



The St. Louis Admirals R/C Model Boat Club

<http://stlouisadmirals.com>
BROADSIDE



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NOTICE:

**The next meeting will be held on April 2, 2012 at St. Stephen's Episcopal Church,
33 N. Clay Ave, Ferguson, MO 63135**

NOW HEAR THIS

FROM THE BRIDGE



Scales. Now the first obvious connection with water are those funny things our finny friends have on their sides. Or maybe what you should have practiced prior to standing in front of an audience and striking up

“Anchors Away.” But my choice

of meaning here came about after discussing the topic of scales as it relates to the size of our boat models.

Here the “scale” refers to the size of the model relative to the size of the real thing. In the case of my WW II fleet boat submarine, the scale of the boat is 1/48, where $\frac{1}{4}'' = 1' - 0''$. Why is my boat that size? Well, since my sub is a relatively large vessel in real life, over 300' long, it quickly becomes impractical to tote around anything much bigger than the 6'-6" it already is, and quite frankly, that size can be a challenge. I test fit it into my Honda CRV before I bought the car!

But certain real things start to rapidly come into play when you have a big boat with a small size scale. With my sub, one inch tall waves on the pond suddenly become four feet high in my scale. So three inch waves are now twelve feet high, and easily come crashing over the bow and making my miniature sailors quite uncomfortable. Therefore, choosing a smaller boat in a larger scale starts to lessen the impacts placed on the

model in the real world. A nice 1/12 scale boat hitting the three inch waves is now encountering only three foot tall swells.

And some things just don't scale down. Gravity is there for both the model and the full-sized boat. The viscosity of water doesn't get thinner for our models. And wind doesn't cooperate at all. As Club Member Father Tom pointed out to me, a 10 mph real wind can be a full sized gale for a model.

So as with most things in life, model boating is something of a compromise. Some things in nature we just can't change, so we compromise into something that is workable. Modeling a really big boat is tough, whereas choosing a smaller boat in a larger scale may make your model boating life easier. And you can take some liberties, to a point.

I built a small Graupner fishing trawler that was supposed to be a 1/60 model. But there's nothing on this rather generic boat that necessarily gives away its scale. So I tried out various sized model people in various scales to see what looked OK. I found that I could use scale sailors of between 1/48 to 1/72 proportions and still have the people and the boat look like they were appropriate. I could change the scale of the boat to match the size of the people. While the model boat size didn't change, it could easily become a smaller scale boat in 1/48, or a bigger scale boat in 1/72.

Neat! My point is, don't get too hung up on getting things absolutely to scale. As long as it looks good and OK to you, it's perfect.....

Commodore Jim

Happy sailing.

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**5:00 PM Dinner at Applebee's, 2309 N Highway 67, Florissant, MO 63033, and 7:00 PM meeting at St. Stephens Church**  
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Tentative 2012 meeting dates are:

May 7, 2012 BOATHOUSE

JUNE 4, 2010

Subject to availability by St. Stephen's Church

May 19, 2012 PICNIC NOON - ? AT O'DELL'S POND

REGATTA DATE IS SEPTEMBER 29-30, 2012 BOATHOUSE, FOREST PARK, ST LOUIS, MO

Membership Dues ## Please take note of the following: ##

Dues for new members will be prorated on a per month basis based upon our beginning of May 1st dues.

Please make checks (no cash) payable to "St Louis Admirals R/C Model Boat Club" in the amount of \$30.00. Send checks (no cash) to

Tom Eckert
10121 Pinehurst
Overland, MO 63114-1527

PS If you would like to have your e-mail address included for receipt of the Broadside and other publications please include it on a separate sheet of paper, to my attention. If you have moved since your last renewal, please note change of address, etc.

Thank you, Tom Eckert

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Saint Louis Admirals RC Model Boat Club  
Meeting Minutes  
March 5, 2012

Commodore Jim opened the meeting at 7:20 PM with the pledge of allegiance. Robert Schmidt, a prospective member, attended with his wife Glenda. Bob Chapman was present with a new pacemaker. Jane Rivers Chapman was wearing a rotator cuff sling. John Ziemer and Ray Sepanski were back. George Kirby attended while his son Paul stayed home to care for his mother recovering from a heart attack. Luther Disher was absent; his grandson passed away. A sympathy card was signed by the members. It was confirmed that Towboat Joe passed away.

Reading of the minutes as published in the BroadSides was approved. The Treasurer reported was approved. Timely payment of annual dues (May) will help support all the upcoming activities. Please contact Tom Eckert at (314) 426-6244.

The members decided that the early warm weather made it unnecessary to schedule any more indoor sailings at the Mehlville H.S. indoor pool until late in 2012. At this point in time, the planned sailing schedule includes April 2nd at St. Ferdinand Park (1 – 5 PM), May 7th at the Boathouse in Forest Park (1 – 5 PM), and May 19th at O'Dell's pond in Bunker Hill, IL for the annual picnic starting at noon. (There will be a small fee to cover the cost of meat; please bring a dish to share).

The City of Ballwin, MO has invited the Admirals to display and sail their boats at the Ballwin Days Festival on Saturday, June 2, 2012. Club officers will work with the Director of the Parks Department to assure support

including tables, chairs, shade, access for unloading / loading boats, parking, etc. Details will be provided as they become available.

Club officers will also contact the Munny Opera about the possibility of displaying and sailing boats in the pond there one evening when they stage the production of "Pirates" during the week of July 30<sup>th</sup> to August 5<sup>th</sup>.

Skip MacEwen relayed to the club members an invitation to sail on Sunday September 9<sup>th</sup> at a private lake and residence in Foristell, MO. There is a dock and a sand beach on a 3 acre lake. Details will be provided as they become available.

Chris Kunz and Tom Eckert will check on the possibility of the Admirals displaying and sailing their boats at the Kirkwood Green Tree Festival in September.

The Admirals annual regatta is planned for September 29<sup>th</sup> and 30<sup>th</sup> at the Boathouse in Forest Park. Tom Eckert agreed to be the regatta chairman again, assisted by Chris Kunz.

Since Labor Day will fall on the first Monday in September (3<sup>rd</sup>), the club tentatively plans to hold its monthly meeting on Monday September 10<sup>th</sup>. George Kirby will check on the availability of St. Stephen's hall.

Dave St. Clair presented a miniature speedboat that he built. He also discussed a dolly he is designing that will allow one person to launch heavy boats. The lip/edge of the dolly will lower the boat into the water and raise it back up again after sailing.

Commodore Jim gave a presentation on WWII submarine propulsion systems. He compared and contrasted the designs and operations of American and German vessels. Members noted the connections of towboat diesels and train diesels to the American sub diesels.

Dave St. Clair and Tom Eckert won the Mark Twain raffle gift cards. The meeting adjourned at 9:20 PM.

Minutes as presented by Chris Kunz, Secretary

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### Early Submarine Discovery

The Secret of the Pearl Islands by *Sven Röbel*

For the past 137 years, a mysterious wreck has emerged at low tide each day on a beach off the coast of Panama. Researchers now know that it's the presumed lost "Sub Marine Explorer," one of the world's first submarines and a vessel that would ultimately kill its German inventor.

The tower was the first thing Jim Delgado saw. Inch by inch, it emerged from the deep-green surf of the Pacific Ocean -- an encrusted piece of black metal covered with barnacles, rust and seaweed, a ghostly apparition slowly rising from the sea.

Low tide came slowly and sluggishly, eventually exposing the mysterious rust-eaten wreck a fisherman had described to Delgado. The man believed it was a Japanese submarine that had been on a mission to attack ships near the Panama Canal during World War II, only to fall prey to the treacherous waters of the Pearl Archipelago.

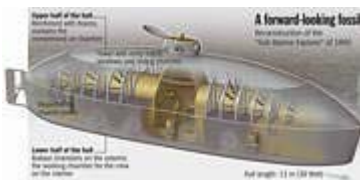
But the more the tide retreated, the more Delgado -- director of the renowned Vancouver Maritime Museum -- was convinced that the fisherman's story couldn't possibly be true. This thing appearing before his eyes had to be older, much older.

The design reminded the scientist of an "iron cigar," and he instinctively thought of the "Nautilus," that legendary underwater vessel author Jules Verne described in his novel "20,000 Leagues Under the Sea." Delgado had devoured the book as a young boy.

But could something like this be possible? Delgado was mesmerized. Years ago, working as a marine archaeologist, he had recovered the wreck of the "General Harrison," a ship from the days of the California gold rush, from San Francisco Bay. He was also involved in the raising of the "H.L. Hunley" from the harbor entrance at Charleston, South Carolina -- the first submarine ever to sink an enemy ship, during the American Civil War in 1864.

## Historic find

That was five years ago, and by now it's become clear that Delgado made a sensational historic find. He discovered the lost "Sub Marine Explorer," one of the world's first functioning underwater boats, designed by a brilliant German engineer whose invention eventually brought him an agonizing death.



A look at the workings of the submarine.

The well-preserved wreck off the shores of San Telmo offers an unprecedented glimpse into the maritime past. Even though the beginnings of manned underwater vessels aren't so distant, the pioneer days of submarines remain filled with unanswered questions. Old construction plans often diverge from the actual designs, and many boats were either lost or destroyed. In some cases it remains

unclear as to exactly how -- and whether -- the vehicles actually worked.

The San Telmo discovery could provide answers to many questions about the first submarines. Some of Delgado's colleagues believe that the wreck in the Pacific is a unique example of a handful of submarine prototypes that have remained preserved. They are craft in which daring men -- essentially the Space Shuttle pilots of their age -- ventured into the unknown world beneath the ocean's surface in the 19th century. Only five diving machines from the years before 1870 have survived the ravages of time:

The "Brandtaucher" designed by German inventor Wilhelm Bauer, now in a museum in Dresden.

A nameless submarine used by the Confederates in 1862, during the American Civil War, now on display in New Orleans.

The "H.L. Hunley," built in 1863 and currently being restored in Charleston, South Carolina.

The "Intelligent Whale," a submarine built in 1866 and now in a New Jersey museum.

And the "Sub Marine Explorer" off the coast of San Telmo in the Pacific, built in 1865.

The "Explorer" marks a high point in maritime engineering, but also a tragic one. Equipped with a cleverly designed system of ballast chambers and a compressed air tank that allowed for pressure compensation, it also had two hatches beneath the hull enabling divers to exit the craft underwater. But about 130 years ago, when the vessel was being used to collect oysters and pearls from the ocean floor off the coast of Panama, the condition known as "the bends," or decompression sickness, was largely unknown. The condition can cause an agonizing death when divers rise to the surface from deep water too quickly. Technical progress had fatally outpaced medical science, costing the inventor and team of the "Explorer" their health and their lives.

One man, Richard Wills, an expert on American Civil War submarines, wrote back to inform Delgado that his data were a perfect match to a description Wills had discovered in a scientific article from 1902. The piece even included a precise drawing of the largely unknown diving device. This couldn't possibly be a coincidence -- the vessel had to be the "Sub Marine Explorer."

## Little known inventor

Inside Kroehl's craft.

Little was known at the time about the man who designed the craft, a German inventor named Julius H. Kroehl who had emigrated to the United States. He built an iron fire watchtower in Harlem in 1865 and was then hired by the New York magistrate to demolish -- unsuccessfully, as it turned out -- a reef that obstructed shipping in the East River. But how did the mysterious German hit upon the idea of designing such a progressive diving ship? Delgado decided to get to the bottom of the story. A search through historical archives revealed that the "Sub Marine Explorer" last belonged to an outfit called the Pacific Pearl Company, which planned to dig for oysters off the coast of Panama in the 1860s.



As far back as the days of the Conquistadors, divers had been digging up treasures from the depths of the "Archipiélago de las Perlas." Black slaves had once fished the famed "La Peregrina" pearl -- a magnificent, softly shimmering 50-carat jewel -- from the waters of the archipelago. The shells also held the promise of fortune, offering wealth in the form of mother-of-pearl, a highly sought-after luxury material used in the fashion of the day.

According to old business records, one of the partners in the company with offices near New York's Wall Street was a certain W.H. Tiffany, apparently a member of the eponymous jewelry and lamp dynasty.

Accompanied by SPIEGEL, an international team of scientists set out for the waters of the Pearl Archipelago on February 18. According to expedition leader Delgado, he had "assembled the best people" -- people like Australian Michael McCarthy, 58, a world-renowned underwater archaeologist, Larry Murphy, also 58, a specialist in corrosion studies, and metallurgist Don Johnson, 79, a proven expert in the study of materials and rust processes. One of the most pressing issues for the team was to determine how much longer the rare wreck would withstand constantly being submerged in salt water. They also wanted to find out what materials were used to build the craft and how it actually worked.

The sub has resurfaced every day at low tide for 137 years.

Armed with GPS navigation gear, multi-parameter probes and laser-guided distance measuring devices, the researchers tackled the archaic technology of the 19th century. "It was as if we were looking through a portal into a forgotten era," Delgado raves. He and his team found themselves constantly surprised by the ship's design and its technical intricacies.



The upper half of the ship's double hull, which once housed the compressed air tank, was made of pressure-resistant cast iron, while the lower half consisted of wrought-iron plates connected with rivets. The heads of the rivets were on the inside of the hull, apparently in an effort to make the boat, which was moved by a propeller driven by muscle power, as streamlined as possible.

In the fine layer of sand that covered the floor of the work chamber, with its two hatches for recovering oysters, Delgado found a depth gauge filled with mercury and the wooden handle of a manual pump, which was apparently used to improve the air in the small enclosed space. Spraying a fine water vapor was meant to bind the carbon dioxide in the air onboard the vessel. After all, the boat contained up to six men collecting oysters in candlelight, in what amounted to hard labor on the ocean floor.

All of these characteristics closely matched an old newspaper article Delgado's research assistants had previously dug up in archives. In the summer of 1869, the "Mercantile Chronicle," a Panama paper, using the florid language of the day, described how the revolutionary submarine worked. "Before submersion," wrote the paper, "enough air is filled into the compressed air chamber," using a "pump with the power of 30 horses" mounted on another boat, "until the air in the chamber reaches a density of more than 60 pounds," which corresponds to pressure of about four bars. Once the compressed air tank has been sealed, "the men enter the machine through the tower on the upper side" and "as soon as the water is permitted to fill the ballast chambers, the machine sinks directly down to the ocean floor," where "a sufficient amount of compressed air is promptly fed into the working chamber until it possesses sufficient volume and power to resist the enormous pressure of the water," so that the men can "open the hatches in the floor of the machine" and begin recovering oysters.

The writer continued: "When they have been underwater for a sufficient period of time and all shells within reach have been collected," compressed air is pumped into the ballast chamber "and as this air then forces out the water, the machine safely rises to the surface."

## Ignorant of diving dangers

Kroehl, the designer, couldn't know how important gradual, controlled pressure compensation is during surfacing. Nowadays, when underwater researcher Delgado, himself a practiced diver, climbs into the narrow chamber -- bathed in a pale, green light from the midday tropical sun -- he surveys the rust-covered valves, rudder levers and handles and tries to imagine what it must have felt to work "in this iron coffin." What it must have been like to hear the hissing of compressed air with ears aching from the pressure, and how sour the air must have smelled when almost all the oxygen had been consumed and the candles were slowly being flicker out.

Delgado waxes philosophical at such moments and talks about the "great flow of history that extinguishes the individual." He has been studying the "Explorer" for five years now, and yet he doesn't even know what its inventor looked like. Although Kroehl himself was said to have been a passionate photographer, not a single portrait of the man has been found.

The biography of the forgotten engineer, compiled from the rudimentary recollections of his descendants and the records of his military service with the Union army, is still filled with gaps. Kroehl was born in 1820 in the East Prussian town of Memel, now Klaipeda in Lithuania, and as a child moved with his family to Berlin. Old address books reveal that his father, businessman Jacob Kröhl, lived at Hausvogteiplatz 11 between 1829 and 1833.

## Jim Delgado in the tower of the "Explorer"



In 1838, after having served in an artillery unit in the German military, the young Julius apparently boarded one of the many emigrant ships that were then taking countless Germans to the shores of the New World. American records show that Kroehl became a US citizen in 1840. New York City commercial records from 1855 list him as an engineer in Lower Manhattan, an area filled with docks, iron foundries and plenty of German immigrants.

By then, Kroehl had filed a patent for the "Improvement of iron-bending machines," and he was apparently fascinated by the diving bells that had recently been developed for use in bridge construction.

In November 1858, Kroehl married 26-year-old Sophia Leuber in Washington, and beginning in 1863 he spent a year and a half fighting in the American Civil War. He served in the Union navy as an underwater explosives specialist and later as a scout in the Louisiana swamps. There Kroehl apparently contracted an illness that kept him bedridden for months. Between bouts of fever, the inventor must have repeatedly worked on the idea for his underwater machine. His thoughts probably revolved around a sort of diving bell, but one that was self-propelled and able to move freely -- and could therefore be used to attach mines to enemy warships.

But by the time he had finished the plans and regained his strength, the navy was less than enthusiastic. The war was over and Kroehl's project was too costly. The military simply failed to recognize the enormous potential of this type of submersible battle machine. Attempts with a few other devices had been less than encouraging, but Kroehl's submarine was technically superior to everything that had preceded it.

Refusing to give up, the inventor in 1864 became chief engineer and a partner in the Pacific Pearl Company -- a company that made headlines two years later. In the spring of 1866, the *New York Times* reported on the first sensational dive of the "Sub Marine Explorer." On May 30, at about 1:30 p.m., Kroehl, accompanied by three friends, entered his underwater device and dove to the bottom of the harbor at North Third Street. Bystanders spent an hour and a half waiting anxiously before the steel monster reappeared at the surface and the hatch slowly opened. Kroehl, clearly in the best of spirits, casually puffed away at his meerschaum pipe and proudly presented a bucket of mud, freshly collected from the bottom of the harbor.

The Pacific Pearl Company's investors were apparently impressed by the demonstration. That same year, they paid to have the disassembled "Explorer" shipped from New York to Panama's Caribbean coast, where it was loaded onto a train and taken through the jungle to Panama City on the Pacific. At the time, the town was a mosquito-infested pit, full of shady bars, corrupt officials and feverish fortune-hunters en route to California -- a way station on the new transit route between New York and San Francisco.

**Arrival in Panama** On December 8, 1866, the news of the arrival of an incredible diving apparatus caused a sensation in the chaotic city. The device was apparently being assembled at the train station and would soon be ready for use. About six months later, the "Panama Star and Herald" reported that the work was finally complete. Engineer Kroehl, the paper wrote, had personally supervised the hoisting of the "Sub Marine Explorer" into the adjacent dock, and in a few days the boat would begin its first diving trips off the coast of islands owned by the Pacific Mail Steamship Company.

The trial runs, which lasted several weeks, apparently proved to be Kroehl's undoing. Completely confident in his invention and obsessed by the possibilities of working deep underwater, he couldn't possibly know that nitrogen molecules expand into small gas bubbles in the body when a person surfaces too quickly, essentially causing the blood to foam.

When Julius H. Kroehl died, on Sept. 9, 1867, doctors made the usual local diagnosis and the US consul made it official, writing to Kroehl's widow that her husband had died of "fever." None of them could have known about the deadly decompression sickness. The funeral, the consul wrote, was held by the local chapter of the brotherhood of Freemasons at the "Cementerio de Extranjeros," or Foreigners' Cemetery, in Panama City's Chorrillo district.



Part of the sub's hull has been destroyed.

For two years after Kroehl's death, there were no further reports of the "Explorer," until the *New York Times* published a story about a pearl diving expedition to an island it called "St. Elmo." On an August day in 1869, at about 11 a.m., the boat apparently dove down into the waters off Pearl Island, remained submerged for four hours and finally surfaced with 1,800 oysters on board. The process was repeated on each of the next 11 days, until the crew had collected 10.5 tons of oysters and pearls worth \$2,000.


But then, wrote the paper, "all divers succumbed to fever," which ultimately led to the undertaking being abandoned. The devilish machine, according to the *Times*, was taken to a protected bay off the island, where the crew soon planned to return -- but this time with "local, acclimated divers" supposedly immune to the "fever."

It was in precisely this bay, in the green waters off San Telmo, that Jim Delgado found the "Explorer" surfacing at low tide, as it has been doing every day for the past 137 years.

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We are scheduled to participate at **Ballwin Festival Days** on the afternoon of **Saturday, June 2, from 1 PM to 5 PM**. We are scheduled for a Muny presentation (*Pirates*) in Forest Park on Friday, **August 3, from 4 PM until the show at 8 PM**.

The normal Club sail for May will be on **May 7 at the Boat House in Forest Park, from 1 PM to 5 PM**. **Picnic is May 19 at O'Dell's pond, starting at noon**. **Regatta is at the Boat House on September 29-30**. Looks to be a good summer of sailing and shows.....



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Wreck of the Sub Marine Explorer in Panama's Pearl Islands

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