

LUIGI PELLARINI - AN UPDATE OF LIFE AND OUTPUT

IAN WRENFORD & DON CAMERON

Since the posting on this web site of Cameron (2011) a number of further details of the life and output of Luigi Pellarini have been located. These have included further details of the PL.8, a USA patent application for the Airdynecraft and a possible second design confusing the PL.9 number. These details and other lesser additions are presented in the following material as is an outline of his ability and character traits, the latter summarised from Lockley (2018)

PL-8 AIRJEEP

The history of the PL-8 has been further traced through a series of photographs from various sources. These show it in storage at Bankstown Airport in May 1970 and again in 1982. By October 1987 it was on display at the old Chewing Gum Field Museum, Tallebudgera, Qld. These are followed by two at the Aust. Army Museum of Aviation at Oakey, Qld. There it was on display in January 1992, but by October 2011 it was in storage.

In April 2018 it was offered, by the Oakey museum, to QAM at Caloundra, Qld. It arrived at QAM in September 2018 and is being restored to its original incomplete display standard. It had never been fitted with an engine or instruments. Although an earlier photograph (Anon) shows it on its intended undercarriage, matching those of the PL.10 and prototype PL.11. Oakey had fitted it with three wheels which are said to possibly be Pilatus Porter tail wheels. However it is likely it was on its original wheels in most of the earlier photographs.

There is also a report, (Johnson via Lockley (2018)), that c1973 parts of an airframe, likely to have been the PL.8, were in storage at Bankstown. "*They consisted of a fuselage section and two tail booms. On either side were three windows and a large door.*". One of other photos shows the front seats bench in place with one seat in position on the bench. It is therefore possible more of the aircraft had been completed than presently exists at QAM. Items of use for other aircraft no doubt having been removed before it left Bankstown.

When received at Oakey it was bare metal with patches of green zinc chromate primer. There it was painted orange, possibly the International Orange used on Army aircraft in Bougainville (1998-2001). The construction is from pop-riveted aluminium which suggests it is not a mock-up but was intended to fly.

The aircraft was of unusual design being a high winged sesquiplane canard, with twin, 45degree angled, square section, tail booms. It was to be powered by a single pusher engine. Retracting tricycle undercarriage was provided. Seating was for 6, two of whom were rear facing. Each tail is angled out at 45 degrees from the vertical, fulfilling the dual functions of conventional elevator and rudder. A flap/elevator

appears installed at the rear of the lower stub wing. Also at the rear of the canard (never fitted).

Dimensions as measured at QAM are:-

- Wingspan – 9.8m
- Length – 7.2m measured
- Height – 2.5m measured
- Engine – 125hp Franklin horizontally opposed 4cyl (Presumed)

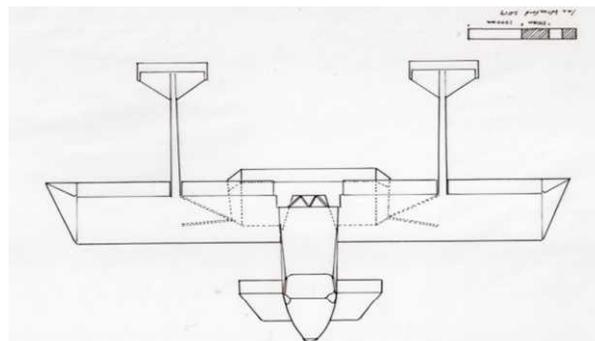
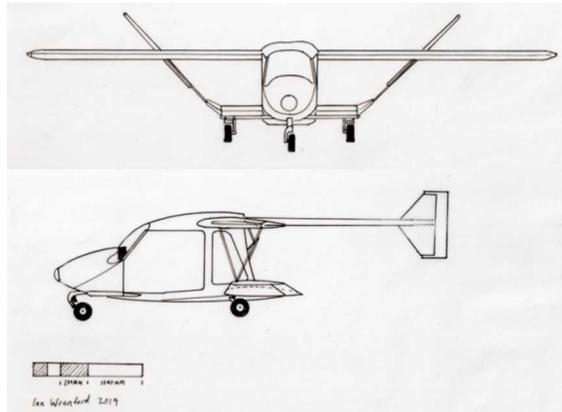


Fig 1 The PL-8 Air Sedan drawn (Del IW) from the components presently at QAM. Note the tail plane is drawn at the correct 45 degree angle. In the side and top views this makes it look foreshortened.



Fig 2 A possible appearance of the aircraft if it had been completed with a Franklin 125hp engine (Del IW). The fairing below the engine is assumed to be similar to that of the Marchetti Riviera which tapers to a point. Aerodynamically it cannot end abruptly

on the airframe as it does presently. The doors have been drawn based on the locations of three sets of hinge attachment points on the present airframe. The central pillar in the main opening is consistent with the positioning of the horizontal cross-member on the existing airframe

CONFUSED PL.9

When preparing the original paper on Pellarini (Cameron (2011)) the only design located under this designation was an intended Bennett Aviation agricultural aircraft. Pellarini was designing it for construction and use in New Zealand. It was to be built around an A.S. Cheetah engine. Young (2007) in a Wings Over New Zealand Aviation Forum post in 2007, says when he started work with Bennett in August 1957 he initially worked on components for the PL.9. This project ceased in Nov-Dec 1957 when Harvard airframes and their P & W Wasp engines became available. This resulted in Pellarini being asked to design what became the PL.11, around parts from the Harvards, for the same intended use. Young (pers. com.) still insists his initial work was on the Bennett PL.9.

However, Aircraft (Anon 1957a) indicates that the Royal Queensland Aero Club had just announced that Pellarini had begun design work on the RQAC PL.9. It also received a brief mention in Flight (Anon (1957b)). A 4-place fully aerobatic, low wing monoplane which they intended to construct in their Archerfield works early the next year. It was expected that production drawings would be approved by DCA in January, 1958.

It was to be a low wing, four seater, with fixed tricycle undercarriage with the front wheel enclosed in a faired spat and a high mounted tailplane. Power was to be from a 150hp Lycoming O-320 engine. It was designed to meet specific Australian training requirements but to also be attractive to private owners and charter operators.

The earlier Fawcett 120 designed for the same use had been a high wing four seater suggesting there was little commonality of thought between the two. On the other hand the later Victa R2 (PL.10) and PL.13 were clearly more sophisticated developments of the RQAC design.

Dimensions and performance of the RQAC PL.9 were to be:-

-	Wingspan	-	34ft (10.363m)
-	Wing area	-	168 sq ft (15.697sq m)
-	Gross weight	-	2 100lb (952.56kg)
-	Top speed of	-	145 mph (232.8kmph)
-	Cruising speed of	-	125mph (200.53kmph)
-	Wing loading	-	12.5lb/sq ft (61.03kg/sq m)

To date it has not been possible to sort out which is the true PL.9 design. It is possible, but thought to be highly unlikely, that the same design number was used

twice. Both belong essentially to the same time span (late 1957) and neither proceeded to completion. Some preliminary construction work was carried out on the Bennett aircraft (Young (2007)) but no record of any on the RQAC aircraft has been sighted..

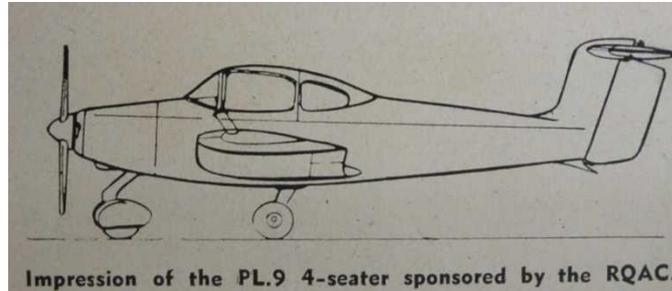


Fig 3 The RQAC PL.9 drawing from Aircraft, December 1967.

AIRDYNECRAFTS & DYNECRAFT

An American patent application, No 4,030,688, (below) granted June 21 1977, (application date February 18,1975) was initially assumed to be for the PL.14. However Pellarini's son Frank (pers com) has indicated his father did not use PL. numbers beyond PL.13. The next aircraft, the one covered by this patent, was simply referred to as the Airdynecraft or sometimes as the "Brabham collaboration".

United States Patent 4,030,688

Pellarini June 21, 1977

Aircraft structures

Abstract

Improvements in and relating to aircraft structures. The aircraft comprises a narrow delta planform fuselage with two small-span shoulder type wings in tandem and cascade. The shape of the fuselage and its relationship with the wings result in an aircraft capable of exploiting more efficiently, than conventional aircrafts, the potential energy carried by the aircraft and to comply more accurately with the first degree of universal flexibility as does the atmospheric environment than do conventional aircrafts.

Inventors: Pellarini; Luigi (Sylvania, New South Wales 2224, AU)

Family ID: 3765853

Appl. No.: 05/550,855

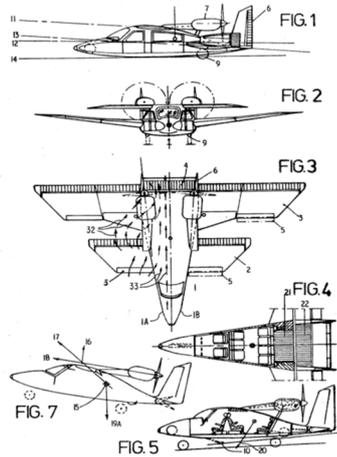
Filed February 18 1975

In the full patent application there are six pages of text accompanying the material above. These include the statement that: "*as these aeroplanes are different in configuration they are called airdynecrafts*" hence, no doubt, the name of the intended construction company in which, as noted below, Pellarini had an interest in and its only production effort.

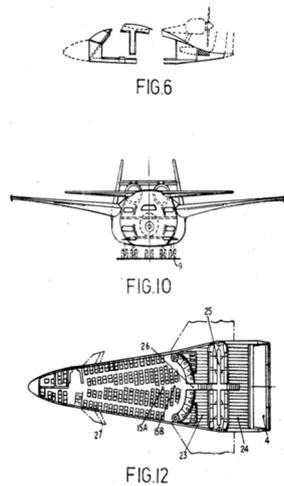
The Airdynecraft was part built by Airdynecraft Pty Ltd, a company formed c1976 jointly by Pellarini and Reg Brabham,(a cousin of racing car driver Jack Brabham), with Snow Bennett (See PL.11 & later works manager of the Transavia factory)

possibly also having a small holding. The aircraft was to be built in a factory at Girraween. NSW. The company was managed by Brabham, with Bennett as works manager and Pellarini as designer.

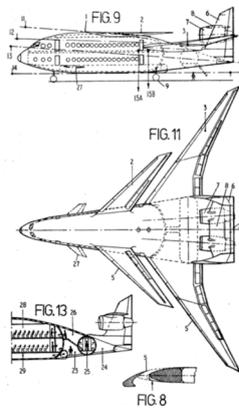
U.S. Patent June 21, 1977 Sheet 1 of 3 4,030,688



U.S. Patent June 21, 1977 Sheet 2 of 3 4,030,688



U.S. Patent June 21, 1977 Sheet 3 of 3 4,030,688



The top plan is that of the Airdynecraft layout. The next two are possible future developments based on the Airdynecraft patent. These drawings are from patent 4,030,688.

A radio controlled scale model was built and flown early in the development of the Airdynecraft. This appears to have shown some adverse features (Daryl, (2018)), possibly the reason why construction of the full sized airframe was abandoned and Pellarini withdrew from the company in 1976. There is also a suggestion that the relationship between Pellarini and Brabham had become unworkable. The airframe

appears to have reached a somewhat similar stage to that of the fuselage of the PL.8 when work ceased.

Airdynecraft was dissolved early in 1987. Presently it is not known what became of the incomplete Airdynecraft airframe.



Reg Brabham with the radio controlled model. The partially completed Airdynecraft is in the background. (Photo cMarch 1976)

The name Aircraft Design Pty. Ltd appears in the literature about this time but it has not been possible, as yet, to positively identify its position in Pellarini's affairs. It seems likely he used it to separate his professional activities and finances such as Airdynecraft P/L. from his personal life and finances.

Dyneplane, on the other hand, was a private company formed by Dr Len Martin to specifically produce a different form of the Airdynecraft which Martin was sure could be made into a profitable commercial product. There were disagreements over the patenting and the dispute ended up in the law courts (Frank Pellarini (pers com)). (See also Table 1)

Table 1

Chronological order of notices appearing the Government Gazettes relating to the winding-up of the three companies.

Govt. Gaz. date	Company	Action	Petitioner
NSW Gazette			
2 May 1980	A/c Design P/L	Petition to wind up	Dyneplane P/L
6 June 1980	A/c Design P/L	Liquidator Appointment	Dyneplane P/L
22 May 1981	A/c Design P/L	Strike off register in 3 mth	
5 May 1982	A/c Design P/L	Struck off register	
30 Nov. 1984	Dyneplane P/L	Appln. to wind up	Luigi Pellarini
31 May 1985	A/c Design & L.Pellarini	v/s Leonard Martin	For levy to pay claim
Australian Gazette			
23 Dec. 1986	Airdynecraft P/L	Registration to be cancelled in 3 mth	
11 April 1987	Airdynecraft P/L	Registration cancelled	

GENERAL COMMENTS

Pellarini's son Frank (pers com) has indicated his father co-operated in a number of other projects that did not receive PL. numbers. These included a hydroplane in 1944 and "the Frati". Stelio Frati was a freelance Italian aircraft designer, one of whose designs eventually became SIAI-Machetti SF-260 which Frank Pellarini says his father converted from wooden to metal construction in 1963. Cameron (2011) indicates there was a suggestion in the literature that Pellarini returned to Italy at some stage to do stress work for the SIAI-Marchetti SF-260 design. It first flew July 1964. This gives a good indication as to what the "Frati" was and a timing of this visit to his homeland.

However Zanaboni Chicco (Pers Com), the moderator of the Facebook group of the Historical Aircraft Group, Italy, says in several messages that he had met Pellarini at Bresso airport, Milan on several occasions, the earliest in late the 1960s. Pellarini was looking for his Aerauto PL.5 to see how he had designed the wing folding mechanism. He had forgotten. However Chicco says he was too late as it was in progressive stages of deterioration, too far down to be of use to him. It was finally scrapped in 1974. From these dates it is probable that Pellarini returned to Italy several times over the 1960-70s.

It is also noted that the PL.10 Victa R-2 is now on display in the Functions space at HARS Albion Park NSW. It will be interesting to see whether HARS restore it simply to display standard or, as they often do, put it back the air.

PELLARINI HIMSELF

Lockley (2018) has recently published a booklet that covers Pellarini's life and work. It contains considerably more details of his personal life which is summarised below.

He was born in 1913 in north east Italy. With his father killed in the 1914-18 war, his mother and family were supported by two uncles enabling him to achieve a good education to graduate engineer stage. After developing an interest in aviation late in this period he did a three year post-graduate course at the French Aeronautical Institute in Paris.

On return home in 1935 he joined the flying boat designers Savoia -Marchetti,. From there he became involved with innovative designs with Magni and possibly developed the idea of planes that could also be used on roads. In 1940 he moved to SAIMAN, one of whose earlier designs had been the LB-2 with a twin boom tail and pusher engine. This was a general layout Pellarini was to use extensively in his own later designs, justified in his case as a means, in agricultural aircraft, of keeping corrosive chemicals away from the rear of the fuselage. (Cameron (2011)).

(A) Lockley (2018) quotes a statement from Geoff Young, who assisted in completion of (was left to complete ?) the PL-11 design,

"that Luigi was a genius who could come up with amazing original solutions to complex engineering problems. But he was not a good organiser and manager, and his frequent changes made logical development difficult."

(B) Earlier Lockley dealing with Luigi's involvement with the Fawcett 120 states:-

"Fawcett and Pellarini were both robust characters and it is likely that there were personality clashes and that the co-operation came to an abrupt end."

These two character traits, which show up in other PL design histories, could well be one of the reasons only one of Pellarini's designs came to widespread use despite the obviously ingenious approaches in most of his designs from the Aerautos to the Airdynecraft.

Lockley (2018) indicates Pellarini had continued to work until suffering a stroke in 2000. This had involved his usual forward thinking from advanced Aerautos to variable geometry wings, a giant 800 seat airliner and a hypersonic aircraft. During this period of his life he had been in contact at least with De Havilland Aircraft, Boeing, Lockheed and NASA. Lockley(2018) contains drawings of a number of these possible innovations. Nothing became of them because, in part he was too far ahead

of the time and in part because of his refusal to move overseas. Luigi passed on in December 2001 leaving a legacy of innovative aviation designs.

REFERENCES

Anon. (1957a) : *Light Aircraft and Private Flying News*- Aircraft - December : 54

Anon. (1957b) : *Flight* - December : 936

Cameron D.G. (2011) : *The Output of Luigi Pellarini - an innovative aircraft designer*- QAM Technical papers

Daryl (2018) : Quotelike options post by mrhainey Nov 10. on <http://rnzaf.proboards.com/thread/27233/snow-bennett?page=1@scrollTo=273214>

Lockley (2018) : *Luigi Pellarini's Aeroplanes, Aerautos, Airtrucks, Airtruks and others* - pp 34. Privately Printed (PO Box 301 Pymont NSW 2009 - tomlockley@gmail.com)

Young, Roger (2007) : *A summary of the history of the PL 11 Prototype #1*- <http://rnzaf.proboards.com/index.cgi?action=display&board=agriculture&thread=1...>
Entry of 12 Nov 2007.

ACKNOWLEDGEMENTS

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The substantial use of material in Tom Lockley's booklet is also gratefully acknowledged.