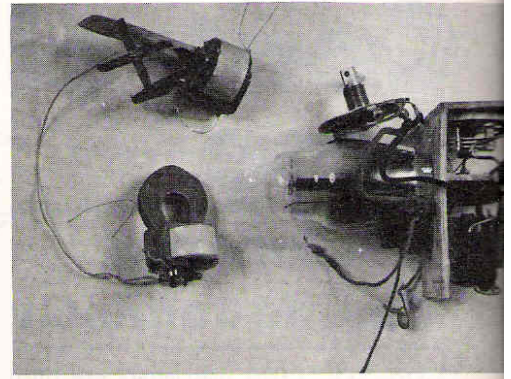
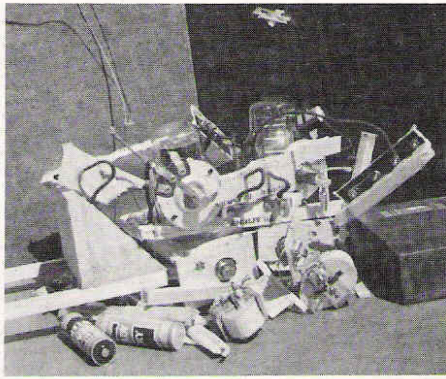


Left: Walt Good and the RC Guff with a new body for the 1938 Nats. Lester Good (Pop) on left, ham operator Kreilick on right. Right: Although external damage to the plane was mild, internal damage to the receivers appeared awesome; they were repaired and used again.



Goods' radio equipment in 1938. Clockwise from right: receiver with Type 30 tube, sensitive relay and escapement. All homemade.

THE 1937 NATIONAL CONTEST revealed, in the preceding installment, that the beginning steps of RC model plane development were a blend of two different hobbies: gas-powered model planes and amateur radio. The modeler needed to produce a stable, controllable plane which could easily carry the radio gear, and the radioman needed to produce the airborne radio gear to tolerate the environment of vibration and ignition noise—and hard landings. Only a few individuals possessed both skills, so most of these early efforts utilized at least two persons.

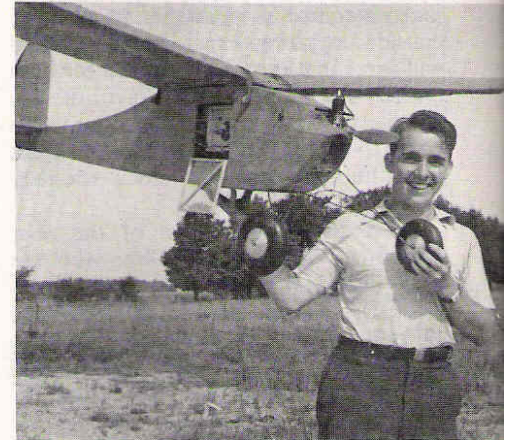
The stories of the next four Nats, starting with 1938, will highlight many of the advancements as they happened. While there were just six entries in 1937, the number had climbed to 26 by 1941. Each year some old hands would reappear, and

many RC successes burst forth, especially with the final prewar meet in 1941.

1938 Nationals

The second AMA Nats with an RC event was in Detroit on July 9, 1938. There were five entries. Two were veterans of the 1937 event, Pat Sweeney and Walt Good. Chet Lanzo, the 1937 winner, did not enter this time. Elmer Wasman spectated due to receiver problems. Leo Weiss and B. Schiffman didn't show. The three newcomers were Clinton DeSoto, Howard Flanigan, and Mike Roll.

DeSoto had a giant 25-lb. Cub with a 14-ft. span and a twin Forster engine. The two controls (rudder and elevator) required four separate receivers using the new RK62



This picture taken at the Kalamazoo Airport a few weeks after the 1938 Nats crash shows Walt smiling. No wonder. The Guff with rebuilt Rx (see side window) was flying again.

In the three-part series concluded in this issue, our author has taken us from the first RC event at the 1936 National Contest, the year in which AMA was founded 50 years ago, to the final prewar Nats in 1941. Offering RC that first time may have been pure optimism (there were no entrants), but RC established itself forever as a dynamic modeling class just five years later. Part 3.



Walt Good History of RC Flying

newcomers would arrive to bolster the ranks. No one person actually entered all of the five prewar Nats RC events. Although Wasman and Good attended all five, they officially flew in only four. However, enough repeaters were present at each meet to develop a camaraderie among these pioneers, a closeness that still remains today, 50 years later.

At each meet we'll review the top fliers and their equipment—and observe the development of trends toward success. Finally, we'll witness the moments when

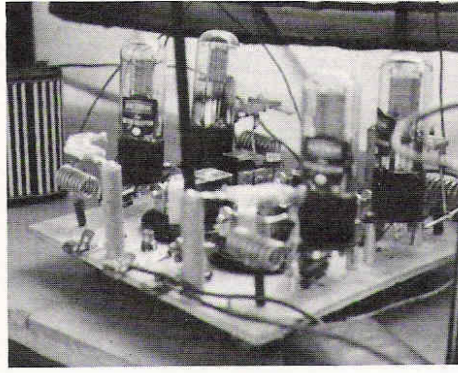
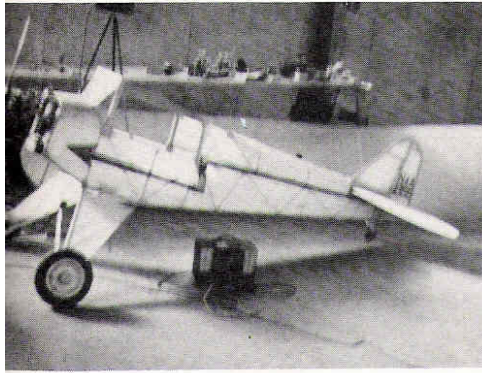
Raytheon gas tube in a one-tube superregen circuit with a Sigma relay in each. Four transmitters on four separate frequencies (56-60 MHz) were used to operate the receivers to give left/right and up/down flight control. With no signal, the control surfaces remained in their last positions. No provision was made for automatic return to neutral positions, and our hindsight tells us that the non-neutral-return system may have been difficult to fly at this early stage of RC.

Two reversible motors operated the rudder

independently and simultaneously if desired. Everyone was anxious to see this behemoth fly. Total radio payload was 4½ lb. Before the Nats, the total flight weight was 28 lb., but the 10-in.-dia. wheels and steel landing gear were lightened to bring the weight just under the RC event limit of 25 lb. maximum.¹

We were all very disappointed that the giant Cub wasn't flown. To this day, I've not learned whether the Cub was ever flown.

1938



Left: The DeSoto Cub, second at the 1938 Nats, sits in a Wayne County Airport hangar. Wing of the 25-lb. model can be seen in the background. Center: Four RK-62 receivers controlled the Cub's rudder and elevator. Right: Cub fuselage outside the hangar. It's a biggie.

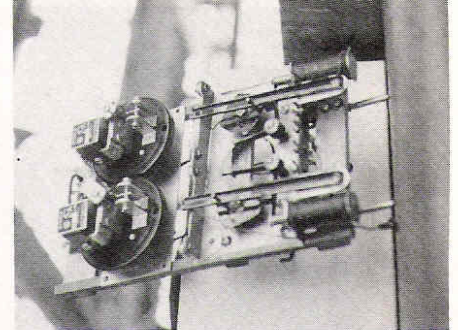
Good's Big Guff had a new fuselage with a big radio compartment, 12 x 15 x 6 in., to allow easy access to all of the airborne gear. The relays and actuators had been changed from the 1937 rig. Homemade polarized relays with lightweight balanced armatures were more resistant to engine vibration and would operate reliably on a current change of 1/2 milliamperes. The actuators were changed to homemade four-spoke escapements mounted directly in the fin and horizontal stabilizer, allowing a very short and direct mechanical connection to the control surfaces. The 1-oz. escapement had positive positions and was very fast—a few tenths of a second to any position. Our old cycling actuator took over 3 sec. and lacked positive home positions.

Both the rudder and elevator were operable. However, only the rudder was actually connected at the 1938 meet.

Howard Flanigan's plane had an 8-ft. span with two large four-spoke escapements in the cabin for rudder and elevator control. It used two RK62 receivers on 56 and 60 MHz and a Brown Jr. for power.

Pat Sweeney brought a new plane, the Custom Cavalier, a well-established design from the Free Flight Gas arena. It is believed he used some of his 1937 gear with a rubberband-driven escapement for rudder control.

Mike Roll. From our ancient photo album,



Left: Howard Flanigan (in the hat) and his 8-ft. cabin plane with two controls placed third in 1938. Right: Flanigan's setup used two Sigma relays at the top and two escapements at the bottom fastened to a wooden bulkhead which was then fitted inside the cabin.

we see his RC plane was a streamlined shoulder-wing type similar to a Cavalier. It used only rudder control.

Strangely, not much detail was written about the equipment in these early RC models. This was partly because the reporters weren't very knowledgeable about RC and partly because the RC event reports were brief in order to share space with the many other events at the Nats.

The Radio Control event was on Saturday, July 9, the windiest day of the Nats. These pioneers liked RC, but they didn't like that much wind!

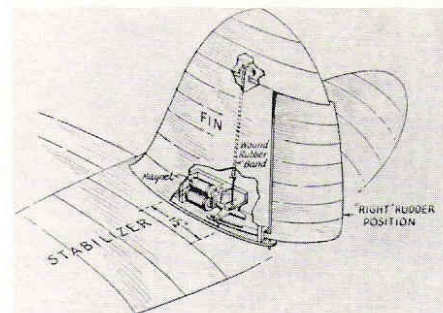
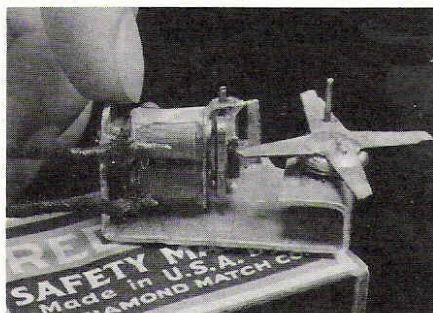
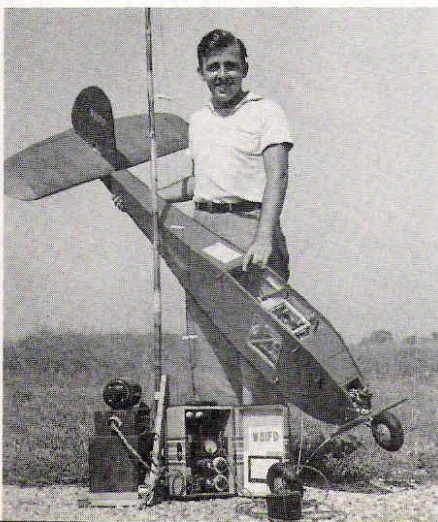
Good. My ship had chalked up about 30 flights since the last Nats, so I had gained confidence in the new controls and decided to give it a try. To keep this account of my

"flight" accurate and unbiased, we turn to the description by Charlie Grant, then editor of *Model Airplane News*.²

"Toward the end of Saturday afternoon, after diligent work during the entire day, Walter Good had his radio-controlled model prepared for flight. He demonstrated the efficiency of the radio mechanism on the ground. It worked perfectly, and great praise is due this young man for the unique and efficient mechanism which he employed. Paul Kreilick, his radio operator, shares this honor. The mechanism is one of the most complete and efficient that has been exhibited.

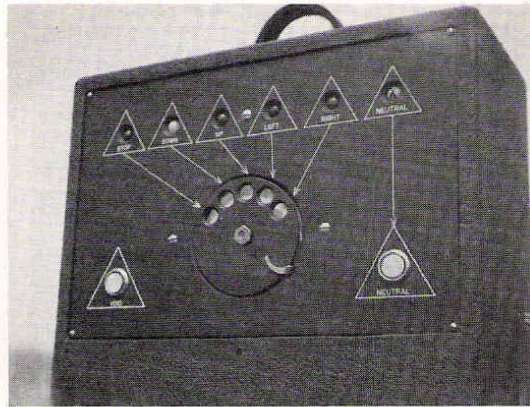
"Finally he undertook to fly his ship, even though the wind was blowing about 20 miles per hour and was very gusty. It was difficult, because of the novelty of this type of ship, to keep spectators from rushing the

1939



Left: Bill Good holds the Guff fuselage next to the new 20-watt transmitter, storage battery, and 400-volt generator. That's portable, believe it or not. A new fin/rudder was also added for 1939. Center: The homemade escapement used in the Guff fin and stab for rudder and elevator control was also new for 1939. Right: Cutaway view of the rudder escapement mounted in the Guff fin. Escapement is sketched oversize to show details.

1939



Left: Joe Raspanti ground-tests his Super Buccaneer, second at the 1939 Nats. Note the tripod-mounted control box. Center: His control box used a telephone dial. Rudder and engine controls were dialed in. Right: The four-tube receiver and sensitive relay inside the cabin.



Left: Phil Sonheim, fourth in 1939, with his helper, is shown holding the receiver package from his plane. He is the uncle of present-day AMA leader Dick Sonheim. Right: Elmer Wasman makes more of the always-required adjustments to his entry just before placing third.

group who was endeavoring to prepare the model's flight. However, finally the model was taken on the field.

"The motor started, and it took off. Unfortunately, the grass was quite long, and some of it caught on the elevator flap and deflected the takeoff so that the model immediately went into a stall, from which it recovered. However, a second stall after a zoom turned it over on its back, and it made a complete loop.

"In the meantime, Walter was endeavoring to do a 100-yard dash back to the operating mechanism, by means of which he hoped to remedy the disastrous conditions of flight. Unfortunately, though, at the bottom of the loop the model hit the ground just before it nosed up and before Walter could control the ship.

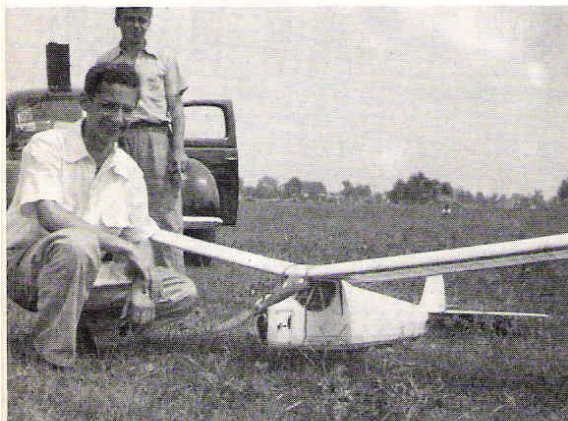
"The ship was not a complete washout,

but the radio apparatus inside the ship looked as if someone had stirred it around in a concrete mixer. The tail and part of the mechanism was damaged, and the nose was pushed in. In spite of this damage and the hours of work which had gone into the model, Walter still had his smile, for which we commend him highly."

I must admit the "smile" was partly a fake, because I was kicking myself for not being near the transmitter at the end of the launch. I had carefully instructed my radio helper, Paul Kreilick, W8QQE, to hold the control box where I could grasp it easily after I galloped back from the launch—and cautioned him not to move the switch, because he had never flown a plane before. A touch of rudder would have corrected the stall by placing the Guff into a circling

Wasman's fuselage carried an RK-62 one-tube receiver and escapement rudder. It didn't make a successful 1939 Nats flight.

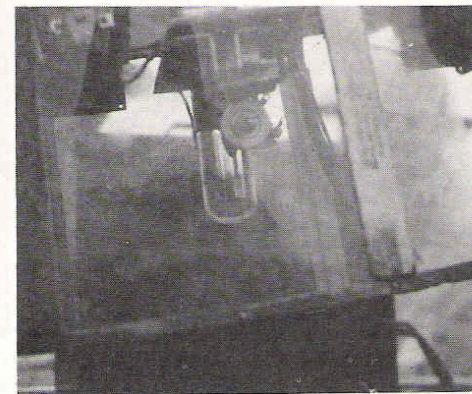
1940

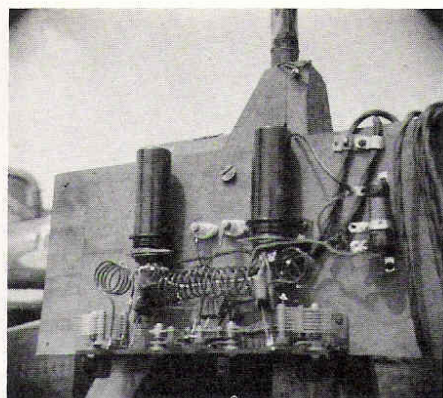


Irwin Leshner's RC entry for the 1939 Nats.

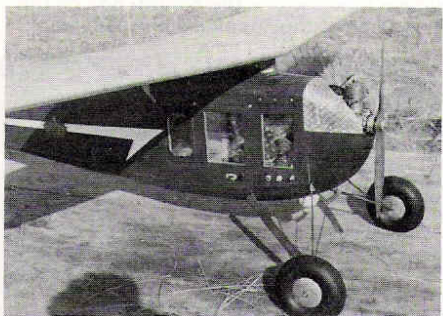


Left: Bieberman's transmitter with "V" antenna sits on top of his car at the 1939 Nats. Right: Bieberman's one-tube receiver is seen here through the transparent panel in the fuselage.





Left: Bill Good built this two-channel transmitter overnight at the local electronics store and then won the meet with it the next day. Center: Bill and Walt prepare the RC Guff for flight. It was fitted for rudder, elevator, and engine control, but only the rudder was used in the 1940 Nats. Right: Bill tuning the receiver with a meter prior to flight—a standard and necessary procedure in the early days. Photo by Al Daraghy.

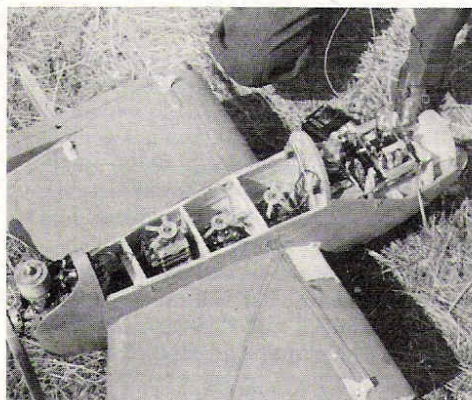


Siegfried's plane with Forster .99 and selector "telephone exchange" behind windows.

flight.

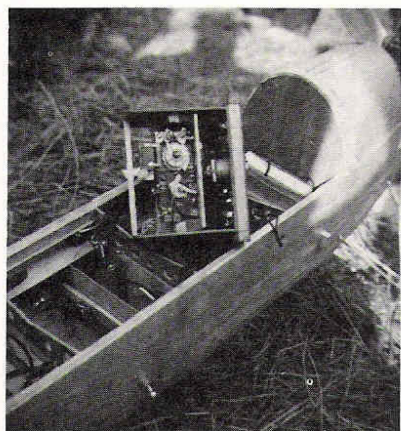
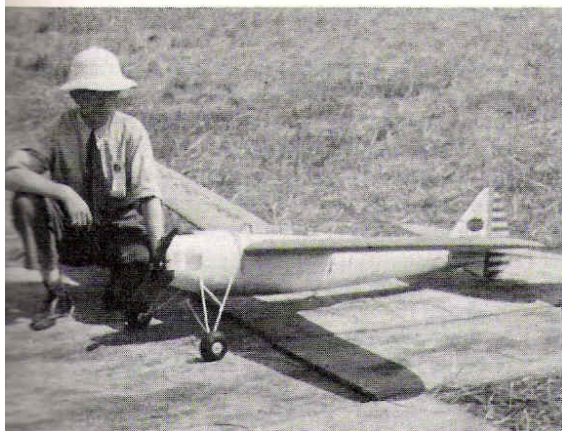
I don't really believe the long grass "deflected the takeoff" as Grant suggested. Since it was a wing-tip-assisted launch, which was finally released at shoulder

Left: The Custin brothers, Tom and Jim, were fourth at the 1940 Nats with their 8-ft. model. Right: Tom Custin holds the 3½-lb. RC receiver and controls—all in one removable unit.



Left: Shereshaw's famous RC-1 pusher plane (fifth) with Cecil Winik helping. Right: The RC-1 with covers removed shows three motorized escapements and two one-tube receivers.

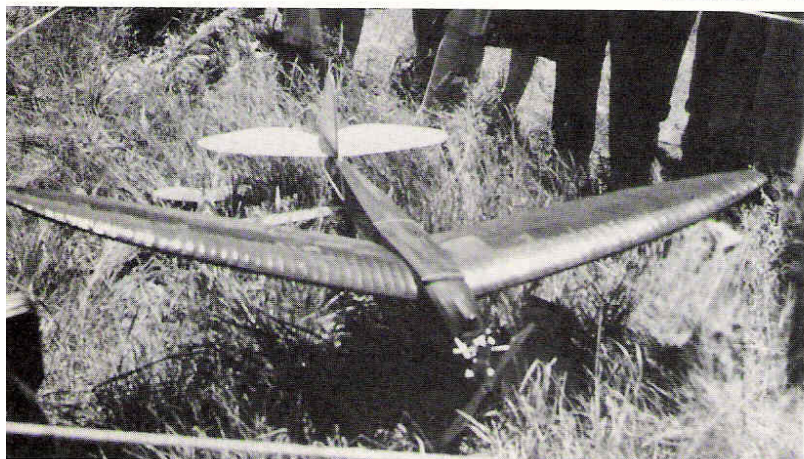
John Ault and enlarged RC Buccaneer—6th.



Left: Phil Sonheim with his 9-ft. 3-ch. plane. Right: A close-up of the homemade selector device. Note use of many bulkheads and compartments to separate the heavy equipment.



Left: Wasman launches his model by the wing tip from a plywood runway. Model then hit the background weeds. Jim Walker sits in the foreground. Right: Bob Reeder and radioman with his pylon model—rudder-only controls.



Jim Walker's 1941 Nats winner with just 7-ft. span had pulse proportional control of the rudder and engine speed. It featured a trike landing gear and was powered by a Brown Jr.



Left: Earle's 9 1/2-ft. original with REM and three receivers. Right: Earle holds the plane while a friend works the control box on the table. Transmitter located in the car's trunk.



Left: Winnie Davis launches Siggy's 14-lb. RC plane. Right: Siegfried's 50-watt transmitter can be seen sitting in the car trunk, control console on the ground, tail of the 14-footer in the background. Plane in the foreground is a backup. Siegfried went on to finish in third place.



Hemp's Miss America RC fuselage. Power was a Barker engine; model placed fourth.

height, any effect of the grass was reduced.

Normally the Guff would climb slowly from the launch as a stable Free Flight model, and the first control command could be delayed several minutes if desired. You can be sure that we learned the lesson about launching in the wind from that important flight. Later, launching in such a wind was handled quite easily by this same model as long as the pilot was at the controls from the start.

If brother Bill had been at the controls (instead of on a Great Lakes ship as radio operator), he would have flicked in a bit of rudder before the first stall!

Grant says further, "The 20-mile wind and the crackup on the initial flight discouraged the other radio event contestants. . . . It was evident from the experiences of these men that at least three or four days should be spent on assembling and testing before any preparation for flight. One day's time proved to be insufficient. This was the prime cause of the lack of successful flights with radio models. The gusty weather clinched the matter, as far as flights were concerned."

We all agreed with that statement, but it would be three years before this time margin was added to the meet schedule. In fact, the 1941 Nats would be the first one to set aside three days for RC. The final standings for the 1938 Nats, based on ground demonstrations and the one attempt-

ed flight, were as follows:

1. Walt Good, Kalamazoo, MI
2. Clinton DeSoto, Granby, CT
3. Howard Flanigan, Detroit, MI
4. Pat Sweeney, Chicago, IL
5. Michael Roll, Dearborn, MI

Even though the Guff was given first place, it was not a very satisfying win.

Thus, we end the second Nats with with much RC interest but still no convincing demonstration of actual maneuvers by a radio-controlled model plane.³

1939 Nationals

In contrast to the 1938 Nats which had only five RC entries, the 1939 Nats had 16. Of these, 11 actually showed up at the Wayne County Airport in Detroit. This time the RC event showed promise of some real action.

Four of the 11 were repeaters from 1937 or 1938. They were Flanigan, Good, Lanzo, and Wasman. The newcomers were Bieberman, Leshner, Mende, Raspante, Rose, Siegfried, and Sonheim.

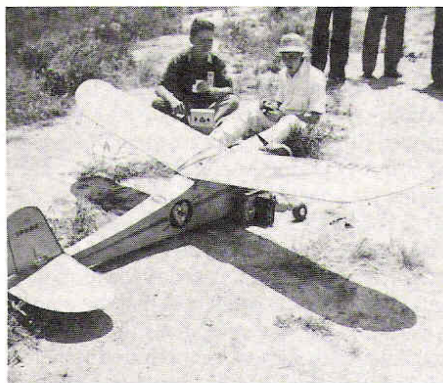
This year the judges would be using a point system for the first time. On the ground, points were given for workmanship and control operation before the actual flight. In flight, points were given for several different maneuvers, such as cross-country and return, circles to left and right, Figure-8, and others. A perfect score would net 100 points.

At the pilots' meeting, the judges decided that they would call out each maneuver in advance so that a fast-talking pilot wouldn't get away with describing what his plane had just done—rather than what it was supposed to do! One contestant suggested that a model with four vacuum tubes in the receiver should receive more points than a receiver with just one tube. Of course, the one-tube fliers objected, and the judges ruled that the performance was to be the principal factor, not the number of parts. Thank goodness!

All of the models had the basic rudder control, and a few also had elevator control. Many used the new single RK62 gas-tube receiver and Sigma relay with escapement actuators. The trend of rudder-only was beginning to emerge.

Goods. The weather was perfect: cumulus clouds and a very light breeze. Even better for me, brother Bill was present for his first RC Nats, having missed the two before. The Guff had a new fin and rudder (replacements on account of the 1938 Nats "flight" damage) and new, lighter (0.5-oz.) escapements. The two receivers were rebuilt versions with the same Type 30 tube.

The batteries were anchored to the floor of the body instead of being part of the receiver/relay package. In the 1938 crash the batteries were integral with the receiver package, and this proved decisively that one pound of loose batteries could be very destructive! Lesson learned: mount the



Ault (with helmet) and his RC Guff-type plane which had escapement control and was fifth.

batteries separately.

With more than 60 flights on the Guff and several public demonstrations throughout southern Michigan during 1938, we had high hopes that this might be *the* year for a true RC demonstration.

Bill was the pilot (we always took turns), and I launched the Guff by running with the wing tip. First, the judges called for a left circle followed by a right circle. The plane did both. Then came the "cross-country and return" request. The plane climbed into the light breeze for almost two minutes before the judges said the half-mile point had been reached. Bill steered a 3/4-circle to the left, followed by a 1/4-circle to the right, and headed back toward the transmitter. The Guff soon arrived overhead to complete the "return"—at which point it had well over 1,000 feet of altitude. While the Guff was being turned back into the wind, the Figure-8 was requested. This was a large left circle followed by an equal-sized right circle to form an 8. It went smoothly. Next, Bill chose a spiral dive and stall for the optional stunt maneuver, which also went well. (At home we had been practicing the spiral dive and a loop, using just rudder control, but that was a bit unreliable. We agreed not to use it.)

It should be mentioned that even though the Guff had both rudder and elevator controls, we decided to use only the rudder—with which we had the most experience. The elevator receiver was switched off, and the elevator escapement was pinned in neutral.

With all the required air maneuvers completed, the plane was cruising at 1,500 feet. It was in a thermal. Then the engine stopped at 6 min., which was normal.



George Karpovich adjusts his Custom Cavalier featuring two-escapement control. Clinton DeSoto helps with transmitter controls.

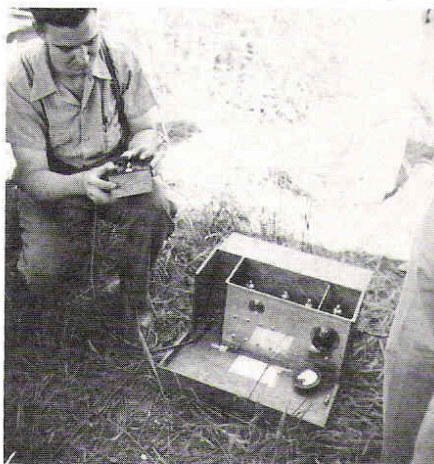
For the next few minutes, Bill repeated several of the maneuvers to try to better the point score. I don't remember whether that ploy helped, but the control during the glide worked well, and there was still altitude to burn.

At this moment, the district radio inspector, who had earlier checked the ham licenses and was then witnessing the flight, asked if he might have a try at the stick. While keeping his eyes on the plane, Bill calmly asked him if he had a ham license. The reply was, "No." "Sorry," said Bill!

Fliers from other events on the field collected around the transmitter and landing area after the word had spread that a radio job was in the air. One of the judges was trying to tell Bill when and where to make the turns in the approach, so I had to butt in and tell the judge that this last task was a "spot landing" and that it was Bill's job to make the turns as he saw fit to get as close as possible. Bill was using the steering technique of keeping the final turn before landing banked as long as possible, then giving quick opposite rudder to level the wings, followed by neutral. The plane would then float in for a smooth landing. It did—and less than 100 feet from the judges! The points awarded were 89 out of a possible 100.⁴

What a nice day that was!

Of the flight, Zaic's *1939 Nats Book* said: "Was it under control? Sure was! From the moment it took off until it glided



Left: Ken Harker behind Purdue University's 12½-ft. entry. Model was demonstrated on the ground but not flown. Center: The Harker transmitter used tone control for three-channel operation. Right: 10-tube receiver with electronic tone selection used in the Harker plane.

back to its master. It was worth coming to the Nationals just to see this historic performance."⁵

Joe Raspante and his 11-ft. Super Buccaneer then set up for his flight. Sal Taibi was the only person I ever saw who could hand-launch that giant plane from over his head—not from the wing tip.

Joe's plane had a four-tube receiver and rudder control. It was beautifully crafted and powered by a Forster .99. The control box used a telephone dial with five commands for up/down, right/left, and stop engine. Since the photos of the plane show no elevator flap, I believe that the rudder and engine were the only active controls he used that year.

The flight lasted almost four minutes and gathered a total of 11 points for the second RC flight made at the 1939 Nationals. One account states that radio interference stopped the engine prematurely.

Elmer Wasman had a short flight at the meet for third place, but he told me later that his best RC demonstration took place at the dedication of a new airport in southern Georgia shortly after the Nats.

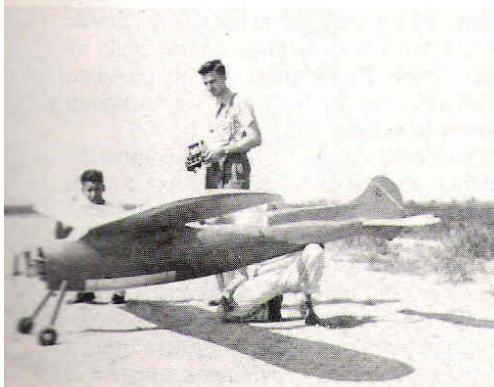
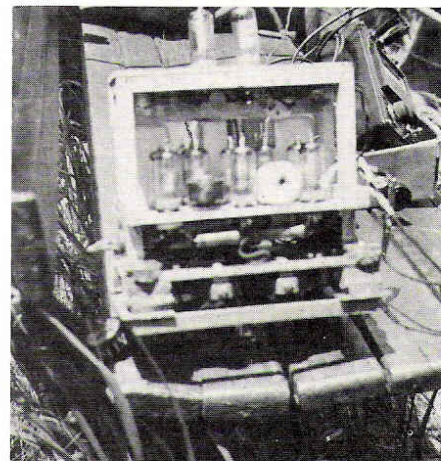
According to my notes, a total of six pilots attempted flights that day. The list below shows who they were and how they placed.

Pl., Name, Hometown, Age, Points

- 1, Walt and Bill Good, Kalamazoo, MI, 23, 89
- 2, Joe Raspante, Brooklyn, NY, 29, 11
- 3, Elmer Wasman, Jacksonville, FL, 30, 9
- 4, Phillip Sonheim, Nielsville, WI, 27, 8
- 5, Charles Siegfried, Wichita, KS, 42, 8
- 6, Robert Mende, Flint, MI, 22, 8
- 7, Erwin Leshner, Philadelphia, PA, 20, 6
- 8, Jesse Bieberman, Philadelphia, PA, 34, 6
- 9, Howard Flanigan, Detroit, MI, 54, 1
- 10, Chester Lanzo, Cleveland, OH, 25, 1
- 11, Robert Rose, Highland Park, MI, 19, 0

1940 Nationals

More entries, more actual flights, and more surprises were encountered in this event held in Chicago. This time 11 planes appeared from 16 entries, and at least seven of them made scored flights. Six entries



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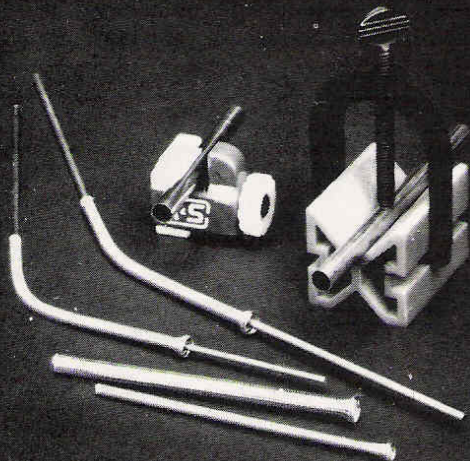
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were repeaters, and five were newcomers.

Charlie Siegfried (Siggy) from Wichita had the largest plane—15-ft. span, 13½-lb. weight, and Forster .99 power. It was dubbed “the telephone exchange” because its control system for rudder, elevator, and engine was basically a dial telephone similar to Raspante’s system. By dialing a given set of pulses, the airborne selector switch would energize the desired electric motor and give, say, left rudder. When the signal was turned off, the rudder would return to neutral. A similar action operated the elevator, but with a different number of pulses. Engine control, however, remained at the throttle position that was set, having no automatic neutral return feature.

The airborne collection of electronics, motors, gears, selector, and batteries weighed 3½ lb. and was described by C.E. Bohnenblust, Charlie’s radioman, in the *QST* magazine which carried a cover photo of Charlie’s plane.⁶

His control box was the size of a small suitcase, complete with neck strap. It made him look like a street vendor. The central “stick” controlled the rudder and elevator through a mechanical pulse generator, the details of which were not revealed. The long cable from the box led to the trunk of Siggy’s car and into the 50-watt transmitter housed there.

In a typical flight Siggy would start the Forster .99, hoist the giant plane onto Winnie Davis’ shoulder, quickly don the control box, and check the system—always talking in a steady stream. Then Winnie would run at full speed and heave the plane into the air. This show was repeated many times at meets, and Siggy became one of the special “characters” of the RC circuit.

I can still remember one of his flights in which the plane went dutifully through all the required maneuvers while drifting downwind the whole time, finally disappearing behind the trees outside the airfield. Spot landings were not his thing, but his controls did work.

This time Siggy earned second place, the closest to the top he ever reached. How proud he was.

Joe Raspante followed Siggy in third place with a very respectable flight of his Super Buccaneer.

Jim and Tom Custin from Wisconsin took fourth place with their original 8-ft. cabin plane which weighed about 10 lb. Power was from a twin-cylinder engine built by their friend, Ed Schunke. Earlier they had tried a Forster .99, but it didn’t have enough power to suit them.

Tom built the radio system to control the rudder and engine.⁷ It had two control channels which gave variable positions based on a clever sequenced-selector-pulse system—almost proportional control! The receiver used the RK62 tube and a home-made polarized relay. The servos were Pittman permanent magnet motors using a

Continued on page 171

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RC History/Good

Continued from page 82

lead-screw speed reduction. The transmitter control box was called the "wheatfield" because it had a dozen clattering relays to generate the pulses. Hmmm—digital control?

Jim, being the older, assumed the position of pilot and had made several RC flights just before the Chicago Nats. I'm not allowed to mention the one that ended in a tree—something about a "missed pulse" in Tom's system!

However, on the day of the Nats, Jim had to report to his summer job on a Lake Michigan ship, and Tom became the pilot for their official flight. Tom says, "The plane got into the air OK, and I made two maneuvers before the ship turned the wrong way and went into the ground." It was good enough for fourth place!

Tom recently retired from General Electric in Syracuse, and Jim is thinking about retiring from his job as a patent lawyer in Milwaukee.

Ben Shereshaw. Several planes had three-function controls for rudder, elevator, and motor (REM). The most unusual was Shereshaw's twin-boom pusher called the RC-1. Cecil Winick of Radio Control Headquarters (RCH) attended to the adjustments of the RCH receivers and motor-

ized escapements. What a pretty plane. Fifth place.

John Ault. With an enlarged Buccaneer, he was awarded sixth place using escape-ment rudder control.

Phil Sonheim. He had another REM ship that was a 9-ft. mid-winger. It housed a completely homemade selector and electric motor system which was very neat and compact. It took ninth place. (I learned later that he was the uncle of Dick Sonheim, well-known present-day AMA leader.) This RC system was never published, probably because Phil turned his skills to secret war work shortly after the Nats. I'm told that he died during the war under rather mysterious circumstances while pursuing this work in the States.

Goods. For the second time, brother Bill was able to team with me at the Nats. We felt that the Guff was in even better shape than before—and the pilots then had more than a hundred flights of stick practice. Some of these were public demonstrations at several meets in Illinois, Michigan, Ohio, and Canada.

What a surprise Bill and I found waiting for us after our first night at the Sherman Hotel. After breakfast on Wednesday morning, we went to the car in the hotel lot and found a hole in the Guff wing which had been stored just beneath the car ceiling.

Then my dad said his binoculars were gone. Then Bill said, "Where's the transmitter?" It was gone, too!

After a few hours of discussion with the hotel management and the local police, it became clear that recovery of the stolen items was extremely unlikely. What to do next was the question. The RC event was scheduled for the next morning, Thursday.

Bill said, "Walt, you fix the wing, and I'll build a transmitter." That's what happened! Bill went to the Newark Radio Store on State Street and explained the problem. The manager said he had lots of parts and would be there all night for inventory—and that there was a workbench in the back room.

I couldn't believe it. Bill had never worked that fast at home! In the morning he came forth with two radio tubes on a 4-ft.-sq. piece of plywood, along with a bunch of coils and parts. He reminded me that this "overnight" transmitter should not be touched, because 400 volts was exposed everywhere. We almost forgot that the temporary control box, which Ken Davis and I had rigged up, had 400 volts on it, too. We all survived somehow.

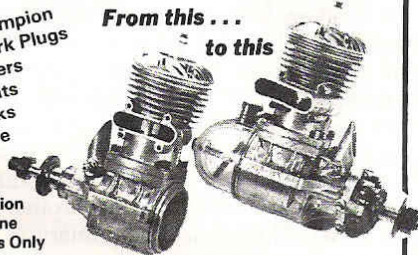
On the way to the RC site at 79th and Keeler, we stopped at an open field to make a quick distance test. It was OK after some tuning. At the site, word had spread about the stolen transmitter, and several fliers offered theirs for our use. One was Joe Raspante, the guy we had beaten out of first

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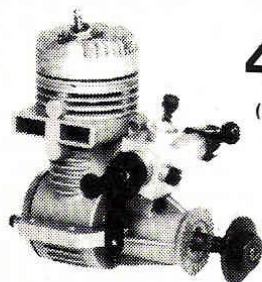
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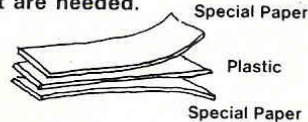
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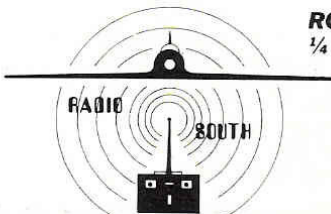
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place the year before. That was real sports-
manship, so I've always had a very warm
feeling for Joe ever since. I can't say the
same for the Sherman Hotel!

At the meet we decided to fly with rudder
only, even though the "overnight" trans-
mitter had two channels as before. We did
not use the elevator or the newly-installed
throttle control. Actually the Guff carried
two separate receivers, so we had the
option of rudder/elevator or rudder/engine,
which might have earned some extra points.

Fortunately, we had the opportunity to
make several flights at the meet and almost
pulled off the "secret" maneuver of an
inside loop (which we had been practicing
on the home field using only rudder con-
trol). We began by using full left rudder to
start a left circle which spiraled tighter and
steeper with every turn, during which the
model picked up considerable speed. When
the nose was pointing down steeply, we
gave opposite rudder just long enough to
stop the turn, then held neutral. The nose
rotated rapidly to a vertical position where
the plane stalled and fell over on its back
and recovered to level flight—making a
pear-shaped loop.⁹

At the meet the engine quit at the top of
the stall, and the model flopped down
without going neatly over on its back.
Luckily, the altitude was sufficient to glide
back to within 20 ft. of the spot for maxi-
mum landing points.

Note that the final points listed below are
lower than the year before. This time the
judges were required to give fewer points
for poorly-executed maneuvers. Further-
more, Leo Weiss was one of the judges,
taking a "postman's holiday" from his RC
target drone job at Wright Field.

Pl.	Name	Controls	Points
1	Walt and Bill Good	R	65
2	Charles Siegfried	REM	49
3	Joe Raspante	REM	34
4	Jim and Tom Custin	REM	23
5	Ben Shershaw	REM	19
6	John Ault	R	17
7	Phil Sonheim	REM	13
8	Elmer Wasman	R	12
9	Lester Helle	R	11
10	Jesse Bieberman	R	10
11	Bob Reder	R	6

1941 Nationals

This event at Chicago, July 1-6, was the
fifth for RC and the last one prior to WW II.
Up to that time, it was the biggest and best
ever held.

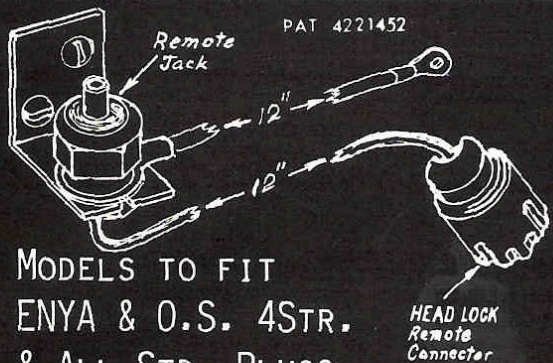
The field of 26 RC entries yielded 12
scoring pilots. There were three repeaters
and nine newcomers, of which eight had a
total of 40 flights over the three-day period.
For the first time, extra days were allowed
for tuning preparations, poor weather, and
other delays. This was most fortunate, as
the first two days were plagued with windy
weather. Siegfried, Ault, and Reder were
the repeaters, and the names of the new-
comers will emerge as we go on.

Bill and I attended this meet, but we did
not enter a plane. We were highly-inter-
ested spectators. Bill was on his honey-
moon, and I was finishing my PhD research
and thesis. Based on any sensible priorities,
neither of us should have been there, but we
just couldn't miss it!

This time a newcomer took first place.
He was Jim Walker of Fireball Control
Line fame from Portland, OR. We then
remembered from the preceding 1940 Nats
that Jim had spent most of his time carefully
observing the RC event. He helped Elmer
Wasman launch his plane. Also, several
1940 photos showed Jim critically watch-
ing the RC planes and the judges.

Rumors of Walker's preparations with
his RC model leaked to Bill through some
letters from Ed Rockwood, a rabid RC
experimenter on the West Coast. The
rumor mentioned a new system called
"proportional control," something we
dreamed about but had never seen. This
would be new and exciting if true.

Jim Walker. Sure enough, his entry was a
small 7-ft. ship with proportional rudder
and proportional engine speed. He used
two standard RCH receivers and relays in a
very clever way. The engine control, the
simpler of the two controls, used two sets of
breaker points for the engine's ignition
system, one set for high speed, the other for
low speed. Then he led the primary spark
coil wire through the relay contacts and
then to the two timer points. Signal "off"
gave low speed, "on" gave high speed. The



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neat part is that pulsing that channel gave an intermediate speed. There's more. Changing the pulsing "dwell time" produced any speed between low and high. At medium speed the engine emitted a distinctive "burping" sound as it jumped between high and low speed.

The rudder channel used dwell-time pulsing. Here, he used a small electric motor driving through a fluid coupler to the rudder, which was pulled to the left side by a spring. With "off" signal, the rudder was to the left; with "on" signal, it was to the right. Dwell-time pulsing gave a 50/50 ratio for neutral rudder, while varying the pulse ratio gave any desired position from full left to full right. It was truly proportional, the rudder following the control stick. It was the first contest demonstration of a dual-proportional system using two independent radio channels for a model plane. Furthermore, Jim squeezed this equipment into a small (at that time) 7-ft. plane that weighed only 5 lb. when fully loaded!

He did the first taxi maneuvers I had ever seen with this proportional system—even on a bumpy dirt road. The tricycle landing gear helped in the accomplishment.

Walker was awarded 88 points out of a possible 100 with the air maneuvers, spot landings, and taxiing. It was clear, when Walker's last flight carried a smoke bomb to simulate skywriting, that he was a skillful competitor. Many RC competitors later

found this talented showman to be a formidable opponent.

Arthur Earle. Close behind Walker, the next plane earned 83 points for second place. That five-point gap was the difference between an assisted takeoff (5 points) and the taxi and takeoff (10 points)! Earle's 9½-ft. plane was powered with an Ohlsson .60 and used three controls, REM. This was his original design and—get this—his first model plane! All three controls were actuated by escapements from three separate receivers. His flying was very consistent, and one of the spot landings stopped within 54 ft. of the spot—excellent for those days. Earl was a newcomer and, to my knowledge, never flew again at a National Contest.

Charlie Siegfried, using his 1940 plane, took third place with a higher score than he had for second place in the year before. He even managed a large loop, which may have been the first recognizable one performed at a Nationals.

Ken Harker. The most modern plane, brought by two electrical engineering students from Purdue University, attracted great attention to its complete and complex control system. Harker and Dick Symonds had designed and built a 14-tube receiver with five audio channels for rudder, elevator, and engine controls. Selective audio

circuits directed the command signal to the desired electric motor and control surface. No sequence system delays here. This was the electronic equivalent of the tuned-reed system used by Leo Weiss in 1937.

The ground checkout demonstrated how each control and direction could be quickly chosen. The control surface speed seemed quite slow to us, since the travel time from neutral to full deflection was about four seconds.¹⁰

The 12½-ft. plane sported a sleek racer-type body and a ¾-hp Mercury Avia engine. It was disappointing to all of us that it was not flown at the meet. The whole system was beautifully crafted.¹¹

Even though Bill and I didn't bring a plane, we had the satisfaction of seeing two duplicates of the 8-ft. Guff at the meet—the first meet where there were two look-alike planes present. John Ault flew his Guff seven times at the meet for a fifth place with a 50-point score. He called his plane the Spook, but gave no explanation as to why!¹² He is now actively retired in Arkansas.

Mike Thomas of Pittsburgh was the RC Contest Director, and Frank Zaic and Harry Copeland were the judges. The names of the other officials couldn't be found in my reference material.

The final standings:

Pl., Name, Plane, Equipment, Points

1, Jim Walker, 7-ft. trike gear, RM proportional, 88



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- 6, George Karpovich, Custom Cavalier, RM—2esc, 39
- 7, H.D. Edwards, 9-ft. Cavalier, RM—2 elect. mot., 29
- 8, Bob Reder, 8-ft. Sailplane, R—1esc, 13
- 9, Ken Harker, 12½-ft. orig., REM—tones, 9
- 10, Clark Hile, 8 pts.
- 11, Cecil Winik, 6 pts.
- 12, Allen Trimmer, 5 pts.

R = Rudder, E = Elevator, M = Motor

This account of the five-year history of the RC event at the AMA National Contest makes it plain that Radio Control had arrived, at the time of the 1941 event, as a small but new and distinct category in the model plane family. A measure of the rapid buildup near the end of the period is the number of RC flights—40 flights in 1941 compared with a total of 10 flights for the previous four years.

Receivers. Technically, the airborne radio gear was still highly experimental and extremely fussy. Tuning and adjusting the finicky sets occupied much of the contest time. For example, if the receiver's 45-volt "B" battery dropped as little as one volt, the tuning and relay settings had to be redone. The single-tube receivers, both the Type 30 vacuum tube and the RK62 gas

tube could be coaxed to do the job needed at that time.

The superregenerative mode of operation was highly resistant to spark ignition, and usually there was no problem with it. Other types of detector modes used in the three- and four-tube sets did not fare as well, and the extra audio tubes were adversely affected by vibration, especially in powered models.

Relays. Commercial units were heavy, expensive, sensitive to vibration, and marginally adequate for the small plate current changes available from the receivers. Homemade relays fared better when tailored to the particular receivers in use.

I remember when brother Bill wrote an article in 1940 for *QST* magazine giving construction details for our homemade DG-6 polarized relay. He received hundreds of requests from hams for information and availability for purchasing.¹³ I think the fact that he stated that we had built the relays for 50¢ (35¢ for the magnet and 15¢ for the fine wire) grabbed their attention. The labor of winding a half-mile of fine wire on a small form and forming the metal parts was not included in the cost! Later, Sigma and other commercial relays became available.

Control systems used during that period were varied, but they may be grouped into several categories, as follows:

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1) Escapements ranging in size from ½ oz. to 4 oz. were seen to be rapid and positive in over half of the models. Some used one escapement for the rudder alone, while others used them for up to three channels, giving rudder, elevator, and motor (REM). Escapements would prove to be around for many years to come, and they would appear in many and various clever arrangements.

2) Sequential selector systems worked like a dial telephone. They were used by Siegfried, Wasman, Sonheim, and others. A group of pulses received by the selector would connect power to a specific control surface, then an electric motor would move the surface in the desired direction. This gave multiple controls on a single channel, but it was slow and operated only one control surface at a time—probably better for a slow boat than a fast airplane!

3) Non-sequential selectors, such as Weiss' 1937 tuned reeds, would become very popular in the 1950s, as the time delay for selecting any control was but a fraction of a second. Harker's electronic tone selection system was similar in result. Both of these planes were ahead of their time, but they were such ambitious projects that the enormity and complexity of the efforts involved caught them unproven at contest time.

4) Walker's proportional pulsing was also ahead of its time, but he demonstrated superbly its effective control capability in a

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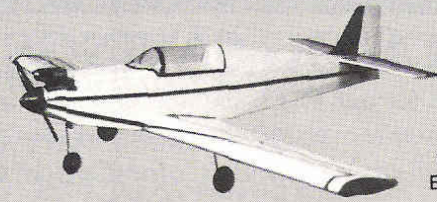
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lightweight package. Later, other mechanisms of single and dual proportional systems would become popular.

5) The earlier slow-cycling systems used in 1937 planes by Lanzo and Good did not reappear after that first year, indicating that other methods were considered more effective.

Transmitters were the easiest part of the RC systems, since they were without any unusual limits on weight and size. Power outputs of five to 40 watts were normal, and almost all of them used the 56-60 MHz ham band. Thanks to the ARRL and pioneering hams for having the frequencies and basic equipment available at the right time. Of course, it would have been even better if simpler radio licenses had been available, but that need would be solved after WW II when the AMA and the FCC developed the no-exam RC license.

Many lessons were learned from these pre-WW II years at the five AMA National Contest RC competitions—and viable RC systems were developed by these pioneers. Even the less-successful pioneers showed us directions not to follow—thereby helping others to avoid them. Undoubtedly RC development would have progressed much more slowly were it not for the stimulation provided by these contests.

Thanks to the AMA and the many supporting organizations and those individuals who made these RC meets possible. These include the Detroit Exchange Club, the Polks, the Steve Corbetts, the Chicago Parks, the Frank Nekimkens, and many, many others of that period.

The next AMA Nats RC meet would not take place until after the end of WW II in 1946—in Wichita, KS. Then, in the following decades, we would see a giant leap in the growth rate of AMA membership numbers due primarily to the bursting popularity of RC as a competition event.

But that period is still another story—or group of stories.

Acknowledgements. Thanks to my wife, Joyce, to brother Bill, and to son Terry for their support—and to the many others who helped with the research for this series.

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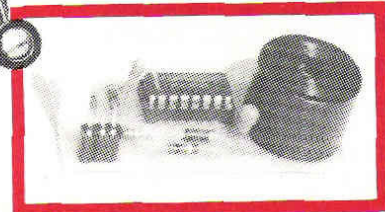
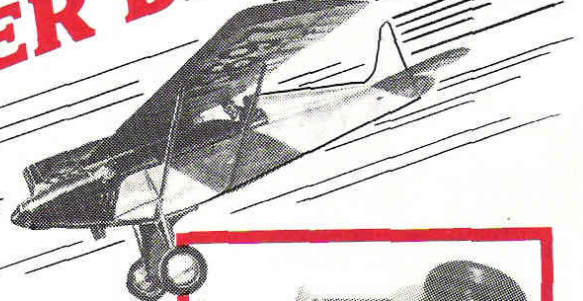
F3H Int'l./Jolly

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Rudnick and I were the only two to complete the 21km course. I managed to come home one minute faster than Rudnick.

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