



The Starved Rock Radio Club (SRRRC) meets on the first Monday of every month, unless otherwise scheduled, at 7:00 p. m. at the SRRRC clubhouse in Leonore, Illinois. Club nets are held on the SRRRC repeater (W9MKS) every Wednesday evening at 7:00 p.m. The W9MKS repeater is located at the SRRRC clubhouse in Leonore, Illinois, and it operates on a frequency of 147.120 MHz (+103.5 PL). The Starved Rock Radio Club was organized in September of 1933, and has remained an ARRL affiliated club since 1934.

The mission of the Starved Rock Radio Club has continually been to give faithful, co-operative service and assistance for the betterment of amateur radio, in the promotion of interest in amateur radio communications, for the advancement of the radio art, for the use of amateur radio for public service and welfare, and for the maintenance of fraternalism and the promotion of good fellowship along with a high standard of conduct. Visit us on the web at www.qsl.net/w9mks

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Arcs, Sparks, and Early Radio

By Frank Bellinger KA9HRO

When hams gather to discuss the days of very early radio, they often choose the work of Guglieima Marconi (1874-1937) as the logical starting point for discussion. This is so for good reason. Born in 1874, Guglieimo Marconi was privately educated in Italy in a fashion commensurate with families of certain means. The young Marconi was fascinated by and conversant with much of the work done by his contemporary Heinrich Hertz (1847-1894), whom we shall talk more about a bit later. In a fashion similar to present day ham practices, Marconi was successful in transmitting and receiving wireless signals first across his family's estate, then across a plain



This feat was considered so significant that, in 1909, Marconi was awarded the Nobel Prize in physics for his accomplishments. The transmission of that trans-Atlantic signal

near London, and then across the Bristol Channel. For much of this work there was just the presence or absence of a signal, a current induced in a wire. His work culminated with panache in 1901 when he succeeded in transmitting the first wireless signals across the Atlantic Ocean between points nearly 2100 miles apart!

not only validated the process, but also demonstrated that the "Hertzian waves", as they were commonly called, would not be adversely affected by the curvature of the earth, thus quieting most of his doubting peer group. So yes, the activities of Marconi are fundamental to any discussion

See **Early Radio**, page 4

Lifetime Membership Proposal

BY-LAW VOTE AT NEXT MONTH'S MEETING. OFFICIAL NOTICE AND INFORMATION.

A by-law was moved, amended, seconded and tabled at the August meeting. It concerns establishment of a lifetime membership option. In form it is the addi-

tion of paragraph "F" to by-law 25, Membership Dues. This is a kind of complicated thing, so follow it carefully.

As of the present time, by law 25 reads as follows: "A. Regular membership dues are ten dollars per year.

B. Non-licensed member dues are ten dollars per year.

C. Family Membership dues are fifteen dollars per year.

D. Associate membership dues are ten dollars per year.

E. Honorary membership

See **By-Law Change**, page 3



The Editor's Shack

SRRC finally has a tower. For a while there it didn't look like it was going to happen. Earlier in the month, the contractor called, and the date was set. Calls for volunteer labor went out. The big day came, and the contractor called again. Seems he had taken another look at the job, and he didn't feel that the job could be done without additional equipment. Was this a ploy

for more money? Actually, no. As it turns out, a more experienced employee looked at what needed to be done, and felt that, while they could get the tower down using just a crane as originally thought, there was a good chance that we would have been left with a big pile of scrap metal for our \$1300. The contractor negotiated for the needed equipment, and the tower

came down exactly as planned, and at little added cost, on another date. The tower now resides beside the clubhouse, and now the real work begins. A big thanks to all those who helped on this project.

73, W9QA

Busy Storm Season Decreases Awareness

By TAMMIE SLOUP — Staff Writer

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This summer may not go down in the record books for rain accumulation, but it has been one of the stormiest ever seen in the area.

Damaging hail, strong winds and fantastic lightning shows have been blowing through the area regularly. Although numerous funnel clouds have been sighted, only one tornado in the area — just north of Peru — has been confirmed. Luckily, the tornado touched down in an open area.

But those trained in weather spotting predict our luck may soon run out, and statistically, La Salle County is due for a damaging tornado.

"It's not a matter of if, it is when," said Jesse Risley, president of the Starved Rock Amateur Radio Club and area weather spotter. "I don't ever remember a year when it's been this active; this is almost double (what normally occurs), and we still go until October."

Unfortunately, the more storm watches or warnings are issued, the more people neglect protecting themselves from potentially severe weather.

"People don't seem to pay much attention to severe thunderstorms and tornado warnings," said Frank Carraro, La

Salle County Emergency Coordinator with the Amateur Radio Emergency Services. "I guess because there's been so many ... and 90 percent don't get much more than heavy rain or a little hail. But when you ignore, you ignore at peril."

Tom Ciciora, director of the Sandwich emergency management agency, said many times, it takes a disaster to raise people's awareness.

"I'd like to strangle people when they say, 'It's just a watch,' or, 'It's just a severe thunderstorm.' The Plainfield tornado came out of a severe thunderstorm," he said.

Ciciora, who was working in Calumet City when the Plainfield tornado hit 13 years ago, left work early that day as the weather started to turn nasty. As assistant ESDA director and a trained weather spotter, Ciciora continued to keep tabs on the approaching weather. When the tornado hit, he headed toward Plainfield to assist.

It wasn't the destruction the tornado left behind that struck Ciciora.

"It was the people with the dazed looks on their faces. I've never seen anything like it since. This is what we're trying

to prevent."

But residents of Plainfield have learned one lesson, according to Risley.

"When the sirens blow, they move to shelter. But not here. It's a sad fact, we're going to lose a lot of lives. The siren means seek shelter immediately," he said.

Area spotters strongly urge residents to just merely be aware of the weather, and take watches and warnings seriously.

"What frightens me most is if we (spotters) go out, (sound) the warning siren in a timely fashion and people don't get to a shelter. If someone gets hurt, that's a personal crack in the face," Ciciora said.

All three spotters also stressed every home should have a weather radio.

"It should be just as common as a smoke detector," Ciciora said, adding they can be purchased at stores such as Radio Shack or Farm and Fleet.

"All my friends and family have learned to accept that they're going to get one as a gift at some point," he said.

August Meeting Notes

Frank Carraro, KF9NZ - SRRRC Secretary

Lyle Redfern, a long time non-ham member passed away recently. He was a close friend of Paul AA9VR. We are going to get a lawn mower it seems. Back in May we approved buying a mower to avoid the cost of having it done, but no one ever went out and bought one. Now we will have one very cheaply. VERY cheaply. KB9UPS will donate one. Now all we need is someone to push it once in a while.

The Hatcher Co. in Streator FINALLY came through with an estimate of \$1290.00 to take the tower at Otter Creek down. There was a lot of discussion, but the vote to accept the estimate was unanimous. Maybe the SRRRC will finally get a tower! We

will need help to dismantle and haul it to Leonore. We already have promised contributions of \$225.00 for the project.

The budget as proposed by the Board of directors was accepted. The figures are in another article in this issue. The Membership Committee proposed a lifetime dues option. After quite a bit of discussion and a couple of amendments, a motion to amend by-laws was made and tabled according to the by-law rules. The exact text of the proposal is published in this issue. A vote on the motion will take place at the September meeting.

The Repeater Maintenance Committee reported that the UHF Ringo was put up on the west tower over the weekend

by KB9PUT with KF9NZ assisting. It is now in service, receiving the UHF signals from the remote sites. The UHF Yagi on the east tower will be taken down August 9th, and taken up to K9PHW's QTH for use on that site. Joe, K9PHW, tried to relocate the remote equipment on to his TV tower, but the UHF transmitter wiped out his TV reception. It is hoped that the UHF Yagi will solve that problem. N9OUW now has a remote site operating from his repeater site near Utica. This will help a lot, but the voter needs to be readjusted to make this site vote properly.

Nick, KB9PUT was appointed hamfest Chairman.

Annual Board of Directors Meeting Notes

Frank Carraro, KF9NZ - SRRRC Secretary

The Board of Directors met Saturday August 2nd to review the finances of the Club and develop a budget for the fiscal year. Here is the budget decided upon:

INCOME

Hamfest net profit.....	4170.00
Dues.....	600.00
Interest.....	150.00
TOTAL GROSS.....	4920.00

EXPENDITURES

Utilities, Taxes, Insurance....	3200.00
Contributions.....	200.00
Field Day.....	100.00
Building M&I.....	200.00
Repeater Maintenance.....	100.00
Tower.....	1300.00
TOTAL.....	5100.00
DEFICIT.....	180.00

The Board expressed concern about the continued drop in hamfest income, and discussed possible alternatives. The estimate of dues income was somewhat conservative, but it was felt that the dues increase was fully justified and overdue. While we may lose members in the short term, in the long term the dues income will increase. The cost of taking the tower at Otter Creek down seems high, but it is a lot less than any other tower of the size, new or used, that we know of.

By-Law Change, continued from page 1

will be free

Effective January 1st 2004 dues are increased by ten dollars each class except honorary membership which will remain free."

The proposed change is to add paragraph "F" to read as follows:

Effective January 1, 2004 Lifetime membership will be available for a non-refundable payment of 15 times annual dues. Payments may be made in quarterly installments over a one-year period. All income from lifetime dues payments is to be deposited in a separate interest-bearing bank account, and the principle amount of the account is

not to be expended. Interest from the account may be transferred to the general funds of the club.

Consider this matter carefully, and be prepared to vote your conclusions at the September meeting

CHAPTER 5 – The Cigar Box Radio

Excerpted from *Voices in the Air—The Fascination of Radio* © Robert Bonebrake

Reprinted with permission of the author, Robert Bonebrake, W9GCQ. This 174-page book is available at the Streatorland Historical Society Museum or from Francis Kmetz, WB9VLW, at \$12.95 each. The club has a copy at the clubhouse, which can be checked out. It is enjoyable reading.

With the installation of the new crystal I thought I had improved the operation of my crystal set as much as I would be able to. The only other thing I could do was to re-build it into a cabinet and do

away with the board it was mounted on. I took the flat coil of the board and fastened it inside a King Edward cigar box, cutting a slot in the top of the box so the contact on the station selector arm could touch the coil. I mounted the arm and another new crystal selector assembly (a deluxe model that had a glass cover to keep out dust and dirt) on top of the box, and put terminals for the earphones and the aerial and ground on the ends. Two coats of white paint covered up King Edward's picture, and my first homemade radio was finished. It didn't work any better, but I thought

it looked a lot better.

My grandmother thought it looked nice too and, some time later after I had built other radios, she wanted to buy it. I couldn't imagine what she wanted to do with it, but my mother said she just wanted to preserve it as a memento of something I did when I was a kid. She gave me sixty cents for it (enough money to buy more radio parts) and it sat on the dresser for many years. She is gone now, but the King Edward crystal set still works. Her wishes for it were fulfilled.

Early Radio, continued from page 1

of early radio.

But one must ask, "Was there any reason for Marconi to believe beforehand that anything like the transmission of some type of wave was at all possible?" That is, was there some theoretical basis for all this that would solidly support the findings of the inventor/experimentalists? Yes, there was, of course, the on-going adventure of Heinrich R. Hertz who feverishly demonstrated the attributes of his spark gap device set in a resonance mode. It seems that having familiarity with Hertz's work, Marconi extended the effort to the logical conclusion of a successful trans-Atlantic signal. But was there anything more than that?

Enter one James Clerk Maxwell (1831-1879). Maxwell was a physicist who contributed much to the disciplines of his choice. He was the first to conclude correctly that the rings of Saturn must be comprised of small particles in order to lie in stable orbits. He is known to anyone who has studied thermodynamics for his work in the kinetic theory of gases; he shares distinction with Boltzman for an equation that bears their surnames, the Maxwell-Boltzman distribution. But his most valuable contribution lies in the estab-

lishment of the foundations of classical electrodynamics. "Classical" because his work relates to the familiar stuff of what we know today as electrodynamics--motors, generators, electromagnetic waves, synchrotrons, television and microwave radar. The workings of amateur radio lie solidly within this litany of applications. (Modern physics has further embellished the "classical" electrodynamics with quantum mechanics and relativity. But such is not the topic of the effort here—just know that when the right boundary conditions are put into the modern theory, the "advanced" works collapse into the old familiar classical structures. Everyone is happy!)

Anyway, just exactly what did Maxwell contribute to the young field of electrodynamics? Well if you like to learn new words, I would say he was "esemplastic". To be esemplastic means that one has the ability to gather diverse ideas into a coherent assembly. Maxwell was definitely able to do such things. He assembled works from the likes of Michael Faraday (1791-1867), Carl Friedrich Gauss (1777-1855), and André Marie Ampere (1775-1836). Notable among their collective achievements is the fact that a law that bears their name honors each one. Remember: the significance of a "law" in

the scientific context follows a sequence of observation, then hypothesis, then a large amount of testing and peer review, followed by the formulation of a theory that is subjected to the most severe examination possible. After considerable scrutiny, and after all critics are exhausted and there can be no conclusion other than the correctness of the concept, the finding may be distinguished as a "Law." So Maxwell gathered together Faraday's law of induction (the electrical effect induced by a changing magnetic field), Gauss's laws (2) of magnetism (magnetic field) and electricity (charge and the electric field), and finally Ampere's law (magnetic field proportional to current) and displayed these laws in a table as if to consolidate them into a unified statement. This had not been done before—each law was considered in an isolated manner. These equations that were defined by others, are now known as "Maxwell's equations" when they are taken as a consolidated statement. Notice that the term "Maxwell's Law" is not invoked here—in may not be because it is the work of others, not Maxwell. But a fact remains that places Maxwell's assembly of these laws in the realm of "Brilliance." Were it not for the following, perhaps little would remain today of Maxwell's

Early Radio, continued from page 4

effort in this matter: **Maxwell determined that something was missing from Ampere's law for magnetism!** The law was correct as far as it went but was missing a very important term that Maxwell promptly deduced. As formed by Ampere, the law for magnetism was necessary but not sufficient, as a mathematician would say, to describe the physics. It was, perhaps, Maxwell's greatest moment of genius when he conspired to append that additional term based on considerations of symmetry. The term added to Ampere's law became the subject of much controversy in the scientific community of the day. Not surprisingly, it was flat out rejected. The addition was mathematically sound so there was no valid objection there, but the implications were tough to swallow for his scientific peers. The term added the notion that light was an electromagnetic phenomenon, that the speed of light could be determined from purely electromagnetic measurements, and most important of all to radio, that **electromagnetic energy could be propagated from a source (transmitter) to a distant receiver. Astounding!**

Now let us return to our friend Hertz for a moment. Acting in the true spirit of the scientific method, Maxwell's work prompted Hertz to seek means to vigorously test the Maxwell hypothesis. The result of his doing this actually contributed much to Marconi's widely acclaimed success of later years. Hertz was the first to broadcast and receive radio waves in a laboratory setting using his resonant spark gap apparatus. Maxwell's equations, as assembled by Maxwell, were cumbersome to use which added to their being suspect to the scientific community—Hertz recast the equation set in a more transparent form. In the short period from 1885 through 1889 Hertz was able to generate electromagnetic waves in the laboratory, measure their wavelengths and speed, and became aware of reflection and refraction (bending) of the radio waves! The latter measurements confirmed that light was electromagnetic radiation that followed Maxwell's

equations. Hertz completely validated all of the implications of Maxwell's additional term! All this was done with a spark gap transmitter. So Hertz' efforts greatly enhanced prospects of success for Marconi.

Now there is another item of utmost importance left to tell in this story. In order to have any practical value for communication of "intelligence", some sort of code was needed to supplement a simple on/off status of a transmitted signal. Re-enter now the work of one Samuel Finley Breese Morse (1791-1872). I say re-enter because well prior to any and all of the happenings described above, Morse, in 1835 had his first land telegraph model working. Morse is familiar to everyone in our modern day and age for his development of a code that bears his name. Morse was intrigued with the news of the newly developed electromagnet by Carl Friedrich Gauss. Morse conceived the idea of using that device for a "telegraph" using wires to connect a transmitting device (key) to the recording device (sounder) some distance away. He had telic motivation for this effort because he mistakenly believed it was an original idea on his part. (Gauss actually beat him to it, but Morse is generally credited with the invention. Morse later conceded to Gauss in his usual gentlemanly manner.) Nevertheless, Morse devised a scheme using a mechanical clock mechanism to draw a strip of paper between the sounder contacts of his cobbled electromagnet. When the key was depressed, the contacts were drawn together and a short line—a dash (or a dot depending on contact closure time)—was thus scribed on the moving paper. Initially Morse developed a menu of numbers that corresponded to words of his "dictionary" but that soon proved cumbersome. He then contrived the code system using dots and dashes that were assigned to the alphabet, numbers, and punctuation that are familiar to us in our day.

So when it was time for Marconi to send his wireless message across the Atlantic Ocean, a code system was already in place and widely in use across

the continents of Europe and America. And now, the Morse code would irrevocably connect those two continents. This entire story is, to me, a delightful blend of the "tag team" nature of technology advancement—so many people were collectively involved over an extended time. It is also a paradigm of technology being driven forward by the announcement of additional hypothesis (Maxwell's contribution). Both theory and experiment are needed for an efficient technology development. There is nothing more bothersome to the scientific community than the pronouncement of a hypothesis or theory—it must be accepted by virtue of experiment, modified or absolutely denied. Theorists are the protagonists of the scientific world.

Whew, what a story indeed! One is left breathless after reading about the depth of accomplishment of these pioneers that is too extensive to capture here in a few short paragraphs. Volumes have been written about each of these early radio pioneers. In some instances, the accomplishments were made at a very early age in life. All of this business is well beyond my capability; I'll just remain among the benefactors of their work. And now, I think I'll turn the transceiver on, see what the bands are like, send a bit of Morse Code, and think about all those early contributors—wish I could send them all a thank you radiogram.

de KA9HRO 73s

Note: References furnished upon request. The story idea and script is my original, historical content was gleaned and verified from a variety of references, and relevant equations (omitted in this script) were studied in modern physics/engineering texts.

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Worker Dismantles “New” SRRC Tower

W9DON photo