sister ship to *Niagara*

been copied more than any of his inventions, as it is used today on almost every racing sailboat throughout the world. The first crosscut sail was made for a twenty-one foot fin keeler that Captain Nat designed for W. Butler Duncan, and the second suit went on Captain Nat's fin keeler *Alerion II* built in 1894. As we will see, almost at once crosscut sails were made of every size from those of cup defenders down, and I can't help thinking the crosscut sail gave Herreshoff built yachts an advantage over others during the few years before other sailmakers adopted them.

All during this time the Herreshoff company was building many steam yachts and launches, in fact the dollar value of steamers probably exceeded the sailboats

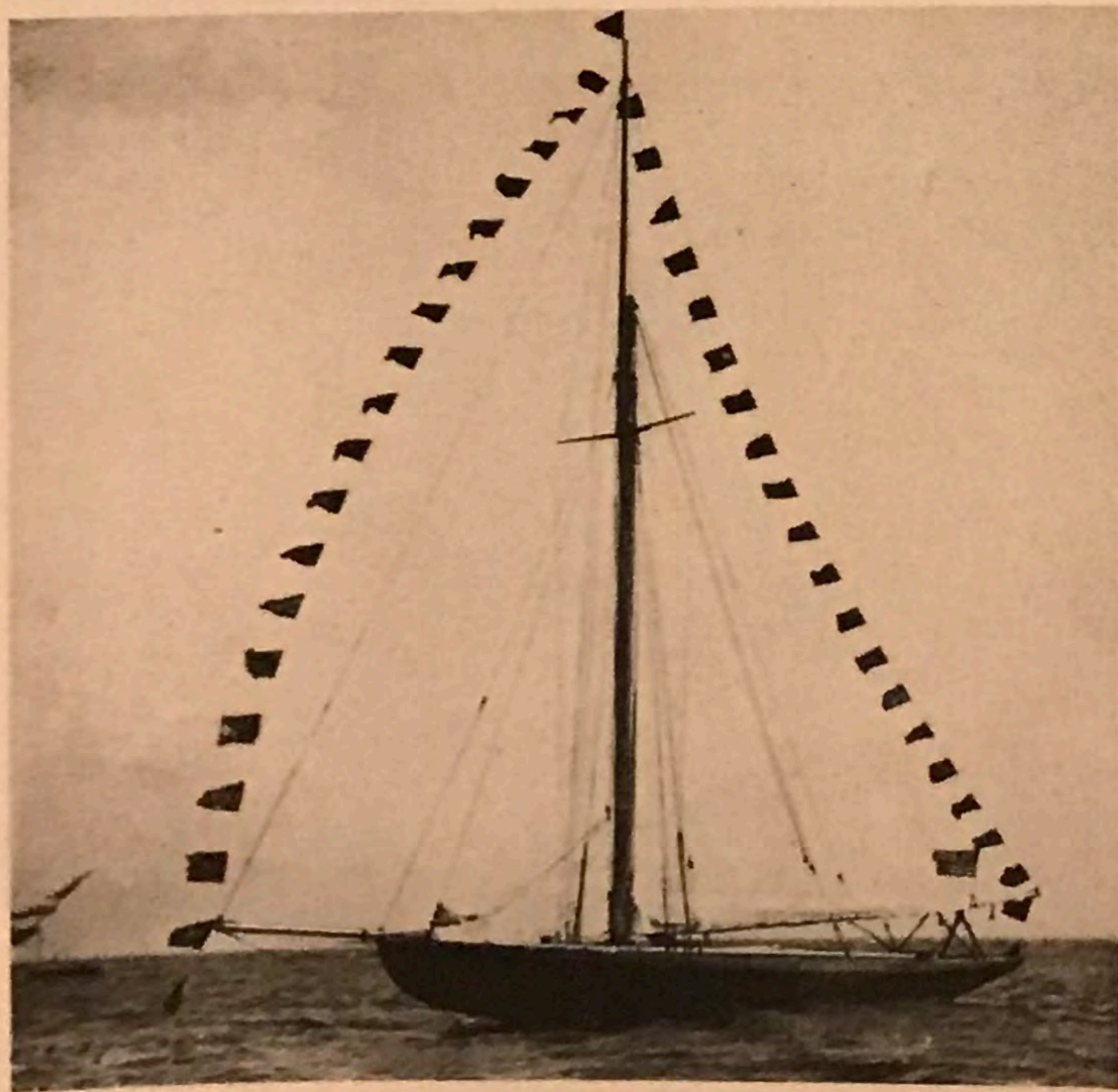


Fig. 91. *Niagara* at the end of the 1895 racing season



Fig. 92. *Japonica* (*ex-Niagara*) about 1897

even if the sailboats did outnumber them, and it certainly is quite wonderful that Captain Nat could be designing new steam engines and developing the crosscut sail at the same time. Figure 88 shows a rather typical small steam yacht of a type of which the Herreshoffs built several in the next ten years.

One of the outstanding Herreshoff yachts of 1894 was the 10 rater *Dacotah*, Figure 89, built for the Clyde where she won twenty-five firsts and one second out of thirty-three starts. I think this was Captain Nat's first fin keeler with a topmast and three headsails, and you can see by the photograph that the spoon bow was now fully developed although *Dacotah* was a few months too early to have crosscut sails. We have seen that Captain Nat considered the bulb keel the best in *Wasp*, *Navahoe*, *Colonia* and *Vigilant*, which were designed after he invented the fin keel, but in the smaller yachts which had comparatively greater speed, particularly in the stronger winds of Scotland and England, he was still using the fin keel with great success.

In the winter of 1894 and 1895 Captain Nat certainly was busy as, beside several small sail and power yachts, he was designing the two 20 raters *Niagara* and *Isolde* for British waters, besides the new cup defender which was named *Defender*. I will describe the 20 raters first. They were single masted with a topmast and three headsails, double planked with mahogany on the outside finished bright as several of the smaller fin keelers had been. They were sixty-five feet overall, forty-five feet on the water, twelve feet beam, and ten feet draft. After a trial spin at Bristol their fin keels were unbolted and they were shipped abroad on the decks of steamers. *Niagara* was owned by Howard Gould, one of the Gould brothers who had the *Vigilant* on her visit to England the previous year. *Isolde* was owned by Baron von Zedtwitz who was to be killed the next year in the famous Meteor-*Isolde* collision on the Solent. *Isolde* looked like Figure 90, and in fact they were sister ships, but during

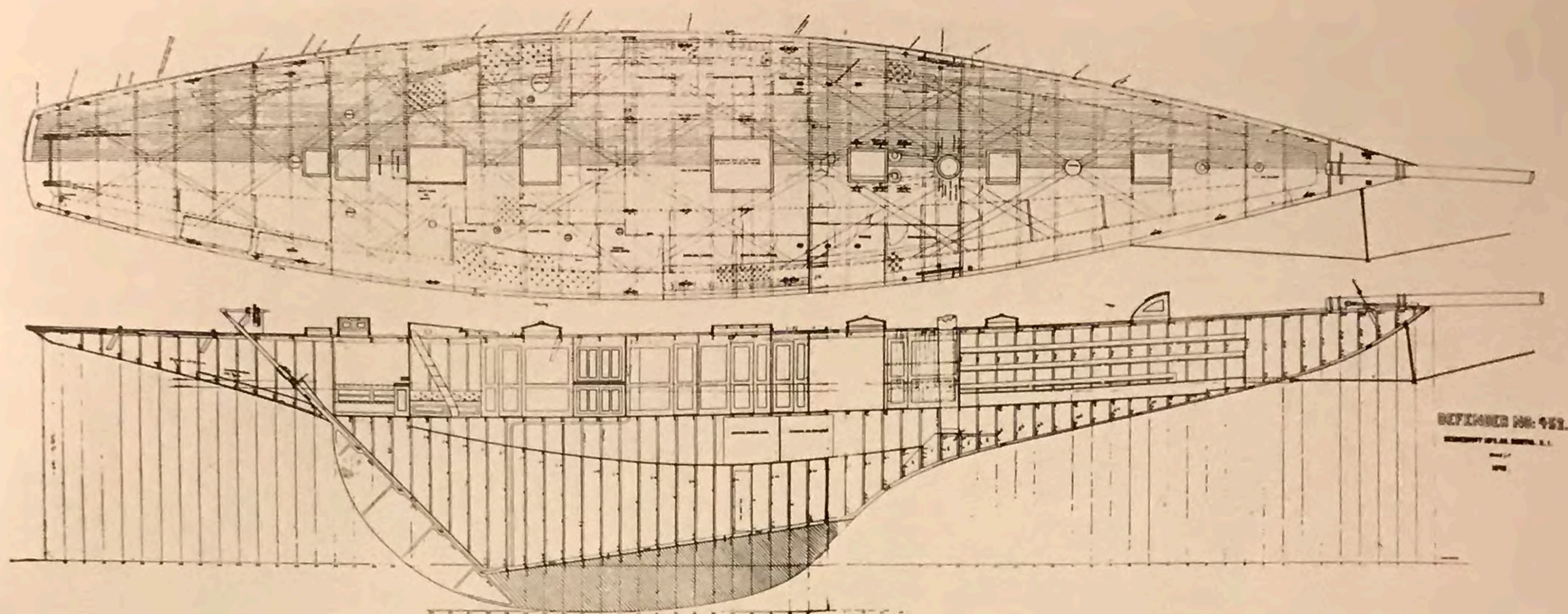


Fig. 93. Construction plan of Defender

the next few years one or the other of them was painted white at times.

The captain of Niagara was John Barr, the elder brother of the famous Charlie Barr of whom we have spoken. John Barr was among the best of the Scottish racing skippers and had been captain of Thistle in 1887 in her unsuccessful attempt to capture the America's Cup. Thistle was a beautiful yacht designed by Watson and built in Glasgow by a Scottish syndicate. When Thistle was beaten by Volunteer the Scots would not believe it possible, so on John Barr's return to his native town of Gourock he was so much blamed for the failure of Thistle that he came to this country and settled at Marblehead, Massachusetts. (I might note that today the model and whole design of Thistle would appear superior to Volunteer, but Thistle's sails were altogether too flat while Volunteer's were of the proper draft. Also Volunteer was faultlessly managed by General Charles J. Paine, and the management of large yachts is most important.) At any rate when John Barr went over as captain of Niagara he had an opportunity to vindicate himself and prove that he and Niagara were the fastest combination in the popular 20 rater class in England, for I believe he won a pennant in every race but one. Figure 91 shows Niagara at the end of the racing season of 1895 with her racing pennants hoisted—thirty-one firsts, eight seconds, two thirds. John Barr picked up

most of his crew in New England, and one of them occasionally calls on the author nowadays. A member of the Niagara's crew was the Norwegian Chris Christensen, who subsequently went as mate with Charlie Barr for several years and eventually was captain of Resolute. Niagara certainly did well for an American yacht racing in English waters. This almost clean sweep of hers must have been a great satisfaction to Howard Gould and should have made up for the rather poor showing Vigilant had made the previous year in British waters when owned by the Goulds.

There is no doubt that these large fin keelers were fast in a breeze. Niagara once made a phenomenally fast passage between ports when racing the circuit. She had a strong fair wind and her spinnaker set. I am

(Continued on page 50)

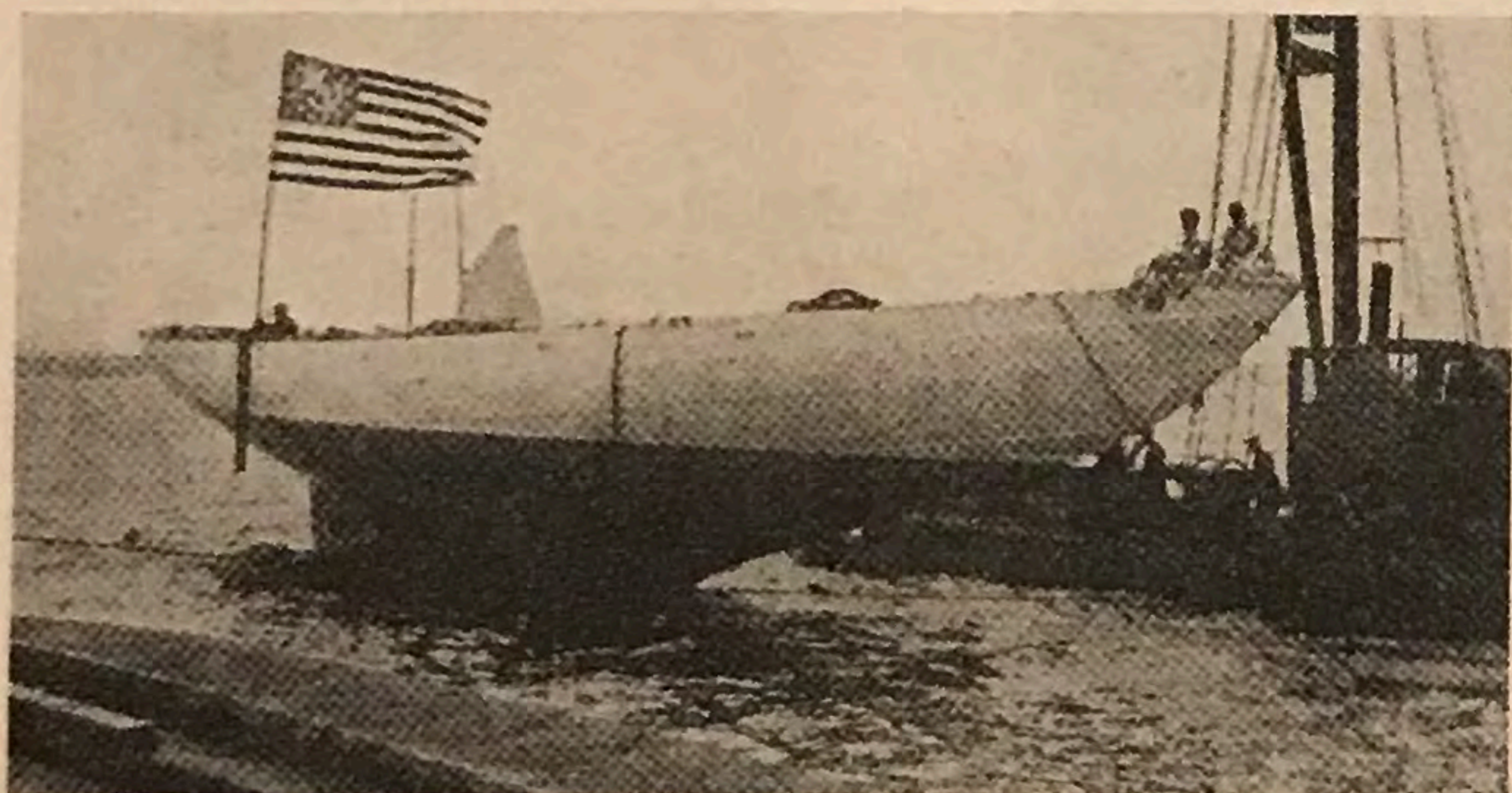


Fig. 94. Defender stuck on the ways



Fig. 95. Defender sailing

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N. G. HERRESHOFF (Continued from page 31)
sorry I do not remember the time and distance, but I believe she made an average speed of over nine knots for some one hundred miles, which is most remarkable for her waterline length of only forty-five feet. Niagara did so well that even the British writer, B. Heckstall Smith, writing about her in later years, says, "Under the length and sail area rule in 1895 Herreshoff had sent over the 20 rater Niagara, and it must be admitted the American designer defeated the British designers. She was not a half measure. Herreshoff went right out for a yacht of plate and bulb type, and with her he soundly hammered the British boats." However I credit part of the success of Niagara to Captain John Barr, for Niagara's sister ship Isolde usually only finished about in the middle of the large 20 rater class the first year, although Isolde did very well in the next few years after Captain Barr returned to America. In later years Niagara was rigged as a yawl and painted white. Under the name of Japonica she won the Nore to Dover Corinthian Cup, the Royal Yacht Squadron handicap, the Royal Southern Handicap twice, the Weymouth Town Cup twice, the Rothschild prize at Havre, and a host of other valuable and important trophies. Figure 92 shows Japonica (ex-Niagara) in about 1897. She perhaps was one of Captain Nat's most successful designs, but because she stayed in England is not so well known over here.

Niagara and Isolde were the largest fin keelers Captain Nat designed and perhaps the most refined, and while they were designed only three years after the first fin keeler Dilemma, they were to go out of style nearly as quickly as they had come in because, while the Herreshoff Manufacturing Company produced in all about one hundred of them, they were mostly built between 1891 and 1897. The bulb keelers were surely taking their place, both because they were faster in light weather and because the fin keeler was barred from racing in most classes after around 1897. It is said that most clubs barred them because fin keelers did not leak at all, and some would be going today if they had not gone out of style and been broken up. It certainly would be interesting to know how one of them would have acted with a high narrow rig with its resultant higher speeds, but I fear there would be steering difficulties, for the high narrow rig definitely needs a hull which tries to head off when heeled to counterbalance the heading up tendency of a high rig. So perhaps it is just as well that the fin keelers have gone out of style.

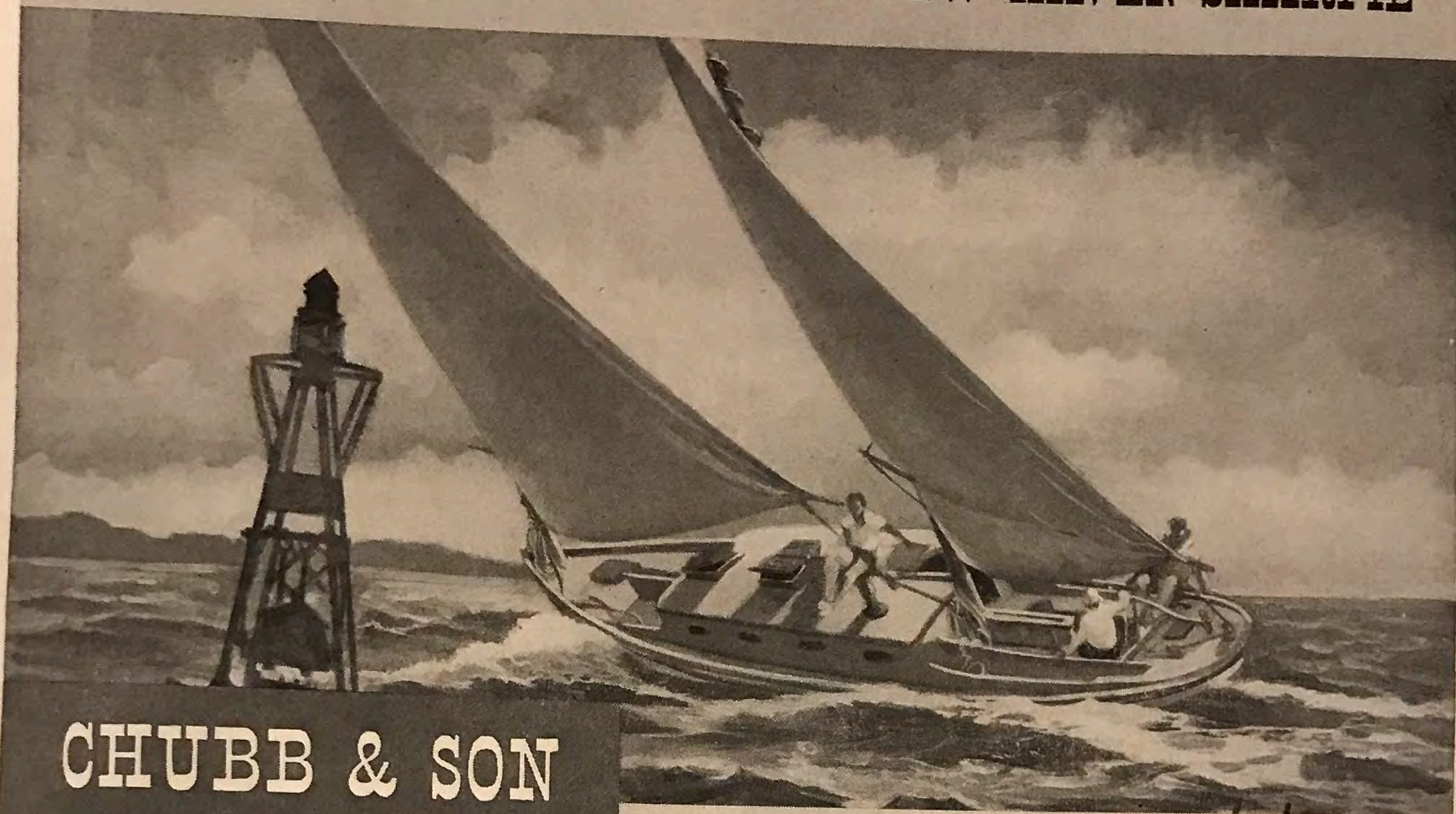
While Captain Nat designed several other yachts, both sail and steam, for the season of 1895, by far the most important was the cup boat Defender, and as I believe she represents one of the greatest advances in his designs I will give her some space.

In the autumn of 1894 Lord Dunraven challenged again for the America's Cup. This time he had Lord Wolverton, Lord Lonsdale, and Captain Harry McCalmont, owner of the steam yacht Giraldo, associated with him in the attempt. He again went to G. L. Watson for the design, but I fear Watson was too much influenced by their ideas and requests, for the Valkyrie III, as the challenger was named, had little resemblance to a Watson yacht. In fact she was an enlarged Vigilant with a deep keel instead of a centerboard. She was a large yacht in every way—length, beam, draft and sail area. The British seemed to have been impressed with Vigilant's great beam and so made a wide yacht, but Vigilant had only been made wide because at that time the Herreshoff company could not launch a yacht of much over 14 feet. But now that the ways had been changed and some dredging done around the wharves Captain Nat designed the new cup boat Defender with a draft of nineteen feet, and made her only twenty-three feet beam, so she was about five feet deeper, and three and one-half feet narrower than Vigilant. It might be said the Americans this time had the cutter (the narrow yacht) and the British the sloop (the wide yacht). Some of the general dimensions of the two follow:

	Valkyrie III	Defender
L. O. A.	129	123
L. W. L.	88.85	88.45
Beam	26.20	23.33
Draft	20	19
S. A.	13,027	12,602
Ballast	77 tons	85 tons
Racing length	101.49	100.36

So we see the greatest difference between the two was the amount of ballast. To acquire this large amount of ballast Defender had to be designed very scientifically. Her frames were made of bulb angles instead of angle irons and, although she was the first yacht to use bulb angle frames, large ocean steamers had used them previously. However there were no rolls in this country for the smaller bulb angles suitable for yacht work so Captain Nat had to design the shapes and the Herreshoff company paid for making the rollers. Defender's deck beams were of aluminum,

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and the ones in the widest part of the yacht were quite large (about five by two and one-half inches) with two smaller sizes nearer the bow and stern. She was plated with Tobin bronze below the waterline and had aluminum topsides and much aluminum in the deck framing (margin plate, diagonal strapping, etc.). Figure 93 shows her construction plan, which was certainly neat.

Defender, I believe, was the last of Captain Nat's cup defenders to have a wooden deck, all later ones having metal decks covered with either a thin layer of cork or unpainted canvas. Apparently after Captain Nat's experience abroad racing on *Vigilant* he was determined to beat the Englishmen this time without any doubt. Defender was a very beautiful model which has not been much improved on since, although the modern yacht has less draft and more displacement to fit the various modern rules, and many, particularly the ocean racers, have considerably more freeboard. But in general balance of proportions she was a model that would perform well in any size from a model yacht to a 90 footer. All of Defender's rigging, spars and fittings were much refined and she was the first cup boat to use crosscut sails, although I think a crosscut mainsail was made for *Vigilant* the same year.

Defender was built for C. Oliver Iselin, Edwin D. Morgan and William K. Vanderbilt, who by this time had great confidence in Captain Nat and did not interfere with the design. E. D. Morgan had been commodore of the New York Yacht Club the year before and always was a very popular man though a modest one, so there was quite a celebration at the launching of Defender on June 29, 1895. This was quite late for a cup boat to come out, but probably was because Captain Nat had been seriously ill the previous winter. She was christened by Mrs. C. Oliver Iselin amidst the acclaim of waiting thousands, who had arrived on special trains from Newport and Providence, and quite a fleet of spectator steam yachts. The *Herald* of that day says, "As she came into view outside the shop, a moving dream of white and gold, every man, woman and child in the great crowd broke into cheers, and along the harbor shores rolled the loud boom of cannon; then as the great sloop slowly swung down the ways a sailor man on the stern flung aloft the Stars and Stripes, and the multitude cheered afresh vociferously." But the Defender did not take to her element as planned, for when about halfway down the ways she came to a stop and could not be budged although one

of the large steam yachts tried to start her, in fact pulled so hard that the steam yacht's towing bits and some of her after bulwarks were torn away, but Defender stuck fast, as shown in Figure 94. When a diver was sent down to ascertain the reason for the stoppage it was found that in building these new launching ways a bolt or lag screw had been left sticking up a few inches, and when this obstruction was removed she slid down the ways with little resistance.

I must tell an amusing incident for the benefit of those who remember the jovial Boston yachting reporter, Bill Swan. Bill had been chosen to cover this launching for one of the Boston papers and determined to get the jump on the other reporters, so after hovering around Bristol a few days he wrote up a flowery description of the launching, calling it most successful and describing how Defender looked afloat, etc. This story he sent to his paper several days before the launching and asked them to hold it until he telegraphed for its release. When Defender started down the ways Bill started to run to the telegraph station (about three-quarters of a mile away) and on arriving there quite out of breath sent the message to release his story. So the Boston paper gave the account of a successful launching which poor Bill never did quite live down.

The launching of these large or deep yachts was quite a strain for Captain Nat, as he was responsible for everything. Not only did he design the yacht, cradle and ways, but he superintended the building and launching.

In the meantime *Vigilant* had been brought back from England by Captain Charley Barr, and George Gould (now sole owner of *Vigilant* as his brother Howard was in England racing the 20 rater *Niagara*) spent much money to put her in the best possible racing trim. At great expense about twenty tons of her ballast was removed, recast and bolted to the bottom of her keel which increased her draft from six to nine inches. That summer *Vigilant* was under the management of Edward A. Willard, and with her improvements and with Charley Barr for skipper and "Lem" Miller as mate, went remarkably well, making the Defender appear less fast than she should have been. Defender also had several things against her, the first of which was that her captain did not work with Captain Nat in getting her new style fittings, sails and rigging in working shape. The second was that her mast step settled and gave trouble in the early season. While

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the mast step had been properly designed, it seems that during Captain Nat's illness, when he could not inspect the work, several rivets had been left out in a place which could not be seen after the step structure was put in place but where there was a great strain. It was some time before the trouble was located, as it was in a difficult place to get at to re-rivet as should have been done in the first place, and in the meantime the press had made the general public believe the Defender was structurally unsound. Her third trouble was that for some patriotic reason or other she was manned entirely with an American crew, mostly Deer Islanders. While no doubt Maine fishermen are picturesque characters and good on smacks with a crew of one or two, they were not to be compared with the crews of various nationalities which had specialized in large yacht racing. To a great extent our larger yachts had been manned by Scandinavians who would obey a command promptly instead of stopping to think it over and decide whether they wanted to or not, as the Deer Islanders did.

Defender's fourth trouble was that the aluminum in her construction began to disintegrate, which kept all hands worried, and while it is true that some torpedo boats in both France and England had been built of aluminum, and while Captain Nat had made careful strength tests with aluminum, it was not then known how quickly it disintegrated when in contact with bronze and salt water. Strange to say, the aluminum often disintegrated under the paint, so that Defender generally appears in photographs with streaked sides.

In the trial races of 1895 she raced against Vigilant, Jubilee and Volunteer, but although she showed remarkable speed at times and I believe won every race (when she did not break down), she did not beat Vigilant materially, although by the end of the season when she met Valkyrie III she was undoubtedly a remarkably fast craft for her time. I should like to impress the reader with that fact because of its connection with the Dunraven controversy which apparently sprang from it. Figure 95 shows her sailing.

The first race between Valkyrie III and Defender started at 12:20 September 7. It was a windward and leeward race in a light breeze and a lop of a sea. The accounts of this race given by both English and American witnesses state that soon after the start Valkyrie was footing the faster but that Defender got a lift (change of wind) which let her up and gave her a lead which she kept from then to the finish. I believe the facts of the race were more as follows. Soon after the start Valkyrie III had to be sailed a little wide to keep her going well with her large beam in the choppy sea and light wind, while Defender sailed well with her sails trimmed flat, and consequently pointed high, which had made the reporters think she had had a lift. But as Defender steadily drew away from Valkyrie in the remainder of the race the logic would seem that she either was considerably faster or received a succession of lifts.

However Defender won the race by eight minutes forty-five seconds, and it is my opinion that Lord Dunraven clearly saw in this first race that he was pitted against a definitely faster yacht. I think he saw that Defender with her high percentage of ballast could carry her sail well, although with her slight beam she had little head-on resistance. I think he realized that Defender with her crosscut sails and polished bronze bottom was too fast for Valkyrie III. Dunraven had worked very hard in building and preparing Valkyrie and no doubt the strain of managing her almost single handed was too much, so that he seems to have broken down under the disappointment of this race. Then, having heard through some rumor that Defender had taken on ballast after she was measured, he entered a protest against her on the assumption that her waterline length had been increased since her official measurement, but when the waterlines of both yachts were remeasured the following afternoon no difference from the previous measurements were found.

This incident, however, had started ill feeling on both sides which finally was to result in a most unfortunate controversy. The rumor that Defender had taken on ballast arose from the fact that a few days before the race, and after she had been officially measured, Defender's crew took a few pigs of lead aboard her tender to saw them into smaller blocks so the lead would stow better into the part of the bilge where they were to be carried. Originally Defender had all of her ballast outside, but before the international races her cabinwork was taken out and the pigs of lead mentioned were taken aboard to make up for the weight. These same pigs were aboard when she was measured, but it was simply decided to stow them more compactly or in a more shipshape manner. Perhaps the only mistake was to have sawn the pigs up on Defender's tender instead of aboard Defender, but no deceit was intended, and perhaps that

is why they did the job so openly that it was observed and the word taken to Dunraven.

But to cap the climax, in the second race three days later on September 10 Valkyrie III fouled Defender at the start. Valkyrie had been a little early at the line and to use up time steered a crooked course. Being close on Defender's weather quarter, as she swung the end of Valkyrie's boom caught on Defender's weather topmast shroud and broke it. Fortunately the wind was quite light so the topmast did not come down, and although Defender was crippled she came about so that her well side was to windward and made a start only about one minute behind Valkyrie. Defender's crew at once rigged a temporary lashing or preventer tackle to her broken shroud, but she could not carry her jib topsail when on one tack. In spite of this Valkyrie only beat her forty-seven seconds corrected time, so we see if Defender had not been detained over one minute at the start she would have beaten Valkyrie although she was crippled, so she must have been decidedly the faster of the two.

After a protest by Defender the race was given to her, as it was a clear case of the weather boat coming down on and fouling a close hauled yacht under her lee. It is quite clear in my mind at least that Lord Dunraven now saw he had no chance to beat Defender, and I imagine that if they had had ten races Valkyrie III would not have won more than one or two, for Defender's fine model, plenty of stability, and crosscut sails made her very fast indeed. At any rate right after the start of the third race Valkyrie III withdrew and headed back to her anchorage, leaving Defender to sail alone over the course, which gave her three straight races although only one which was satisfactory.

I will not dwell on the rather ridiculous controversy which continued throughout the next winter as the result of these protests by both sides (although I think the New York Yacht Club could have shown more tact at times), but will say that both before and after these races Lord Dunraven owned several of the handsomest yachts ever built. He was somewhat of a designer and had modeled the most successful of the British 20 raters, Audrey. It is my belief that he broke down from overexertion in attempting to manage a cup challenger single handed, and for a while probably was not entirely in control of his actions.

(To be continued)



U. S. POWER SQUADRONS (Continued from page 9)

efficient program of education. The important fact is that anybody and everybody can reap the same benefits and enter into the activities of the USPS by registering for the piloting course and becoming a member of the organization after passing the examination upon completion of the first course, for which no charge is made.

As is usual when good fellows of the same thoughts, inclinations and hobbies get together, social activities have become a part of the program of the organization although the USPS is basically an educational group. The picture below shows a typical rendezvous of vessels of one or more of the units gathered for a weekend of fun and sports during the summer months when the classes held during the winter give way to fun afloat. Here again the USPS has meant more and more enjoyment of my boat to my family and myself, through activities with my friends of my own and various other units. The peculiar part is that after we get to know one another we do not think much of time and space. We just go to meet each other no matter how far it is, how long it takes, and no matter what the financial burden. Another angle which has been interesting to watch is the participation of the women. Nowadays classes of the Power Squadrons contain many of the distaff side and the number increases yearly. Although women are not formally admitted to regular membership they can reap the benefits, both educationally and socially, the same as the men, in practically all of the squadrons. Thus the term "squadron widow" is being used less frequently.



Dale Yacht Basin, Inc., Bay Head, N. J., is sponsoring a Boat Show from March 17 to April 16. Besides a number of New Jersey exhibitors there will be shown Richardson cruisers, Lyman skiffs and a large display of Chris-Crafts.



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