HOMEBUILT

JOURNAL OF THE EXPERIMENTAL AIRCRAFT ASSOCIATION OF SOUTHERN AFRICA

VOLUME 2 — NUMBER 1

SEPTEMBER 1974

ON THE COVER

After nine months this fine looking Jodel D9 is now providing its builders, Norman Ryan and Horst Fischer with lots of happy flying. Bravo Kilo is powered by a VW 1700 cc (converted) motor.

STATEMENT OF POLICY

The Experimental Aircraft Association of Souther Africa is a body representing individuals involved in the construction and operation of homebuilt aircraft and the restoration of antique aircraft.

Subscriptions of R4.00 per year include affiliated membership of the Aero Club of South Africa and a quarterly issue of "Homebuilt".

Temporary Editor: H. Fischer

CORRESPONDENCE

All correspondence to the Association should be addressed as follows:

The Secretary, E.A.A. of S.A.,
Gerald Scott,
9 Langenhoven Street,
Parkrand,
BOKSBURG
1460.

FROM YOUR CHAIRMAN

I feel that, as the new Chairman of E.A.A. of Southern Africa, it is in order for me to thank Tony Wills and Steve Crutchley for all the work that they have put into "Homebuilt". I only hope that your new Committee will be able to do as fine a job in the future.

Maybe we have a moment to ask ourselves the question — "What is the Homebuilt magazine about? " It is our magazine, designed to stimulate interest in homebuilt, antique, surplus military and commercial aircraft in Southern Africa.

In this year 1974, we should then try, through "Homebuilt" magazine, to recruit more members to E.A.A. In the United States, the E.A.A. has a membership which consists of Pilots in the Forces, Airline Pilots, Commercial Pilots, Private Pilots and would-be Pilots. Membership is not confined to home builders! It is open to anyone who is interested in flying.

During the period that I serve as the Chairman, I plan to make it my absolute priority to increase the membership to E.A.A. in Southern Africa. Would it be too much to ask every registered member of our local Chapters to try to recruit at least one additional member this year. Maybe, at some later stage, we could consider running a contest, with prizes to the member who introduces the most new members?

In closing, I would like to say that we have a very low accident record. I believe that this is because our membership today consists of real enthusiasts — the people who understand flying and want to keep it as a sport for everyone.

I sincerely hope that this will continue amongst our new members.

Sincerely yours,
E.C. WOODS.

NATAL NEWS — PIETERMARITZBURG
by Steve Crutchley EAA 30896

Before giving the local news I would like to take this opportunity of publicly thanking members in the Pietermaritzburg and Durban area for assisting with arranging and running the 1974 Annual Convention. Without their cheerful support the event could never have taken place.

Len Cormac's Jodel F-9 had its first flight on the eve of the Convention with Tony Wills at the controls, and since then it has been steadily clocking up the hours. Apart from some carb ice problems and a spot of bother with engine overheating all has gone well. It has once again been shown that converted VW motors are prone to carb icing and a really effective carb heat system is essential. The engine overheating problem was overcome by increasing the air exit area of the pressure cowl.

Owen Pilcher has been industriously re-modifying the VW engine in his Termite and the gain in performance has been remarkable. The goals were to reduce the frontal area of the installation, to improve the induction manifold system and to reduce engine noise. The alterations involved replacing the "sore-thumb" Scintilla Vertex magneto with a rear-mounted unit, re-siting the carb above the motor and the use of a common expansion box for all four exhaust stacks. Len Cormac has previously demonstrated the effectiveness of this system on his Jodel by producing the quietest, smoothest sounding VW in the business.

Dave Hocking and Jan Pasker are working steadily on their Taylor Mono projects and workmanship is first class. In spite of its small size there is a lot of work in this design. Don Harvey is continuing to make a highly professional job of his Steen Skybold and the temptation to indulge in some lengthy cockpit-sitting must be tremendous. The fuselage and engine installation are now almost completed.

John Buchan is progressing well with his Jodel Mk III and the basic fuselage and wing structures are virtually completed. John Spencer has made a good start on his BD-4, no doubt stimulated by his flight in Doc Bergamasco's superb example of this design.

My own project is receiving attention but unfortunately detail work does not make for an exhibition of rapid progress. Canopy latches, nose-wheel steering mechanism and disc brake set-up are among the zillions of items on the go at present. From firewall aft the airframe is about ninety per-cent complete. If the saying that there is as much work ahead of the firewall as behind it is true then I have another four years to go!

NEW CHAPTER ESTABLISHED ON THE WEST RAND

The growth of the E.A.A. in South Africa took another step forward with the establishment of Chapter 514. A well-attended, by invitation only, inaugural meeting held at the Northcliff Country Club on the evening of September 10 drew guests from as far afield as Pretoria, Heidelburg and the Vaal Tri-Angle. We were indeed privileged to have as an honoured guest, Aero Club of South Africa Chairman, Brig. J. Gilliland, who gave the inaugural address. Brig. Gilliland, a keen supporter of the E.A.A., congratulated the steering committee and foundation members of the new Chapter on being awarded Chapter status.

The talk, "Some Thoughts on the Light Aviation Scene in South Africa" given by Professor B. W. Skews of the

LEARNING FROM THE MISTAKES OF OTHERS

Submitted by Ron Johnstone. Chapter 322

Acknowledgements to PILOT CONTRIBUTION

We can all learn by the mistakes of others; it's cheaper that way! Though it has taken me 18 years to log my first 1,000 hours, I feel that I have avoided accidents and incidents by looking and listening. There is no substitute for experience of course, but listening to fellow-pilots dissecting accidents and incidents is one way of learning. If one can sift out the "line-shooting" and bear the facts in mind for future reference, it is a quite painless way of adding to one's storehouse of knowledge. After all, good airmanship always begins on the ground.

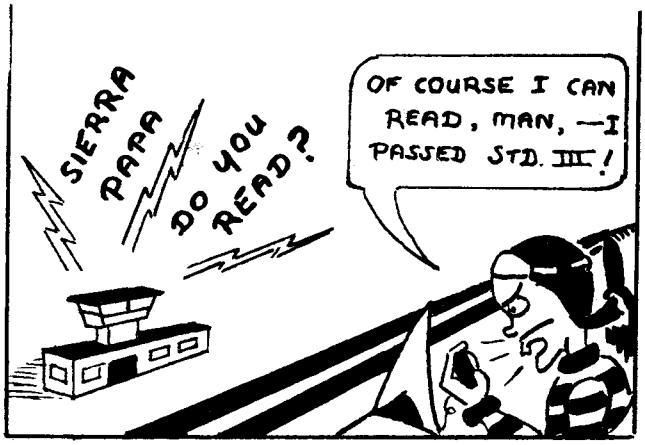
With this thought in mind, the following comments might be useful, for no matter how much or how little experience an individual pilot may have, what might be termed "self-training" can make the difference between good and bad airmanship.

SELF-DISCIPLINE: How many of us still say our cockpit checks aloud? There is nothing embarrassing in this, no matter how much experience one has, and there is less chance of forgetting some vital action. A perfunctory check might fail to disclose the one item that is about to cause a prang, and that *would be* embarrassing! Self-discipline is also the art of resisting beat-ups, or flying even "when the birds are waling", or performing low aerobatics for the benefit of the girl friend who, bless her, would not know a barrel roll from a spring roll! Self-discipline doesn't come from any book, but it CAN be acquired. Basically it is MAKING yourself do the right thing at all times, until it eventually becomes second nature.

STANDARDS: Never accept that your best is good enough; you can always improve on it. When others start to copy you, then you know your standards are getting near the mark, but these standards have to be maintained in all departments. So you've recently had a hundred hours of aerobatic practice, and are a wizard! But how good are your cross-wind landings? . . . your navigation? . . . your radio procedures? . . . your subject knowledge? The same standards should apply throughout.

MANNERS: There is no substitute for good manners, in the air as on the road. You're coming in to land at a country aerodrome, 140 knots downhill, and someone in a Tiger Moth ahead is sedately letting down at 58 knots. There's no room to land on the right, so, what do you do? Land in front of him, just to teach him a lesson? Land to the right anyhow? Panic? How about being a gentleman and going around again? This is also another way of building up hours! Bad manners are usually the result of a like temper or a super ego, but here again, these can be brought under control by self-discipline.

OVER CONFIDENCE: This can be defined as "a dangerous weapon in the hands of a fool". The pilot who exudes over-confidence is usually cultivating this foolish trait to over-come some defect in knowledge, experience, ability or all three. He is also heading for an expensive fall. The cockpit is no place for over-confidence, and a Tiger Moth can kill you just as effectively as a supersonic Mirage. But let us have ordinary, everyday confidence by all means; confidence in our ability to handle our aircraft in a given situation – and with it, the wisdom to stay on the ground when we know that we can't handle it!



. . . . is failing to acknowledge that you have received an R/T transmission until asked.

PRACTICE: Do you have an hour's flight today, then come back in six months' time for another hour, just to "keep in practice"? Guess who you're fooling? And guess what's happening to your standards? I have occasionally returned to home base after a long cross-country flight, only to perform a rotten landing. So, before turning it in and ending on a sour note, I have promptly gone up again and done some circuits and landings until they were right. If I could do it when a student pilot, who not now? There's no disgrace in this, or in going around again when necessary, in fact, it's plain common sense.

KNOWLEDGE: The pilot who knows *all* there is to know about flying has yet to be born. The one who claims he does, is either a fool or a liar. And the expression "A little knowledge is a dangerous thing" is very true—if you place the emphasis on that key word, "little". All the self-discipline, manners and other attributes of airmanship that we can acquire are to little avail unless we have the theoretical and practical knowledge necessary to back them up. As pilots, we are expected to have knowledge of ANO's, ANR's, AIP's, NOTAM's and other documents, apart from our practical flying. Don't knock them – it took a lot of bent aircraft, and a lot of sadder but wiser pilots, to compile the knowledge contained in these documents. But we can acquire this knowledge from their hard-won experience the easy way, and at little or no expense to ourselves!

EXPERIENCE: You will only acquire this with time, money and opportunity. These considerations aside however, the only real way to ensure that you stay alive long enough to amass experience yourself is by paying heed to the fund of knowledge and experience that is freely available to all pilots. Then you're on the way!

I don't know if any of these thoughts will save lives, but they may help to do so. I am now working on my second thousand hours, and hope to be wiser myself when I have reached that stage!

BUILDING AN INEXPENSIVE ENGINE SPEED INDICATOR

by Stan Hewitt Chapter 322

Installing a mechanical R.P.M. meter, with its heavy, unsightly cable can sometimes pose quite a problem. Not to mention the rather large hole required in the bulkhead for the the end of the cable to pass through.

The MFC 6030 voltage regulator takes care of this as it supplies the integrated circuit, TR 1 and TR 2 with a steady 4.5 volts D.C. from an input voltage of anything from 9 to 24 volts D.C. The radio battery normally being 12 Volts.

The completed R.P.M. meter can be accurately calibrated with sine wave audio signal generator, representing the pulses produced by the ignition system.

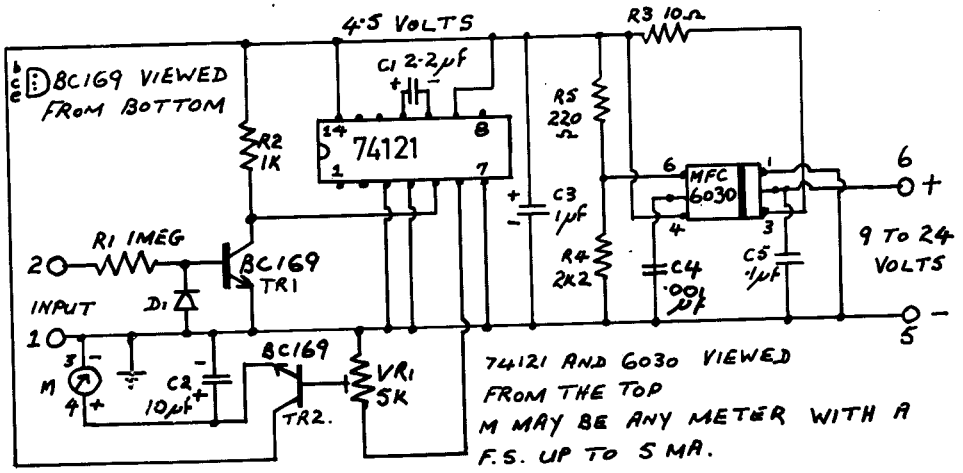


FIG 1

I built up a rather simple unit as shown in figure 1. The input coupling is capacitive, therefore no physical connection to the magnetors is required. A screened lead with the screen to ground, pin 1 and its cone to the input, pin 2 with the end left open is simply run to the vicinity of the magnetors. The high-voltage spikes caused by the magnetors firing is sufficient to induce a spike into the input cable, thus driving the front end transistor TR 1.

TR 1 also serves the purpose of forming a buffer stage to the input of the integrated circuit 74121, protecting it from over voltage. The diode D 1 protects the transistor TR 1 from reverse voltage spikes, while the high resistance of the input resistor R 1 limits the base current of TR 1 preventing any damage to TR 1. The value of R 1 may be reduced if the pick-up is not enough.

The spikes produced by the firing of the magnetors are fed via TR 1 to the integrated circuit, where they are processed, giving a mean average D.C. output on pin 6. This output may not be sufficient to drive the meter selected, therefore Transistor TR 2 was added to give D.C. amplification, so being able to cause a full scale deflection on almost any meter. The meter used in the prototype was a movement from a radio altimeter with a suitable recalibrated dial. Any meter with a 0-1 mA or 0-5 mA full scale reading will do.

The purpose of capacitor C 2 is to damp the meter preventing the meter needle from oscillating at low R.P.M. Capacitor C 1 controls the length of the output pulses on pin 6. C 3 and C 5 are simply decoupling.

In a homebuilt aircraft, the R.P.M. meter will more than likely be operated from the same battery as the radio. The voltage drop of this battery at the end of a days flying would cause the R.P.M. meter to read low.

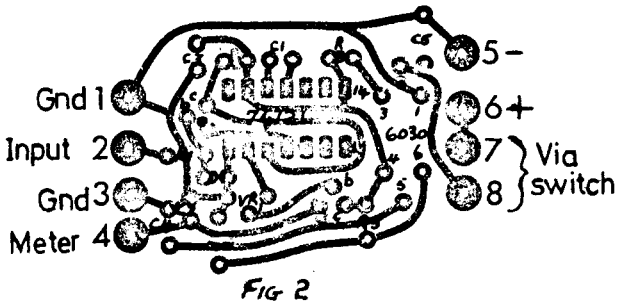


FIG 2

For a 4 cylinder 4 cycle engine the frequencies to produce the appropriate R.P.M. reading is as follows:

C.P.S.	=	R.P.M.
20	=	600
33.5	=	1000
67	=	2000
100	=	3000
134	=	4000
167	=	5000

For a 6 cylinder 4 cycle engine 150 C.P.S = 3000 R.P.M. and 30 C.P.S. = 600 R.P.M.

OSHKOSH 1974
by Horst Fischer EAA 70832

Witman Airport has broken the record for number of plane movements again with the FAA air traffic control tower reporting 58,686 landings and take-offs for the first five days of the fly-in.

The total is 246 more plane movements in five days than the 58,686 take-offs and landings in the entire seven days of the 1973 EAA fly-in.

Single day records fell Saturday when pilots logged 14,750 airplane movements, 1,109 more take-offs and landings than the record just set Friday of 13,645 plane movements. Plane operations Sunday totaled 12,433.

Attendance at EAA activities for the first six days reached a record 250,000 persons, announced Arthur Kilps, Hales Corners, EAA treasurer.

Forty-four men and women of Greater Pittsburgh Chapter 45 of the EAA arrived on a chartered Martin 404 plane Friday for the fly-in. The chapter's president is Miss Judy Frankiewicz.

The first year of the international hospitality tent at the EAA fly-in was a big success with 255 overseas visitors registering from 23 countries, reported David Jameson. Largest representation was from Australia with 93 persons, followed by Canada with 59 and Japan with 25. Other countries and the number of persons in attendance are South Africa, 14; England 13; Switzerland, 13; Germany and Venezuela, five each; New Zealand and France, four each; Puerto Rico, 3; Israel, Brazil, Belgium, Bahamas and Mexico, two each; and Ireland, Jordan, Rhodesia, Norway, West Indies, Finland and Republic of China, one each.

Among airshow highlights was the first appearance of all three BD-5's, the tiny jets that captured the crowd's imagination in 1973. Chief test pilot Les Berven flew the BD-503 prop jet with the BD jet team, which were as close as 18 inches apart in formation. Berven even showed the plane could be flown with the canopy open. Another team member narrated his own 16-point turn in the petite aircraft.

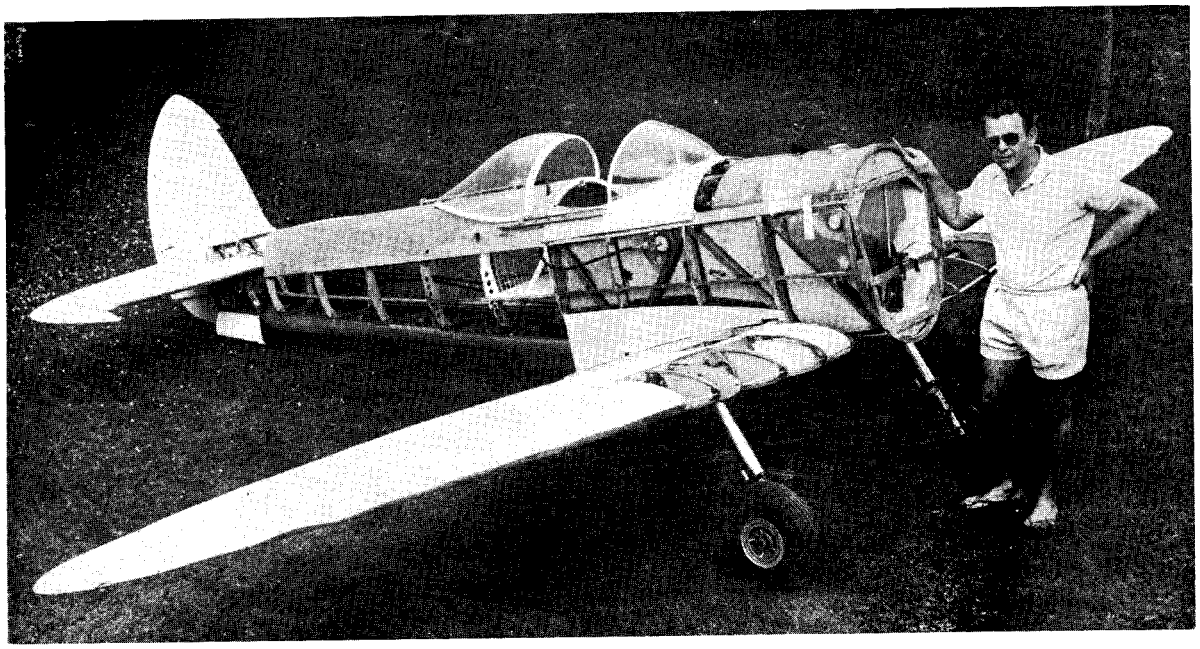
Flying briefly was a replica of a 1911 Curtiss Pusher, complete with bamboo struts and wire holding it together. Flown by Dale Crites of Waukesha, the Silver Streak is a sister ship of the "Sweetheart" on permanent display at the EAA Museum.

Marion Cole, former member of the world champion aerobatic team, thrilled the crowd when he flew the EAA's own Super Acro Sport for the first time (first time for Cole). He did four slow rolls on take-off, inverted turns, loops and back-to-back rolls while testing the aerobatic capabilities of the smart-looking open cockpit biplane.

"Chicken Maneuvers" by the world champion Red Devils in their tiny Pitts Specials left the crowd gaping, as did the aerobatics of the master, Duane Cole; Frank Sanders in his five-bladed propeller Hawker Sea Fury; 58-year-old Pete Myers in his midget racer; Prof. Art Scholl in his Super Chipmunk; Daniel Helgoin, national aerobatic champion of France, in his Cap 10 and indestructible Ed Mahler flying his PJ-60.

Bob Hoover of Rockwell International continued to amaze the crowd with his maneuvers in the P-51 Mustang and the sleek F-86 Sabrejet, which he says is his favourite because it's easiest to fly. Hoover flew 550 miles per hour in the Sabrejet and did nine tailspins in a row, which the announcer said, was another "first" for the show.

Chuck Doyle closed the show by writing "EAA" and "WB" (for Warbirds) in a clear blue sky above the convention site.



A DIFFERENT FORM OF INSANITY – A HOMEBUILT SPITFIRE

by Wing Commander Peter Knobel

Some small boys want to be engine drivers. I wanted to be a pilot – not just a common or garden pilot, but a SPITFIRE pilot, with a sports car, a gorgeous bird, a Great Dane and a long silk scarf! I still haven't flown a Spitfire, but growing up is a slow process.

As a bursting-with-enthusiasm-embryo-fighter-pilot, I wound up instructing in the South African Air Force. By the time I joined the Rhodesian Air Force, they had grounded their Spitfires. An attempt to fly a privately owned Spitfire in the United Kingdom was frustrated when the pilot landed it "wheels-up" the day before I was due to fly it.

The only solution was to build my own, and this decision was influenced by several factors. These were, a *Popular Mechanics* article on how to build a Fly Baby, a predilection for building things (after 2000 hours spent rebuilding an old Jaguar, I was still left with – an old Jaguar), a visit with the late John Taylor who designed and built the Monoplane and Titch, and an examination of the glorious little Cosmic Wind Racer.

I commenced the design proper, in 1965, attempting to satisfy the following requirements:–

(a) It had to be aesthetically appealing (to me); I therefore used a Mk 14 bubble canopy fuselage, Mk 22 empennage and an early full length wing.

(b) It had to be 20 feet long to fit my garage – hence the scale 3/5th or Mk 6.

(c) The undercarriage would have to retract for authenticity and the requisite performance. I got carried away by aesthetics when I made the tailwheel steerable and retractable.

(d) The wings had to fold to permit towing behind the old Jaguar, thereby avoiding hangar rental and hangar "rash".

(e) The bubble canopy gives excellent visibility and I was keen to try out a few blowing ideas of my own.

(f) A sliding canopy is essential for authenticity and to cater for my devout and sincere cowardice. When the going gets rough I "want out".

(g) Power from 135 to 210 horses for adequate performance.

(h) A variable pitch propellor to be efficient over a speed range of 60 to 240 mph.

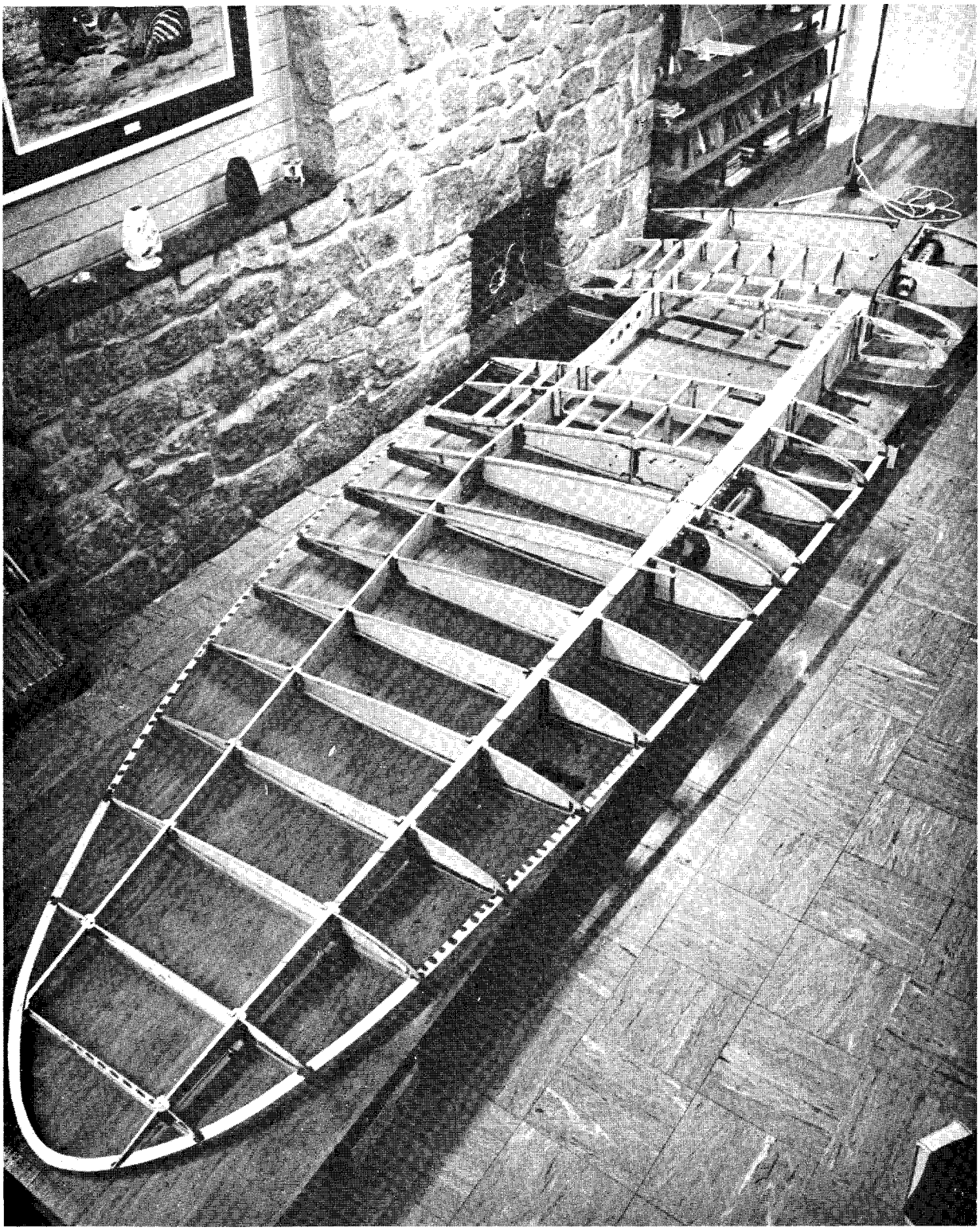
I have tried where possible to retain the aerodynamic characteristics of the original and encountered considerable grief in using the correct NACA 2200 series aerofoil. During my research I found that the Spitfire was the only production aircraft to use this section, which was chosen for its small centre of pressure movement with change in angle of attack. This allowed a small tailplane giving less drag and more speed. However, the tailplane could not handle the nose-up pitch change caused by flap application – witness the minute flaps on the original. The thickness/chord ratio varies eliptically from 12,5 percent at the root to 6 percent at the tip – not exactly fat and forgiving!

The empennage was increased in tailspin and fin height for the following reasons:–

(a) Due to Reynolds Number effect the scaling down of an aerofoil decreases its efficiency.

(b) I want plenty of control to handle the torque on take-off and preferred not to build in fin-offset but to rely instead on a large rudder.

(c) I noted with some concern that on my original drawings a straight line between the nose and top of fin was interrupted by my head–an unhealthy situation in the event of a "base over apex" type adventure.



Due to the all wood and fibreglass design, the structure of the 3/5 scale Spitfire is totally different from the metal original. The undercarriage track has been widened 12 inches from scale as I intend towing the aircraft on its wheels, and I well remember seeing Spitfires cartwheeling at the old Stamford Hill aerodrome due to their very narrow track and the undulating grass surface.

The pilot has moved three inches forward to counter a tail heav tuation which occurs when scaling down. Everything gets smaller except the pilot, and when he sits behind the C.G. we have a problem.

Blisters of four inches to house the flat four Lycoming, will detract from true scale on the cowling. A Ferrari V12 was briefly considered but rejected on the grounds of cost. The cockpit was widened two inches from scale as even the full size cockpit is rather narrow.

Construction details

Fuselage: The frames were built up by laminating oregon pine directly to plywood on which the required shape had been traced. Unnecessary plywood was then cut away. Unfortunately this fiendishly clever scheme results in an awful lot of expensive sawdust! The final two fuselage frames are extended to form the fin spars.

Wings: Eliptical planform wings may be the most efficient subsonic shape, but they are also the most awkward to build. The main and rear spars are built up of half-inch oregon laminations with the 6° dihedral built into the centre section. In plan view, the spar is untapered and 3 inches wide to the wing fold point, and thereafter tapered to quarter-inch at the tip. Of course, it also tapers when viewed from the front.

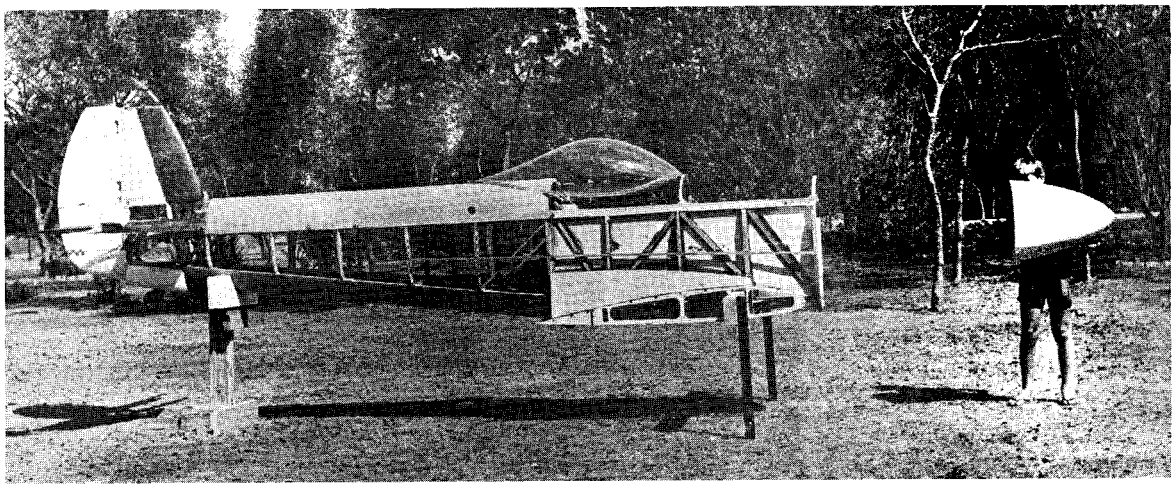
main spar aft with the scarfing done directly on the wing due to the slight compound curve. The leading edge was filled with polyeurethane foam and sanded to shape.

Tail section: The construction is I think, unique. The laminated rear spar and elevator spar were attached by the hinges, the ribs slipped over and glued to the spars, leading and trailing edges fitted and then the whole business was filled with expanded polyeurethane foam. The tailplane/elevator was then sanded to shape using the ribs as a guide, and covered with polyester resin fibreglass. This was sanded and filled, sanded and filled *ad nauseum* to give a very fine finish. The elvator was then cut free and the leading edge built up with foam and fibreglass.

The fin was built up in a similar fashion and pockets, left in the rudder, and elevator, were filled with lead to mass balance these surfaces to 110%. I have a profound respect for control flutter.

Undercarriage: I can modestly state that the stainless steel main gear is a work of art – as I had very little to do with it! I am indebted to my friends Bob Sutton for steel and the specialist African welder, and Colin Black for the magnificent machining. It follows the original complex Spitfire system of extending below and in front of the main spar, and retracting outwards and behind the spar – the angles involved at the pivot point are something else again! The wheels are 6.00 x 6.5 Auster type, which are horribly non-standard but necessary for true scale.

The inner leg slides in an outer tube containing a monster coil spring. Further cunning little truck valve springs take care of the rebound. The complete undercarriage is retracted by three small hydraulic cylinders powered by a handpump.



Plotting each rib took a wee while! After tracing each outline onto plywood 3/8 cap strips were attached using 3/8 plywood blocks in the nose.

In true homebuilding tradition, the wings were assembled on a dinky little 25' x 4' table set up in the lounge. Having taught my wife to fly during our courting days she is sympathetic, but the piano still sounds muffled due to sawdust in the works!

Each rib was bedded into its own jig on the level table with incidence built in from +2½° at the root of -½° at the tip. While still in the jig the top surface was skinned from the

Fuel and hydraulic tank: Due to the complex shape of the fuel tank which reaches down between the pilot's knees, and the slim hydraulic tank which fits between the inner and outer skin of the cockpit I had no option but to use fibreglass.

An earth strap dangles from the filler neck into the fuel and also connects the filler neck to the engine. The overflow vent protrudes into a scoop in the lower fuselage thereby pressurising the tank and avoiding loss of fuel in the inverted position.

Work remaining

The next steps are

(1) complete the remainder of the airframe
(2) weigh and then calculate engine position
(3) make engine mounts and cowling
(4) struggle to get everything working!

Materials used

These comments on the materials used may be of interest to homebuilders:—

(a) Oregon pine — 17% stronger, 20% heavier and a sixth of the price of spruce. Maximum thickness used is half-inch.
(b) Cascophen resorcinol resin glue — fantastically strong but very messy and the consequent fingerprint marks look very amateurish. I prefer this glue as I am not convinced that the acid catalyst in Aerolite glue gets completely neutralised.
(c) 20000 staples fired from staple guns — a "must" replacement for traditional nails. As I class the removal of staples as "unskilled labour" this job is reserved exclusively for my wife!
(d) Polyester resin fibreglass — messy but I could not manage without it. It is cheaper but not as strong as epoxy resin.
(e) "Micro balloons" of phenolic resin — introduced by "Pikkie" Rautenbach — used as a filler mixed with polyester resin or Cascophen. It sands beautifully and can be drilled and tapped.
(f) Stainless steel — expensive, but easy to work, resilient and consistent. It is very strong and of course needs no finishing.

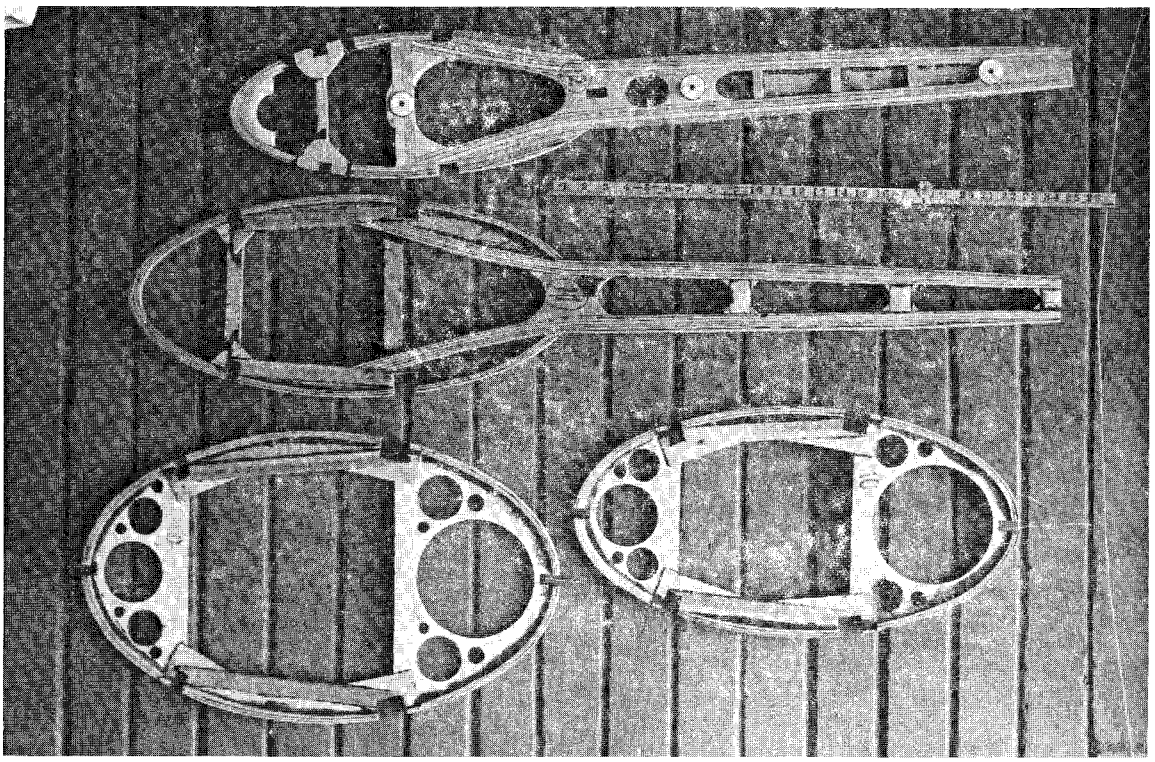
Requirements for building an aircraft:

(a) motivation
(b) family support
(c) time
(d) space — aircraft can be built in bedrooms but plenty of room is worth trouble arranging.
(e) tools — hand tools will suffice, but a handsaw and electric drill with attachments are well worthwhile.
(f) money — aside from the engine the costs are negligible when spread over the years, it takes to built the aircraft. Seldom can one apply more material in a month than one can afford to buy.

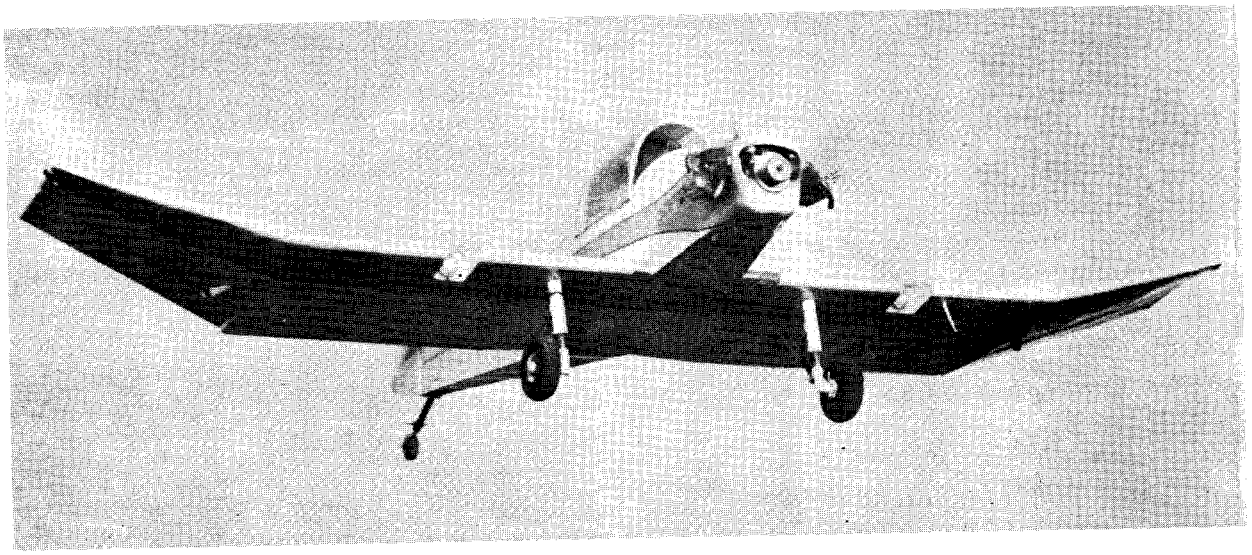
Conclusions

One would be correct in feeling that I had bitten off more than I could chew for a first attempt. However, my particular motivation involved the Spitfire and nothing else. I would not recommend it to my worst enemy, and have no intention of producing plans.

I only require time to complete my project and it is therefore very precious to me. I sincerely request that I do not get involved in correspondence, or I shall be too old to fly my Spitfire when it is completed.



Editor's note: *Wing Commander Peter Knobel, of Salisbury, has flown 83 types of aircraft, from gliders to four-engined transports. During his career as S.A.A.F. pilot, civilian instructor, airline pilot and Rhodesian Air Force pilot, he has amassed a flight time of 7300 hours. He is 39 years of age, has a family consisting of wife, Jacqueline, a qualified pilot, whom he describes as "bossy", and three "expensive" teenagers. His ambition is to live to a hundred and forty so that he can have time for all the many projects yet to be tackled.*



FLYING THE JODEL D 9
by Horst Fischer EAA 70832

After nine months of enjoyable work between Norman Ryan and myself, I finally flew the bird for the first time on Saturday, 11th May, 1974. In the morning, Phil Geers, who modified the 1500 cc VW engine to 1700 cc, had the first joy; one high-speed taxi run for engine performance and handling and on the second run he was . . . airborne! Needless to say, what a thrill for any homebuilder.

I had made up my mind that I also had the faith and courage to take her into the skys. After making little final adjustments, I taxied to the runway and soon was airborne after 500 feet. I made a turn toward downwind as soon as I dared, to stay close to the field. After 10 minutes in the air, and gaining the feel of the aircraft, I decided it was time for a short cross-country, (Springs to Brakpan-Benoni, about 8 miles away, without landing) and then I just cruised around enjoying the fruit of nine months labour.

Now it was time to find out how she landed. So far everything had been better than expected. The engine was running find and the plane handled very well. I set out for a nice long final, throttled back to hold 60 mph and to a descent rate of 300 fpm. I must have forgotten myself for a split second when landing, because she touched down without feeling the runway, just like my D11 does. Total time for the first flight was 45 minutes.

SPECIFICATIONS:

Weight empty	480 lbs.
Weight gross	750 lbs. max.
Wingspan	23 feet
Length	17½ feet
Cruise Speed	100 Mph
Stall Speed	30 Mph

PIETERMARITZBURG 1974
by Barry Walker

The annual migration to Natal took place a little earlier this year due to the withdrawal of the normal July Holiday and was held at Oribi on the weekend of Republic Day, May 31st. This meant that the Pietermaritzburg Fly-in was a three-day affair.

The fuel restrictions did not help things much. Fuel was available on the down-flight, but nothing could be arranged for returning on Sunday. Due to a small problem I decided not to fly my biplane to PMB and elected to fly with Guy Blackburn in his immaculate Gypsy-engined Auster.

Take-off was scheduled for 7.30 a.m. to fuel up at Springs at 8.00, but on arrival nobody could be found. "The birds had flown". Due to a shortage of 80-87 we had no option but to head for Rand. On the flight across the weather to the port side did not look all that healthy. Low cloud seemed to stretch to the berg.

We fueled at Rand and as we taxied to the runway Woody came in on final in his good-looking Pitts Special. He reported cloud on the deck from Heidelberg to the escarpment. We had a short discussion and decided to fly to Heidelberg and see for ourselves. This we did and sure enough—there it was—not solid, but pretty thick and right on the ground. Maeve, my wife, confirmed later they had a bad drive in the car through this area.

We could see the main road through holes in the cloud and as long as we could see, we pressed on. At last the cloud opened up and we headed for Vrede. There was a large cloud right over Vrede airport, so we could not see if anyone had arrived there before us. We gave the Auster its head and climbed over the pass. What a beautiful sight, and I am sure Guy made a lot of good shots as the air was as clear as crystal and the visibility almost unlimited.

We arrived at Ladysmith and sure enough—the thick air got Guy — and the Auster was not for going down. So we overshot and came in nicely at the next attempt. Fuel and coffee later we saw the arrival of Woody in his Pitts Special; Bill Keil and his son in the Super Cub; Murray Cahoe in the

Faunier; Doc Fuchs and his wife in the Clip Wing Cub and last but not least John Durbar and his wife in the old faithful Vagabond.

After they were suitably refueled and refreshed we took off together for PMB. On climb out we could hear Stan Jane and the rest of the pack calling Ladysmith for clearance to land.

The flight over some of the most beautiful scenery in Natal was enjoyed to the full and we diverted to fly over my old school "Treverton" in Mooi River.

Shortly after we had PMB in sight and in the circuit we could see the chaps running the "Comrades Marathon". Three members of Maeve's family competed and all finished! Nice work, chaps, but I rather fly over the berg in an open cockpit, than to attempt the "Comrades".

The welcome to PMB by the members of the local Flying Club is always the best and is certainly appreciated by all. These folks have no bones about opening all their facilities to us and they sure make us feel very welcome.

Friday afternoon was taken up renewing old acquaintances and Don Harvey kindly offered his accommodation to Guy and myself for the weekend. Thank you once more, Don. Friday night was the usual ball and everybody enjoyed everything.

Saturday morning dawned cold and put a damper on the flight to Peatties Lake. Most of the pilots flew there, even if it was just for a look.

On the new scene we saw the little Jodel D-9, flown by Horst Fischer, doing its thing and what a lovely aircraft it is! We wish the two builders, Norman Ryan and Horst Fischer, lots of luck with a very nice aeroplane. I am sure after having seen this aircraft fly a lot of prospective builders will be looking at this little inexpensive bird.

The weather had turned so foul by the afternoon that the crowd missed the superb show normally put up by Woody and his friends in the Pitts Special. Maybe next time . . .

Interesting aircraft seen was a Gates Lear Jet, which dropped in; also a large Nord, which came by a few times and surprised the crowd with the number of passengers it could take and still give a decent take-off, sort of downwind as well! !

There was of course the usual array of commercial birds in attendance and we appreciate their interest in our little show. We like to think of ourselves as sport flyers and not just builders and restorers of airplanes, so a hearty: "Welcome to the fold".

The A.G.M. was the usual type of scene with yours truly getting his old job back. I am now sure nobody else wants it.

The prize giving was well-attended. Congrats to the winners. The social was another ball and everyone had a great time. Thanks to the PMB boys.

The return home was a real scene and most of us went home by car or got as far as Ladysmith and had to wait there until Monday. Anyhow, all returned safely home, even if it was a little later than anticipated.

We might get a story from the snow fliers to complete the trip. How about it, your skiers in the sky?

Thanks again everyone at PMB, we think you are the greatest!

AIRCRAFT FOR SALE

Members replying to advertisements regarding aircraft for sale are urged to read the wording carefully and to seriously consider the meaning behind them. For instance . . .

Would make ideal parachute club aircraft — may require evacuation at any time.

Always kept hangared — tyres are flat and the motor won't start anyway.

Requires new propellor — end of crankshaft has snapped off.

Tremendous rough field performance — requires a bump to get it in the air.

Excellently appointed for N/F — too shabby to display in daylight.

Engine zero hours since major — the mechanic has lost the carburettor

Ideal for antique enthusiast — spares haven't been available for twenty years.

Good slow flight characteristics — top speed 55mph.

Requires slight attention to airframe — hanger caved in.

Lots of baggage space — someone has swiped the seats.

Dependable radio — you can depend on it to conk out when you need it most.

Unique paint scheme — would only appeal to a hippie.

Very short landing roll — a diabolical ground looper.

I knew it

HOMEBUILT
by Steve Crutchley EAA 30896

Our 1974 Annual Convention proved that the expression "third time lucky" is not to be trusted. Having had unfavourable weather during our previous two annual conventions we had really looked forward to a change in luck. Unfortunately this was not to be, and conditions deteriorated as the three day event progressed. This is not to say, however, that the 1974 Convention was not a success, as everyone seemed convinced that it was the best we have ever had.

The first day, Friday 31 May, dawned sunny and windless at the convention site here in Pietermaritzburg, but unfortunately conditions over the rest of the country were QBI. It was not until nearly midday that the first homebuilt, a Mini Ace flown by its builder Toy van Rensburg, appeared overhead. He had flown some three hundred miles over rugged country and the prize for the first homebuilt to arrive was well deserved.

This VW-powered aircraft has been in constant use since 1969 and now has almost one thousand flying hours to its credit. Thanks to good care and maintenance it still looks as good as it did when it was first rolled out of the workshop.

The next homebuilt to arrive was the Pitts Special, belonging to Woody Woods. This aircraft is superbly finished in the traditional Pitts colours and in the hands of Woody, or his son Johnny, it is a real crowd pleaser.

There was a discouraging lull during the early afternoon and it began to look as if no more machines would be able to get through. However, there was suddenly a stir of excitement as the unmistakeable shape of tip-cranked wings in the distance indicated the arrival of a brace of Jodels. They were the newly completed D-9 of Norman Ryan and the D-11 of Horst Fischer. Also in the loose formation was Phil Geers in his Nipper.

Not long thereafter came Hoekie Baldwin of Port Elizabeth, in his Turbulent, followed by Klaus Winter, flying Hoekie's first homebuilt, a Termite.

Together with the Pietermaritzburg based Fly Baby of Tony Wills, Owen Pilcher's Termite and Len Cormac's Jodel F-9 there were ten homebuilts on the field when the sun set on the first day of the Convention. By American standards this is hardly worthy of comment, but considering the small number of homebuilts flying in this country we felt well satisfied. The only aircraft which we had been expecting but that had failed to arrive was Doc Bergamasco's BD-4. A phone call to Cape Town, a thousand miles south, confirmed that bad weather had prevented his departure.

The evening programme consisted of a variety of movies of interest to homebuilders. Needless to say, the one that stole the show was "E. A. A. Magnificence" — recently presented to E. A. A. of Southern Africa by none other then the President of E. A. A. International!

The Saturday morning dawned cold and overcast but the fly-away picnic to the nearby Peatties Lake went on as scheduled. Homebuilders are a hardy lot and in spite of the weather a good time was had by all.

While at the lake our Chairman, Tony Wills, accepted Hoekie's offer of a flight in his Turbulent. The verdict was "phenomenal". Apparently the all out level speed is every bit of the 140 mph claimed for this machine, and to see it moving through the sky one cannot doubt that it is an exceptionally fast little aircraft. In fact, during an earlier flight, our Cessna Skyhawk had been unable to keep up. Owen Pilcher later flew the Turbulent and reported at one thousand feet at the end of the runway after take-off.

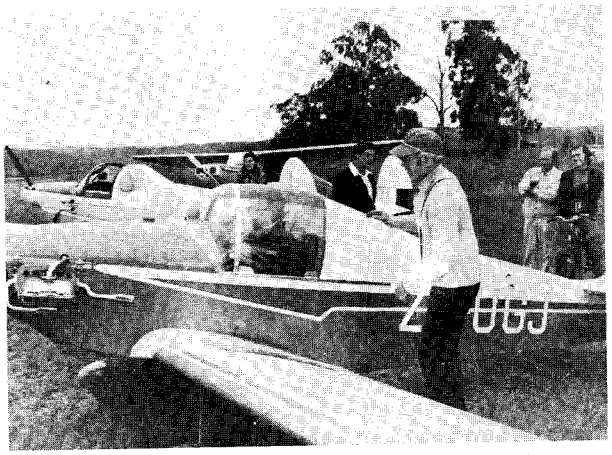
Scarcely had we returned to Pietermaritzburg in the late afternoon than a stranger to our skies roared past overhead. It was with much excitement that we watched the BD-4 join circuit and touch down after its trip all the way from Cape Town. Doc certainly deserved the prize for the last homebuilt to arrive for the Convention.

Perhaps it was the day spent out of doors in the cold that made the social and prize-giving such an enjoyable event that evening. With a roaring fire at one end of the clubhouse and the bar at the other, who could remain cold and cheerless for long!

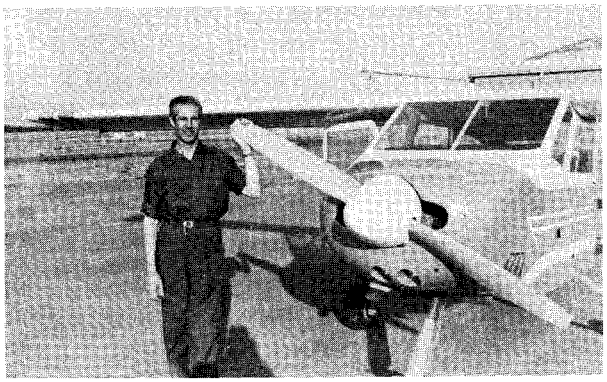
The Ian Lewis Trophy for the best homebuilt was awarded by the judges to Hoekie's Turbulent, while the 3-M Trophy for the best finish on a homebuilt went to Tony Wills for his immaculate Fly Baby.

If the Saturday had been cold, then the Sunday was Arctic! Flying events were out and for once we had a good crowd for the Annual General Meeting. Tony Wills stood down as he felt there were others who could further the aims of our Association more effectively. Woody Woods was duly elected as the new Chairman and with his frequent visits to the States we can look forward to an even closer link with E.A.A. International.

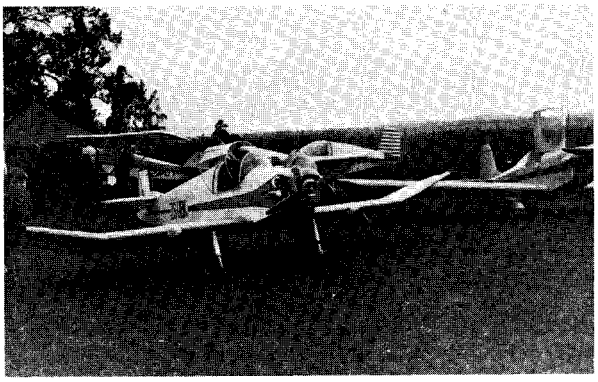
It was pleasing to see that in spite of the fuel restrictions imposed on aircraft and motor vehicles, the attendance at the 1974 Convention was not down on last year's, nor were there less aircraft present. "Get there or bust" seemed to be the motto.



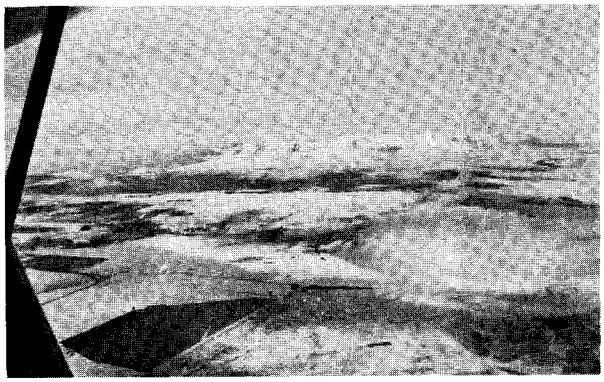
"Greater love hath no man . . . "
"Hookie" Baldwin watches Tony Wills get settled in "Hookie's" Turbulent — Tony managed a very creditable flight and landing.



Dr. Bergomaisco, proud owner and builder of the Bede 4, winner of the best "homebuilt" at the convention.



PEETIES LAKE – MARITZBURG.
A corner of the Aircraft Park at Peeties Lake during the fly-in picnic. A good time was had by all although the cold weather moved in. Horst Fischer's Jodel D9 in the foreground.



RETURN FROM MARITZBURG.
Nigel Keil took this shot from the Super-cub as they cleared the "berg"– "Harrismith Hill" in the distance. He and Bill chose the direct route whilst Woody Woods (in the pitts) and Laurie Kay (in the maul) chose to go south. They were forced to "hole-up" in the Free State for several hours till weather over the Reef cleared.

RETURN FROM MARITZBURG 1974.
Bill Keil and his son Nigel managed to get through as far as Vrede but were forced to land in the snow there and wait a few hours f for the weather to clear.
Photo shows a freezing Bill Keil beside the heater-less Super-cub!

Continued from page **1.a**

Aeronautical Engineering Department of the University of the Witwatersrand and patron of the new Chapter was most interesting and revealing in it's coverage and is printed elsewhere in "Homebuilt" for the benefit of readers. The present Vice-President of the E.A.A. in South Africa – Mr. R. F. Johnstone, thanked Professor Skews for his talk and complimented Chapter 514 members on the organisation of the meeting which included a display of photographs, aircraft plans and the original and attractive Chapter logo prepared by our artistic secretary – Mrs. Christine Burge, wife of Chapter member, Tom Burge.

During the intermission period, members and guests enjoyed the opportunity of meeting and talking to our honoured guests who included Mr. Bryan Cheyne, Inspector for the Dept. of Civil Aviation and Mr. Alan Hindle. A fine gesture was made by Mr. Hindle in his presentation of signed sets of W.W.1 Aircraft prints to the new Chapter for sale to members and guests attending the meeting. The sale of these prints raised R30,00 for Chapter funds. Thank you Alan, we are indebted to you for your kind gesture.

The evening's programme concluded with an excellent practical demonstration of the "Emco Star" combination wood working machine. Given by Messrs. Theuns Wessels and Tom Eatock of Internation (Pty) Ltd., the demonstration created much interest as it was a similar type of machine that Chapter member "Ted" Phelps used to create the outstanding restoration of the DH 82A Tiger Moth wing which was on display at the meeting.

The Steering Committee elected to conduct the affairs of the new Chapter until such time as the first Annual General Meeting is held, are: Messrs. A. "Buck" Gough-Jones, Chairman; Ronald H. Crause, Vice-Chairman; Mrs. Christine A. Burge, Secretary; S. H. "Scotty" Stewart, Treasurer; Jack R. Ashbury; Tom H. Burge; Martin Maurice; Nick G. Olivier; E. T. D. "Ted" Phelps; Roger H. Raad and Richard Tait, as Committee and Sub-Committee members. Persons resident on the West Rand and particularly in the Northcliff area, who are interested in joining or obtaining more information on the new Chapter, can obtain this information from either Ron Crause at home, phone 46-4046/Mrs. Christine Burge at 678-1329 or by writing to P.O. Box 284, Honeydew 2040, Transvaal.

SOME THOUGHTS ON THE LIGHT AVIATION SCENE IN SOUTH AFRICA

by Professor B. W. Skews

Aeronautical Engineering Department
University of the Witwatersrand.

In order to introduce my subject, I would like briefly to survey the formation of aeronautical education at the University of the Witwatersrand. I do this to illustrate the strong feelings and support that exist for aeronautical activities in South Africa.

The need for academic training in this field has been felt for some time by people, not only in the University, but particularly outside it. The University by itself did not have the resources to support developments in this field, so a group of interested organisations and individuals got together to collect sufficient funds. Thus it is that the aeronautical industry raised the money to pay my salary – it is a pity that this salary has to correspond to University levels rather than industrial levels.

The main need concerning these people is to help develop a local expertise in research, design operation and development of aircraft. These needs have much in common with item C in the E.A.A. constitution:

> *To foster and promote aviation education and to encourage the exchange of information pertaining to the design, construction and operation of homebuilt aircraft.*

The major common area is of course in the light aviation field and what I have to say pertains particularly to this area and more particularly to the link between those who fly and those who design.

Let me admit at this stage, that I did not receive my basic training as an aeronautical engineer and perhaps for this reason I have been astounded at the extent of the interest and enthusiasm in light aviation in this country. I keep on uncovering new and fresh facts of this interest.

There is no doubt that we are a very air-minded country. The E.A.A. has a considerable and important part to play in fostering this further. In order to place this air-mindedness and the need for design in perspective, let us examine a list of the number of civil aircraft registered in countries manufacturing to their own design. The list reads as follows (1970 figures).

U.S.A.	132804
Canada	10970
France	5103
Australia	3822
Germany	3790
Brazil	3563
U.K.	2492
Italy	1347
Switzerland	1052
Sweden	1004
Japan	931
Spain	702
India	568
Holland	395
Austria	323
Israel	138

South Africa does not appear in this list for obvious reasons. If she did manufacture to her own design she would appear eighth, immediately after the U.K., in having had 2036 civil aircraft registered in 1970 (the 1973 figure is 2301).

Surprisingly enough, over the years, the commercial light aircraft industry has declined. The U.S.A. is producing one half of the light aircraft they did 28 years ago (2700 units/month in 1946). The homebuilt movement has always been a strong component of this industry and must play an increasingly important part for a variety of reasons.

There are many people who wish to fly and own their own aircraft and this movement offers the least expensive way of doing so. In addition it gives one a tremendous kick.

Many current designs show considerable competence, eg. PAZMANY who has had his aircraft accepted as military trainers by four countries.

It is clear to me that the development of innovative design in light aircraft is likely to come through the homebuilt movement rather than the more conservative commercial concerns. This innovative component is of particular interest to South Africa at present. It also places a considerable responsibility on E.A.A. since the future light aviation scene will largely be determined by E.A.A.'s world wide activities.

I think I realise the main reasons for the founding of this group. It is primarily to do with an interest in flying; of owning your own aircraft; of the fun, enjoyment and presige it offers. For some, it is the satisfaction of building your own aircraft. In other words, it is the "sport" aspect rather than the experimental aspect which appeals to most of you.

I am in no way criticising this aspect, as it forms the backbone of the movement and leads to the air-mindedness I have been discussing. However, it is accepted that most sport aviation enthusiasts build aircraft to existing designs and this in the terms which I am discussing, play an essentially passive role and are not likely to materially assist in future developments of the recreation of the light aircraft industry. Whilst general developments in sport aviation can only be of benefit to the country (and also has strategic overtones) I would encourage the development and consideration of the occasional innovative design.

I now wish to move on to my last point which bears on an editorial recently published in your excellent magazine "Homebuilt". It had the following to say:

> *One would like to preserve the informal and friendly atmosphere that is possible with a small association but if one is to protect the interests of the individual homebuilder it will require weight of numbers and a sophisticated administrative organisation.*

This is a problem that I have heard frequently from various quarters of the aviation fraternity in this country. It is understandable that people with similar *specific* interests tend to group together and, in some ways, keep themselves apart from other groups who have the same general interests. Frequently friction arises between these groups and does nothing to contribute to the well-being of aviation in this country.

I am not suggesting that we form a single body which tries to satisfy all groups simultaneously, as some groups may genuinely have no interest in the detailed work of another group. It must be admitted that small groups have distinct advantages but I do feel that they should be more aware of each others doings.

To my mind, what is required is an umbrella organisation, which will act essentially as a secretariat to represent the voice of aviation in this country and which can draw inputs from all the various sections. The Aero Club and its affiliates, the pilots' associations, the Royal Aeronautical Society, SLAET, and so on.

It will enable the small association atmosphere to be retained within the various groups but will also supply the administrative machinery and weight of numbers which you could not raise yourselves.

It is pleasing to hear on the grapevine that there are moves in this direction already. It would seem wise for bodies such as yourselves to give these developments your fullest support. Co-operation between the various bodies from the smallest right up through to the DCA can only be of considerable benefit to this country.

On this note, I would like to join other aviation bodies around the country, in welcoming you to the field, and of wishing you the very best of success.

FLYING DOWN TO THE CONVENTION
by John Dunbar

Flying in small planes is certainly full of adventure and members may be interested in a little incident we experienced on the way down to the convention.

We reached Frankfurt before the clouds had cleared off the area and were forced to fly low over the town. We decided to find the airfield in order to land and wait for the clouds to clear. We located the airfield without much difficulty and after one inspection run at low level to check the surface, we landed. The runway was short and ran downhill towards a scrapyard and rows of trees. I chose the downhill approach because it was into wind according to my drift. The touchdown was smooth on the top of the hill, but the ground fell away steeply initially and we were flying again just enough to cause bouncing. It was quite impossible to go around again as the field was too short by the time the bouncing really started and so we just sat there, bouncing, until I finally was able to apply the brakes vigorously in order to stop becore we became another item of scrap in the scrap heap.

No sooner had I swung the plane around and stopped the engine, than a car drove in the gate and my "good morning" was greeted by an invitation from the driver to go home with him for a quick cup of tea before proceeding on our way. How nice and how typical of the country folk and how different from the people who live in the concrete jungles.

However, during our short conversation, the cows had become very interested in the peculiar red contraption which had suddenly appeared and looked as if they might contemplate eating it. We therefore thanked the farmer most graciously for his invitation and spent the next half hour chasing cows away until they finally lost interest.

During that half hour, an aeroplane passed high overhead, as the clouds had cleared by then. It looked like a Fornier, but was very high and was obviously not intending to land at Frankfort. I did not give it another thought until I suddenly heard an aeroplane very much lower and closer and looked up to see Murray circling us. I rushed to the Vagabond and turned on the radio to a pre-arranged frequency and sure enough, Murray's voice came through loud and clear.

He had only noticed the Vagabond at the last minute as he passed high over the field and decided he had better check that all was well. It was indeed a welcome sight to see the Fornier and after a brief chat and re-assurances that all was well, Murray continued on his way with the parting words that we would see him at either Harrismith or Ladysmith depending on the fuel position and weather.

We then started the motor and taxied to the top of the hill as I felt that a downhill take-off would give me a better opportunity to gain speed quickly. The wind had all but dropped by then. Whilst taxying, a very disconcerting squeale became audible from the dashboard and after much listening and testing of magnetos I was fairly sure that the rev counter was the culprit.

The take-off was one of the most hair-raising I have experienced and I know that Doreen thought the end had come. I sued all the runway available and started the run by first opening full power against the brakes.

The one golden rule that pilots of all low pressured planes like Cubs and Vagabonds should remember is "never to try to go over anything you can go around if you have difficulty in take-off distance" and no doubt this was our life saver.

Instead of aiming straight for the trees at the end of the runway, I used the runway diagnolly until, at the moment we reached flying speed, a bump threw us into the air and from that instant my main objective was speed and turn so as to either out-turn the trees or at least have a longer distance before reaching them. After the initial turn it was obvious that I would not out-turn the trees and therefore levelled the wings and aimed straight for them. The diagonal line towards the trees had given me a greater distance to gain speed and at the last moment we zoomed over them with a few feet to spare.

I never want to repeat that experience again. We were lucky as it all happened so quickly, I can truly appreciate how accidents happen. A small error in judgement is all that is necessary. Thank goodness I do know my Vagabond pretty well, as I do not fly anything else.

After my flip in the Maule at Peatties Lake, I wished I had had a Maule at Frankfort. That vertical take-off is fantasic.

Printed by Lectrotechnics