



The Flightline



Volume 43, Issue 1

Newsletter of the Propstoppers RC Club

AMA 1042

January 2013

President's Message



Happy New Year to all we had a great 2012 year for flying and many new members . Having two fields has been great we fit all types of elect. fuel large planes and helicopters and a fine group of Members who are willing to share their knowledge making this Club the best .

The library has requested we use the main entrance the back door will remain closed..This meeting we can plan for a swap meet for Feb. If you have a show + tell bring it in these are great we get to see new planes and learn from others. Don't forget the indoor flying Jan 4th Tinicum and Jan 12th .Brookhaven see you there. The meeting is Jan 8th

MERRY CHRISTMAS and a HAPPY NEW YEAR

Dick Seiwel, President

Agenda for January 8th Meeting

At Middletown Library;

Doors open 6:00, meeting at 6:30

1. Installation of new Officers
2. Membership Report
3. Finance Report
4. February Swap Meet?
5. Show and Tell

Minutes of the Propstoppers Model Airplane Club

December 12, 2012

Call to order was at 6:38 by Vice-President Eric Hofberg

Minutes of the November meeting were approved by the membership

Treasurer's report by Pete Oetinger was presented and accepted

Old Business:

Per the vote at the last meeting, a contribution to Elwyn was made. We received a letter of thanks from them. Elwyn remains as one of our main flying sites. With some good weather, Flying has continued into December.

New Business:

The library has requested that we no longer enter through the basement. They prefer that we enter through the library main entrance.

Eric Hofberg announced that he will again host an open house displaying his train layouts over the Christmas holidays. Details will be sent in an e-mail.

Show and Tell:

Al Tamburro showed an electric control line plane he built from scratch together with an automatic electronic speed controller.. More on this overleaf.

Dave Harding showed two old Cox electric control line planes that worked from batteries situated on the pilots hip. The control lines were insulated and carry current to the planes.

Adjournment took place at 7:50 pm

Dick Bartkowski, Secretary

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Indoor Flying

Brookhaven Borough Gym 6till 9:30 pm
Saturdays Jan 12 Feb 9 March 9

Tinicum School Gym 6 till 9 pm
Fridays Jan 4 Feb 1 Mar 1

Guests flyers OK with \$3 charge, AMA required.

Calendar of Events

Club Meetings

Monthly Meetings
Second Tuesday of the month.
Middletown Library
Doors open at 6:00, meeting at 6:30 pm.
Next Meeting; 11th December

Tuesday Breakfast Meeting
Tom Jones Restaurant on Edgemont Avenue in
Brookhaven. 9 till 10 am. Just show up.
Flying after in the Summer at CA Field or
Chester Park; 10 am. weather permitting.

Regular Club Flying

At Christian Academy; Electric Only
Monday through Friday after school till dusk
Saturday 10 am till dusk
Sunday, after Church; 12 pm till dusk
At Elwyn Field; Gas or Electric
Monday through Saturday 8 am till dusk
Sunday 12 pm till dusk

Indoor Flying

Guests OK, AMA required.
Brookhaven Borough Gym 6till 9:30 pm
Dec 15 Jan 12 Feb 9 March 9
Tinicum School Gym 6 till 9 pm
Dec 7 Jan 4 Feb 1 Mar 1

Special Club Flying

Saturday mornings 10 am
Wednesday Helicopter evening in summer
Thursday evenings in the Summer
Tuesday mornings 10 am weather permitting
after breakfast.

Check our Yahoo Group for announcements;
<http://groups.yahoo.com/group/propstoppers/>

Beginners

Beginners using due caution and respecting club
rules may fly GWS Slow Stick or similar models
without instructors.

The club also provides the AMA Introductory Pilot
Program for beginners without AMA insurance.

Al Tamburo's Frankenplane Show and Tell



For some time now Al has been building, flying and developing electric powered U/C models. For many of us club members who flew U/C back in the day these developments are quite interesting and open up new avenues to this kind of flying.

Most of us are victims of "officials" of parks and school yards who chased us away for making too much noise. This became so prevalent that an entire generation of "officials" learned to chase away any and all model flying from these places. Fortunately the development of quiet electric powered models progressed at such a slow rate that the generation that followed the old officials had no aero modelers to chase and the next generation, today's park and school officials, welcome us to fly our quiet models!

So back to Al and his developments. These models obviously have electric motors but the controls to the motors are via specially built "timers". These devices not only switch the power on and off after a predetermined time but also facilitate a start delay followed by a power up ramp to the pre-determined power level.

In the heyday of U/C aerobatics the most popular engine was the Fox 35. the primary reason for this is the operating characteristics which allowed a power setting with the engine developing modest power while "four cycling" in level flight and a transition to high power two-cycling in maneuvers. This allowed the models to climb and power through the maneuvers without loss of speed then return to the low power four-cycle operation when back to level flight. This characteristic was "activated" by placing the fuel tank in such a position as to allow the fuel head (pressure) to decrease due to the maneuver loads; A tank below and behind the carburetor would yield such a pressure change.

Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers

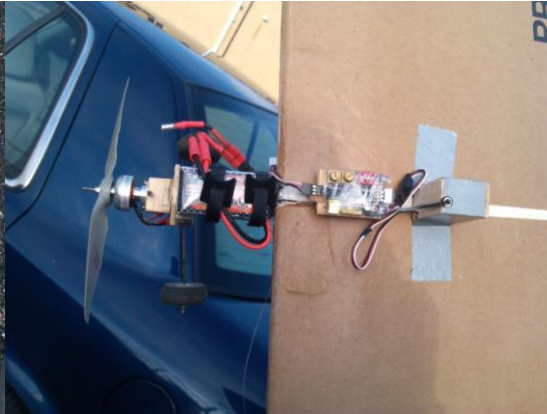
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Anyway, this characteristic was important to the flying qualities of U/C models and Al together with Jim Barrow, the electronics whizz, are developing such a system for the electric powered models. All displayed this brass board system at the meeting.

The other aspect of Al's show and tell was the model he displayed. It is constructed from "Dollar Store" foam board, an inexpensive material that consists of a paper sandwich with lightweight foam; \$1 per sheet! Al explained how you could use it in it's flat state or form it to various airfoils by scoring the inner face sheet.

The Frankenplane design features a diamond shaped symmetrical airfoil similar to that used in the club's old RC combat plane designed by former member Marty Bakalorz and Steve Boyagian flew back a dozen years or so. Their model used a plastic drain pipe for a fuselage, a yardstick for the wing spar and Coroplast for the wing and tail surfaces. Coreplast is a heavier material appropriate to those larger, heavier, oily models.. I can't find a picture of that model but here is one of Ray Wopatek with his Armadillo featuring a similar wing and tail. This model used an aluminum tube for the "fuselage" and was almost bullet proof. Right Ray? The picture was taken at one of our Sleighton fields, the one on the upper field looking away from the sun.



Here is another of Al's electric U/C model developments: "Time Out".

The wing of this model is made from foam core with the top layer of paper removed and replaced with border paste and brown paper. Border paste is much stronger than wallpaper paste and so is brown paper when properly soaked with white glue. But you must be careful covering foam with brown paper as it shrinks. So the correct method is to cover both sides at the same time so the shrinkage is symmetrical.



Al Tamburo.

One smart dame!

In 1933, a beautiful, young Austrian woman took off her clothes for a movie director. She ran through the woods, naked. She swam in a lake, naked. Pushing well beyond the social norms of the period, the movie also featured a simulated orgasm. To make the scene "vivid," the director reportedly stabbed the actress with a sharp pin just off-screen.

The most popular movie in 1933 was King Kong. But everyone in Hollywood was talking about that scandalous movie with the gorgeous, young Austrian woman.

Louis B. Mayer, of the giant studio MGM, said she was the most beautiful woman in the world. The film was banned practically everywhere, which of course made it even more popular and valuable. Mussolini reportedly refused to sell his copy at any price.

The star of the film, called Ecstasy, was Hedwig Kiesler. She said the secret of her beauty was "to stand there and look stupid." In reality, Kiesler was anything but stupid. She was a genius. She'd grown up as the only child of a prominent Jewish banker. She was a math prodigy. She excelled at science. As she grew older, she became ruthless, using all the power her body and mind gave her.

Between the sexual roles she played, her tremendous beauty, and the power of her intellect, Kiesler would confound the men in her life, including her six husbands, two of the most ruthless dictators of the 20th century, and one of the greatest movie producers in history.

Her beauty made her rich for a time. She is said to have made - and spent - \$30 million in her life. But her greatest accomplishment resulted from her intellect, and her invention continues to shape the world we live in today. You see, this young Austrian starlet would take one of the most valuable technologies ever developed right from under Hitler's nose. After fleeing to America, she not only became a major Hollywood star, her name sits on one of the most important patents ever granted by the U.S. Patent Office.

Today, when you use your cell phone or, over the next few years, as you experience super-fast wireless Internet access (via something called "long-term evolution" or "LTE" technology), you'll be using an extension of the technology a 20-year-old actress first conceived while sitting at dinner with Hitler.

At the time she made Ecstasy, Kiesler was married to one of the richest men in Austria. Friedrich Mandl was Austria's leading arms maker. His firm would become a key supplier to the Nazis. Mandl used his beautiful young wife as a showpiece at important business dinners with representatives of the Austrian, Italian, and German fascist forces. One of Mandl's favorite topics at these gatherings - which included meals with Hitler and Mussolini - was the technology surrounding radio-controlled missiles and torpedoes. Wireless weapons offered far greater ranges than the wire-controlled alternatives that prevailed at the time. Kiesler sat through these dinners "looking stupid," while absorbing everything she heard.

As a Jew, Kiesler hated the Nazis. She abhorred her husband's business ambitions. Mandl responded to his willful wife by imprisoning her in his castle, Schloss Schwarzenau. In 1937, she managed to escape. She drugged her maid, snuck out of the castle wearing the maid's clothes, and sold her jewelry to finance a trip to London. (She got out just in time.)

In 1938, Germany annexed Austria. The Nazis seized Mandl's factory. He was half Jewish. Mandl fled to Brazil. Later, he became an adviser to Argentina's iconic populist president, Juan Peron.)

In London, Kiesler arranged a meeting with Louis B. Mayer. She signed a long-term contract with him, becoming one of MGM's biggest stars. She appeared in more than 20 films. She was a co-star to Clark Gable, Judy Garland, and even Bob Hope. Each of her first seven MGM movies was a blockbuster. But Kiesler cared far more about fighting the Nazis than about making movies. At the height of her fame, in 1942, she developed a new kind of communications system, optimized for sending coded messages that couldn't be "jammed." She was building a system that would allow torpedoes and guided bombs to always reach their targets. She was building a system to kill Nazis.



By the 1940s, both the Nazis and the Allied forces were using the kind of single-frequency radio-controlled technology Kiesler's ex-husband had been peddling. The drawback of this technology was that the enemy could find the appropriate frequency and "jam" or intercept the signal, thereby interfering with the missile's intended path. Kiesler's key innovation was to "change the channel." It was a way of encoding a message across a broad area of the wireless spectrum. If one part of the spectrum was jammed, the message would still get through on one of the other frequencies being used. The problem was, she could not figure out how to synchronize the frequency changes on both the receiver and the transmitter. To solve the problem, she turned to perhaps the world's first techno-musician, George Antheil.

Antheil was an acquaintance of Kiesler who achieved some notoriety for creating intricate musical compositions. He synchronized his melodies across twelve player pianos, producing stereophonic sounds no one had ever heard before. Kiesler incorporated Antheil's technology for synchronizing his player pianos. Then, she was able to synchronize the frequency changes between a weapon's receiver and its transmitter.

On August 11, 1942, U.S. Patent No. 2,292,387 was granted to Antheil and "Hedy Kiesler Markey," which was Kiesler's married name at the time. Most of you won't recognize the name Kiesler. And no one would remember the name Hedy Markey. But it's a fair bet than anyone reading this newsletter of a certain age will remember one of the great beauties of Hollywood's golden age ~ Hedy Lamarr. That's the name Louis B. Mayer gave to his prize actress. That's the name his movie company made famous. Meanwhile, almost no one knows Hedwig Kiesler - aka Hedy Lamarr - was one of the great pioneers of wireless communications.

You're probably using Lamarr's technology, too. Her patent (<http://www.google.com/patents/US2292387>) sits at the foundation of "spread spectrum technology," which you use every day when you log on to a wi-fi network or make calls with your Bluetooth-enabled phone. It lies at the heart of the massive investments being made right now in so-called fourth-generation "LTE" wireless technology. This next generation of cell phones and cell towers will provide tremendous increases to wireless network speed and quality, by spreading wireless signals across the entire available spectrum. This kind of encoding is only possible using the kind of frequency switching that Hedwig Kiesler invented.

When the war ended, Lamarr and Antheil put the invention behind them. It was not to be implemented in Antheil's lifetime. However, while seemingly inactive, the patent was not forgotten. Electronic technologies were beginning to develop, and in the 1950s, engineers from Sylvania Electronic Systems Division began to experiment with the ideas in the Secret Communication System patent, using digital components in place of the paper rolls. They developed an electronic spread-spectrum system that handled secure communications for the US during the Cuban Missile Crisis in 1962. By then, the Secret Communications System patent had expired.

It was in the early 1960s that the term "spread spectrum" began to be used. Today it refers to radio communications that employ cryptographic subsystems (like the pseudo-random patterns on the Secret Communications System's paper rolls), use a wide frequency spreading factor (much wider than typical voice telephone communications), and are not dependent on a particular type of tonality (such as a human voice) in the transmitting waveform.

"Hedy Lamarr and George Antheil were the first to satisfy all three ingredients," says Price. Their spread-spectrum technique is today called "frequency hopping" because the transmission jumps from frequency to frequency.

Initially, spread spectrum remained a military communications technology, and even today "the Defense Department of the United States has a huge investment in spread spectrum of a frequency-hopping type now, just like Hedy Lamarr's, which protects our assets all over the world," notes Price.

In the mid-1980s, the US military declassified spread-spectrum technology, and the commercial sector began to develop it for consumer electronics. Today, it's an increasingly important component of mobile telephony. CDMA (Code Division Multiple Access) technology uses spread spectrum. Spread spectrum has proven highly useful in cellular telephones, because its inherent encryption guarantees better privacy for cellular phone users. The technology has also proven to be an extremely efficient method for using radio waves. Rather than requiring each transmission to use its own frequency, spread spectrum enables people to simultaneously communicate over the same bands of spectrum without appreciable interference. Thus, as more people buy cellular phones, the increasing demand for spectrum can be accommodated by sharing the same frequencies.

So much for history, and why are you bothering us with the Dave? Well, of course we owe our 2.4GHz radios to Spread Spectrum technology, and guess what? Spektrum and Futaba do it differently. Why, How and So What?

First let me try to explain the techniques in simpler terms. Let's imagine our 50 channels of 72 MHz radios are voice channels. Each channel works like a telephone line. I could talk to you via one channel and you would hear what I am saying. Then my wife could talk to you and you would recognize her; so long as you have spoken with her before! The difference? Well we speak with different frequencies; my voice is a low frequency and my wife's high, but you can understand what each of us say. If we both spoke at the same time over the same channel, or phone line, you could probably understand what we each said.

Well, you might have said you could "bind" to each of our voices, and indeed you can; we do recognize voices. This is basically frequency diversity on one channel and it is quite complex, but the brain sorts it out.

Now if there were some noise on that channel you might not be able to understand us both, so, as we do in our everyday phone conversations, if we get a noisy line we hang up and dial again, seeking a clear channel. Now going back to our 50 channel 72 MHz scenario we could switch to another channel too.

What if we could automate the hopping from one channel to another? This way we would have a greater chance of the message getting through even though parts of the message is lost or corrupted as we pass through the bad channel. Well, our verbal communication has a good deal of redundancy built in so we can often/usually understand the message despite missing some bits. Us deaf guys get quite good at it, although sometimes.....

Anyway, what if our model radio commands get dropped or missed? The information we send to our model is a very low speed/frequency command. We pull up on the stick and the model responds. We can't tell if the response is slightly slow or if it had a momentary reverse because the model responds slowly too, at least in terms of communication speeds.

(This is not always so. Ask me about the experiment with the Widener model configuration where I use a thirty year old servo that was slow as cold molasses).

Now if we were smart we could test the individual channels for noise before sending information over it.

What I have just described is the basis for the Futaba FASST spread spectrum protocol, except it uses the 80 channels of the 2.4 GHz band. The technical term for this method is Frequency Hopping Spread Spectrum, or FHSS.

Now let's go back to the communication with my wife and I using the same channel/band for our conversations. What if, instead of using one channel at a time we chopped our communication into small pieces and sent it over several channels at once? How in the heck would we receive and decode it? Well, we would instruct the receiver as to which channels we will use. This would be part of the binding process; first bind to the voice then to the channels selected. The receiver collects the pieces from the stated channels then decodes for the voice it is expecting; a unique voice/code.

This is basically what the Spektrum DSM process uses. The technical term is Direct Sequence Spread Spectrum, or DSSS.

Here are some links to further explore and understand the processes as they apply to our radios;

<http://www.rchelicoptertfun.com/spectrum-radios.html>

<http://www.youtube.com/watch?gl=CA&v=xUyhPDVBial>

So tip your hat to Hedy Lamarr and thank her for her contribution.

Dave

Hollywood Does RC Model Airplanes

Well, us old guys know the story but I thought many of our newer, younger members might like to know that we owe something to Hollywood for early developments in our hobby.

A star in early movies, initially the silent variety and later "talkies" was Reginald Denny, a handsome young Brit.

he had come to the US with his family in 1908 to act in the play "The Quaker Girl". Cutting a dashing figure with his athletic good looks, he joined a stage troupe in 1912 that toured the US, India and parts of the Far East. He made his film debut in 1912 and appeared in several British pictures. Possessed of a fine baritone voice, he also toured with the Bandmann Opera Company. He liked what he had seen of the US and returned in 1915, making his debut in American films that year.

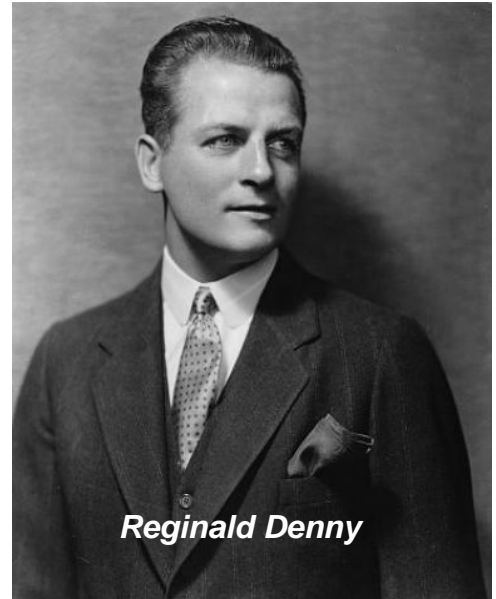
In 1917 Denny joined the Royal Flying Corps as a pilot and remained for two years, during which he became the brigade heavyweight-boxing champion. He took his acting and flying experiences with him back to Hollywood, where he settled in 1919 and where his film career took off in earnest.

He became interested in model plane building--and, particularly, the potential of radio-controlled model planes--in the early 1930s and embarked on a surprising second career as something of an aviation pioneer in drone technology.

Along with this serious business of controlled aircraft, Denny opened a model shop in 1935 on the north side of Hollywood Boulevard called Reginald Denny's Model Shop (he lived nearby at 2060 N. Vine St.). The newsreel cameras were close behind, providing publicity for the shop and the models via Movietone shorts. He was also featured in magazines catering to model-airplane hobbyists and other enthusiast magazines. Along with the model kits (many rubber band-powered but also some powered by gas engines) developed by his company,

Denny sold a great variety of model items, and his shop was, to say the least, a popular hangout for boys in the area for several generations (though others eventually took over the aviation interest and the shop). Denny was himself a consummate modeler of great skill who built at least one special example of his large one-engine "Dennyplane" for [Robert Montgomery](#).

The shop evolved into the "[Radioplane Company](#)". Denny believed that low-cost RC aircraft would be very useful for training anti-aircraft gunners, and in 1935 he demonstrated a prototype target drone, the RP-1, to the US Army. Denny then bought a design from Walter Righter in 1938 and began marketing it to hobbyists as the "Dennymite", and demonstrated it to the Army as the RP-2, and after modifications as the RP-3 and RP-4 in 1939. In 1940, Denny and his partners won an [Army](#) contract for their radio controlled RP-4, which became the [Radioplane OQ-2](#). They manufactured nearly fifteen thousand drones for the army during World War II.



Reginald Denny



Actor Robert Montgomery
with his Dennyplane



Reginald Denny with his engineer Walter Richter and one of their Radioplanes



It was at the Van Nuys Radioplane factory that in 1944 that Army photographer David Conover saw a young lady named Norma Jeane, and thought she had potential as a model. This "discovery" led to fame for Jeane, who soon changed her name to [Marilyn Monroe](#).



The Widener students making progress in constructing their entry in the SAE Aero competition. The model has a twelve foot wing with two foot chord and a large close coupled tail shown here. They had the ribs laser cut from CAD files they developed. The model will be expected to fly powered by an OS FX61 at about 55 pounds gross weight of which 40 pounds will be payload. They have managed to find some tungsten rods for the ballast making the payload box as small as possible. The rules forbid them from using lead, nor can they use fiber reinforced structures. Watch this space for updates as the model comes together and flight tests begin in the February time frame.

Dave Harding

Membership Renewal For 2013

Membership renewal for 2013 is now required. You can renew by mail or at the club meeting in January.

Don't loose your club privileges!

Bring cash or check and your AMA card.

Dues are \$60.

Ray Wopatek
1004 Green Lane
Secane, PA. 9018

Please enclose a **copy** of your current
A. M. A. Membership card,

And Please, Please enclose a
Stamped self- addressed envelope.

Ray Wopatek Membership Chairman