

Heathkit of the Month #100:
by Bob Eckweiler, AF6C



Heathkit History The Heath Kit *Parasol*

Introduction:

It's April, the month of April Fools day, and to celebrate I like to present an unusual Heath-kit. This April will be no exception.

In honor of the 100th *Heathkit of the Month* article, we'll cover the first Heath "kit". Everyone who follows this column knows the first Heathkit was the O-1 Oscilloscope. But we are not talking about that kit. We are talking about the first real Heath kit (notice it is two words). Even before Howard Anthony announced the first Heathkit oscilloscope in 1947, the Heath Company produced kits, which Heath initially called "knockdowns". Before discussing the Heath *Parasol*, (figure 1 ¹) which was introduced in late 1926, let's

Here is a link to the index of Heathkit of the Month (HotM) articles:

http://www.w6ze.org/Heathkit/Heathkit_Index.html



FIGURE 1: Heath *V Parasol* Airplane at Wisconsin Oshkosh Airshow in 2003. Photo by FlugKerl2¹

take a look at the early Heath Company and its founder Edward Bayard² Heath.

Edward Bayard Heath (1888 - 1931):

Edward Heath (figure 2) was born on Long Island, N.Y. His father died when he was three, and his mother later remarried, moving up-



FIGURE 2: Five foot-one inch tall Edward Bayard Heath. Photo: Wikipedia Commons³



FIGURE 3: A young Ed Heath at the controls of the first airplane he built. (From an early Heath ad.)

state to Amsterdam, N.Y. where both families had relatives. They ended up traveling around the country a lot, likely due to Ed's stepdad being a machine parts salesman. Ed attended many schools as he was growing up, including the excellent Lane Technical School in Chicago where he met the woman he would later marry, and where he learned a lot about aviation. Heath was a voracious reader, especially of technical literature. As an adult Heath was small in stature, standing just over 5' tall and weighing on the order of 110 lbs. His size and weight would later influence some of his aircraft designs.

Edward Heath's First Airplane and Flight:

The history of Ed Heath's first airplane and his first attempts at flight have become muddled over the years. Two distinct versions exist. One version, told by Chet Peek in his book *The Heath Story* ⁴, has the first and second attempt occurring on September 12th and October 10th of 1910. In those two attempts the plane never left the ground and each attempt resulted in structural damage. A different version, told by Heath's mother and business partner has the flights occurring on October 10th and November 2nd, 1909, one year earlier. She stated that in each instance the result was a flight of about one-half mile.

What is known is that he returned to Amsterdam, N.Y. early in the year and started construction on his first airplane which looked

similar in design to the French Blériot XI (**figure 3**); the plans for which had then been recently published. Other knowns are that his first attempt at flight took place at the nearby Antlers Country Club, and the second attempt on or near the Fonda Fair Grounds west of Amsterdam, N.Y.

According to the version in Chet Peek's book:

The first attempt at flight took place on Monday September 12, 1910 and resulted in the plane never leaving the ground and suffering from a collapsed landing gear at the end. An article in the Amsterdam Evening Recorder newspaper ⁵ states:

"Just when it seemed the monoplane was about to leave the ground, one of the posts supporting the upper portion and the left wing gave way allowing the wing to drop. Driver [sic] Heath immediately shut off the engine."

A second attempt then took place on Sunday October 9th, 1910 near Fonda, N.Y. About 9½ miles west of Amsterdam. This attempt again failed with the plane not leaving the ground, but instead *"one of the wings got caught in some manner"* according to the Fonda Democrat ⁶, This ended his attempt to fly in the Amsterdam area.

The second version told of Ed Heath's first flying experiences in a memorial article. In the article *"The Edward Heath Memorial Completed"* that appeared after Ed Heath's death in the December 1931 issue of *Popular Aviation*, page 86, his mother states:

"[The first flight] took place on October 10, 1909, at The Antlers Club. Amsterdam, N.Y. – a flight lasting about 40 seconds and about one-half mile in length. He took off from a hillside, and on landing broke the left side of the landing gear. After making the necessary repairs, he made a second

flight on November 2, 1909, starting from the Fonda Fair Grounds [horse race track]. About all of the homestretch, or one-third mile, was used in taking off, and he just cleared the fence at the end of the track. This was a straight-away flight of sixty-five seconds' duration that also covered about one-half mile. The landing was made in rough ground, where the landing gear was again broken and, in addition, the propeller was damaged."

Ed Heath's mother went on to say that he put his plane in storage and began working for the Curtiss company (builder of the Jenny biplane) at Hammondsport in western N.Y. There he met Walter Eales, who had built a Curtiss type airplane, but was lacking an engine. Heath and Eales were able to obtain an engine and they took turns successfully flying the plane. Heath later sold his interest in Eales plane and returned to Amsterdam to repair his original plane. His uncle had made a deal for Heath and his airplane to make a static display appearance at an event in nearby Gloverville, N.Y.

Ed Heath worked for Curtiss for only a short time. In his teens Heath had made a name for himself racing motorcycles and once raced against Glenn Curtiss, so he ended up in their motorcycle division instead of the desired aviation division. He was soon back in Chicago where in 1911 he purchased the Bates Aeroplane Company which he renamed the E. B. Heath Aerial Vehicle Company.

The E. B. Heath Aerial Vehicle Company

Little history can be found about the early E. B. Heath company years up to and including WWI. By 1913 Heath had developed a second airplane, the **2B** biplane. It was available with both conventional landing gear (\$1,400) or with floats for use on water

(\$1,500). The company was heavily into making aircraft parts and carving propellers. Supplying the war effort with aircraft parts during WWI appeared to be a majority of their business. Sometime along the way the company name was changed to the Heath Airplane Company.

The 1919 Heath catalog lists a series of "knockdown" aircraft for sale. Some are listed in **Table I**. By "knockdown" it appears the planes were assembled in Heath's factory and then disassembled and crated for shipping. Instead of buying a "knockdown" you could buy a "list of parts" which was basically the raw material to build and assemble the plane. These aircraft were expensive and probably were not viable for the general population. Heath dreamed of making available a plane that the average Joe could afford and fly safely. He knew that this would add revenue to his company. Heath already had started a flying school, where people paid to learn about aviation working in his factory, and their time working would go towards flight time in one of Heath's trainer airplanes. The rate works out close to one minute of

SOME OF THE AEROPLANES LISTED IN THE 1919 HEATH CATALOG	
MODEL	PRICE
Heath Glider	\$90.00
Tail extra (if desired)	20.00
Complete, list of parts	42.00
Heath Motorcycle Model Biplane	\$700.00
List of parts	195.00
Heath Model 2C Monoplane	\$1,000.00
Complete, list of parts	325.00
Heath Model 2B Tractor Biplane	\$1,450.00
Complete, list of parts	350.00
Heath Standard Trainer	\$4,275.00
Complete, list of parts	850.00
Heath Ford Motored Biplane	\$1,375.00
Complete, list of parts	425.00

TABLE I

GET THESE BARGAINS

Used fur-lined flying suits, good condition.....\$15.00	JN or Canuck axles _____ 3.75
Curtiss OX5 pusher propellers _____ 35.00	JN stabilizer braces _____ .50
Jenny wings, newly covered _____ 60.00	Brown shock absorber, 9c per ft. 100 ft. _____ 6.00
Hispano cylinder blocks, right side, good condition _____ 20.00	rolls _____ 2.00
Hisso "A" and "I" used pistons _____ 1.50	Wicker seats _____ 75.00
Lankenhaimer gas strainers _____ 1.50	1 Standard fuselage with cockpit cowl, seats, and controls _____ 50.00
Acetate dope, in 5-gallon lots, per gallon... 1.00	Complete tail assembly for same _____ 40.00
New inner Hisso "A" connecting rods _____ 12.50	Complete landing gear for same _____ 1.25
New outer Hisso "A" connecting rods _____ 9.00	Oil gauges _____ .25
Hisso Model "E" hubs, complete _____ 10.00	Oil gauges in 1 dozen lots _____ .75
750x125 wheels, (30x5) _____ 4.95	Liberty hose clamps per hundred _____ 5.50
700x100 wheels (28x4) _____ 2.00	Thermometers _____ .25
1/32 in. Waterproof plywood, 24x60, full sheets, per sq. ft. _____ .20	AC Spark Plugs, each _____ .20
1/16 in. Waterproof plywood, 20x60, full sheets, per sq. ft. _____ .25	AC Spark Plugs, in lots of 100, each _____ 15
	AC Spark Plugs, in lots of 1000, each _____

HEATH AIRPLANE COMPANY, Inc.
2856 Broadway CHICAGO, ILL.

Figure 4: Heath Ad of aircraft parts and accessories, many surplus from WWI

flight time for each one hour worked in the factory. Working times were 6½ hours, five day-a-week. Which resulted in about 30 minutes of flight time per week. While this sounds callous, the factory work was also part of the school, teaching aircraft mechanics and construction. (See **figure 5**)

In 1919 Ed Heath designed and built his *Feather*⁷ biplane, designated the MA-2. It was his first ultralight airplane. This was a single place plane with a wingspan of 20' and weighing 270 lbs. The engine was a two cylinder Thor motorcycle engine modified by Heath's company. With 76 cu. in. and 18 horsepower the engine let the *Feather* cruise at 45 MPH. Heath planned to sell these planes \$1,200 ready to fly, \$990 less engine and \$250 for the kit of materials to build your own (less engine). The engine could be bought separately for \$250. Before Heath could get the *Feather* into production, the bottom dropped out of the airplane market

when the U.S. Government released a massive amount of aircraft and aircraft related components onto the war-surplus market.

Just as Howard Anthony would do after WWII, Ed Heath purchased a lot of WWI war surplus including numerous lower wings for the Thomas-Moore *Scout*⁸ biplane trainer. A lot of extra lower wings were manufactured since they were the part most commonly damaged in training accidents, and the Army had a lot of trainers in use during the war. Besides manufacturing aircraft Heath brokered the war surplus parts at his plant and by mail through magazine ads. Many of the parts acquired were used in-house, as well as being sold retail. **figure 4** is a Heath Parts Ad (Mar. 1928 *Popular Aviation* p. 79) - wheels, tires, and even newly covered Jenny wings for \$60! In 1922 Heath used a surplus Jenny fuselage and built a two cockpit biplane, the *Favorite*. To the fuselage he added custom built wings and propeller. Heath's company

had gained a lot of experience carving propellers during the war effort. When the war ended surplus wood blanks were readily available for a song, and Heath had people skilled in the art and science. Propellers were a high-profit commodity, especially with his flight school labor source working under skilled supervision.

Heath at the Air Races:

About the time the second Ford rolled off the assembly line you can bet someone came up with the idea of auto racing. The same could be said for airplanes. Before WWI air racing was more popular in Europe than in America. The first US National Air Races was sponsored in 1920 by publisher Ralph Pulitzer and held at Roosevelt / Mitchel Field on Long Island, N.Y. – now the site of the Roosevelt Shopping Center⁹. The races were held yearly until 1940 at airfields throughout the county. Some races were based on cross-country flying, and others were pylon racing where a closed course was defined by red and white pylons. The National Air races started up again after WWII. Four years later, after a devastating crash in Cleveland, the races ended and were later replaced by the National Championship Air Races near Reno NV in 1964.

The **1923 Air Races** were held in St. Louis and Heath

19 Years Back of Us



E. B. Heath—Winner in National Air Races, 1927

FROM 1908 to 1927

*Years of experience is what counts
and not merely big promises*

HEATH'S SCHOOL OF AVIATION
not only a school but a real aircraft factory. Directly connected with

THE HEATH AIRPLANE CO.
Oldest in the Business—Established 1908

DAY AND EVENING CLASSES
Work After Class Hours Guaranteed

NOW—You Can Earn While You Learn! A New Opportunity
Never Before Offered in the Aviation Field
—By an Old Reliable Concern—

Evening Courses Can Be Arranged for on the
Deferred Payment Plan.

Our Student Welfare Department Will Assist You in All of Your
Problems, Employment and Otherwise.

Heath's School of Aviation
Dept. 51, 2856 Broadway Chicago, Ill.

FIGURE 5: Ad for Heath's School of Aviation from *Popular Aviation Magazine* (November 1927 Issue - Page 57). The caption under the photo reads: *E. B. Heath – Winner in National Air Races, 1927*. The plane shown, however, is the Tomboy so the photo must have been taken at the 1926 Philadelphia Air Races.

entered a race for the first time knowing that a win would be good advertising for his company. He entered his *Favorite* biplane into the "On to St. Louis" cross-country race. This race required a flight of over 200 miles terminating at the St. Louis Flying Field. Points were given for horsepower, number of passengers and of course distance. Heath left from Chicago with four people onboard (the two seat biplane). The flight was momentarily delayed by engine trouble resulting in a forced landing, but they made it to St. Louis and won third place.

With enthusiasm, Heath took his ultralight *Feather* biplane to the **1924 Air Races** held at Dayton. While these races had many categories for military aircraft, Dayton also offered races for light aircraft. Unfortunately, 1924 was a wash for Heath when his plane couldn't handle the high gusty winds and ended up on its back. Still, Heath learned a lot from viewing the designs of his competitors.

The **1925 Air Races** were held at Mitchel Field on Long Island, N.Y. Heath showed up with a new airplane, the *Hummingbird*. A monoplane design weighing just 300 lbs with a wingspan of 26' and a length of 16½'. It was powered by a Heath modified Henderson motorcycle engine. Heath had help with the design from Clare Lindstedt who would later help design the *Parasol*. The *Hummingbird* was fast but underpowered and was at a disadvantage around the triangular race course. All the competition were using motorcycle engines except one which used a Bristol Cherub II engine with significantly more horsepower. The extra power allowed the plane to accelerate out of the turns faster and quickly outpace the others in the field including Heath's *Hummingbird*.

At the **1926 Air Races** held in Philadelphia, Heath's luck improved. He showed up with

his *Hummingbird*, but now renamed the *Tomboy*¹⁰ and sporting a Bristol Cherub engine. These engines were expensive at \$1,270, but Heath thought it a good investment. Heath won every race he entered and came home with over \$2,200 in prize money. It was with this prize money that Heath, with Lindstedt's help, designed and built the *Parasol*. a sport plane for the masses.

The **1927 Air Races** were held at Spokane, WA. Heath won both events he entered flying a modified *Parasol* with a new racing wing and using the Cherub engine. (This plane is often referred to as the *Spokane Parasol*¹¹). Both wins were "last-man-standing" races where the *Parasol* was the only plane remaining in the air at the end. Still the plane performed well and was fast, garnering it a lot of attention. Lindbergh had recently made his historic flight and aviation was experiencing high popularity. The event was well attended.

The **1928 Air Races** were held at Mines Field. Today Mines Field is known as Los Angeles International Airport – KLAX. Heath showed up with a new midget race plane, the *Baby Bullet*¹². With speeds increasing every year Heath, Lindstedt and a few other of Heath's team started construction on a plane they called the *Wee-Mite*. In the summer of 1928 fire struck the Chicago Heath plant at 2856 Broadway. Heath was able to quickly get new facilities on Sedgwick St. During the fire the *Wee-Mite* was badly damaged and Heath had lost a lot of inventory. However, the *Wee-Mite* was repaired and renamed the *Baby Bullet*, and it was ready for shipment to Mines Field in time for the races. The *Baby Bullet*, with its 75 cubic inch Cherub engine, competed in a class with a 300 cubic inch displacement limit. To everyone's surprise the Heath plane, with its 34 horsepower engine, not only won, but by halfway through the race had



Figure 6: 1930 National Air Races Poster

lapped the field. And by the finish Heath had lapped the field twice and some of the competition three times!

Heath and his engineers modified the *Baby Bullet* substantially assuming the competition would get tougher at the **1929 Air Races** at Cleveland. One thing they did was reduce the size of the wing to reduce drag. When finally tested, the speed had decreased instead of increasing. The previous wings had been stripped for parts so they couldn't be changed back. Heath took the modified *Bullet* and a new Heath-Henderson powered *Parasol* hoping do their best. Heath planes flew in four races. The *Parasol* won its race and the modi-

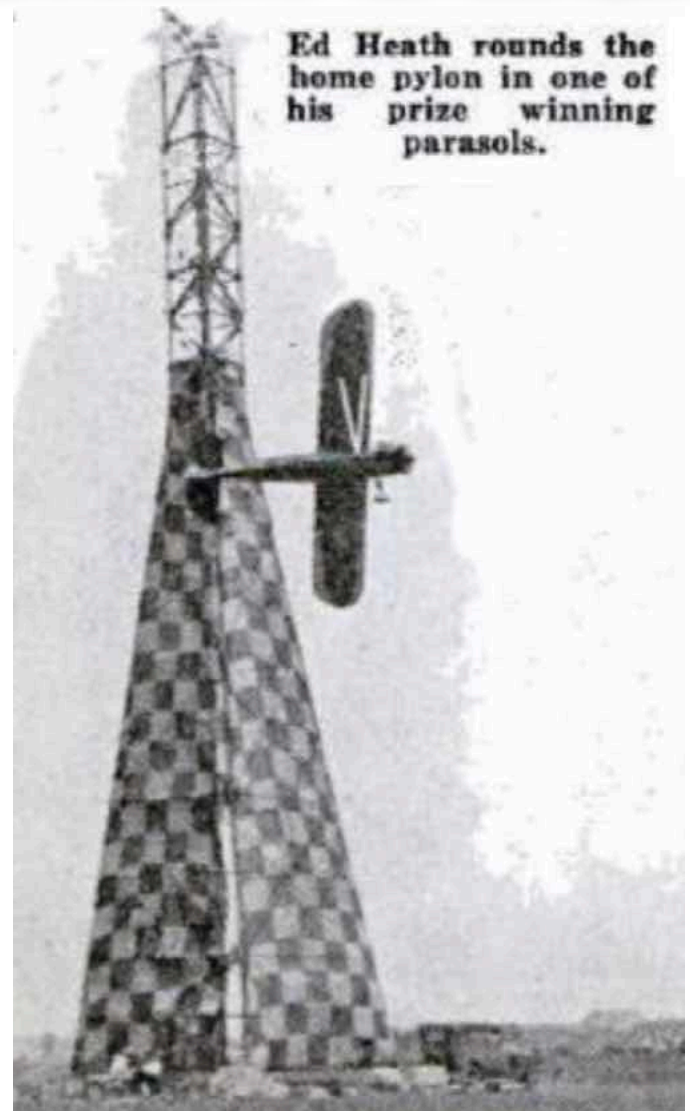


Figure 7: Edward Heath flying a Parasol around the a pylon at the 1930 National Air Races. Photo from Nov. 1930 Popular Aviation (p. 27)

fied *Baby Bullet* won one race and finished second in the other two. Heath was piloting both first-place wins.

The **1930 Air Races** were held at the Curtiss-Reynolds Field north of Chicago (figure 6). Heath won two races. The Men's 100 cu. in. class in a modified *Parasol V*, beating two other Heath monoplanes (figure 7) . He also won the Men's 275 cu. in. class in a new design, the *Cannonball*¹³, using a Heath designed 200 cu. in. engine that produced around 70 horsepower.



Figure 8: X10717, the low-wing airplane E.B. Heath was flying when he was killed.

Ed Heath was killed in a flying accident before the **1931 Air Races**, but the company sent the *Cannonball* and two of the latest Heath *CNA-40 Parasols*. The *Cannonball* won its class and the two *Parasols* came in first and third in their class. The races were held in Cleveland for the second time. It was the last year the Heath Airplane Company officially competed in the Air Races, though one must believe that others flew Heath aircraft in com-

petition. The re-engined *Cannonball* appeared in the 1932 races but finished in 6th place.

The Death of Edward Bayard Heath:

With the *Parasol* selling well, a friend of Heath's had modified a Heath *Parasol* he had built to a center-wing configuration. This may have resulted in Heath later designing the Heath *Center-Wing* model. Heath then also designed and build a prototype low-wing air-

How to Build the Heath Parasol

Part IV
The Bolted Fuselage
Specially written for
POPULAR AVIATION
by
E. B. Heath.

1888—EDWARD B. HEATH—1931

Edward B. Heath died on Feb. 1, 1931, as he would have wished to die—at the control stick of a new type of airplane which he was striving to perfect.

The airplane was an experimental ship of the low wing type, and was the first of its kind which he had built. A weakness in one of the wing struts developed while he was testing it, and the wing collapsed at a height of 1500 feet.

This view of the completed fuselage shows the simple bolted truss construction used. Note the minimum number of brace wires.

THE BOLTED FUSELAGE
by E. B. Heath

V-323 18 in. 3"x16 ga. (.065) sheet steel (clamps).
V-324 120 pcs. No. 8/32 machine

Figure 9: Part four of a seven part series by Ed Heath that ran in the Dec. 1930 thru July 1931 issues of *Popular Aviation*

craft (**figure 8**). This was basically a *Parasol V* model design with the wings attached at the bottom of the fuselage. Two struts from each wing attached to the upper fuselage. Perhaps, unknown to Ed Heath, it is rumored that these new struts were made of aluminum instead of steel. The struts, instead of being in tension, were in compression under positive 'G-load' and if too weak, prone to folding. A good analogy is a length of rope; pull on it and it will be very strong; push on it and it will just fold up.

On Sunday February 1st, 1931 Heath drove to the company airfield at Potter Rd. and Dempster St. in western Morton Grove, IL (Near the current Maine East High School). The prior day, two of Heath's test pilots had taken the new plane up and reported it performed well. That Sunday morning Heath also flew the plane and seemed happy with it upon landing. It was reported he took the crew at the airfield, including the two test pilots, to lunch. After lunch he returned to the airfield and decided to take the plane up once more. Perhaps something was discussed over lunch that Ed Heath wanted to check out? He took the plane up and was seen pulling out of a short dive when the right wing collapsed, and the plane fell to the ground. Upon impact Edward Bayard Heath, aged 42, died instantly. The crash and his death were reported in the *Chicago Tribune* and in *Popular Aviation* (**figure 10**)

At the time of Heath's death, *Popular Aviation* was running a seven-part series on "How to Build the Heath Parasol". Evidently Heath had already completed the series of articles as they continued to run monthly through July 1931. **figure 9** shows the header of the fourth

RIGHT: Figure 10: Heath's death announcement from the April 1931 issue of *Popular Aviation* pg. 8, "An Airy Chat with the Editor" editorial column.

IT BECOMES our sad duty here to record the passing of one of aviation's pioneers. Edward B. Heath died on February 1st while testing an experimental plane.

Ed Heath was our friend. In a larger sense, he was a friend of all those who were sincerely interested in aviation. Heath's work and plans, carried on over a period of twenty years, were in the infancy of their development, and in his case, the industry's loss is far greater than the personal loss we feel.

We might extol Heath's many virtues—his industry, his enthusiasm, his patience, his helpfulness to others, his cooperation and the fine spirit with which he gave his time and advice. But we believe that the finest service we can do for him and the one he would prefer us to do, is to publish the true facts of his death and dispel any false or misleading statements that have appeared in newspaper accounts of the accident.

Heath frequently expressed his disapproval of the low wing type of plane. However, in response to popular demand he designed and built a low wing model and took it out for its first tests on Sunday, February 1st.

In putting this new and untried ship through test maneuvers, one of the wing struts failed and the wing collapsed at an attitude of about 1,500 feet. Heath was instantly killed as the disabled craft plunged to the ground.

From these facts it is evident that any reported "motor trouble" had nothing to do with the case. Furthermore, the plane in question had no relation to the Heath Super Parasol.

The Heath Aircraft Corporation will continue to operate under the present management and will devote all its energies to the production of the parasol which is meeting with such success in all parts of the world.

* * *

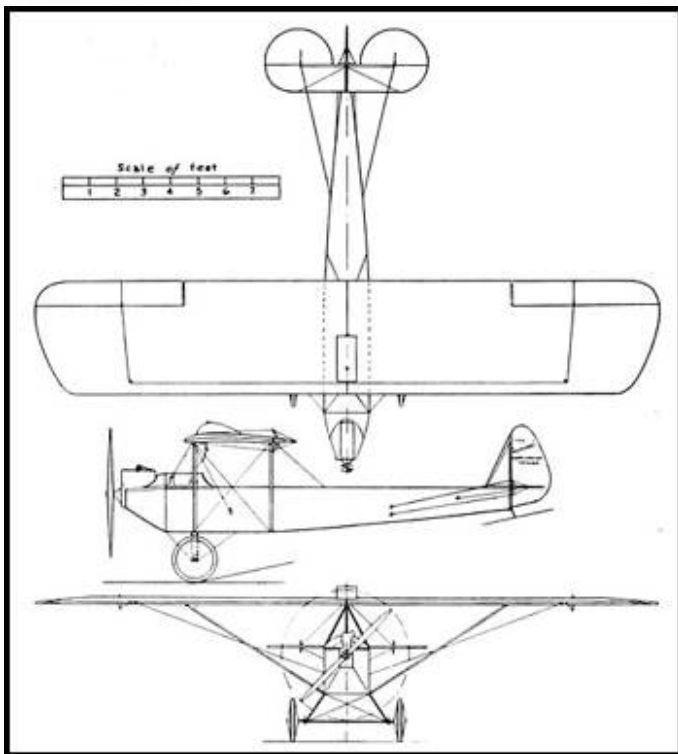


Figure 11: Outline drawing of the Heath Parasol built with the Thomas Morse Scout lower wing. (Aero Digest - March 1927)

installment of the series, including a short announcement of his death.

As tragic as Ed Heath's death was, if it hadn't happened the Heathkit Company as we knew it may never have existed.

The Original Heath Parasol Airplane (1926):

With the prize money Heath won in his early air racing days he brought to fruition his desire for a sport plane that would be affordable to the average person. The original *Parasol* was designed in late 1926 and was announced in *Aviation Magazine* in its February 1927 issue. The original *Parasol* sold for \$575 ready to fly at Chicago. It has a wingspan of 23' 0" and 94 sq. ft. of wing area. It came powered with a Henderson Deluxe Motor (23 hp). Additional specifications are given in **Table III**. The original *Parasol* could be sold so inexpensively because it used a pair of Thomas-Morse *Scout* lower wings that Heath had obtained a quantity of surplus. Newer, more efficient,

wing designs had been developed, and that along with the low horsepower and minimal wing area made the plane's performance degrade with heavier pilots.

The \$575 *Parasol* sold, but Heath knew the supply of surplus wings would eventually run out. Also, even at the low price, many people still couldn't afford to purchase the plane. While mention of selling the material to build the original *Parasol* was hinted at in advertising, no price or offer of such was found by the author in its advertising.

The Super Parasol (1928):

After Heath's racing success in Washington state flying his "*Spokane Parasol*", He knew he had to improve the *Parasol* to keep it viable in the market place. A new wing that was longer, with more surface area and used the Clark Y airfoil cross-section was designed. Heath also began modifying the Henderson motors, resulting in the Heath-Henderson B-4 engine that produced 16% more horsepower. The big drawback to the wing was the added cost. The *Super Parasol* sold for \$975, almost a 70% increase. This was vastly out of the price range of much of the people the plane was designed for. Heath, cleverly devised a do it yourself time payment plan. He broke the plane's construction into 11 groups, each with detailed plans. You could buy all eleven groups for \$199 (no motor). Or if you wanted, you could buy the plane one group at a time. The first group costs under \$12, and the most expensive group (group 9) costs under \$37.50. The groups were:

1. \$11.76 - Wing ribs. You can either build the required jig or buy one for an additional \$4.00.
2. \$14.01 - Initial wing structure.
3. \$10.58 - Wing frame structure.
4. \$11.66 - Material to complete the wing (less cover).

Center punch	Hand Drill
Chisel	Pliers
File	Rule
Hacksaw	Screwdriver
Hammer	

Tools Listed as Required for Assembly**Table II:**

5. \$12.79 - The complete tail section: Stabilizer, Fin, Rudder, and Elevators, less cover.
6. \$22.21 - Fuselage longerons and fuselage front section.
7. \$17.61 - Fuselage rear section, completing the fuselage, less cover.
8. \$17.55 - Aircraft controls.
9. \$37.31 - Landing gear including wheels, tires and tubes.
10. \$21.01 - Remaining parts to complete airplane less cover and motor.
11. \$30.60 - Material for covering and doping the wings, tails surfaces and fuselage.

Prices shown included the 10% discount offered by Heath Co. from their list prices. Amounts are representative of early pricing.

Builders are warned that *“The parts are not precut and tubing is sold by the foot, cloth by the yard and metal by the sheet”*. In comparison it would be like a later Heathkit coming with a sheet of metal, and you would form the chassis and then drill all the holes.

Heath sold a lot of the first groups and one can imagine that there were a lot of partially built wings that were collecting in people’s garages and workrooms.

One feature Ed Heath developed for these early home-built airplanes was a way to assemble the metal tubed fuselage without the need for welding. Welding was not a skill many people had, and having the fuselage welded professionally was expensive for the

home constructor. Heath’s method involved joining the 5/8” 20 gauge steel tubing using 20 gauge sheet steel fittings, nuts and bolts and two-penny shingle nails as rivets. Bracing was done with wire and turnbuckles. The design must have worked well as there was no structural problems reported. Heath factory-built planes came with a welded fuselage frame. **Table II** lists the tools Heath Company said were needed to assemble the airplane:

The V Parasol (1930):

The *V Parasol* (**figure 1**) was another advancement to the Parasol line. It added easily removable wings for storage and towing behind a vehicle on the road, a door for easier access to the cockpit, a skylight in the center of the wing allowing a sight-gauge for the fuel tanks and, if bought assembled from the factory, a fully welded Warren truss fuselage frame. The ‘V’ title for this model came from the new V-shaped wing struts. Up to the model V, all the Parasols came with landing gear that had a single axle connecting the wheels as depicted in **figure 11**. Either many people updated their landing gear or the model V was the first to use split-axle landing gear as shown in **figures 1 & 9**. The home-built Heath *Parasols* were often modified by the builder, and other than using a different motor, one common modification was to change to split-axle landing gear.

The *V Parasol* was very popular and many material kits were sold. It was the model covered in Heath’s seven part *“How to Build a Parasol”* article. (**figure 9**). Its specifications are also given in **Table III**.

In the early 1930s the state and federal government were beginning to regulate private as well as transport aviation. To fly a small plane for profit between states after the rules went in to effect required that the plane be

certified. Many states followed the feds rules. Some states actually outlawed, for a time, flying in a home-built airplane unless it went through a certification process which was expensive for the builder.

The Certified Heath Parasols:

About three months after Ed Heath's death the company was put up for sale. It was purchased by Gen. John Clinnin and his brother Walter. John was a lawyer who had helped Ed Heath incorporate the previous year. The company was now called the Heath Aviation Corporation. The plant was moved to Niles, MI about 70 miles east of Chicago. Staff was reduced and a new head was hired, Fred Seiler. Fred made the decision to get the Heath *Parasol* certified. Heath Co. developed two new *Parasol* models over the next two years. The 1931 Heath **LNB-4** with Approved Type Certificate (ATC) 456 and the 1932 Heath **LNA-40** with ATC 487. The two aircraft are almost identical with the exception of the power plant. The **LNA-40** uses a more powerful Continental A-40 engine. Both are heavier by almost 200 lbs., and both now use an 'N' configuration for their wing struts.

Heath LNB-4 Parasol:

The **LNB-4 Parasol** received its ATC in mid-December of 1931. The biggest hurdle was getting the engine type-accepted. When introduced, the LNB-4 (**figure 12**) was the least expensive certified airplane in the world. This plane, being heavier, was not a good performer. Heath didn't sell many factory models (It is believed nine factory built LNB-4s were sold). It had a service ceiling of only 9,000 feet and an initial climb rate of 350 ft/min. However, the kit version (to be discussed later) evidently sold well though no numbers have been found.

Another problem affecting the LNB-4 was that Henderson stopped manufacturing mo-



Figure 12: The LNB-4 Certified Parasol.

torcycles in mid-1931, and the source for the engines Heath was modifying to make the B-4 engine would soon dry up.

Heath LNA-40 Parasol:

Continental, a large aircraft engine company, had recently developed an engine for small aircraft. The A-40 produced about $\frac{1}{3}$ more horse power (37 hp.) than the B-4 engine. It was also reasonably light (145 lbs.) and reliable (especially after Continental fixed a few early problems).

Other than the engine, the two biggest changes were that the door was moved from the left side of the fuselage to the right, and a baggage compartment was added in the headrest, placarded for only a 4 lb. capacity. The door change was required since the A-40 engine turned in the opposite direction than the non-standard B-4. When starting the engine by propping the propeller, the door needed to be on the side that gives easiest access to the engine controls. The higher performance LNA-40 had a service ceiling of more than 16,000 ft. and an initial climb rate of 500 ft/min.

The First Heath Kit:

Up until the **LNB-4 Parasol** all the kits offered was just the raw materials along with blueprints and instructions. However, if factory approved parts were used, a home builder could get his plane certified if the work was done under the supervision of a CAA represen-

HEATH PARASOL MODELS and their SPECIFICATIONS					
Specification:	Parasol	Super Parasol	V Parasol	LNB-4 Parasol	LNA-40 Parasol
Overall Length:	16' 9"	16' 9"	16' 9"	17' 3"	17' 3"
Height:	5' 10"	5' 8¼"	5' 8¼"	6' 0"	6' 0"
Wing Span:	23' 0"	25' 0"	25' 0"	31' 3"/ 37' 6" (a)	31' 3"/ 37' 6" (a)
Wing Chord:	4' 3"	4' 6"	4' 6"	4' 6"	4' 6"
Wing Area:	94 sq. ft.	110 sq. ft.	110 sq. ft.	135.5 sq. ft.	135.5 sq. ft.
Airfoil:	Morse	Clark Y	Clark Y	Clark Y	Clark Y
Empty Weight:	260 lbs.	260 lbs.	260 lbs.	450 lbs.	465 lbs
Gross Weight:	545 lbs.	560 lbs.	560 lbs.	675/700 lbs. (b)	700 lbs.
High Speed:	70 mph	70 mph	85 mph	73 mph	80 mph
Cruise Speed:	n/a	56 mph	66 mph	62 mph	68 mph
Landing Speed:	32 mph	28 mph	28 mph	32 mph	32 mph
Range (c):	120 s mi.	120 s mi.	120 s mi.	215 s mi.	200 s mi.
Fuel Quantity:	3.3 gal.	5 gal.	5 gal.	9/10 gal.	9/10 gal.
Oil Quantity:	3 qt.	3 qt.	3 qt.	6 qt.	6 qt.
Power Plant:	H. D. L. (d)	H-H B4 (e)	H-H B4 (e)	Heath B-4 (e)	Continental A-40
Horse power:	23 hp	25 / 27 hp. (f)	25 / 27 hp. (f)	27 / 30 hp. (f)	37 hp.
Year Introduced:	1926	1928	1930	1931	1932
Price (ready to fly):	\$575.00	\$975.00	\$975.00	\$1,074 / \$925 (g)	\$1,224 / \$1,085 (h)
Price (kit) (x):	n/a	\$199.00	\$199.00	\$499.00 (j)	n/a

(a) Standard wing / High Altitude Wing
 (b) Early / Late production model
 (c) Statute miles
 (d) Henderson De Luxe engine
 (e) Heath Henderson 4 cyc. engine.

(f) Max. continuous / Takeoff power
 (g) 1931 / 1933 prices
 (h) 1932 / 1933 prices
 (j) 1931 price

TABLE III

tative. As a consequence Heath offered two kit forms for the LNB-4 ¹⁴. The first included factory welded fuselage and tail surfaces. The wings still required fabrication. In its literature Heath called the new kits **“The Big New Heath Construction Kit Complete”**. Added to

the brochure was the following additional paragraph describing the second kit form:

NOTE: These are construction kits which the customer does a portion of the building. Therefore it is impossible to license this type of kit. However, Heath Airplane Company produces a line of assembly kits which are licensable...

The licensed assembly kits are supplied with the ribs constructed, the drilling and welding being done, leaving the work for the purchaser that of assembling the various sections. This kit sells for approximately twice the amount... If you require a licensed kit write for the Model LN CN Booklet.

This certifiable kit is probably the closest to the electronic Heathkits that were so popular between the late 1940's and the early 1990's.

A bit more Heath History:

Without Ed Heath's leadership, and with the country still under the effects of the depression, financial problems grew. In 1933 Heath changed its name to the International Aircraft Corp. but wasn't selling many planes.

Bankruptcy followed, and Howard Anthony was called in by the Feds to inventory stock. Anthony ended up buying the company. He took back the Heath Airplane Company name and with his wife was able to keep the company running, first by selling off old inventory and then producing specialized aircraft parts. First tail wheels and then whole tail wheel assemblies. He started selling numerous aircraft parts including windshields, cockpit communications for trainers and yes he designed and sold an aircraft radio [I had to work radio into the story somewhere!]. Howard Anthony moved the company from Niles, to Benton Harbor, MI in January of 1936 ¹⁵. At that time they were still

Build Planes Here For England



Pictured above is a standard model Heath airplane owned by the Heath Aircraft factory here. Twenty of the ships are now in production here for a firm in England, according to Howard Anthony, factory manager. The ship pictured was formerly owned by Robert Thompson, an Army pilot of Dayton, O., who preferred it to the heavier Army planes. He has flown the plane in every state in the Union and traveled 26,000 miles. The plane is priced under \$800.

Figure 13: SeeText

selling the *V Parasol* as well as the *LNB-4* and *LNA-40* in their brochures. An article in the July 11th 1936 Benton Harbor *Herald Palladium* announced the sale of 20 Heath planes to England. The plane appears to be a version of the *CNA-40* (**figure 13**), a center wing version of the *LNA-40 Parasol*.

With WWII starting up in Europe, Heath Co. business grew. They were a major supplier of aircraft parts for the buildup and support of the war effort. This brings the history of the Heath Airplane Company to the where the history of the Heathkit Company starts.

Conclusion:

There are many Heath *Parasols* on display in air museums across the nation. A few privately owned ones are currently flying, including the *Spokane Parasol*. A Google[©] search on Heath Parasol or Edward B. Heath can get you exploring ¹⁶.

Writing this article was a learning experience. I was able to get copies of some early aviation magazines, and was fascinated by many stories that I now want to go back and read. The seven-part "*How to Build a Heath Parasol*" really opened my eyes to the effort the successful home constructors must have put in. Unfortunately the issue that contains the Part I was not with the other magazines. If any one has Part I, I'd be interested in getting a copy.

I have to acknowledge Chet Peek's book, "*The Heath Story*". I tried to reach Mr. Peek, but the publishing firm is no longer in business that I could find. Also Mr. Peek, if my math is correct is nearing his 100th birthday. Congratulations. The book is hard to



Notes:

1. Photo Credit: By FlugKerl2 - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=10862294>
2. Ed Heath's middle name is often given as Baird. He used that spelling on his WWI draft registration form. It is occasionally also seen as Bavard, which likely started as a typo.
3. https://en.wikipedia.org/wiki/File:Edward_Bayard_Heath.jpg
4. Chet Peek, *The Heath Story*, (Three Peaks Publishing, Norman, Oklahoma, 2003, 1st ed. ISBN 1-86619603-6) p. 1.
5. I was unable to find either newspaper story to confirm or repudiate the date. A few pages later the date is given as September 13th
6. See note 5.
7. A photo of the Feather may be found at: https://www.libraries.wright.edu/community/outofthebox/files/2015/05/ms223_043_111.jpg
8. A photo of the Scout may be found at: <http://www.aviation-history.com/thomas/scout.html>
9. On May 20, 1927, less than seven years after the first National Air races, Charles Lindbergh would take off from Roosevelt Field on his famous cross Atlantic solo flight.
10. A photo of the Tom Boy, the re-engined Humming Bird may be found at: <http://www.aerofiles.com/heath-tomboy.jpg>
11. The Spokane Parasol is still flying today. Here is an article: <https://generalaviationnews.com/2016/10/10/haydens-storied-spokane-parasol/>
12. A photo of the Baby Bullet may be found at: https://upload.wikimedia.org/wikipedia/commons/1/17/Heath_Baby_Bullet_6.jpg
13. A photo of the Cannon Ball may be found at: <https://www.enginehistory.org/members/images/CannonBall/0001.jpg>
14. And possibly the *V Parasol* which is also mentioned in the ad, though the *V Parasol* did not have a type certificate.
15. "Heath Aviation Company", *The Herald Palladium* 1 Jan 1937, p. 121.
16. Photo of numerous Heath Parasols of different models may be found at: <http://www.airminded.net/heath/heath.html>

find, but worth the read if you are an aviation fan - and I know many hams are also interested in aviation.

I'd also like to acknowledge ADV Plans LLC who provided the Popular Aviation magazines on DVD with a very reasonable copyright permission for photos from the magazine.

And again I have to acknowledge all the help I got from Chuck Penson – WA7ZZE; especially with his help finding numerous Heath news articles and historical facts.

For those who could care less about Heath aircraft and Heathkits in general, I apologize for all the space you think I wasted. Until next April, I'll try to keep my focus on Heathkits and especially amateur radio related Heathkits.

However, I plan to take a few months off from writing. I'd like to use that time going back and correcting some typos and even a few bits of just plain wrong information that inadvertently crept into a few of the articles.

Revisions:

Rev. A: Rewrote section covering Heath's first attempts at flight for better clarity. Made minor changes to text and to punctuation. Still looking to obtain copies of news articles mentioned in Chet Peek's book.

Rev. B: I'd like to thank Bob - K1RWM for pointing out some typos and the fact that I had two Figure 3's. I need to fire my proof-readers! Thanks to Bob I have corrected those errors in this revision 'B'.

73, from AF6C



This article originally appeared in the April 2020 issue of RF, the newsletter of the Orange County Amateur Radio Club - W6ZE.

Bob - AF6C