Issue No. 65

AUSTRALIAN MODEL NEWS

JUNE 2020

From the Editor

When the lockdown was lifted I managed to attend a control line event at Knox MAC and looked forward to things getting back to something approaching normal. Unfortunately this was not to be and here we are again — locked down once more and this time condemned to wearing a mask. I received this picture from Knox member Derek Pickard emphasising the necessity to wear a mask or risk infection.

Thank you to those who were able to contribute something to this issue, they have given me enough to keep the newsletter relevant. It looks as though we won't be able to do very much flying for the next two or three months but if you continue sending news of your workshop activities it will help to keep AMN afloat until we get over this virus problem.

John Lamont

This newsletter is published bi-monthly to feature model aircraft building and flying and to report on aeromodelling events in Australia and New Zealand.

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On the Cover.
John Goodge's "Gambler" flying in the 2019 Victorian Vintage Stunt event.

Contents

STAN NEWELL

AEROMODELLING CENTENARIAN

7/4/1920 —

Stan Newell is a life member of Doncaster MAC who reached one of the milestones of life when he became 100 years of age at Easter 2020. We were in lockdown for the Covid –19 viral infection at that time and his friends and fellow club members were unable to join him in celebrating this momentous occasion.

Stan is an active modeller still building and flying both free flight and r/c models and, with the recent easing of restrictions, Cliff McIver and other Doncaster members gathered with Stan at the Doncaster flying field for a belated flying session to recognise his achievement.

With Cliff McIver on the buddy box, just in case, Stan enjoyed a few circuits with Cliff's Piper Cub.

Stan enjoying a flight with Cliff on the buddy box.

Cliff's Piper Cub was the ideal vehicle for the occasion…..sedate in flight and large enough to be easily seen.

Stan and Cliff, both Life Members of the Doncaster MAC, celebrating the event.

Stan with three of his own design, foam construction, r/c models.

Top. DH 60 Gipsy Moth

Centre. SE5a

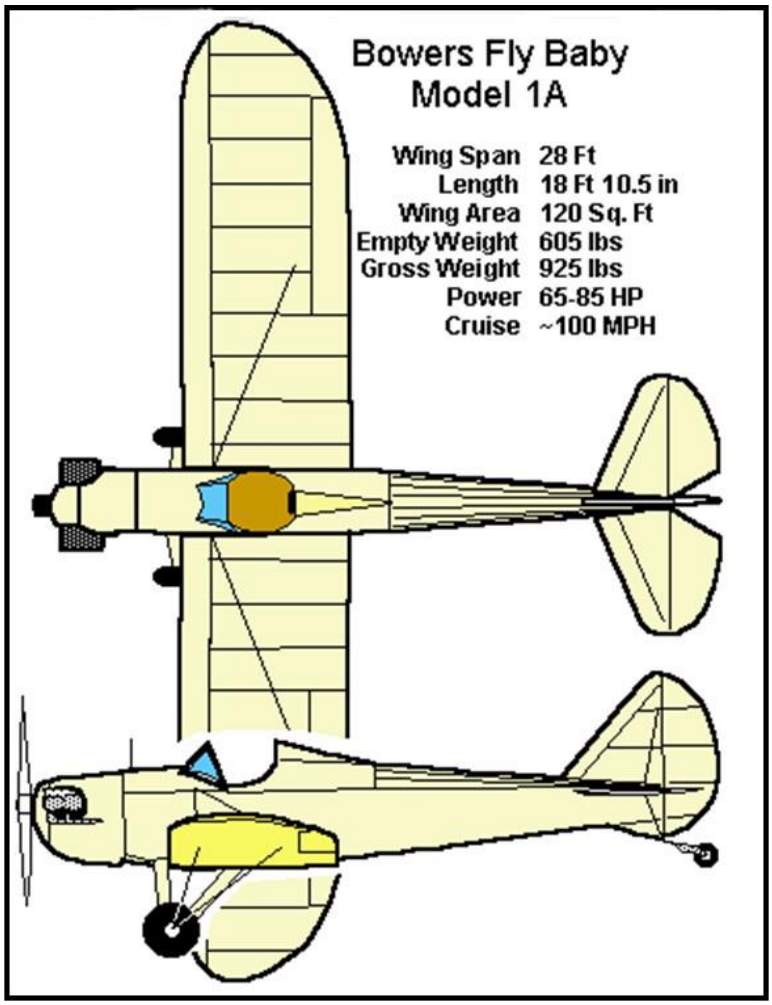
Bottom. DH 82 Tiger Moth

John Byrdon's

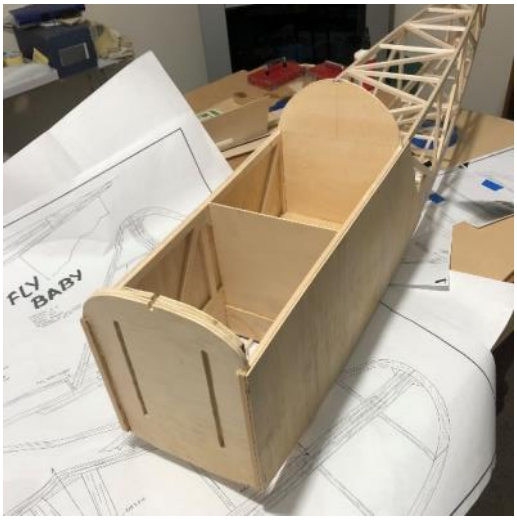
Lockdown Models

John Byrdon, a fellow member at Greensborough, sourced a plan from the USA and has commenced construction of a 1/3 scale Bowers Fly Baby as his 'Lockdown' project.

While rummaging through his stock of material John discovered a plan of the Hearn's Hobbies "Butch" that he recalled building and flying at the age of eleven with Gary Ryan who is also still flying at VARMS. By coincidence a "Butch" was flown at the 2020 All Australian event at the Knox club and I'm able to present photographs of John's quickly constructed and still bare model together with a finished and flying model.

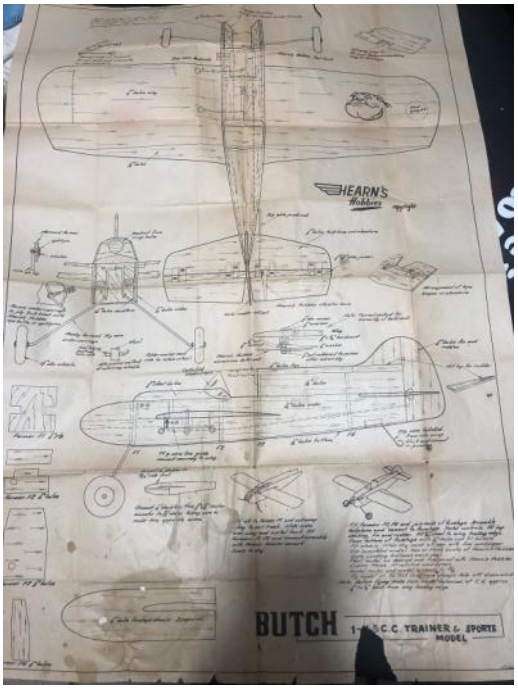


The basic frame of the Fly Baby fuselage.



The Fly Baby is basically a single seat, low-wing Cub and has a similar performance.

John produced this neat set of instruments from scratch to dress up the open cockpit of his Fly Baby.



The plan for "Butch" was one of many that I drew for Hearn's Hobbies in my earlier days of modelling.

John's "Butch" model was a quick build to the painting stage.

A "Butch" model built by Frank Grassham and powered by a Taipan 1.5cc diesel at the 2020 All Australian event.

KNOX MAC "ALL AUSTRALIAN" 2020

It's been a long wait for action at Knox MAC and the weather for this event was perfect. The only draw back was the sodden and muddy field which had not been mowed for some time and had also had a visit by someone on a motor bike who managed to cut some deep wheel tracks across the circles. As a consequence a number of people declined to fly rather than risk their aircraft.

Those that did fly managed quite well and the only loss was the new electric powered HH "Demon" of Graham Keene who travelled from Moe to attend the event.

With a number of flyers of limited aerobatic capability the event was divided into two sections — Advanced and Novice — to increase the chance of a placing for more flyers.

Advanced was won by Ken Maier with his Spitfire and Novice by Steve Vallve with his very flighty Calamity Jane.

Ken Maier receives the winners award for the Advanced Event from Knox MAC president, Reeve Marsh.

Steve Vallve was the winner of the Novice Event with his "Calamity Jane" designed by Peter Weaver.

Entry No.	Entrant	Model	Designer	Year	Engine	Category	Static Score	Flight Score	Total	
14	Ken Maier	Spitfire IX	Geoff Pentland	Late 50's	Elfin 2.49 diesel	Advanced	12	151	163	
11	John Goodge	Hearns Hobbies "Demon"	Hearns Hobbies	1952	Electric - Turnigy G25 710 KV	Advanced	0	153	153	
2	Reeve Marsh	Hearns Hobbies "Demon"	Hearns Hobbies	1952	1955 Enya 29	Advanced	5	134	139	
	Graham Keene	Hearns Hobbies "Demon"	Hearns Hobbies	1952	Electric - Turnigy G25 710 KV	Advanced	9	119	128	
13	David Nobes	Hawker Tempest MK II	Pentland/Nobes	2000	OS LA 46	Advanced	56	0	56	DNF
12	David Nobes	JU 87 Stuka	David Nobes	2020	OS LA 25	Advanced	28	0	28	DNF
1	Steve Vallve	Calamity Jane	D Weaver	1951	OS35 S	Novice	5	78	83	
3	Gary Whitbourn	Hearns Hobbies "All Australian Mk.I"	Hearns Hobbies	1955	OSFP 20	Novice	14	67	81	
8	Harry Bailey	"Galaxy" Classic B Team Race			Brodak 25	Novice	3	51	54	
6	Harry Bailey	Hearns Hobbies "Demon"	Hearns Hobbies	1952	Frog 500	Novice	17	0	17	DNF
9	Harry Bailey	"Gold Dust" Vintage B Team race			OS Max 29	Novice	13	0	13	DNF
5	Frank Grassham	Hearns Hobbies "Butch"	Hearns Hobbies	TBA	Taipan 1.5 cc diesel	Novice	7	0	7	DNF
4	Bernie Cosgriff	Aeroflyte	Aeroflyte	TBA	OS35 S	Novice	1	0	1	DNF
10	Ron Jones	Aeroflyte "Wildcat"	Aeroflyte	TBA	Silver Swallow 2.5	Novice	1	0	1	DNF
7	Harry Bailey	"Backtrack" Classic B Team Race			OS25 FP	Novice	0	0	0	DNF

MAAA VINTAGE STUNT

	Contestant	EVENT SCORE	Static	Flight #1
1st	Ken Maeir	163.00	12.00	151.00
2nd	Jonn Goodge	153.00	0.00	153.00
3rd	Reeve Marsh	139.00	5.00	134.00
4th	Graham Keene	128.00	9.00	119.00
5th	Steve Vallve	83.00	5.00	78.00
6th	Gary Whitbourn	81.00	14.00	67.00
7th	Harry Bailey	54.00	3.00	51.00

Steve Vallve flying his "Calamity Jane" to win the novice event, assisted by Reeve Marsh as caller.

Harry Bailey flew his "Galaxy" team racer but was restricted in his performance by the high speed and lack of manoeuvrability of the model.

Derek Pickard explaining his point (not giving the two finger salute).

Gary Whitbourn starting his "All Australian" assisted by Derek Pickard.

David Nobes elected not to fly and became the sole judge.

Graham Keene's electric powered HH "Demon" was the only crash of the day.

Steve Vallve won the Novice event with his OS35 S powered "Calamity Jane" despite the model being

Ken Maier won the Advanced event with his Elfin diesel powered "Spitfire"

Harry Bailey brought three team racers and flew the his all-red Galaxie in the Advanced event. The model was too fast for the vintage aerobatics required but managed a wingover among the many high speed, straight and level laps.

Bernie Cosgriff did not fly his P-40 "Warhawk" powered by an OS35 S.

Reeve Marsh's HH "Demon" powered by an Enya 29 placed third in the Advanced event.

Another high speed machine, Frank Grassham's HH "Butch" powered by a Taipan 1.5 diesel did not fly.

Gary Whitbourn's HH "All Australian Mk.1" powered by an OS 20 FP.

David Nobes' "Tempest" was a runaway winner in Advanced static judging.

David's new Ju87 "Stuka" also polled well in Advanced static judging.

My apologies to the owner as I missed the details of this model.

Harry Bailey's H H "Demon" is a work still in progress and on completion will be powered by a FROG 500.

Derek Pickard declined to fly his ex Doug Grinham from the long grass.

Luigi Prina

" THE SHIPS THAT SAIL THROUGH THE CLOUDS "

In early July I received an email from Dave Bush who lives on the west cost of the USA in Vancouver, Washington State. Dave had lost contact with a friend, Luigi Prina, who lives in Milan, Italy and as he had received a copy of AMN from Luigi he thought that I might be able to assist in locating his friend.

Although not familiar with Luigi and his flying ship models I do have a couple of Italian contacts in Pino Carbini, the newsletter editor for SAM 2001, and Giorgio Valcastelli, a former member of the VFSAA when he was working for several years in Melbourne with the Italian Embassy.

It turned out that Luigi is an honorary member of SAM 2001 and had temporarily lost his internet service. The service had now been resumed and I was able to re-establish contact between Luigi and Dave. It was a happy ending!

While corresponding with Luigi I learned that he is now 90 years of age and an architect by profession. He has been a keen aeromodeller since his teenage years and builds unusual ship models that actually fly. I found his models fascinating and I hope that my readers will find his story to be of interest.

A Lifelong Dream

I was born in Milan in 1930 and I have been interested in flying since I was a child. I was 10 years old when I discovered aircraft modelling, and I have kept this passion with me ever since, together with my passion for drawing and manual activity.

Thanks to my father I always had access to large quantities of paper and design instruments growing up, and my mother allowed me to create whatever I wanted to without being worried about messing up the house. When I was 12 our house was damaged by a bombardment and I was given a large, uninhabited room where I was free to let my passions take over, especially airplane modelling. As a result at the age of 16 I won a national competition for the design of an airplane model with a combustion engine. I remember when I went to receive my prize in Florence they asked me: "Why didn't your father come to collect his prize?" because I looked quite young for my age. When I told them that I was in actual fact Luigi Prina they were very upset. The following year I held the national record for indoor models for a period of time. It was a speciality that had just arrived from America.

At that time I thought I would end up becoming an aeronautical engineer, but my professor of Design and History of Art convinced me to follow a more creative career path, so I chose architecture. I abandoned active aeroplane modelling and I obtained my degree in architecture at 23. Throughout my 60-year career I projected many cultural centres and university residences in a number of Italian cities, such as Rome, Palermo, Verona, Bologna, Genoa, and Milan, my city.
In Pavia I worked on an 18th century church that had been deconsecrated by Napoleon who then assigned it as a barracks and warehouse. I carried out a renewal project on the structure, taking care of the acoustics personally, and turned it into a conference centre and auditorium. The project was sponsored by The Ghislieri College, one of the oldest university colleges in Pavia founded in 500 AD by Pope Pius V. International conventions and concerts of mainly ancient music are held in this church every year. I also restored a medieval castle for the same institution, discovering frescoes from the Period of Leonardo. There is still some work being carried out for the creation of an international university campus.

I can safely say that all my activity as an architect was aimed at culture and the youth. It's a profession where creativity and imagination counts. This is the reason why I abandoned aeronautical engineering for architecture.

Another great passion of mine is literature, from the Latin poets (Virgil, Horace) to Italy's greatest poet of all time, Dante Alighieri. I have memorized almost all of his most famous work, 'The Divine Comedy', and this knowledge helps me to create new ideas for my flying ships. My passion for airplane modelling has always been hidden and I gave courses for this discipline in both youth and after-school clubs. The names of my boats come from Greek and Norse mythology: Luciano (*Lucian*) is a Greek writer from the first century who was brought to the moon on his ship, and he tells about the "Star Wars" between the inhabitants of various planets. Enea is the main character of the most important Latin poem, *the Aneid*, (written by Virgil, First Century BC.); Ulisse (*Ulysses)* is the main hero of the Greek poet Homer (Sixth century BC.); City bike is the dream of every cyclist in the traffic of our cities . . .

I know Li Po and the other poets of his time thanks to the marvellous music of Gustav Mahler, who was inspired by your poetry. Music easily overcomes cultural borders and divides.

I became a grandfather at 57 and I decided to do something new in honour of the new generation. At the time I met Eugenio Tomiolo, an important Venetian painter who was also a dialect poet and a maritime expert.

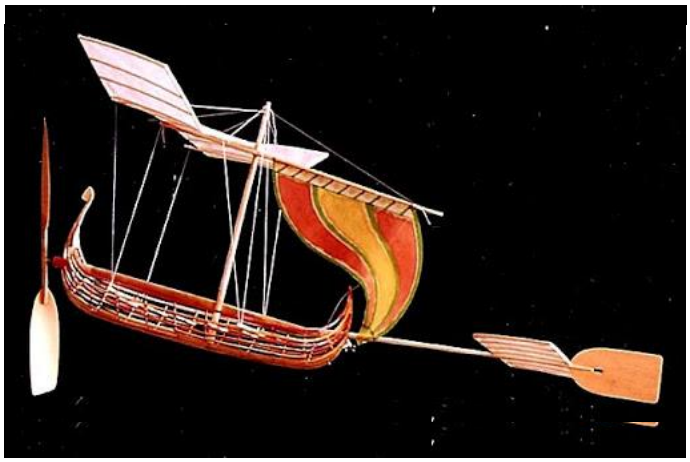
He built imaginative and fantastic models of ships that he intended pairing with a book on maritime legend that he was writing. This is how the idea of the flying ships came about. I said to him “Do you want to bet that I can make your ships fly?” I built the first flying ship and I made it fly in his studio. The ceiling of his studio was painted to resemble a sky full of clouds. When the ship began to fly against the ceiling, everyone in the studio had the impression that the clouds were moving. Tomiolo was really enthusiastic about the whole thing to the point where I saw him again a year later and the first thing that he said to me was: “Those clouds were moving!!!”

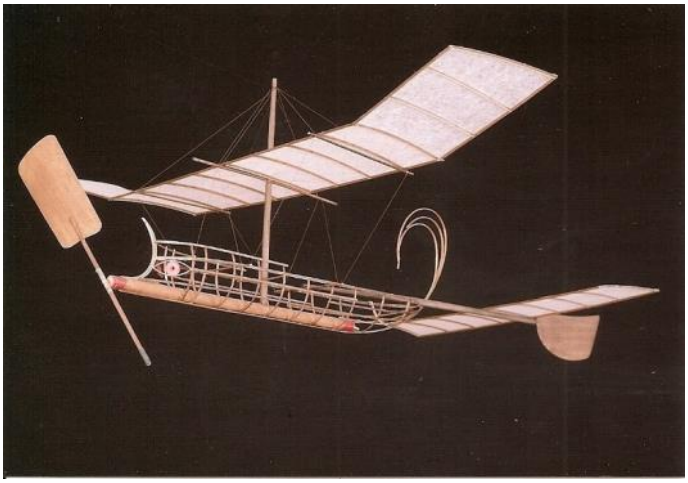
That was the day when the construction of the flying ships began. I've constructed about 300 in total, and I've been inspired by the Norse and Greek mythology and literature. In actual fact there have been many poets that have made ships fly with their imagination. There was Dante who sung about the "crazy flight" of Ulysses. Virgil transformed the sails of his ship into wings as soon as he laid eyes on Italy. Lucian, who flew to the moon, as well as all the other writers like Horace, Apollonius, Euripides, Ludovico Ariosto, the Vikings, the Flying Dutchman, who have all spoken about ships that fly.

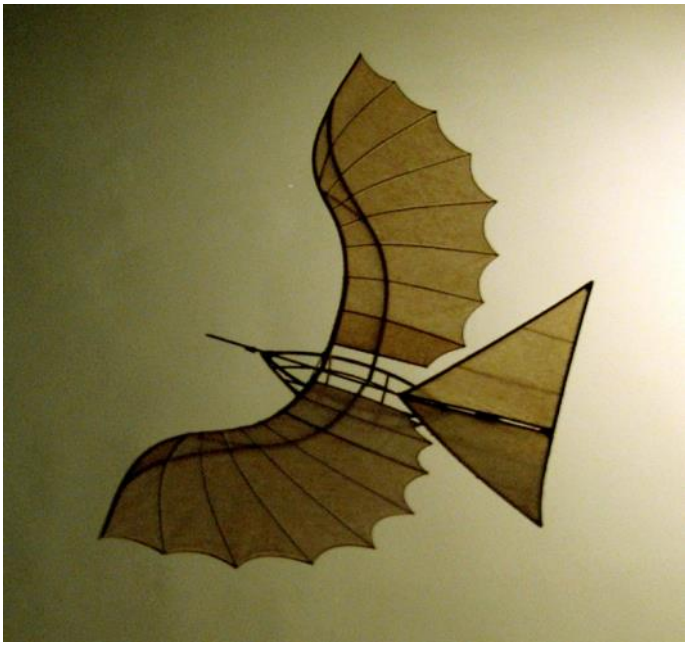
Every boat is a prototype, starting from an original sketch that I later destroy. The main inspiration comes from the ships of Ancient Greece depicted on ancient vases, to ancient miniatures, Viking ships, the boats of The Republic of Venice immortalised by the pictures of the 15th and 16th centuries, to the designs of Leonardo da Vinci .

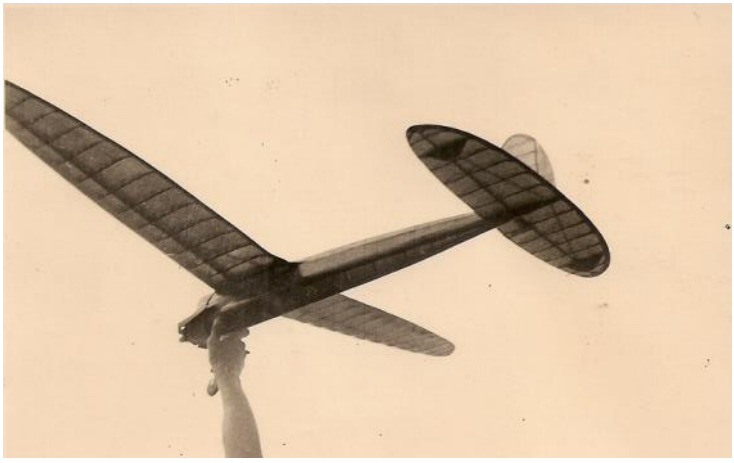
I want to reveal the secret that allows me to create and transform my dreams into reality: a marvellous wife who has put up with me for 60 years. She supports my follies and has never berated me for the disorder that characterises my work area and as a result the rest of the house. Her name is Maria Teresa.

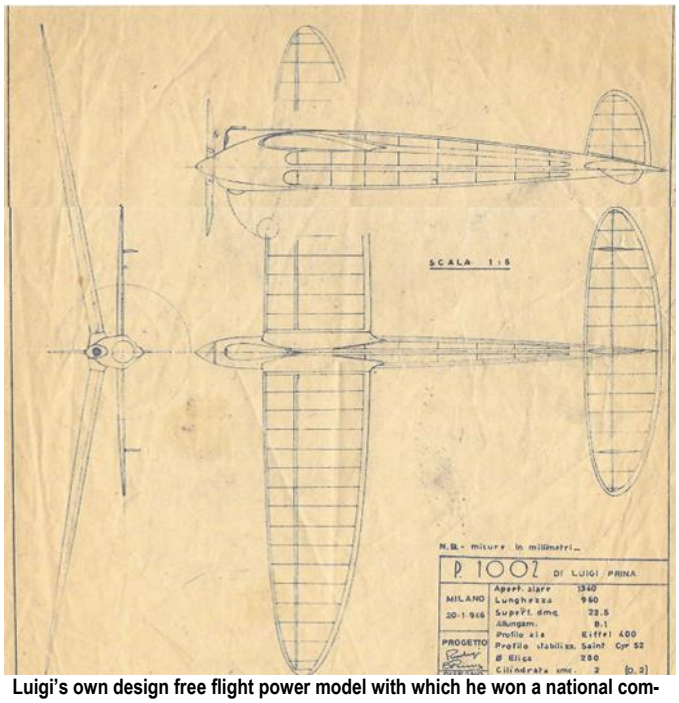
Luigi Prina











Luigi's own design free flight power model with which he won a national competition at the age of 16years.

An enlarged, electric powered, radio controlled version of Luigi's 1946 model built by Rover Mersecchi.

Rod Mitchell's

McDonnell XP - 67

"MOONBAT"

Back in April 2019 I featured the Mc Donnell P-67 "Moonbat" in AMN when Ivan Vidak the designer and initial constructor of the model passed it on to Rod Mitchell for completion. Ivan had built the basic structure and commenced the balsa sheet covering when Rod took over and the aircraft has now been completed and test flown.

Mc Donnell XP-67

An extensive aerodynamic test program of the numerous advanced aspects of the design was begun by McDonnell, NACA, and the University of Detroit.The design demanded skin that was perfectly smooth and precisely shaped to maintain its laminar-flow characteristics, mandating the development of new construction techniques, as the company had never produced an entire aircraft before. Wind tunnel testing uncovered problems with cooling airflow through the engine nacelles, which were never fully resolved.

The first XP-67, 42-11677, fitted with XIV-1430-17/19 engines was ready for ground trials on December 1st 1943. On December 8th the aircraft was damaged by fires in both engine nacelles. By January 6th 1944, the damage was repaired and the XP-67 made its first flight, which ended after six minutes due to engine trouble. After modifications were made to the engine installations, two test flights were carried out.

By this time, it was becoming obvious that the XP-67 was hampered by a serious lack of power. The engines were only delivering 1,060 hp (790 kW), well short of their promised 1,350 hp (1,007 kW) rating. On March 23rd 1944, flight trials restarted. Army Air Force pilots finally got to fly the aircraft on May 11th 1944 and judged the cockpit layout fair and ground handling satisfactory, but deemed the aircraft underpowered due to its poor initial rate of climb, slow acceleration, and long take-off roll.

Other flight characteristics were generally good during gentle manoeuvres; stick forces were light, roll rate was adequate, and control was effective at all speeds with good longitudinal stability. However, a tendency to dutch roll was prevalent. The prototype also displayed several disturbing behaviours as its stall speed was approached. The problems were serious enough that test pilots declined to test the XP-67's spin characteristics, fearing that a spin might be unrecoverable. This irregular and unstable stall behaviour has been attributed to advanced aerodynamic principles that were not fully counteracted until the advent of electronic stability controls years later. Although the final flight test report was generally positive, the aircraft's manoeuvrability was deemed inferior to existing types such as the North American P-51 Mustang.

Upon return to the factory, the cooling ducts were reworked. Several problems were cured during the ensuing test flights, but the engines continued to be plagued by chronic overheating and deficient power output. The XP-67 only reached a confirmed top speed of 405 mph (652 km/h), which was far short of its promised top speed of 472 mph (760 km/h), and was unremarkable compared to other fighters in service at the time.

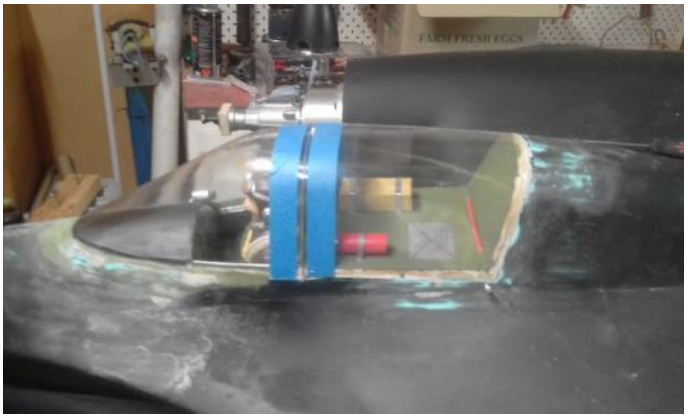
On September 6th 1944, the starboard engine of the XP-67 caught fire during a test flight and the pilot executed an emergency landing. The aircraft was a total loss, the remains of the first prototype were scrapped and the project was cancelled.

Ivan machined special radial engine mounts and the engines are set up to run in opposite directions to eliminate torque reaction.

The f

Elevator and rudder servos are at the back of the model but the long engine nacelles maintain correct balance.

Fuselage complete and ready for the cockpit canopy to be fitted.



Cockpit canopy fitted.

Rod Mitchell with the McConnell XP-76 "Moonbat" ready for its test flight. Ivan Vidak travelled to Warrnambool for the occasion.

Initial test flights of the Moonbat with the undercarriage down were successful but further flying showed that the rearward retracting tricycle undercarriage had a significant effect on the centre of gravity when the wheels were up and additional nose weight had to be added to improve balance in flight.

Big improvements at Twin Cities Club, Albury

The Twin Cities Club has recently undertaken a massive improvement program at their Albury flying field. The entire undercover pit area, the engine starting area and the area between the club house and pits have all been concreted.

These areas had previously been covered with the blue matting that is in common use at a lot of flying fields, particularly in Victoria, as it was sourced from the paper mill in Albury. This material served its purpose well over the years but in recent times it had become eroded underneath and was becoming dangerous in a few areas.

The Club decided that the entire area should be replaced and sought quotes to complete the project in one undertaking. During the quoting process it was decided the area immediately in front of the club house should be of exposed aggregate and this certainly looks better than plain concrete. The entire project was completed in just over two weeks, from excavation, pouring concrete and backfilling. The backfilled area will be grass seeded in the coming Spring.

In addition to work the Club have modified a portion of the amenities area to include a dedicated hot and cold shower which will make your next camping trip to Albury much more comfortable.

Should look great for the summer months.

David Balfour

David Balfour's

De Haviland DH.82a "TIGER MOTH"

This Tiger Moth, supplied by the Value Planes company, is a highly detailed kit available from Rob Sargent of Albury RC Models the Australian agent for Value Planes. This company also produces a Fokker D7 with two metre wingspan, a 1/3 scale Nieuport 28 and an Old Timer. The model is 1:3:8 scale with a 2.3 metre wingspan and is an extremely detailed representation of the DH 82a Tiger Moth.

The kit comes with a comprehensive set of drawings and an instruction booklet with lots of coloured photos. The materials supplied are of an extremely high quality, from the timber to the water cut stainless steel fittings. An interesting feature of the kit is that there is almost no balsawood supplied, it is all high quality laser cut pine and hardwood — as the Americans would say "the lumber is very good".

A special note regarding the wing construction. The wings in the kit are built exactly as the wings of the full size Tiger Moth with lots of laser cut ribs, as can be seen on the accompanying photos.

I have modified the engine installation and built the mount as a module that includes the engine mount, engine, fuel tank, ignition module, ignition battery and throttle servo. This system was originally designed by Lockheed Aircraft for the C-130 Hercules and L-188 Electra and is known as a QEC or Quick Engine Change. It allows the engine, gearbox, propeller and a section of the tail pipe to be removed in one operation. The system works well on model aircraft too!!

Cowl detail is now in progress including a dummy hinge that runs the full length of both sides of the cowl. This hinge is pressed out of .005" litho plate and inserted from inside the cowl, certainly looks like a long hinge. More details such as latches etc will be fitted later.

The tail plane and wings are now covered using Sig Koverall and the project is starting to look like a Tiger Moth.

Fellow club member Ray Chapman is building the same kit and it has almost become a joint venture between Ray and myself. I constructed a jig to set the dihedral so there have been plenty of phone calls and visits during construction.

Another TCMAC member who has been assisting with the aircraft construction is Neil Sharp. Neil has in the past had considerable experience working on full size Tiger Moths and has been invaluable with his knowledge of the aircraft's construction and rigging.

Both Ray's and my aircraft are well advanced and should be ready for test flights in the near future.

Model Specifications

Wingspan: 2360mm

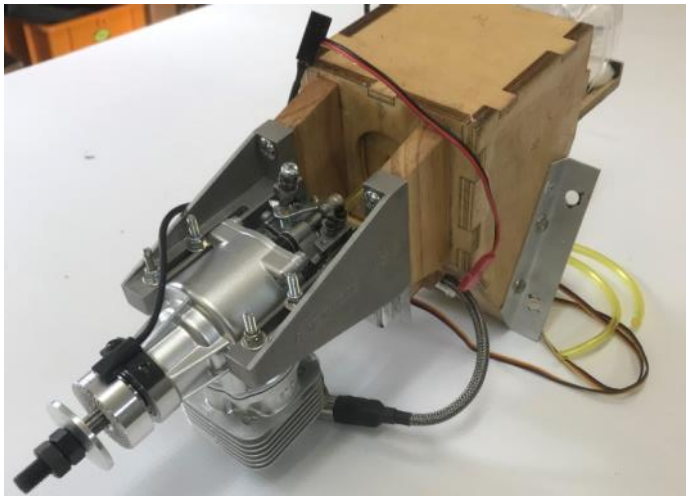
Length: 1850mm

Flying Weight: 8.5kg

Engine: DLE20-RA

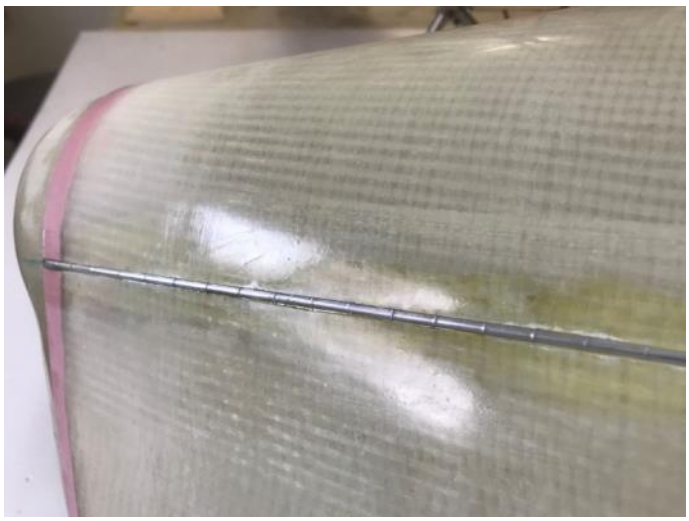
David Balfour

Tiger Moth fuselage. Good metal work supplied for the u/c and top wing mount.



Removable engine module also holds the fuel tank and ignition system.

The cowl is fibreglass rather than the more common plastic moulding.



Dummy hinges improve the look of the cowl. More detail still to be added.

The wing structure is similar to the full size aircraft.

Tailplane, fin and rudder construction is near scale. Covering is SIG Koverall.


MAKING Whoopee!

BUILD FROM OUR FULL SIZE PLANS!

WHOOPEE was designed as an indoor model to fly in a small hall. Many CO2 models fly too fast for this, so I wanted plenty of wing area to give a low flying speed, and a small wingspan to permit tight turns. A typical CO2 powered indoor model weighs around 35 grams. Reducing the weight will give slower flying speeds but as the motor weighs 15 grams not much speed reduction can be obtained without resulting in a model which is too easily damaged. I decided therefore to build a compact model with many wing area, and to make it reasonably robust by not building it too light.

Question: how do you design a model with a very large wing area and a small wingspan? Answer: use plenty of wings! So Whoopee was born. If flew better than appearance might suggest! Why not build one? The good news is that there is no covering or finishing to be done.

At first sight it might seem as if this model might be laterally unstable as there is no dihedral, but in fact the combination of side area and low centre of gravity gives very adequate pendulum stability.

Choice of motors

This model has been flown with both electric and CO2 power. The plan shows both the electric version has a shorter nose to

At last – full-size plans for Robin James' delightful

David Anderson's

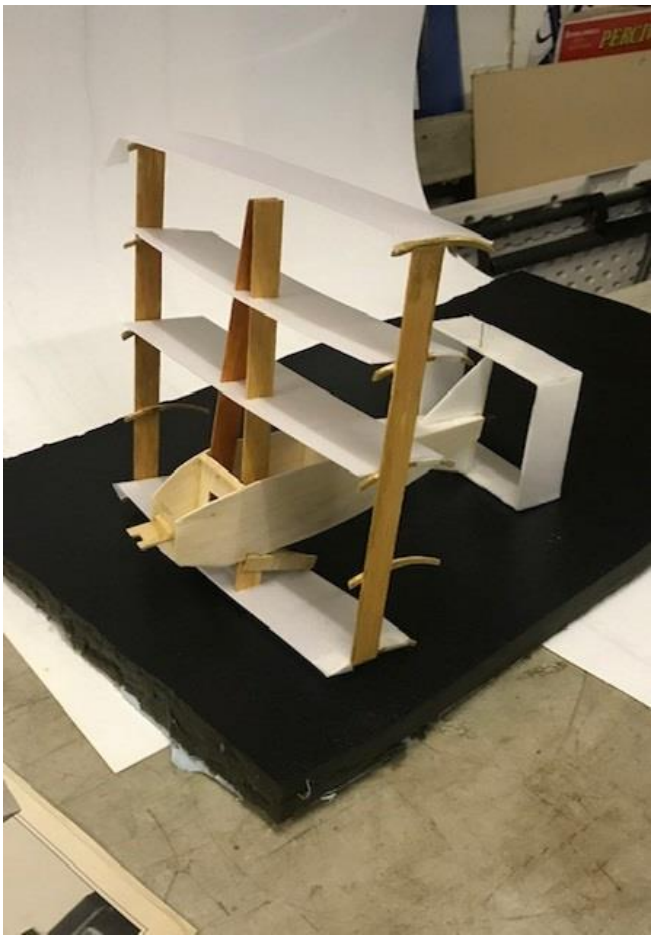
"WHOOPEE"

The Covid 19 lockdown is starting to have an effect on some of our modellers!

This is David's latest project (not finished, not fully rigged!) and it's from a free plan, out of the Aeromodeller magazine, February, 1989.

The original model was designed for free flight, used a CO_2 power plant, and had a wing span of 280mm and a weight of 40 grams.

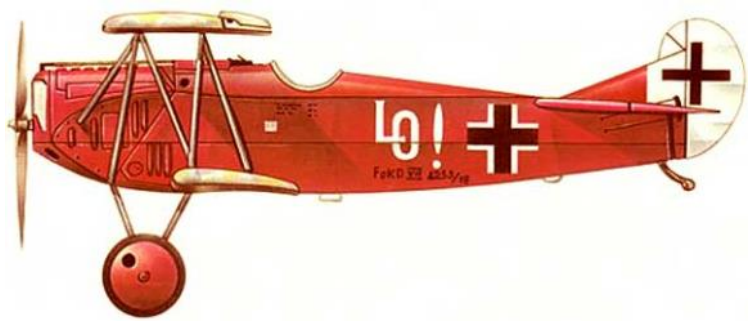
David's version will be the same size and construction but radio controlled and electric powered for indoor flying. With one more wing still to be added it will be another pentaplane to match the outdoor model built by Brian Evans



David's little model requires the fifth wing and the undercarriage to be added but still presents as a novel design. The r/c controls will be rudder, elevator and motor.

Wayne Harrison's

FOKKER D.VII



World War I

The D.VII entered squadron service with *Jasta* 10 in early May 1918. When the Fokker D.VII appeared on the Western Front in April 1918, Allied pilots at first underestimated the new fighter because of its squarish, ungainly appearance but quickly revised their view. The type quickly proved to have many important advantages over the Albatros and Pfalz scouts. Unlike the Albatros scouts, the D.VII could dive without any fear of structural failure. The D.VII was also noted for its high manoeuvrability and ability to climb, its remarkably docile stall and reluctance to spin. It could "hang on its prop" without stalling for brief periods of time, spraying enemy aircraft from below with machine gun fire. These handling characteristics contrasted with contemporary scouts such as the Camel and SPAD, which stalled sharply and spun vigorously.

Several aircraft suffered rib failures and fabric shedding on the upper wing. Heat from the engine sometimes ignited phosphorus ammunition until additional cooling louvers were installed on the metal sides of the engine cowling panels and fuel tanks sometimes broke at the seams. Aircraft built by the Fokker factory at Schwerin were noted for their lower standard of workmanship and materials. Despite faults, the D.VII proved to be a remarkably successful design, leading to the familiar aphorism that it could turn a mediocre pilot into a good one and a good pilot into an ace.

Richthofen died days before the D.VII began to reach the Jagdstaffeln and never flew it in combat. Other pilots, including Erich Löwenhardt and Hermann Göring, quickly racked up victories and generally lauded the design. Aircraft availability was limited at first, but by July there were 407 in service. Larger numbers became available by August, when D.VIIs achieved 565 victories. The D.VII eventually equipped 46 Jagdstaffeln. When the war ended in November, 775 D.VII aircraft were in service.

Post-war Service

The Allies confiscated large numbers of D.VII aircraft after the Armistice. The United States Army and Navy evaluated 142 captured examples. Several of these aircraft were re-engined with American-built Liberty L-6 motors, very similar in appearance to the D.VII's original German power plants. France, Great Britain and Canada also received numbers of war prizes.

Other countries used the D.VII operationally. The Polish deployed approximately 50 aircraft during the Polish-Soviet War, using them mainly for ground attack missions. The Hungarian Soviet Republic used a number of D.VIIs, both built by MAG and ex-German aircraft in the Hungarian-Romanian War of 1919.

The Dutch, Swiss, and Belgian air forces also operated the D.VII. The aircraft proved so popular that Fokker completed and sold a large number of D.VII airframes that he had smuggled into the Netherlands after the Armistice. As late as 1929, the Alfred Comte company manufactured eight new D.VII airframes under license for the Swiss Fliegertruppe.

General characteristics

Crew: 1

Length: 6.954 m (22 ft 10 in)

Wingspan: 8.9 m (29 ft 2 in)

Height: 2.75 m (9 ft 0 in)

Wing area: 20.5 m^2 (221 sq ft)

Empty weight: 670 kg (1,477 lb)

Gross weight: 906 kg (1,997 lb)

Powerplant: 1 × Mercedes D.III 6-cyl. water-cooled in-line piston engine, 120 kW (160 hp)

Propellers: 2-bladed fixed-pitch propeller

Maximum speed: 189 km/h (117 mph, 102 kn)

Range: 266 km (165 mi, 144 nmi)

Service ceiling: 6,000 m (20,000 ft) [15]

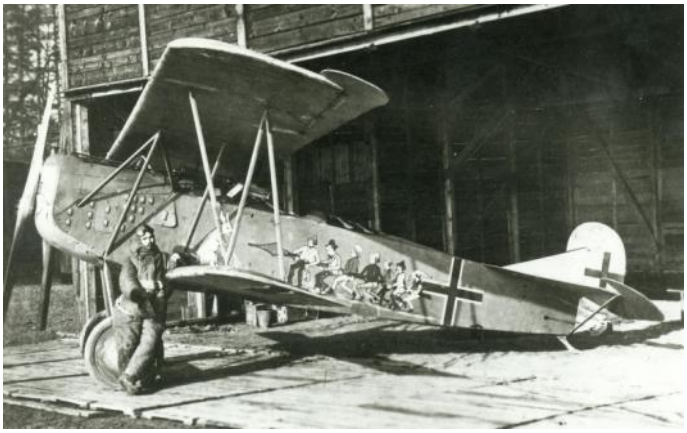
Rate of climb: 3.92 m/s (772 ft/min)

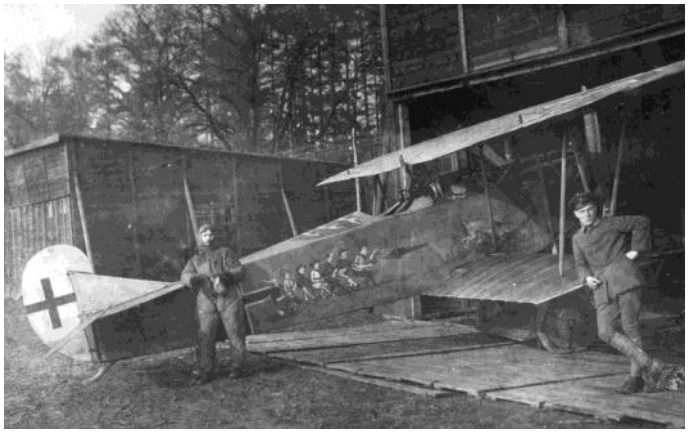
Guns: 2 × 7.92 mm (0.312 in) LMG 08/15 "Spandau" machine gun

The Model

Wayne's 1/4 scale model has a wingspan of 2.2m and is scratch built from the Balsa USA plan. Powered by an 85cc Moki twin cylinder in-line engine the model has a surplus of power but the heavy engine helped with the correct placement of the C of G.

Wayne's Fokker is powered by a Moki 85cc twin in-line 4-stroke engine.



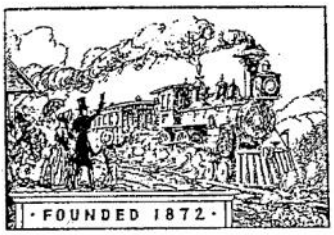


The Grimm Bros decoration was copied from this photograph of an aircraft of WWI, a laborious job as the figures on the two sides are not the same.

The Fokker is decorated with figures from the Grimm Bros poem "The Seven Swabians". The pilot is based on Lothar von Richthofen, the Red Baron's younger brother.

The well detailed Mercedes engine and Spandau machine guns.

Nice cockpit detail.



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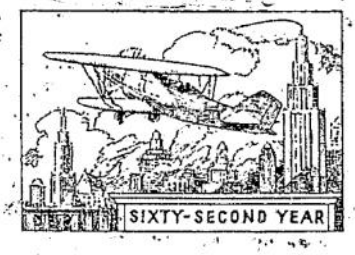
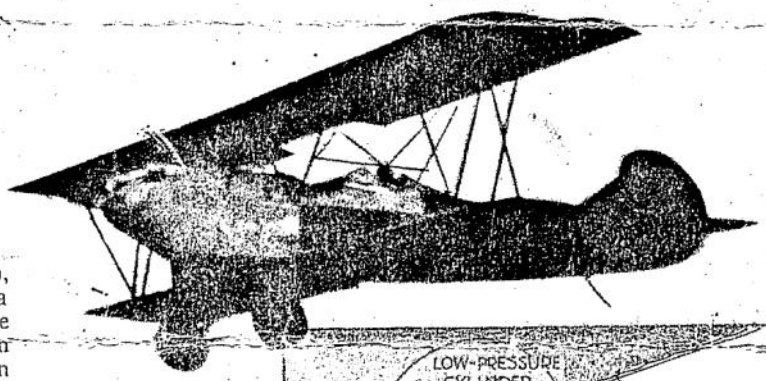
RAYMOND J. BROWN, *Editor*



WORLD'S FIRST
Steam-Driven Airplane

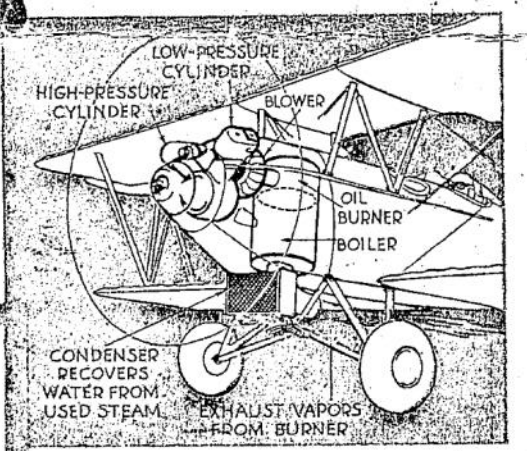
Successful Flights with Long-Sought Craft Crown Many Similar Attempts by Early Aviation Engineers



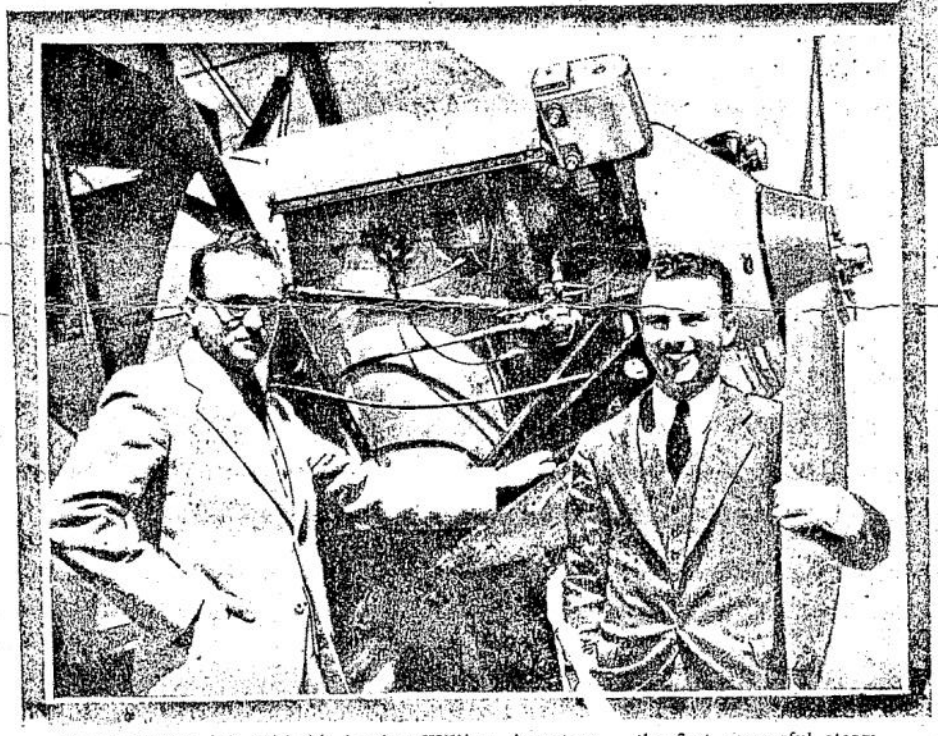
By H. J. FitzGerald

OVER the Oakland, Calif., Airport, a few days ago, a silent plane slanted across the sky trailing a thin ribbon of white vapor. Spectators heard the pilot shout a greeting from the air. They saw him flash past, skimming the ground at a hundred miles an hour. They watched him bank into a turn, slide to a landing, and, with the propeller spinning backward, roll to a stop in less than a hundred feet. They had seen, for the first time in history, a man fly on wings powered by steam!

Two brothers, George and William Besler, the former a geologist thirty-one years old, and the latter a mechanical engineer, two years younger, have achieved the dream of Maxim, Langley, and other pioneers of flight. Through their work, the steam-driven airplane, long talked about, long planned, has become a reality.



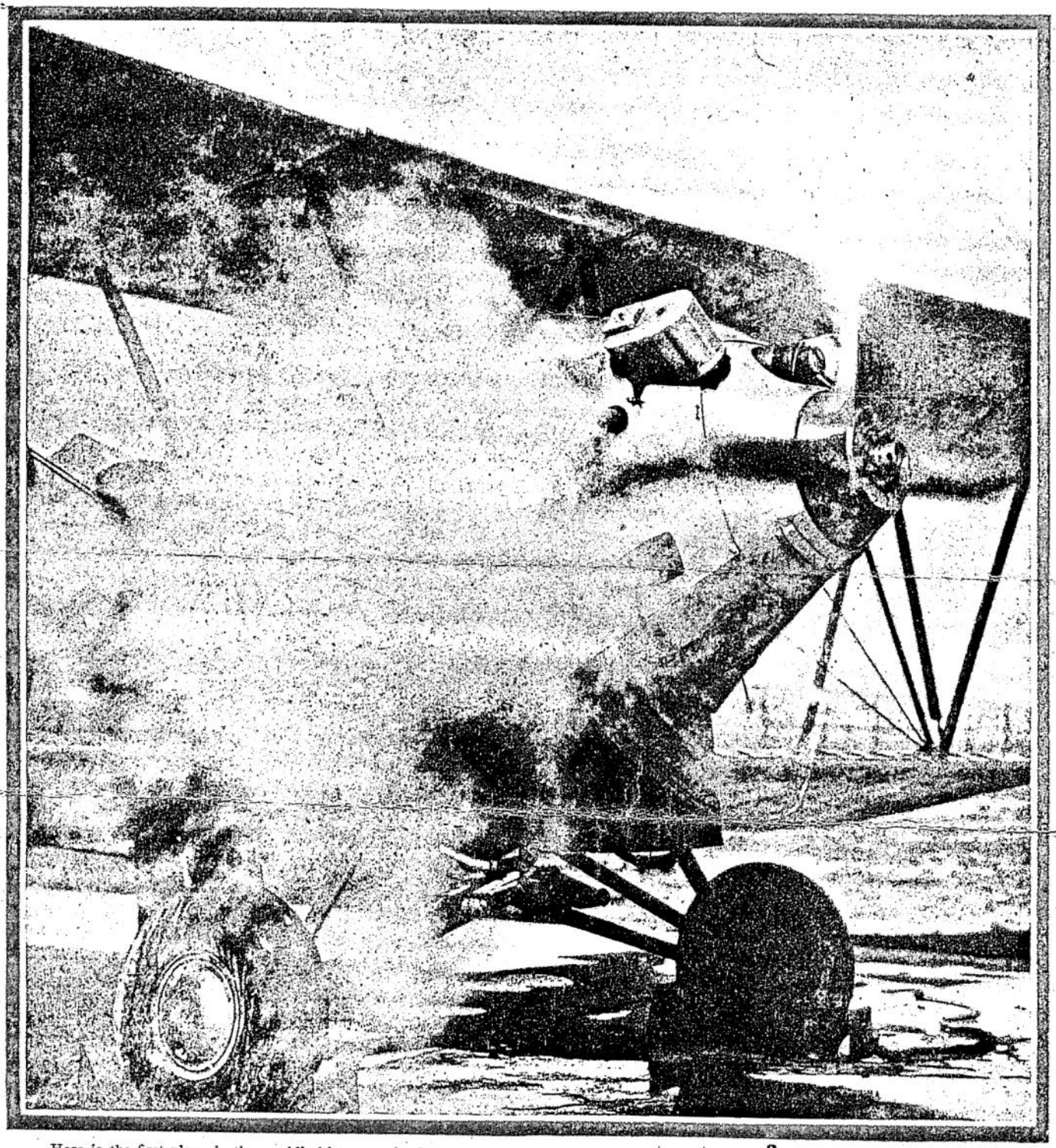
Drawing shows the arrangement of the V-type engine in the nose of the Besler plane. All parts of power plant are ahead of the cockpit. At top, steam-driven plane in first flight with William Besler at controls



George Besler, left, with his brother William, inventors . the first successful steam engine for planes, are shown with their plane in which posit. n of special boiler is seen

This spectacular development in the field of aeronautics is the result of three years of secret experiment. The inventors began their work in 1930, in a machine shop at Emeryville, Calif. A few weeks ago, they brought the product of their researches, a 180-pound engine developing 150 horsepower, to the Oakland Airport and installed it at the nose of a conventional Travel Air biplane.

This blue machine, with William Besler at the controls, sped down the runway and climbed into the air without a sound except the low whine of the propeller and the hum of wind through the wires. Swing-

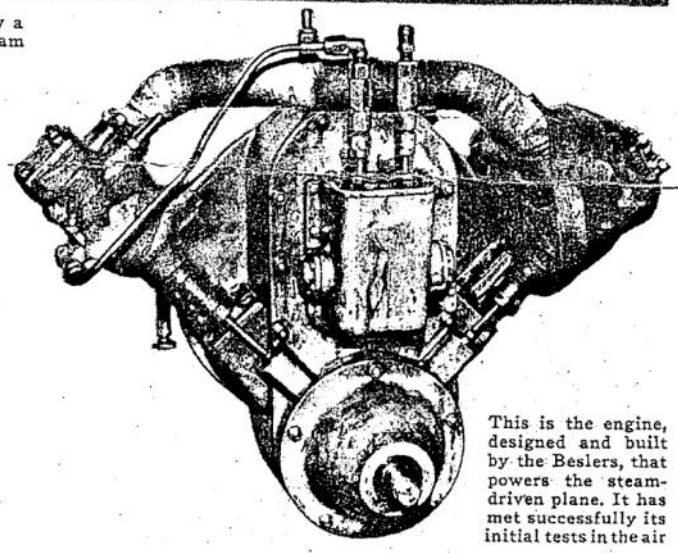


Here is the first plane in the world's history to be flown powered by a steam engine. It is shown before the take-off enveloped in its own steam

ing back over the field at 200 feet, the pilot shouted "Hello!" and heard the answering calls from spectators below. Conversation in the craft, the two inventors told me when I interviewed them a few hours after their historic demonstrations, was as easy as conversation in an open automobile.

Three times, the blue plane blazed a steam trail into the air, taking off, landing, circling about, remaining aloft for five minutes at a time. The constant, wearing vibration of the gas engine was gone; the smooth push and pull of steam power had supplanted it. Each time, as the machine swooped down and the wheels touched, Besler pulled back a small lever at the side of the cockpit and the steam engine at the nose of the ship instantly raced in reverse, whirling the propeller backward to act as a powerful brake and reduce the landing run to a minimum.

This method of slowing down, possible only with steam power plants, applies the braking effect above the center of gravity and thus prevents nosing over in a quick stop. When wheel brakes are jammed on suddenly, a plane noses over or somer-



This is the engine, designed and built by the Beslers, that powers the steam-driven plane. It has met successfully its initial tests in the air

saults in a ground crash. Coming in at fifty miles an hour, the Beslers told me, the new steam plane can sit down and come to a stop in a field hardly a hundred feet square.

The engine is a two-cylinder, compound, double-acting, V-type power plant. Its high-pressure cylinder has a three-inch bore and a three-inch stroke; its low-pressure cylinder has five and a quarter-inch bore and a three-inch stroke.

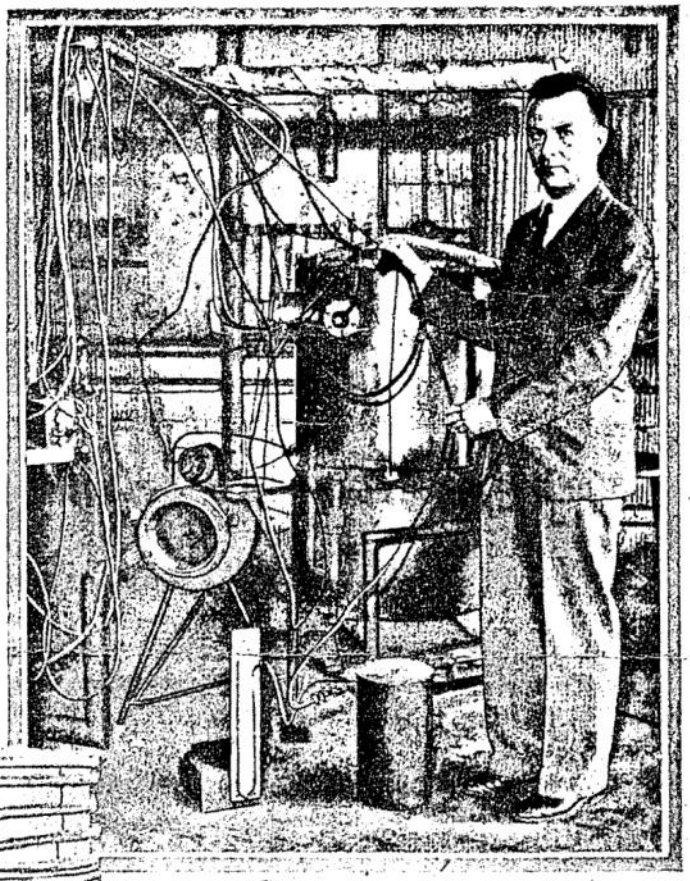
Just behind the engine, the inventors showed me the barrel-shaped metal boiler which, with its super-efficient burner, explains why they have succeeded where others have failed in attempting to drive planes with a steam engine.

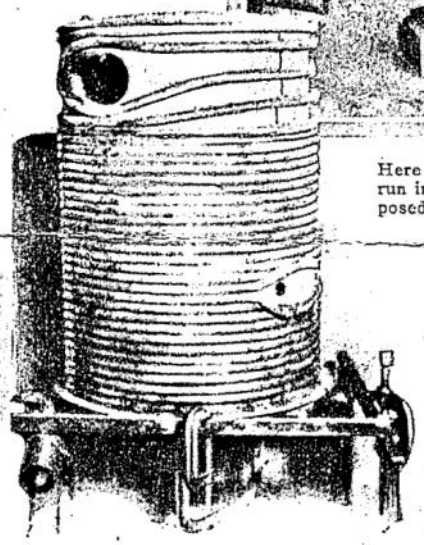
Using vaporized fuel oil, the patented burner releases as much as 3,000,000 British thermal units per cubic foot of fire-box space. This, they told me, is far in excess of anything hitherto attained. An electric blower drives this tremendous heat down among the flat spirals of a single 500-foot pipe coiled within the boiler. Three-eighths of an inch thick, inside measurement, at the bottom, the pipe gradually increases in size until it has an inside diameter of five-eighths of an inch at the top. The water supply to the coiled pipe is thermostatically controlled to keep the temperature constant regardless of pressure.

UNDER the fuselage nose is the condenser which looks like an ordinary radiator for a water-cooled motor and which is said to recover more than ninety percent of the water from the used steam. By using a steam-feed water-pump, the inventors employ the exhaust vapor to pre-heat the feed water entering the boiler and thus decrease the time required to build up pressure within the coils.

The operation of the power plant, once it is started, is practically automatic. At the start of a flight, William Besler climbs into the cockpit and flips over a small switch. Instantly the electric blower goes into action, driving air mixed with oil spray through the burner. Here, an electric spark ignites the mixture and sends a blowtorch of flame roaring downward around the coils of pipe. A few minutes later, steam pressure is high enough for the take-off. All the pilot has to do, from then on, is to operate the throttle and reverse lever.

At 800 degrees F., the steam pressure built up within the coils reaches 1,500 pounds. With a 1,200-pound pressure, the engine will deliver 150 horsepower, whirling the propeller at 1,625 revolutions a minute. Tests have shown that ten gallons of water is sufficient for a flight of 400 miles. By increasing the size and efficiency of the condenser, the experimenters told me, they believe they can make this amount of water last indefinitely.





Here is William Besler preparing power plant for test run in workshop. At left, the interior of the boiler exposed to show coiled pipe used in generating steam

As news of their sensational flights flashed to all parts of the country, eager interest was aroused among aeronautical authorities. The prospect of steam planes on the skyways opens up fascinating possibilities.

Burning fuel oil so non-explosive that it merely smolders if struck by the flame of a blowtorch, the new power plant eliminates the menace of fire. In addition, the Beslers told me, enough fuel oil for a hundred-mile trip can be bought for forty cents.

Because, above a thousand feet, steam-driven planes would be as silent as soaring birds, they would have particular value in military work. Noiseless war planes have long been sought. But muffling gasoline engines reduces their power to such an extent that the plan is impractical. The new power plant, silent by nature, would permit long-distance raids above the clouds by ghost ships giving off no telltale drone of motors to warn the enemy or to aid in directing anti-aircraft fire.

This picture was made when, for the first time in the world's history, a steam-driven plane successfully flew with a man at the controls

MOST spectacular of all are the possibilities of steam on the airways of the stratosphere. In the thin atmosphere of this region, ten miles or more above the surface of the earth, experts agree, the highspeed transport ships of the future will fly. Here there are no clouds, no storms, and the steady trade winds of the upper blue will increase the speed of long distance passenger, mail, and freight machines.

Already, here and abroad, stratosphere ships, with pressure cabins and variable-pitch propellers, have been designed and are under construction. Test hops have been made in such high-flying experimental craft in France and Germany. The chief stumbling block at present is the gasoline motor. It steadily loses power as it ascends. Climb to 20,000 feet and a motor that delivers 150 horsepower at sea level will retain only half its power. Spiral on up to 30,000 feet and your engine will have but three-tenths of its sea-level horsepower. And you are then only half way to the stratosphere! *(Continued on page 92)*

WORLD'S FIRST STEAM-DRIVEN AIRPLANE

Superchargers, driving a blast of air into the carburetor to make up for the reduced pressure in rarefied atmospheres, help these gasoline motors. They are heavy, however, adding to the weight of the plane, and they never completely prevent loss of power at high altitudes.

Now consider the steam engine. It loses no power at all with altitude and *gains in efficiency the higher it goes!* This is because the pressure on the exhaust is less in thin air than at sea level. Thus the perfection of the flying steam engine is a vital step toward conquering the stratosphere.

Realizing these facts, inventors in various parts of the world have been working toward the goal achieved by the Besler brothers. In Akron, Ohio, last fall, a local inventor, Harold C. Johnson, announced the completion of a steam engine with two opposed cylinders, weighing, complete with boiler, only 146 pounds.

Some months earlier, it became known that the Great Lakes Aircraft Company, at Cleveland, Ohio, was working upon an experimental steam-driven biplane. Recent dispatches from France reported that a Paris mechanic had perfected a light steam power plant for airplanes. Another news item, coming from Sweden, told of steam-turbine engineers who are working on a new-type turbine for aircraft use, while a third, from Italy, carried the information that G. A. Raffaelli, an aeronautical engineer, had announced a steam engine for stratosphere machines.

But it was the two California inventors, carrying on their secret researches, who first achieved the long-sought goal of steam-driven flight.

Ever since Henri Giffard, in 1852, navigated the air in the world's first dirigible, creeping along near the outskirts of Paris at seven miles an hour propelled by a clumsy three-horsepower steam engine weighing 462 pounds, there have been proponents of steam power for aircraft.

Many of the pioneers of flight, before the perfection of the gas engine, sought to fly by steam. In 1894, Sir Hiram Maxim, the English inventor, spent $200,000 building a gigantic multiplane weighing 8,000 pounds and having a wing area of almost 4,000 square feet. Driven by a 363 horsepower steam engine and two eighteen-foot propellers, the giant craft reached thirty-six miles an hour on special tracks built to hold it down during the preliminary tests. Its lift at this speed was so great that it tore loose from the tracks, crashed over on one side, and demolished itself.

Two years later, Samuel Pierpont Langley, secretary of Smithsonian Institution, Washington, D. C., saw his sixteen-foot model fly for half a mile above the Potomac River propelled by a miniature, seven-pound steam engine, developing one and one-half horsepower. The full-sized tandem monoplane which Langley patterned after this model in 1903 and which was broken in launching, carried a gasoline motor instead of a steam power plant.

After 1903 and the success of the Wright Brothers, steam power for aircraft was practically lost sight of. Gasoline engines made such rapid advance in lightness and reliability that they came into universal use in aviation. Recently, however, the advantages of steam power have again been attracting an increasing amount of attention.

With the first experimental machine already climbing into the air at Oakland, steam has, at last, been harnessed to work in the sky. Experts are watching the progress of the inventors with the keenest interest. Their machine is a definite step toward the huge, winged steamers of the sky visioned by pioneers of flight.

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