www.motoringartists.com

redline

SUMMER 2021

In This Issue

GMA Information

GMA Committee Members

David Ginn: *Chairman*
davidginn@btinternet.com

Sean Wales: *Membership Secretary and Financial Officer*
seanlwales@gmail.com

David Purvis: *Administrator*
davidpurvismotorart @btinternet.com

David Marsh: *Webmaster*
opus@opusdesign.uk.com

John Napper: *Redline Editor*
john.redline@yahoo.co.uk

Website

The Guild of Motoring Artists' current website is: *https://www.motoringartists.com*

Thanks to **David Marsh** for keeping this updated. E-mail *opus@opusdesign.uk.com* to submit photos and new or updated information about yourself and your work.

Facebook

The Guild of Motoring Artists has a new Facebook Page to which members are welcome to contribute. It is linked to the GMA Instagram page so a post on one will appear on the other.

GMA members on Facebook, please visit:
https://www.facebook.com/Guild-Of-Motoring-Artists-112345913727808/

Thanks to **Sean Wales** for setting this up.

Instagram

The Guild of Motoring Artists has an Instagram page to which members are welcome to contribute.

GMA members on Instagram, please visit:
https://www.instagram.com/motoringartists/

Thanks to **Sean Wales** for setting this up. To be included, please submit 2 jpegs to Sean. Hashtags are also required for each picture. E-mail *seanwales@gmail.com* to submit contributions or for more information.

ArtyFACTS

1 The Metropolitan Museum of Art in New York is returning African art treasures to which country?
2 What was Enzo Ferrari's middle name?
3 Which famous art museum is to open an American outpost in Jersey City in 2024?
4 Which type of bomber aircraft were based at Silverstone during World War Two?
5 What town is 2009 World Drivers Champion Jenson Button from?
6 Which racing driver was nicknamed 'The Weasel'?
7 How did a digital artist called Beeple make a fortune from something that doesn't physically exist?
8 What is Lewis Hamilton's middle name?
9 How did new team Paretta Autosport make history in this year's Indianapolis 500?
10 Which well-known semi-abstract motoring artist was born in Odiham?

The quarterly ArtyFacts quiz is compiled by Barry Hunter

Editorial

Welcome to the Summer 2021 web edition of Redline. It is another packed issue with lots to read and look at. Once again the Gallery is oversubscribed with some contributions held over to the next issue.

Good news is that the **GMA** finally has another exhibition running, at the **Three Hares Gallery** in Olney, Buckinghamshire. Details elsewhere on the **GMA** website. Fingers crossed for some sales between now and the next issue of **Redline**. Other exhibitions are in the pipeline now that Covid-19 restrictions are being gradually lifted and you can find out about them on the website as and when they are finalised so please keep checking. We may not have been able to exhibit our art over the last year or so, but rest assured our members have not stopped producing motoring art!

This issue also includes another of **Paul Gold**'s Far East museum reviews, this time from Thailand and it is quite a collection! I hope that members are enjoying these reviews as much as I am.

Richard Palmer's model car article is a little different this time as it takes us through the process of making a largely scratch-built 1/8 scale model of a Ford Model B 'woody' station wagon which uses real wood amongst other materials. Fascinating stuff and very impressive in my opinion. The model is not yet finished, so something to look forward to in a future issue.

Rick Herron's story is getting more up to date and this chapter concentrates on his design work for a proposed range of electric vehicles. Something very much in the public eye these days and a project ahead of its time for sure.

David Ginn has a Step By Step article on his painting of the rear end of a Lotus 25 F1 car which has been a long time coming, and he has been giving us teaser photos of progress in his Chairman's Letter in recent issues, but I think you can see that it was worth the wait. Sorry there weren't more pages available **David.**

David Purvis has supplied an excellent Star Photo and I hope that this feature is popular with readers.

This is a momentous issue for me. **Redline** Summer 2011 was my first as Art Editor, so I have been laying out the **GMA** newsletter for 10 years now! Time flies when you are having fun! There were far fewer pages back then. Thanks very much to everybody who has contributed for making it the sizeable e-zine that it is now! **David Ginn** has informed me that June is also his 10th aniversary as Chairman of the **GMA**. I'm sure we all agree that he has done a great job. It's been quite a decade!

I hope you enjoy this issue and look forward to the next one in 3 months' time. Regards,

John Napper

Land Speed Record Latest

It won't surprise anybody to hear that the current World Land Speed Record projects have all been delayed due to the pandemic. Unfortunately there have been other problems too.

Back in the 1960s it was possible to buy a used jet engine for very little from a scrap dealer and build a car around it in a backyard. It's a much more sophisticated business now. Here is a brief resume of the current sate of play of the various projects.

North American Eagle

As mentioned in my last report, back in 2019, this car was destroyed in a fatal accident. It is not known if the project will be revived. It is now known that the cause of the crash was the front wheel collapsing under braking, probably as a result of hitting something during the run but it is not known what.

One consolation for the project is that Guinness World Records have recognized **Jessi Combs**' 2-way average speed of 531.889mph as a new outright Land Speed Record for a woman. However, the FIA does not recognise separate women's land speed records.

Bloodhound LSR

This project is currently up for sale. I don't know how much you would have to pay to take over the project, but an additional £8million will be required to fit the rocket motor and for testing and the eventual record runs in South Africa. Bloodhound has achieved 628mph without the rocket fitted.

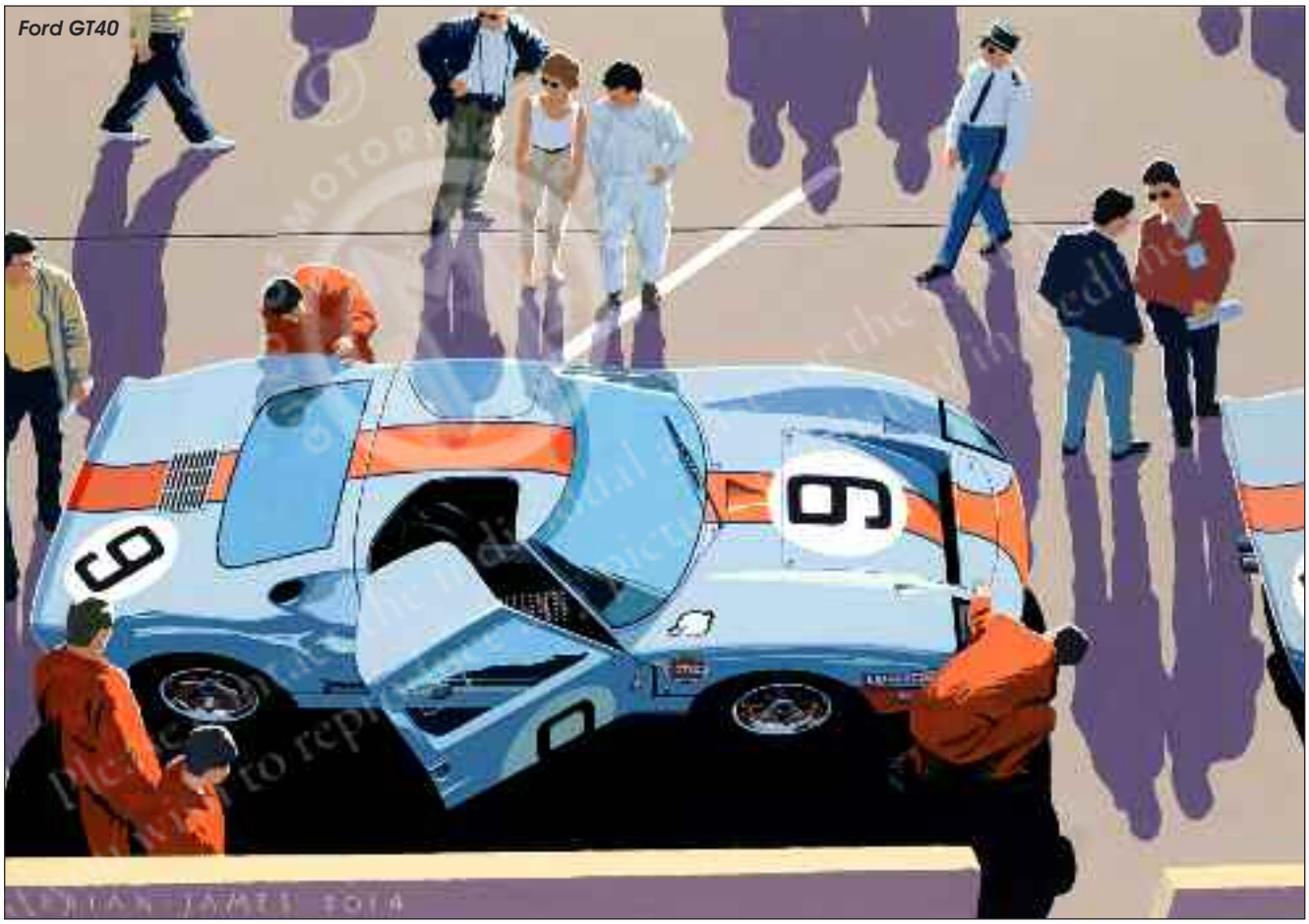
The car is currently on display at Coventry Motor Museum which is home to its illustrious predecessors, Thrust 2 and Thrust SSC, the current record holder.

Aussie Invader 5R

This effort has also been having financial problems but Rosco McGlashan is hoping to be ready to take the record in 2022. A location has yet to be announced but it is intended to be in Australia.

The team has been invited to exhibit the car at the Australian International Air Show in Victoria in December this year but this will require an additional A$50,000 of sponsorship. It's an expensive business!

John Napper


Ford GT40

Brian James

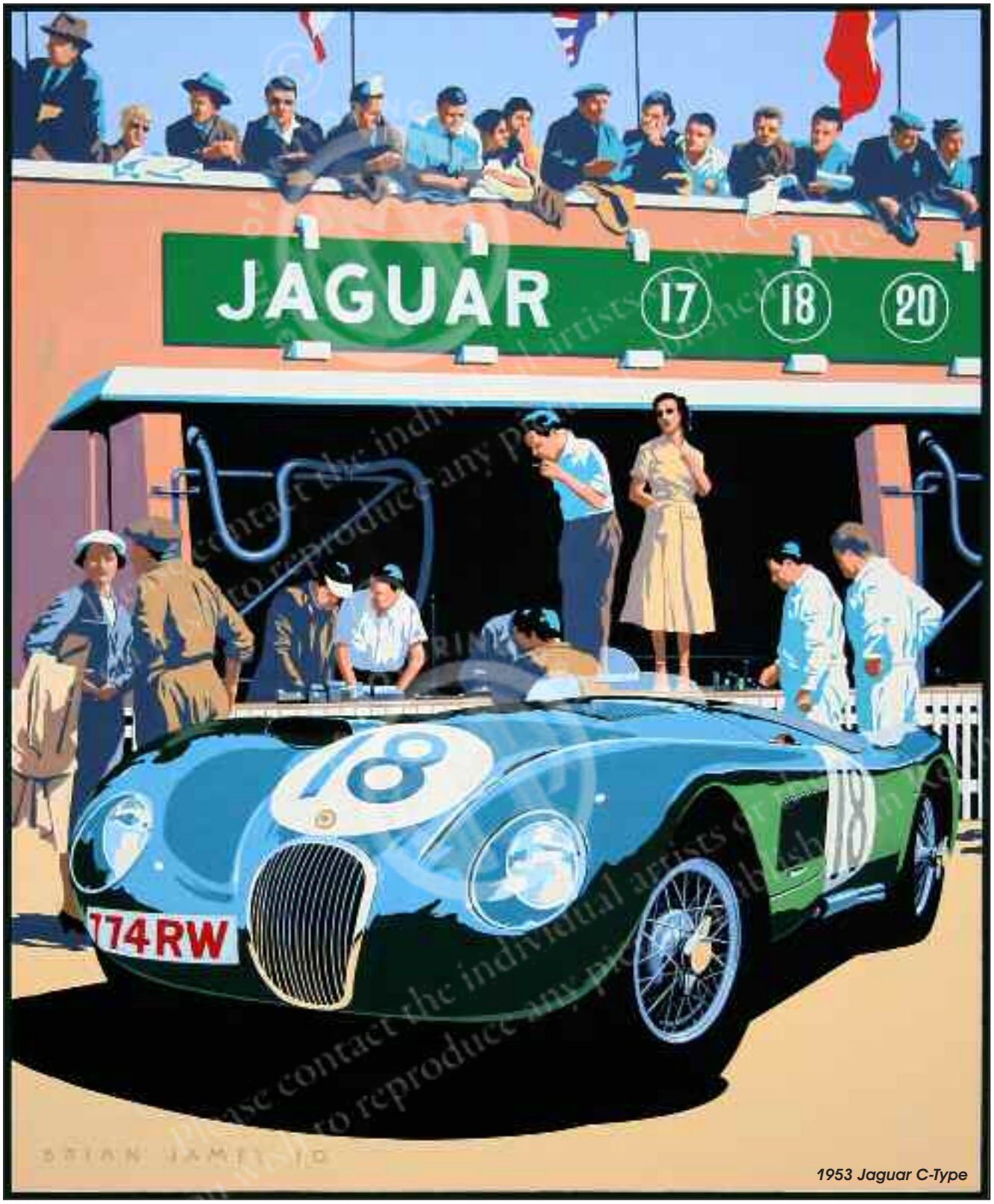
I was born and raised in Birmingham UK, and after school I studied Graphic Design at Birmingham College of Art. After graduating I started a career in advertising, eventually becoming an Art Director. During this period I was becoming interested in advertising illustration, and after 7 years in the business I decided to go freelance as an advertising illustrator, specialising in airbrush illustration, I joined Mieklejohn Illustration a London artists agency, and was soon working on a wide range of national and international advertising campaigns, for companies such as Barclays Bank, British Airways, Jaguar, Volkswagen and Cadburys to name but a few.

Growing up in Birmingham, the centre of the British car industry in those days, I always had a great interest in cars, but I was always too busy on other work to think about painting cars. One of my other interests has been in 1920s-30s Art Deco, graphic design, architecture and of course the cars of that era.

Towards the end of 1990s the highly realistic airbrush style was beginning to fade, being replaced by computer generated images. This meant that I had to change my illustrating style, and with my Art Deco interest, I started developing a style that reflected that era. I began to paint in an Art Deco style, with themes like architecture, travel, things like types of coffee, many of these were published in the US and Europe as posters. Finally I started to explore cars as a subject, and found they had a good reception, with some being accepted on the Carart.US website.

This was picked up by "Classic and Sportscar" magazine and they gave me a double page article in the August 2008 edition. Very shorty after publication I received an email from BMW inviting me to design the poster for Concorso D'Eleganza at Villa D'Este, the prestigious concours event on the shores of Lake Como in Italy, as well as painting the 50 or so cars that took part, for the event year book. They also invited me over

Brian James



1953 Jaguar C-Type

Brian **James**

Jaguar E-type

"Finally I started to explore cars as a subject, and found they had a good reception"

Alfa Romeo T33 Stradale

Brian James

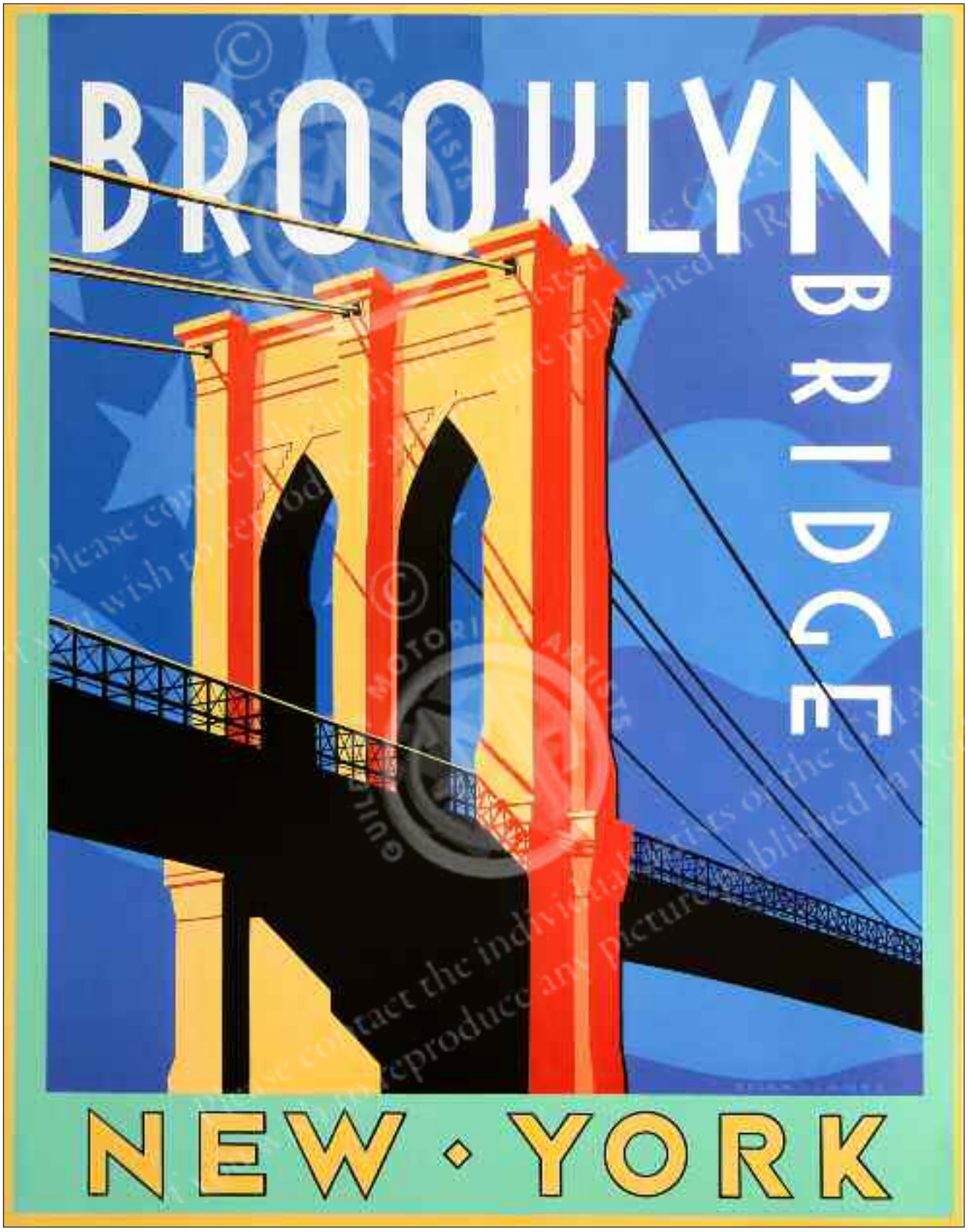
Bedford Estates Mura, viewed from Store Street in London WC1

for the three day event which was an extraordinary experience. It was a commission that that lasted for 8 years. Other clients have included Salon Prive and posters for Castle Combe circuit's Autumn Classic.

An interesting commission came from the Bedford Estates for a mural on the wall of an old petrol station. I painted the artwork as normal, then it was printed on to ceramic tiles, to a height of about 4 metres, and is situated on the corner of Store Street and Ridgmount Street in Bloomsbury. It can be seen on Google street maps!

Also, over the last ten years I have painted Art Deco style posters for London gallery Pullman Editions under the name of Charles Avalon. These number over one hundred and have been travel subjects as well as classic cars. I continue to paint private and corporate commissions, as well as selling prints from my website *www.brian@brianjames.biz.*

Brian **James**



Brian James


EVERYONE'S FAVOURITE CENTRE.
Cadbury
WORLD
THE CHOCOLATE EXPERIENCE
If you've ever wanted to immerse yourself in a world of chocolate, now's your chance.
Take a trip to Cadbury World in the picturesque village of Bournville, Birmingham. It's the only attraction in Britain that is totally dedicated to the history, manufacture, taste and sheer love of chocolate.
Follow the chocolate trail from the ancient Aztecs to the Milk Tray Man, with demonstrations, tableaux, tastings and video displays along the way.
And don't forget the Cadbury Shop at the end of your trip, for our price chocolate and souvenirs. You could even try for a delicious meal at our restaurant.
Go on, admit it. You're tempted, aren't you? Because if you're nuts about chocolate, you'll be mad about Cadbury World.
OPENING TIMES AND ADMISSION PRICES
For further information on opening times and admission prices telephone 021-433 4334.
RESERVATIONS. From 20th March you will be able to reserve your admission tickets in advance of your visit, telephone 021-458 9136.
CADBURY WORLD, P.O. BOX 1918, LINDEN ROAD, BOURNVILLE, BIRMINGHAM. TEL: 021-433 4334.


Wind in the Hair

Brian **James**

Number 12

McLaren M8F

McLaren M8F in the rain at Silverstone (don't often see CanAm cars in the wet!)

The photo was taken with my Nikon D5300, using an AF-S DX NIKKOR 18-140mm f/3.5-5.6G ED VR lens shooting at ISO 200.

David Purvis

Richard Palmer's Model Cars

Part 3 – 1932 Model B Ford 'woody' station wagon

The idea to build a 'woody' station wagon was inspired by another wooden model I was building at the time. I had not worked with wood before, so this was a new and interesting experience.

I had some extra spare parts left over from a previous 1932 Ford kit, mainly mudguards, bumpers, grille and headlights etc., so this inspired the challenge to see if I could create my own 1/8 scale woody.

I had to create a bulkhead and dashboard. I also designed a flathead V8 made with resin and various left-over bits, working from photographs. The doors close with magnets, the dash lights, headlights, taillights and interior light are operational. The diff and suspension still need to be cast in resin. (Quite a delicate job).

The body colour has been matched to the original colour. (Manilla brown).

The woodwork has been varnished.

The seat frames are wooden, covered in black leather. All in all, quite a pleasing result so far, but still lots of finishing off to be done.

Richard Palmer









ALLOY
WHEEL
PAINT

Step By Step – Lotus 25 Engine

As some of you know who follow me on Instagram, this was a bit of a marathon painting, both in terms of its layout, detailed content progress to actually paint this but also the protracted time it took me with my 'daytime' work and life in general mixed in with the pandemic lockdown disruption. I must confess this was not planned, but just happened.

The painting was originally started back in early 2020 to be a 'replacement' painting for the **GMA**'s **Jim Clark Museum** exhibition at ***Duns***, anticipating we would sell a few paintings during the course of the exhibition and the idea was the **GMA** artists participating would send one or two paintings to replenish any sold artworks. I had only to that point sent a couple of Le Mans paintings of the era (Ferrari 250GTO & Ford GT40), but not specifically **Jim Clark** related, so I thought this would be a good project painting.

The photographic reference was from the excellent BBC series book, '**The Power and the Glory**', published in 1992. As you can see, it's of a Lotus 25, from 1963, with the rear engine cowl removed revealing the full glory of that iconic and successful Coventry-Climax 1500 cc V8, with the rear mechanicals and twin chromed exhausts.

However, when I started, I bravely decided to freehand the engine with all its perspective out but I kept finding the juxtaposition of everything did not stack up, so I did what any self-respecting commercial draftsman and technical illustrator should have done in the first place and that was to trace out the key 1:1 on to tracing paper[1], then gridded it up with letters & numbers to create a grid reference[2]. Then I took the canvas and drew up the same grid and translated the A4 reference grid scaled up onto my 20x30" canvas[3+4+5]. This of course still involved free hand drawing the image larger, with the judicial use of the ruler for the principal perspective lines and the exhaust pipes of course.

Over the course of the painting, I tried to restrict the pallet of colours (as I typically do for any painting) to keep it consistent, the main 9 paints I used (plus the two colours for the Lotus Yellow wheel hub and Red connector block) were: Titanium White, Phthalocinine Blue, Paynes Grey, Raw Sienna, Raw Umber, Pale Umber, Burnt Umber, Yellow Ochre, Naples Yellow, (Azo Yellow & Crimson Red).

Apart from 9 colours of the main pallet I did use Azo Yellow Medium for the iconic yellow Lotus wheel hubs and a dash of Crimson Red for one of the electrical connector blocks. Otherwise the rest of the painting was that tight pallet of 9 colours throughout[13].

With regards using the photograph as accurately as feasible, a couple of concessions I allowed myself artistic licence were the road surface and its colour and shadow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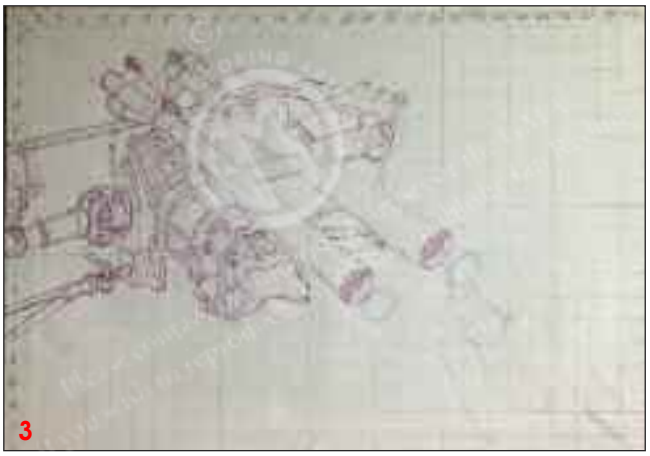
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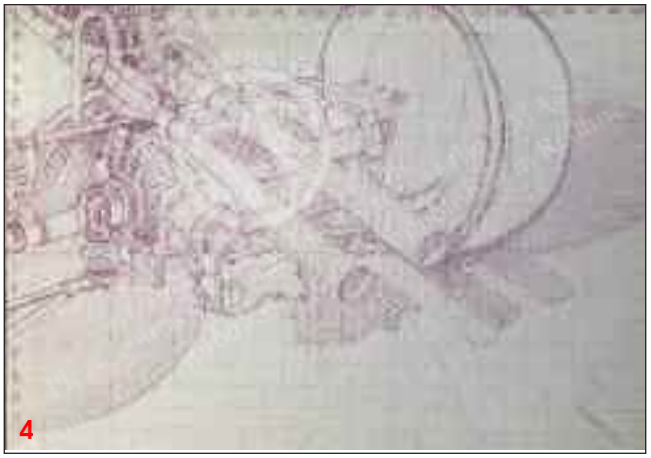
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where I painted it smooth (not bricked), a used more Yellow Ochre and Naples Yellow mix with a dash of Titanium White for the lightest areas and a darker Paynes Grey (which took on a dark green hue when brushed with a touch of Burnt Umber for the deeper shadows. I painted in this 'background or the road surface and car's shadows first, though I did revisit this several times throughout to emphasize some of the shadowing. Then of course I started arbitrarily in one area of the painting for the mechanicals and expanded the painting from there. Normally with car or race car scenes where there is landscape and background I try to tackle various areas of the painting and build out the painting, but in this case, it was clear from the time I spent on drafting it all out in pencil (graphite and red pencil) this painting would need to be built up methodically, almost like a jig-saw puzzle and so I began more or less completing as much as I thought feasible at each step and zone of the painting.

However, it soon dawned on me with the slow progress of an hour or two here and a few hours there, this would take me far longer than I anticipated. In part this is why the painting took me so long, as each part took a lot of concentrating to get it sharp, correct and looking coherent to the rest of the painting at each step. I ended up losing both momentum and enthusiasm some days or weeks. I think there was a period of 5 to 6 weeks where I could not face the painting and it just sat on the easel taunting me to resume! Ha ha ha! This soon became a bit of a love-hate painting, which while I painted it, I was totally absorbed and the rest of the time I simply didn't want to look at it!

Throughout the painting I was trying to get the contrast of the black painted castings, the exposed and polished aluminium castings, the stainless steel bolts and washers, and mechanical struts and axles in polished steel and brushed steel and of course bright stainless steel (chrome) where applicable including the exhaust pipes. This mixing and matching of the coatings and finished to the mechanics also helped define the geometry of all the components.

I must say, that the discipline of this painting in the end gave me greater respect to those artists in our **Guild** and cut-away technical illustrators who paint this level of detail on a more regular basis. It also helped me think logically what the parts were supposed to do, from suspension, axles, gearbox, sump, cylinder heads and exhaust ports, as well as the wheel, brake system and tyre.

I at one point to my shame thought briefly about leaving the tyre detail as slicks but of course I knew slicks were not a tyre option until the early 1970s so I had to at the end, as a last attention to detail, paint in the tread, which again took me three attempts to get remotely right, though like all aspects of the painting I can see glaring errors, but as long as the overall effect looked right allowed myself some artistic licence.

There was one point, late into the painting, where over 75% was complete, I realised I had some nuts and bolts and angles or diameters of the rods or suspension or transmission casing not quite correct relative to each other. At that point I was getting to be a bit of a perfectionist and although it took a day or two (in terms


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10

of hours spent) I repainted numerous discrete sections and moved bolts or changed lines. To assist this, I stuck lots of pieces of masking tape all over the painting with hand-written notes to myself, like move bolt, correct diameter or move rod down or move line up![14] So when I completed all this work over many hours, to the casual observer, it looked like the painting had not progressed, but for me it meant I could complete the painting knowing things were put right and geometrically correct!

You will also note that I painted around all the edges too to continue the painting and perspective, where applicable around the 20mm edges. This did drive me a little nuts in some areas (easier on the road of course! But I really wanted the painting to float on the wall without the distraction of a frame.

I will not detail each image **John** has shown in the article, with a statement or description. as I did send more photos and I thank you **John** for selecting these as the ones for the article to keep it concise. So I will leave the sequence of the photos of the various steps speak for themselves. The only caveat here, is that despite the love hate relationship I had with the painting throughout what became a 9 month period (gestation!) I am glad I took the subject on and the detail it drew me into, as I learned a bit more about myself as an artist too and it did absorb me each time I picked up the paint brush. This painting also allowed me to escape to the halcyon days of 1960s formula 1 and the great achievements the likes of **Jim Clark** made driving such wonderful race cars, with such beautifully (artfully) designed machines. My follow-up car painting (the 1922 Vauxhall GP at Brooklands) watercolour and aquatint painting only took me 3 weeks on and off. That was a refreshing quick painting for me! I think the next one will be an even quicker acrylic, with the car at speed, if not a blur and far more loose affair as I never want to paint another bolt in that much detail ever again!

Anyway, I hope you find the images and the article of interest and any questions, please let me know.

David Ginn


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12

13

The finished painting!

Editor's note:
Pictures have been numbered in sequence order. Where relevant, picture numbers have been added to the text, in red.

Jesada Technik Museum – Bangkok

Another one of my obscure Museum visits was this fantastic place about 45 minutes from the centre of Bangkok. I had read what little I could find about the museum and arranged a taxi (about £4 each way) from the hotel. The driver was unsure of the location but I had a printout of the address in the local language and he assured me it would be fine. We arrived about at a pair of steam trains parked in the middle of a field and I was feeling a little apprehensive, but 200 yards further along I came across a London Routemaster Bus and a Cessna Birddog aeroplane parked outside the museum.

Entry was free and the staff were a little surprised to find an Englishman at their premises. A little about the museum, founded by **Mr. Jesada Dejsakulrit**, a local businessman, who had a passion for vehicles and engineering who visited Europe regularly for work and spent time at Auto museums there. His first purchase was Messerschmitt KR200 in Switzerland around 1997 and within ten years he had accumulated over 500 cars, bikes and associated paraphernalia. He opened his museum to the public in 2007 with the intention of educating younger children (and adults) with technology, Something he still does to this day, free of charge, inviting schools and colleges to visit. I met **Mr Jesada**, they actually let him know I was there and he made a point of coming and speaking with me, informing me there was another storage yard further along the road which I was welcome to browse. The museum also hosts classic car shows, rallies (including overseas) and many events for car lovers.

So, on to the museum. Although there is a roof most exhibits are in a large hall with open to the elements ends. The first hall has cars awaiting restoration, a large collection of around 150 mopeds and scooters – staple transport for the area – including licence built Vespas and similar – all in various states of repair, and then along the back wall, the biggest collection of pedal cars I have ever seen, both modern and vintage.

Heading into the main hall you come across a Peel Trident, and then a line of Microcars running the length of the building, many that I couldn't identify at first look, a Solyto or Arola anyone? Next along was the bubblecars and smaller cars, Fiat 500, Mini Moke, Mehari . Along the next line were various early Citroen Light 15 variants and then 12 or so 2CVs, which had been used in a rally across Thailand, Laos and others, all very colourful and shiny. Then a couple of lines of vintage scooters all in better condition than the storage area, including some very rare European makes. More microcars, Velorex, powered rickshaws, small Honda Kei cars, again a long list of vehicles I was unsure of identifying. Vehicles from every corner of the globe, far too many to mention.


A selection of mopeds


Scooters in front of racks of pedal cars


Bubble cars with BMW Isettas nearest the camera


Fuldamobil


3 Velorex cars


Citroen DS


Mercedes-Benz section

Then onto the bigger vehicles, Mercedes saloons in abundance, very popular here in Thailand with the more affluent. A selection from the '50s to the '90s including a fintail ambulance. I spent 5 hours just in this hall, and then walked along to the storage area, there were 30+ Cessna Birddog aircraft all lined up in pieces, without thinking I wandered among them taking photos – forgetting the local poisonous wildlife but got lucky – apart from the stray dogs living in amongst the aircraft. There were London and Liverpool buses parked here along with helicopters, US Schoolbuses and a variety of parts and engines.

After 7 hours I decided it was time to leave, my taxi had decided he would stay for the day too so gave him an extra £5 as agreed and headed back to central Bangkok. This museum had the widest variety of vehicles and bikes I have ever seen and was probably one of the most memorable for me.

Paul Gold


Peel Trident


Assorted microcars


Goggomobil TS300 convertible


Tatra 600


Tatra 604


Citroen 2CVs


NSU Sport Prinz

Jim Hogarth and ERRA Incorporated

The need for improved batteries and affordable, efficient electric vehicles continues

The way America and the world do business has changed radically in the last few months. Because of Covid-19, we will need to learn how to live with nature and interact with other living things, responsibly. As a civilization we are also transitioning into a new energy economy and reassessing our place in the scheme of things. It is no longer business as usual but a period with potentially great upheavals and radically important new ways of thinking as well as the most critical transition for man from fossil fuels to passive-solar energy. This is the most pivotal point in mankind's history as it is also a do or die situation.

Whether climate change exists because of man or not or because of forces beyond his control we will need to convert to more efficient ways of extracting natural resources, processing it, and manufacturing. We also need to make more efficient our ways of moving about the planet. That is if we want to expand into the solar system to explore the Galaxy.

American Auto industry

The American Auto Industry has changed immensely since WWII, in overall packaging, due to metallurgy, chemistry, and the development of synthetics and plastics as well as automation and computer design. The changes may come faster and be more unsettling than anyone can ever imagine. If we don't do something about the planet heating up, which is melting the polar ice, and is measurable from year to year, the scope of new disasters will beggar the imagination. I have friends and relatives who don't agree on the causes for the planet warming up and the loss of polar ice. There are those who worry about the melting of the permafrost and how fast it is approaching and others saying there is no cause for alarm, and we shouldn't worry at all, but that should not be the point. As Homo sapiens we are growing in numbers and need to expand way beyond the bounds of earth into that new dark, cold but exciting world out there called space. Mankind is an indomitable explorer and will look into every new nook and cranny he encounters. He will not be deterred.

How quickly the planet will exceed 2 degrees C above pre-industrial average temperatures can be debated by politicians and theorists if one likes but the more prudent approach is to look at the most efficient way to develop, mine, and manufacture mankind's needs and to continue to lean out what powers it has. As a heat engine, our civilization requires more and more energy. Whaling gave way to oil. Petroleum and coal are being replaced by passive-solar means as mankind continues to find new energy sources, each a bit more efficient than the previous one. So to invest in new technology is the natural way our civilization has gone. It has just taken longer to transition away from fossil fuels.

Both conservatives and liberals enjoy the benefits of a market economy and investment in the stock market and high tech is the most interesting and potentially rewarding field to put ones money into. Whatever the philosophical reasons we have for our motivation, it is inevitable that we should continue to look for ways to escape the gravity well of Earth. We need to get into outer space and high tech is what will get us there. It will also make our civilization more efficient, which is what we need, and geo-engineering might save the planet if that is what is required. There are educated people who argue about the nature of climate change and have different views on the processes of natural geological time scales while our resources are diminishing here on earth and being dissipated by entropy. It costs more to drill deeper and deeper for oil so we have to husband vital resources till we are able to fully explore the solar system. One can easily forget that it costs energy to get energy.

IT systems are being built and improved by automakers for use in self driving cars and remote sensor devices which will be needed to build automated machines and manufacturing capabilities in space. So many of those entrepreneurs who want to go back to the Moon or space are involved in automotive, aircraft, and rocket design. For this reason, these technocrats need not argue over whether man should move from a carbon based energy system to one using solar energy. Eventually the reason to transition to renewable energy is that it will be the most available and reliable source for power to get us to the Moon and Mars and to develop self-supporting colonies. Because of that, renewable energy has become the wave of the future and any thinking businessman will diversify and invest in this new energy economy. That said I should now go back to the story.

When I was about eight years old and living in Argentina my mother took me aside to tell me I would be going to a summer camp for boys in Cordoba, in the foothills of the Andes. For some reason, possibly because of my asthma, I would be rooming with two American boys,

one whose last name was Tucker. She then pointed out that he was not related to the famous Tucker who had developed a new, safe and radical automobile called the Tucker 48. Maybe she told me that to peak my interest. I had no idea what she was talking about but since it was a car, I became fascinated with it and the name Tucker has stuck with me all my life. I learned more about the man and his situation as I grew up. He became a hero of mine. After seeing the cars and the books about Preston Tucker I fell in love with his car and ideas. It became more ingrained in my mind when I was able to see the film and see his cars on screen with some of my favorite actors playing the roles of Tucker alongside those who helped him design and build one of the most audacious vehicles of the post-war era.

Alex Tremulis was in that group of individuals who contributed to the design of the Tucker and other vehicles of note, which included Brook Stevens. Preston Tucker however faced the might of the big three automakers and was unable to continue manufacturing what was turning out to be a head turning automobile. Had it been successful in 1949 it would have caused an upheaval in the auto industry. Tremulis worked on the car and Stevens worked for Studebaker on the Gran Turismo Hawk but never attained the international stature of a Raymond Loewy who had already gained fame for some other important trade symbols such as Coca Cola and the Lucky Strike cigarette packaging. It took ten years and Studebaker to move the goal post changing the industry with sleek low cars.

Dick Teague impressed me with his AMX designs but more importantly by introducing to a young aspiring artist the 1965 AMC Cavalier. The interchangeable front and rear fenders, derived from the same stamping machines allowed for a commonality, which reduced tooling and manufacturing cost. He also took the time to reply to a letter from a young man of 14 about getting into automotive design as had Lee Iacocca. It led me to think of this aspect of production later working for ERRA, Inc. and in helping me design the full line of electric vehicle platforms.

The formation of new automobile companies exploded on the scene at the turn of the 20th century. Some were wagon makers with a need for tinkering in the expanding transportation market. By the late 1920s there were brands and makes everywhere until the depression whittled the field down to the major three and a few independents including the Auburn Cord Duesenberg Co., Studebaker, Nash and others. As time went on there were even fewer independent startups. Mass production and competition forced a culling process on the industry. A number of specialty companies continued to roll out sports cars throughout the fifties but they were dropping off until few of the second tier of companies were able

1, 2, 3. Original Photoshop design renderings of the Iconic proposal

to continue operating. Former well-known names such as Nash, Packard, Willys, Studebaker, and American Motors were absorbed by the majors, parsed out, or went bankrupt. Eventually those like Kaiser went overseas to disappear completely after holding on for a few decades.

I knew of the Kaiser from my years as a boy in Argentina during the fifties. Until they appeared in car magazines such as Collectible Automobile, detailing the history of these beautiful cars. They had mostly been forgotten until the 80s. The widow's peak, forming the frame above the windshield, was once a very familiar site to my eyes on the boulevards of Argentina. So were the American trucks in a country industrializing and trying to sell its beef overseas. I did not see a new American car until some GM vehicles like the 57/58 Buicks, Cadillacs and Chevrolets began to appear in Buenos Aires. One had to have plenty of money to afford these finned beauties, so difficult to import. It was a whittling down process, to create a completely new car and become a profitable manufacturer was considered nearly impossible until the Tesla appeared.

It happened because the industry was changing and there was a need in the market place. Startups had to have the deep pockets of wealthy industrialists, who had the drive to see the venture through. Today, Elon Musk's Tesla is one of the most sought-after American luxury vehicles sold around the world but it started out as a simple sports car based on a Lotus. Some of the issues new car companies face is the initial design, and tooling cost. A good idea is worth its weight in gold but without capital the endeavor is a very iffy thing.

Attitudes about electrics are changing as there is a resurgence today of a "Hot Rod" culture in Southern California. Famous for changing engines and swapping other components form one vehicle brand to another, it is providing a hot rod power train swap replacing Porsches, Volkswagen and other vehicle engines with Tesla motors. Who could ever imagine electrics would take the symbolic place of the vaunted Chrysler motors used to replace Lincoln V12s in the Continentals of the '30s and '40s having oil journal problems or Ford Flathead V8s in custom hot rods of the fifties. It should tell us something about what may be an industry trend now that electrics are gaining a reputation as very quick, and efficient modes of powering automobiles. It has become de rigueur among the trendsetters, wanting to remain relevant and hip.

These motors were not available in numbers at the time when I worked on the ERRA, Inc. vehicles. Now there is a market for scrapped or crashed Teslas to provide the motors. Interest in electric vehicles has changed perceptibly. To build a one off electric vehicle is a more promising possibility with this growing surplus of parts and the custom design and construction of the body a more realistic endeavor as it was during the Hot Rod heyday.

To manufacture new designs in quantity is a different proposition however. Which brings me back to Southern California's coachwork and custom shops, some made famous on national TV shows.

A redirection of this industry has promise. With new independent body shops, the knowledge of model making, metallurgy, fabrication and custom shop knowhow readily available on the Internet, it's an idea that has merit and its execution is easily feasible. The game changer will be finding more efficient batteries and increased vehicle range as well as composites. As these facets improve, with lowered battery mass and decreased size, internal packaging becomes more flexible with the added benefit of increased passenger room and carrying capacity. The new Hot-Rod culture may help instigate this appreciation for electrics and burnish their image.

I had just gone through a second heart operation in 2004, the site classicautorenderings.com was on the top pages as mentioned before, and I was selling quite a few of the images on 8.5 by 14 inch paper to many loyal customers. I could have kept this up but it was not the business model I wanted. At $20 a print I soon stopped selling them and instead concentrated on the licensed Shelby Mustang and Cobra prints from the large Epson Printer I had purchase. I had gotten a call from an individual on Long Island who asked me to do renderings of a Cobra style roadster. I told him that he needed to contact Carroll Shelby Licensing if he wanted to get the Shelby name on it and that it would not be easy. I created front, side, and rear view orthographic renderings of the car but was unhappy with the direction

4. The Mongoose rendering brought back memories of the TR3 with Duke and myself driving up from Florida. Had we had something like my Australian friend's TR 2 we would have been pulled over immediately and cited for who knows what infractions?

5, 6, 7, 8. The TR2 in the body shop in Australia being completed. The fender flares were larger than depicted in the rendering.

it was going. Even though a contract for the initial design was signed I never received a cent from it.

Vickie and I had gone up to a small shop on Long Island where Ford GT40s and other vehicles were being fabricated from kits shipped from South Africa. I didn't ask who the manufacturer was of these beautiful replicas as there were many kit makers. I met the individual who wanted a new updated version of a Cobra and though I would have much preferred doing a design from the ground up. That was not what he wanted. I incorporated his ideas such as the roll bar and the curved windshield. Ideas of my own included rounded front fenders with flush headlight lenses and the same for the taillight following the contours of the fenders. The renderings were given to another designer who took the design to the final production level. The car became the Iconic and was not what I would have approved, but such is the way of auto development. I am not sure if it ever made it to full production but I have not heard about it since. I was later able to create a roadster using the open two-seat tradition long favored by British sports car builders like Morris Garages, Morgan and Triumph. In chapter 12, I hope to present some versions of these renderings.

That issue over, I moved on, continuing my artwork and original designs. A short while later I received an e-mail from Australia from a racer who wanted to improve the stance of his TR2. Living in the U.S. I was barely aware that in Australia old British Sports cars were modified to race in their sports car races. I am not sure if it was anything like the SCCA here in the U.S. The race cars were modified British sports cars with extended fenders and enlarged wheel arches similar to the larger engine Cobras.

He wanted to see what his car would look like with the additions as well as a roll bar, Recaro racing seats, larger wheel rims, tires, and anything I might add to what he called the Mongoose, not to be confused with the De Tomaso. It was a simple drawing of his modification proposals. I did add a NACA duct on the front which probably would have been impossible to place and other more practical ideas such as brake and engine cooling ducts in the front and side cowls. I also wondered how it would look with a metal or fiberglass side cover over the doors to improve the aerodynamics, like a semi tonneau cover. He sent me a photo of the progress the shop was doing on his car at the time.

JIM Hogarth and ERRA

I received a call from Jim Hogarth around the spring of 2006 or 2007. I was still living in Fairfax, Virginia. He introduced himself as a graduate of West Point who with fellow graduates wanted to bring a full line of electric vehicles to market and would I be willing to join the team? At the time I would be the only civilian on the project and it was an honor to be considered. Though I lacked the experience others

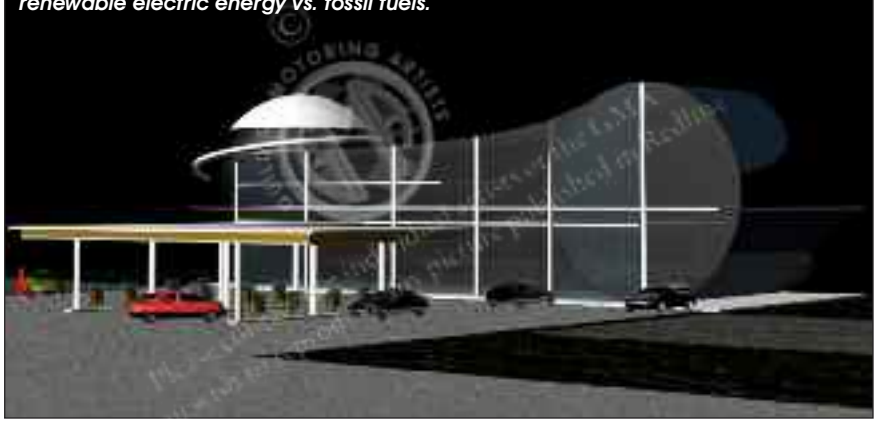
could have brought to the table I was willing to put all my effort into it and agreed to meet him in Crystal City in Arlington, VA. His team was gathering funding for the project and needed something to show potential investors.

The startup budget was small and it would require a lot of effort to bring the concepts to market. He asked if I could bring some of his ideas as renderings to a meeting in the hotel lobby, which I agreed to do. When I arrived I was introduced to the team of which he was the CEO. I said I was willing to join the project but would require a retainer so that I could purchase a new Mac desktop computer and later for a 3D software program. He agreed.

I was introduced to all the members of the corporation and we sat down to the climate under which the company would operate. We would work under an honor code. Jim had evidently run into conflicts of sorts with the automobile lobby. I did not inquire extensively, but we were in the Nation's Capitol and I could just imagine, as it was also a beehive of not only lobbyists but also contractors working on Government projects. At one time I had gotten a security clearance and worked in that capacity myself, as I was privy to some defense contract information. That was years earlier. On the resistance to his electric vehicle project, Jim didn't specify other than there was an unwillingness to support an electrical grid that would provide the infrastructure for the servicing of the vehicles. I had also run for Congress and read up on the pitfalls of trying to secure transportation funding for rail lines which mostly went to road construction and airport improvements. One must remember that Tesla did not exist as a powerhouse at this time. They had brought the Roadster to market. Many considered it a first attempt with a Lotus as the basis for the exterior and maybe parts of the chassis. One had to plug up to their house current to recharge the car overnight.

Jim indicated that the new car was the next stage after efforts proved the concepts with the success of the Sunrise vehicle. It outperformed anything GM produced but was not mentioned much by the press. I had heard of the design and its long life battery. This newer vehicle, if enough funding could be put together, and with proper development, would make electric vehicles more than viable.

***9.** Original version at night and **10.**, The final version during the day with the ERRA, Inc. green globe on the top. It became the logo, and was represented on the business suite. There were charging stations that would be set up across the country. It is now more than economical enough to do so with the cost of renewable electric energy vs. fossil fuels.*



Jim was kind enough to provide answers to some questions about batteries for electric vehicles in this chapter. Which should inform myself as well as the reader on the following points and realizations:

1. *That, halving the mass of the vehicle weight would double the distance on a charge by twice. Amery Lovins first envisioned the idea of a structural composite vehicle, but it was the Sunrise that provided the proof of concept in reality with a design that was mass producible.*
2. *Because of the results from the battery used in the 1995 Tour de Sol race, nickel metal hydride, was never considered, instead nickel hydrogen was found to be able to solve the problems realized from that race. It had the longest battery life and highest self-discharge rate and was cheaper then the Li-ion battery.*

3. *And most importantly the nickel hydrogen battery had a zero self-discharge rate, something no other battery at that time had.*

ERRA, Inc. with the YESS battery and many other inventions and innovations was poised to bring renewable energy to the home and to change the energy economy. It relied on this high-powered long life battery used in military and space applications.

Setting Up A 3D Program With The New Mac

I was given the funding to purchase a new desktop Mac. I returned home to Springfield in Fairfax VA, and began preliminary designs of the proposed vehicle classes. They included a number of models or platforms which designated the size and function of the vehicle and included local delivery, light passenger, school buses, low floor buses, light vans, crossovers, SUVs, estate wagons, roadsters, pick up trucks – large and small, 2 door sedans, 4 door sedans, extended cab pickups, and others.

The vehicles needed to incorporate the following:

1. *Shared body panels, on a monocoque chassis.*
2. *Wrap around front glass without A pillars for best visibility if possible.*
3. *Doors that neither opened as gull-wings nor scissor types, and as minimally intrusive when opening in small parking space by not banging on low ceilings or hitting other parked cars.*
4. *The sides of the vehicles had to have severe tumblehome, that is slope inward to negate the effects of crosswinds. The aerodynamics of the body front to rear had to be of laminar flow design. I intended to illustrate a design with a continuous curve over the top and with minimal impediments so as to retain uninterrupted flow of the air from front to rear.*

"Laminar flow", type of fluid (gas or liquid) flow in which the fluid travels smoothly or in regular paths, in contrast to turbulent flow, in which the fluid undergoes irregular fluctuations and mixing." [1]

This is an ideal, which after production may vary in real world circumstances and is usually represented by percentages of laminar flow. My understanding was to achieve as low a coefficient of drag as possible so air would flow smoothly over the surface. There would be other considerations to take into account such as the drag from the constricted ground clearance on the vehicle and its size (ground effects). These would of course induce drag. It also had to have a monocoque chassis with easily removable batteries below the passenger compartment. The whole vehicle body and other structural members were to be constructed of

11. The First logo eventually changed to the green globe and ERRA, Inc.

carbon fiber and operated by fly-by-wire instrumentation. I was also to incorporate any innovations I thought of to both reduce drag and make the vehicle lighter without loss of structural integrity.

It was a big vehicle designed with a single power train in mind. It had been decided that one motor could power all the platforms. As Jim had stated, "The Power was based on Kw, not cubic inches. As such, only one size motor, one size controller, and battery modules based on the same voltage could power vehicles from sports cars to 22 foot buses. If more power were needed just add an additional motor, simply 1x, 2x, or 4x motors. There was so much more but not necessary for the story. The heat engine created electricity from a temperature differential. We also had heat pumps for heating and cooling."

It could house many batteries giving it great range. The battery could be quick charged even after losing much of its charge without loss of efficiency. It was to be as big as a Humvee HMMWV or High Mobility Multi Purpose Wheeled Vehicle.

There were of course issues that had to be resolved or would prove to become impractical but we would adapt as required. It was also initially a proof of concept. I would come back with initial rough concepts of the vehicles using Photoshop and before getting the new computer, I began searching the Internet for a modestly priced 3D program. We couldn't afford **Auto Desk**. I set to work with the initial drawings on the computer. Some are included below.

The view I had had and most the world at the time was that electrics could never be fast sleek sports cars. My mind raced back to my days at the City of Alexandria, VA motor pool repair shop over a decade before I met Jim. Everyone there was a motor-head. I had been involved in ordering cases of oil at JK Auto Parts and now was in charge of ordering the fuel for the propane tanks and underground gasoline and diesel storage tanks. I knew from the days at Eudy's that water could

leach into the tanks and this was revealed by the measuring stick with a clear demarcation of the levels water to fuel. The City of Alexandria always wishing to make savings and to be good environmental stewards had converted to propane on some vehicles.

On a hill overlooking the motor repair bays was the school bus repair shop and next door to the city and police vehicle,s the American La France fire trucks were maintained. In the fleet were the new Chrysler K cars and they proved to be quite reliable but the city was always looking to save money and one or two primitive electric vehicles had been purchased for evaluation. To the crew at the motor repair shop, guys who drove Harley Davidsons during their days off or loved high performance cars such as myself, these electric vehicles seemed no more than modified toasters with golf-cart wheels. They emitted a low annoying buzzing sound like some unwanted insect intruder but were mostly silent. The noise was similar to a giant wind-up toy car but without the key jutting out of its rear. I felt a sense of its inadequacy with wonderment. But here was a concept completely opposite to what was familiar to the mind. Few grease monkeys or pump jockeys could fathom such a vehicle with air cheating design and no loping rumble of a high lift cam. No one had ever seen a Tesla or even knew what the name meant. Jim was a visionary in anyone's book and I was honored to be included in the team.

A World Car

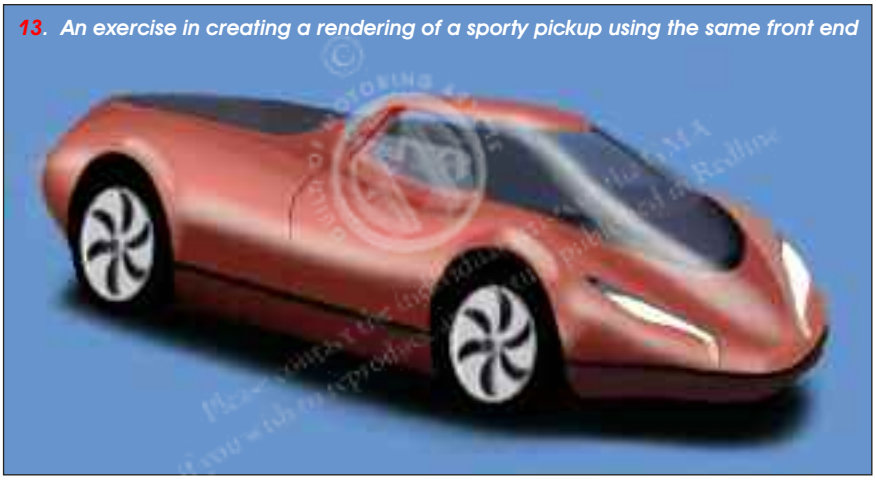
I sat down to consider what I had gotten myself into and knew it was the right thing to do. The automobile had reached a world-class position and every manufacturer, be they a European, Asian, or American based company, was now building like models in many different places. Other things had come about to either improve handling, road holding and efficiency or to allow the transition to electric vehicles. Much of this was due to European racing since the original 24 Hours of Le Mans endurance race in 1923.

Racing does improve the breed, as did the changeover to metrics. Another innovation that helped move things along was the adoption of clay modeling in the design process, CMM (Coordinated Measuring Machines) and in particular the study of aerodynamics. To bring all this about was a process of incorporating aircraft wind tunnels, computer graphics, and 3D design with NURBS curves and surfaces.

In America, aerodynamics was not adopted by the industry until the 1960s whereas the Europeans had already been using it to help shape automobiles since the fifties and in aircraft since the thirties, in particular in Germany. Aerodynamicists had become entranced with the work of the Wright Brothers in the U.S. and later Doctor Von Kaman, Ludwig Prandtl, Lippisch, and others in Germany in their development of high-speed aircraft.

12. An original rendering of a sport model presented at the first meeting.

13. An exercise in creating a rendering of a sporty pickup using the same front end



It may have been a few weeks later when I took the initial renderings and met Jim again at the hotel in Crystal City. Worried that I might not be what Jim was looking for in an employee and not up to the task, I asked him if he wanted a work resume or an artist resume and left it up to him. He asked for the artist resume. Recently I learned that one of the elements that Musk looks for in hiring an employee is exceptional ability over degrees and titles. Jim, a graduate of West Point, may have shopped around and might have looked for more than degrees but instead someone with a capacity to adapt, to work hard, and to learn and grow, aspects which I felt I had or it had shown in my work. Still I was a bit worried that the work was not what his colleagues, who were all engineers and graduates of West Point, might accept.

I did sit down in the lobby of the hotel for an interview first with Jim and we shared much of the technological

14. Large Pickup truck and 15. Local Delivery Vehicle

On the chassis development, again having worked at Eudy's Amoco served me well. Often when not towing cars I would have to pick up parts at the local parts store and later Eudy's Auto Parts store when it opened. I would be underneath a vehicle being repaired, sometimes to lend a hand to the assigned mechanic and/or was told what I needed to get for the specific model.

For a young man it was worthwhile training. I would have to study what ball joint was required on that particular model, or how to adjust for toe in or toe out, by loosening the jam nut and adjusting the inner tie rod. Often I would drive a vehicle or be dropped off to pick it up as it was having the windshield glass replaced and saw how it was done in the glass shop. If I was asked to research the type of model being created and tasked with constructing a virtual interior or suspension system I could visualize the project and render it in the 3D program.

ideas that we would like to see investigated. I think back on that as a blessing. We discussed them and what he wanted in the designs. If there was something I thought would constrict moving ahead with an innovation I expressed my opinion and gave justification for it. There were some things we were unable to do but the prime goals of the project, I believe, were met and there were discussions and communications back and forth on the configuration of the front doors, and how to access the batteries. He urged me to rethink approaches and gave me encouragement.

It was not till the next meeting that I was introduced to the other members. We had common ideas on how the vehicles should look. It was a follow-up interview and for me this was what I had always wanted to do. I had studied much of the problems he had discussed and explained what I thought might be the difficulties we would encounter, such as the articulation of the opening front doors, or how the battery compartment would be accessed and other issues. I accepted the requirements he proposed and the ideas he wanted developed. He funded the purchase of the new computer and tasked me to look for a suitable program within the couple of grands limit of the budget. I settled, and am happy I did, with **SolidThinking**. The product and support was excellent and the cost within the venture's means.

There wasn't much time to render each model on the list of the platforms, so detail was left out. It was proposed that in order to allow for the commonality of body panels, a strip of composite would be added between the monocoque and the upper fender, roof, hood, doors, and trunk where needed. So a single upper front fender, valance panel or roof would be the same for all vehicles. Height would be adjusted using the proper elevation composite, something I had not seen before, and likewise for width and length at the middle where there would be few, if any, compound complex curves. The panels would be bonded together. Below is a cleaned-up version of a local delivery vehicle next to a large pick-up truck, both having many common body, glass, and internal support structure. To bring down costs commonality of parts was imperative.

For 3D programs one needs to take measurements and scale accordingly and orthographic drawings of the vehicles were required to insert into the program. In the book on Automobile Design Techniques by Frederick Hoadley, it is recommended that many preliminary concept sketches be created as well. I would be unable to do a clay model and did not have the tools or equipment at that stage to make a proper clay mock-up. But I was given the go ahead to purchase **SolidThinking**.

It was an Italian based 3D software company used by Volvo and other manufactures, that I located at *https://gfxspeak.com/2010/09/23/solid-thinking-rethinks-industrial-design/*. It had just been sold to an American company and needed exposure in the American design market, and the licensing price was excellent. I set it up and went about working on going through the training lessons. It is much like Auto Desk, which years later, I was able to practice on its 3D software using a trial program.

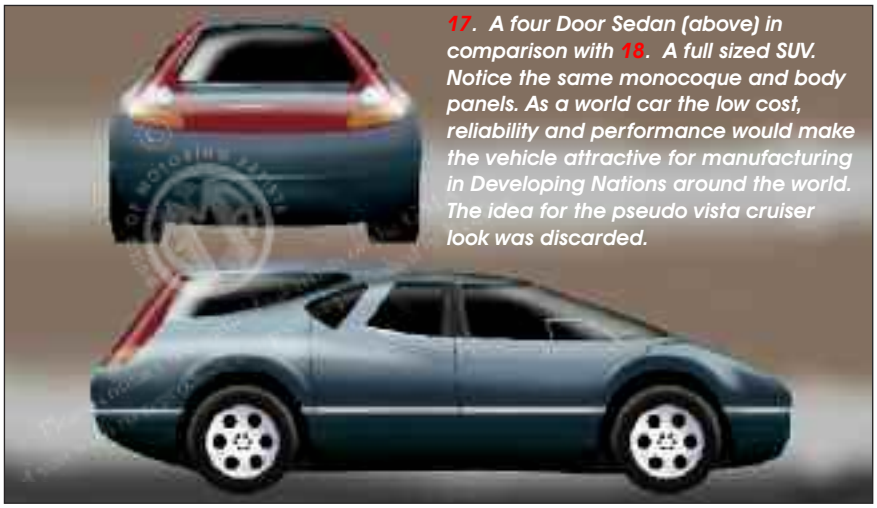
In my mind one problem remained, unless an idea was thought up on how to position the cab on the low floor bus and large cabover trucks there would be an issue. We needed a solution. I suggested we tilt the cab forward.

These were the renderings I submitted to Jim. They satisfied the initial requirements for the vehicles that would take the batteries. It would be a few months before I was hired. In the meantime Vickie would find a job in Los Angeles, move there first and I would follow in the fall. Virginia would stay with a college friend in Fairfax, VA.

A few weeks later the computer arrived and soon after the **SolidThinking** program was installed. There was time to begin learning how to use it and I began with lesson 1 all the way to the last exercise. I cannot remember how long it took. It was a 3D CAD design program. The choice of program was left to me and there were few like SolidThinking, a new company to the American shores, with a desire to open markets. Altair had been involved with European manufacturers before being sold to the U.S. and understood that ERRA, Inc. was a start up electric vehicle company with an innovative storage solution.

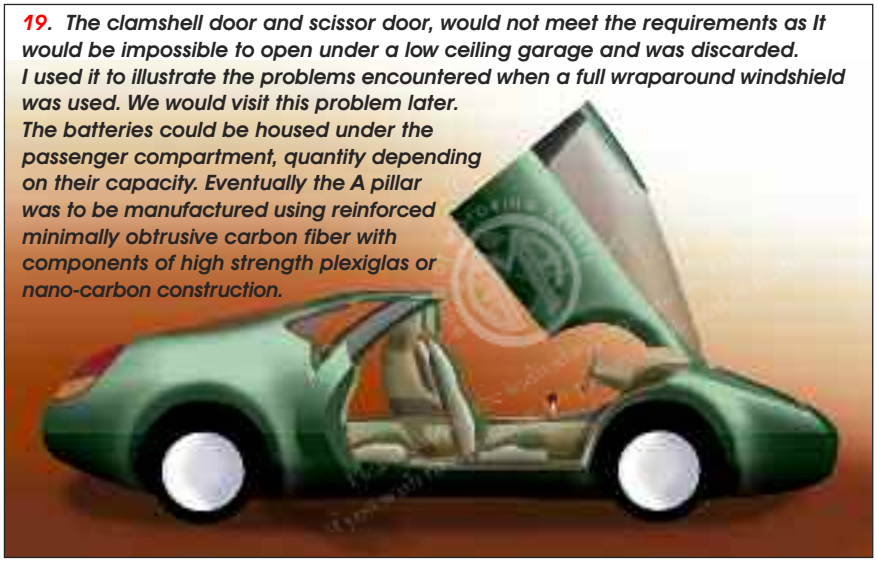
I still have the program and plan to upgrade in future. I have never had any issues with the company and they have always treated ERRA, Inc. well. When the modeling had

***16.** A low Floor Bus with slanted windscreen. For the time being this was the best that could be done to present to the Board and company principals. Again it lacked many of the details like brightwork (bling).*



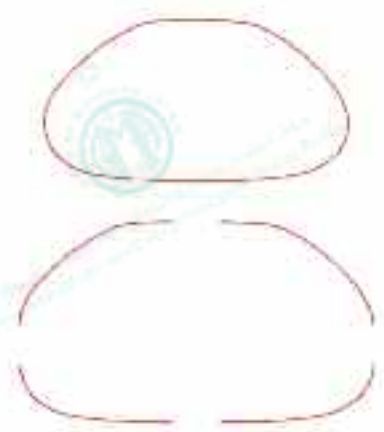
***17.** A four Door Sedan (above) in comparison with **18.** A full sized SUV. Notice the same monocoque and body panels. As a world car the low cost, reliability and performance would make the vehicle attractive for manufacturing in Developing Nations around the world. The idea for the pseudo vista cruiser look was discarded.*

***19.** The clamshell door and scissor door, would not meet the requirements as It would be impossible to open under a low ceiling garage and was discarded. I used it to illustrate the problems encountered when a full wraparound windshield was used. We would visit this problem later. The batteries could be housed under the passenger compartment, quantity depending on their capacity. Eventually the A pillar was to be manufactured using reinforced minimally obtrusive carbon fiber with components of high strength plexiglas or nano-carbon construction.*



20. *The front and back of some of the proposed vehicles used to illustrate their internal size and commonality.*

21. *The rings depict their cross section with open space indicating where the spacers, carbon fiber panels would be bonded to achieve height and width.*



22, 23., *Images of a convertible and roadster*

gotten much further along they paid a visit to my studio. Altair the parent company was a full service company providing much needed software for the automotive world such as HyperWorks, Virtual Wind Tunnel and other modules for improving the workflow on designing vehicles.

I had time to reflect on my past. In the early sixties a boyhood friend Clark and I used to run to each other's house on weekends to show off our new AMT or Monogram build, usually during the summer or during Christmas vacation. He showed me his Avanti model, and his Buick Special wagon circa 1962. These were nothing his older brother would purchase or build nor would his friend Buzz, who lived across the street form them. These cars did not interest them. If it wasn't a Corvette or a '36 Ford hot rod or some Pontiac Catalina Stock car racer it wasn't worth the bother. My friend always loved something quirky or different. Even the Avanti was different to the boys, now entranced with the show called Route 66. Who could beat Tod's annual upgrade of Corvette as he travelled Route 66 solving people's problems? It was filmed on the road for the average adolescent's weekly fix. I however, understood why Clark chose the Avanti and the wagon since it had a

trailer hitch, a hydraulic jack and Hemi engine on a stand. To my mind, that made it worthwhile. Even the '34 Ford tow truck he built had merit as well as the race car trailer, but he managed one day to astound even me in his choice of a Baker Electric. A grandma's car for all pre-adolescent boys, long before the post war Pontiac got ridiculed for its cumbersome chrome strip along the bonnet and boot of their cars in the late 40s and early fifties.

24. The 2 Door Sedan was used as the Orthographic representation of the images and concept drawings to enter into SolidThinking.

The Baker was truly ungainly or it might have been that it was the only electric vehicle that refused to die an early death. It was coffin black with what looked like plate glass windows, upright and austere like granny glasses. It looked like a squat telephone booth on wheels with thick glass and a small black body and fenders. It was almost a way to say, "Hey, here's grandma coming. Get out of her way." They didn't understand that women could be as capable drivers back then as today but they loved to associate the electric car with plodding unresponsive vehicles. With a different attitude about electric vehicles today we may have been better able to tackle climate change with advances in technology, chemistry, and metallurgy. Our knowledge of battery storage most probably would have allowed for greater efficiency, and who knows where we would be now with space exploration and computers had we done so!

California

For about three months I had little to do. The movers would not be arriving for a while and packing had to wait. I had told my band mates that I had not forgotten them and in the summer of 2007 we began to practice to produce and have mixed an album of original rock 'n' roll songs. Jon and I were the only members of the band left living in the D.C. Area. Jon brought a friend from work, Wayne. The original Wayne was in Tennessee so he stood in. I had worked with him before and he was, in my view, a great drummer. There was an excellent keyboardist and I found a Bass player who barely showed up but didn't have to. Jon, whose father having flown a B24 over Europe during World War II, most probably was taught the value of crew training as a team, was strict on practice, and this didn't sit well with him, but we couldn't find another bass player and I told him it would be all right. It was.

Within a few months we were in good form, and would either drive or take the metro to Maryland to have the tracks mixed to an EP of 8 songs. It was my first produced album with more to come. That done, and my obligation to the band over, the house was emptied, the cars put on the transporter which included a Volvo sedan that had belonged to my mom and the Dodge Stealth. I saw that Virginia was going to be OK, said goodbye, and flew out of Dulles the next morning. I was glad to be out of the oppressive humidity of Washington, D.C. which a British consular employee, years ago, when I was servicing his car at Eudy's, had told me was considered a hardship post on par with places in India. That status had changed with the advent of central air conditioning. But if you worked outdoors, what did that matter.

I arrived In LA in the fall of 2009. Vickie picked me up at LAX and with a short drive we were at the apartment she had been renting for a few months. She sold the place in Burbank as her work was in Santa Monica and on weekends we began to look for a place to purchase. I thought the D.C. area was expensive but prices did not compared to the west side of LA. We eventually settled on a condominium in Playa Del Rey and after everything had been moved from the rental I settled in to doing the design work.

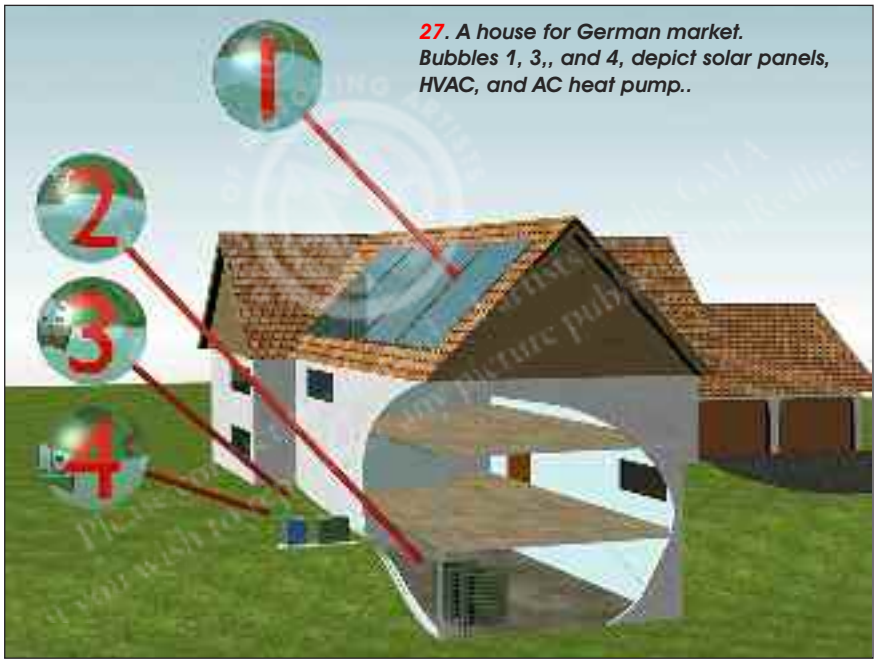
The main thrust of ERRA, Inc. was to provide renewable energy and Jim was busy seeking investment dollars for the venture. The battery technology had been proven with the Sunrise vehicle on a test run from Massachusetts to Pennsylvania, which set the record for miles traveled on a charge. The battery was the main selling point and the reason d' etre for the whole new venture. It was planned that the battery, still sorely needed in the renewable energy storage industry, would be manufactured for every kind of appliance.

There were other innovations Jim and the team were working on such as geothermal and heat sink technology as well as solar panels still vital today. I provided renderings of buildings to the team.

Once moved into the condo with the programs installed and the computer up and running I set about

25. Modular South facing house proposal..

26. View of house with solar panels. Shallow angled roofs can be positioned during construction to face the sun.



27. A house for German market. Bubbles 1, 3,, and 4, depict solar panels, HVAC, and AC heat pump..

to work. I am siting today at the same desk back those ten or so years ago and the need for battery storage is as great as ever. The pace of progress seems to not have gotten any quicker, and the urgency is there for a better storage solution. I was not in the loop on the scaling up process and before submitting this article I hope to find out if funding was hard to come by or if there were problems with scaling up. A number of the principal investors passed away and the company dissolved. Today the Market may be better suited for investors and novel approaches than they were in 2010; certainly the urgency is greater. Civilization never runs out of the need for energy.

How changes in automotive design and construction, have facilitated the advent of electric vehicles.

Without unibody construction electric vehicles would not have the platform that would make them possible and would be much less safe and efficient. Though the monocoque designs shown in the following pages have a commonality of body parts, glass and many internal structural members such as door frames, seats, or dashboards there would be many differences with suspension and in the case of buses, safety items, multiple seating low-floor configuration, luggage compartment and etc. need to be unique. For specialty

28. Is a depiction of the battery. All 3d images were done with SolidThinking

vehicles such as trash retrieval or beverage trucks, specialized bodies would have to be used and placed on the chassis, as is done today.

One thing that would be of critical importance is the load and torsional requirements in the suspensions and consideration for the strength and location of sub-frame mounting points. Just as the suspension on a ¾ ton truck differs from a light duty pickup or a stake bed from a sedan, the mounting points would have to be strengthened and placed in their critical locations. This will not be shown in the renderings as it will require engineering designs and drawings and the exterior designs are the beginning of a packaging study. As with any prototyping designs the product would go through many stages before an actual prototype or various models would be developed and presented. If there were just one platform then the gestation time would be much shorter, but a full line of vehicles, albeit with many common parts the process would take much longer. I thank Jim Hogarth and the members of the team for their understanding and patience with me in allowing me latitude and some clumsiness to be able to go forward. Regretfully we lost some members and one, Daniel Coonan, I was getting to know much better. He will be missed.

Iterations

I did not have time to go through every e-mail or instruction and to search my saved files for all pertinent information regarding the development and there are a lot of images and files that have not been included, but I believe that there were four iterations of the ERRA, electric vehicle each encompassing the platforms. The design of the vehicle in the end is of less consequence than the battery itself and that story is not over by a long shot. Searching for efficiency will continue as long as we roam the earth and especially space, and there is such a thing as technology, which if we can continue to move into space as a caring species in harmony with others there may be a chance to explore the solar system.

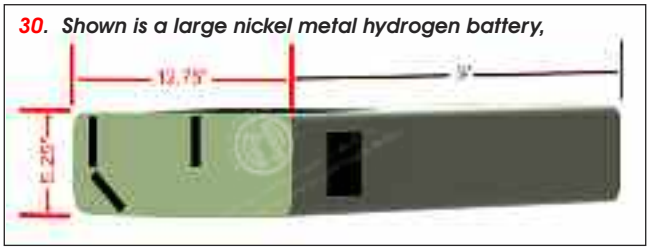
You have seen the initial renderings, completed by Aug 2007. The original designs were close to the initial renderings, which I have not included in this article but were soon followed by the models SW, SX, and SZ.

Of course the most important element in the venture is the battery. Used in Aerospace for planetary rovers and satellites the technology still holds promise to revolutionize battery storage capabilities here on Earth.

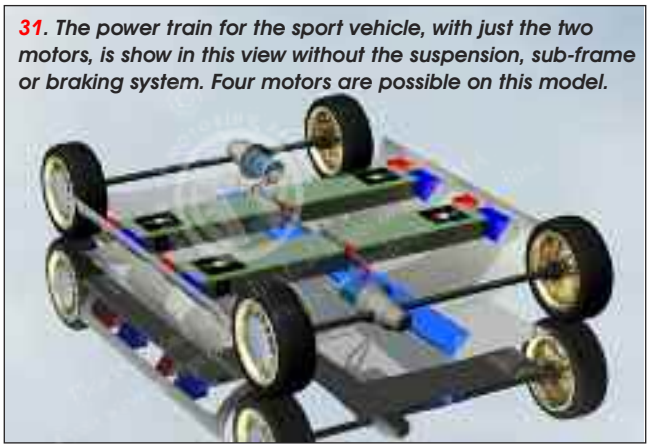
I set to work creating their 3D images with guidance from the engineers. The look of the small batteries would of course follow the same packaging as the current batteries used in every-day appliances.

I began to work on a monocoque chassis that would be a template for all the platforms. Differences would

28. Pictured are the YESS batteries for appliances from cameras to flashlights, which include AAA to D batteries and others found on shelves in drug and grocery stores anywhere. These are nickel-hydrogen.



30. Shown is a large nickel metal hydrogen battery,



31. The power train for the sport vehicle, with just the two motors, is show in this view without the suspension, sub-frame or braking system. Four motors are possible on this model.

32. See-through view of the sport model with powertrain visible, note transaxle,

be in the Kw power of the electric motors, the quantity of batteries housed in the chassis and the requirement of the suspension to accommodate the platform's usage. The control arms, shocks, springs and other suspension parts were not shown, as they required critical engineering designs.

With the monocoque construction and motors the gross empty weight of all the vehicles would be low and thus so would the center of gravity of each vehicle. With a potential motor on each wheel, traction could be applied to all four wheels, which is another

33. Car with cart used to remove and replace battery,

34. The battery, (in yellow} loaded onto the rack is being installed in the chassis.

35., 36., Shown is the cart and battery from a ¾ view at either angle. Without getting into too much detail, the views show how & where the batteries can be connected in series or series parallel. I believe they were to be easily removed and definitely able to be given a quick charge without any problem. Removal of covers over the rocker panels would allow easy access to the battery doors and removal of the batteries. Charging would be a simple matter of connecting to an outlet for that purpose either at a charging station or in the carport or garage at home.

advantage of four wheel drive and "Positraction". The possibilities could be endless. However storage has always been a problem.

At Eudy's, we would often sell new batteries to customers after a diagnosis on the electrical system proved sound. Some of these customers would have had to either been towed in or followed me after being jump-started. In Alexandria, on the harbor or port area, there were rigging and sailboat repair shops that catered to the influential of the City. One incident remains with me when I was called by AAA to tow a big Lincoln Town car. I arrived and immediately three prep boys came out telling me that there was nothing I could do to start the big Lincoln Continental. I never wanted to tow a huge car like that if I didn't have to. It seemed that these preppies had a need to justify their use of AAA or that they knew about electrical systems to some blue collar kid wearing the blue Amoco uniform. Or for some other reason I was unaware of. I ignored their request to immediately hook it up and tow it down to the station. I turned the ignition key but was unable to start it up. The battery looked good, there was no corrosion on the terminals and if I am correct the Ford starter solenoid was mounted on the inner fender well and it looked fine. I got down under the car located the starter which I though was not making a connection and surprised to see that the cable from the solenoid was loose at the starter. I tightened the bolt, got back up from under the car and it started right up. I told them they would have to drive it down to the station to get it looked at if they had the time. This was not always the case with a roadside service call.

When a car was found not to need electrical work which was often the case and it was evident by the purchase date the battery needed replacing, after a load test, I would get a battery for the make and model and the price the customer wanted to pay, take it to the charging station and fill it with battery acid. We would often end up with holes in our pants where the battery acid dripped but we were used to the smells of the service station. We were young and didn't worry about such things. We filled the battery and gave it a quick charge before installing it into the car.

ERRA, Inc. had acquired Ergenics and as stated in a Reve news site press release, "Ergenics Corporation has developed numerous patented technologies related to the green/clean tech energy industry. The previously acquired YESS advanced storage battery is based on a proven solid state nickel hydrogen electrochemistry that is fully scalable from batteries as small as AAA up to battery arrays capable of storing several MWH's of electricity very affordably for long periods of time if needed." [2]

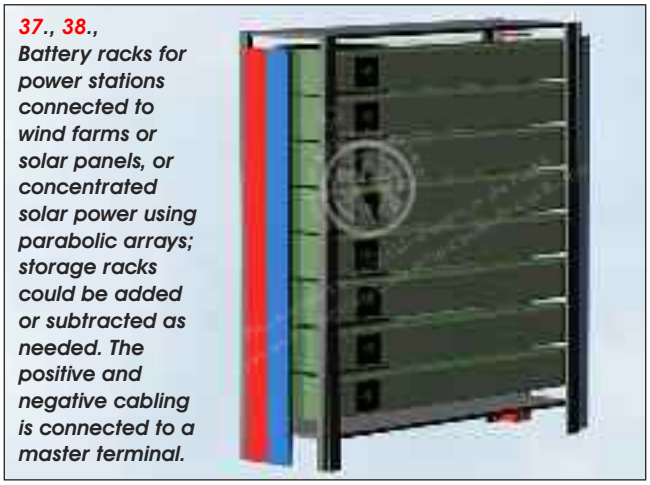
A lot of time is spent before sleep and waking moments when not actually at the computer on how to manipulate the body parts that would be used for

the larger vehicles. I had to start with the automobiles as they required the most development of compound and complex curves and the windshield would be the most difficult to construct. After that I had to figure out how to position it to fit as a windscreen on a bus or large truck. Since the development of models was not feasible until a studio campus had been built and equipped with everything required to create templates for the model builds we had to go with the 3D modeling as a start. The room and equipment needed for that required extensive funding.

What I did have were images of vehicles already on the road to give me a rough idea of the height, length, and depth of each unique platform. I was able to form individual orthographic line drawings and templates, which I loaded into SolidThinking. I was able to begin the process of designing the buses starting with the school bus. Using the 3d design of the 4-door sedan, I added it to the orthographic measurements of a regular transit bus. By tilting the cab up and forward it gave it height and put a steeper angle on the windscreen. This would later serve for all the other large vehicles such as tractor-trailer cab, transit bus, large school buses, and low floor buses. Width and height as explained earlier could easily be added with carbon fiber panels and wherever a door or window needed to be placed the carbon fiber could be cut to accommodate it. Specialty vehicles such as beverage trucks, stake beds, moving vans, and car carriers were designed and built by truck body companies that specialized in such vehicle construction such as Miller with its Holmes 440 wreckers. These would still be up to the company involved in those services.

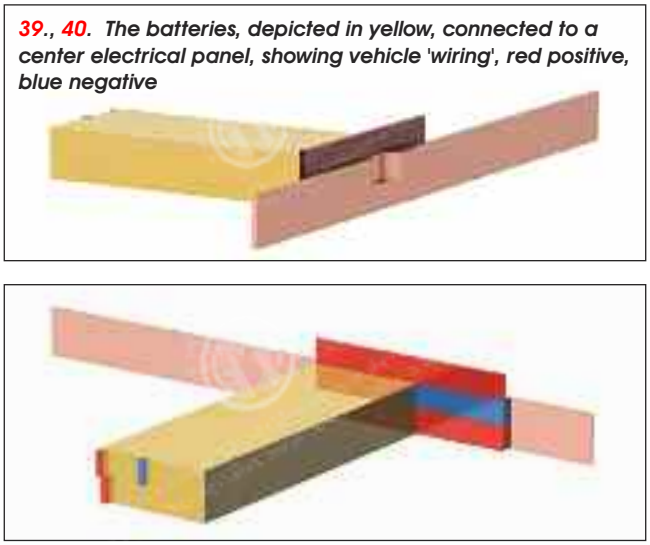
Hot radiators, Hot Cars, and When To Go Beyond the Obvious

Washington D.C. had all kinds of people working in the city and many of them were headed home that Friday or had already gotten ready for a dinner and a night out. That hot summer afternoon a man with either his date or a co-worker he was driving home with pulled up to the gas pumps at Eudy's. The woman was as beautiful as the1966 Thunderbird Landau they were in. As usual, since I was not out in the wrecker truck, I went out to service the car. It was overheating and he didn't want gas. I had cleaned the windshield, opened the hood, and was checking the oil, as was standard procedure, back then. "Aren't you going to open the radiator, I think it needs checking?" He said "It's too hot," I told the man who was in a suit and tie. His date sat calmly beside him, watching with interest. "It needs to be pulled over to the side and hosed down with cold water first," I told him, pointing at the hose next to the building. "One must never open even a vented radiator cap when the engine is so hot." I said. He scowled at me as if I had insulted him. "Are you afraid to open it?" He said with bravado. "If so I'll have to get out and do it myself." One thing we were taught was that we should always try to please the customer. It may have been my pride, I don't know but I took my grease rag and released the lever on the cap. If flew into the air and I was drenched with hot ethylene glycol. I was able to jump back and didn't get scalded as most went on my uniform. I was pissed and stormed away to the office. Mr. Eudy, understanding my anger, had to go out there and with his calm soothing West Virginia way had a couple of the mechanics push the car out of the gasoline line to the side and hosed the engine block and radiator till the engine cooled off. I never waited on that car again, if it ever came back?



37., 38., *Battery racks for power stations connected to wind farms or solar panels, or concentrated solar power using parabolic arrays; storage racks could be added or subtracted as needed. The positive and negative cabling is connected to a master terminal.*

39., 40. *The batteries, depicted in yellow, connected to a center electrical panel, showing vehicle 'wiring', red positive, blue negative*



41. 42. 43., the SW 2 Door opening forward, The SW was the W model which I called the wide body. It was the second version of the car. No interior was included in this illustration nor wipers or door handles. The SW and all subsequent ERRA passenger vehicles were large vehicles as was intended. This model was wide enough at the belt-line to accommodate three seats for adult passengers over the floor pan with batteries. See image -31, 32.

I had driven some large trucks and some with split gears, ten in all. That was something when four on the floor was high performance. On some very busy days I spent the greater part of my time in the wrecker trucks and occasionally in the stake bed truck with a set of jumper cables or the old jeep when it was very busy. Everyone had to pitch in and my shift was later so the wreckers were sometimes already out, being driven by a mechanic or whomever was available. We all spent many hours in the snow helping stranded motorists or those who were trying to get their cars started on cold days. Often praised by a distraught young women or a man in a hurry to get to work, as having performed magic. This was a normal response since they hadn't a clue about engines or electrical systems. I would shrug this off. Once I was called in by the Virginia State Police to assist another wrecker driver, to literally pry two vehicles apart after an accident. It was a minor accident and something I never had to do again. I regret I never got to do a version of a Holmes on the back of an Erra truck.

On one call I was told to go try to start one of Eudy's wreckers being driven by Larry a city of Alexandria Employee who worked part time. I had come back from purchasing needed parts for one of the cars being repaired and rushed out to where he had radioed in. To our dismay we couldn't get the other truck started and it had the customer vehicle up in the air in the towing position wheels a half foot off the pavement. Larry a big jovial man who had been to Vietnam had been used to taking charge and doing things that seemed a bit less than legal, told me to back up to the derelict wrecker truck. This I did and we hooked it up and also lifted it off the ground. You are going to sit in it in case the PTO in the truck becomes active. So, I sat in it as he and the customer sat in the front wrecker and like a tandem truck he towed the two vehicles back to the service station. That was when tandem tractor-trailers were still illegal. There they managed to unhook all three vehicles with no incident. It was one of the most unusual things I ever had to do. Sometimes one cannot wait and sit around to come up with a proper solution and Larry taught me a valuable lesson. You do what you have to do.

For the ERRA vehicles, the problem to solve was how to open the front doors. The issue was in addressing the problem of dealing with uncontrollable variables like garage ceiling height. A difficult challenge to overcome was the multi restriction of allowing clearance between parked vehicles in packed front in parking garages, or not hitting the wall in low ceiling spaces as well as allowing for front end clearance. Some further attention had to be placed on the travel of the doors over the front fenders and to accommodate body width if there were fender flares or a higher curvature over the front wheel wells. Would a forward opening door be able to clear these body obstacles and space constraints in packed garages? The rotating clamshell assembly, as used on the Corvair Monza GT in 1962 was discussed, even though it was not considered as an option for the ERRA vehicles. The other option was the use of an A pillar and if possible some kind of clear composite for much of its construction as suggested by a Swedish company for their automobiles. Jim wanted to remove blind spots from the driver's forward vision. I worked on a forward moving clamshell door, which would tilt slightly up and then forward and down on a central hinge. I would have to make a model of the mechanism to see if it was feasible. It would leave plenty of clearance rising no higher than 64 inches at the most if it could clear the front clip of the vehicle. The wiper blades (not shown) would remain in place on the door assembly as it moved.

Stylistic Characteristics of the Different Iterations

SW

Round headlights, arc to the belt line. A continuous curve from the boot and rear deck to the front hood and bumper-valance panel.

44., 45., 46., SW with clamshell door. Note, Because of the size of the vehicles even if the bodies were very aerodynamic, drag would still be an issue. The object would be to minimize it. A complex articulating rod and hinge assembly would be a challenge as reliability through constant use would be difficult to achieve. We eventually went with the second option of using A pillars with as minimal obstruction as possible.

SX

Using a lower belt-line than the later model and no detailed diffuser shown rendered. The chassis is relatively pristine with no channeling for ground effects. Also, there was a limited application of air dams, spoilers or outer surface treatment until a clay and wind tunnel would indicate where to place them. The idea was to get the basic shape correct and then make adjustments after all mechanical components had been positioned. Some surface treatment, i.e. lights, ducts, intakes, wheel openings, and pillars needed further development. Also there were alternate versions to see how certain styles and appointments would be received. Door handles, mirrors and antennas were often left out for later addition. Cameras were considered to view the rear and sides of the vehicles. Jim wanted to make visibility out the front a priority so an unobstructed view was of main concern. Also on this model were round large headlights with sidewinder rear turn signal, and a low belt line. It also had dual channel front intake and dual fog-light nacelles.

SZ

The SZ model was the most refined. Medium height belt-line, Headlight nacelles like on the original drawings, beefy front end and chromed intake. Brake ducts with chromed bevels. A forward opening door may or may not prove feasible and traditional doors may be required.

Next Part 10:

Proposals for Cab Forward Vehicles, Large Heavy-duty Vehicles and Buses

Rick Herron

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Redline gallery is an opportunity for GMA members to display their latest works to fellow members. We can't all get to GMA exhibitions to view the originals, but it's always good to see new works.

Please e-mail the editor to submit your work for inclusion in the Gallery at any time. Any additional information about the painting, drawing, sculpture etc, is always welcome, but not compulsory. Supply as much or as little as you think appropriate.

Please note that your e-mail address will be included under your name unless you specifically request it to be omitted.

This issue features contributions from: **Anne D'Alton, Ilya Avakov, Adrian Bradbury, David Briggs, Malcolm Davies, Paul Dove, Mike Gillett, Esta-Jane Middling, 'Mike' & David Purvis.**

The committee has decided that only full members of the **GMA** can be considered for the Featured Artist spot at the front of **Redline**, but friends and honorary members are welcome to submit contributions to the Gallery pages. The website version of **Redline** uses watermarks for your protection but members receive clear photos in the full version. Enjoy!

John Napper

Esta-Jane Middling

ejmiddling@gmail.com

Nissan Silvia S15

Markers and colour pencil on A3.

The S15 was the last in the line of the Silvia family from Nissan. Only available in Japan, this particular S15 named "Yuki" was imported into the UK in 2015 and sports the rare factory fitted Aero bodykit.

Esta-Jane Middling

Mike Gillett
michaelgillettdesign@hotmail.co.uk

Lamborghini Bravo

1973 Porsche Daytona

Alfa Romeo Giulia Sprint GT

Adrian Bradbury

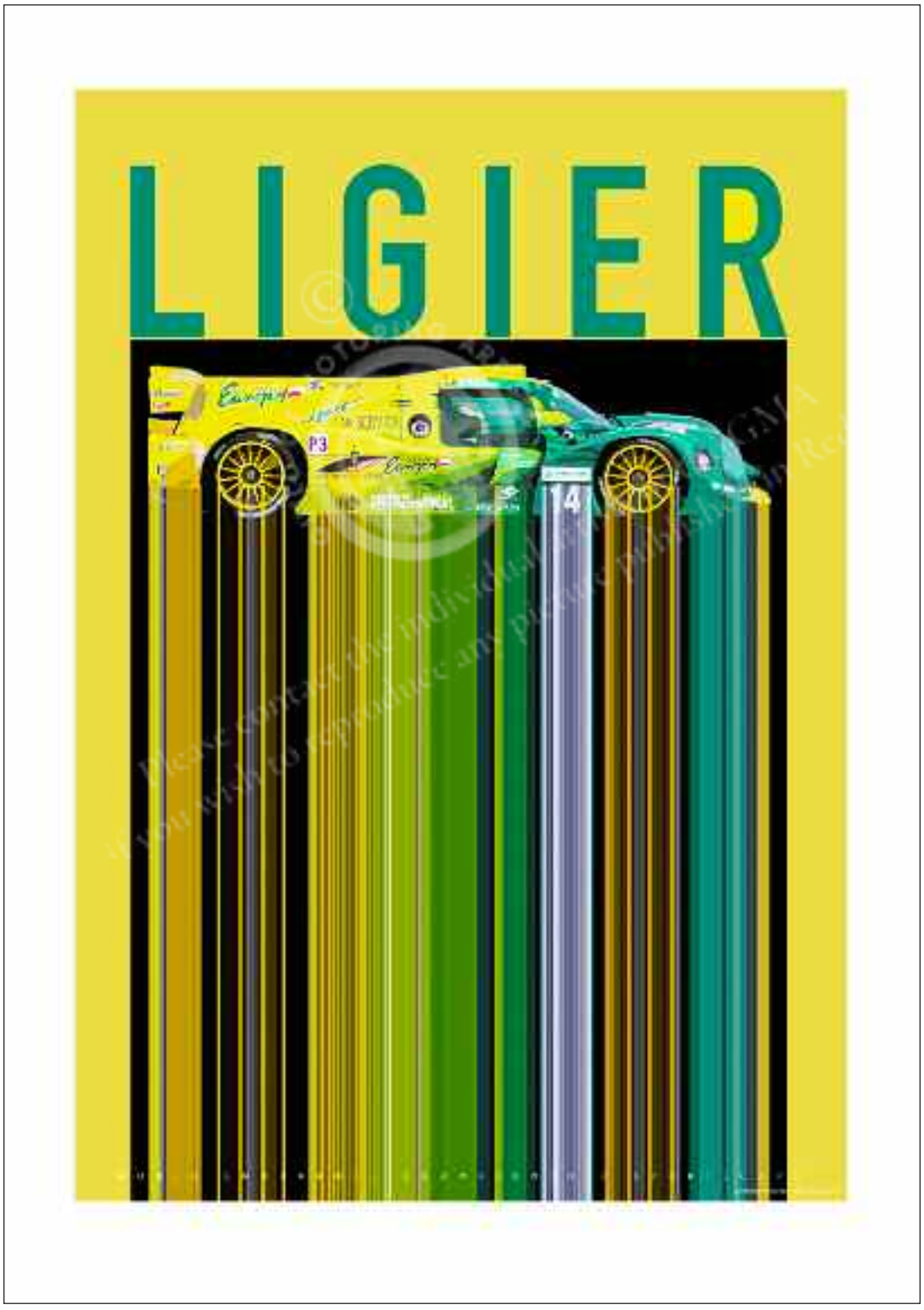
fotodesign@talk21.com

Dallara 1a

From a self generated series of prints based on the World Endurance Championship Sportscars.

I wanted to keep these images bold and graphic, almost minimal. it became about using some aspect of the cars colour scheme to create a supporting background and as though the car was embedded in the background and then have a very simple typographic element again confirming the minimalism of the image.

Adrian Bradbury



Ligier 1b

From a self generated series of prints based on the World Endurance Championship Sportscars.

Often I find myself developing a series of illustrations based on a theme and in this series they were to represent the cars in a minimalist way, reflecting in some ways the precision engineering of the cars as well as the immaculate colour schemes and graphics.

my website is: *http://www.motorsportprints.co.uk* to see more.

Adrian Bradbury

Mike

Lamborghini Countach

BMW 125i M Sport driven by Colin Turkington

Lada Niva Cossack

Ford Sierra Cosworth RS 500

Anne D'Alton
art2cherish@orange.fr

TR2 Macau 1955

This is a 1955 TR2 Macau. The chassis is original, though lightened. It has a Watts linkeage differential.The front brakes are 1961 F1 type. The original engine has been uprated to approx. 2400cc: it has a high port angled cylinder head and an aluminium body. The rear brakes are Alfin (11 inch). She has an uprated TR gearbox with a works, sump and a twin-plate clutch with a lightweight steel, fly-wheel.

This car has been raced (very successfully) from 1978 until the present day.

It belongs to, and is driven by Charles Kirkby. This work has been painted on Arches 300gsm cold pressed textured paper.

Anne D'Alton

David Purvis

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Sprite at Shuttleworth House

Lots of local scene commissions – but only one car.

The Sprite outside Shuttleworth House for a friend's daughter's 21st.

David Purvis

Ilya Avakov
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Volga Gaz 21

In the spring of 2020, at the height of the pandemic, I was commissioned to create a digital illustration.

The customer's name is Marco, he lives in the vicinity of Milan, he has own tavern in the area of lake Como. Marco is a car enthusiast. In his collection there is a Volga GAZ 21 car. This is the only Volga in all of Italy. Marco commissioned an illustration for his tavern.

He saw the Volga Gaz 21 for the first time in December 2015, buried by the snow in Moldova, the birthplace of his wife Inna where they spend the Christmas holidays every year. It was love at first sight! Big, soft shapes and lots of chrome. His father-in-law told him the story of this mythical Russian car and he immediately said to himself: "I want one in my garage in Italy".

2 years later the right opportunity came thanks to the knowledge of his father-in-law. A Gaz 21 second series from 1959 completely preserved with only 35000km, never restored. The had spent 45 years in a museum in Donbass, an area of critical hostility, at the behest of the deceased owner's wife. Having escaped the bombings, it was transported to the first safe city: Karchiv.

In October 2017 he organized a trip with a van and a trailer personally collect the car. He took it as far as Estonia to make it easier to register in an EU country, not without customs problems: tips paid to pass and nights spent at customs with the fear of not crossing the border. 8 days of travel. Finally it arrived in Italy and he managed to register it after a year.

Ilya Avakov

Paul Dove

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King of the Mountains

1954 Aosta Grand St. Bernard hill climb – Eugenio Castellotti, Lancia D24.

(size 120cm x 90cm Acrylic on canvas)

Paul Dove

Beauty and the Beast

1911 Saltburn Sands –
Pietro Bordino, Fiat (Beast of Turin)

(size 120cm x 90cm Acrylic on canvas)

Paul Dove

David Briggs

briggs22@btinternet.com

Mark 1 Ford Transit

A Mark 1 Ford Transit 17 cwt model , (the protruding nose signifying it is powered by the Perkins Diesel engine as opposed to the alternative petrol Ford unit), of a JCB agent has arrived to carry out some repairs to a JCB 7 tracked machine. Other vehicles include a JCB 6D with crane attachment (incidentally believed to be the only one so fitted outside of the factory with the conversion carried out by the guy in the blue JCB overalls who commissioned the painting! A JCB 3C backhoe is working on the extreme right hand side of the scene. A couple of tipper lorries in the background the only one identifiable is a yellow Wimpey AEC 6 wheeler.

You will note the precarious antics of the steel workers, happily going about their work without any harnesses etc, but you have to remember this was in the days before Health &. Safety had been invented, (hard hats only became compulsory in 1992 for example) !!

For those viewers with an interest in motorsport in the late '60s early '70s, you may recognise the name on the JCB 7's jib, – Sid Taylor. Sid, a Dubliner, moved to the Walsall area and established a successful plant hire business. He was able to fund his own racing exploits and help establish some famous drivers careers as well, including Denis Hulme, Peter Gethin, and Derek Bell, to mention but a few, in Formula 5000 and Formula 1. Just thought you might like to know that.

David Briggs

A Brace of Scanias

It's set in a recycling centre near Belfast, and features (left to right), Komatsu 380-6 loader, Scania R580 with BMI walking floor trailer, Sennebogen 818e grab, and Scania G 480 with a BMI walking floor trailer.

They are loading shredded scrap timber for recycling.

David Briggs

Morris FJ k160 & Dyson trailer

Morris FJ k160 & Dyson trailer of the firm of Henry Lyons of Sligo in the north west of Ireland.

It is set in 1971 when the outfit was about to take part in the St Patrick's day parade, hence the Irish flags on the front bumper. The setting is John Street Sligo.

David Briggs

Malcolm Davies

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1929 Marmon Roosevelt roadster

Marmon was a company based in Indianapolis, USA. Its car building exploits ran from 1902 until the mid 1930s.

With one of it's cars, the 'Wasp' Ray Haroun won the inaugural Indianapolis 500 in 1911 which was also the first known use of a car with a rear view mirror. The company was also responsible in the late 1920's for being the pioneer of the V16 engine, which later became more common in Cadillac and Peerless cars. (Watercolour on Hahnemuhle paper, approx A4 size)

Malcolm Davies

Rust in Peace

This is the latest piece of artwork in my abandoned series of paintings. This time a 1940s American Ford pick-up truck, left out in the open air for some considerable time. The exposed metalwork has turned into some fascinating shades of reds, browns and purples.

Whilst the truck is real the background is a figment of my imagination. (Watercolour on Hahnemuhle paper, approx A3 size)

Malcolm Davies

ArtyFACTS

1 Nigeria. It has been established that two 16th Century Benin Court brass plaques and a 14th Century Ife brass head rightfully belong to the National Museum in Lagos. It is not known how they came to be removed from the museum and sold on.

2 Anselmo.

3 The Pompidou Centre in Paris.

4 The Vickers Wellington twin-engined bomber which was designed by Barnes Wallace in the 1930s in 'those enormous Vickers sheds' at Brooklands believe it or not!

5 Frome in Somerset .

6 Roy James, the getaway driver for the Great Train Robbery, nicknamed 'The Weasel', was a talented and audacious racing driver. He raced a Formula Junior car in 1963 on the proceeds. He died aged 61 at the Brompton Hospital from heart problems.

7 Mike Winkelmann, known as Beeple, created a digital work of art every day for 5000 days, starting on the first of May 2007, eventually creating a huge digital mosaic entitled 'Everydays: The first 5000 days'. He then created an NFT (Non-Fungible Token) for this work which was auctioned by Christie's for 69,346,250 dollars. The buyer now owns the NFT which means that he or she can view the work at any time, but nobody else can.

8 Carl (Named after Olympic sprinter Carl Lewis).

9 Paretta Autosport is the first ever all-female team to compete in Indycars, and possibly any form of motor sport. Owner (Beth Parette), driver (Simona de Silvestro) and all the pit crew are women. They are hoping to do a full season in 2022.

10 Dexter Brown.

The quarterly ArtyFacts quiz is compiled by Barry Hunter

Next Issue

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Please e-mail any **Redline** contributions to:
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