

Take Flight!

The Spirit of Truro

Introduction



In the late 1970s and early 1980s Truro School really did take flight when pupils, under the guidance of Design and Technology teacher Dennis Keam, built an Evans VP2 aeroplane.

It was the first major project undertaken in the newly built workshop, which had been built with the Sports Hall by pupils, staff and parents. Dennis

Keam helped build the new block and once it opened he was keen 'that he should produce something sensational' and 'to show the rest of Britain what can be achieved by youthful enthusiasm and effective craft teaching'.

We decided to build a plane because it was the most challenging thing we could think of. The idea was to show just what go-ahead youngsters can achieve within a planned craft teaching programme. 75% of aircraft projects are never completed. This one was going to be different².

It was 'a very far cry from the toothbrush rack one remembers attracting much unfavourable comment at the planning and production stage at boarding school some years ago!'³ and believed to be the first plane built for flight by schoolboys. Initially plans were made for two aircraft to be built; the Evans VP2 and 'the unconventional miniature 'Quickie' aircraft costing only £2,500 which are the rage in America' or the LongEz. '"If we go on like this we'll end up with our own private air force" says Mr Keam with a chuckle'⁴.

Preparing For Take-Off

Work began in the summer term of 1978. Plans for the VP2 were bought from the USA for £42 where it was a very popular plane among private flyers. The project was started 'without any previous experience, without any money but with limitless enthusiasm'⁵. Eighty boys took part in the project and two boys who worked on the plane continually were Fred Chan of Hong Kong and David Walton of Newquay⁶. Ten first year sixth-formers were responsible for the planning, delegation and assembly of the basic framework



Dennis Keam checking wing ribs

and wings. Boys in the lower forms did much of the cutting, shaping, sanding and gluing under the supervision of staff. The fuselage took two

¹ Headmaster D.W. Burrell correspondence to Calgary Board of Education, January 1983

² News from BP Oil, June 17

³ Westwings, March 1979

⁴ News from BP Oil, June 17

⁵ Aeroplane Monthly, October 1981, p.555

⁶ News from BP Oil, June 17

months to complete, the wings and tail a month each. The final paintwork was carried out by Art master David Heseltine, in school colours.

Summer term 1978

To ensure that no errors were made in the cutting of the ¼ in ply wing ribs a local engineering company made a template. When all the 30 ribs had been shaped and lightening holes drilled, it was found that the template spar slots had been set at the wrong angle – and so at the start of the summer holidays it was back to square one with a vengeance. Such was the determination of the boys that two weeks of the holiday were spent making new ribs⁷.

Autumn term 1978 Work began in earnest.



Spring term 1979

In January the stabilator and rudder were assembled and most of the leading edge ply on the wing was completed. The wings were covered but there was a 'moment of frustration when it was discovered that three of the control cables running through the fuselage touched aft of the rear bulkhead. This was resolved with the addition of an extra fair lead'9.

Fourth and sixth formers were mainly involved, but simpler jobs such as drilling lightening holes in ribs and glass-papering were shared among junior pupils. By early November the fuselage was complete and when the much-awaited spruce for the spars arrived the wings were soon built and fitted to the fuselage⁸.



Autumn term 1979

⁷ Aeroplane Monthly, October 1981

⁸ Flight International, 12 May 1979, Aeroplane Monthly, October 1981

⁹ *Aeroplane Monthly,* October 1981

The VP2 was completed except for the engine, cowlings and instruments. There were delays with the conversion of the VW engine followed by a 'near



disastrous decision to reduce the propeller diameter by 6in in order to obtain the 3000 rpm required for the desired climb rate. This resulted in some hairy test flights. The corrector type of carburettor and an oil cooler solved the problem but plans to fly the aircraft at airshows in 1980 were dashed'.

The work was done by quite a lot of pupils, wooden slats were cut out by quite young boys, but in the later stages it was six or seven keen sixth-formers who were doing Metalwork Design and Technology and Woodwork at A-level who really put the finishing touches on. Generally speaking it was done out of school hours rather than in school hours, and it really takes no official place in the normal time-table and curriculum.

D.W. Burrell, headmaster

It was feared that the project was taking attention away from O-levels and A-levels, but Keam argued that it was best way to interest boys in real technology of 20th century and give them excellent practical experience.

The project was sponsored by BP Oil's *Challenge to Youth*Scheme and several local



companies – Graham Reeves, B.C. Davey esq, E.J. Thompson and Co, South West Power Tools, Slades of Hayle, Bristol Airways, Yeates Footwear, Ciba-Geigy, Mallett & Sons, P.B. Sharp and Son, W.E. Taylor and Son. The aeroplane cost £4,000 to complete.

Of American design, the Evans VP2 aeroplane is like a war time Mosquito made of wood and is powered by a 1834cc modified Volkswagen engine. It has a cruising speed of 74 mph and a top speed of around 100mph ¹⁰.

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¹⁰ News from BP Oil



Registration number: G-BTSC

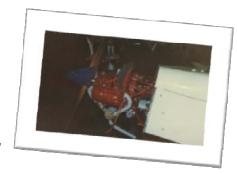
Weight: 964lbs 'less than a Mini'

Ceiling of 12,000ft

Wing span: 27ft

Length: 19ft 3ins

Fuel consumption: 3* petrol 'at an economical 2.5 gallons an hour', has a range of about 450 miles.



Equipped with 720 Channel Radio covering all civil aviation frequencies.

The Truro School Flying Club was formed to oversee and fundraise for the project. The chairman was Ted Groom and the committee consisted of parents, staff and governors.

Naming Of The Plane

In May 1980 HRH Prince Charles visited the school to unveil the new centenary window in the school chapel. After the unveiling the Prince of Wales was led to the Technology Block where he was to name the finished plane 'Spirit of Truro'.



Evans Aircraft





thusiastically the Prince, an experienced pilot himself, tested the controls and was obviously impressed by the expertise which had gone into its construction. He voiced a sentiment which was in everybody's mind when he said,

'I hope it will fly'. Fortunately it has done so¹¹.

Aug. 28, 1980

Mr. Dennis Keam er. Dennis Acam Truro School Trennick Lane Truro Cornwall TRI 1TH England

I was very pleased to receive your letter and the enclosed material. The photos of the Prince mean more to me than either Carter or Reagan by far. I came very close to flying either Carter or Reagan by far. I came we already have ever for the Farnboroush Air Show, but since we already have cover for the Farnboroush are to Vienna just two weeks later, flights reserved for a trip to Vienna just two weeks later, in the property of the property o

I will be very interested in following your ship and want to see that it performs successfully for you. Write for any being took your.

Once again, it was quite a thrill to see the Prince sitting in a VP. help I can give you.

All the best, S. J. Va. 4.

WSE: em

W.S. Evans

Letter from the plane's designer

¹¹ Truro School Centenary Magazine 1980, p.38

Test Flights

On 17 June 1980 the plane was tested at Deer Park, Tregavethan by Phil Irish, an enthusiastic local pilot, local businessman, member of a wartime bomber aircrew and who had had a close interest in project since the start. However he was unhappy with the engine which he thought was underperforming due to an incorrect carburettor. Keam later reported that the engine had 'turned out to be a disaster in its present form' and needed to be



Members of the construction team

replaced¹². However modifications could not be made until the New Year when the plane returned from London where it was on exhibition.

On 17 April 1981 the plane was taken by road to the



Bellamy's facilities at St Just for testing and modification. It was reported that the 'plane did very well,

its performance being very impressive¹³. After modifications were carried out and further test flights at Lands End, the Civil Aviation Authority issued a certificate of

airworthiness on 16 June 1981, a day before the plane's public debut.



¹² Truro School Flying Club minutes, 16 September 1980

¹³ Truro School Flying Club minutes, 25 May 1981

Farnborough Air Show 1980

While the plane was waiting for a new engine it the plane was taken to be an exhibit at Farnborough Air Show, which was reported in the *Truro School Centenary Magazine* by Dennis Keam.

Unless one visited the 1980 Farnborough Air Show, it would be difficult to visualise the size, scope and variety of the largest international air show in the world. Alternating with the Paris Air Show, this showpiece for the aerospace industries of the western world spares no expense to advertise and sell civil and military aircraft, avionics, weapons and all the support services. Entertaining of existing and prospective customers is held on a lavish scale in the specially constructed chalets hired for the show at a minimum cost of £4,000 each. Rumour has it that each meal costs the benevolent company concerned £40.

Farnborough 80 opened on Sunday 30 August with a Press Day when journalists and reporters from every country questioned, photographers recorded and filmed, all searching for the highlight of the Show. Four trade days were then followed by

three Public Days when the total attendance was well over the half million mark. The credit for the organising of this colossal undertaking must go to the Society of British Aerospace Companies and the Royal Aircraft Establishment, the hosts.



Friday 10am

29 August RAE Main Gate saw the arrival of a large furniture lorry which was immediately escorted by Military Police to a hangar to upload and depart. 10am RAE Queens Gate witnessed the arrival of four occupants hot foot (tyred) from the West. Two hours later they finally obtained security clearance, the magic Flying Area stamp, and were reunited with 'The Spirit' at 4.00pm. Assembly, wash down, polish up completed 'The Spirit of Truro' looked her very best beside a Tornado, Jaguar and the French Mirages.

So started, far away from Truro School one of the most prestigious weeks in the history of the School. The first school in the country to build and fly an aeroplane, as an educational project, had so impressed the SBAC that all fees were waived and Truro School was invited to exhibit at the 1980 Farnborough Air Show, the biggest in its forty-two year history.

Raymond Baxter and Reginald Turnhill complained that their employer (!!!!) always wanted the story of the Show before it started, a request they resisted. It was to their enjoyment when they spotted our aeroplane and with great enthusiasm uttered the same words 'This is the highlight of the Show', a theme echoed by the national and international press and radio. (Reports have come

back from Australia, S. Africa, America, Far East and Europe). Thus began a hectic week when a gleaming 'Spirit of Truro' in her inspiring school colours proved to be the highlight of the Show. So great was the interest that pupils became exhausted answering a barrage of questions from 9am until late into the evening. The Press and trade days were hectic, the Public Days incredible. Such was the demand for information that 5000 leaflets were rushed from Truro and lasted only two days. As might have been expected in such a venue, questions were asked on every aspect of the project and the School. Such was the strain that one pupil slept all day Thursday on a chair, 75 metres away the noisiest of jet bombers was taking off.

Many memories will linger from an unforgettable week: the delight of Old Boys who were very proud that their school had built this delightful machine, the journalist who said that in twenty two years of reporting on English education this was the finest thing he had seen, the industrialist who was thankful that here was a school doing something positive at last and gentlemen wearing ties and badges with aeronautical associations who beamed with delight at 'a real aeroplane, not a rocket with wings on', as one put it.

Such was the reward for the 80 pupils aged from 11 to 18 who had spent two years building the two seat aircraft designed by Bud Evans of La Jolla, California. The fuselage of 1/8 ply on spruce logeron and wings of spruce and ¼ ply covered with ceconite were completed in little over 12 months - a long delay occurred waiting for the engine which ironically did not develop the power required, ironic in as much as the one component albeit the most important, bought in, let the whole project down.



The rate of climb during the test flight left a lot to be desired although in all other aspects she handled serenely. It was decided to replace the existing 55hp engine with a Rolls-Royce Continental 85hp. If all goes to plan the aircraft should be back in the air by Easter showing the School's colours at air shows and charity events.

After the Farnborough Air Show 1980

The School is indebted to Mr Phil Irish who test flew the

plane from his airstrip, the Companies and friends who have donated over £3,500 towards the project and those who have given much needed advice. Our thanks is also extended to BP who have followed this project from the start and featured the School in its national and international magazines.

Those of us who have worked on the project have found it demanding, exciting, frustrating and rewarding and look forward to the sight of 'The Spirit of Truro' over the City and school where it was built.

The aircraft carries two plates on the fuselage with the simple inscriptions '"The Spirit of Truro" was named by HRH The Prince of Wales, Duke of Cornwall on 22nd May 1980', and 'Built by the pupils of Truro School'.

As a result of the plane's appearance at Farnborough Air Show the school received newspaper articles from Australia, magazine coverage in America, a thirty minute radio programme in Holland and articles in the UK aero magazines as well as letters from a Romanian model maker, South Africa and Canada.



Taking Flight



...after a blessing by headmaster Mr Derek Burrell, the propeller was turned seven times and the engine started... Followed by a naval helicopter, Mr Irish took the plane around the Treliske Preparatory School a few times and skirted the city. The 15 minute flight was a record breaker in two respects. The 64 000 plane was the

city. The 15-minute flight was a record-breaker in two respects. The £4,000 plane was the first to be made by schoolboys, and its flight was the first in Britain by an Evans $VP2...^{16}$



¹⁴ News from BP Oil

¹⁵ Aeroplane Monthly, October 1981

¹⁶ Unnamed newspaper cutting from School Archive, 'Cheers! Schoolboys' Plane Gets Lift-Off'

Through the summer the plane was displayed Kea School Fete and Truro Lions Club at Carnon Downs as well as at Culdrose Air Day and Bodmin Air Day; trips to Plymouth, and Aberporth had been abandoned due to bad weather. The trip to RNAS Yeovilton was prevented after the propeller was damaged in August. After minor repairs the plane



was ready to go to the RAF St



plane

The Red Arrows inspect the school's

Mawgan International which Sq Ldr Brian Hoskins, leader of the Red Arrows, sat in the cockpit and learnt all about the school's aircraft building project. The following year the plane was taken to shows at

Lands End, Culdrose, Aberporth, Bodmin, Yeovilton and St Mawgan, as well as a static display by BP in London.

Cross Channel Flight

The idea for a longer flight in the Spirit of Truro emerged in 1981. The school's Flying Club reported that 'BP would like the aircraft when flying programme completed, for it to fly the Bleriot route



Taking off on 20 July 1982

across the Channel^{,17}

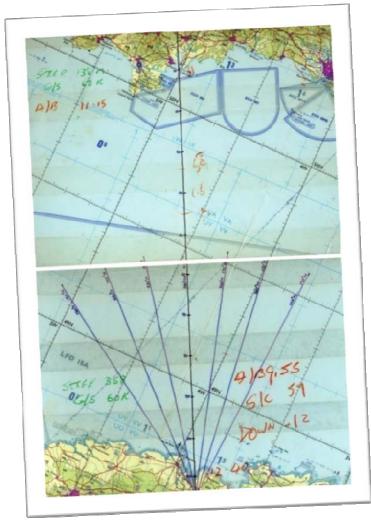
. It was then suggested that instead of the Dover to Calais route a longer journey could be undertaken, between Truro and its twin town of Morlaix, in Brittany. BP provided help with the publicity and getting permits in France; preparations were ready by the summer of 1982 and the record breaking

¹⁷ Truro School Flying Club minutes 25 May 1981

flight took off at 10.15am from Tregavethan on 20 July. 'Looking at its best in the bright sun with the school colours proudly borne Mr Irish circled the private airfield once and was away for the channel' 18.

The school and city's accompanying party dashed to St Mawgan to the Cessna 12-seater plane. Although they were slightly delayed by HM Customs, their arrival at Morlaix coincided with the slower Evans VP2.

If our flight had been bumpy then rather us than Phil in his open cockpit, almost at sea level, as without radar and relying on his maps and compass he came to terms with the unexpected mist off the French coast. This was how flying used to be in the pioneering days and now 'The Spirit of Truro' had reminded us again. Fuel supply was always a problem and Phil Irish solved it... with a converted bicycle pump as he 'topped up' his tank from the spare specially installed alongside him on the narrow seat¹⁹.



The plane and accompanying party were met by the Deputy Mayor of Morlaix who was presented with a framed photograph of the plane on its maiden flight over Truro. The French press 'out in force, was ecstatic'.



Presentation to the Deputy Mayor

Pilot's map of the route

¹⁸ Truro School Terraces, 1983

¹⁹ Terraces, 1983



The Worsley White bureau de change

It was reported in the Ouest France that 'Le do it yourself – anglais va loin et prenet même des ailes. Philip Irish, businessman anglais et anuèn pilote de la RAF vient de le prouveur'. He had come, they marvelled, 'dans un miniscule avion monoplane construit par les élèves d'une école methodiste de la ville jumelle de Morlaix'. When they saw the plaque recording that the plane was named by 'Prince Charles d'Angleterre' the cameras whirred again²⁰.

The party then toured Morlaix with the twinning committee, visiting the Hotel de

Ville and older parts of the city as well as 'souvenir shopping and Breton paté bought by those who had remembered currency or were in credit with Mr Worsley White's bureau de change'. The accompanying party had to return to Newguay by 5pm and so left the Spirit of Truro to follow on the next day, although it took slightly longer because of fog. The return flight 'that established the record' took place on the 23 July.

The time taken was two hours nine minutes at an average speed of 52.77 knots and fuel consumption of 44 litres. Bleriot crossed from Calais to Dover in just over half an hour averaging 47 mph. If speed is the yardstick, the Bleriot XI and the Evans VP2 have quite a lot in common. Without being a fast aircraft it has durability of construction and operational reliability. Both flights by the VP2 were completed without incident...



Home again - 23 July 1982

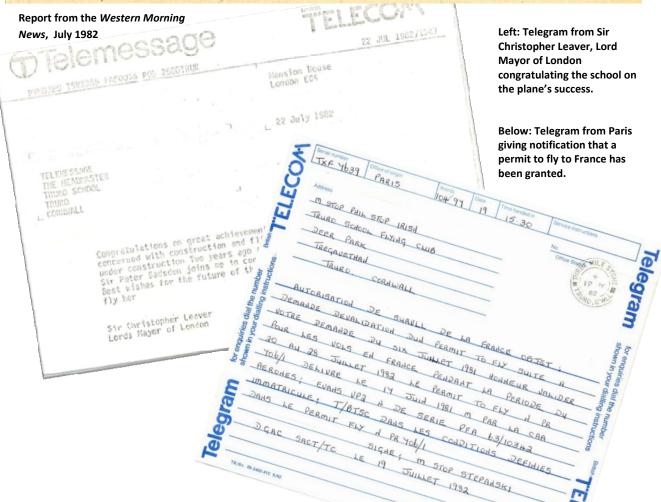
²⁰ Terraces, 1983





Costing about £4,000 to build, Spirit of Truro was sponsored

On arrival at Mortaix airfield,





Certificate awarded after the return flight

A Pupil's Flight

J.A. Dakin in 3L wrote in the 1983 school magazine of his flight in the school plane.

A few months ago my father, a good friend of Mr P. Irish, requested a flight in the 'Spirit of Truro', built by the pupils (of whom I am one) and the woodwork master, Mr Keam. Later, about a month later the phone rang, my flight was set for the next day. Next day I arrived to see the aircraft already rolled out onto the grass taxi-way. But after a lot of unsuccessful swinging of the prop the engine spluttered into life. Mr Irish flew a quick circuit but unfortunately the sky was turning black and





The next day I arrived at the grass-strip early in the morning. When eventually the aeroplane was rolled out of the hangar, we took around half an hour to warm-up the engine.

Mr Irish and I squashed into the cramped cockpit and then the aircraft slowly taxied to the end of the strip, at this point I felt a slight amount of anxiety. I had been up in light aircraft, open gliders and the like, but an open light aircraft, that's different! But as the

engine roared to a climax and the plane started to lift itself from the ground elation took over, it was a great feeling, cold but fantastic.

I flew from just outside Threemilestone (just outside Truro) to Redruth, full circle back to Truro where we circled about for quite some time, 'buzzing' over my father who was taking pictures.

The view was fantastic, and easier to see than from a normal Cessna or Piper, the experience was well worth waiting for. I spent exactly one hour aloft - the longest flight in the 'Spirit of Truro' any Truro School pupil has taken. I was only the second boy to go aloft and I feel more use of this little aircraft is needed as too few boys, or

even girls, have tried this breathtaking mode of

transport²¹.

Back Down To Earth

...Sadly the time has come to part with this aircraft so that funds can become available for another project as a new generation of pupils rightly expect the same opportunity as their predecessors. Perhaps the aircraft should have been named 'Spirit of the Design Technology Dept'

which believes that creative work must be stimulating, exciting, challenging and successful, conditions which this project certainly fulfilled for the eighty boys directly involved. Add the acquisitions of skill and knowledge the irrefutable argument for pursuing such work now emerges from the shadow of publicity which distracts from the educational aims of such work. Paradoxically the status in 'education' of creative pursuits is inversely proportional to the economic importance to our country. One only has to read recent articles on the Japanese gadget industries to realise how far behind in inventiveness we have become.

Perhaps therefore it is not difficult to understand why there is some opposition to the pupils building one of the more sophisticated exciting aircraft of recent years. The LONGEZ is composite of epoxy resin on glass weave with a foam core. This two-seat aircraft can cruise at 180 mph with a range of 2,000 miles plus. A Longez has just flown 4,600 miles non stop from Alaska to the Caribbean in 30 hours. (A far cry from the picturesque but slow 'Spirit of Truro').

Truro School pupils deserve to have an aircraft flying the school colours all over the UK, able to reach London in 1 ½ hours, Scotland in 3. There is no reason why such a craft should not be flown around the world when testing and evaluation are completed.

Truro School owes a great deal to Phil Irish for the contribution he has made to the school at considerable personal expense. He has piloted our aircraft to all the displays in 1981, provided hangarage and an airstrip only three miles from the school. What would the public schools give to have these facilities?

As this present era in creative work in Truro School draws to a close it is comforting for the builders to know that the Science Museum and the RAF Museum wish to acquire the Spirit of Truro because of its unique niche in the education and aviation history of this country. The permanent display of this aircraft will be the final tribute to the determination and skill of a particular generation of Truro School boys²².

²¹ Terraces, 1983

²² Truro School Terraces 1982

It took several years for a more permanent home to be found for the aeroplane. In 1981 the Flying Committee reported that the Science Museum in London would like to have plane on display. There had also been thoughts that it might hang in a specially built portico attached to the Technical Block as a tribute to the school. The Popular Flying Association used information about the plane in a mobile exhibition, which included the PFA International Rally at Wroughton Airfield and York Museum at Elvington. In the early 1990s the plane was taken to the RAF museum at Hendon by Phil Irish. The Air-Britain Photographic Images Collection includes a photo of the plane on show at Popham in 1995, after being rebuilt and given new paint²³. In 2008/9 the plane was bought by former pupil Jonathan Keam who plans to get it flying again²⁴.



The Plane at the RAF Museum, Hendon

In a similar vein to Truro School's aeroplane project in the late 1970s and early 1980s, Boeing UK launched their 'Schools Build a Plane Challenge' in December 2008.

to educate and inspire school children, through a practical challenge to manufacture and fly a light aircraft...this project will directly engage young people and their teachers with the practical elements of science, technology and engineering in a fun and inspiring way²⁵.

Other 'build a plane' projects include the 'Spirit of Brooklands', flying since 2005, and the 'Spirit of Devon Youth', first flown in April 2009, and projects are being developed in East London and Scotland²⁶.

²³ Evans VP-2, G-BTSC on www.abpic.co.uk/photo/1158664/ The website also has a photo of the plane at Farnborough Air Show in 1980 on www.abpic.co.uk/photo/1006792/

²⁴ Truro School Former Pupils Newsletter, July 2009

²⁵ From Boeing in the UK: Schools Build a Plane Challenge, www.boeing.co.uk/ViewContent.do?id=41663

²⁶ From <u>www.flyers.org.uk/Activities/BaP/BaP.htm</u> in conjunction with the Brooklands Museum. Spirit of Devon Youth from www.devonstrut.co.uk/BaP2/project.htm