



## The AMA History Project Presents: Biography of JAMES (JIM) B. and ROBERT (BOB) J. CAHILL



Robert (Bob): May 10, 1915 - November 14, 2011; AMA #F7

James (Jim): March 24, 1918 - November 30, 1990

Transcribed and Edited by SS (06/2002), Updated by JS (10/2007, 12/2011)

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### Career:

- 1935: Bob invented the folding propeller and set a National Record for Senior Outdoor Cabin at the Saint Louis Nationals, which qualified him for the Moffett Team
- 1935/ 1939: Bob designed and built a convertible stick/cabin, which he and Jim had success with at Nationals
- 1936: Bob original member of the Academy of Model Aeronautics (AMA) Council
- 1937: Jim was the first to win major events using a single blade folder
- 1937: Jim helped form the Purdue University Aeromodelers
- 1937-1938: Jim's *Clodhopper II* won the 1937 Moffett Trophy and the 1938 Wakefield Trophy; it was the first successful folder
- 1938: 20-year-old Jim won the Wakefield Cup after winning the Moffett Trophy the year before
- 1940: Jim won the All-Mississippi Valley Championship in Saint Louis
- 1947: Bob helped start the Plymouth meets
- 1948: Jim made the six-man Wakefield Team and placed seventh in the competition with his *Ultra Clodhopper*
- The brothers helped form the Brookside Model Flying Club in Indianapolis at young ages

### Honors:

- 1980: Jim inducted into the National Free Flight Society's Hall of Fame
  - 1990: Jim inducted into the Model Aviation Hall of Fame
  - 1993: Bob inducted into the Society of Antique Modelers Hall of Fame
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*Jim Bennett wrote the following about the two brothers in 1996.*

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### **The Brothers Cahill and the *Clodhopper***

By Jim Bennett

Jim Cahill's principle design theme stressed weight control at the extremities; long power runs and drag reduction. *Clodhopper's* major wins were with big thermals just as Korda's and Lanzo's slabiders, so extensive refinement for streamlining was not emphasized.

In the pre-dethermalizer era, predictability was an advantage. Lanzo lost thirteen models in one season. Jim's elliptical cross section and planked fuselage posed a labor problem. Bob Cahill invented the folding prop. Jim was the first to win major events using a single blade folder in

1937. Jim's single strut 1/16-inch music wire *Clodhopper* undercarriage was used in almost all Cabins afterward with the retracting gear following.

In 1935, Bob's 300 square inch cabin/stick *Hoosier Hi-Flier* was another advance but contest proof for the concept did not take place until Lanzo's stick won the Chicago Nationals in 1940.

### **The First Wakefield Team Qualifications after the War**

In July of 1948, Jim Cahill drove 575 miles from Connersville to the Air Station in Olathe for the first Wakefield Team Qualifications since 1939. The event was held as part of the first of the quarter century long series of Nationals hosted by the U.S. Navy. Jim was entering only the Wakefield Eliminations at the Nationals. Jim's version of the ultimate Wakefield design was in the trunk of his new Studebaker.

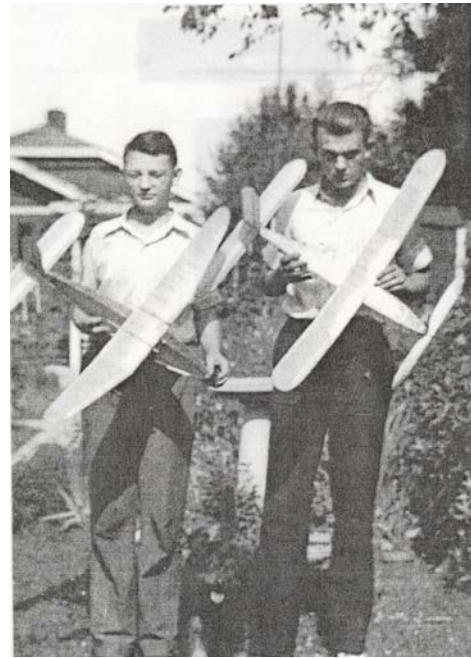
Ten years before, [at age] 20 and a junior engineering student at Purdue University, he won the Wakefield Cup at Caudron Aerodrome in Guyencourt near Paris. *Clodhopper II* did 32 minutes. He used only one model to win. The same model that he flew the year before to take the Moffett Trophy and then lost in a cornfield for four months. Again, with one of the more unusual designs in the 20-year history of the Wakefields, the *Ultra Clodhopper*, Jim's hopes rode on one ship.

### **Cahill's 1948 Entry, the *Ultra Clodhopper***

The fuselage was a diagonally braced Clark Y shape with yellow silk covering and a retracting wheel. The wide-bodied model featured a sheeted leading edge shoulder wing using an NACA 6409 and covered with red tissue. The shoulder wing and wide body used the then Wakefield actual area rule to gain in span and theoretical area.

The stabilizer also passed through the body since the fuselage was as wide at the rear as it was at the wing, inches were gained in taking advantage of the 33% wing area limitation (190 to 210 square inches).

Elliptically shaped twin fins were used. The large right fin on the inside of the turn let drag turn the model. The left was a tip plate. A thinned NACA 6409 was used in the stabilizer. Jim preferred a single fin, but for the 33% stabilizer he used two for the endplate effect. The large fin used a thinned Clark Y and incorporated a hinged trailing edge rudder for adjustment.



*Taken in the spring of 1935, this photo shows Jim (left) with his model that won the Stout Outdoor Cabin Trophy at the 1934 Nationals. Bob is on the right with his class C record holder (33 minutes) set at the 1935 Nationals. Bob's plane was used to develop the folding propeller idea.*

The 19-inch diameter silk-covered prop was a single blade folder, 24 strands of 3/16 U.S. brown rubber weighing 5.1 ounces (that is about 145 grams). The 59-inch motor was made up using the rubber “rope” tensioner (making up a motor of ½ the strands and twice the length, reverse winding 100 turns and letting the rubber entwine while holding the ends). The box fuselage provided room. The motor could take over 1,400 turns and ran two minutes.

Airframe and propeller weight was 5.3 ounces. Jim said the model was heavy, but he wanted it “all weather, no twist, and warp free.” Motor tubes and winding stands were not yet part of the ground support equipment, so winding was scarier and more hazardous.

Weight total was 10.3 ounces (292 grams). Wakefield rules required an “all up” weight of eight ounces but most came in over. Wing loading was over 20% higher than today (1996). Also, motor distribution was almost the entire fuselage length made trimming more difficult than our short up-front motor, long tail Wakefields.

### **The U.S. Wakefield Team for 1948**

Cahill made the six-man team with an 11 minutes, 15 seconds three-flight total in a 15 to 20 mph breeze. Five others qualified in Kansas – the last Wakefield champion, 1939 winner Dick Korda, Californians Dick Schumacher and National Champion Bob Holland, West Virginian Jim Bunton and in the senior division, another Hoosier, Tom Coryell. Coryell made captain of the team with the highest time of the six totaling nearly 17 minutes. Alternates were Charles Dosett of San Francisco and Chester Lanzo.

Other past, present and future outdoor rubber champions and Wakefield contenders in Olathe that year were Manuel Andrade, Bill Atwood, Art Backington, Bob Bienenstein, Henry Cole, Bob Dunham, Joe Elgin, Herb Kothe, Joe Macay, Wally Simmers, Charles Sotich (1948 Junior National Champion), and George Xenakis.

### **England Wins the 1948 Wakefield at Akron**

The 1948 Wakefield was the first to be held since 1939 and was flown in the U.S. by virtue of our win that year with Korda’s 43-minute flight. The meet was at the Akron (Ohio) Airport and sponsored by the Akron and Cleveland Woman’s Chapter of the NAA.

Bob Copland led the British team. Bob, former official world record holder in Wakefield with a 33-minute flight at the 1938 King Peter Cup contest in Yugoslavia, was highly regarded because of his still air, high duration streamliners. He was now using a feathering prop and a silk parachute dethermalizer.

An unknown Englishman, 23-years-old and six foot, four inches tall and a former *Spitfire* pilot, Roy Chesterton, was flying a design and kit made by Ted Evans. In the 100 degree, hazy, low thermal activity atmosphere, Chesterton’s *Jaguar* won with a 19 minute and 30 second total. Cahill lost the *Ultra Clodhopper* on a 7-minute and 44-second second flight dropping to seventh in the final placing.

The *Jaguar* proved to be the best ship even though it used a free wheeler. Chesterton was the most practiced and best flyer of the day. It is interesting that Finland and Sweden, using free wheelers, won the Wakefield Cup 1949 through 1952. Folders add performance, but the dominant parameter was power/weight.

The U.S. team scored the highest total which would have meant a team championship, but that was not yet a part of the meet. A reversal from the last Wakefield at Bendix, New Jersey when Korda won the cup and the British team scored the highest total.

Chesterton and the other British team members used Dunlop rubber, which soon became available here and was a good choice until Pirelli came in.

### **The Early Clodhoppers**

Jim's *Clodhopper II* was the 1937 Moffett Trophy winner at the Detroit Nationals and the 1938 Wakefield Trophy winner. *Clodhopper I* was lost at the 1936 Nationals at Wayne County Airport in Michigan. *Clodhopper II* used a single-blade folding propeller, the first successful folder. Single-blade folders were then used by the following modelers: Dick Korda on his 1939 Wakefield winner; the Moffett winner of 1939, 1940, and 1941; Naudzius, Nelder and Beaumont and Alan King of Australia on his 1954 winner.

*Clodhopper* was powered with 16 strands of 1/4-inch U.S. Brown, 49-inches long. An elliptical cross-section planked semi-pod fuselage was a conspicuous feature. A two wheel single strut, 1/16-inch music wire gear, another new feature, was used by almost all cabins afterward until the single struts retracting gear came in. Jim used built-up box spars in the wing and stab. He concentrated on keeping the extremities light, theorizing a low polar moment of inertia allowed the model to be more responsive and stick in a thermal. A shoulder wing was another standard of Jim's designs. Jim's props were silk covered and incorporated a copper wire around the tip for protection from whacks on the takeoff surface. He kept this feature through future designs.

*Clodhopper II* was lost on an out of sight flight in taking the 1937 Moffett. After four months in a cornfield, Jim restored the model inlaying balsa where it had been eaten by grasshoppers. The insects gnawed the ribs, trailing edges of the wing, stab and prop and the fuselage planking from the inside to the outside dope. It was also necessary to reduce the stabilizer to a 33% Wakefield requirement from 40%. Following restoration, he qualified for the U.S. Team at the 1938 Detroit Nationals and went on to Wakefield victory in Paris. Incidentally, Jim built the original *Clodhopper* in his three man dormitory room at Purdue. Comet Models produced a simplified version in kit form with solid spars and a paper covered fuselage.

He again qualified in 1939 at the Detroit Nationals but did not attend the Wakefield meet at Bendix, New Jersey, and an alternate flew for him. Earl Stahl was the alternate but unable to attend, so Ted Just flew for him.

### **The Indianapolis Group**

Bob Cahill and younger brother Jim, at ages 12 and 9, became model airplane enthusiasts. It was 1927 and the year of Lindbergh. Inspired by the articles in *American Boy* magazine, they began building indoor stick models. In a couple of years, Bob and Jim helped form the Brookside Model Flying Club in Indianapolis. During those years and at Purdue University engineering school, the brothers were leading national flyers in outdoor and indoor rubber. Jim helped start the Purdue Aeromodelers in 1937.

Bob attended the 1930 Nationals in Detroit, and Jim's first Nationals was the 1931 Dayton meet. By 1934, Jim at age 16 flying a 134 square inch taper wing, diamond cross-section cabin, won the Stout Outdoor Trophy at the Akron Nationals.

At Lambert Field during the 1935 Saint Louis National meet, Bob's 33 minute, out of sight (and lost) flight set a national record for Senior Outdoor Cabin in qualifying for the Moffett Team. Vernon Boehle of the Indianapolis club also qualified with a 28-minute flight and went on to win the Moffett Trophy. Ken Ernst, another club member, won the Stout Outdoor Trophy that year.

First of the Indianapolis club to win a National Championship was Jim Parnham taking the Stout Outdoor Trophy in 1932 at the Atlantic City Nationals. Vern Boehle won the Mulvihill Trophy in 1934 at Akron and held a national stick record.

### **Bob's Hoosier HiFlier Cabin/Stick**

Bob started a series of experiments on reducing drag of the free wheeling propeller and proceeded through feathering devices to a two-bladed folder. This was the first folder used in competition when Bob flew a 300 square inch wing cabin and stick at the 1935 Scripps Howard Contest in Cleveland. Bob's two-bladed folding prop had problems because a stop and tensioning device were needed. Winding the 48 strands of 1/8 inch U.S. Brown required a better winder and further muscle development before the designer/builder was up to the flying task.

The 300 square inch wing increased Reynolds number and the larger wing lessened the effort to build lighter. The pre-war AMA rules were three ounces/100 square inches projected wing area and it was easier to build to that weight with a larger model. This ship preceded Chester Lanzo's 1940 Nationals 300 square inch stick winner, his 1941 350 square inch class E record-holding cabin and Dick Korda's 1941 Nationals-winning 300 square inch cabin.

### **Additional Milestones**

Bob and Jim were prominent flyers, placing high at national and regional meets in stick and cabin and flew indoor and outdoor HLG in local meets.

Bob designed and built a convertible stick/cabin with a removable cabin structure with a hollow tube stick fuselage enclosing the rubber. The design was successfully used by Bob and Jim at the Nationals between 1935 and 1939.

Jim won the All-Mississippi Valley Championship in Saint Louis in 1940, (Carl Goldberg won the title in 1941) then the second largest meet in the U.S. with 400 contestants. Top points were

gained by winning indoor cabin and placing second in indoor stick in the 130-foot ceiling Saint Louis Arena and winning outdoor stick at Parks Air College.

Jim's 1940 outdoor rubber cabin design was *Jasper*, a 150-square-inch shoulder wing diamond named after Sergeant William Jasper, hero of the American Revolutionary War, and Jasper County, Indiana.

In 1941, Jim brought out his *Super Clodhopper*, a 200-square-inch shoulder wing Wakefield/Cabin using a large stringer on each side of a box frame creating a modified hexagonal cross-section.

*Boxcar*, a 150-square-inch high-wing, single-bladed prop with a retracting wheel, square body cabin, which was flown by Jim in 1944.

Bob was a member of the original 1936 AMA Council, along with Frank Zaic, Charles Grant, Carl Goldberg, Hewitt Phillips, and other famous names. In 1947, Bob helped Merrill Hamburg get the Plymouth meets started. Bob, at age 87, is a member of the Society of Antique Modelers' Hall of Fame.

The late Jim Cahill is a member of the Model Aviation Hall of Fame and the National Free Flight Society Hall of Fame.

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*Robert Huddleston wrote the following information. Unfortunately, no record was kept as to what this was written in or if it was published.*

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## **James Cahill – Wakefield Champion**

By Robert Huddleston

I first met Jim Cahill in 1926 when I moved into his neighborhood in Indianapolis, Indiana. He was eight or 9-years-old at the time – just beginning to become involved in airplane modeling after having his interest aroused through an article he'd read in American Boy magazine. As he grew up, Jim, along with his brother, Bob Cahill, became very active model creators and flyers in and around the Brookside, Indiana, community as well as throughout the greater Midwest.

Jim's high personal standards and attitudes regarding his scholastic efforts and achievements (he received his Bachelor of Science degree in Mechanical Engineering from Purdue University) were carried over into his model designing and building. The attention to detail so necessary in the development of successful modeling techniques was second nature to Jim. He always approached new projects scientifically – from investigating and researching the basic concepts and theories involved, to the actual flight testing steps and procedures he would use.

Through prolific, innovative experimentation, Jim Cahill produced some very significant designs and construction modifications in airplane modeling:

He was the first in the Midwest area to use balsa-sheeted leading edges on his wings to preserve the airfoil.

He made extensive use of the folding propeller on many of his rubber-powered model airplanes, as well as experimenting with the counter-balanced single-bladed folding propeller.

Perhaps Jim's most rewarding effort, design-wise, was the effective utilization of the balsa-sheeted fuselage on his original design model Clodhopper, with which he won the 1938 Wakefield event in Paris, France.

Jim Cahill's success in contest events was not limited to the single Wakefield win in Paris, but spanned from indoor flying trophies to the Stout event win at the 1934 National Contest in Akron, Ohio.

It was through Jim's design developments and original concepts that many fellow modelers throughout the world have enjoyed successful contest endeavors.

Though today Jim Cahill's talents are devoted to the consultation field of insurance accident analysis studies, he is remembered as always having been quick to help and assist other modelers with any of their problems or questions, and should be considered as having been an extremely positive influence in the education of many of the modelers he came in contact with over the years. Jim Cahill – designer, builder, and flyer – was one of the major contributors to the overall science and promotion of the flying model airplane.

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