

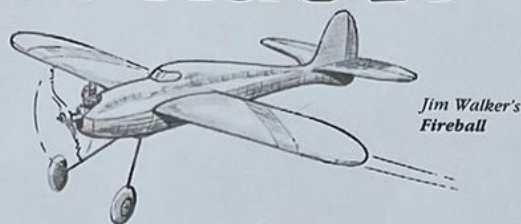


Chapter 4

The Model Team Racer

Trimming

History and Now



When we select a Team Racer as a suitable building and flying project from our period of interest prior to January 1958 we refer to it as a Vintage T/R. Other classes with similar design parameter's have been more recently introduced up to a cut off date of 1965. The overruling factor within these racing classes is that they retain to a large degree certain design features that reflect an overall appearance resembling full-sized aircraft. Within this collection of models, most of the flight trim factors that concern our trimming procedures are incorporated into the original design.

Therefore when we reproduce a particular model, and if we are to fly within the vintage rules, we accept the various factors influencing flight performance that the original creator incorporated into our chosen model design.

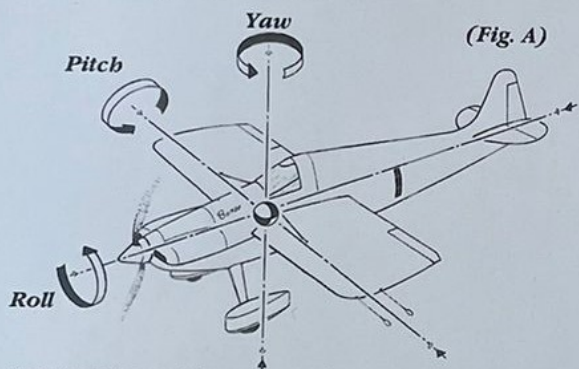
However, an understanding of the underlying principles and forces involved with this type of control line model, will enable us to initially make a more informed selection when choosing a modelling subject, or starting a new model design from scratch, and finally trimming our model for optimum performance.

Therefore if the various parameters are understood we should be able to extract the best performance from our selected aircraft by choosing the optimum compromise within those parameters set by the original designer.

It is important to note that if you intend competing with your VT/R and decide to modify the model in any way from the original design, you may be infringing race regulations. You should therefore first determine from the relevant regulatory authority, and the race regulations under which you will compete, that the modifications you intend do not infringe those regulations.

The Winning Margin!

In the following we shall explore the various factors that determine our model's ability to fly at its optimum racing performance.



A control line model requires to be correctly trimmed in all axis to fly at its optimum performance.

During flight the pilot controls the model in pitch, with the control handle, via the flexible control lines, bellcrank and pushrod to the elevator.

As we are all aware, the engine provides the power, transmitted to the airframe via reaction from the thrust of the propeller to propel our aircraft up to and maintain its ultimate speed, while the major force working against this speed is aerodynamic drag.

The flight trim of our chosen model should be optimised to produce minimum drag consistent with sufficient control line tension and good flight control characteristics at optimum racing speed.

The various parameters can be directly subjected to mathematical analysis. However it's not intended to go via that route here but rather to present them in a more broadly acceptable practical format.

Therefore the following is presented in a practical and visual manner to convey the various factors that affect flight characteristics and performance, and hopefully provide you with information enabling you to optimise the performance of your control line T/R models.

Those contemplating original designs will also benefit from an understanding of the following explanations when related to the particular requirements in their chosen c/l category.

Let's start by exploring the original design principles that were utilised to establish the essential requirements for a stable control line model in the vintage era of team racing, in the period around January 1948 to our official cut off date of January 1958/65.

The main source of reference in the U.K. that were generally consulted during that period were the books of



Aircraft Plans (three view)

THE FOLLOWING is a list of models and full sized aircraft together with plan page numbers set out in alphabetical order. These include models (*indicated thus*) not currently on the Official - VTRSIG - list of B T/R. models. * Denotes * Newly drawn models, researched by author. And are indicated thus *

Page Number	Model	Designer	Nationality	Information source
178	<i>Able Mable</i>	Dick Clark	U.S.A.	Model Airplane News 1950 Jan.
201	<i>Aggressor *</i>	Gordon J. Rae	U.K.	Designer. 1951
206	<i>Aitken F2G1 *</i>	G. Aitken	U.K.	Model Aircraft 1952 May
215	<i>AK1</i>	C. H. Crowe		1952
247	<i>Art Chester Jeep</i>	A. Kochman	U.S.A.	Air Trails 1952 Dec.
171	<i>Atbos *</i>	D. H. Shipton	U.S.A.	Designer
176	<i>Auggi *</i>	D. H. Shipton	U.S.A.	Designer
185	<i>Bartlett Bullet</i>	Warren E. Bartlett	U.S.A.	Air Trails 1952 Dec.
184	<i>Battler *</i>	Ron Moulton	U.K.	Model Aviation, 1950 July
210	<i>Battlo *</i>	M Battlo	Spain	Aeromodelleur. 1952 Sept.
50	<i>Bee Line B R 2</i>	M. Thurston/H. Booth	U.S.A.	(Full sized aircraft) 1922
224	<i>Blue Star</i>	Piaolo Vittori	Italy	Modellismo 1954 May
214	<i>Blue Tango</i>	Al. & Frank Greenwood	U.K.	Designer, F Greenwood 1952
218	<i>Bluebottle</i>	Ciril S. West	U.K.	Aeromodelleur 1953 Sept.
230	<i>Blunder Buster</i>	Ron Schuver	U.S.A.	plan number, CU526X
173	<i>Bonnema Bipe *</i>	Vince Bonnema	U.S.A.	Air Trails 1955 Mar.
217	<i>Bowden S86 *</i>	Bill Bowden	Australia	Air Trails 1950 Feb.
208	<i>Brazel Racer *</i>	Dave Brazelton	U.S.A.	Aeromodelleur 1953 April
60	<i>Brown B2</i>	A. Brown	U.S.A.	D. H. Shipton
63	<i>Bugatti 100 P</i>	Louis de Monge	France	(Full sized aircraft) 1934
177	<i>Bustercon *</i>	C. Con.	U.S.A.	(Full sized aircraft) 1938
200	<i>Butch *</i>	Howard	U.S.A.	Air Trails 1949 Dec.
212	<i>C. 7even *</i>	Janssen Hegedoom	Holland	Flying Models 1951 Aug.
58	<i>Cantilever Pou</i>	Henri Mignet	U.K./France	Aeromodelleur 1952
83	<i>Cassutt Mk.111</i>	Tom Cassutt	U.S.A.	Dec. & Sept. p.751
195	<i>Cardinal Puff</i>	C. Taylor	U.S.A.	(Full sized aircraft) 1936
61	<i>Caudron C460</i>	Caudron	France	(Full sized aircraft) 1951
170	<i>Chatterbox</i>	Keith Conrad	U.S.A.	Model Aircraft 1951 Mar.
62	<i>Chilton DW 1</i>	Dalrymple/Ward	U.K.	(Full sized aircraft) 1936
206	<i>Challenger</i>	Leon Shulman	U.S.A.	Model Airplane News 1949 April
205	<i>Chow Hound</i>	B. A. Thompson	U.S.A.	(Full sized aircraft) 1937
183	<i>Cloud Clipper *</i>	Ray Welch	U.S.A.	Model Airplane News 1952 May
89	<i>Cobra F3</i>	David M. Forbes	U.S.A.	Air Trails 1952 Mar.
55	<i>Comper Swift</i>	N. Comper	U.K.	Model Airplane News 1950 May
80	<i>Cosmic Wind</i>	?	U.S.A.	(Full sized aircraft) 1975
184	<i>Cracker *</i>	G. J. Rae	U.K.	(Full sized aircraft) 1930
223	<i>Crescent *</i>	W. Wheeler	U.K.	Berkeley kit. 1950
240	<i>Crescendo</i>	K. Taylor	U.S.A.	Designer
48	<i>Curtiss Herring no. 1</i>	Glen Curtiss	U.S.A.	Aeromodelleur 1954 Jan.
51	<i>Curtiss R2 C1</i>	Bill Wait	U.S.A.	Model News 1950 Feb.
240	<i>Dalesman</i>	Ken Long	U.S.A.	(Full sized aircraft) 1909
189	<i>D. Artagnan *</i>	D. H. Shipton	U.S.A.	(Full sized aircraft) 1923
181	<i>Dave's Racer *</i>	D. H. Shipton	U.S.A.	Aeromodelleur 1960 July
48	<i>Dayton Wright R B 1</i>	Rntebart/Baummann	U.S.A.	Designer 1950
48	<i>Deperdussin</i>	L. Bechereau	France	Designer
222	<i>Delta Canard *</i>	?	U.K.	(Full sized aircraft) 1920
226	<i>Delta</i>	P. Bataillou	France	(Full sized aircraft) 1912
53	<i>D.H. 71</i>	De Havilland Students	U.K.	1957
244	<i>D.H.TK4</i>	De Havilland Students	U.K.	Aeromodelleur, Annual, 1954
224	<i>Dooling *</i>	John Oliver	U.K.	(Full sized aircraft) 1927
232	<i>Double Dice</i>	Chas Taylor	U.K.	(Full sized aircraft) 1937
52	<i>Driggs Dart *</i>	Ivan Driggs	U.S.A.	Complete Book of The
66	<i>Druine Turbulent</i>	Roger Druine	France	Model Aircraft
213	<i>Dutch 29 *</i>	Jansen	Holland	1955/6
236	<i>Dude</i>	A.D. Carvalbo	U.S.A.	(Full sized aircraft) Flying Manual, 1924
239	<i>Easterner</i>	Dave Ray	Australia	(Full sized aircraft) 1947
79	<i>Falck Rivets</i>	Bill Falck	U.S.A.	Aeromodelleur 1952 Sept. & Dec.
79	<i>Falcon Special</i>	L. Johnson	U.S.A.	Flying Models 1957 Jun.
246	<i>Falkerts S K 3</i>	W. A. Musciano	U.S.A.	1958
188	<i>Fast Cat *</i>	Miss. Bridget McCann	U.K.	(Full sized aircraft) 1949
204	<i>Fastwin *</i>	R. DeGuitre	Canada	(Full sized aircraft) 1948
199	<i>Festival *</i>	A. Piacentini	U.K.	Air Trails 1951 Sept.
226	<i>Firebrand</i>	J. M. P?	U.K.	Peter Russel
97	<i>Fireball</i>	Jim Walker	U.S.A.	Air Trails 1952 Jan.
244	<i>Firecracker</i>	Dick Ealy	U.S.A.	Model Aircraft 1951
187	<i>FireCracker</i>	?	Australia	(Not a team racer) Air Trails
188	<i>FireCracker II</i>	R. (Dick) Edmonds	U.K.	Model Airplane News 1951 Dec.
227	<i>Fourth Dimension *</i>	B. Morley	U.K.	Australian Model Hobbies, 1950 Aug.
209	<i>Fruit Nose *</i>	Ken Marsh	U.K.	Australian Model Hobbies, 1950
197	<i>Gay Deceiver *</i>	Grandville/Miller	U.S.A.	G. J. Rae & Designer.
56	<i>Gee Bee R1</i>	B. Evans	U.K.	The Aeromodelleur 1954 June.
189	<i>Gee Mac</i>			Aeromodelleur 1952 July



Aircraft Speed and Vintage Team Racing

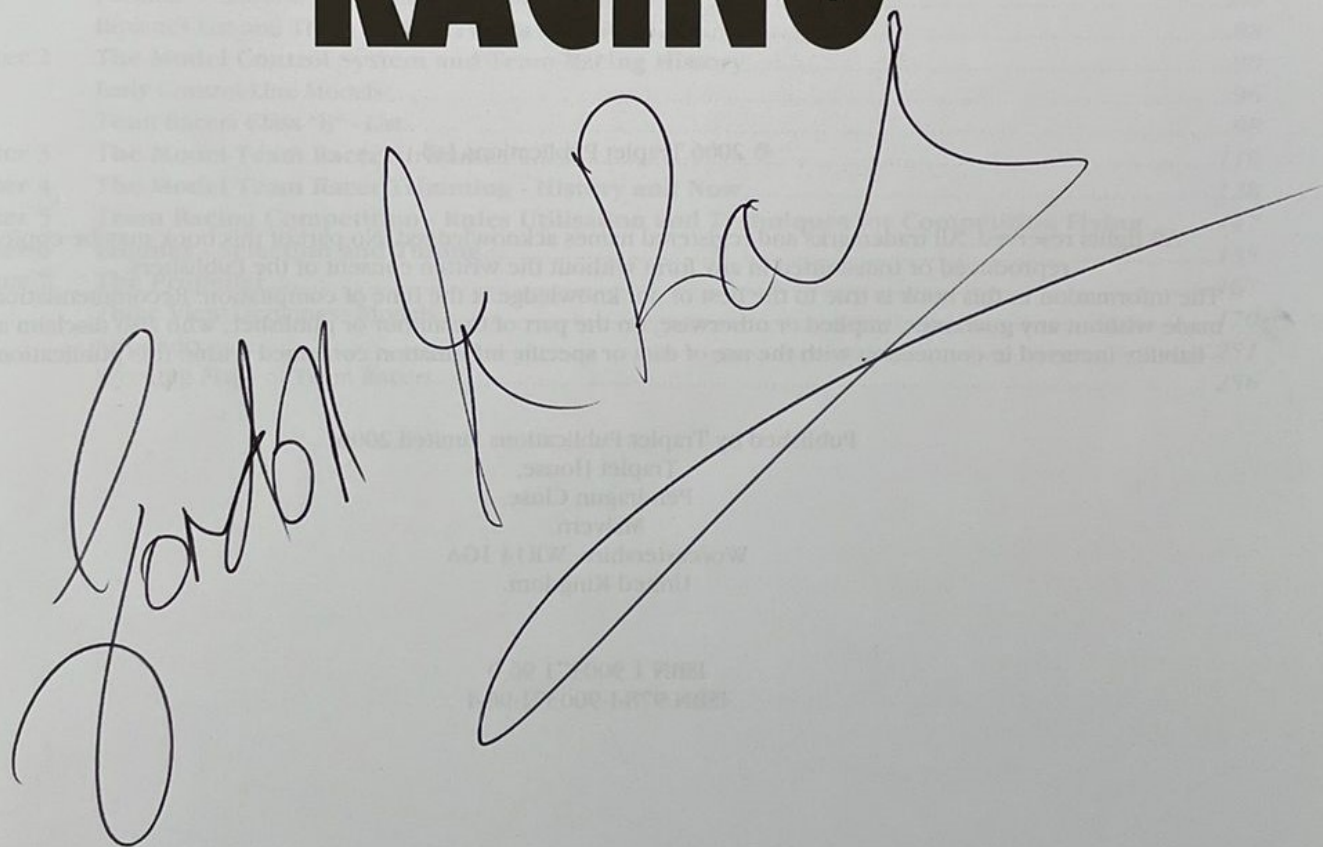


By Gordon J. Rae

THE MODELLER'S WORLD
S E R I E S

Aircraft

SPEED AND VINTAGE TEAM RACING

A large, stylized handwritten signature in black ink, reading 'Gordon Rae'. The signature is written in a cursive, flowing style with long, sweeping strokes. The 'G' is particularly large and loops around the 'o'. The 'Rae' part is also fluid, with a long horizontal stroke extending from the 'e'.

BY GORDON RAE

Introduction

There are basically three categories of aircraft information contained within these pages, presented in three view drawing form with appropriate text.

The first category with historically supporting text is presented as drawings of the full sized aircraft, with the scale bar on the drawings presented in feet. These are not, in the main, recognised as eligible for vintage team racing, unless there is evidence of the particular subject having been built for control line flying during the vintage team racing period.

Secondly model that have competed during the vintage racing period, which are near scale, or generally closely based on a scale subject, the scale bar in this case is in inches, and the drawing is to team racing scale.

Within this latter category there are examples of scale team racing models that, if designed with minimal engine cowlings and fuselage dimensional requirements, invariably ends up with a wing of too small an area to comply with the regulations. These models are often arranged to have the fuselage scaled to accommodate the engine within its cowlings, with the wings to a different scale, to fit closer the optimum area for B class vintage team racing.

A typical model of the later category is the Folkerts SK-3 by that prolific US modeller of the period Walter A. Musciano, shown as a three view drawing. Further examples of models in this category is the Laignor Special modelled by Pall Plecan, his model is close to scale but with an over-scale lower engine cowlings and also, with its wings to a different scale. The attractive TK4, by pioneering UK control line modeller Ron Moulton, is another excellent example of this type of model.

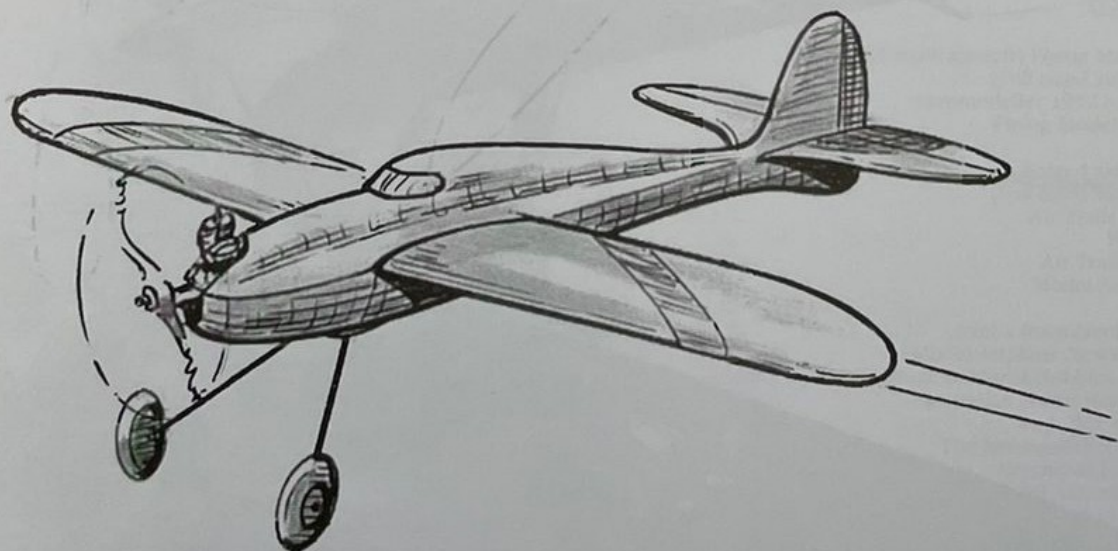
Finally and most prolifically illustrated category, are the Team Racers which in the main are freelance scale like designs originating within our reference period. The overall dimensions of these team racers is determined by the T/R regulations, performance considerations and individual preferences of the originator, and as this category contains mostly models optimised for racing, they are usually the fastest.

The later category within these pages, contains models recognised by the Team Race Special Interest Group as eligible for official competitive racing in the UK and are listed along with newly researched models by the author. The latter distinguished by an asterisk, so (*), and not as yet, necessarily accepted as eligible for racing in officially recognised Vintage T/R events.

This latter group of models also contains subjects for the recently introduced class, the "Barton B", for models up to 1965 which also embraces original designs within the same format.

Newly discovered vintage T/R models are constantly being reviewed by the TRSIG for consideration and possible acceptance as genuine models from the vintage era, with some finally added to the officially recognised list of acceptable models.

A model needs to be submitted to the TRSIG committee together with sufficient acceptable proof of its vintage authenticity for validity. The author is continually researching and adding new aircraft to the existing list of drawings. These will become available as they are completed.



About the Author



Born Gt. Malvern, Worcestershire England 1930. Constructed first flying models in the mid 1940s. Built first Team Racer "Hells Bells" in 1950 fitted with Cadet spark ignition engine constructed by his father and modified by Gordon to glow ignition. Continues as competitive and experimental modeller in various categories with own designs.

Educated in Malvern then trained in aircraft and general engineering with Sir Allan Cobham's "Flight Refuelling Ltd". Served in RAF doing National service, served in Flying Training Command 1949/50, on airframes.

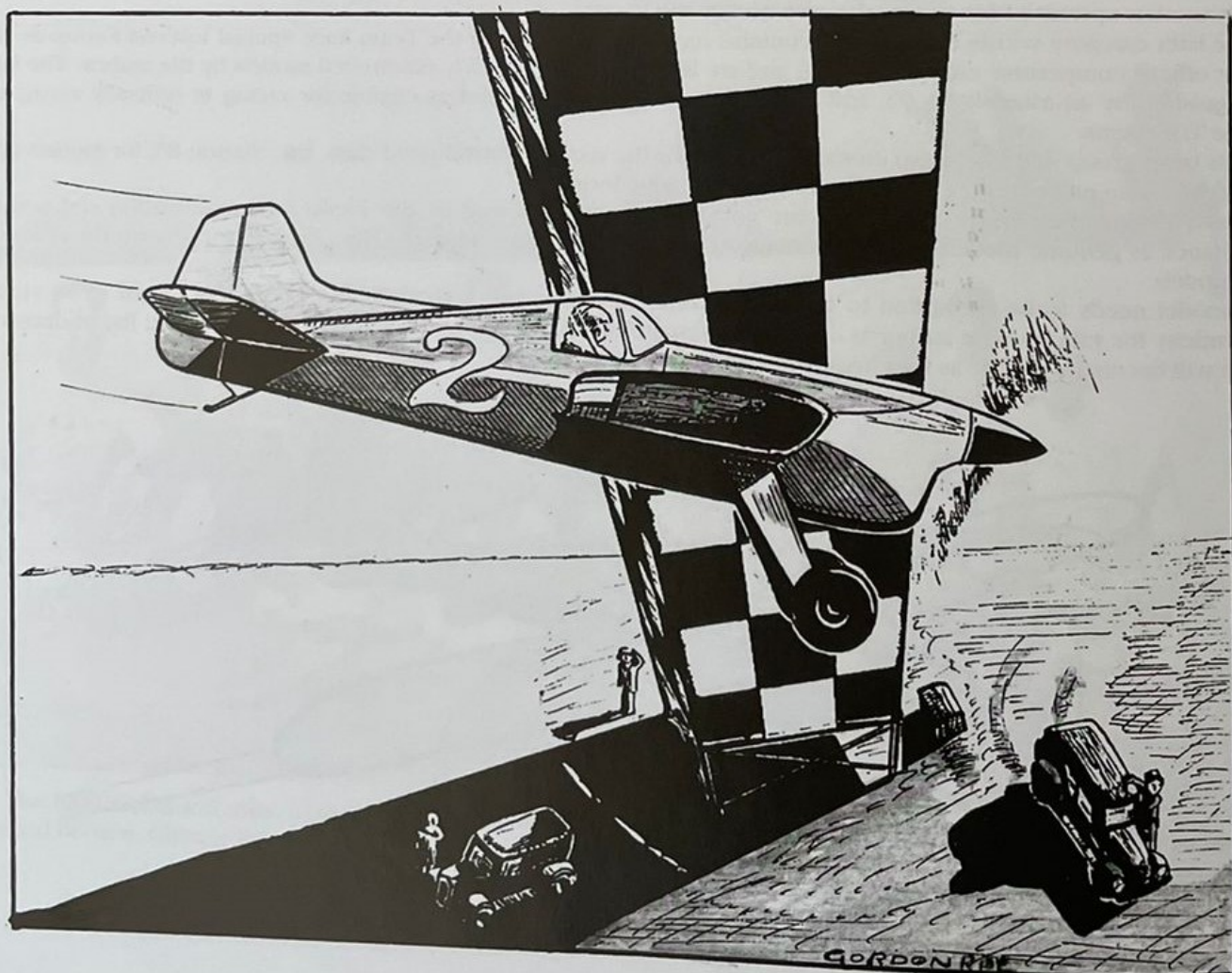
Lifelong employment until retirement, as H.M. government scientific officer on design and research, during which time gained a joint Queens award for Technology.

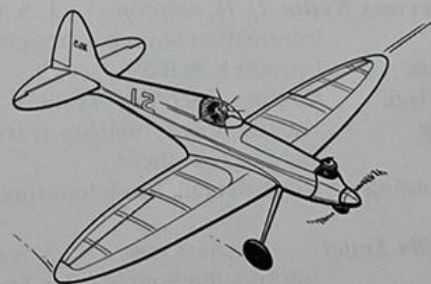
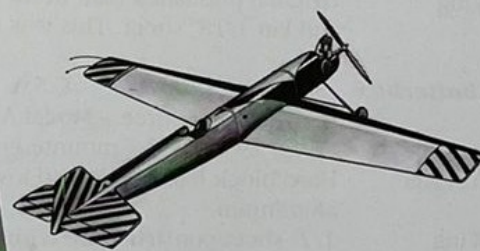
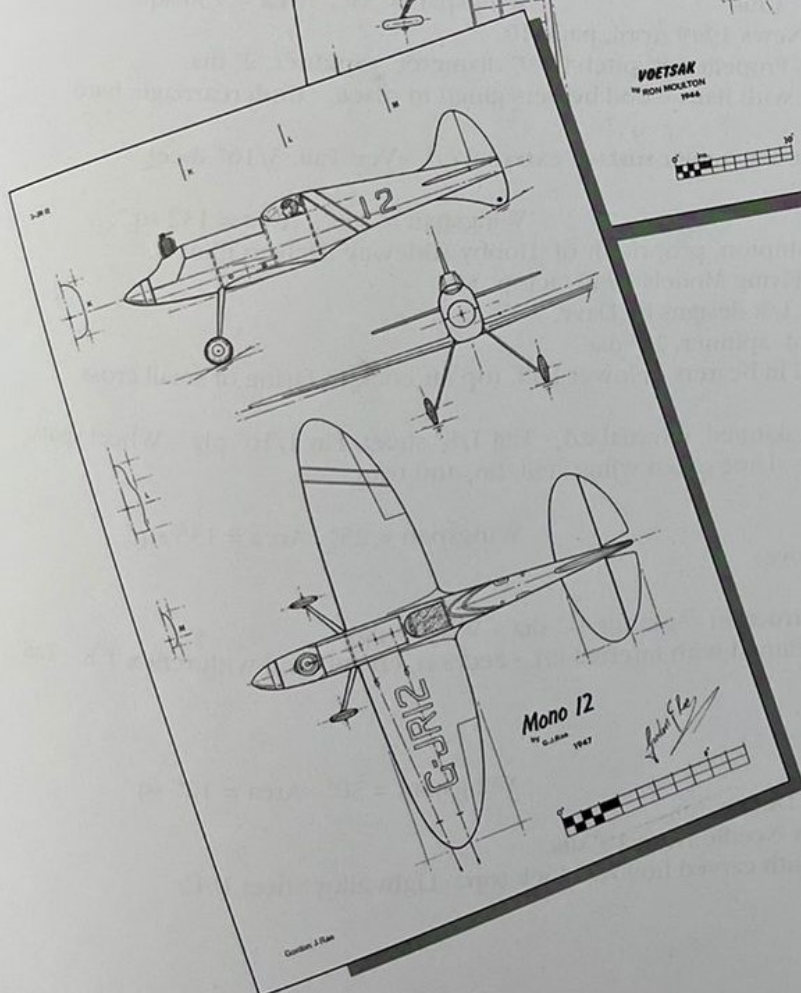
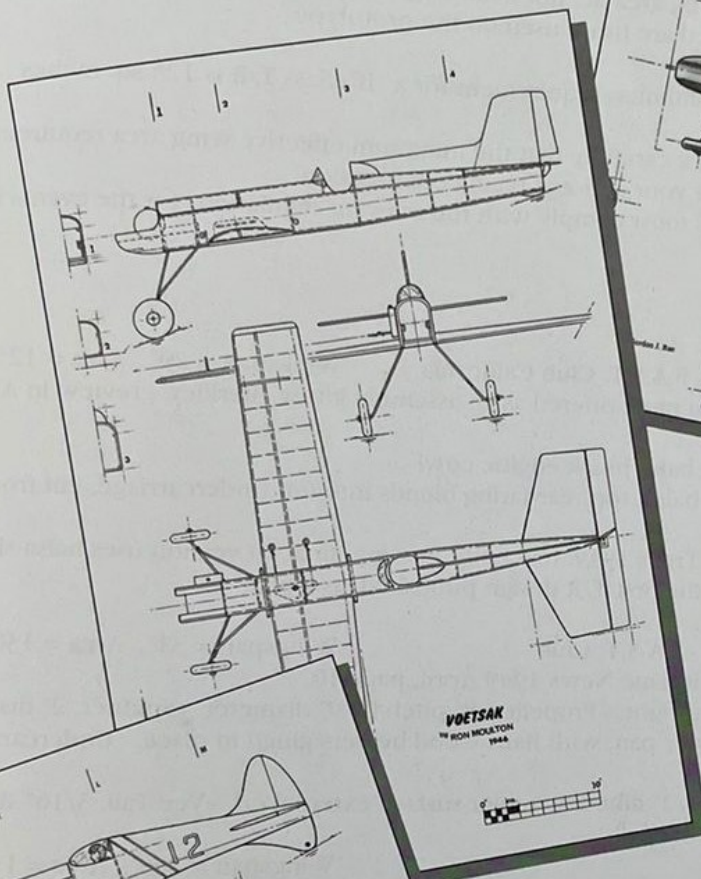
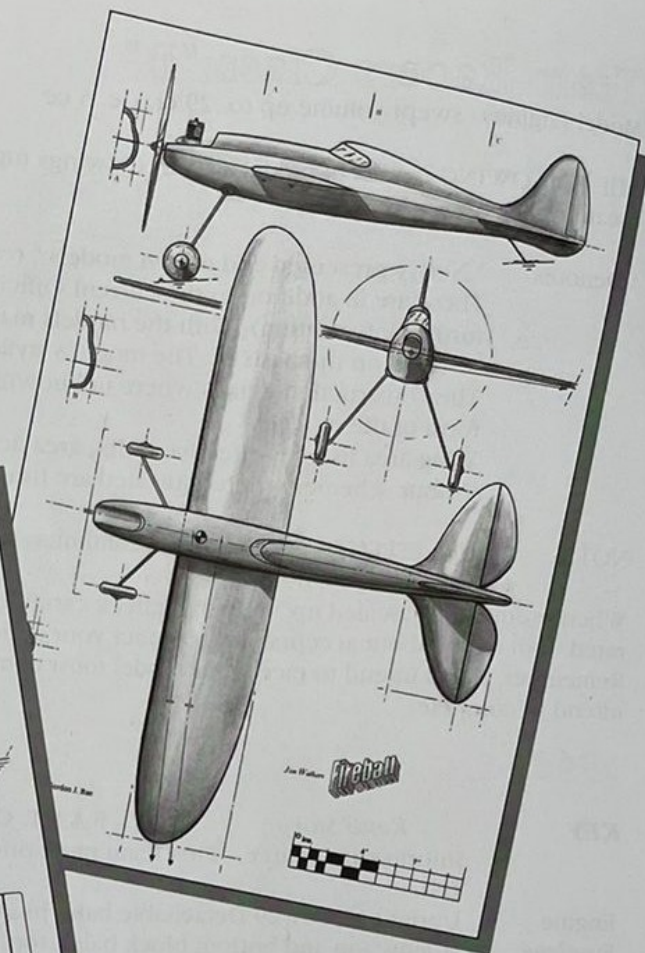
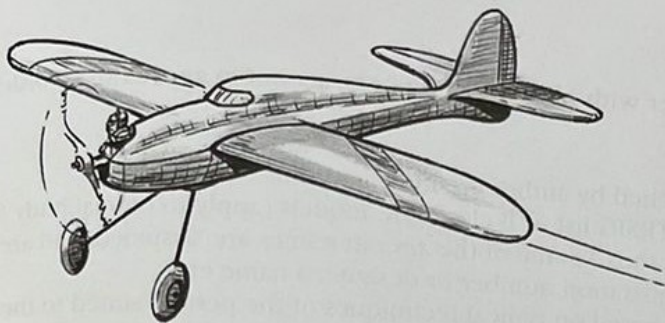
Participated in cycle racing, horse riding, full-sized gliding, paragliding, sailing, sculling and latterly as a member of a walking group and tenor in a choir.

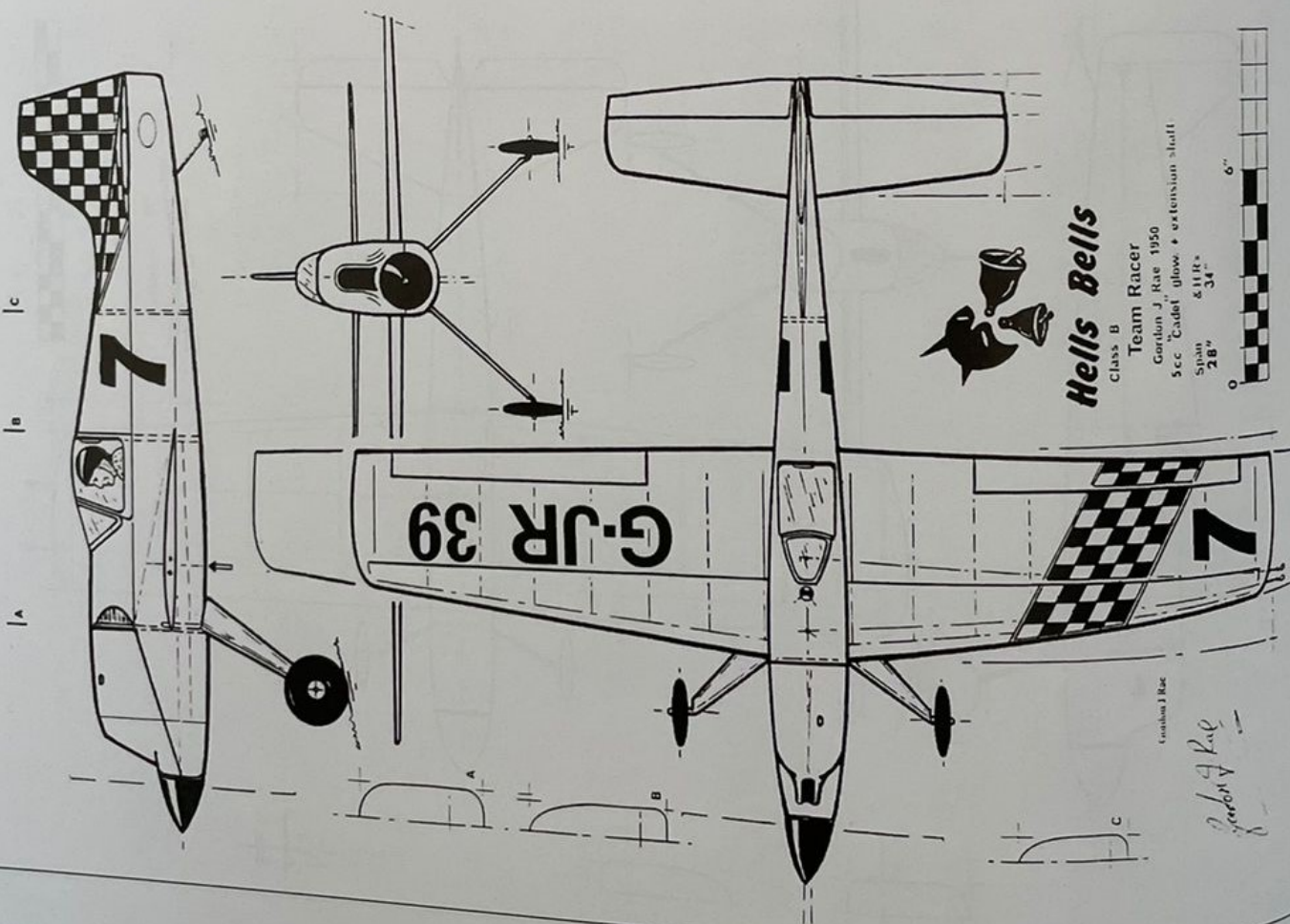
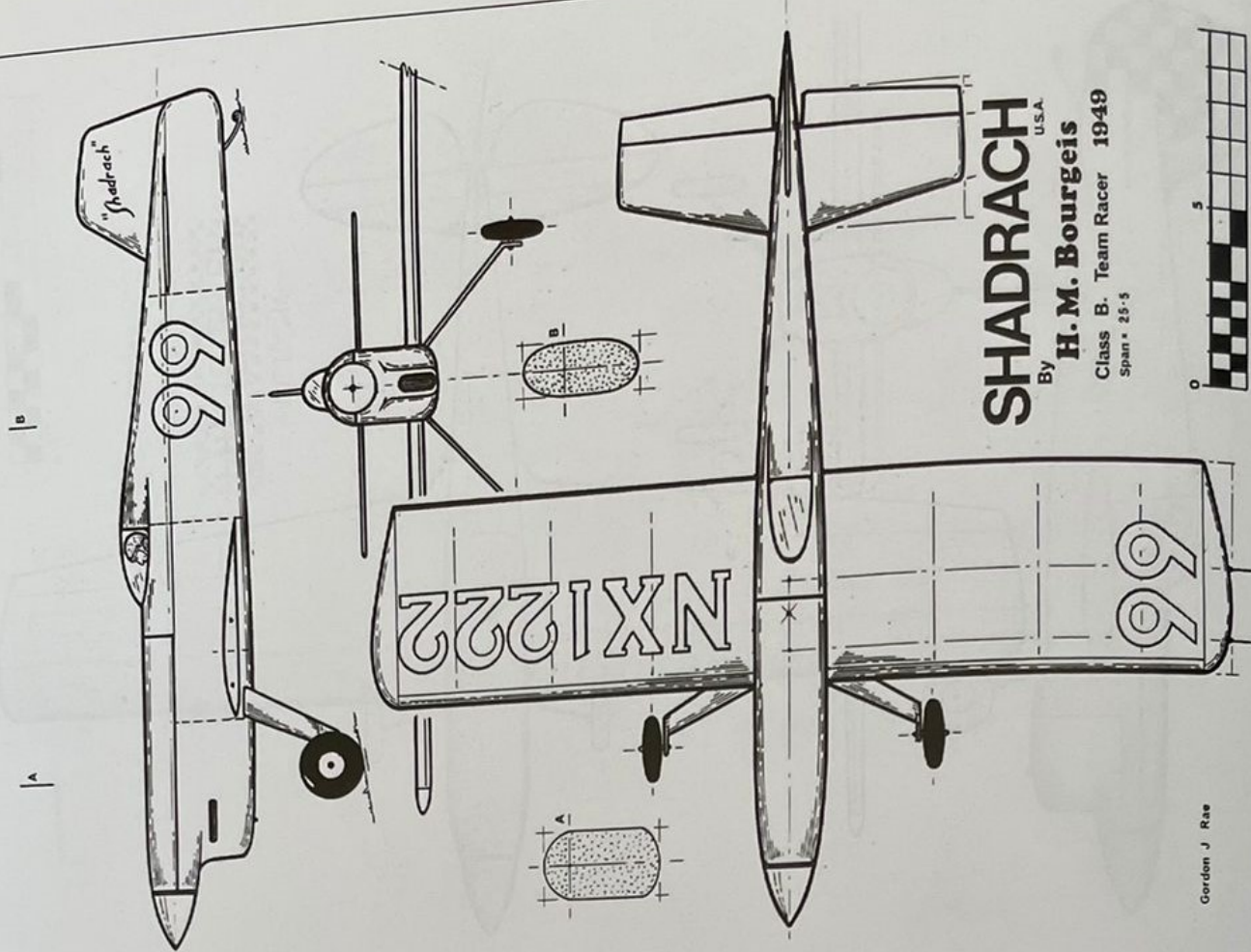
In 1953 started a part time hobby on the design and construction of circuit racing cars, both sports racing and single seaters, engaged in all requisite fabrication and building techniques including space frames, suspension, gearboxes, engines, etc. Operated under the title of RAE (Racing Automobile Engineering 1957 reg.). Successfully participated in various formulas in competitive motor racing circuit events in home country England, Europe and the U.S.A. from mid fifties into the new century.

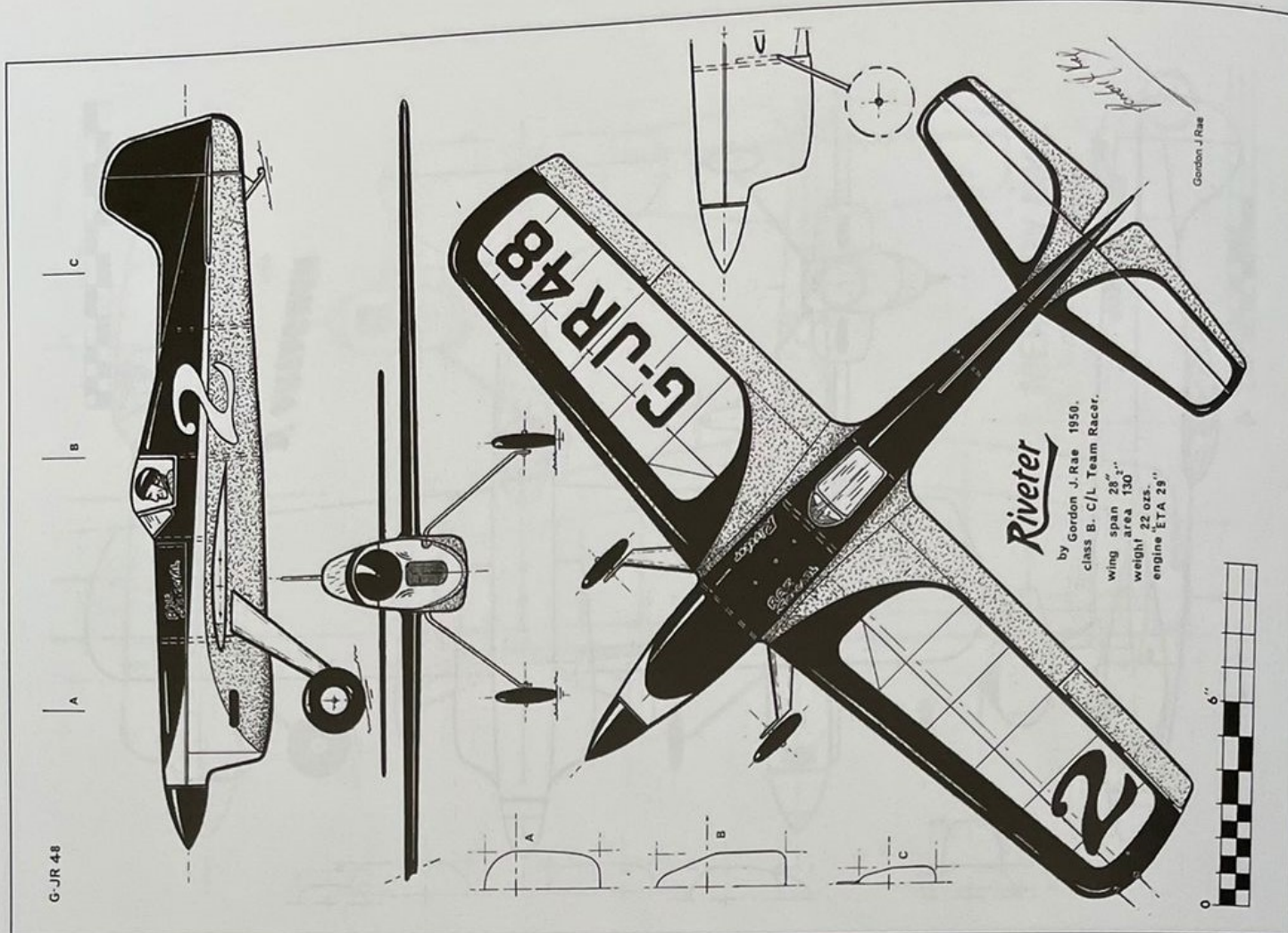
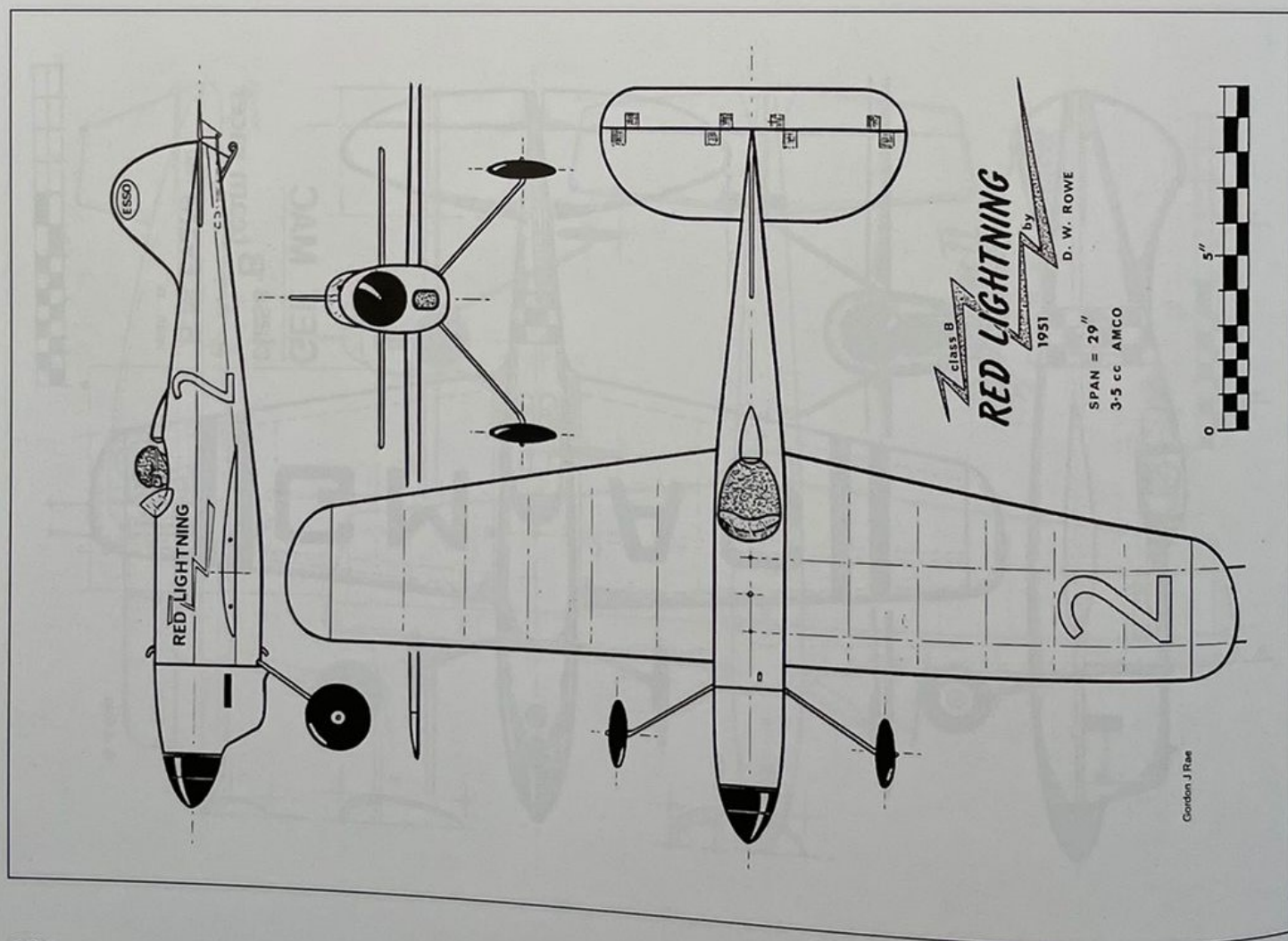
Continued involvement in modelling and related motor racing subjects to present time including technical judging for International Formula student.

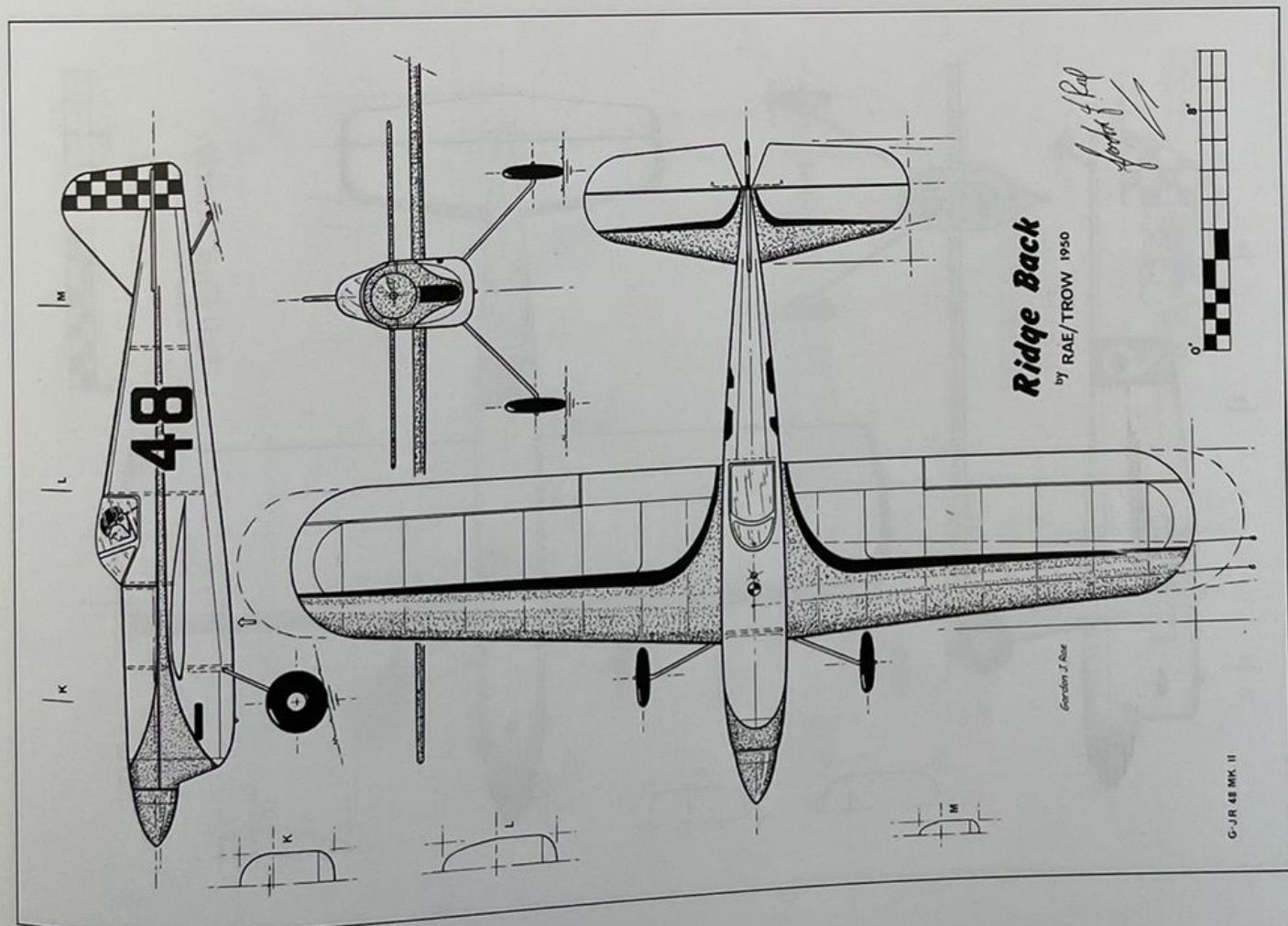
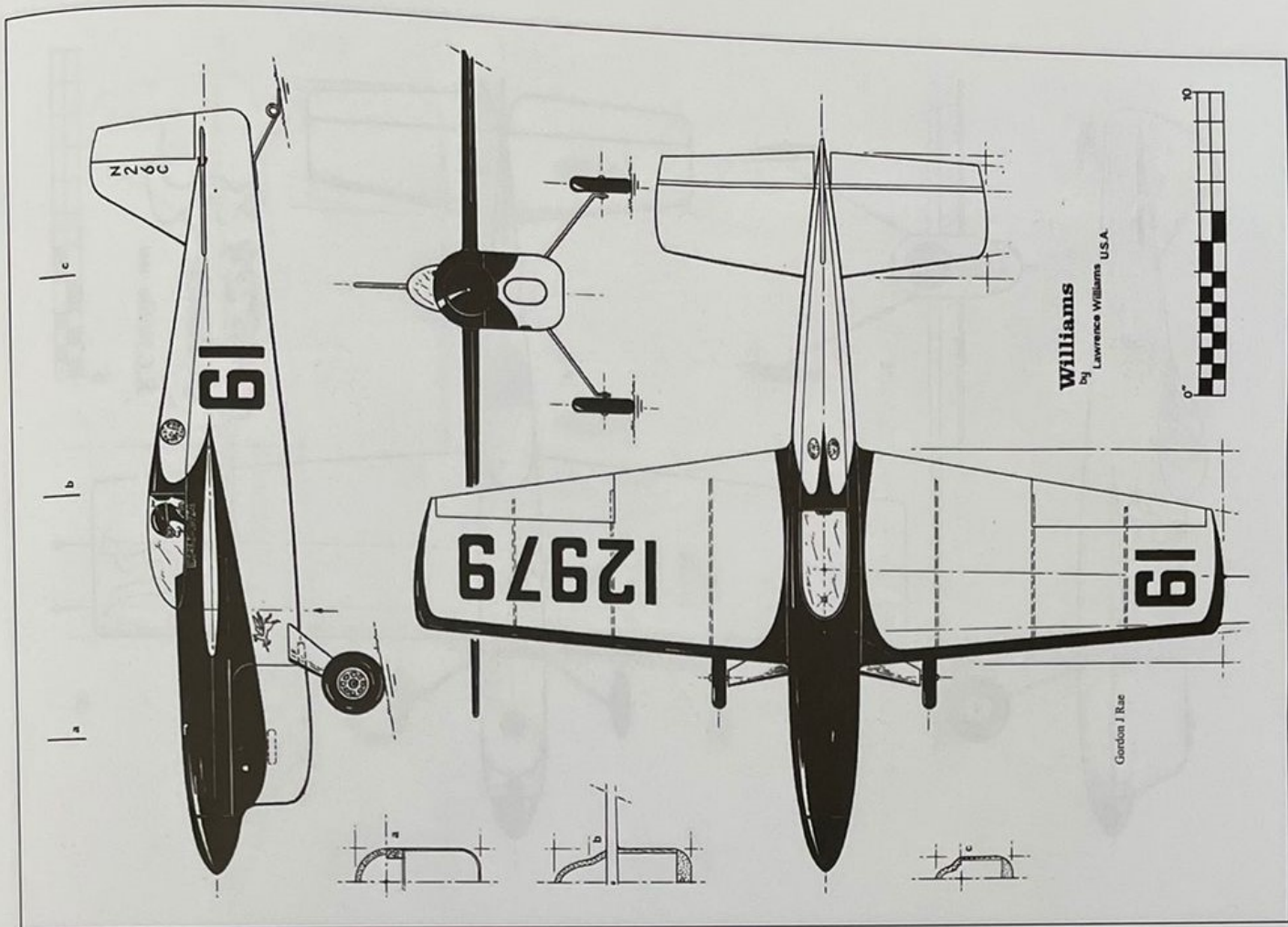
Apart from RAE cars racing in the UK, the first sports racing car of an initial batch of five "RAE type A" produced in the mid 1950s, is still racing competitively in vintage events in California USA. As is also one of five 1965/70 designed sports racing "RAE type E" in Germany.

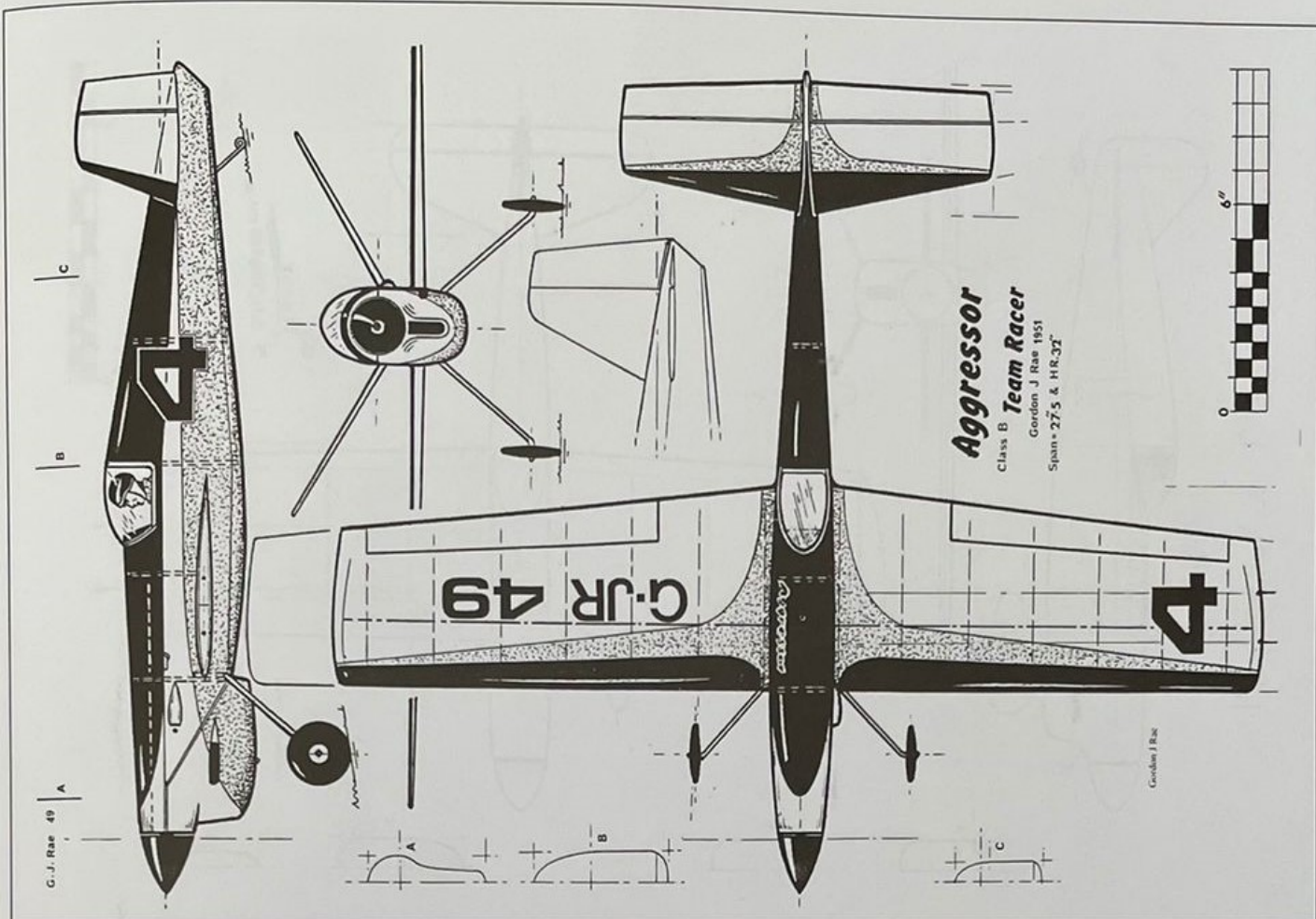
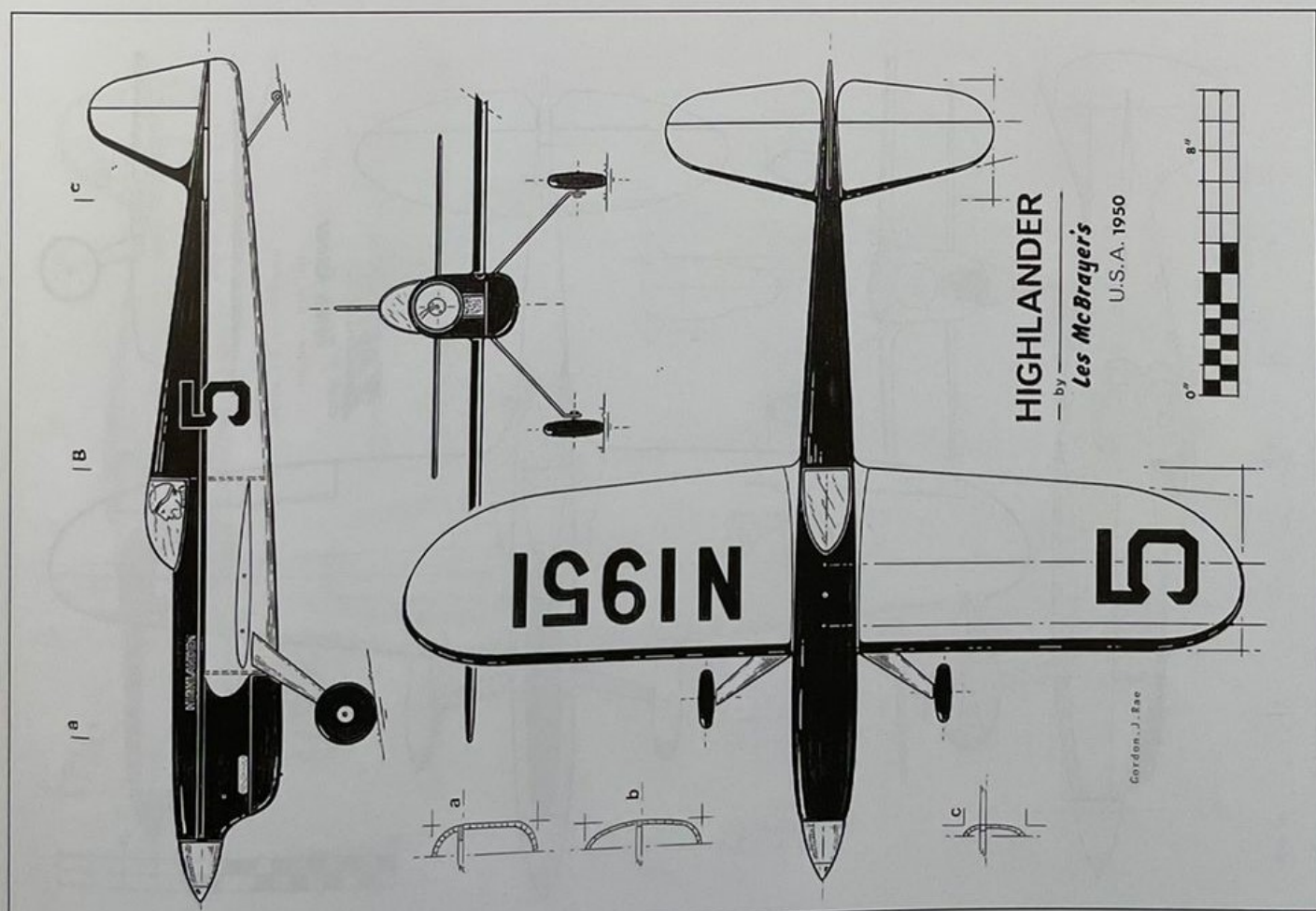


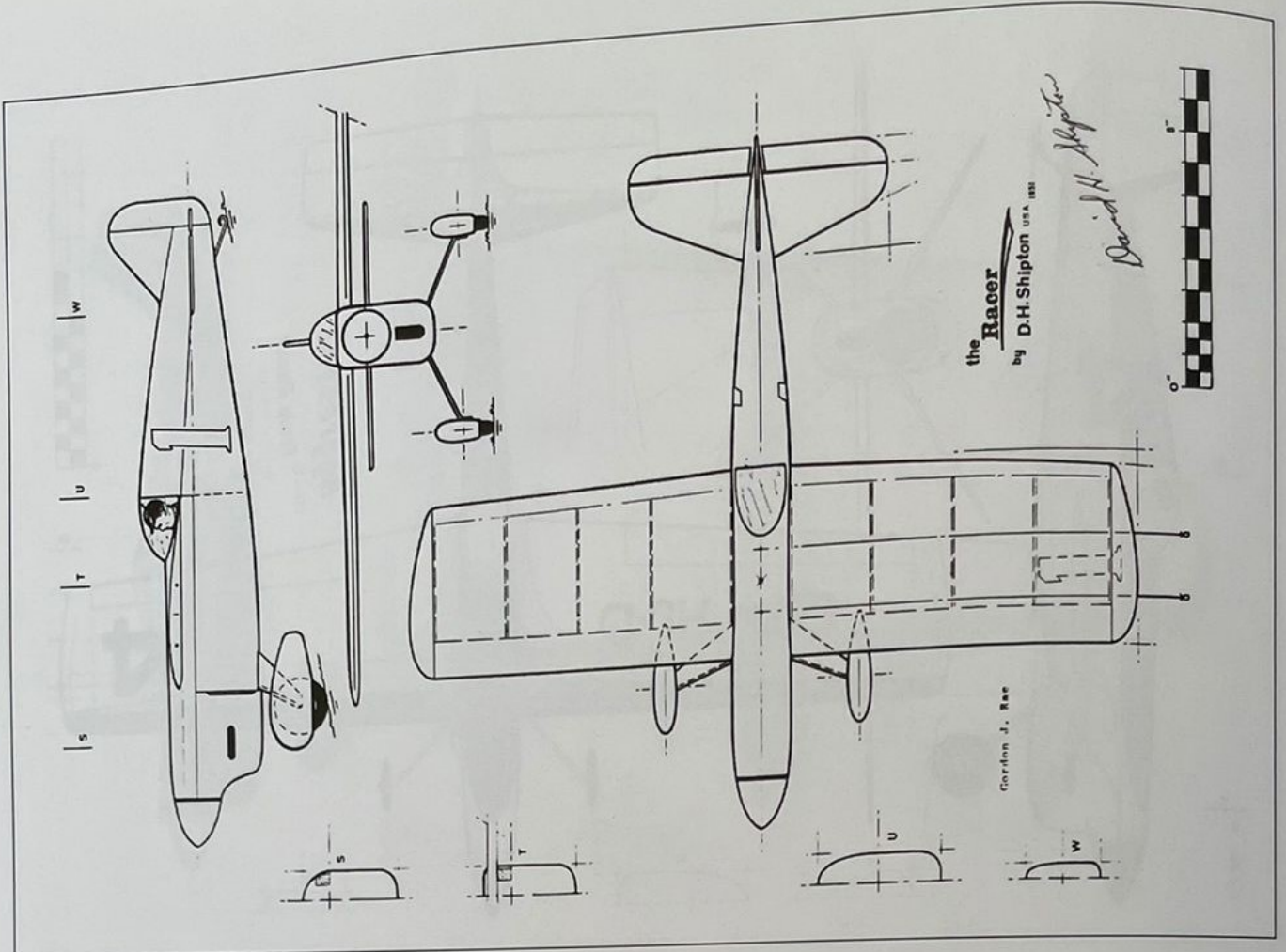
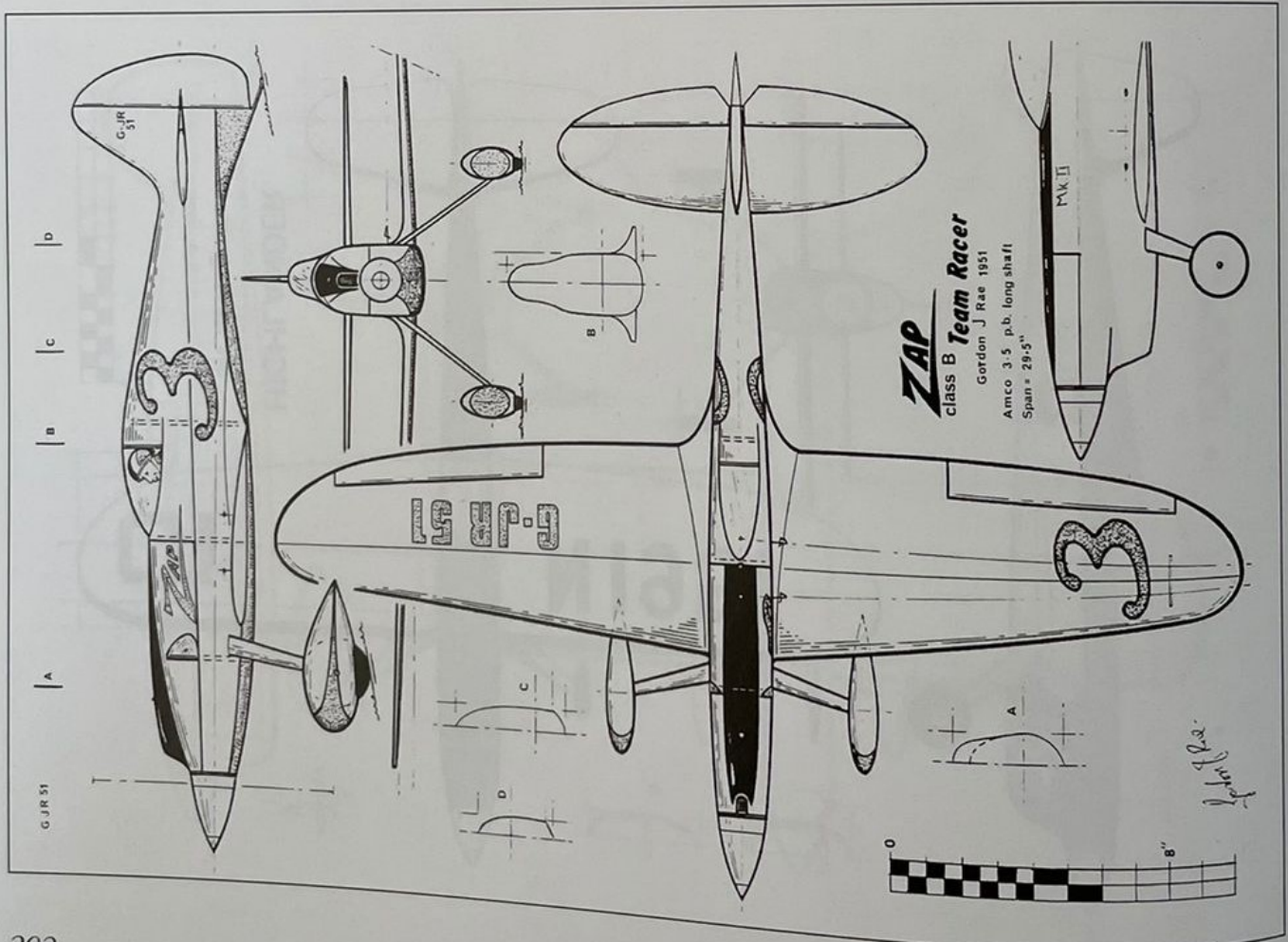


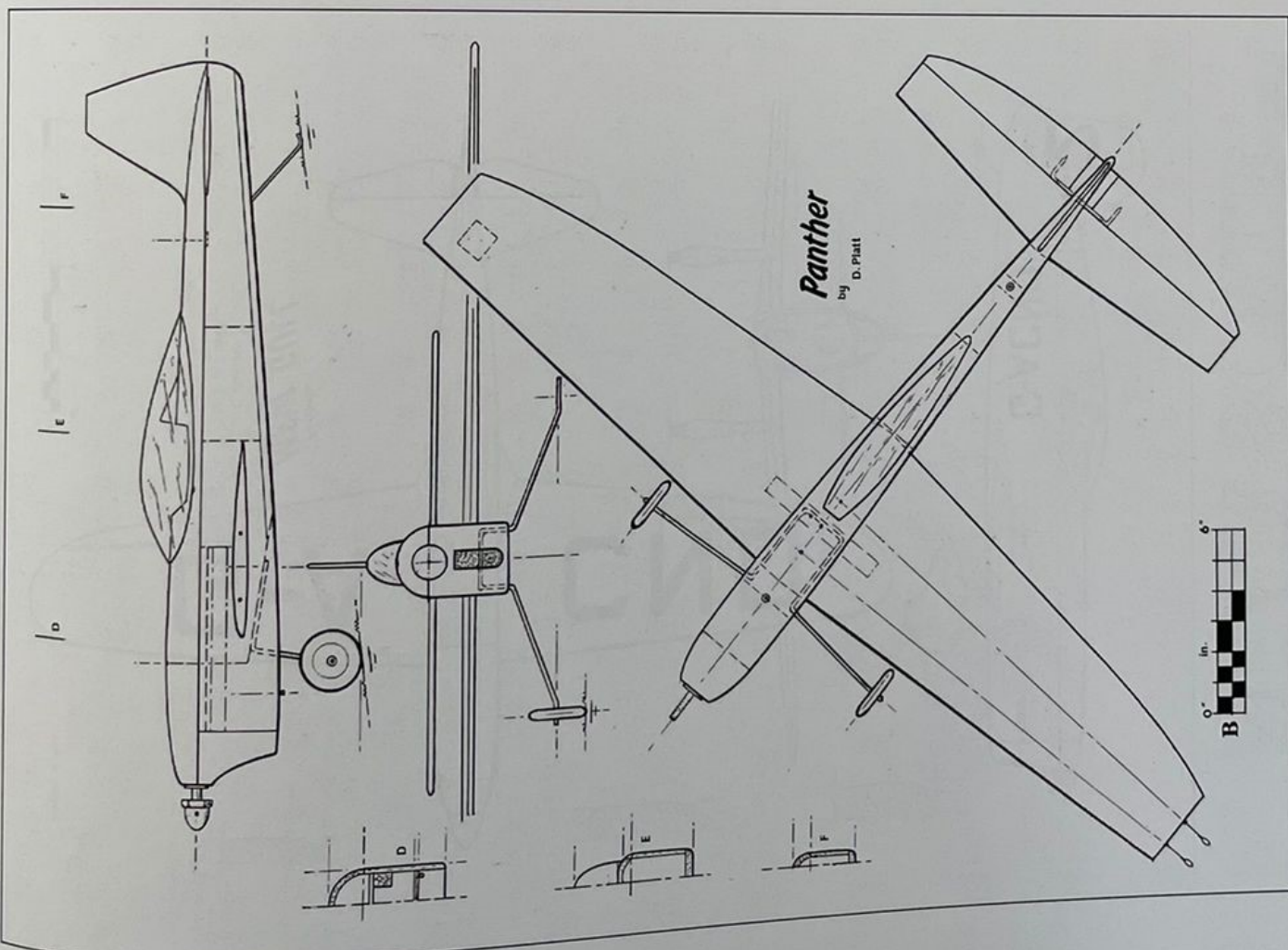
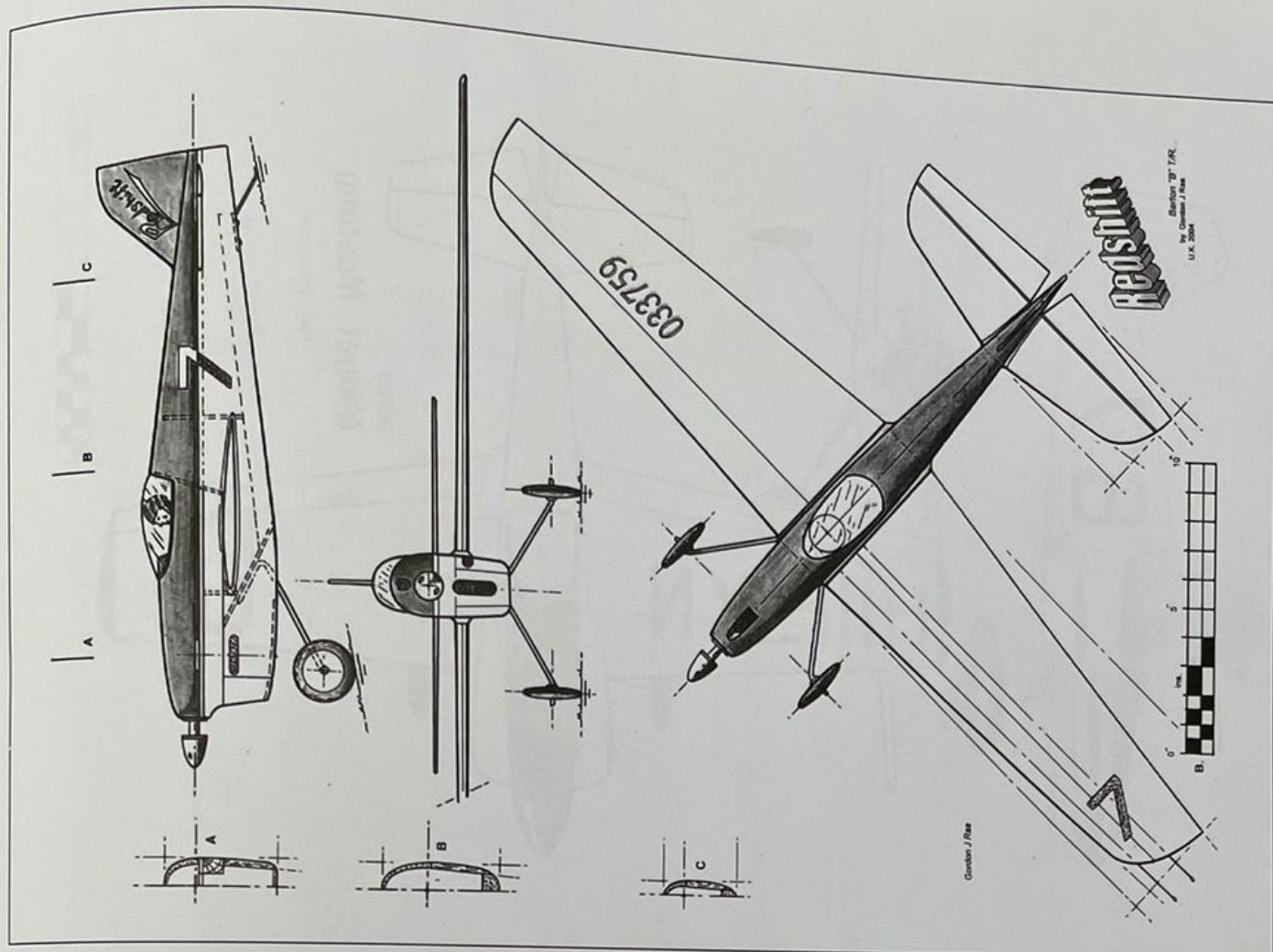














Aircraft Speed and Vintage Team Racing

This book, with the aid of three view drawings, sketches and text, introduces you to the fascinating story of the development of aircraft and the quest for ever increasing performance.

Also included is reference to the important part played by models in the development and testing of new ideas.

Together with the progressive advancement of speed in the full sized field, and the emergence of competitive model aircraft racing in the form of control line team racing.

TRAPLET
PUBLICATION

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February 2nd, 2018.

My dream since childhood has been to fly in a plane and skydive with a parachute. To take off in a bird's eye above the ground and enjoy the free fall. I have done this countless times. I have felt the taste of freedom.

Since I am retired - I am also free. And you don't have to jump with a parachute to feel the taste of freedom. There is no need to wait anymore. Although all my model airplanes in my photos and sketches remind me of what I have experienced in my years of curiosity, I don't have to fly anymore in order to be free.

Like a child again. I go where my eyes show me. I would no longer be able to carry the heavy burden that an adult has to carry. Then there would be no more zest in these years.

I am free and I don't remember what it was like to be an adult anymore. That I ever even had such a phase is only evidenced by my book, written down by me. It is a reflection of my deeds and of the fact that I have left something behind. My 3 granddaughters too. I don't remember their names anymore.

They visit me. I get to know these girls anew every time.

And I have written a letter to myself. To remember. To return, at least in imagination, to my body, my mind and my spirit. In my life. To visit myself.

Gordon Rae

