

# M.A.R.C.S. SPARKS

Monthly Newsletter of the Madison Area Radio Control Society  
Madison, Wisconsin AMA Charter #665

Volume 44 - April 2005 - Issue 4

## *Come Fly With Us*

MARCS meetings are held on the first Thursday of every month at 7:00 P.M. in Room 201B of the Madison Labor Temple, 1602 S. Park St. in Madison. Visitors are always welcome. We think we have a great hobby and we invite you to come and see and consider joining us.

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Contribution of articles for publication is encouraged.

**Deadline for publication is the 20<sup>th</sup> of the month.**

## Minutes of MARCS General Membership Meeting, March 3, 2005

*by Patricia McDonald, Secretary*

The meeting was called to order at 7:15 by President Tom Lazar with 40 people present.

**February Minutes:** Minutes of the February meeting as printed in the March issue of SPARKS were accepted as published.

**Guests or visitors:** None. No new members.

**New Business:** Trophies and Service Awards were distributed to those who did not attend the Banquet.

April 23<sup>rd</sup> is Field Work Day

The Field Committee chair position is open.

Anyone interested in being a contest director should call Tom.

**Meeting Adjourned** at 7:25

**The swap meet** followed the meeting.

## Philosophy 101

What kind of people do they think we are? Is it possible they do not realize that we shall never cease to persevere against them until they have been taught a lesson which they and the world will never forget?

Winston Churchill on the Japanese, 1942

## Last Call for Dues

The names of members who have not paid their 2005 dues before the May issue of Sparks is ready for mailing will have their names purged from the mailing list.

**PLEASE NOTE:** A couple of members who have paid 2005 renewal dues for receiving Sparks by e mail have not supplied an e mail address. Unless I receive your e mail address by the time the May issue of Sparks is ready for distribution, or unless you pay the additional \$5 to Ed McDonald for hard copy distribution, you will not receive the May and subsequent issues.

## May Sparks Will be Late

Because *ye Olde Editor* has drawn a permit for the second spring turkey season, Sparks will be a bit late next month. I usually put it out on the 20<sup>th</sup> or 21<sup>st</sup>, but the second turkey season runs from the 20<sup>th</sup> to the 24<sup>th</sup>. Given the choice between having to have contributions in several days early or being a few days late, I thought it better to be late. The May meeting won't be until 5<sup>th</sup>, so you will still get the bulletin well before that. Look for it to go into the mail on about the 26<sup>th</sup> or 27<sup>th</sup>. Contributors who can get their material to me by mid month should try to do so. That will allow me to get your articles at least mostly in place before I leave on about the 18<sup>th</sup> and it will help me finalize it more quickly when I get back.

## Field Work Day - April 23

Don't forget field work day on April 23. Be prepared for some brush cutting around the field's edges and to the west of the field. Any surface damage to the field will need to be fixed, probably by top dressing, and there will likely need to be some minor fence repairs.

**Volunteer Needed:** I usually do the food and soda thing when the work is finished, but, as you can see from the article above, I won't be in town for it this year. If you could plan the menu, buy the food and soda (hot chocolate is better, if it's a cold day) and cook or heat as needed on the grills, please let me know. Turn in your receipts to Ed McDonald for reimbursement. Plan on feeding about 25 to 35 people. It's really a fairly easy job and more people than are needed usually offer to help.

## I Ain't Gonna Take it Anymore

*By Ed McDonald*

At the awards dinner I was presented with the Smoking Hole Award. That's the last award anybody would want. During the presentation roast Jerry Buss told how I keep a log for each of my models. After receiving that award I went back to make one last entry. In doing so I started reviewing the plane's history. I found it very interesting and you may too.

First, the plane was a project for Pat, myself and a Little Brother. Pat and I had been in Big Brothers and Sisters of Arlington, Texas for several years and had been matched with Littles three times. Neither of the first two Littles were interested in model airplanes but then along came Matthew. He had

models all over the ceiling of his room and pictures of planes on his walls and he talked airplanes. Wow!

We took him to a hobby shop and let him select the model, motor, radio, covering, everything. We started working on the model every weekend for part of the time we spent with Matthew. Eventually, however, he didn't have time for us anymore and our match with him was terminated. This happened because his dad's interest in him and time spent with him increased dramatically, using up all of Matthew's spare time. We didn't mind being left out of his life on that basis.

Pat and I finished the plane. When we moved to Madison, the plane had 38 flights. It was the first plane I flew at Kettle Field. It was used twice for outings with the Boy Scouts and several trips to the field with students from LaFollette High School. Once Bob Lehmann had guests from France, a father, a teenage boy and a teenage girl. None could speak English. I had each on the buddy box flying that plane. Pat had several flights on it with Bob Miracle as her instructor and we generally regarded it as her airplane.

Pat didn't mind that I was always trying to get people interested in MARCS and would take them to the field and let them try their hand with the buddy box on her plane. After all, I'm a pretty good RC pilot. Right? What harm could possibly come to it? All together there must have been about thirty people that flew that plane on the buddy box.

It was an Aerostar. We built it in the autumn of 1994. The first flight was May 14, 1995 and we ended up with 259 flights. The crash that earned the trophy happened on August 31, 2004. I was trying to get my neighbor interested in RC and he was on the buddy box for that flight. We were flying around and he was kind of enjoying himself, but he was a little nervous too. He started toward the pit area and I told him to turn back from the flight line. He kept coming so I decided to take over. Many times in that situation I would do an Immelmann turn, a half loop and a half roll, and be right back over the field heading away from the pit area. So, I released the trainer switch, gave it full up elevator to do the half loop, and that was it. When the plane got about a third of the way into the loop the wings folded and the fuselage went right over the pit and parking lot and crashed into the dirt between the fence and the road. It was in a whole lot of pieces and I put them all in the trash can. Fred Bast rescued the carcass and rebuilt it and now I'm not allowed to fly it!

## MARCS 2005 Calendar of Events

Event	Date	Location
Field Work Day	April 23	Kettle Field
IMAA Big Bird Fly In	June 11	Kettle Field
Thermal Soar	June 18	Long Island Sod Farm
War Birds Over Dane	July 9	Kettle Field
Electric Fun Fly	July 24	Kettle Field
Ken Kindschi Scale Rally	August 21	Kettle Field

Hand Launch and Boy Scouts events scheduling is pending

But what a plane! What a history! I am glad I kept that log. I hate that trophy, but the plane was well worth whatever I paid for it. It deserved a trophy. I just felt kind of put out that it was the Smoking Hole Award.

But given a few days to think things over after being roasted for crashing my poor wife's airplane - actually it was the second of her planes that came to grief at my hands - I decided to make the best of a bad situation. That's why when I decided to change my internet ISP I adopted a new address: [rcace@charter.net](mailto:rcace@charter.net). Hey, I know it usually takes five kills of enemy planes for a fighter pilot to claim ace status, but if I'm going to have to endure the outrageous fortune of having to display the Smoking Hole Award in my house for a year, I'm going to claim ace status on the basis of my two kills of friendlies. You can call it ego if you like, but I don't care. Like I said, I ain't gonna take it anymore!

### The Bent Bird

*By Don Weigt*

For the past 20 years or more, the typical radio control system has looked about the same. The controls have worked about the same. Most have used the same basic 4 cell NiCad packs in the planes and 8 cell packs in the transmitters, with the same basic overnight line powered chargers. The first impression is that progress has stopped. But, that is not so!!

#### THE BASICS, AND VERY EARLY

RADIOS: Radio technology, and especially receiver technology, has evolved a very long way since the early days of RC. Let's go way back first, to see just how much things have changed. In the earliest radios, one tube did it all, or at most there were two or three tubes. But, there was only one working at the radio frequency, and it both amplified the signal and detected it. There

was only one tuned circuit, or at most, two. If there were two, they both were tuned to the transmitted frequency, which was too high to permit the receivers to be very selective. The second tuned circuit could help reject signals off frequency by about a megaHertz, but not close in. In that way, they were similar to the early home radios that had multiple circuits with separate tuning knobs all adjusted by the user for the best reception. These were never very selective, because all the tuned circuits were operating at the high frequency of the transmitted signal.

A typical tuned circuit made of a coil and capacitor will pass signals with little selectivity in a band having a width of about 2% of the center frequency. So, those early 27 MHz receivers received all signals in a band of about 1/2 MHz equally well, and those beyond that with gradually reduced sensitivity. Adding a second tuned circuit had little effect on that center 1/2 MHz, but did make it harder for signals farther off frequency to interfere.

One tube amplifier/detectors had rather low gain compared to the 3 or more gain stages before the detectors in later super heterodyne receivers. So, these early radios had to use circuits with feedback to get enough sensitivity for good range.

SUPER WHAT?! They were basically oscillating at their tuned radio frequency, set up so even a weak received signal greatly affected the oscillation. In CW radios, this changed the tube's operating current enough to operate a sensitive relay. In later radios, it sent a tone signal to an audio amplifier, which drove an audio detector. These oscillating detectors were called superregenerative detectors, an odd sounding name.

In radio terminology, the use of feedback to increase gain was called regeneration. It could increase sensitivity, but high gain occurred just before the point where the amplifier began to oscillate. Setting such a

circuit for good sensitivity was difficult, and needed frequent tending as the battery and tube aged. Also, as long as it wasn't oscillating, it didn't detect the signal it was amplifying, so a diode or another tube was needed to do that. Someone found a way to make the amplifiers oscillate while still being sensitive to radio signals coming to their antennas. These circuits were called superregenerative, meaning there was enough feedback to cause oscillation in normal operation. And, strangely, since the circuits were intended to oscillate, they turned out to be less critical to adjust than plain regenerative circuits. Tubes and early transistors were quite expensive, and equipment was bulky, heavy, and rather unreliable, so single tube or transistor RF detectors were a really welcome development for radio control, especially in airplanes. Their big disadvantage was their poor selectivity. When the 5 channels were added to the original 27.255 MHz "Citizens Band" frequency, they were too close together for "superregen" radios to separate. So, we had 6 frequencies, but could fly only one plane at a time, and were in great danger of getting shot down by interference from other radios on nearby frequencies, including the voice radio frequencies used by "CBers", which were on frequencies between those for radio control, and typically had more powerful transmitters, too!

**SUPER HETERODYNE?!** So, by the late 60s, we all knew we needed better receivers to let us fly airplanes on the various RC frequencies at the same time, and to reject most of the interference from legal users of nearby radio frequencies. The solution was the super heterodyne receiver. These used the same basic circuit as the AM receivers for home entertainment. Heterodyning is a term relating to the mixing of frequencies and shifting the signal to one better suited for the intended use. I do not know why it is called "super" heterodyne. I do remember my instructors didn't know why, either!

The antenna connected to a tuned circuit, as before. A few radios had two tuned circuits for more selectivity at the transmitted frequency, but as we've seen earlier, this didn't improve them much. The improvement came from shifting the incoming signal to a lower frequency before amplifying and filtering it more in additional tuned circuits, usually three more.

These receivers added a crystal oscillator, operating at a frequency 455 kiloHertz (455 thousand "cycles per second", as we called it then) away from the

transmitter's frequency.

The signal from the antenna, after selection by the tuned circuit, was sent to a mixer, which also was connected to the oscillator. A mixer is a sort of detector. It is non-linear, meaning it distorts in an intended and predictable way that multiplies together the two applied signals. Mathematicians in the 19th century, before the invention of electronics, showed that produces two new signals at frequencies that are the sum and difference of the applied signals.

The output of a mixer with a 27 MHz radio signal and a signal from a crystal oscillator 455 kHz (0.455 MHz) higher OR lower, contains signals at 455 kHz and at about 54 MHz. Both signals contain the same information as the original radio frequency signal from the transmitter. Either signal could be called an intermediate frequency, or IF signal, because it's in a stage between the radio frequency and the detector, but the lower one was what was wanted and used.

Most of these receivers had 3 circuits tuned to the 455 kHz IF frequency, one connecting the mixer to the first IF amplifier, the second between the first and second IF amps, and a third coupling the second IF amp to the detector. That meant any signals very far from the center frequency would be weakened (attenuated) a lot. Since the center frequency was 455 kHz, the 2% width of those filters was only about 9 kHz: about 1/50th as wide as the 500 kHz or so band that the antenna circuit passed. That is far more selective than the receiver would be with all 4 or 5 circuits tuned to the radio frequency!

Properly tuned, it was also about 5 kHz above and below the center of the channel. That meant that even the neighboring CB channel, 10 kHz away, would be attenuated a bit, and might not cause a problem unless the transmitter was very close by. It also meant the next RC channel, 50 kHz away, was 10 times as far removed, and not a problem. This permitted as many as six planes to be flown together for the first time. Airspace and pilot skill, not radio selectivity, became the limitation. Life was good!

The manufacturers liked the new radios, too. The tuned circuits at the antennas could all be tuned the same. The IF filters could all be tuned the same. Want to change channels? Just pop in a new receiver crystal! Back then, you might even be allowed to change your transmitter crystal, too. The radio was changed to another channel, simply by changing the oscillator frequency, controlled by the crystal. All the circuits

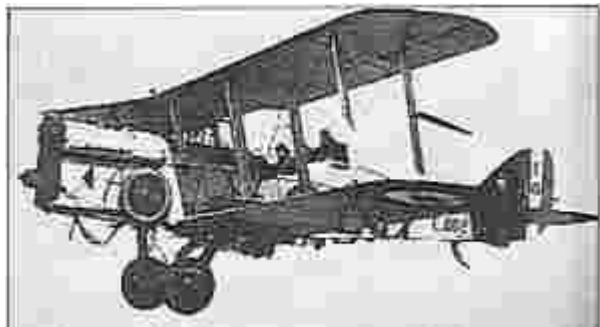
after the mixer worked exactly the same, regardless of which frequency the radio used. The IF parts were the same as used in portable AM radio receivers for listening to entertainment, music, news, and sports. Using standard parts, and tuning all receivers alike, led to great savings in manufacturing the radios, as did the growing sales volume from this better equipment. This helped make the prices reasonable for the quality, spurring sales.

**Next month:** Dual conversion and narrow band, really!

In the meantime: spring is coming! Check your planes carefully before their first flights of the year, whether new or old. Check batteries, range, hinges, pushrods, engine security and operation, structural integrity, and so on. It's much better to find and fix a problem before a plane leaves the ground! Wait until it's not too windy and the sky's not too crowded. Don't let impatience ruin a plane: remember the effort and money it cost. Improve your chances of a good return on that investment by taking care of it and flying it safely. Then, have a great time, and go home smiling!

### Collishaw

Raymond Collishaw was offered a permanent commission in the RAF following the war and he jumped at the chance as he enjoyed the life style and work. After leave in Canada he was posted to Russia in 1919 as part of the western Allies' intervention in the Russian Revolution on the White Russian side. He lead 10 pilots south to Nororossiiski flying Camels and DH-9 two-seater bombers. At first death from



DeHaviland DH-9

typhus was the greatest hazard as there were no medical supplies and there was little they could do for typhus anyway. In late August, Collishaw went into battle dropping bombs from his Camel on Bolshevik troops crossing the River Volga on rafts. He sank a gunboat and became one of the few aces at the time to sink an

enemy vessel.

It was a nasty civil war, with no thought given to the safety of civilians and waged by any means possible. Cavalry charges with Cossaks and Muslims were still held, with Sopwith Camels flying top cover. In one sortie four Camels caught a large troop of Bolshevik cavalry in the open. Their 8 machine guns cut them down without respite, inflicting 1,600 casualties. It stopped only when the aircraft ran out of bullets.

In October he downed his first aircraft in Russia, an Albatros D-V that crashed into the Volga. He downed another a few days later, but then was put out of commission with typhus. Collishaw, as usual, was fortunate in being tended by a homeless Russian countess who likely pulled him through the disease. Despite all of their efforts the Allies lost in Russia and were forced back. They had to abandon their aircraft and flee with some aristocrats and anti-soviet peasants on an old train. It was nearly their undoing. The Bolsheviks chased them for 500 miles in an armoured train mounting a 9 inch cannon. Civilians along the way tore up track in front of them or fired on the cars as they passed. Typhus ran through the train, dead bodies were simply hurled from the cars. They had to collect snow and firewood for the engine and themselves. At one point a local body of Bolsheviks ran a railroad engine into the train, but failed to derail it. Finally, in January, 1920 they made it to Crimea and relative safety. He admitted in his autobiography that Russia was far more frightening than the Western Front.

Once they were in the Crimea they received new planes and were back in action. Collishaw blew an enemy train off the tracks and damaged a second one with bombs. On the second foray his motor was damaged and he was forced down behind enemy lines. Fortunately, the ground was frozen and he was able to taxi back to his lines. By the time the Allies pulled out of Russia, Ray Collishaw had destroyed 2 planes, 2 trains, a gunboat and a bridge. He also collected three Czarist medals the Order of St. Anne, the Order of St. Stanislaus and the Order of St. Vladimir. He was made an Officer in the Order of the British Empire "for services in Russia".

After arriving back in England he took three months leave and returned to Canada. Following this leave he returned to England in August, 1920 and



Order of St. Vladimir

spent a bit of time at an RAF depot and was then posted to Mesopotamia, then in the painful process of becoming Iraq as a result of the demise of the Ottoman Empire. He took command of No. 30 Sqdn equipped with DH9a's. Iraqi tribes were revolting against central authority under King Faisal and the "British Mandate". The RAF was sent to crush the rebels. As there was no air opposition the entire activity was bombing and strafing rebel positions, troops, villages and stock. For some reason many of the pilots had no compunction about bombing civilian villages, but refused to bomb their livestock. Collishaw thought bombing non-combatants to be dishonourable. The only real danger to the pilots was being forced down in rebel territory due to engine problems. The rebels had little respect for their aerial tormentors and would kill them if they captured them. They all carried papers written in Arabic, Syrian and Turkish called "blood chits." They promised that a substantial reward would be paid to those who helped a downed airman. He spent three years in freezing cold weather with deep snowdrifts in Kurdistan, to temperatures of 130 with no shade, dusty, dysentery, thirst and other equally unpleasant discomforts in Baghdad. (No doubt American soldiers of today could relate to Raymond Collishaw's experience in Iraq.)

Part of their operations were against more Bolsheviks in North Persia at Kazvin in support of units under Gen. Ironside. As winter set in most of the action consisted on desultory bombing and reconnaissance and the maintenance of communications between the Kazvin base and Baghdad. The planes would take off from airfields made of deep, packed snow (done by camels) and landed in temperatures over 120. By the spring of 1921 the British had had enough and were not prepared to fight any major battles against the Bolsheviks over Kurdistan. His work "in recognition of distinguished services in Iraq in 1921" was noticed with another Mention in Despatches dated

October, 1922.

No. 30 Sqdn was then involved, along with 47 and 70 Sqdns, in setting up the Baghdad to Cairo air route to enable easy military access to Mesopotamia and Britain. Also, it was to make Baghdad part of a projected Australia, India, Cairo, Baghdad, London air route that would, of course, be controlled by the British. They worked with two truck crews in identifying landing areas 20 miles apart, preferably near water on flat ground. At one oasis water was required for the aircraft. The water was nearly 80 feet down in the well and no one was stepping forward to descend for it. Collishaw had a rope tied onto himself, and with bucket in hand descended to get the water. By the time he reached the bottom his eyes had adjusted to the dark, and he was horrified to see the walls crawling with large, black scorpions. Quickly he scooped up a bucket of water and rose out of the well. One bucket was all they got.

The provision of water was a continual problem. Collishaw thought that they could use the inner tubes and tires of Handley-Page O/400 bombers. The concept was to put an inner tube in a tire, fill it with water and drop it from an aircraft to resupply distant airstrips. They experimented with one such tire weighing 750 pounds when fully loaded with H<sub>2</sub>O . The pilot came in low over the Baghdad airfield in a Handley-Page bomber and released the tire. Travelling at 100 mph the tire hit and rebounded off of the field, assumed an upright rolling attitude and changed course for the hangers. Everyone dropped or ran like mad away from the tire travelling towards them. It hit a hanger in the side and went through the offices of several flight commanders, out through the other side of the hanger and demolished an aircraft. Needless to say, they went back to delivering water by truck.

By 1923, the RAF was back in Kurdistan and Turkey fighting a breakaway rebellion by Sheik Mamoud, the self proclaimed King of Kurdistan with Turkish backing. A column of 5,000 mounted British troops was sent into Kurdistan and Collishaw went along as RAF Liaison Officer. After six weeks on horseback, and the burning of a number of rebel towns the British withdrew, having accomplished anything.

Following the Mesopotamian excursion Collishaw commanded No. 41 Sqdn, back in England, at Northolt, equipped with Armstrong-Whitworth Siskins. From there he attended the RAF Staff College at Andover. He found the College to be run along very

unimaginative lines, with little thought given to actual field problems and how commanders in the field overcame them. The Naval Staff couldn't see any need for aircraft that could sink an enemy battleship -- that's what they had battleships for. They prepared plans to refight WW I, not the coming (then unrealised) war. From the Staff College he went to command No. 23 Sqdn flying the new Gloster Gamecock. They did a lot of night flying in cooperation with the London AA Squads. One night his Gamecock flipped onto it's back while he was landing it. He was in fine shape, nothing broken or bent, but he was stuck in the plane soaked with fuel. A few feet away there was an airstrip marking flare burning merrily away. He expected to be burned to a crisp at any moment, but help came eventually.

In 1927, Collishaw was posted to a new organization that had developed in response to continuing poor relations with France and the lack of aircraft squadrons in England. He became the Head of the Department for Operations and Intelligence working under Air Marshall Sir John Salmond of the Air Defence of Great Britain. They all assumed that if war came, it would be with France. During this period there was a strong anti-military lobby in the League of Nations. Part of this was a movement to outlaw aerial bombing. Collishaw blamed this activity for limiting England's bombing abilities at the beginning of WW II. By the end of WW I the Handley-Page 0/400 bombers were dropping 1,650 pound bombs, and the H-P 1500 bomber was capable of dropping a 3,360 pounder. At the beginning of WW II the maximum bomb size carried by English aircraft was a 500 pound bomb.

In July, 1929 Collishaw was sent as Senior RAF Officer aboard HMS Courageous, England's newest and largest aircraft carrier located in Malta. He spent three years aboard the ship. From there he spent three years commanding RAF Station Bircham Newton where No.s 35 and 207 Sqdns were located flying Fairey Gordon light bombers. The only respite



Fairey Gordon light bomber

he had from boredom was the rare visit from the King and Queen. In 1935, he was finally promoted to Group Captain and was sent to command RAF Station Upper Heyford. After a few months the Italians invaded Ethiopia and the government wanted an experienced commander in the region. Ray was sent to Sudan to take over No. 5 Wing of the RAF's Middle East Command. The Wing was composed of his old compadre's, Sqdns 35 and 207 still flying Gordon bombers and No. 3 Sqdn flying Bristol Bulldogs.

Nothing much came of the British response to the Italian campaign and the Wing was disbanded in 1936. Collishaw, however, took over command of the RAF Station at Heliopolis, Egypt. Here there was a lot to do with the menace that was growing in Europe. On leave one time, he and his wife took a motor trip from Cairo through Cerenaica (north eastern Libya). He took careful note of military installations along the way (there was only one road) for future reference that was to stand him in good stead.

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