

**THE EARLY FOUNDING
AND DEVELOPMENT**

of the

**HERRESHOFF MANUFACTURING
COMPANY**

BY

JEANNETTE BROWN HERRESHOFF

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P R E F A C E

This modest little book has not been written in order to give an outline of the family tree of the Herreshoff family, but merely to furnish a brief yet comprehensive account of the several enterprises started and conducted by the seven brothers, grand sons of Charles Frederick Herreshoff who came to America from Germany in 1787, and settled in New York.

History records some account of the Herreshoff Manufacturing Company, and reference thereto can be found in several encyclopedias here and abroad; but I feel that even at this time I am justified in elucidating certain features of what has already been set forth by others whose intimate knowledge appears to me to have been rather meager in several aspects, and, no doubt unintentionally, somewhat one-sided in some directions.

I, as the eldest daughter of the eldest of the seven brothers, having come into possession of numerous papers, documents and credentials appertaining thereto, feel myself motivated to render a more accurate account, not necessarily in exact historical sequence, but in a concise and encompassing manner, and which, with partiality to none and justice to all concerned will, however, reveal that of this galaxy of early day geniuses and inventors of the early period of our nation, James B. Herreshoff stands out like a planet in perihelion.

Jeannette B. Herreshoff.

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A steamboat pilot on the Mississippi once remarked to the writer that it took over three thousand years for man to devise a better boat building plan than that one from which Noah built the ark; but from time to time various styles of vessels were fashioned all over the world where there was transportation by water. The Sampans on Chinese rivers were of one sort, the Triremes which bore the warriors of Carthage were of another sort, the Gondolas around Venice another, and probably the vessel that transported Cleopatra in all her magnificence to her rendezvous with Caesar was as far removed from the ark-type as the Santa Maria was from the Kyak of an Eskimo.

With the invention of steam power and applied to boats the idea of speed came as a concomitant, and the need of certain changes in order to offer less resistance, for example such as better stream-lining, became apparent. Just as Stradivarius had a penchant for making fiddles and in time developed the most resonant violin to delight the ear and charm the soul under the bow sweep

of a Paganini or a Kreisler, so some men have been inclined to boat building and commencing with the construction of a better small boat or skiff, step by step achieved renown by fashioning a vessel that soon created world wide demand.

And this introduces us to the Herreshoff Manufacturing Company. Much has been told and much has been omitted about this Company. The part omitted has to do with the time when the foundations were being laid for the spectacular achievements of which the public was informed from time to time.

Charles Frederick Herreshoff, son of Charles Frederick Herreshoff, Senior, and grandson of John Brown of Providence, Rhode Island, lived in Bristol, Rhode Island with his wife and nine children. James, the eldest of the nine children manifested marked tendencies at an early age for the designing of boats. As a boy, he built a boat for himself, and when the chance came to dispose of it at a profit, would sell it and build another.

The story goes that at the age of ten, not satisfied with the run of things around the parental home where he was visiting, he took a sheet from his bed before break of day and used it as a sail for his row boat to sail to Providence, to be with his two aunts and his uncle John, with whom he lived.

This uncle John took much interest and pride in the running of their farm, in the orchard, and in the growing of rare species of trees and the cultivation of shrubs and flowers. This farm was in



JAMES BROWN HERRESHOFF AS A BOY

the main their summer home, and was situated across the bay from Bristol, on Poppasquash.

All along through the years of his adolescence James built little boats and sold them, and with the cumulative profits paid his way through Brown University. That he was assiduous in his studies is proven by his having surveyed the railroad from Bristol to Providence at the age of nineteen.

In later years, in reminiscing, he said the boats he built as a young man resulted from the interest and guidance of his uncle John, his father's brother, for this uncle was also boat minded, and when passing would pause and make helpful suggestions.

The Inventive Genius

The scholarly and active mind of James Herreshoff went farther than boat building and the instruments and work of a civil engineer.

On my visits to Bristol and Providence I have met people who would tell me about James and his inventions, of his fish oil business on Prudence Island, of his astounding success as a manufacturing chemist, and how much he had done for his family. There is one anecdote they enjoy telling. One cold morning soon after arising they heard a most unusual noise in the distance. Rushing to the windows they saw James whiz by like a meteor on his hot air bicycle an invention of his, fitted with a motor using naphtha and coke for propulsion, and having a gadget for controlling the speed. Since the loud and rapid explosions of his invention frightened the horses he would make his runs before equine traffic started.

This particular morning was very cold and he had wrapped newspapers around the cylinders of the mechanism to facilitate starting. His intention was to run from Bristol to Providence, but at Barrington he realized that the engine was overheating, and being located under the seat he deemed it best to turn back for Bristol, and although he had a device for stopping the machine he feared the over-heated cylinders would ignite the paper, (which it finally did) and thus ruin the bicycle; so he ran it down Hope Street at tremendous speed, across Wally Street and into the water.

James Herreshoff had by then established a laboratory in Providence. In Pennsylvania oil had already been discovered and the use of kerosene was popular, but naphtha, a by-product was not yet in general use. It was extremely cheap and in some places given away free for cartage. James made an exhaustive study of its properties and found it to be free of residuous matter and when ignited would burn without smoke, so he conceived the idea of utilizing it as a power fuel for the propulsion of his bicycle, which idea was adumbrative of the motor cycle of today.

Even DaVinci could not have been more diversified in his talents; certain it is that his technical knowledge and inventive genius did not run in one or two grooves.

In those days in Bristol Harbor the waters froze over in the winter months and skating was a fashionable pastime. The beau-monde from Provi-

dence and Bristol would congregate there in the afternoons, and on moonlit nights—the men in tall silk hats and the women in fashionable attire. Whether the place and the period evolved a Sonja Henie is not within the realm of my knowledge; still, their skating was a very graceful affair, embracing wonderful gyrations and the figure eight and other more intricate designs. To facilitate and aid in the grace and ease of such performances on the ice James invented and manufactured an ankle brace to be used with skates. It met with instant popularity, and even the great Blondin used them to strengthen his ankles for walking on a tight rope across Niagara Falls.

Boat Model Whittling

James had done so well with the boats he built before and during his first college year that his mother urged him to interest his father in resuming and continuing the boat building business. This suggestion appealed agreeably to him, and resulted in more frequent trips away from his laboratory at Providence to his home spot and son and father would sit before the big fire place and whittle models of boats.

Evidently Charles Frederick Herreshoff soon contracted the boat building fever for anon he constructed a boat making house across the street from the home at 142 Hope Street. It was not a large structure for they contemplated building only row and small sail boats. Brother John helped in the construction and finishing of the boats.

C. F. Herreshoff manifested marked ability in the designing of boats which were to be raced in contiguous waters. The trio then built a twenty-six foot yacht and named it Kelpie. When launched it sat on the water lovely as a swan, and in the spring of 1863 James and John sailed her to Cape Cod. On the return trip to Bristol a Mr. Clapham in his boat followed the two brothers and was so delighted with the vessel's performance that he gave them an order for a boat. This first order for a sizeable vessel induced John to send out notices in November 1863 that he was desirous of receiving orders for the building of boats, guaranteeing them as to model and workmanship.

Transcription of the Notice

Bristol, Rhode Island. November 23, 1863

To the Honorable S. P. Chace,

Dear Sir:

I am about starting a shop for building small boats such as vessel tenders, surf boats, and barges or small boats of all description and would first like to know whether I can have orders from you for building.

I wish to know what prices you give for boats of different lengths, say from 20 to 25 feet, and from 25 to 30 feet, or larger.

I think I can give satisfaction as to model and workmanship.

You will oblige me by giving me your earliest attention to this matter.

Very respectfully yours,

John B. Herreshoff.

by

J. A. Herreshoff.

At this juncture the reader should recall that the family of Charles Frederick Herreshoff included nine children; seven were boys. So far in our narrative only James and John have been referred to. At the time of the starting of the boat building enterprise as indicated in John's letter to the Honorable Mr. Chace, Nat was fifteen years old and in school. Some of the years of his schooling was in Boston. After finishing his studies he took a position with the Corliss Engine Company in Providence, Rhode Island, as draftsman, which position he held for many years.

In 1872, while still at the Corliss Engine Company, he addressed a letter to his brother James, from which I quote in part:

Dear James:

I hope you do not think I have forgotten you. My eyes have troubled me a little this winter so that I have not used them much in the evening. I was pleased to receive letters from you, and the sheets with sketches of boats and engines. Evidently John is quite busy this spring building boats, and has one now under construction for a Mr. Thayer, and has orders for several yachts and a few

steam yachts, one being for Professor Agassiz. At Corliss we are very busy.

Your affectionate brother

Nathaniel G. Herreshoff.

Sometimes, in the course of human experience, when the rain-bow looms its brightest it is on the verge of fading. John took on as partner Mr. Dexter Stone, and for reasons not obviously clear to me the partnership did not prosper and the boat building company went into bankruptcy.

A period of depression eventuated for John which endured for several years, and which to an almost distressful degree affected him and his family.

Re-Establishment of John

James Brown Herreshoff, eldest of the nine children, after leaving Brown University had started on a career that, if exhaustively narrated, would constitute a book. He possessed a most active and ingenious mind.

When he was apprised of the bankruptcy of the boat shop he directed his energies and also his resources toward helping brother John, who, unfortunately was blind. But a blind man can carry on measurably through the eye sight of others, and James decided to re-establish him in the boat works.

In 1873 James Herreshoff devised a tubular marine steam boiler, constructed in the form of a bee hive, having coils of iron pipe and activating

with superheated steam. For this invention James was issued a patent.

It was tested out in a specially built forty eight foot launch which registered a speed of fifteen miles per hour. James related the story that government engineers who came to inspect this new coil boiler, and not seeing certain gadgets usually employed and considered necessary for safety, decided to get out of the boat. "Gentlemen," James interjected in an authoritative tone of voice, "Be seated;" and with that remark he applied the power to the boat, and to the surprise and consternation of the government engineers they were seated as they shot forward over the foaming bosom of the deep with such surprising speed and faultless operation of the power plant and behavior of the launch that the trial trip was pronounced an eminent success, and resulted in an order from the United States Navy for The First Torpedo Boat. Both the coil boiler and the hull of the boat were constructed according to the drafted designs of James B. Herreshoff.

The Impact of Genius

According to Emerson, though your home be the forest, the building of a better mouse trap will cause the world to make a beaten pathway to your door.

That boat having made the spectacular speed of twenty-one miles per hour, was the fastest of its size in the world, and won for itself the name "LIGHTNING".

The safety coil boiler was acclaimed in yachting circles. Orders immediately poured in from various parts of the world; from France, from Russia, from England and South America. There was an order for a Gunboat from Spain. The U. S. government ordered a fast Revenue cutter to catch smugglers on the coast of Louisiana where a great deal of that business was done. One of the orders from the government was for a steam lorry or wagon to carry the mail between places out west. Another order was for a fog signal apparatus—a little house like a caboose containing, also, a Coil-boiler and all its fixings to be put on the deck of a Light ship. The General of the Life Saving Service gave an order to build a steam launch to be used in their service. The little shop also was swamped with other orders and anon burgeoned forth into a boat building enterprise of magnitude for those days. Thus Bristol, Rhode Island became noted as the home of fast boats and took precedence over any other spot in the world for making a specialty of the fastest steam propelled and sailing crafts the world over.

The Intertwining Genius of James

Some time later John's wife wrote to James in Brooklyn, New York, where James was teaching and working with his brother Francis, and aiding him to get established in the Nichols Chemical Company, which was to become later, under the guidance of James' son, the largest copper refining company of its time.

John's wife wrote that John had brought the boat "Lightning" from Providence with ten men on board in forty-seven minutes. She then addressed James' wife as follows: "I miss your coming over to see me very much—there is no one to take your place."

Close-ups of James

James had been brought up principally by his two aunts and uncle, sisters and brother on the father's side of the family tree. He lived with them until he was twenty-one years of age, in the Brown house on Power Street in Providence, Rhode Island. The summers were spent on their Poppasquash farm across the bay from Bristol.

He received unusual training from his two aunts and his uncle John in the arts, music and philosophy, and in the sciences from Brown University. He sang with such expression that he could move his audience either to smiles or to tears. His oil paintings were much admired. He also excelled in the greatest of all arts—the art of conversation. He was friendly and much in demand for social affairs.

While still at the University he became an assistant under Professor Horsford, which position he left to become chief chemist and superintendent of the Rumford Chemical Works where he invented a new baking powder. His active mind reaching ever up and his genius ever out, he left the Rumford Company and established himself as a manufacturing chemist, a business in which he continued

for twelve years. He also acted as research department of several industrial firms. The information and inventions developed were turned over to the respective firms, and patented by them for which he received a handsome fee.

While James was at his work in Providence his mother wrote to him and I quote from the letter dated February 13th, 1859:

My Dear Son James:

I wish Charlie could be in your house under the influence of Mrs. Wittier (land lady) and yourself. Could you not find a corner in the house where he might sleep? His smoking would occupy a small part of his time, could be done out of your sight and of the reach of your olfactories. (James did not smoke and could not stand it.) "I have allowed myself," she continues, "to be smoked to bacon rather than to be the cause of driving my husband and son into the kitchen. Up went the window this afternoon after your father had finished smoking and stepped out and in a few minutes the air was pure.

You may do a great deal of good in this way. Charlie may be benefitted more than you are aware by your example and the good sense and refinement of Mrs. Wittier.

Remember, my dear son, you cannot separate faith and works. If you cannot or will not receive him, interest yourself in his boarding house. Perhaps Mr. Barney would take him." (Unquote)

I should like to insert here another letter written later and which I quote in part:

August 4th, 1871

My Dear Son:

Your very welcome letter was received this morning. You cannot think how anxious we have been about your thinking that you might be sick. I wrote you a long letter in answer to the one you wrote me. It seems I wrote you about Julian, (son) and the dreadful mistake in having his eyes touched—the terrible injury that had been done him—how disfigured, and of the loss of sight. In that letter I recommended him to your care and kind interest if I should be taken from him. (Unquote).

Every man not a Genius

The head of the family, the pater familia, never seemed to care for business. He enjoyed his boat, his friends, and hunting. But as the nine children were growing up pressure was borne on the father to take some sort of a position lest the wolf of want approach the home, and the mother looked to James, the first-born, for help. One of the many cousins in Providence, in writing to James, suggested that the father might like a seat in the Legislature.

The pressure on all sides to get the father into something that he might be interested in was so pronounced that years afterwards James would often refer to that period in his life and say: "Why, father did not really have to work, you know. My father was born a gentleman, with properties inherited."

However, to endeavor to interest as well as to help his father, James evolved, in 1861, a novel oil press, and with it began the manufacturing of fish oil, fertilizer, and a substance for dyes.

This newly invented process was patented, and with this they were able to carry on a very large and steadily expanding business. But alas and alack, the father proved not to have the measure of genius to cope with the prospering enterprise, and as example of proof I here insert a letter from the father—C. F. Herreshoff—to his son in Providence.

Bristol, March 15th 1863

Dear James:

John Burns (foreman) is here and is dissatisfied with his doings partly on account of the condition of the guano. He expects the schooner from Newport to-morrow or next day and proposes to have the barrels which she has on board carried over to Prudence. No doubt you had better go down if you can leave to-morrow and settle his difficulties.

Charles F. Herreshoff, Sr.

Genius versus Talent

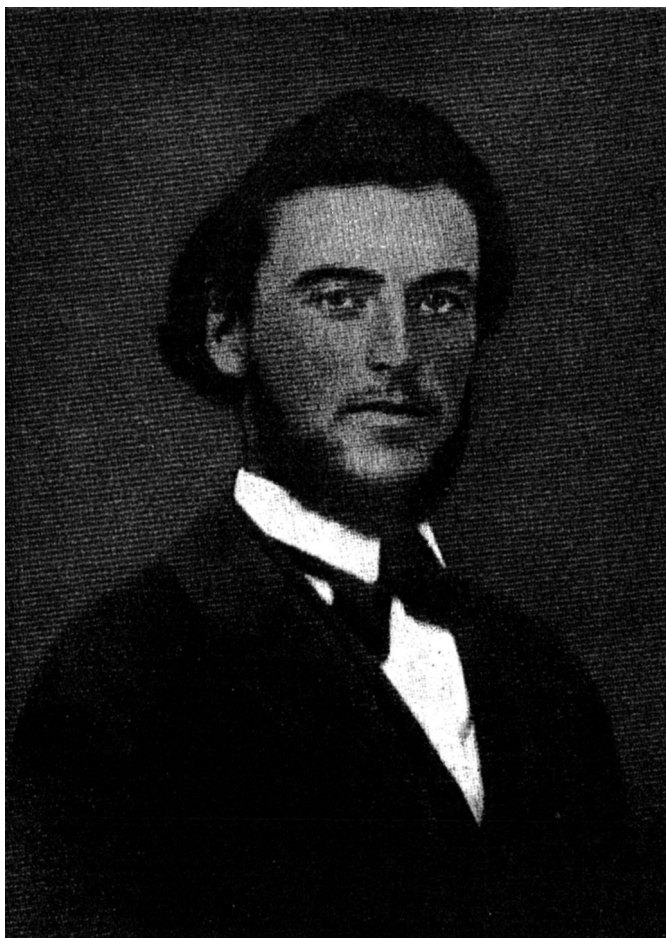
According to James, his father was born a gentleman; it is doubtful if any man truly was on the order of a gentleman, and was without a generous quota of talent. But talent is one thing and genius quite another, and Dickens remarked, "Once a gentleman, always a gentleman." So

even the smell of guano has little appeal to the nostrils of a gentleman. It is on file among letters I possess or have had access to that James paid in full some debts incurred by the father. One bill for groceries embracing a period of several years, beginning in 1849, footed up to \$2000.00, was paid by some of his first earnings. But James had in him the elements so finely mixed that a matter of a few thousand dollars put no damper on the affection which he had for his father, for Charles F. Herreshoff was a nice sort of man—a genial companion, and a true sportsman.

Among his many friends were General Burnside, who had an estate in Bristol; and General Nathaniel Green, near by on the Island of Rhode Island. Yes, and General Grant used to come often for a visit even when he was President, especially when General Burnside was giving a clam bake on his estate. In the fall they all would go hunting over on Poppasquash with C. F. Herreshoff, Jr., one of the sons.

But to return to the fish oil industry which appears to have stumped the father. The demand for the products turned out from fish oil was accelerating from day to day, and James had been keeping tab on it. To his ears seemed to come a cry on the order of "come over into Macedonia," as the Bible has it.

James decided to give up his fine position at the Rumford Chemical Company and take a whirl at the fish oil business over on Prudence Island. But profitable and promising as it was,



JAMES BROWN HERRESHOFF AS A YOUNG MAN

the nature of it caused him to envision something more. He enlarged his own business as a manufacturing chemist which he had started simultaneously with his fish oil business and one of his clients was the Rumford Chemical Co. where he had been chief chemist and superintendent. James Herreshoff was a man who was master of his destiny.

His headquarters as manufacturing chemist was in Providence where he was socially prominent. Among his intimate friends were his cousins Governor Francis and his two daughters Elizabeth and Sally.

At that time Narragansett Bay was virtually choked with fish! It was possible to fetch in a full catch in jig time. He would take his boat out to where the fishing boats were in wait for him and James had but to put a dollar bill on the end of a pole and pass it over to one of the boats, and the Master would fill up James' boat.

His boat, The Sprite, was the fastest around, and enabled him to return very early in the day to his fish works.

His men unloaded the fish in the vats and then steamed them. The resulting water contained albumen which he used as a base for dyes. This process he patented. The cooked fish were then put into a press of his own design and the oil extracted. The oil, purified and deodorized by his own secret process was put in barrels and shipped all over the world. It was used principally for softening and preserving leather. The residue was also put in barrels and shipped as guano for ferti-

lizer. The demand for it was greatest in the New England area, in the state of New York, and throughout the south. Orders called not for small shipments but for tons and tons of fish oil, guano, and dyes, a by-product manufactured by his chemical plant in Providence. He had two buildings in Providence for his chemical works, and one for headquarters for his inventions. He marketed, in addition, dyes, paints, baking powder, cream of tartar, tooth powder, and pharmaceutical products; also a tension regulator for sewing machines; an apparatus for making nitric and muriatic acids; a sounding device, and a device for measuring specific heat of gases. Some years later a row-cycle and a row-tricycle were invented by him and proved so successful that they were copied in many forms.

The articles produced were of such high standard that they brought top prices, and always he held his prices in even line with market quotations furnished him by his broker. The volume of his several enterprises was so enormous for those times that he told us after the civil war, during the reconstruction period he netted \$500,000 annually. He accumulated a large fortune and was rated a very wealthy man for those days.

James discovered that containers he needed could not be bought because they were being used to transport coal-oil to England and that England must be spending huge sums here. James therefore figured that the government of the United States, which was then in economic straits, due to

the exhaustive strain of the country's resources during the civil war, would soon be on its feet financially. He seized upon this advanced idea to invest advantageously his fortune that he was rapidly accumulating. One of these investments was United States gold bonds bought at a fraction of par and which later he was to sell at many times the purchase price. Sooner or later most of his fortune went to his brothers and sisters.

Continuing with John in Boat Works

From available documents, letters etc., it appears that it was at this particular period of his life that he re-established his blind brother John in the boat business with the invention of the coil boiler.

In the fall of 1876 James went south to help operate and instruct owners in the handling of boats which had been ordered from John and shipped south from the works at Bristol.

A letter from his aunt Anna to James' wife, written to Jacksonville, Florida, was dated 1876. From it I quote in part:

My Dear Jane:

Your note came this morning before breakfast, and it cheered me very much. I think often of your delightful visit here last fall. James was charming; he was so cheerful and active; there seemed new life all around. But O, the times they have on the ice, for the harbor is frozen over. Charley made a large ice boat, and Nat put his

French sails on his, and did they not fly! All day long, without their dinner they rushed to and fro like mad creatures from another planet.

I must find room to say I am truly your very affectionate aunt,

Anna F. Herreshoff.

In 1878 James went to England for the same purpose. I quote from a letter James sent from London:

"Last week I spent two days at Erith with Mr. Darnell teaching him to run his steam yacht with the coil boiler which John had shipped over to him. The boat went finely and was the admiration of all. We had no trouble keeping the steam steady at 125 pounds pressure.

Mr. Darnell has proved himself an apt scholar and, with a boy to steer, has been several times up to London Bridge, 16 miles distant.

In the evenings up to midnight the nightingales sing in Erith." (Unquote).

James in London

While in London, where James was for a period taking care of the boats and engines sent over by his brother John, he used for the comfort of his young child a little folding baby carriage convenient for traveling; a fore-runner of the many thousands now in use. He had invented it some years previously. One day it was announced that Queen Victoria was to drive through the streets in all the

pomp and glory of former times. The beautiful coach and horses with her body guards and retinue of servants heralded her and a long line brought up the rear. The English people love these occasions and usually shut up shop and make it a holiday. Crowds lined the streets and it was a most festive affair with the Queen smiling and bowing to her subjects. Not having experienced a parade of this sort James, his wife, and the little child in the folding baby carriage were walking and mingling with the crowd. Suddenly, just as the coach came along the parade stopped, and one of the body guards came over to James, saluted, and said to him, "Pardon, Sir, Her Royal Highness, the Queen, wishes to know if the little carriage is some of your handiwork?" "O yes, it is," replied James, "and the baby is mine also;" and the Queen smiled and bowed and then moved on.

"Ideas must work through the brains and the arms of good and brave men, or they are no better than dreams." (Emerson)

James had ever in mind the bringing up to the highest standard the boat work at Bristol.

While abroad he studied all materials as applied to the construction of yachts, and their furnishings within. In several respects the English builders excelled at that time.

He went over to France, remained long enough at Nice to build a boat for a friend, all complete

for cruising. Even a pianoforte was installed. The vessel won every race in which it was entered.

The Land of Frederick the Great

While in Europe James took the opportunity to visit Germany, locate the exact birth place, and acquire family tree data in connection with his grandfather, C. F. Herreshoff, who came to America after the Revolutionary war. He found much data and even the college records of his grandfather at Minden,—a very pretty city.

While there James received a letter from his aunt Anna, which I quote in part:

Dear James:

To think of you being in Prussia, the country of Frederick the Great, and country of your grandfather—the latter you know, was an officer of the former—and therefore a noble.

I understood that princes were all educated in the same school. I have a silver pin case with a crown upon it given to your grandfather by a fellow student.

O, dear James, I long to see you; this is one idea that is not stiff with cold.

Good bye my dear little boy." (Unquote)

Brother Nat

Nat's disposition was agreeable but slightly at variance with that of the other six, and although he also was boat minded he appears to have leaned

to the matter of a simpler aquatic contraption what was known as a Catamaran. He seems to have thought the building of them would prove exceptionally profitable, and although his brothers had pressed him to quit Corliss and join them in their now fast growing business, he appears to have contemplated going on his own in the construction of Catamarans modified for smooth water, for I have an advertisement "feeler" which he sent out, which I here reprint:

THE NEW ERA IN YACHTING

The Patent Catamaran, or Double Hulled Boat

Having, during the season of 1876, thoroughly tested the sea-going qualities of the "AMARYLLIS," whose performances at the Centennial Regatta in New York Harbor, in June, 1876, will be well remembered, I now take pleasure in informing the lovers of aquatic sports that I am prepared to furnish them with a new and valuable accession to their resources. I have made many improvements in the details, which are intended to give extra security and strength, at the same time preserving lightness. For my several improvements, there has been a patent allowed me, dated April 10, 1877.

I propose to build three sizes of the Catamaran, or Double Boat, namely:—20 feet long, 25 and 32 feet, and other sizes if desired. The smallest size will carry 3 or 4 persons, the second size 5 or 6, and the third 7 or 8; but the greatest speed is always obtained with the fewest number on board. With a good beam wind, 14, 16, and 20

miles per hour, can be obtained with each size respectively. They will be completely rigged, anchor, cable, and storm jib, &c, everything ready for instant use, and throughout the best material and workmanship is guaranteed. The catamaran is notably fast, safe and comfortable. No careening, no wetting of jackets, no shifting of ballast. In short, sailing in them is the perfection of enjoyment.

I will also furnish Boats of the ordinary description, with particular reference to speed and accommodation, and excellence of material and general equipment combined. I also hold myself in readiness for consultation in all matters in Naval Engineering, and for furnishing models, drawings, specifications, &c, for Yachts and other sailing vessels

NATHANIEL G. HERRESHOFF.

Bristol, R. I., May 1st, 1877.

However, he subsequently passed up the idea, it seems, for he joined the brothers in their lucrative boat works.

It was soon found that he was not able to do the work his brothers had planned for him. James, who was in Europe, invited him to come over for further study under his guidance. Also it was hoped that the trip would be beneficial to his health. We have a letter that Nat wrote to James some years later thanking him for his generosity that made his trip to Europe possible.

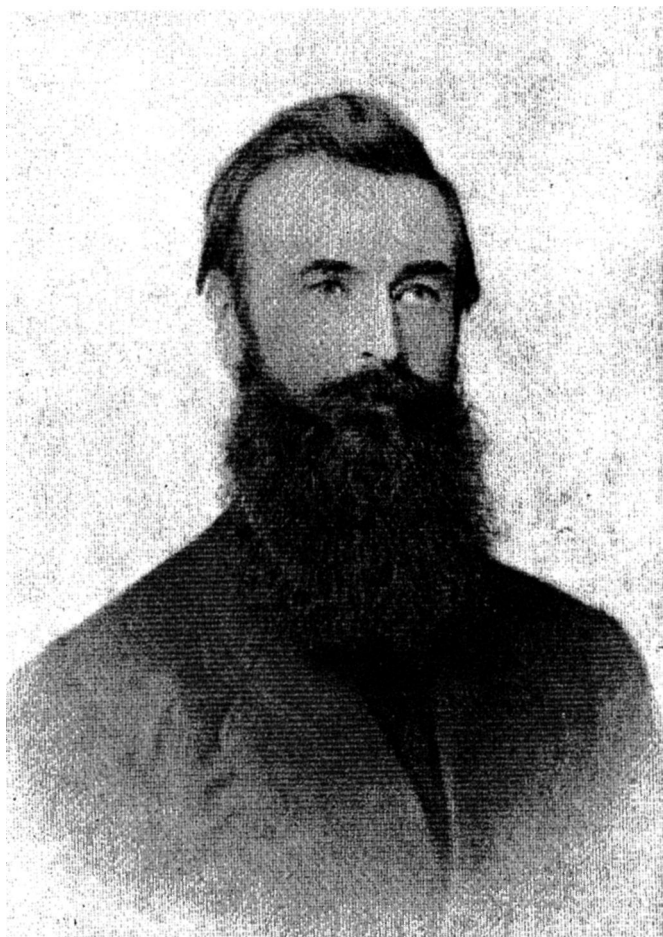
It is a most remarkable fact appropriate to insert at this juncture, that his blind brother John,

while unable to whittle a boat model to a nicety, could take such a whittled model and by his delicate sense of touch, quickly determine what the cost would come to for the construction of a boat of that model when length etc., was given him.

It appears that whittling out the model of a hull with some soft wood was in practice at the boat works, but the draftsman had much to do to design all the details. So Nat attended to the drawing, John to closely approximating the cost and selling price and other ins and outs of the business, while others did the building. Expert ship carpenters were sought in the boat yards of England, Ireland and Scotland and brought over, and James was the guiding spirit of the works. James' trip and stay over-seas, as hereinbefore referred to approximated a period of six years. When he returned from Europe in 1883 he was met in New York by his father and two of his brothers, Nat and John, who brought him back to Bristol, Rhode Island in one of their recently built yachts.

With added knowledge of yacht construction acquired by close study of every feature pertaining thereto in England, he set about to eliminate any non-essential, and apply every possible means to raise still higher the boat building standard of the Bristol works, which even by then had attained to international renown.

He perfected an anti-fouling paint; planned a combination of materials which would result in lightness without sacrificing strength; and even evolved a new design which contributed markedly



JAMES BROWN HERRESHOFF IN ADVANCE YEARS

to speed; it was a pronounced departure from the tubby type, to that of a more streamlined model; and this augmented the reputation of the boat works not only in this country but also abroad.

Accidents oft suggest improvements

Cicero once remarked that "to stumble twice against the same stone is a disgrace." It was during this period that an accident occurred to one of the steam propelled crafts which had been built and outfitted with the coil boiler. Nat had altered the shape of the coil boiler against the better judgement of James and the rest of his associates, and added certain gadgets which proved to take the safety out of the safety boiler, for an explosion occurred which scalded one man to death.

It is thought that it was due to this that James decided to desist from the building of steam driven craft, and confine their operations to the construction of sailing vessels; and now only the most consummate skill, the most faultless designing, and the greatest care and scruples were brought into play; such characteristics that later elicited the statement from Lord Brassy that there was "absence of skimping and perfection of workmanship when that eminent naval architect, James Brown Herreshoff was bossing the job."

New Departure in Keel Fashioning

One winter following the transition in boat building I recall James showing me a new boat model. The model had two pointed ends with a

long strip of something extending down from the middle with a lump of lead on the end of it. He termed it a "fin keel," and due to its length could not float it in the bath tub. It needed more depth of water. So he took it down to the harbor, only to find that the water had frozen over. He got a hatchet and hacked and broke away enough ice to make ample room for floating it, and for drawing it through the water to determine its poise and balance, and how it re-acted to bow waves. Its behaviour was so faultless that he took it to his brother Nat, suggesting that he draw the design and to build a boat accordingly. It was such a revolutionary departure from the customary keel style that Nat ignored it.

While it is obvious from the records that James was the guiding spirit and mainstay of the Herreshoff boat concern, yet his nature was of such benign temper that it inhibited him even from showing a semblance of over-lording. So the winter went, the summer circled by on the wheels of time, and the next winter period announced its presence with arctic blasts and sleet and snow and waters quiescent under a blanket of ice.

Then James again brought forth his pet model, again sought to interest Nat in its construction, and again Nat failed to evince any interest in it.

As a last resort James submitted the model to his blind brother John. Blind though he was but with fingers so extremely sensitive, John took the model in his hands, drew his deft fingers along its contour, considered its every point and revolution-

ary feature then turned to Nat and said. "Nat, we will build the boat." Immediately he computed proper dimensions, and forthwith the craftsmen were applied to its construction. When launched, the craft acquitted itself beyond all expectations.

Well I remember standing on the wharf with James, watching Nat sail it back and forth in Bristol Harbor, elated as a child with a new toy. The craft's length which was submerged in the water was so much less than its complete over-all length that it seemed to be capable of turning around instantly, answering quickly to the least turn of helm.

In the boat works, all the while it was under construction it was referred to as "The Dilemma." I remember overhearing some one ask James what was the meaning of the word "dilemma"? "O," said he, "an ass between two bundles of hay"! This reply indicates that James possessed humor in his make-up to excite the resibilities of a person, while his statement in regard to the repertoire of the nightingale at Erith, England proves that he had poetry in his soul.

It should be noted that although John favored the building of the new fangled craft, and Nat came to accord with John and James, before the actual work on the new style of keel was started and while the ways were being prepared for the new style of craft, a keel approximating the one to be fashioned was hurriedly made and attached to the "Sprite", and subsequently to the "Jane", two boats privately owned by James, and both boats

proved the merits of the new design of "fin keel". James personally bore the expense of the try-outs; and this new departure in wind propelled craft started a long line of prize winners, made front page news in papers and periodicals far and wide, resulted in a flood of orders from yachtsmen here and abroad, augmented still more the fame of the Bristol works, and fortune of the boat firm. James found it necessary for many years to spend at least half a day orienting Nat with new ideas being introduced at the boat works not only in regard to shape of hull but with the building of same. Thus once again had James Herreshoff triumphed.

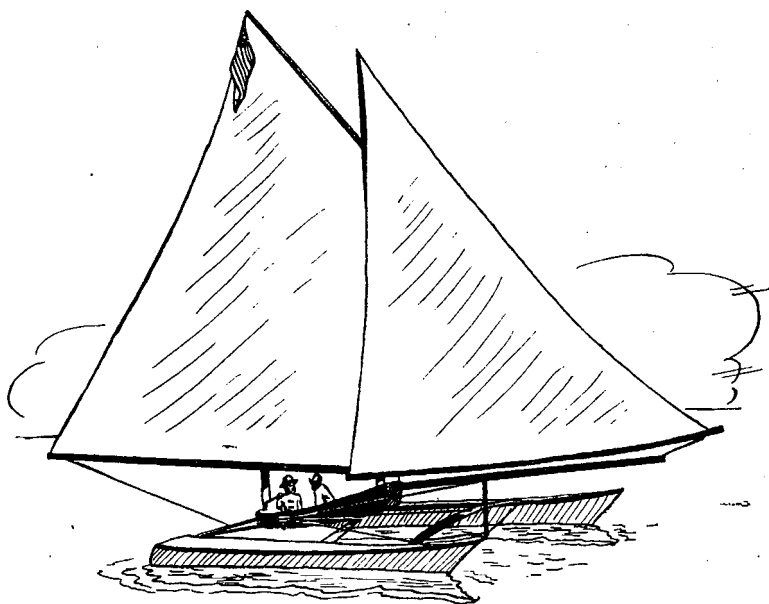
That fame and fortune are not capable of filling full and to overflowing what is called the cup of happiness is apparent from the mental attitude of Nat as his listening ears sensed the rustle of Azrael's wings.

About eight months before Nathaniel G. Herreshoff died I saw him for the last time alive sitting by his bed. He did not seem to be sick. His body was not shrunken or wasted as of an old man nearing death.

After all the fame, and the glory, and the wealth that poured into the coffers of the Herreshoff Manufacturing Company he said to me just before I left, "I wish James had not hung over my drafting board as he did suggesting this or that idea; then I would have been left with my patented Catamaran which I liked very much, and which was mine and mine alone."

(The Catamaran referred to was of course different, but the definition of the word is from the Tamil tongue, meaning a kind of float or raft used as a substitute for a surf boat in the East Indies, and consisting usually of three pieces of wood lashed together, the middle piece being longer and having one end turned up in the form of a bow. Nat's reference to it suggests that he must have been thinking of Gray's Elogy, in which he says, "The paths of glory lead but to the grave.")

While John was always appreciative, he said many times that he enjoyed horses more than yachts.



CATAMARAN

APPENDIX

(From "The Riverdale News" New York City, of June 1929)

"A Master of Motion"

"Over-looking the Hackett Woods, in Riverdale, is the most charming of houses, high on a slope, and reached by a narrow flight of steps leading direct to an uncovered veranda which seems to have been built by the side of a cool pool.

At present, gold fish are at home in the pool, but some day it may be filled in and become a sunken garden—its possibilities are so varied. I mention these details, not because they belong to the story, but because I want to always remember them—the sunlight on the water, the honeysuckle on the stone coping, and the charming little balcony over-looking it all. But above all, I can still see the impressive white-clad figure of a man, upon whom the weight of years has fallen, who suddenly came into the picture, and who still looked out upon the world with clear blue eyes, in which there burned the fire of genius.

Snow white locks, thick and luxuriant, were carefully brushed back from a noble forehead. He was immaculate in dress and in grooming. His daughters guided him to a comfortable chair—their father, 95 years of age—one of America's pioneers in invention, a typical New Englander of another day.

It was not a legend to which I listened as I sat beside him. Much that I heard can be found in

our national encyclopedias, but cold print can never record just the picture that he made, his daughters beside him, the sunlight falling about him—and the Hackett Woods stretching far to the South. Sometimes he imagines that they are New England.

In this Riverdale setting the inventor, James Brown Herreshoff, is rounding out the long life which began in Bristol, Rhode Island, on March 18, 1834. His fame had circled the world, but his travels were more limited; yet he had seen "the white cliffs of Dover," the country of the immortal Shakespeare, the country of Balzac and of Victor Hugo, and the birth place of his grandfather and the one-time empire of Frederick the Great. He had lived for a while at Coronado, in California, after his unprecedented successes, but now was spending the sunset time of his life in Riverdale, in company with a son and two daughters, his wife having preceded him by several years to those realms in some blue yonder, in some universe out of space and time.

TESTIMONIALS

The following are some of the many testimonials in our possession:—Extract from the Official Report from the Committee who were appointed to examine the Herreshoff Safety Coil Boiler:

The advantages of this boiler are, 1st, Safety: The pipe forming the Coil, and the standing pipe are the only parts subjects to pressure, and these are so small in diameter, that it would require a

very great press to burst them, and if an explosion did occur it would do no more damage than the bursting of a tube in a tubular boiler.

2nd. Lightness: While this boiler is lighter, per se, than a tubular boiler of the same power, the weight of the water is almost entirely gotten ride of.

3rd. A much smaller cylinder may be used for the same power of engine, owing to the greater pressure of steam that can be carried with safety.

4th. Economy, and the great rapidity with which steam can be generated from cold water.

F. C. DADE,

Chief Engineer, U. S. N.

W. H. LYONS,

Master Machinist

SAM. GRAGG,

Passed Ass't Engineer U.S.N.

Commo. T. H. STEVENS, U.S.N.,

Comd't Navy Yard, Norfolk, Va.

Approved, T. H. Stevens, Commo. and Comm'dt.

Mr. Herreshoff:

Dear Sir:—Thinking it may be of service to you, I now write, what I have so often told you, that I think my boat the "Gem," that you built for me and delivered in March, 1875, a perfect success. She has been used a great deal during this time in very salt water (for salt deposits much sooner with us than with you) and I think the boiler and engine are in as good order now as the day

they left your shop. I am more than pleased with her and am sure that no one will ever be disappointed who owns one of your boats. Even with the improvements you have made to your engine since you built my boat, I feel perfectly satisfied with mine.

Should you at any time wish to refer any one to me please do so at your pleasure, I shall be pleased to answer any questions that a purchaser might feel like asking.

Wishing you great success with your boats, I remain,

Yours very truly,

GEORGE L. APPLETON,

1 1-2 A. & G. R. R., Bryan County, Ga.

October 16th, 1876

99 Maiden Lane, New York, Nov. 21st, 1876
Herreshoff Manufacturing Co.:

GENTLEMEN:—In regard to your enquiry concerning the Coil Boiler, set up in our works last June, we would say that in every respect it has fulfilled all your representations.

Although placed in one of the most difficult positions possible, where the amount of steam consumed varies greatly, almost hourly, it has always kept a perfectly even pressure. We also take pleasure in saying that its saving of coal over our horizontal flue boilers has been very marked. We would be happy to answer any enquiries concern-

ing it, and strongly recommend it to any one wanting a durable, safe and economical boiler.

Very truly yours,

G. H. NICHOLS & CO.,

Laurel Hill Chemical Works.

New York, Feb. 17th, 1877

J. B. Herreshoff:

Dear Sir:—The gentleman's name who wants the "Fleche" is Conners, I told him what I thought to be the truth about the boat, that there cannot be a boat built better than the "Fleche." For speed there was nothing around here could beat her of her size, the last time I used her, we went from Flushing to New York in 45 minutes. I like the "Viola" better, because she has cabins that are comfortable, either in cold or warm weather, and she works like a charm; we have made better time with her than we expected we could from your statement. You promised that I could get about 10 to 12 miles out of her. Last Thanksgiving-day I left Elizabethport at 5 P. M., arrived at Flushing at 7 P.M. which was equivalent to 15 miles per hour. I have taken the machinery all out for the purpose of nickle-plating all the bright parts. I found that the bearings were all smooth and in good condition.

I have had the management of fine machinery for over thirty years, and never saw any better work in the fitting of machinery than is in the

"Viola." I think your patent boiler is a great improvement over the tube-boilers; I am satisfied there is no such thing as exploding them; they are much more economical in the way of fuel and will outlast three of the old style, and are easily managed.

Yours respectfully,

VIRGIL PRICE

Form	11.	Albert Mines
Laurel Hill Chemical Works		Capleton, P.Q.
Laurel Hill, L. I.		Canada
G. H. Nichols		
W. H. Nichols		

Laurel Hill Smelting Works
G.H. Nichols & Co.
Main Office, 41 Cedar Street, N. Y.
Laurel Hill, L.I., Dec. 20th, 1889

My dear bro. James:

You will be interested to know that there arrived in Bristol this week or last week a tank car load of oil of vitriol from our Canada works.

In my younger days when I used to read your "big" works in chemistry and play ball on the common, I little thought that at this later period of my life I should be making acid in the wilds of Canada and sending the same to my native town, and home of my boyhood.

Had it not been for your kindness during my college days, this remarkable circumstance might never have come about.

This acid is to be used in taking cloth off of old rubber shoes at the rubber works.

Your aff'c't bro,
Francis.

(Clipping from Providence, R.I. newspaper, late Spring of 1876)

A REMARKABLE BOAT

First Trial Trip of the Herreshoff Torpedo Steamer at Bristol

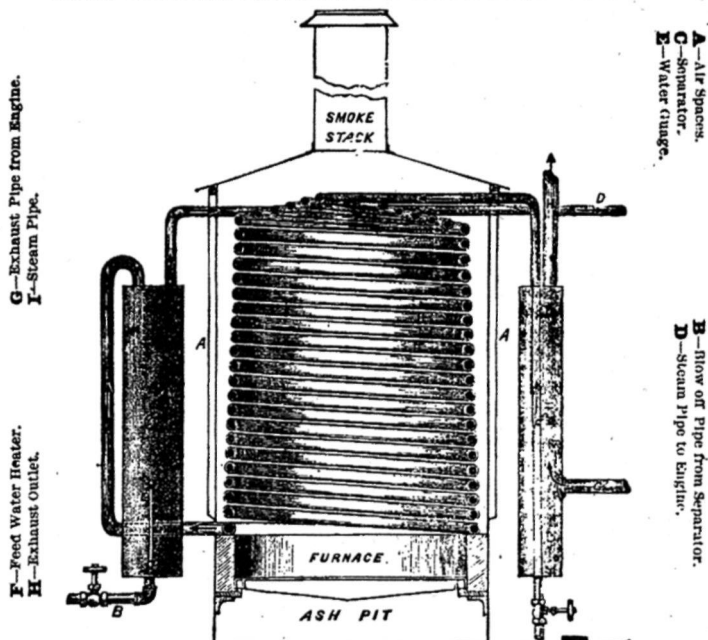
Since those summer days in 1875 when the little "Vision" appeared in Providence harbor, and astonished every one by a speed of fifteen miles an hour, considerable public attention has been attracted to the Herreshoff Safety Coil Boiler. Government officials became interested, and last fall a contract was made with the Herreshoff Manufacturing Co., of Bristol, to build an experimental boat for the Newport Torpedo Station, one of the conditions of the contract being that the boat should, before delivery to the government, run nineteen miles within one hour. So remarkable a condition excited curiosity, and a good deal of doubt was expressed as to the possibility of its fulfillment. The fastest boat of this class, known as "dispatch boats," that has hitherto been built, was by the noted builder Thornycraft of England, and her best record was 18 1/4 miles in an hour. So that Mr. Herreshoff, to fulfill his contract, must build the fastest boat of her size in the world. On Wed-

Herreshoff Manufacturing Co.,

BRISTOL, R. I.,

BUILDERS OF

The Herreshoff Patent Safety Coil Boilers, Portable and Yacht Engines, Steam Yachts and Launches, Propeller Screws, Pumps, &c.



G—Exhaust Pipe from Engine.
I—Steam Pipe.

F—Feed Water Heater.
H—Exhaust Outlet.

A—Air Spacers.
C—Separator.
E—Water Discharge.

B—Flow of Pipe from Separator.
D—Steam Pipe to Engine.

JOHN B. HERRESHOFF, AGENT,
9, 11, 13 & 15 Summer Street, Bristol, R. I.

THE SAFETY COIL BOILER

nesday of last week she was launched, and from the results of the trial trip made on Friday, there is excellent reason to suppose that he has accomplished the task.

The boat, which as yet has no other name than the "torpedo boat," is 57 feet long by 6 feet wide, and about 3 feet deep. Her model is the result of a very interesting and beautiful series of practical experiments carried on by the Messrs. Herreshoff last fall, to determine the build most certain to combine the highest degrees of lightness, strength and stiffness, with the least amount of displacement and resistance to the water. Her lines are very long, the bearing surface running unusually far forward and aft; her bottom smooth and round, and her stem and stern both sharp. She is decked over for a distance of about eleven feet from both ends, and the washboards midships rise from about an inch inside the gunwale, to 7 or 8 inches. A large double safety coil boiler with double jackets (the outside one and the funnel being of brass), occupies nearly the whole width of the boat; and just aft of this is the engine, a double cylinder, also built at the Herreshoff works. The diameter of each cylinder is about 4 1/2 inches, and the length of stroke about twelve inches. The shaft is of forged steel, brass encased, some thirty feet long, and the screw is of bronze metal, with two blades, and set aft of the rudder, in the Thornycraft fashion. She is steered by a wheel placed in the bow, and handles remarkably easy.

Although the engines were started and the boat run a few minutes Thursday afternoon, no tests were made or time taken, the object being merely to see that every thing was in its proper place and in working order. Friday morning at ten minutes past eleven the fires were lighted, and at twenty minutes past a start was made, with 90 pounds pressure of steam. Mr. John B. Herreshoff handled the machinery, a Providence gentleman took the wheel, and the foreman of Mr. Herreshoff's engine shop and a fireman, completed the party. The harbor was quite smooth, though a southwest wind brought in a rain squall, which added nothing either to the speed of the boat or the pleasure of the party. Runs were made from various points in the harbor, and the time carefully noted by two of the party, whose figures agreed within a few seconds. After the return, the distances were picked out from a U. S. Coast Survey map, and may therefore be taken as correct.

The results of the trip may be thus stated: Time for a round trip of $6\frac{1}{2}$ miles windward and leeward, and including two long turns, 23 minutes; time for $4\frac{1}{4}$ miles with one turn, 19 min. 30 sec.; time for 3 miles to windward without turn, 10 min. 30 sec; fastest time of the trip, $1\frac{3}{4}$ miles in 5 min. 30 sec.; and average of 19.35 miles per hour. Highest pressure of steam 120 pounds. Lowest pressure, 55 pounds. Average, not over 85 lbs., Westmoreland coal used. When it is considered that this was the first action of new machinery, that the steam was not above half the average

working pressure for which the boiler is intended, and that the trip was made in a sharp rain squall most of the time, it will be seen that the results of this preliminary trial afford good grounds for the belief that the contract will be fulfilled, and that to Mr. Herreshoff will belong the credit of building the fastest boat of her size in the world.

In a short time the last official inspection and the contract trial by the Government Board, will be made. But before that time Mr. Herreshoff intends bringing the boat to Providence and affording those interested an opportunity to inspect her and witness her remarkable speed. Already suggestions are made that this boat will be but the first of a series, and should the decision of the inspecting board be favorable, Mr. H. will unquestionably have as much work on his hands for the year to come, as he can well attend to.

This shows that with the aid of a fireman to shovel coal and with someone to steer John B. Herreshoff, though blind, was able to handle the machinery by its feel and vibrations,—so simple and safe was the coil boiler yet so strong and efficient.

**An Episode from a letter written to James by his
mother in the early seventies in which
she mentions her husband and
the other eight children**

If you have had any news from Bristol you no doubt know of the alarm we had on Monday.

Nat had been ailing since Thursday night in Providence and was quite sick with cold and fever. His kind landlady did all she could for him and gave him hot composition to drink. He was at Corliss's the next afternoon and Saturday morning, at his work, and felt quite improved; but when he found himself late for the cars to Bristol, he hurried so very much that in getting into them he felt he had surfeited his blood and, after a while, he felt chilled through. He was quite feverish that night; the next day, Sunday, he went to Poppasquash to see Charlie and at noon broke out with an eruption on the face, chest and arms. Annie (a friend) was here and made a bed, Sunday night, for him in your room: She gave him a dose of oil and put a settee in for me—Strange to say that when Lewis was so bent in sleeping with him at Carrie's Saturday night I said, "who ever heard of such a thing when a person is threatened with fever and who knows but he is coming down with smallpox." On Monday morning Lewis called in Dr. Drury and he pronounced it Varioloid.

Such a tumult and scattering there was in the house. Cousin Amasa in Providence came down to get Julian's clothes for Julian was visiting him. I sent clothes to Francis not knowing how long he might be kept away. Sadie, (Johnny's wife) was in great alarm and packed baby and baggage for Boston where she still is. John was away on business. Sally was next door with her sister Carrie. Letters and telegrams went around to have everyone, who had seen Nat, vaccinated. Professor

Appleton and cousin Charlie Eaton aided the doctor and had everyone in their homes vaccinated. The poor maids, Bridget and Ellen were in the greatest alarm,—pale as ashes. They packed their trunks, got them out of the house, and left us. Bridget went to Massachusetts to visit her brother but Ellen came back in two days to stay.

John Wilson was stationed here by the town, all the while, in front of the house to prevent anyone from going out or coming in and to do our errands. — He had orders not to take a thing out of the house. Your sister Carrie next door wrote and received all letters. Those received were afterward sent to us to read. Stanton, her husband, thought of my using the great bell from the window in the northeast chamber. Standing on their piazza we could hold quite a conversation sometimes to 10 p m.

But things did not go on so smoothly after the Board of Health gave orders for Wilson to get five gallons of some abominable stuff at Spooners, which they called crude carbolic acid. But Lewis thinks it is crude Naphtha. Wilson had orders to sprinkle a gallon around our house every morning. I had not heard of all this and had come down to eat my breakfast after nursing Nat when all at once it seemed as if Naphtha was in everything—on the butter and on all on the table. I thought your father must have spilled it in cleaning something. Soon I went to the door and found the cause. Lewis and I were very indignant. Your father sent Wilson to the Board of Health to know what it

was. He brought back word that it was carbolic acid. Then your father asked Dr. Drury to intercede for us and to have some less disagreeable infectant used; but among all his cares he neglected to attend to it. So Lewis tipped up the remaining four gallons into the bay. Wilson went to Williams, Sam Drury and Wardwell of the town council or Board of Health and told the whole story. They ordered him to get more and to continue to use it. Lewis had already sent for Dr. Snow of Providence, the smallpox doctor. When he arrived he laughed at this infectant and signed a paper that the patient was nearly recovered and in his opinion the infectant was unnecessary. So a town meeting was called about it and it was discontinued. Dr. Drury was much provoked because he heard that I had said that Nat's sickness was measles. He and Lewis had some high words but "all's well that ends well," for Nat has not had a sore from the crown of his head to the soles of his feet; and I still think it is as likely to be measles as Varioloid. Nat has been down stairs three days, in the garden yesterday and today in the boat to Poppasquash. There are many cases of smallpox in Warren and very many in Lowell. Keep clear of these diseases. This afternoon the flag of smallpox was taken down.