

THE OUTPUT OF LUIGI PELLARINI – AN INNOVATIVE AIRCRAFT DESIGNER

By

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The Queensland Air Museum collection contains a Transavia PL 12 Airtruk the design of which was by Italian born Luigi Pellarini. The prototype Airtruk was first flown in 1965. It was Pellarini's only commercially successful product but had been preceded by a number of innovative designs that failed to reach production status. His initial interest in his native country was in "flying cars" but on reaching Australia he developed an interest in aircraft for use in agriculture. The PL 12 was only one of four of these, the others being the PL 7 K.S.A.S. Tanker (1956), the incomplete PL 9 for Bennett in NZ and the PL 11 Bennett Airtruck (1960). Those completed have been described by some as the ugliest aircraft ever built. As well he designed two other aircraft of more conventional appearance, the Fawcett 120 (1954) and the Victa R2 (1961), both of which only achieved prototype status mainly due to lack of financial backing and competitive pricing from American designs. Added to these were several further designs which did not reach prototype completion.

ITALIAN DESIGNS.

All Pellarini's initial work was on flying cars varying, for those of which details have been located, essentially in engine fitted, in wing form and span and in tail boom arrangement. His concept for a roadable aeroplane (aerauto) revolved around a multi seat, high wing monoplane. On this the wings could be quickly folded backwards to sit against the body. The propulsion, both on the ground and in the air, was provided by a pusher propeller with the tail on a single or twin booms. On the ground in the twin boom A.E.R.-1 these booms were folded aft of the cabin to further protect the airscrew from outside interference during road use. With wings folded his aerautos could be reduced to about two metres width and housed in a normal garage. A fixed tricycle undercarriage was used.

In an Argus interview on his arrival in Australia (Anon. 1952a) Pellarini stated that he "*had made the world's first flying car in 1945 and for each of the next five years he had made a new model*". He claimed he had sold all the models but made very little profit. These five are described, as far as possible, below.

PL 1

The only mention sighted of this design is in Bassi (2010) who states work on the flying cars began in 1944. As the PL-1, the first was built in collaboration with Carrozzeria Colli of Milan and was probably completed around the end of the Second World War.

PL 2C Aerauto

Again only limited details have been located for the PL 2C Aerauto (Anon 2011a). It was a two seat type with a Walter Mikron 60hp (45kW) engine and a claimed performance of 190km/hr maximum speed and a cruising speed of from 80 to 170km/hr. The PL 2C appeared in 1946 and was proposed to sell for 500 000 lira.

PL 3C Aerauto

This 1947 aircraft was an advanced modification of the PL 2 with an 80hp (60kW) Walter Mikron engine. Again it was built by Carrozzeria Colli.

Aeronova A.E.R 1 (Fig 1a)

The next model was officially the Aeronova A.E.R 1, first flying in May 1948. It was probably the PL 4 in his private records (Table1). The A.E.R.1 was intended for quantity production by a newly formed company, Aeronova Costruzioni Aeronautiche, based on Milan (Bridgeman 1949). The A.E.R. 1 differed from the earlier models in that gull wings were used instead of the straight, shoulder mounted wings of the earlier models. The A.E.R.1 had a single Lycoming O-290 AP horizontally opposed 4 cylinder engine of 125hp (93kW) driving a pusher propeller. It is described in Janes 1949/50 as a “*single engine, three seat, roadable monoplane*”. “*It had a fixed tricycle undercarriage with hydraulic brakes on the main wheels and a steerable nose wheel. The seating for three was with two side by side with dual controls and one behind with a baggage space behind the third seat and large access doors on each side*”. Twin fins and rudders were carried on twin booms (Fig 1a).

Aerauto PL 5C (Fig 2a)

Pellarini claimed in his Argus interview (Anon 1952a) that the PL 5C had been flown for 250hrs and driven for 8 000miles. Anon (2011a) says it reverted to the straight wing of the PL 2 and 3 and was of the same general appearance. In his drawings (Fig 2a) for a United States patent application, lodged in May 1950 (granted April 1954), Pellarini (1950) and in (Bridgeman1950), (1951) and (1952) a photograph shows only a single slim, central tail boom and single fin and rudder. The Janes (Bridgeman) entries indicate it to have had a two side-by-side seat cabin but the 1950 & 1951 entries indicate that a three seat version, the PL-6C, with a 125hp Lycoming engine was contemplated. This is not mentioned in the 1952 issue.

There is some conflict about various details between the Janes (Bridgeman) and Wikipedia (Anon 2011a) entries. The former states an 85hp Continental while Wikipedia, says it was fitted with a 125hp (93kW) 4 cylinder Continental C85 engine. The C85 was in fact only an 85hp engine (Bridgeman 1949). Also there are minor differences in specifications etc. between the two sources. Anon(2011a) gives a wing span of 9.8m (32ft 2in) and length 6.30m (20ft 8in). (See Table 2 for the Bridgeman’s specifications) and there are possibilities some of the Wikipedia material refers to the PL-2C, under which heading the entry occurs. It regards the PL 3 & 5 as simply versions of the PL 2. A rather literal, computer generated, translation from the original Italian of the Anon (2011a) paper does not help clarify these differences.

Again the PL 5C was produced by Carrozzeria Colli but with extra financial assistance from a newly formed group, Aerauto SpA . This allowed Aerauto to move to the larger premises of Magni Aviazione at Taliedo (Anon. 2011a). The prototype, after successful initial testing, was registered as I-AUTO and between Christmas Day 1949 and early January 1950 was taken on a demonstration tour of major Italian cities covering 4 000km with 800 km in the air (Anon. 2011a). The Janes entries again vary being 6 700km (4 160miles) total with 2 000km (1 240miles) flown. The flying was less than planned due to bad weather.(Bridgeman 1951).

As a result of the tour, modifications were made to the engine mounting to permit the thrust line to be adjusted from 0 degrees in flight to 25 degrees on the ground (Bridgeman 1951). This variation gave better take off and landing features and improved road speeds. It was achieved by movement of the wheels from forward for landing and take-off to a rear position for road use.

Initial military interest was shown in the PL 5C but this was formally abandoned in 1953. As well it had not been received favourably by the civil authorities. It could not be registered because of the absence of reversing and side marker lights and possibly also the absence of adequate headlights. A Cairns Post photograph (Anon. 1952b) shows only one centrally mounted headlight.

It would appear that two PL 5Cs (was one possibly the PL 2C?) were built and when the project was abandoned through the break up of the sponsor group and the “embittered” Pellarini moving to Australia, one was demolished and the other left in a hangar at Bresso airport for many years. It was finally destroyed by a fire in the 1970s (Anon. 2011a).

Despite the commercial failure of the aerautos, the publicity they attracted had a very positive effect on the business of Carrozzeria Colli, a motor vehicle and coach building company of Milan already well known for their modification work on Alfa Romeo and Fiat cars.(Anon. 2011a).

AUSTRALASIAN DESIGNS

Pellarini arrived in Australia in December 1952, aged 38. He was unhappy with his failure to get his “Air Cars” into production in Italy and stated he intended to build locally and market world wide developments of the “flying car”, Aerauto PL 5C. He saw great scope for such a vehicle in the wide open spaces and long distances of Australia. He had two four seat models in mind, one twin engine, the other single engine. Despite widespread publicity (Anon. 1952 a, b, & c) it would appear he was unsuccessful in this venture also.

Fawcett 120 “Illawarra Trainer”

Pellarini may not have been successful in having his flying cars built in Australia but by February 1953 construction had begun on the **Fawcett 120**, design of which has been attributed to him.(Robey 2007) (Despite the indications in the various Janes issues that an Italian PL-6C was in contemplation, was this his sixth actual design?). It was a conventional all metal, high wing, four seat monoplane with tricycle

undercarriage. It was powered by the then readily available DH Gipsy 1 engine of 97kW (130hp).

The 120 was the result of the need for a modern training aircraft to replace the aging Tiger Moths etc in the Illawarra Flying Schools fleet. Suitable American aircraft were not available due to restrictions on overseas expenditure of Australian dollars at that time. This resulted in Illawarra's principal Doug Fawcett conceiving the idea of building his own locally produced alternative. According to Robey (2007) he approached Pellarini "*who happened to be in Australia on a working holiday*". The 120, sometime colloquially known as the Illawarra Trainer, was the result. Due to a number of delays the prototype did not fly until November 1954 and then only briefly as it was again grounded by the authorities. It was not until June 1956 that all paper work was in order and, as VH-BQC, testing could be resumed. It was December 1957 before official testing had been completed. During this period (1957) it had been tested by the army for suitability for army co operation, reconnaissance and artillery spotting but no orders resulted (Parnell & Boughton 1988:259). By late 1957 earlier reasons for not importing American aircraft had disappeared and the idea of the 120's production was shelved.

Some years later difficulties were again being experienced in obtaining training aircraft from America so the Fawcett 120 was retrieved from its hangar at Bankstown, NSW, dusted down, re-engined with a Lycoming O-360, further modernized, and re-flown in August 1990. However, its future was again destroyed by slow achievement of certification and increasing cost and the project was eventually shelved. VH-BQC was presented to the Australian Aviation Museum at Bankstown c1993 where it was photographed in May 2007 (McDonnell 2008) who also stated it was kept in airworthy condition.

TABLE 1
Limited details of the aircraft so far traced to Luigi Pellarini

| PL No | Builder | Country | Year (First Flight) | Engine & Comments |
|--|--------------------|---------|---------------------|--|
| 1 | Colli | Italy | 1945 | First effort, no details available. |
| 2C | Colli | Italy | 1946 | Walter Mikron 60hp (45kW) |
| 3C | Colli | Italy | 1947 | Walter Mikron 80hp (60kW) |
| 4? | Aeronova AER1 | Italy | 1948 | Lycoming O-290 AP 125hp (93kW) |
| 5C | Aerauto | Italy | 1949 | Continental C 85 85hp (63kW) |
| <i>Pellarini to Australia December 1952 aged 38.</i> | | | | |
| 6? | Fawcett 120 | Aust. | 1954 | DH Gipsy Major 1 130hp (97kW) |
| 7 | KSAS Tanker | Aust. | 1956 | AS Cheetah X 400hp |
| 8? | Pellarini Air Jeep | Aust. | dnf | Franklin 120hp (90kW) Des. late 1950s (?) |
| 9 | Benett Des. only | N.Z. | dnf | AS Cheetah 450?hp eng. Dated 1957 |
| 10? | Victa R.2 | Aust. | 1961 | Lycoming O-360 180hp (135kW) |
| 11 | Bennett Airtruk | N.Z. | 1960 | P&W R1340 550hp (410kW) |
| 12 | Transavia Airtruk | Aust. | 1965 | Continental 10-520 A 285hp (212kW) |
| 13 | Transavia | Aust. | dnf | Continental IO-520 285hp (212kW) aban. c1967 |

Des = design dnf = did not fly - Design or airframe never completed.

Kingsford Smith Aviation Services PL 7 Tanker (Fig 1b)

The Kingsford Smith Tanker was certainly Pellarini's seventh numbered design. Construction of its prototype began in March 1955 at Bankstown, NSW - Pellarini having been commissioned to design a medium sized agricultural aircraft for the Australian and New Zealand market earlier that year (Eckford 2004). It was his first venture into the agricultural aircraft field.

After a number of delays in its construction the prototype first flew in September 1956 (Robey 1998). It was an unequal span biplane with the fuselage built around a welded steel tank which formed the main structure. The engine was mounted on the front and the pilot's cockpit fitted high at the rear. The tailplane and two fins and rudders were on booms carried from the top wing centre section. The tailplane was mounted as high as possible to allow the loader access, under it, to the hopper. The top wing carried a deep cutout to further facilitate this access to the central tank area. The then readily available Armstrong Siddeley Cheetah X engine of 298kW (400hp) was used. It had a fixed tricycle undercarriage.

Initial testing proved that it was easy to fly and could have served its purpose but it was deemed not to be a viable project. Instead KSAS went ahead and developed a series of conversions on CAC Wackett trainers, of which they held a large supply, and eventually the Yeoman Cropmaster. Meanwhile the sole PL 7 was stored in a hangar at Bankstown, NSW, where it was destroyed in a fire in January 1958. (Eckford 2004).

Pellarini Air Jeep (PL-8? or later)

Designated variously as the Airsedan (Eyre 1983 & 1988) and PL-13 Air Jeep in other references, Eyre (pers com) has confirmed that the Air Jeep and Airsedan are the same aircraft. Only brief published statements under both names have been located as it was never completed, registered or flown. However Buckmaster (2011) presents a photograph identified as the PL-13 Air Jeep and quotes the placard with it when it was on display at "the Museum of Aviation at Toowoomba, Qld" c2006 as follows:-

"Designed in Australia in the late fifties by Luigi Pellarini . A sesqui-plane design for use by the military, there was little interest however and the project did not go any further. The Transavia Airtruk did evolve from this design and was a successful agricultural aircraft. The design appears to be a canard sesqui-plane pusher with a split V-tail".

If true, the late fifties design date and the later development of the Airtruk suggests it could be one of the missing PL 8 or 10 numbers with the "PL 13" designation being unfortunately and incorrectly (See PL-13 below) applied at a later date..

McDonnell (2006) also shows a photograph resembling Buckland's and identifies it as the PL-13 at Toowoomba, Qld. However Eyre (pers com) gives more complete details with photographs of it at Bankstown, NSW and indicates.

"Work proceeded on construction of a prototype at Bankstown. NSW during the 1970s. However, work was slow and the aircraft was never completed. Finally,

in about 1982, the hangar space became too valuable and the incomplete aircraft was conveyed to the Australian Army Museum of Aviation at Oakey, Qld. At the Museum it has been restored and painted to the stage it reached when work stopped and it is on display in an incomplete state.”

This late construction dating (1970s) suggests the display placard’s 1950s design could be in error and that it followed the true PL-13 of the 1960s. However, the selection of the sesqui plane layout as used on the PL-7, Franklin engine plus a fuselage pod very similar in outward appearance to that of the Aerauto designs suggests that the basic design work was indeed carried out at the earlier date with actual construction long delayed or protracted. Who financed the partial construction has not been located, although one report has been sighted that said Pellarini had “designed and built” the Air Jeep.

According to Eyre (pers com) it was a single pusher engine four seater for touring with the tail on twin booms, there being one surface at an angle at the end of each boom. A retractable tricycle undercarriage was fitted with canard and stub wings below the main wing with a flap at the rear of the fuselage pod.

The “Museum of Aviation” at Toowoomba, Qld stated above is more likely the Museum of Australian Army Flying at Oakey, Qld where the Air Jeep is now (Oct. 2011) located although apparently not on display.

Bennett PL 9

The only references sighted to the PL 9 are two entries by Young (2007a&b) on the Wings Over New Zealand Aviation Forum web site. In the second he identifies himself as one who had worked on the PL 11 prototype. He says he had started with Bennett Aviation in August 1957. *“Initially we dabbled with a few minor tasks on a machine designated the PL 9, but as soon as Snow (Bennett) heard that there were a bunch of Harvards coming up for sale he contacted Luigi Pellarini and the PL 9 design was ditched in favour of the PL 11”* .

In the earlier entry Young (2007a) said that Bennett and his two partners Worthington and Gardiner had shown interest in the PL 7 and Pellarini was designing the PL 9 for them. They had formed Bennett Aviation to construct the PL 9. Like the PL 7, it would have utilized the AS Cheetah 450hp engine. It was almost certainly of the twin boom format as Young goes on to state this concept was not, as is usually thought, for ease of loading. *“It was simply to do away with the rear fuselage. On aircraft such as the Cessna 180/185, FU24, etc., superphosphate in the rear fuselage created major problems with corrosion. Luigi therefore decided simply to do away with the rear fuselage and hence the twin boom design.”* The PL 9 never progressed beyond the drawing board. It was abandoned when the prospect of the P&W R1340 Wasp engines and other suitable Harvard parts emerged. In the same entry Young estimates the design work on the PL 9 ceased and that on the PL 11 began Nov-Dec 1957. Thus construction of the PL 11, he believes, would have begun in early 1958.

Victa R.2 (PL 8, or 10?) (Fig 2b)

While listed as flying after the PL 11 Bennett Airtruck it is possible the R.2 is one of the missing designs, either PL 8 or 10, probably the 10. It was of very modernistic appearance but otherwise a conventional design for Victa Consolidated Industries and was intended as their first aircraft after a long history of lawnmower production. However, before the prototype R.2 had even flown Victa had decided instead to proceed with the production of Henry Millicer's prize winning Airtourer. This was a much more suitable and easily produced alternative, with which to enter the aviation field, although it was December 1961 before the production prototype Airtourer could be flown. With the axing of the R.2 project Pellarini went to New Zealand "*to work on the Bennett agricultural project*" (Brogden 1961).

The prototype R.2, VH- MVR, flew for the first time at Schofields Aerodrome, NSW in February 1961. Powered by a Lycoming O-360 180hp (135kW) engine it was an all metal, four seat, low wing, strut braced monoplane with a retractable tricycle undercarriage. Early prototype testing was completed and it was reported to fly well (Robey 1961). Eyre (1983) states that to allow concentration on the Millicer aircraft testing of the R.2 was suspended in April 1961. However he believed that the cockpit was somewhat cramped and would have required re-design before production could be entertained. As a result MVR was disassembled and stored first at Victa's Milperra, NSW works. When Victa closed its aircraft facility the R.2 was moved to Bankstown where it was again stored although some restoration was under-way in July 1982 (Eyre 1983). This was not completed and it was returned to storage at Bankstown (Eyre 1988) where it still exists, albeit in pieces. (Eyre pers com)

Bennett/Waitomo PL 11 Airtruck (Fig 1c)

The design of the Airtruck, which was built in New Zealand, almost certainly followed that of the Victa R.2 even though the PL 11 first flew in August 1960 while the R.2 was not airborne until February 1961. The PL 11 was designed to replace the DH Tiger Moths in the New Zealand topdressing market. G. C. Bennett, the principal of Bennett Aviation Ltd of Te Kuiti, NZ had a part in the design besides Pellarini (Anon. 1962). While its relationship to the KSAS PL 7 is evident, by the basic tank structure, it was a high wing monoplane with the pilots cockpit moved forward to a high position just behind the engine, for much better view, and the tail plane split into two separate units each at the end of one of the two booms. This further improved the access of the loader to the hopper.

With Bennett's acquisition of a supply of N.A. Harvards, and their parts, liberal use was made of them in the PL 11 construction. Engines, cowlings, wheels, shock absorbers, wind screen parts and hydraulic system parts were all included (Anon. 1962). The hopper could carry either superphosphate or up to five people when converted to a rudimentary cabin.

Bennett Aviation built the prototype ZK-BPV but ran into difficulties and was reorganized as Waitomo Aviation Ltd who proceeded to lay down two production aircraft after the design had been re-stressed and strengthened by G.E.F. Young (Taylor 1965). This was to meet the NZ Civil Aviation Dept requirements (Eyre pers com). Only one of these was completed, ZK-CKE, although Taylor (1965) says orders

had been received for 17 before it was realized that the Airtruk could not compete on the market with the Fletcher Fu 24 (Anon. 2011b). This was despite the fact that in July 1961 it had been granted an American Cof A (Anon. 1962). Anon. (2011b) indicates the third airframe may have been “*largely constructed but never flew*” by that stage.

The decision to terminate the project may also have been influenced by the crash during trials of BPV in October 1963 and CKE which flew in March 1965 and commenced commercial operations with Rural Aviation in late February 1967 but crashed a few days later. One pilot survived the other did not. It was regarded as a versatile design and with considerable refinement went on to become the Transavia PL 12 Airtruk. (Anon. 2007). It is interesting to note that G. C. Bennett was the initial Works Manager at Transavia and N. Johnston, the PL 11 test pilot, held that position at Transavia (Parnell & Boughton 1988:313).

Transavia Airtruk PL 12 (Fig 1d)

With the Bennett Airtruk completed Pellarini set about the drastic refinement of the basic design. While the general layout of the PL 12 was the same, the dimensions were reduced with span shortened by almost 3 metres and the length by one and a half metres. This allowed the empty weight to be halved from 1 678kg down to 839kg and better streamlining was achieved by fitting a smaller more modern inline horizontally opposed engine instead of the bulky radial. The result was a substantial reduction in the power required.

As the Transavia Airtruk, the PL 12 was put into production from a new factory at Seven Hills, north-west of Sydney. Apart from two replica Sopwith Pups this and the later developed Airtruk versions, the Skyfarmer, were to be Transavia's only ventures into aircraft production. (see the PL 13 later). Due to lobbying by Pellarini, Transavia had been specifically formed by the Transfield Corporation in 1964 to produce the Airtruk. In 1966 they joined with Victa, Yeomans and Sasin in an appeal to the Australian Tariff Board for protection against price cutting by American producers. The appeal was rejected in February 1967 and only Transavia continued in aircraft production. However, to compete with the Cessna Agwagon, Transavia had to reduce its price by \$6 000 but it soldiered on for 26 years before Transfield closed it down in 1993.

Over those years there were a range of Airtruk models. The initial airframe was stress tested to destruction and the second, as VH-TRN, flew for the first time on 15th April 1965. The first production aircraft, VH-TRD, appeared in October 1966. Early aircraft were fitted with the 212kW (285hp) RR R Continental IO-520-A, a six cylinder piston engine, but were somewhat underpowered. The 224kW (300hp) IO-520-D replaced the A. Dimensions may also have varied slightly as differing figures are available for early airframes. Initial aircraft were spreaders and dusters but a spray equipped version appeared in 1969 essentially for the overseas market.

The first major change was the PL 12U Utility (10 built) from December 1970. This had an enlarged pod with a cabin capable of carrying five passengers but still kept the IO-520-D engine. Several, as “Bushrangers”, were supplied to Thailand fitted with weapons for counter insurgency work. Next was the T-320 of July 1976 with the RR

Continental Tiara 6-320-2B motor but this engine soon ceased to be available. Transavia then changed to the T-300 Skyfarmer with the Lycoming IO-540-K1A5 224kW (300hp) engine. This flew in July 1978. The final version was the T-400 which featured 762mm (30in) longer tail booms, bigger dorsal fins and a 40% larger set of stub wings with a 298kW (400hp) Lycoming IO-720 eight cylinder engine.

Unbuilt projects, when the company was closed down in 1993, were the T-550, to be fitted with a turbo prop P&W Canada PT6A or Soloy/Allison 250-C30 engine and the M-300 military support aircraft, a further development of the PL 12U "Bushranger".

Of the 118 Airtruk/Skyfarmers produced by 1993, c90 were exported to countries like New Zealand, Malaysia, Singapore, South Africa, Denmark, Yugoslavia, Spain, Taiwan, North America and at least four Skyfarmer T400s to China. In excess of 27 were registered in New Zealand with c18 locally assembled there from Australian components. In March 2005 there were still 12 on the Australian register.

Pellarini PL 13 (R.2 development)(Fig 2c)

While the PL-13 designation has been applied at times to the Air Jeep it is clear is that this is not a correct usage as Taylor (1965) and (1966), in the reputable Jane's All The Worlds Aircraft, has entries and diagrams of a Transavia PL 13, without a name, and said to be a "*a four seat light aircraft derived from one of Mr Pellarini's earlier designs, the R. 2, of which a prototype was built by Victa Ltd. and flight tested in 1961*". Both entries are accompanied by the same three view drawings (Fig 2c) which show a definite resemblance to the R.2. Major changes are Janes PL 13's lack of the bracing struts for the wings of the R.2 and swept back wing tips on the PL 13. The relative spans/lengths were:- **R.2** 32' 0"/ 21' 6" and for the Jane's **PL 13** 32' 0"/ 24' 11". The next year Janes carries the simple statement that "*Development of the PL 13 light aircraft described in the 1966-67 Janes has been discontinued*". Supporting this is the statement by Parnell and Boughton (1988) that the PL 13 was a later development of the Victa R.2 but never built.

Eyre (pers com) in discussing the range of Pellarini's work does not mention the PL-13 but includes "*a four-seat fully-aerobatic low-wing monoplane for the Royal Queensland Aero Club.*" It seems likely this was the PL-13.

DISCUSSION

In Australia Pellarini worked first for Fawcett, then Kingsford Smith followed by Victa. He moved from Victa to New Zealand to work on the Bennett (PL 11?) (Brogden 1961) then back to Australia for the Airtruk although Coates (2011e) asserts that the PL-12 was designed in New Zealand and built in Australia. It is possible that work on the PL 9 and Victa R.2 was carried on concurrently as Young (2007a & b) suggests that the PL 9 design was not completed so as he could move straight onto the PL 11. There is also a report (Anon. 2011d) that he returned to Italy for a while to do the structural design of the SIAI Marchetti SF-260 which first flew c1965. Was this in the period between 1960 and 65 between the PL 11 and PL12?

It would also seem he dabbled in other design projects, as in 1957 he designed a removable steel hopper for installation into the Bristol 170 Mk 21 Freighter,

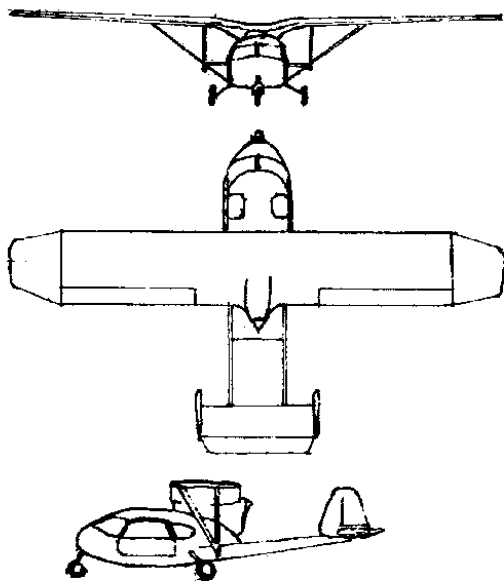
VH-AAH for Aerial Agriculture P/L of Bankstown, NSW. With a dumping chute cut in the floor it began fertilizer spreading in early 1958. (Goodall 1980). Eyre (pers com) also lists among Pellarini's unbuilt designs "*in the 1970's a futuristic wedge-shaped twin pusher-engine passenger aircraft.*"

At some stage along the line of development of the Airtruk/Skyfarmer, Pellarini would have left Transavia. When he did move on or retire from Transavia has not been discovered but he does not receive any mentions in the literature relating to later versions of the Airtruk/Skyfarmer series. However, he is listed by Taylor (1965 & 1966) as not only Chief Designer of Transavia but also as a Director. This listing is still present for the 1967-68 edition but no designer is shown in the 1969-70 and later edition of Janes. He is also not listed as a Director in the 1969-70 and later editions. The change in name from Airtruk to Skyfarmer despite the retention of the PL 12 designation could have marked his departure from Transavia.

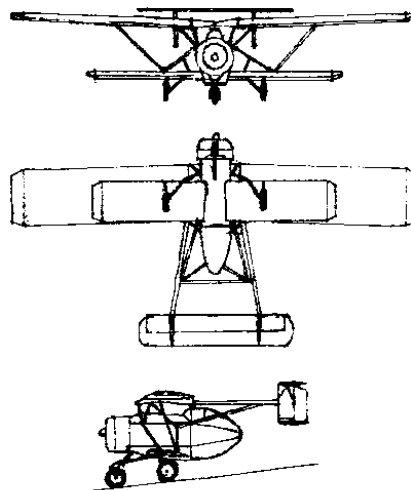
Pellarini was born in Milan (Anon 2011a) and two conflicting reports on his age have been sighted. (Anon.1952a) has him 38yr in 1952 and if correct he would have been c64 yrs old when the first Skyfarmer, the T-300, flew in July 1978 and he would have been c79yrs old when Transavia was wound up in 1993. However, Parnell and Boughton (1988) in a chapter of Aviation Biographies show him born 1903 but the Italian Bassi (2010) says born 1913 making the arrival age correct. As to his final days, an unconfirmed report has been sighted that he died in Australia in 2002. It would put him in his c88th year.

It seems likely that the thirteen designs discussed in this paper are Pellarini's total output of completed or partially built aircraft. They exhibit an interesting range of approaches to several aeronautical problems, flying car, agricultural aircraft and general light touring and training aircraft with a little military flavour thrown in. The Transavia Airtruk was his only commercially successful design but a number of the others bear comments that they flew well and could have been successful if timing and financial situations had been different. Also these is a suggestion that his designs met with unexpected delays (Fawcett 120, PL 7 & PL 11) or complete inability to obtain official approvals (PL 5C). Where the fault lay in this problem is unclear but Robey (2007) suggests there were faults and misunderstandings on both sides in regard to the Fawcett 120. Brogden (1961) suggest he was not favourably viewed by the Australian DCA. They regarded him more as an architect rather than as an engineer and his work always needed close checking, hence the delays in getting flight approvals. It is also interesting that the PL 12 Airtruk was much more successful on the export market than it was at home. Whatever the truth, with the Airtruk, and to a lesser extent the Airtruck, he made a major impact on Australasian aviation development.

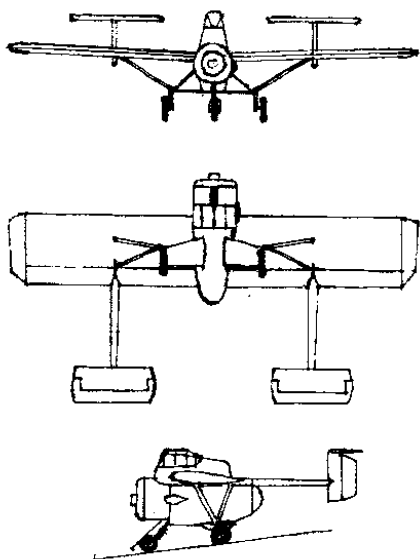
Fig 1
Available outlines (re drawn) of four of Pellarini's more important aircraft



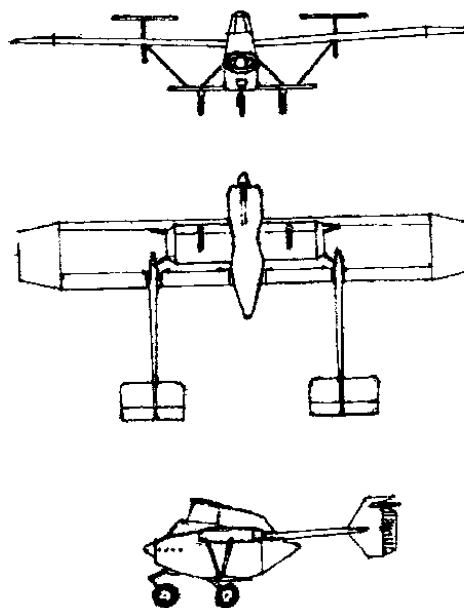
1a Aeronova A.E.R.-1 1948 (Italy)



1b K.S.A.S. PL 7 1956 (Aust.)



1c Bennett/Waitomo PL 11 1960 (NZ)

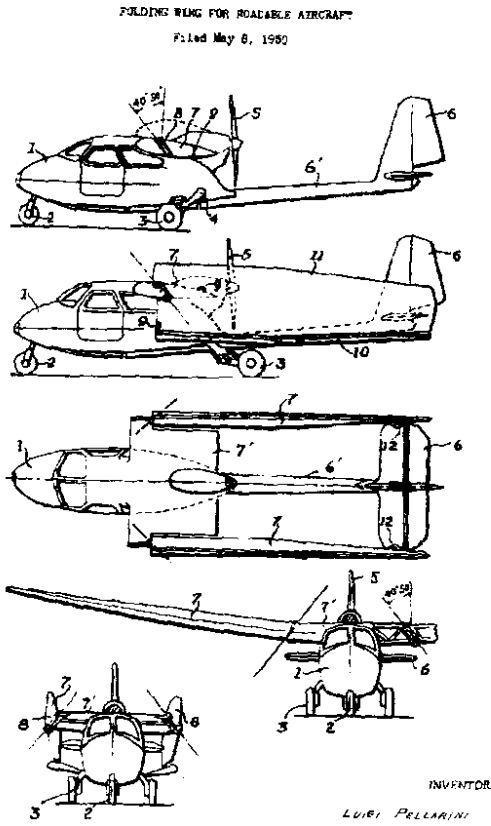


1d Transavia PL 12 1965 (Aust)

Scales are not consistent between aircraft - See table 2 for spans and lengths

Del -DGC

Fig 2
 Outlines (re drawn) of further Pellarini designs



2a United States Patent appln
 2,674,422 by L. Pellarini .
 Granted April 6, 1954.
 This is possibly the PL 5C

After Pellarini (1950) This provides full
 written details of the application.

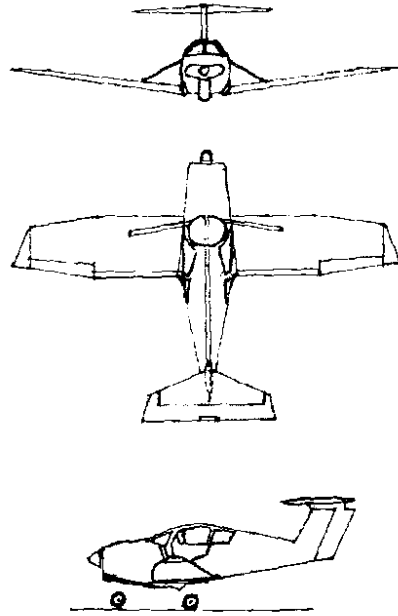


Fig 2b Victa R.2 (PL 10?) 1961 (Aust)

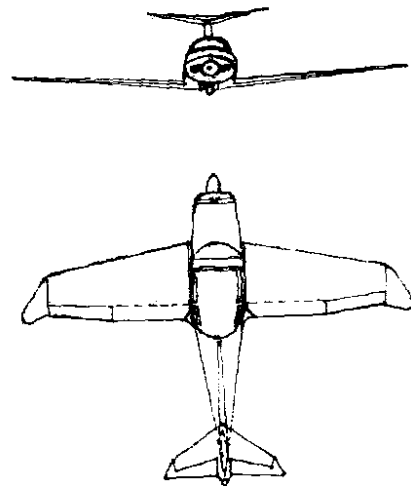


Fig 2c Transavia PL 13 Incomplete (Aust)

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TABLE 2
SPECIFICATIONS & PERFORMANCE

| Model | Aeronova AER- 1 | | Aerauto PL-5C# | |
|-----------------|---|------------|---|------------|
| Engine | 93kW (125hp) Lycoming O-290AP 4 cyl. horiz. opp | | 63kw (85hp) Continental C 85 4 cyl. horiz. opp. | |
| Wing Span | 9.60m | 31ft 6in | 10.2m | 33ft 5.5in |
| Length | 6.30m | 20ft 8in | 6.10m | 20ft 4in |
| Height | 2.00m | 6ft 7in | 1.76m | 5ft 9in |
| Wing Area | 12.3sq m | 132.3sq ft | 13.2 sq m | 142sq ft |
| Weight Empty | 425kg | 936lb | 460kg | 1 012lb |
| Weight Loaded | 710kg | 1 562lb | 700kg | 1 540lb |
| Max Speed | 220km/h | 137mph | 180km/hr | 112mph |
| Cruising Speed | | | 160km/hr | 100mph |
| Initial Climb | 250m/min | 820ft/min | 162m/min | 535ft/min |
| Service Ceiling | 5 000m | 16 400ft | 4 000m | 13 120ft |
| Range | 600km | 373mile | | |

Ex Bridgeman (1951)

| Model | PL 7 Tanker | | PL-8? Air Jeep* | |
|-----------------|---------------------------------------|------------|---|-----------|
| Engine | 298kW(400hp) A.S Cheetah 7 cyl.radial | | 90kw (120hp) Franklin 4 cyl. in-line. air cooled. | |
| Wing Span | 12.44m | 40ft 9.5in | 9.6m | 31ft 6in |
| Length | 7.46m | 24ft 6in | 6.93m | 22ft 8in |
| Height | 3.05m | 12ft 0in | 2.19m | 7ft 2in |
| Wing Area | 37.67sq m | 405sq ft | 18.85sq m | 203sq ft |
| Weight Empty | 1 007kg | 2 230lb | 476kg | 1 050lb |
| Weight Loaded | 2 270kg | 5 000lb | 1 021kg | 2 250lb |
| Max Speed | 203km/h | 127mph | 209km/hr | 130mph |
| Cruising Speed | 179km/h | 112mph | 193km/hr | 120mph |
| Initial Climb | 225m/min | 740ft/min | 292m/min | 960ft/min |
| Service Ceiling | 3 900m | 12 800ft | 4 572m | 15000ft |
| Range | 547km | 340mile | 1 046km | 650mile |

* Estimated Spec & Perform. ex Eyre (pers com)

**TABLE 2
SPECIFICATIONS & PERFORMANCE**

| Model | PL 11 Airtruk | | PL 12 Airtruk | |
|-----------------|---------------------------------------|-----------|--|-----------|
| Engine | 410kW (550hp) P&W R-1340 9cyl. radial | | 212kW (285hp) Continental IO-520-A 6 cyl. horiz. opp | |
| Wing Span | 14.63m | 48ft 0in | 11.98m | 39ft 3in |
| Length | 7.82m | 25ft 8in | 6.35m | 20ft 10in |
| Height | 3.30m | 10ft 10in | 2.79m | 9ft 2in |
| Wing Area | 34.3sq m | 369sq ft | 23.8sq m | 256 sq ft |
| Weight Empty | 1 678kg | 3 700lb | 839kg | 1 850lb |
| Weight Loaded | 3 266kg | 7 200lb | 1 855kg | 4 090lb |
| Max Speed | 264km/h | 164mph | 191km/h | 120mph |
| Cruising Speed | 200km/h | 124mph | 176km | 107mph |
| Initial Climb | 546m/min 1 800ft/min | | 183m/min 600ft/min | |
| Service Ceiling | | | 3 200m | 10 500ft |
| Range | 724km | 450mile | 611km | 380mile |

| Model | Vieta R 2 (PL-10?) | | Transavia PL 13 | |
|-----------------|--|----------|--|-----------|
| Engine | 134kW (180hp)Lycoming O-360 4 cyl. horiz. opp. | | 212kW (285hp) Continental IO- 520-A 6 cyl. horiz. opp. | |
| Wing Span | 9.75m | 32ft 0in | 9.75m | 32ft 0in |
| Length | 6.4m | 21ft 6in | 7.59m | 24ft 11in |
| Height | 2.51m | 8ft 3in | 2.03m | 6ft 8in |
| Wing Area | 12.26sq m | 132sq ft | | |
| Weight Empty | 539.7kg | 1 190lb | 717kg | 1 580lb |
| Weight Loaded | 1 020.59kg | 2 250lb | 1 234kg | 2 720lb |
| Max Speed | 294km/h | 183mph | 386km/h | 240mph |
| Cruising Speed | 275km/h | 171mph | 357km/hr | 222mph |
| Initial Climb | 357m/min 1 160ft/min | | 335m/min 1100ft/min | |
| Service Ceiling | 5 060m | 16 000ft | 5 950m | 19 500ft |
| Range | 1 191m | 740mile | 1 600km | 1 000mile |