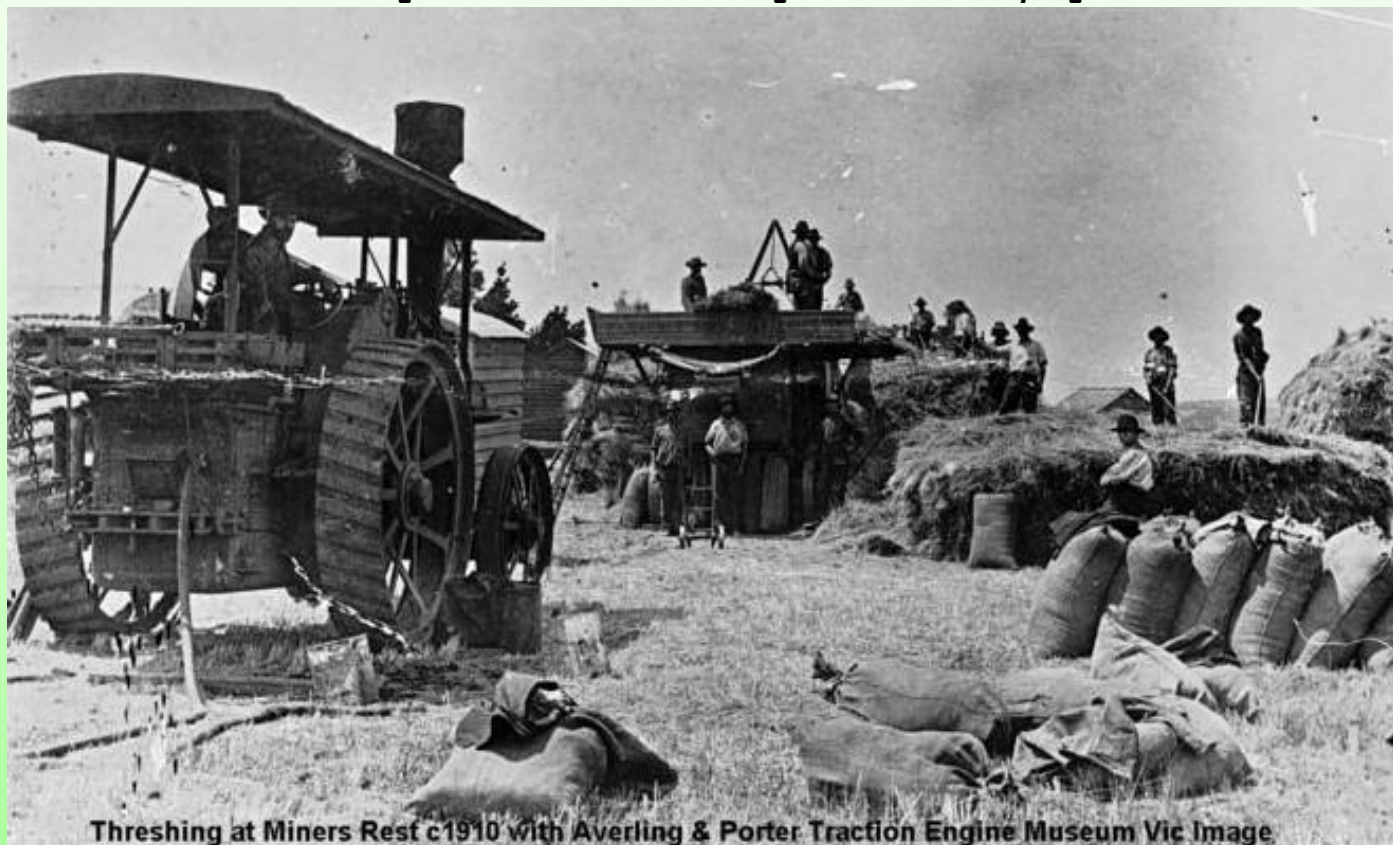


THE PYRENEES HERITAGE PRESERVATION MAGAZINE

Edition 153 Aug-Oct 2019 Find us at- www.lakegoldsmithsteamrally.org.au



Threshing at Miners Rest c1910 with Averling & Porter Traction Engine Museum Vic Image

LAKE GOLDSMITH THRESHING RALLY

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RAAF BLACK CATS

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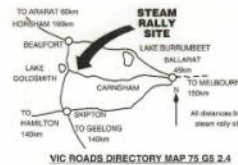
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Our Mission Statement

To foster, nurture, encourage and demonstrate technical, agricultural and life skills associated with the Industrial Era.

To provide a quality environment where these skills may be used to educate and entertain members and visitors.

To run two weekend rallies each year, and be available at convenient time for other interested groups or individuals.

To conserve and develop a heritage collection.

Find us on the net at:- www.lakegoldsmithsteamrally.org.au

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Overview

Welcome to Goldsmith 153, August & October 2019

For this edition the changes continue. There is a way to go yet, but hopefully it gets a bit more interesting. The A5 continues for the Post mail editions which come out for the April, June, October & December editions.

The February and August editions are email only, although this year they were combined with the main editions as there was a lot of completion from other projects .

For the main story, Neville Scobie has put together a history of Lake Goldsmith Threshing as a lead into the Threshing Rally due on November. These contract teams had a long history in the district when the annual harvest was a major event on the farming Calender before grain and hay handling was mechanised for bulk handling. Money was saved and the hard labour involved was eased but a colourful annual event passed into history.

The second story started out as a search to find out who was the first to fly from Australia to Africa across the Indian ocean, and it just snowballed as the role of the fabulous PBY Consolidated Catalina in our civilian and military life came to light, and the existence and operations of the combined RAAF/US Navy offensive aerial program came to light. The book "RAAF BLACK CATS" reviewed on page 17 arrived in the mailbox after the story was completed, Now I can read it to see how this search went. How the exploits of these RAAF airmen and the US Navy crews that supported them has stayed under the radar is a mystery, hopefully the book will reveal more, but their story needs to be told.

Download from:- www.lakegoldsmithsteamrally.org.au/magazine.html

COVER PICTURES

COVER PICTURES Top Threshing Grain at nearby Miners Rest c1910 picture from Museum's Victoria. Bottom An RAAF Black Cat rises from the sea .

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The Scobie Family & Lake Goldsmith Threshing History

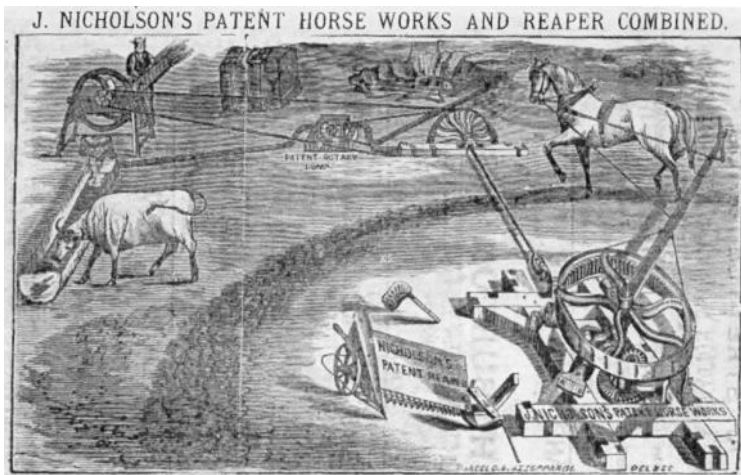
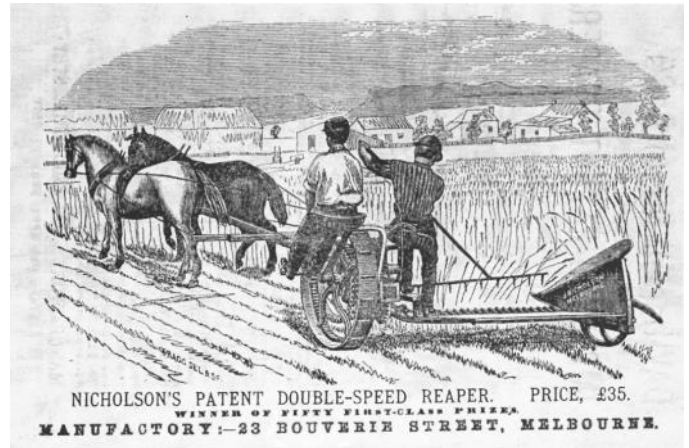
As recalled by Neville Scobie

As the next L G Rally is featuring Threshing & Chaff cutting etc, a few lines regarding it's history might be in order. About 70% of the Traction Engines, which are such popular attractions at Lake Goldsmith and other rallies around the world were generally purchased as part of a "Threshing Set." When Steam power was first developed, the portable steam engine provided a base for the manufacturers of threshing machines, chaff cutters and many other machines to develop from.

Threshing grain goes back to the dawn of agriculture when a flail was used on a sheet of material to separate the grain from the straw, and throwing it into the wind to blow away the husks from the grain before crushing the grain to make flour was the basis of food production.

Similarly, cutting cereal crops into smaller pieces made it more palatable for stock, particularly for the horses and oxen that provided power and transport from the farm to feed the growing world.





The industrial revolution expanded and cereal production moved with it. as did the Threshing machine, that bashed the grain out of the straw, sieved it through to remove any chopped straw that was mixed with it. and blew the dust and husks away, before the grain was sized into different grades for different uses and bagged.



The early threshing machines (or winnower's as they were sometimes called) were driven by horse-works or treadmills (above). As steam engines evolved, it made sense to use them to drive the machines and use the horses



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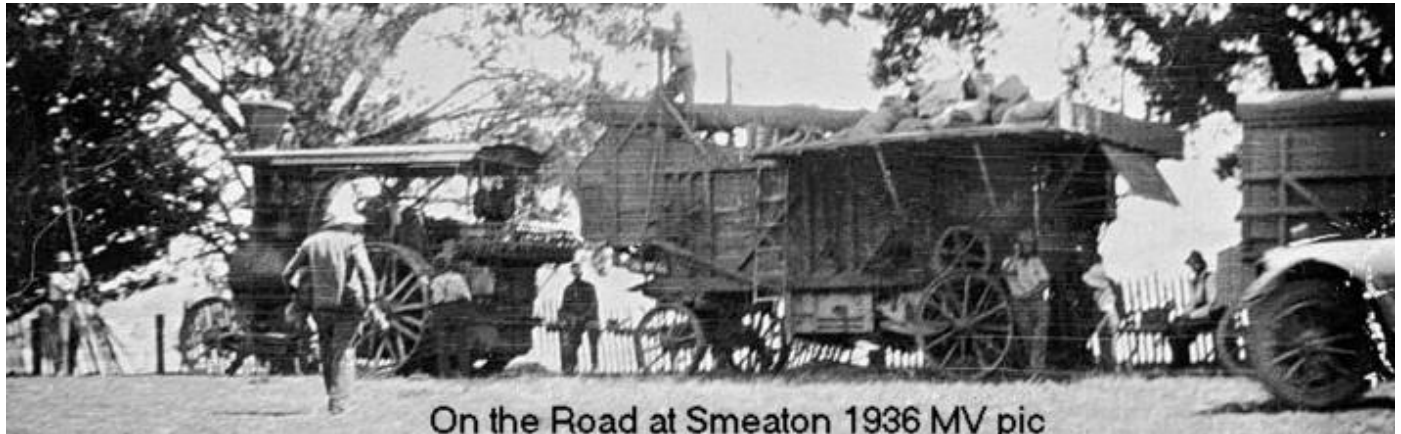
Over 102,000 of Clayton & Shuttleworth's Engines and Threshing Machines have been made and supplied.

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for mobile tasks such as ploughing or transport until the portable engines evolved into Traction Engines and tractors and replaced the horses in the field and on the road, and replaced the portable steam engine as the power source for the thresher.

It is probably no coincidence that the manufacturers of threshers also went into the production of Steam Engines. As the Thresher continued to

evolve, and still does today in the form of the modern self propelled Combine Harvester, the portable Steam engine evolved to the Traction Engine, which could tow the threshing machine from site to



site. The Steam Traction Engine gradually became a more universal power house until, eventually it gave way to the I.C. tractor.

All of this technology came at a price which most farmers could not justify owning. This led to the arrival of the “Threshing Plant Contractor” who brought the plant and built up a “Run” of client farmers around the district.

As mentioned earlier, most manufacturers of either steam engines or threshers, (if they did not manufacture both), or their agents had access to alternatives to supply a complete “Set”. It was probably a good sales pitch at the time, and the agent would have had a lot to do with the success or failure of any make of steam engine or threshing machine as the



farmers or contractors had first hand knowledge of the advantages or pitfalls of each particular make of machine, and as today the skill of the salesman to push the product that they believed offered the best advantage.

Welch Perrin & Co. of Queens Bridge Street in South Melbourne, being a case in point, were agents for Clayton & Shuttleworth and John Fowler & Co. sold very few Clayton & Shuttleworth steam engines but sold their Threshers married to John Fowler Traction Engines.

Surprisingly , many “Threshing Sets” brought new, remained complete for their working lives, some even changing ownership several times.

Sixteen, or so men were needed to man the plant, four on the sheaf stack, throwing hay to two “Band Cutters” on top of the thresher, who passed it on to the “Feeder” who fed the machine.

There were four “Straw Stack Men” stacking the thrashed straw onto massive stacks that were left for stock to rummage through during the following year, or sometimes later baled.

Three men bagged off and sewed the finished grain at a rate of 700 to 1000 bags per day.

A “Chaffie” dragged the chaff and rubbish from the machine using a horse drawn tarpaulin to move it away.

The steam engine driver and “Mousie” (the boss) basically kept an eye on procedures. The farmer also had to supply wood and water for the steam engine, and bring in the hay and cart the bags of grain.

The contractor, as you may well imagine, was a person of mechanical bent, and although every machine was similar in design and function, no two machines were alike as most were modified to suit local conditions to reduce manpower, or make life easier for the men or just to suit a personal quirk for use or appearance at the whim of the owner.

Some of these modifications were extremely clever, some not so much, but it all added to the



history of the machine, or the district, or the men who worked it. The degree of workmanship also varied, speaking heaps of the character of those who altered and worked the machines.

Quality varied from equal to or better than the original build, to “Blacksmith or basic “Agricultural” engineering with its amazing expectations of the tensile strength of twisted baler or fencing wire.

Some of these features ended up being taken up by the agents. Most notable of these is the “Blower” and pipework mounted at the front of the machine below the straw walkers and ahead of the main riddles. This “blew” the cocky chaff well clear of the machine saving the “Chaffies” wages.



Elevating Side Feeder by Sides Band Cutter

Another innovation was the “Side Self Feeder” (above) invented by W Sides, a contractor from Geelong. It consisted of a narrow elevator where the sheaves were placed from the sheave stack, passing a set of rotating knives (mower blades) to cut the bands & tease the sheave directly into the drum.

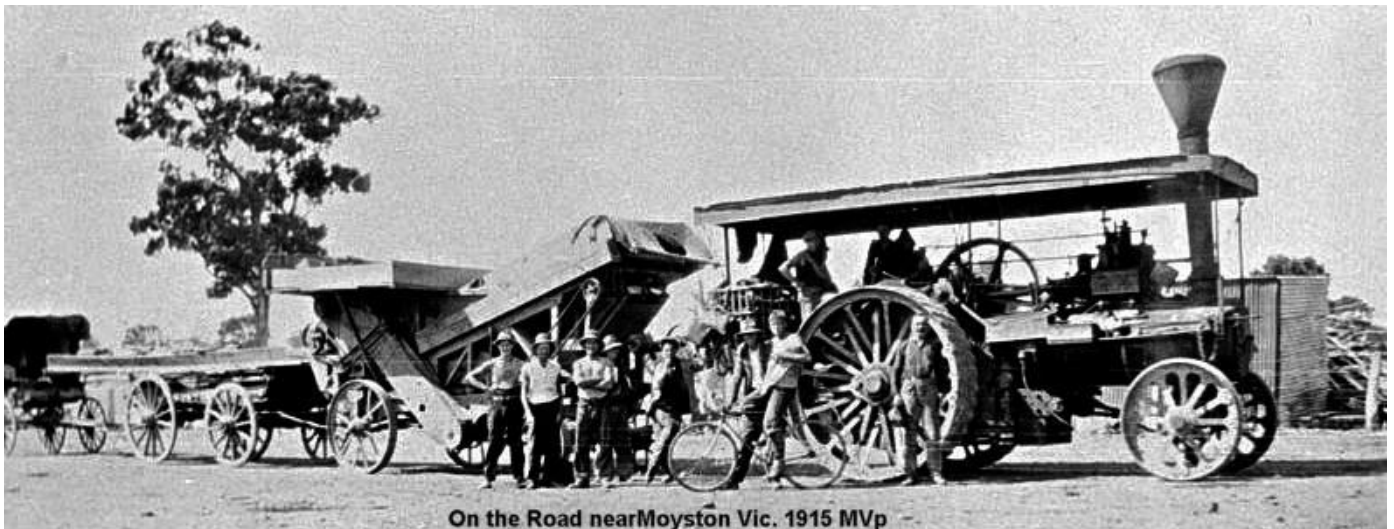
This saved the three men on top of the machine who had cut and fed the sheaves.

The machine at the Hamilton Pastoral Museum is fitted with one of these feeders.

The machine at Lake Goldsmith has a New Zealand made feeder, which only saves the feeder.

There were many other modifications, some mounted weighing apparatus, altered speeds on various parts, increased riddle area etc, the list seems endless. It does say a lot for the innovation of the farmers and men of the districts that the machines worked in.

Tasmanian plants seem to have had more in common with the New Zealand plants than the Victorian plants. They had the straw elevators permanently mounted at the front of the machine and could be folded inside for transport between sites. On the road the train of the threshing plant consisted of the “Traction Engine”, the “Thresher” and two “Stinkeys” (a New Zealand term for living vans). The contractor paid and accommodated all the workers. Here in Victoria the farmer paid for a “Set” (5 hours minimum charge to set up the stack, plus a rate per bushel or bag threshed. The farmer paid all the workers direct except the engine driver and Mousie. Their wages were part of the contractors bill. The workers who travelled with the plant from site to site either slept under the stars or a haystack or went home. The Living Van was reserved for the Mousie and the Engine Driver, who had to light up early and have steam up before the men could start.



So, the order of the (Victorian) threshing plant train was the Traction Engine, the thresher, the elevator cart (the elevator was in 2 parts which were removed manually from the thresher for transport between jobs) followed by the living van, and last of all the “Furphy” water cart, which was the first item to be dropped off to allow the farmer to use it to supply water for the traction engine. Twenty minutes was allowed to “Set” the plant up at the stack. This involved levelling the thresher (to make sure that the grain flows in the right direction), chocking it (to make sure that it does not move while working), refit the elevators, lubricate everything, and adjust the thresher to suit the crop being threshed, changing the riddles air blast etc, and lining up the Traction Engine drive belt and chocking its wheels.

As you can imagine, threshing took on a busy but Carnival type atmosphere, all machinery, men, preparation, cooking (the farmers wife would have to feed all of the men three meals plus two “Smoko’s” a day) made it a busy but exciting time of the year. The threshing sea-

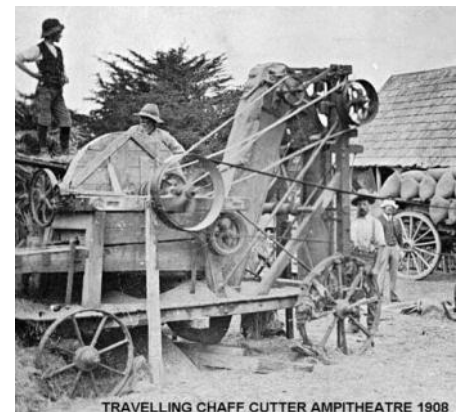


son would start as soon as the hay was ready to thresh in December and hopefully finish before the Autumn break in May normally giving it is a 3 or 4 month season.

A lot of Contractors also took on Chaff cutting This (apart from the extra income) kept the contractors men employed for most of the year, and helped justify the purchase of the Traction Engine. Chaff was always in demand, as until WW2 (when surplus ex army trucks became readily available) the horse and cart still reigned supreme in the city and towns, and the horse also held pride of place on the farm. Chaff cutting would start as soon as threshing finished and go on until the spring, although little was



done during winter as the Traction Engine was not the most manoeuvrable machine in wet conditions, unless they found solid conditions in a hayshed somewhere.



Chaff cutting was probably one of the hardest jobs for the Traction Engine, for as well as driving the Chaff cutter, it also had to supply steam to "Steam" the hay prior to cutting. This moistened the hay, making it cut cleaner, with less dust creating a better quality and more nutritious product.

The Thresher that we are using today is a Clayton and Shuttleworth (No 38 200) built in 1908, with a 5' drum it is typical of the size machines used here in Australia. I believe that these machines are larger than the standard machines in England which I understand usually use 3' to 4'6" drum.

The interesting thing is that it has taken Combine Harvester designers 80 years to develop a header with a 5' drum that can match the thru-put capacity of these "Colonial" threshers.

This machine is truly a "Ballarat" machine, it started its working life with Glenare Bros. at Dunstons, their run starting around Lethbridge and finishing up on the outskirts of Ballarat around Mt. Warrenheip. It was originally driven by an 8hp Fowler 8C Traction Engine (No 8841 more about this



engine later). The Plant and Run was sold to Dick Barry, who I believe originally come from around Ballan / Elaine area before moving to Talbot

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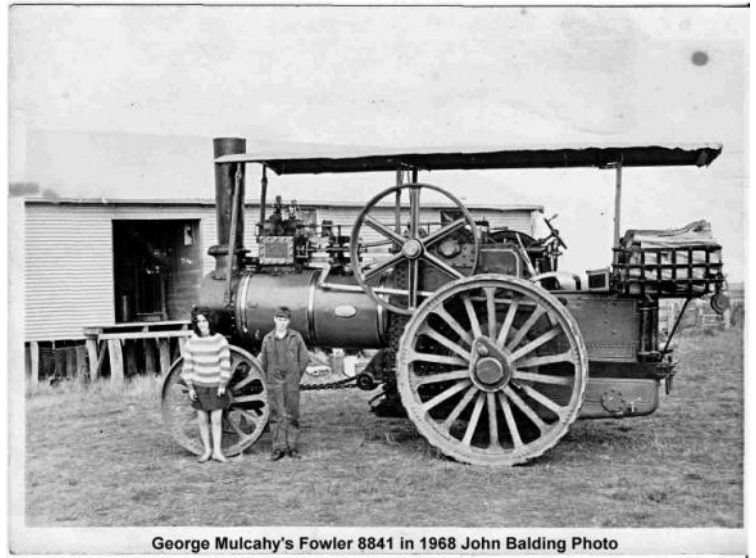
Street near Sturt Street in Ballarat CBD.

He only did contract threshing, not Chaff cutting, spending the off season rebuilding and “tweaking” the thresher. Many of these extras are still evident on the machine today. He had close ties with “Morris Ellis & Sons,” machinery agents in Sturt Street, so the thresher spent most of its time there, with full access to the Ellis workshop in later years. Morrie Ellis & Sons used Dick Barry’s yard in Talbot Street as their used machinery yard. (they were agents for Fiat Tractors, Mitchell Implements etc.)

Dick sold the plant about 1950. The Traction Engine went to Harrison Bros. at Enfield. who I believe also ended up with the only Steam Roller made by the Phoenix Foundry in Ballarat. The Thresher went to Cliff Nunn at Mount Emu. George Mulcahy brought the Fowler in the late 1950’s and it became the founding Traction Engine that started the Lake Goldsmith Rallies.

George later brought a Thresher belonging to Scobie Bros. at Dean and used it for a season, presumably to clean up a few old hay stacks, as headers would have been fairly common by then.

George and brother Tom had heard of “Steam Rallies” in England and decided to give it a go with the first held on Lyn Bruty’s property at Poverty Point near Haddon in 1959, then at Georges Property at Lake Goldsmith in 1962. As they say the rest is History!!



George Mulcahy's Fowler 8841 in 1968 John Balding Photo



George Mulcahy on Fowler 8841 Driving a Thresher in 1961 at Lake Goldsmith J. Balding picture

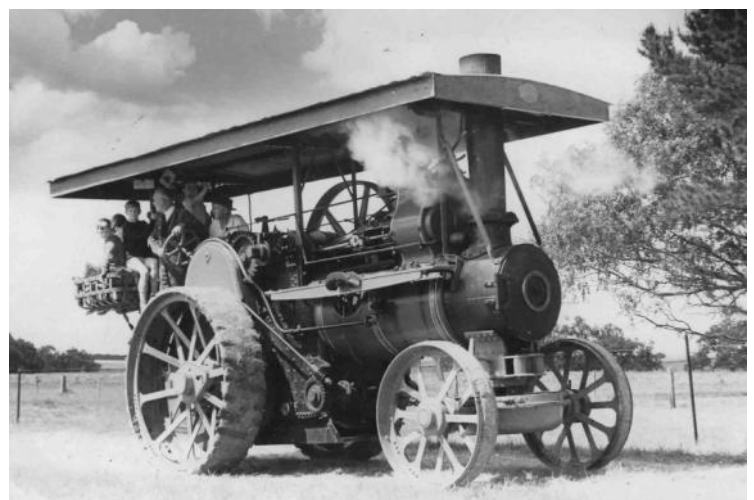
At the first Lake Goldsmith Rally, George decided to put on a thresher display, this was the first working display at any Australian Rally, using Fowler No 8841 and the ex Scobie Thresher, Clayton & Shuttleworth No 38378, a similar machine to the Clayton & Shuttleworth No 38200 that is used at Lake Goldsmith today.

This display created a lot of interest, especially with the old ex-threshermen contractors.

Threshing has been superseded by headers since

the late 1940’s. A lot of these old thresher men became the core founding members of our organisation as we know it today.

These “Thresher Men” did not need to be asked twice to “give a hand” to set up and run the plant at anytime when it ran. The wealth of experience was daunting, the stories told were amazing (wether they were true might have been another matter). These blokes were experts at their trade, so to watch them work or assist when there was a rare breakdown was both a privilege and a pleasure.



Clarie Hall Steering J Kirkpatrick compound Fowler 16107 1964 Lake Goldsmith



Line up for the "ABC Big Country " c1970 T.K.Brown, John Mulcahy, Geoff Scobie, George Mulcahy, Jack Ross, Les Buckwell, Maz Scobie,

Above:- George, Tom and John Mulcahy (Lake Goldsmith, Bob, John and Jack Kirkpatrick (Stockyard Hill), Ken and David Boyle (Stockyard Hill), Les Buckwell And T K Brown (Coleraine), Alec Fraser (Burrumbeet (and later Tatyoon)), Jack Ross (Newlyn) Clive and Erwin Sackling (Moonaghip), Les, Max and Geoff Scobie (Dean), (Geoff and grandsons run shed 42)

The Scobies have organised the threshing display since the first rally as they were so familiar with their old machine which they knew inside out. Although they could still “play “with part of their old plant at rallies, they regretted having parted with their old thresher. In 1976, with a lot of encouragement from George Mulcahy, they were able to purchase Dick Barry’s Thresher from Cliff Nun and swap it with George for their old machine. George always said that it was one of the best deals that he had ever done, for not only did Scobies get their old machine back, Dick Barry’s plant was complete again, Fowler 8841 & Clayton & Shuttleworth thresher 38200, although they have only ran once together since they were reunited. This was at the May 1978 Rally for a “Leyland Bros” Television Special on Lake Goldsmith. (although I do not know if it was ever screened).

That is not the only time that Lake Goldsmith has featured on Television. The ABC filmed a



Scobie & Sons Threshing Set Fowler Traction Engine & Clayton & Shuttleworth Thresher

feature on threshing at the rally in an episode of the current affairs show “Weekend Magazine in 1968. It was the first job for a young reporter Paul Lineham, who later went on to become a current affairs celebrity.

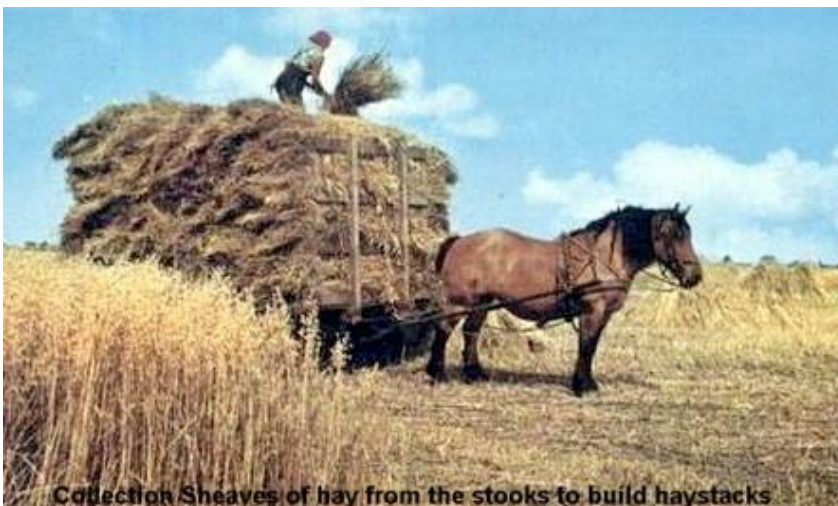
Threshing at Lake Goldsmith again featured with Steam Ploughing at Sam Marshalls property at Lockington, steam sheep shearing at Jack Kirkpatrick's at Stockyard Hill in an episode of the life-style show "A Big Country" in 1970. Threshing also featured in a Lake Goldsmith on Country Wide a forerunner of "Landline" in 1989 Our Past President and Secretary, John Norris worked for the ABC in Adelaide for many years before moving to Lake Goldsmith.

The Lake Goldsmith Threshing display also featured in a T.V. add for Viscount Cigarettes in 1971. The add also featured modern (1970) harvesting methods at Alec Frasers property "Yally-Y-Poora" at Tatyoon. That footage would make interesting viewing today. To compare 2019 with 1970. If anyone has a copy or footage of the Viscount add, we would like a copy.

As George Mulcahy had retired from farming by the late 1960's, getting sheaf hay to put through the thresher for displays became a problem. Scobies usually supplied the hay until the mid 1970's when Smith Bros (David & Jim) of Rocklyn started their Chaff milling enterprise. They used sheaf hay to make chaff until 2011 when they started to use round bales. They were part of the threshing team at Lake Goldsmith, and now run the "Emu Creek Sawmill at Lake Goldsmith.



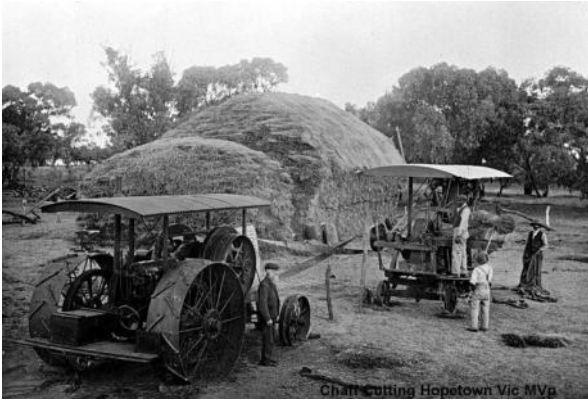
Cutting sheaf hay is a very laborious process. The hay is cut and tied into sheaves with a "Reaper and Binder" using twine to tie a bunch (sheave) of hay in the middle. The Sheave, which weighs about 10Kg is left in the paddock. They are then stacked by hand into "Stooks" of 15/20sheaves and allowed to dry for at least a fortnight. The hay is then stacked on a trailer or wagon using pitch forks, carted to a shed or haystack and unloaded by hand.



A good stack of hay in a paddock is a work of art. It had to be done properly otherwise wind and rain would destroy it. These days Scobies have restored their old reaper and binder and cut one or two acres of oats with it for our displays each year.

In 1984 a major threshing display involving the Lake Goldsmith





team was organised in front of the Old Melbourne Science Museum in Swanston Street Melbourne for the 150th anniversary of Victoria. It was a massive undertaking as Swanston Street was covered with instant turf and many and varied displays along its length. Our display involved three semi trailers, one for Hay, one to move the Traction Engine and Portable and one for the Thresher and a Tractor to manoeuvre things around. Two trucks were also needed too, one for firewood for the steam engines, and one for the straw press, it was a logistical drama, but we pulled it off.. It created massive interest in the middle of Melbourne and it also cemented the close ties we have with Museums Victoria which continues today.



Lake Goldsmith demonstrating Threshing in Swanston Street outside the Old Science Museum 1984

Scobies continue to coordinate these displays to this day with fourth generation (Les's great grandsons, Joel and Mitch, taking on this exhibit, along with the valued association of the Newell family (2 generations) Graeme Milton and Trevor Oliver since the 1970's, and Mick and Jake Coleman amongst many, many others. It is a major undertaking each rally, and only made possible by the massive team effort involved. No doubt I have forgotten many, and I sincerely apologise for this, but I wish to acknowledge and thank them for their past, present and future assistance.

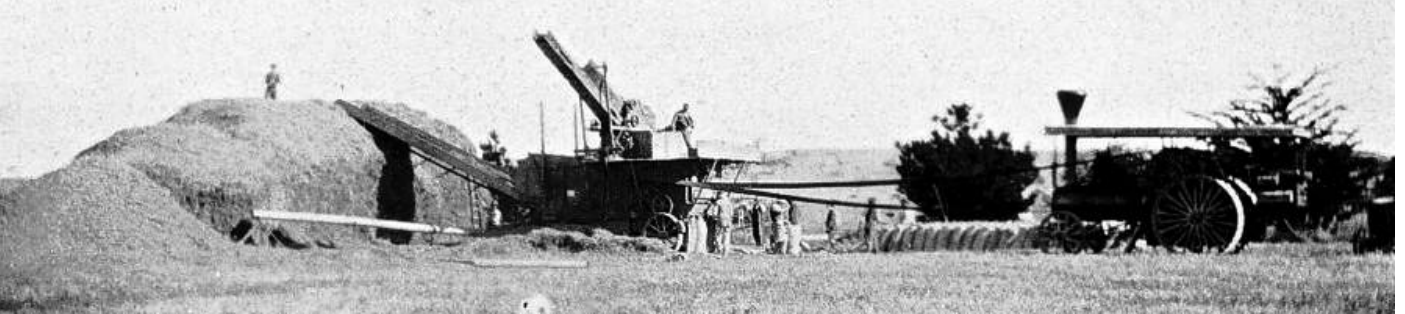
Of Course every exhibit involves a massive amount of work behind the scenes. These notes give an idea of the amount of work involved in just one exhibit. Lake Goldsmith has a great many stories involving the many exhibits displayed there , and hopefully these "Themed Rallies" give those involved the recognition that they deserve. N. Scobie.



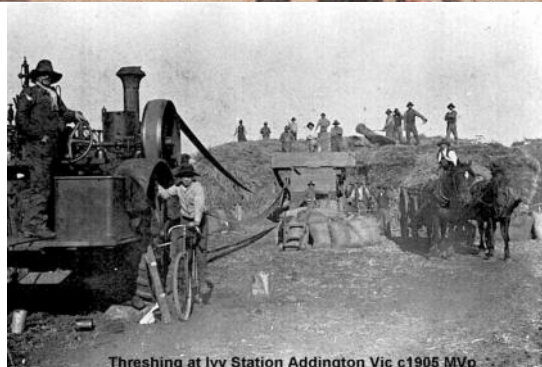
Scobie & Sons Threshing Set Fowler Traction Engine and Clayton & Shuttleworth Thresher



On the Road near Moyston Vic. 1915 MVp



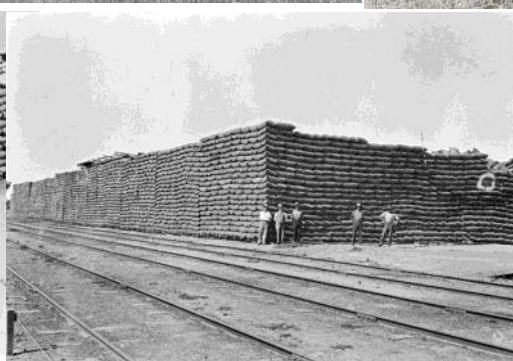
LGSPA Demonstration in Swanston Street outside the old Science Museum 1984



Threshing at Ivy Station Addington Vic c1905 MVp



Glengyron Station Dean 1919



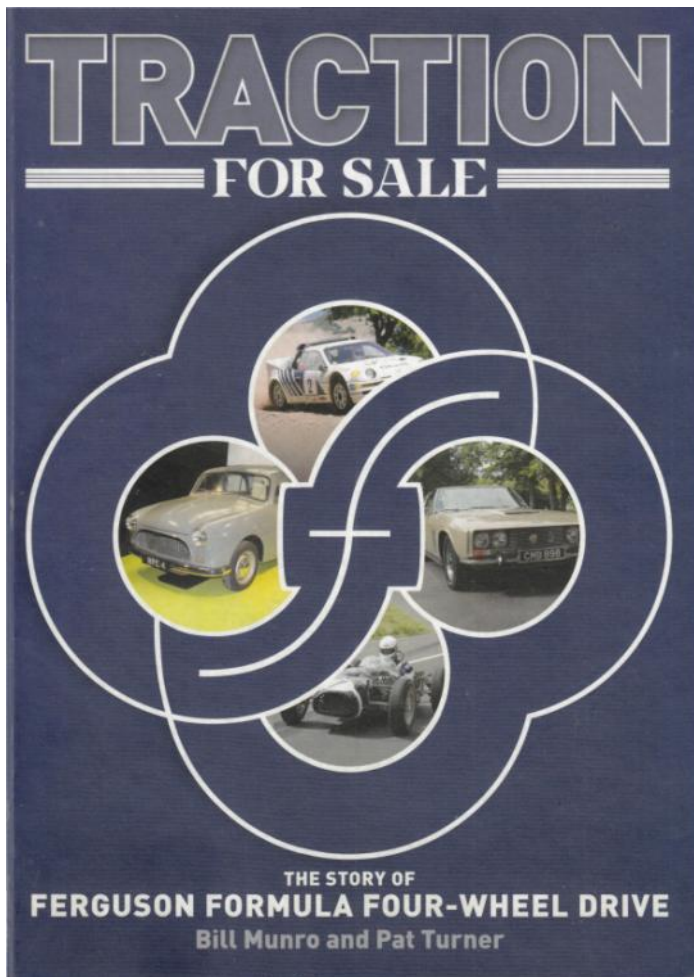
Book Reviews:-

TRACTION FOR SALE-

The Story of

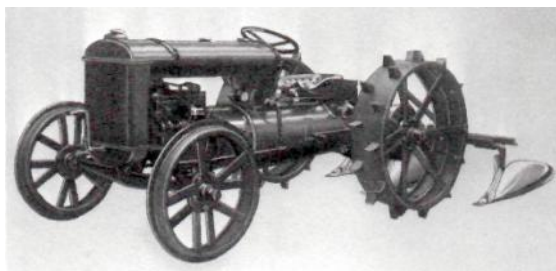
FERGUSON FORMULA FOUR-WHEEL DRIVE

In edition 144 October 2017 the Harry Ferguson Tractor Club started their Tractor trek from the Rally Grounds and toured through Beaufort and the surrounding district. To mark the trek we took a look at Harry Ferguson's other contribution to modern motoring, full time four wheel drive and stable braking for road vehicles. The article outlined the P99 Ferguson Formula One car, and the gradual introduction and adoption of the system and its use on so many current cars.



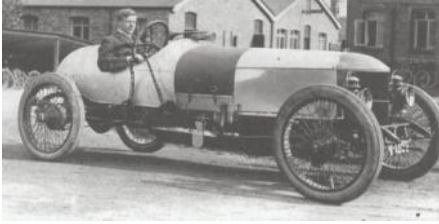
Unknown at the time, a book devoted to the subject was being put together by Bill Munro and Pat Turner in the UK. This book was released this year, and it will be available at the November Rally.

The book covers Harry Ferguson's varied background as he established his mechanical background in various fields from building an Aeroplane to racing cars and improving farm safety with his linkage mounted ploughs and other tractor attachments which led to the famous tractors that bear his name and set standards that are still in use today.



Along the way he established a lot of contacts in various fields, one of these from his early motor racing days was Fred Dixon who raced Riley cars in the 1930's. One of Dixon's ambitions was to improve car safety and performance by using full time four wheel drive in competition vehicles. To achieve this Dixon realised that to make this work each of the four wheels had to be able to rotate at different speeds while they still provided their share of tractive effort, and if a wheel did lose contact with the ground it

must not spin to avoid the remaining wheels losing traction. Another racing driver, Tony Rolt, teamed up with Dixon in the late 1930's to produce their first all wheel drive prototype. World War 2, (during which Rolt had spent a lot of time in Golditz prison, where he had built a glider to try and escape), (he later won at Le Mans in a C type Jaguar) interrupted the venture.



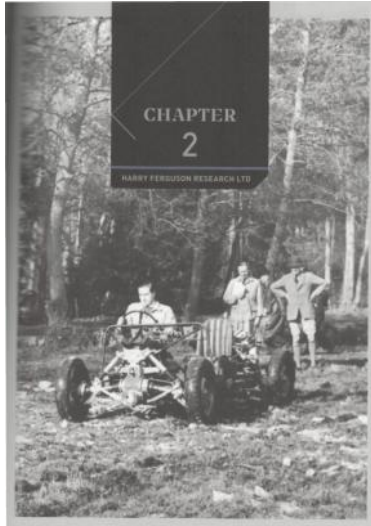
Ferguson's Vauxhall



Dixons Riley



Rolts Alfa Romeo



In the late 1940's Harry Ferguson met Dixon and Rolt and discussed their prototype 4wd and put some money into the venture. Harry Ferguson could see the basis of a safe popular family car.

Harry Ferguson Research Ltd. was on the way, and so was the drive to develop the safe road vehicles that we drive today. For anyone who can remember the roadholding of 1930 style cars, the difference is dramatic. Of course there is more to safety than 4WD, and selling safety is not easy, very few think that they should pay for something that they may never need, in spite of the fact that you can only have one fatal accident.

thing that they may never need, in spite of the fact that you can only have one fatal accident.

This book covers an exciting era of post WW2 development, from the dreams of 3 competent enthusiasts the company grew to be an inventive prototype manufacturer and a world class design consultancy, and manufacturer of specialist transmissions.



The Ferguson Family supported HFR after Harry Fergusons death until it became self supporting under Tony Rolt as FFD. The family still provided back ground support as they concentrated on tractor research. FFD eventually became part of the Ricardo Engineering Consultancy as their transmission division which is active internationally today. This book has a lot of information in its near 300 A4 with 600 or so pictures.

centrated on tractor research. FFD eventually became part of the Ricardo Engineering Consultancy as their transmission division which is active internationally today. This book has a lot of information in its near 300 A4 with 600 or so pictures.

Unusual for this type of book you can read the story from start to finish, and then go back and fill in on the highlight detail packets which include stories from Indianapolis to Le Mans & Group B Rally cars to Formula One, with stories from behind the Iron Curtain to Detroit, and technical details from sprag clutches, viscous couplings and viscous transmissions all of which played a part in the evolution Full Time 4WD.

If you have an interest in Ferguson Tractors, the evolution of Formula One, Rallying or 4WD or how persistence against the odds pays off, there is something here for you. Enjoy the read. Ed.



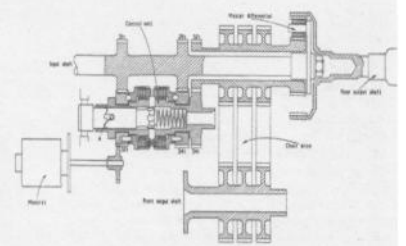
THE JENSEN C-V8 In detail

THE TRANSFER CASE

Although there was one inch difference between the wheelbase of the Jensen FF and the Mustang 110in/2,768mm and 108in/2,743mm respectively, the Jensen's Chrysler engine was physically larger and sat much further back in the chassis, leaving no room for a separate transfer case. This necessitated bolting the transfer case directly to the rear of the transmission in place of the transmission's tailshaft housing. A short adapter casing was fitted between the two units. The case included a Duolok and a triple-tooth Morse Hy-Vo chain drive the front output shaft. The Maxaret control unit was driven by a layshaft, spur driven off the input shaft.

THE FRONT AXLE, SUSPENSION AND REAR AXLE

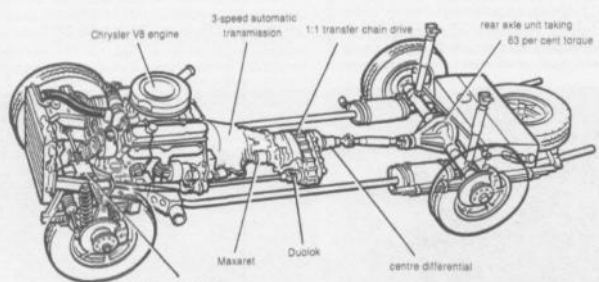
The independent front suspension of the Jensen C-V8 was derived from contemporary large Austin models, with coil springs acting on the lower wishbones and Armstrong lever arm shock absorbers acting as the upper wishbones. As the springs were located on the same plane as the axle centre line, they blocked the path for the front axle shafts and so were replaced by a pair of smaller diameter springs mounted either side of the axle centre line. The lever arm shock absorbers were replaced by forged steel wishbones. New uprights, designed to take the driven front hubs were built, which were located on the upper and lower wishbones by ball joints instead of the original fulcrum pins. The front suspension of the production FF followed this design.



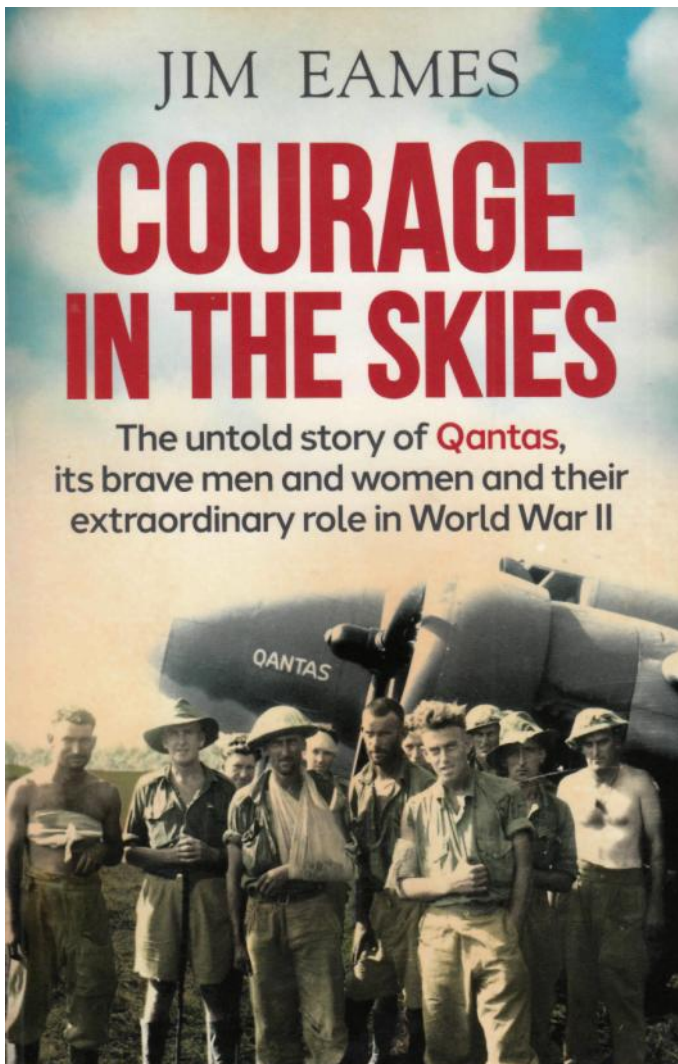
(Above) The transfer case of the Jensen prototype contained a triple Morse Hy-Vo chain, though later production cars had wider, twin chains. (Ricardo MTC Archive)

The engine and transmission were offset and angled to the right to clear the steering column and front propshaft. Drive to the front axle was taken by a short propshaft on the passenger side of the engine to the Salisbury final drive unit in the front axle. At the rear, a short, one-piece propshaft took the drive to the standard Power-Lok limited slip rear differential. The rear axle was suspended on longitudinal leaf springs and located by a Panhard rod.

(Below) Packaging the Jensen's driveline presented very different challenges compared to the Mustang. Though the Jensen FF's wheelbase is only 1 inch shorter than that of the Mustang, the Jensen's engine is mounted much further back. Although this allows room for the front axle to be mounted ahead of, instead of underneath the engine, it very much reduces the space for either the transfer case or the propshaft. (Ricardo MTC Archive)



Ever now and then a book comes along that makes you feel as though you have been living in a vacuum, and this book is one of them. It was published in 2017 and written by an author with a long his-



tory of aviation writing. Qantas started out in Queensland in the early 1920's, and by the late 30's on the eve of WW2 they acquired Short C class Empire Flying Boats to start an air service to the UK.



Short S23 C class Empire Flying Boat QANTAS CENTAUREUS MV Picture

As Qantas Empire Airways they had commenced a land based service to Singapore via Darwin in the 1930's. With the arrival of the flying boats they operated from Rose Bay on Sydney Harbour, and they set up a service facility at Sydney's Kingsford Smith Airport to service the 900HP 9 cylinder Pegasus SC engines which opened just weeks before the outbreak of WW2.

Qantas retained its identity and service through out the period to the fall of Singapore from where it flew relief shuttle flights to Indonesia until the end when the passenger launch made its escape. This was followed the fall-back fighting through Indonesia and Timor to Australia, and eventually to Broome where they, amongst others, lost more planes in a Japanese fighter attack. The aircraft were on the civil aviation register, at times some were used by the RAAF and at other times they were under charter to the United States. With planes lost to enemy action and accidents the flying boat fleet was shrinking.

The Consolidated Catalina saved the day. These incredible planes were the backbone of the 300 or so "Double Sunrise" 30 hour flights from Perth to Ceylon that bypassed the Japanese and reconnected the UK.



This is an incredible bit of Australia's Civilian & Military aviation history in WW2 and the interplay with Britain and the US makes an incredible read. Ed.

ROBERT CLEWORTH and JOHN SUTER LINTON

RAAF BLACK CATS

The secret history of the covert Catalina mine-laying operations to cripple Japan's war machine



In March 1945 Reg Cleworth, a navigator on PBY Catalina seaplanes flying out of Darwin, went missing in action. No details were ever given about the incident that took his life, nor the reason his plane went down. For Reg's younger brother, Robert, the news came as a prophecy fulfilled. The last time they saw each other, Reg confided in Robert, 'I don't think I'm coming back'.

Forty years later Robert decided to investigate what happened to his brother. What he uncovered was an extraordinary story of a covert Australian airborne mine-laying operation in cooperation with the US Seventh Fleet to disrupt the Japanese supply routes. One of the riskier and more dangerous RAAF undertakings of the Pacific War, secrecy restrictions were imposed on everyone involved. They were never formally lifted.

Had it not been for a chance meeting that allowed Robert access to previously unopened files in the US national archives, this remarkable story may never have been told. What he unearthed revealed the sacrifice and achievements of the RAAF Catalina crews and the vital role they played in MacArthur's strategic plan for the south-west Pacific.

ABSORBING, COMPELLING AND POWERFULLY TOLD,
RAAF BLACK CATS IS AN IMPORTANT ADDITION TO OUR
UNDERSTANDING OF AUSTRALIA'S ROLE IN THE PACIFIC WAR.



Cover design: Luke Canby / Blue Cork
Front cover photograph: Australian War Memorial OG3228
Back cover photograph: Courtesy Reg Marr, DFC, QC



This book was only released this year, and my copy only arrived as this edition of Goldsmith was due to go to print. The inclusion of the Black Cats in the following supplement only occurred by accident when they kept popping up searching for some background on the PBY Catalina's role in the first crossing the Indian Ocean.

Firstly the US military starting painting some of their Catalina's black as a camouflage to allow such slow flying planes to be used at night behind enemy lines. This they did successfully, and a lot of background can be found in the internet. The odd references to 4 Australian RAAF Squadrons was intriguing, so it led to many days on the internet until the bare bones of a story came to light. There was enough official US material reporting events to confirm that there is an enormous gap in the awareness of the role that this small group of specialist RAAF airmen played in the successful outcome of the War in the Pacific.

The authors of this book have gone to a lot of effort to bring the story of these airmen to light with the origins and details of these raids, the interaction of the allies to coordinate these raids with other actions and some corrections to history.

Hopefully our supplement generates enough interest to encourage some readers to follow up and learn more about the secret roles of these airmen in Australia's history.



The First & the Furthest—The RAAF Black Cats



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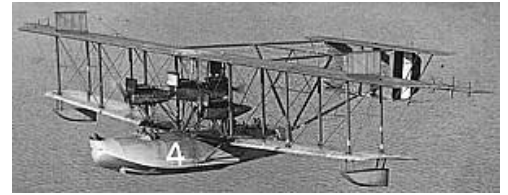
AIRPLANE PICTURES

FIRST FLIGHT ACROSS THE INDIAN OCEAN

Australia to Africa

Pioneering Flights

There is a lot of aviation history about crossing Oceans, and the first to be crossed was the Atlantic when, in May 1919 the US Navy flew a Curtiss NC-4 from the US to Newfoundland, the Azores, Lisbon Portugal and finally Portsmouth England in 23 days. Navigation was via over 50 station ships along the way. (right)



When the Daily Mail offered £10 000 for the first nonstop flight in under 72 hours, four teams entered. All had to ship their planes across the Atlantic to the US and each had to provide a runway for their heavily loaded planes.



Australian Harry Hawker and MacKenzie-Grieve (left) in a single engine Sopwith Atlantic were the first to try on May 18 1919 but engine trouble brought them down in the sea from which they were rescued.

Raynham and Morgan started the same day but crashed on take off.

Mark Kerr's Handley Page Atlantic (right) had to make a forced landing and the delay ended their chances.



The victors (below) were Alcock and Brown in a Vickers Vimy which landed in Galway Ireland after 1890 Miles in 16 hours flying in poor weather on June 15 1919.



The plane landed on a bog and ended up nosed down, fortunately with the crew unhurt. Winston Churchill handed Alcock and Brown the £10 000 prize. Hawkers team received £5 000 for their part in the competition. Their plane was recovered and displayed on Selfridges Department Store roof. Alcock and Browns Vickers Vimy is in the Science Museum.

The crossing of the Atlantic demonstrated the improvement in reliability of aircraft which had been achieved during WW1, and the improvements in long range navigation.

The Pacific Ocean was the next to be crossed in 1928 when Australians Charles Kingsford-Smith and Frank Ulm, with Americans James Warner and Harry Lyon as radio operator and Navigator flew their Fokker Trimotor, "Southern Cross" from Oakland in California to Hawaii 2400 Miles, from Hawaii to Fiji 3155 Miles and from Fiji to Eagle Farm racecourse in Brisbane 1683 Miles.

In 1934 he flew back from Australia to the US with Capt P.G. (Bill) Taylor as co-pilot/navigator. "Smithy" had an association with Taylor from ANA (Australian National Airways) which he founded with Frank Ulm. Taylor was a pilot with ANA. Later, on a flight to New Zealand, in the Southern Cross Taylor saved the flight by climbing out on the struts 6 times to recover oil from a disabled engine with a damaged propeller, transferring the oil to an over-heating engine on the opposite side. The plane returned safely from midway across the Tasman Sea.



With the Atlantic and Pacific crossed the Indian Ocean was yet to be crossed between Africa and Australia. Many flights had been made from Europe to India and Singapore following the coast of Burma, Siam and Malaya. From Singapore flights to Darwin via Indonesia were frequent by the mid to late 30's and Qantas Empire Airways and BOAC had services that met at Singapore.

By the mid 30's Japan had invaded and occupied Manchuria in China and Italy occupied Ethiopia and the Spanish Civil war was underway, concern about maintaining the UK, India, Australian flight connection which depended on the coastal airbases for fuel, service and accommodation of passengers on these 10 day's (and more) trips if the fighting spread from these countries.

Events changed rapidly as the Japanese occupation expanded and WW2 spread to the East Indies

and the Pacific.. The Democracies responded with trade embargoes in the vain hope of avoiding war but realising that it was a possibility they started to prepare for it.

The US Navy recognised the need for a long range flyingboat for patrol work in the Pacific and put out tenders for appraisal. The successful design came from Consolidated Aircraft of San Diego in Southern California. The US Navy had used various flying boats from Consolidated which evolved into the Consolidated Model 28 for civilian use and the PBV (Patrol Bomber (Y was the code for Consolidated))

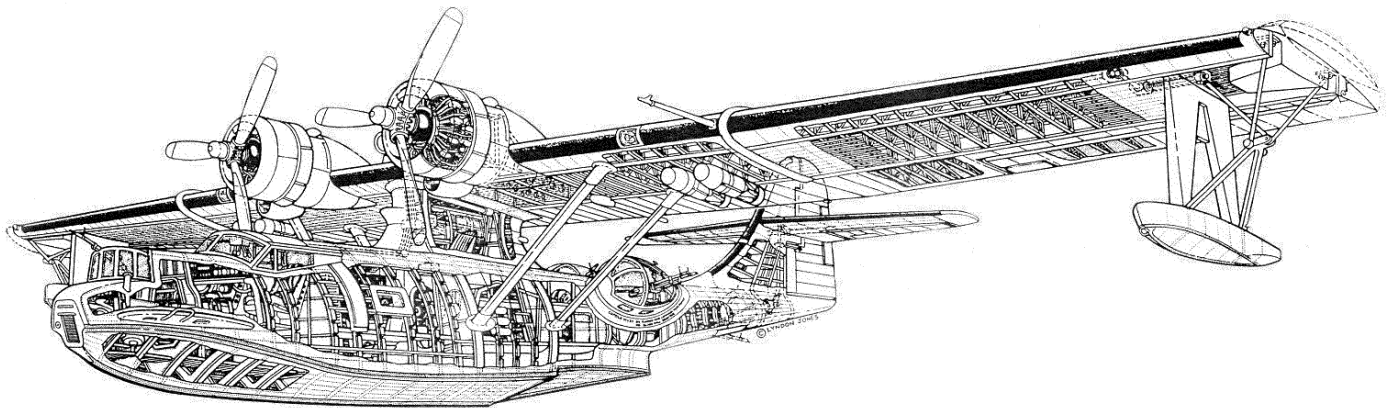


CONSOLIDATED P2Y RANGER ("US NAVY)

above Model P2Y Ranger (US Navy) and left Consolidated model 22 and below an early model 28 PBV before the side blisters were added.



The wing floats on the Catalina were hydraulically operated and when raised they became the wing tip where they provided some lift rather than the dead drag. Below this cutaway drawing gives some idea of the layout. Later amphibious models had landing wheels that retracted into the sides of the hull. The early models needed a special dolly to be beached.



By 1937 the US Navy had a Patrol Bomber Flyingboat with a range of 2500 Miles. An earlier experimental model had made a 3380 mile record flying from Panama to San Francisco in 34 hours.

The Consolidated Model 28 made a timely arrival for zoologist Richard Archbold who had conducted zoological expeditions into New Guinea in the 1930's. Archbold was independently wealthy and travelled on these expeditions which he financed.

The first was in 1933/34 to South East New Guinea.

The second trip was 1936/37, for this trip a Radio equipped Fairchild 91 B Single Engine Amphibian flying boat was used to ease transport and improve communications. The plane was destroyed in a storm while anchored at Port Moresby.

For the third trip in 1938/39 Archbold acquired a



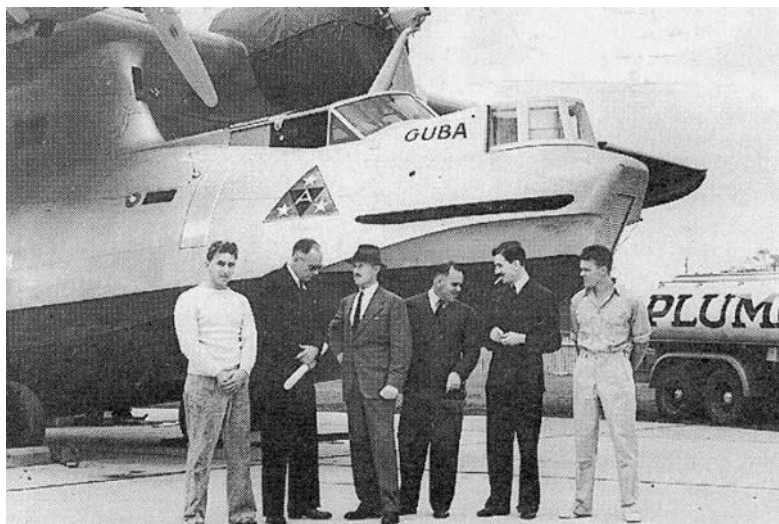
Consolidated Model 28-3 (PBY-2) and used it to explore New Guinea, which was then part of the Dutch East Indies.

The Plane was named Guba, (Tropical Storm in the local language) and it was purchased for the “American Museum of Natural History” in New York for \$378,286 including spares. With the expedition near its end, before Archbold headed back East across the Pacific, he was approached to seek his assistance in exploring and alternative route from Australia to the UK via Africa rather than the Singapore India route in use at the time.

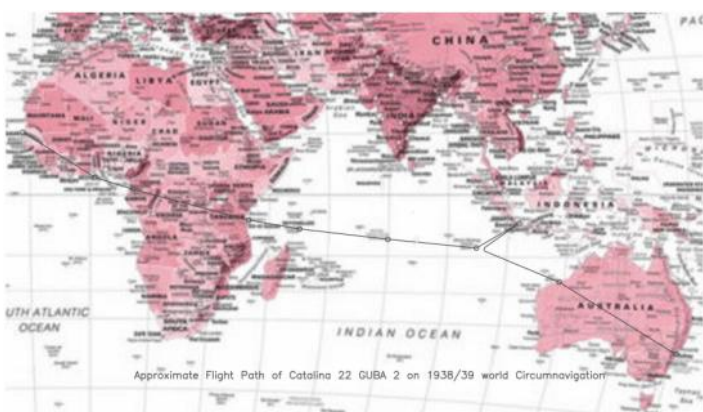
The approach was made by P.G. Taylor, who was mentioned earlier in reference to his association with Kingsford-Smith with ANA and his record flights. Taylor was a WW1 pilot and an experienced Astro navigator who had been involved in civil aviation in various roles. He was also well connected by virtue of these roles.

Archbold supported the idea and the Australian Government picked up the extra costs involved.

The picture above was taken at Rose Bay before the African trip started. Taylor is third from the left, and Archbold is 5th with the cigarette.



Above, from the Geoff Goodall collection, GUBA 2 is seen at anchor at Williamston near Melbourne.



The Map above left shows the approximate flight path of GUBA 2 from Rose Bay (above) in Sydney to Port Headland in Western Australia (below left). This was the first time a flying Boat had crossed Australia. Archbolds crew flew and navigated while Taylor recorded the survey of the route. Guba 2 had been fitted from new with long range fuel tanks which extended its range to around 4000 miles.



From Port Headland (left) on June 4 1939. The next stop was the low lying Cocos (Keeling) Islands, now an Australian protectorate, about 1600 miles West. Bad weather made it hard to find so they diverted to Jakarta (it was Batavia then), and returned when the weather cleared.



GUBA 2 appears to have been the first plane to arrive at the Cocos. There was no airstrip or refuel facility (unless you sent it by boat beforehand), so a seaplane was a must, and at 1600 miles you needed a large reserve to get back or go forward.

Later, the Royal Air Force built an airstrip in 1942 to attack Japanese forces. They set up a base which peaked at near 8000 personnel.

After WW2 in 1948 "Qantas Empire Airways" used the Cocos Island base to survey a route from Sydney to Johannesburg. The Australian RAAF took over the base in 1952. In September of that year Qantas commenced the fortnightly Island hopping "Wallaby Route" from Sydney to Johannesburg South Africa using Super Constellations, via Perth, the Cocos(Keeling) Islands and Mauritius. This route survived until the Boeing 707 came into service in 1967. Its increased range allowed it to bypass the Cocos (Keeling) Islands.

In 2017 Australia Post introduced a set of 4 \$1 stamps that featured the Sea and Land planes that established the regular Trans Indian Ocean flights between Australia and South Africa.

Now back to 1939

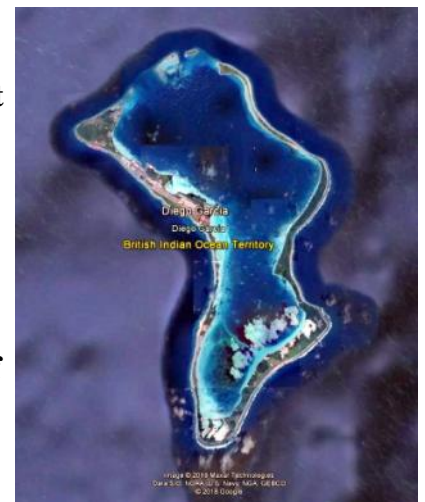
From the Cocos Islands Taylor headed another 1700 miles West to Diego Garcia Island, part of the British Indian Ocean Territory which, since 1968 has been a military outpost used jointly by Britain and the United States. During WW2 it was a Radio and weather station and it was used as a Flying Boat Base



As an aside a British Catalina (left) landed 5 years later in 1944, low on fuel after a flight from Madras in India. The fuel ran out and the engines cut out before the plane could reach the mooring bouy under its own power.

There were no beaching facilities, so the plane remained moored in the lagoon near the Coconut plantation.. A cyclone blew up and wrecked the plane on the beach. It was stripped of

small useable parts, and later the motors and other parts were recovered. The crew were recovered by another Catalina Flying Boat.



The plane had been meant to refuel in the Maldives, but a storm had damaged the refuelling tender and they had to fly two hours further South, guided by the Diego Garcia radio station who monitored the continuous signal given out by holding down the Morse key for long periods. That is getting home by the skin of your teeth. These Catalina's did not have Guba's long range tanks.

The hull and wings remain as a relic and reminder of the islands role in WW2 and the planes that searched the area for Japanese submarines, and 21 year old pilot James Park who flew "Katie".

One can only imagine what goes through your mind in the middle of the Indian Ocean, in a severe storm that makes navigation impossible taking directions from a radio operator giving you directions from a Morse key signal with so little fuel in the tanks that the engines cut out on landing.

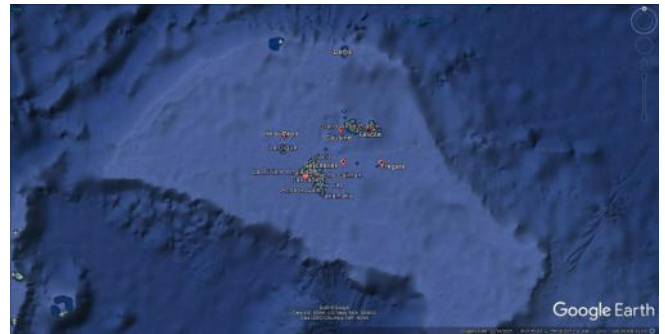
Back to 1939

Diego Garcia was only a coconut plantation in 1939 when Taylor passed through, but it certainly offered opportunities as a Flying Boat Base if War came and the Singapore route was lost.

The next landing was a further 1200 miles West at the Seychelles Islands. The Seychelles became a

Republic within the Commonwealth in 1976. With a population of around 100 000 spread over its 115 or so Islands. In 1939 it was still a British outpost from Mauritius.

Guba 2 was the first plane to arrive by air at the Seychelles on the 17th of June 1939.



In addition to surveys to find useful landing sites the crew also collected weather data from the local population and their own observations. Royal Navy vessels in the area also collected weather data.



From the Seychelles the last leg was another 1000 mile trip West to Mombasa (right) in Kenya where they arrived on the 21 of June. They had covered 5600 miles since the 4th of June. Taylor left the crew at Mombasa and GUBA continued West to Lake Victoria and the Congo, then Nigeria and Dakar in French West Africa. From there they flew to the US Virgin Islands in the Caribbean, and from there to New York and later back to San Diego from where the New Guinea Expedition had started a year or so before.

Archbold had never expected to fly around the world, he expected to fly back home across the Pacific. His willingness to support the Australian Government, who needed to have a back up route to the UK, gave him and Taylor some unexpected records, he was the first seaplane to fly across Australia, The first Plane to fly across the Indian Ocean, and the first seaplane to fly across Africa.

Taylor's route to Kenya stayed South of Ethiopia which was still occupied by the Italians. Ethiopia was out of the war fairly early, so India could still be used for air travel to the UK and the Island hopping route was not needed as a life line, the lifeline fell to Qantas using Catalina's on another route that bypassed the Japanese held territory to Australia's North.

As a follow up, Guba 2 was sold to the British Aircraft Purchasing Commission in 1940. It served in various rolls until like the Fairchild it was damaged while moored at anchor somewhere along the Welsh Coast

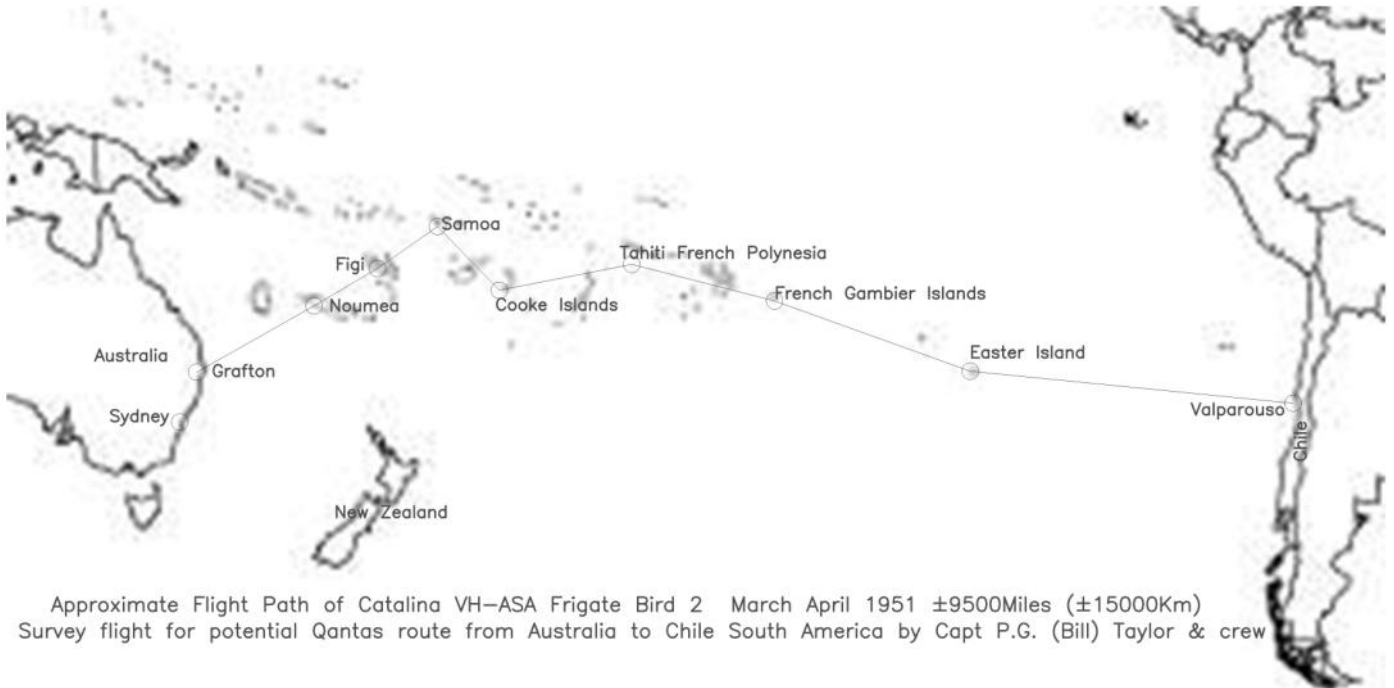
GUBA 2 was not Archbold's first Catalina. In 1937 he had purchased a Model 28-1. (right) At that time some Russian flyers were lost trying to fly across the North Pole from Russia to America. Archbold allowed Consolidated to reclaim the plane and sell it to the Russians to use as a search plane, while they built a new one for him. Both planes were named Guba, and both planes had the same registration NC 777. The Russian Navy took over the Model 28-1 after the unsuccessful search. It was later destroyed by Gun-fire from a German Submarine. The picture on the right is held by the Ohio State University.



The search for the Russian Flyers was led by Australian Polar Explorer Sir Hubert Wilkins who had flown across the Arctic from Alaska to Norway. The Fokker Tri Motor used by Kingsford-Smith to cross the Pacific had been Purchased from Wilkins who had acquired 2 of them for Arctic exploration. He decided that they were too heavy to risk landing on ice. He used a Lockheed Vega for the record trip for which he was Knighted. He grew up on a Farm about 200KM North of Adelaide.

P. G. Taylor was involved with flying through WW2. After the war he was involved in the first crossing of the South Pacific in a Catalina in 1951. The flight was to survey a potential route for QANTAS to fly from Australia to Chile.

The aeroplane is pictured on the right, from the Bob Stewart Collection, at the Rathmines Flying Boat Base on Lake Macquarie in NSW.



The Government provided the plane, one of its 168 RAAF Catalina's. It had been built by Boeing in Canada under license in 1944. Taylor named it "Frigate Bird 2". The flight left Australia from the Clarence River at Grafton in Northern New South Wales and headed for Noumea.



The Last refuel stop was at Easter Island, which does not have a harbour. The Catalina had to land in the open sea in bad weather. It then had to sail, part under power and part drifting to the leeward side of the island. Taylor was washed into the sea at one point and 3 anchor ropes broke. The heavily laden plane had to take off in heavy seas which needed a boost from the JATO rockets fitted earlier.

The picture at left from Taylors collection at the Power House Museum was taken "sailing" at Easter Island.

It was March 2012 before Qantas's inaugural flights to Chile, 61 years after P.G. Taylors epic crossing of the South Pacific. The flight time dropped from about 13 days to 13 hours and the Catalina was replaced by an A380.



Taylor made the return flight in Frigatebird 2, with more problems at Easter Island, this time the JATO assist failed making lift off hazardous. The plane was welcomed home at Rose Bay on Sydney Harbour, and in 1954 Taylor was knighted for his services to aviation, and he was presented with the Catalina. He later donated it to the Powerhouse Museum. It was cosmetically restored by Hawker Pacific at Bankstown in N S W and was placed on display suspended from the ceiling as part of the MAAS display at Powerhouse where it can be seen today.

The Atlantic and North Pacific Oceans were all first crossed by Land based planes, and the first trips from the UK to Australia were the same. Whilst airstrips as we know them were not always available the planes could land on sports grounds, racecourses, roads or hard beaches. Harbours were also available at these places which allowed fuel to be shipped to these stopover points The war changed the roll of Flying Boats. The construction of landing strips to serve as bases for Bombers and Fighters, provided bases for later commercial services, and the Helicopter gradually took over the rescue roll, and the flying boats flew into the sunset and passed into history.

The Indian and South Pacific were different, the potential landing spots were frequently very low Atolls surrounding a lagoon. Whilst it was possible to arrange fuel deliveries it was not possible to find landing strips. The arrival of the long range shallow draft PBY Catalina allowed the Lagoons to be used as protected landing sites. Taylor was an experienced pilot and navigator, including astro-navigation. He became very experienced with the Catalina, starting with Guba 2. He was involved in ferrying the early lend-lease Catalina's from San Diego to Australia. These planes would be used by QANTAS in its WW2 role, including the 300 or so Double Sunrise flights between Perth and Ceylon which flew to the West of the Cocos Island RAF base to avoid Japanese Flying Boat contact. They carried mail and passengers. Like GUBA 2 they were fitted with long range fuel tanks to cover these near 3500 miles.

The book "Courage In The Skies" reviewed earlier is well worth a read. The roll of QANTAS as a civilian airline in WW2 is a real eye opener, it was that book that prompted these articles on the pioneering record flights and the incredible Catalina's that maintained an aerial life line to England during the dark hours of WW2.

These early QANTAS Catalina's all arrived under the Lend Lease arrangement with the United

States, and at the termination of hostilities they all had to be destroyed. Four were sunk in the graveyard off Rottnest Island in Western Australia, and one was sunk off the New South Wales coast.

It was an inglorious end to these planes that, at 33 hours hold the record for the longest duration commercial flight and played such a significant role in Australia's War. There are plans to try and recover parts of these planes as reminders of their role to future generations, hopefully they meet with some success.



Qantas used other Catalina's after the war in New Guinea and on services to the Pacific Islands as can be seen above, again from the Goodall collection.



QANTAS has recognised the role of the Catalina's in its history, and they support the QANTAS Founders Museum at Longreach in Queensland. The PBY-6A above was purchased in Spain where it had been used for fire fighting. The plane was restored to flying condition and flown back to West Queensland where it was painted in QANTAS wartime camouflage colours used for the Double Sunrise Flights.

Google QANTAS Founders Museum





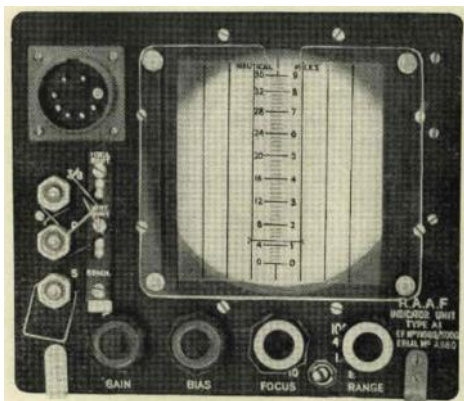
QANTAS Catalina at Rose Bay, Sydney Harbour on its beaching trolley in 1953 prior to retirement.

Before we sign off on this story it may be of interest to follow up with some background on the Catalina and its incredible role in the Islands of the East Indies by an RAAF/US Navy mining program.

In addition to the QANTAS planes the RAAF had had 168 Catalina's by the end of WW2, and the US Military had Catalina Bases in Australia. The US Navy had a base "Advance Base A" at Pelican Point at the South End of Matilda Bay in Perth near the University. This base helped QANTAS who's Double Sunrise Flights operated from a base nearby. The Aviation Heritage Museum of W.A. is nearby at Bull Creek has a Catalina in US Navy configuration which was restored in Texas and flown to Perth about 2007. The US Navy had 3 other flying Boat base in Western Australia at Geraldton, Exmouth, and near Karratha. The picture on the right shows a Catalina at Perth. The Catalina's were the first US aircraft fitted with Radar . The ASV (air to surface vessel) radar was developed in the UK in the late 1930's as the Mk 1. An improved Mk 2 had a range of 20 miles against large ships. These sets were first used by Britain on their Flying Boats, including Catalina's. The radar sets went into production in Canada and the US and Australia where the PMG produced 1300 of the all up total of 17000. The receivers were YOGI bar aerials mounted under each wing. (see picture on right)



The operator used the display on the left to determine the range to a target from the vertical distance to the "bump" and the direction by



which side of the vertical line the bump was on.

The 1.7M wavelength was replaced by 10cm wavelength Mark 3 Centrimetric ASV MK 3 when cavity magnetrons became available. The receiver antennae was then placed above the Cabin as can be seen on the right. The transmitter for





both sets was mounted above the centre of the wing. These sets were much more sensitive than the earlier models. They improved submarine detection day or night. Many Squadrons of PBY's flew missions at night. They were painted flat black, the engine exhausts were shrouded and they had been fitted with ASV radar and radar altimeter's which allowed them to fly at near sea level (10' or 3M at times) and stay below any enemy radar and maximise the impact from a surprise raid.

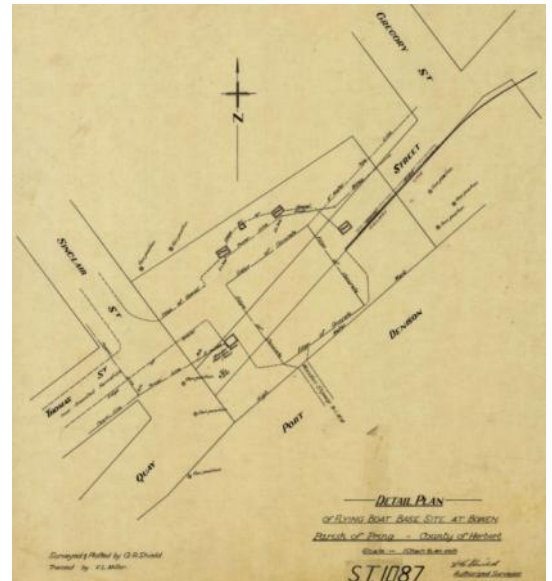
The picture above shows an Australian operated "Black Cat" in Papua New Guinea from where operations were run to mine harbours and oil refineries in Japanese occupied territory. The Radar transmitter and early Mk 2 receiver aerials are clearly seen in this picture. Four Australian Catalina Squadrons were involved in night raids mining Japanese Bases, which apart from damaging and restricting enemy shipping, they limited Japanese involvement Sea Battles. The Catalina's low speed and low altitude allowed the magnetic mines to be laid precisely and have maximum impact. The stealthy flat black paint, and their low altitude made it difficult for enemy fighters to attack the raiders at night. These raids were carried on from early 1943 to early 1945.



The PBY's had a big role in search and rescue. Rescue planes frequently flew with the raiders at a distance to help any downed aircrew. Their crew generally included a Doctor. The picture on the left shows a Catalina picking up a crewman from a British Sub-

marine in the Banda Sea North off Timor before transporting him to Hospital in Darwin.

The RAAF operated their early Catalina's from Port Moresby. When this area was difficult to defend the Squadron was moved South to Bowen on Port Denison in Queensland in April/May 1942 where their Catalina's were involved in Patrol and Intelli-



gence gathering flights prior to and during "The Battle Of The Coral Sea" when the Japanese attempt to capture Port Moresby and isolate Australia from America was defeated. Two Catalina's were lost to enemy action.



The picture & plan above +1 show Bowen during WW2 when it was No 1 Flying Boat Maintenance Base, and the site today (above) with the Catalina silhouette outlined on a hardstand area.



The Catalina's soon moved North to Cairns which became there main operational base for raids to the North. Based on Admiralty Island in Trinity Inlet (above, as it is today) just upstream of HMAS CAIRNS naval base. The Black cats flew raids regularly to New Britain, New Guinea and the pacific islands and beyond. Right, a heavily laden Black Cat prepares to take off from Cairns.



The Catalina Squadrons also operated from Karumba near Normanton on the Gulf of Carpentaria where a refuelling base had been set up in 1937 for the Qantas Empire Flying Boats which flew between Singapore and Sydney, for raids into the Dutch East Indies.

Bases were also established further West at the Qantas base on the North East of Groote



Eylandt at Umbakumba (above) and at Melville Bay near the North Western end of Drimmie Head on the Gove Peninsular in Arnhem Land (see current picture right). This Black Cat base was close to the RAAF Gove airstrip. The base had 5000 personnel at its peak during the war.

Further West the base at Darwin became important in 1944 when RAAF No. 76 Wing was based there.

Four squadrons were dedicated to Black Cat operations which successfully held enemy shipping in harbour.

Bombing raids, to be combined with B24 bomber raids, the BLACK CATS mined at night and the Liberators bombed in daylight, were less frequent.



An aerial photograph of Catalina Base. The base is situated on a peninsula or near a body of water. It features a large, long, white building with a flat roof. To the left of the building is a parking area with several vehicles, including what appear to be white vans or small trucks. The surrounding area is covered in dense green vegetation and trees. A yellow pin is placed on the image, labeled 'Catalina Base'. In the bottom right corner, there is a small text overlay: '© 2014 Google', 'Image © 2014 S. (Pan Knight) Mei & Wang'.

[illegible]

Catalina at Doctors Gully Darwin

The Flying Boat base at Rathmines on Lake Macquarie in NSW was opened in 1939 and became the RAAF's largest Flying Boat Base. Various planes saw service there, but the Catalina was the mainstay throughout the War and beyond until it was phased out in 1952. The Base was used for training and maintenance, and it trained over 200 Catalina crews during the war.

An aerial photograph of a coastal area in Dublin. The image shows a peninsula or headland with a mix of greenery and built-up areas. A yellow pin is placed on a large, open, light-colored area labeled 'Rathmines Park'. Another yellow pin is placed on a building complex labeled 'Rathmines Club Catalina'. A green pin is also visible on a smaller green area. The coastline is visible on the right side, with dark water. In the bottom left corner, a small portion of a residential area with houses and a road is visible.

on site at the peak, and there were about 40 or so planes there at any time.

The pictures on the (bottom right prev page) show the base as it was during the war, and today as can be seen on Google Earth. Below the hardstand area and ramp can be seen. The large hanger was later moved to Richmond airbase to house the then new C130 Hercules.

The remains of the base have been Heritage listed by the NSW Government for the role that it played in the defence of Australia during WW2.

The RAAF had 168 PBY Catalina's. During the war there were 4 frontline squadrons. 3 air-sea rescue units and 2 communication units. Additional Catalina's were operated by the US Navy, and the RAF from their bases.

Over 320 RAAF air crew and 32 Catalina's were



lost, and one plane was lost for every 95 sorties. With the early loss of offshore bases the Catalina became our only offensive plane taking the fight to the enemy with the mine laying Black Cats. It has been said that the Catalina was to Australia what the Spitfire was to Britain, but the public was blissfully unaware of these secret, precision long range Dam Buster style raids.



The memorial above was built near the Foreshore in Cairns with support of surviving Catalina Crew members and the people of Cairns to recognise the role that these units played in the nations defence. They had the highest loss rate of any aircraft used by the RAAF in the South West Pacific.

The PBY-6A VH-CAT Catalina pictured above left is currently being restored to airworthiness at Bankstown to become a Flying Memorial to the Catalina's based at Rathmines where it will be used for flights and displays on its historic base.

Aircraft Restoration Society (HARS) incredible collection at Albion Park/Illawarra in NSW.

On the left is a map of th RAAF area commands in use during WW2. We have now covered all but the Southern area that includes Victoria, South Australia and Tasmania.

Right, this PBY-6A seen at Avalon is part of the Historical



As the war came closer to Australia, and with the loss of 16 Flying Boats and Seaplanes in Broome following an Airborne attack by carrier based Japanese Zero fighter planes, it was considered safer to provide bases away from the coast where the enemy would have less chance of disrupting work at the base.

The base chosen for the maintenance of flying boats and seaplanes was at Lake Boga, just South East of Swan Hill on the Murray River, and about 220KM North of Lake Goldsmith.



Work began in early 1942, and RAAF staff arrived at the end of June and the first Catalina arrived from Rathmines in July and the first service began in August. The work was not limited to Catalina's, and a variety of other planes had been serviced by the time the base closed in late 1947. Over 400 aircraft had had major repair work completed at Lake Boga. These included planes from the US and the Netherlands (Dutch) East Indies (now Indonesia) .

The Australian Black Cat Catalina's were all flying boats, although many arrived as amphibians. These planes were converted back to flying boats, the heavy protective armour for the crew, and the fuel tank seals were removed to reduce weight and increase range. This work was done at Lake Boga and at Rathmines. In spite of this work planes returned to Darwin from missions to the North with as little as 30 Gallons of fuel left, not a lot for engines that could produce 2400HP.

Later the base was used as a disposal centre for aircraft which were of no further use to the RAAF after the war. The picture below was taken at Lake Boga in 1951.



The RAAF kept some Catalina's on their books until 1952, but they were gradually sold off. Some Catalina's went into commercial service by Qantas, but many were sold to scrap dealers who recovered anything of value and broke the rest up at Lake Boga. The Catalina's had a substantial hull which could handle rough sea landings. Many hulls had a second life as barges on the nearby Murray River. The Local Red gum, which grows along the river was a valuable timber, particularly for

railway sleepers which had to be transported from the forest where they were cut, to a railhead.

I can remember seeing 4 or 5 of these hulls daisy chained in tow in the Barham/Koondrook area in the mid 1950's. Road transport eventually took over and the hulls vanished. As fortune would have it many of these hulls survived on farms. The remains of some of these, and many other historic Catalina pictures can be seen at :-

<https://www.goodall.com.au/australian-aviation/civil-catalina-1/Civilcatalinas.htm>



Some hulls ended up in tidier shape as can be seen from this side paddle river boat conversion.

As time went by a group of local Lake Boga residents decided to preserve the history of the base and began collecting memorabilia and gathered up Catalina parts that had survived the ravages of time and scrap collectors until they had enough to start to reassemble a fuselage and wings in the



1980's Gradually a static display emerged. Today there is an impressive display of heritage gear to mark the site of No 1 Flying Boat Depot that played a major contribut



ion to the success of the long range RAAF missions into the East Indies and beyond in WW2.



Today the Catalina has been restored to an immaculate static display and it is housed in a spacious hanger setting along with an assortment of associated relics from the period when the base was active . You can contact the Museum at:- <https://www.flyingboat.org.au/about/opening-hours-entry-fee.html>

There are 2 other Catalina's under restoration in Victoria at the Australian National Aviation Museum at Moorabbin and the RAAF Museum at Point Cook. (are there any others?)

We are fortunate that so many groups of volunteers have taken the time and effort to preserve the machines and skills that have played a part in making our world what it is today. This story started out by trying to find out who made the first flight across the Indian Ocean between Australia and Africa. I had no idea that the Australian Government had financed an American explorer under the direction of an Australian Pilot to prove an alternative route that would keep us connected with Great Britain, if future hostilities were to isolated us from Singapore and India. The Explorer's plane was an early Catalina fitted with long range fuel tanks. The story just rolled on from there. An unimaginable series of events had to come together that made our RAAF Black Cat Squadrons a unique and effective part of WW2 in the East Indies.

Just briefly reiterate, the Japanese army invade China in the early 1930's, and the US Navy saw the potential need for a long range Patrol Flying Boat to monitor events so they called for proposals and tenders. Consolidated successfully proposed an upgraded model of its existing flying boats, and after a few changes the PBY was accepted and production started at their new plant at San Diego at a price of about US\$90 000 (1935). Our intrepid explorer ordered a special version for his Pacific crossings to New Guinea. The US Navy placed orders in 1936 & 1937 , then Britain ordered 200 and it was produced until the end of the war. Production No numbers seem to vary from 3300 to 4050 all up, but either way it was the highest production Flying Boat ever.

Consolidated used the name Catalina for their private sales of the Model 28 which the US Navy called the PBY. The RAF used the name for their Military, and it seems to have been adopted by all.

In 1932 Pratt and Whitney introduced their R-1830 Twin Wasp 14 Cyl Radial Engine. These engines were used by Consolidated on the PBY Catalina (and their B24 Liberator Bomber). They were

built in record numbers (nearly 174 000) for radial piston aircraft engines. They were very reliable.

The engine change-over period on the RAAF Catalina's started at 240 hours, in stages it stretched to 720 hours and inspired high confidence in the crews that used them flying 20 plus hour flights across the sea in enemy territory in radio silence on moonless nights.. The engine was in production until 1951, and parts are still made.

The engine and 3:2 reduction hub gearbox can be seen on the right.

These engines produced 1200 take off HP and weighed in at 1250 pounds, pretty much a pound per horse power.

They had a bore and stroke of 5.5" and peak revs were 2600.



A rugged plane and a reliable engine provided confidence for very long range missions at night.

The Catalina in standard form could run on one engine.

The next essential tool for the Black Cats was an offensive Sea Mine, that is one that could be placed in an enemies harbour to destroy his ships, or often more importantly, force him to stay in harbour until your submarines could be put in place, or bombers could attack him in the harbour before he could get out. Traditionally tethered floating mines had been put in fields to defend targets.

Magnetic mines had been developed in WW1, but it was difficult to deliver them into your enemies harbour. Germany developed a magnetic mine and dropped them in the Thames estuary. As fortune had it, one fell in shallow water at a military base on the Thames estuary, and was visible at high tide. The mine was recovered and stripped with non magnetic brass tools and its function was soon discovered. The Royal Navy was able to design their own version, and with the US, developed magnetic mines that could be delivered by air from a planes Torpedo Racks, or from submarines via the Torpedo Tubes. Along with building a new mine it also discovered how to neutralise the magnetic mine, by "Degaussing" a ship hull with a reverse polarity electro magnet. They also learnt to detonate the mines using an aerial or submerged electro-magnet. See the Vickers Wellington rigged to detonate magnet mines that may have been laid in the Suez Canal .



As a bonus these mines could be used as acoustic mines which responded to a ships noise, magnetic mines, which responded to the ships magnet field, or pressure changes produced by powered boats. Delays could be set so that the mines detonated under the first ship or one that followed a few later. The picture lower left shows 3 American Mk



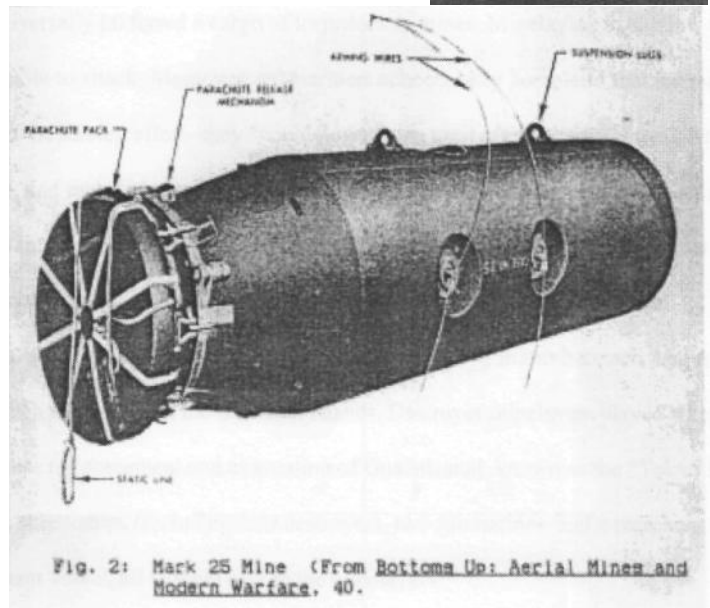
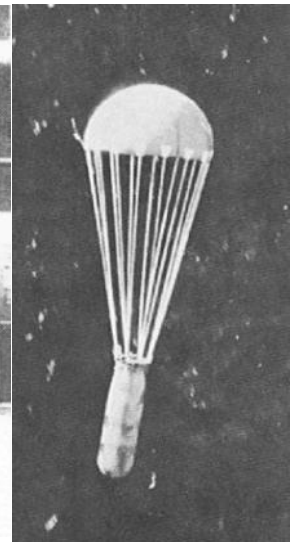
25 Magnetic mines below a carrier based Douglas A1 Skyraider. picture on the lower right previous page shows a Torpedo in the Catalina wing rack which could accept either weapon

On the right a mine is being readied to mount on an RAAF Catalina A24-101. A static line opens the Drogue direction control parachute on release.

The Catalina's could use a variety of British or American mines.

The Mines typically weighed 2000 pounds each and used 1250 pounds of explosive. For aerial use a parachute is fitted, as can be seen on the right. The PBY could carry 2 mines.

These mines could be dropped from a high plane and many were dropped by B24's, and later B29's. The downside was a loss of accuracy when placing the mine, or being attacked by fighters as these were generally daylight raids. Britain and the US used these B24 raids over the East Indies.



Similarly the carrier born planes had a short range, so the carrier had to be fairly close.

As these mines sat on the seabed they had to be in fairly shallow (under 150') water to be effective against a ship's hull. To place them from a submarine meant that the sub had to be in shallow water where it was exposed to attack, and it needed to move away fast to avoid any risk from an armed magnetic mine. It also meant that they carried less torpedo's, and they could not see if the mine was effective. Later in the war B29's had enough bases and range to deliver mines close to Japan.

Before these mines came into use the American Army Air Force had used Black Cats for working close to the enemy at night, but typically it does not seem that they used them for mining. With the Army, Navy and Marines to look after they were fully occupied.

The RAAF had 4 Squadrons (11,20,42 & 43) of Catalina's primarily devoted to mining enemy harbours and ports which they needed for oil and other essential commodities such as nickel.

The RAAF Catalina's had an enormous advantage of long range, ASV radar with enough range, radar altimeter to fly low over water at night and stay under the radar (often 100 to 200 feet), black camouflage and good navigators who could fly on moonless nights. Mine field patterns were worked out in conjunction with the US Navy's 7th fleet, prior to the run and each plane used some form of local reference datum from which they flew a timed course to release their mines in a precise location to achieve the expected result. The individual mines were specked for each planned position

If the enemy managed to sweep any mines they went back later and did it again.

These mining runs started in April 1943 and ran until they finished up in August 1945 . 2,498 mines were laid on 1,130 successful sorties for a loss of 9 aircraft.

After the war the US Strategic Bombing Survey estimated that these mines sank 90 ships with a total weight of 250,000 tons which was about 40% of the enemy losses in the Netherlands East Indies.

The RAAF carried out 38% of the Aerial mining of Japans “Outer Zone”. The RAF accounted for 22% mainly from bases in the Indian Ocean using B24’s, and the US AAF & US Navy 40% between them, mainly using B24’s, and later B29’s.

The crews of the RAAF Catalina squadrons were continuously operating for long periods behind enemy lines. In addition to the offensive roles they inserted and recovered commando units, serviced coast watchers scattered throughout the islands, recovered downed airmen and seamen and carried out surveillance patrols. For such a small group they punched well above their weight, and it was mostly done in secret. Whilst pictures of Bombers in Action were used for morale boosters, pictures of Black Cats in the dark just don’t make an impact on the front page.

That these secret missions have stayed more or less under the public radar is amazing when their exploits deserve the pride of the nation that they worked so tirelessly to protect.

This has not been an attempt to write a history, it is just a record of what you can discover about our heritage and those who have tried to preserve it. This magazine is about highlighting the history preserved in Victoria, and the story behind it. I hope that this unexpected story encourages others to follow up on the endeavours of our forebears and record their part in our colourful history. Ed

P.S. See page 17 “RAAF BLACK CATS”, It just arrived and it will fill in a

lot of back-ground on the Black Cat raids.

The Authors have done a lot of research here and in the US files of the 7th Fleet to reveal the outstanding contribution made by 76 Wings’s Catalina’s. Ed.



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SHOWCASING ALL THINGS BALLARAT
(But includes anything old & interesting)

AN INDOOR DISPLAY INCLUDING:
Large display of name plates of Ballarat made equipment, containers & packaging from Ballarat food & beverage processors, operating 1880's printing press etc.

OUTDOOR DISPLAYS INCLUDE:
Cowley Steam Road Roller, Jelbart Road Roller, Ivey Steam Engine, all Ballarat made. A large display of oil engines many of which are built in Ballarat, as well as a hay baling demo, pumps and thresher. Cars, Trucks & Tractors

ENTRY BY GOLD COIN DONATION.
Getting to our Rally. Take Airport Road exit off Ballarat Link Road, turn right at large overhead water tank follow signs. While at the Airport take the opportunity to visit other like minded displays, the Anson Museum, Aviation Museum & Air force Association.

FOR FURTHER INFORMATION PHONE:
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Proudly supported by Scobies Service Centre and Westag Ballarat by transporting the large items to our Rally

LAKE GOLDSMITH 114TH STEAM AND VINTAGE RALLY

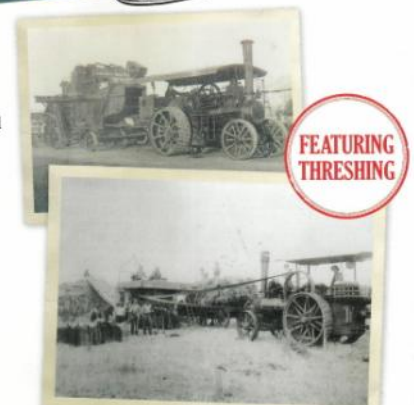
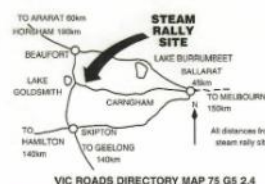
2ND & 3RD NOV, 2019

Regular attractions include:

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ADMISSION PRICE: • Adults \$15.00

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For rally information contact: Trevor Ph: 0407 539 041
or Graeme Ph: (03) 9723 3310 Mob: 0418 388 149

www.lakegoldsmithsteamrally.org.au • PO Box 21 Beaufort 3373

From the Flyer on the Bottom Left corner of the previous page, the

BALLARAT ENGINE & MACHINERY PRESERVATION SOCIETY

will see its 50th year, and to celebrate, they will host a

“The Best Of Ballarat Rally”

and the opening of their new clubrooms

at Hut 48, Ballarat Airport, Airport Road, Mitchell Park at 10AM on Sunday October 20 2019

Insured exhibitors are welcome to join the external and internal displays, and public entry is by Gold Coin donation

Colin Holmes, with inputs from Hugh Sloane & Neil Wright has prepared a 200 page book on the clubs history. The book includes overviews of some local engineering firms, and Lake Goldsmith rallies.

If all goes to plan, the opening will be marked by

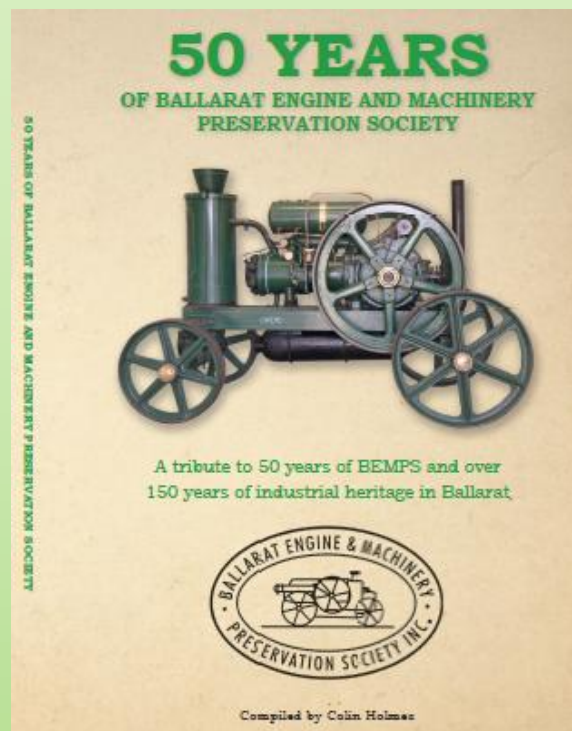
A ROAD RUN OF STEAM VEHICLES

which will arrive at the BEMPS rally during the day.

They will stay in Ballarat and join other steam wagons and Engines on a Road Run to the Lake Goldsmith Rally via the Ballarat - Carngham- Lake Goldsmith Roads on Friday November 1 to arrive at the **114TH LAKE GOLDSMITH RALLY** mid to late afternoon on Friday.

If you are on the road on the Friday, take your camera there are some good spots for some action recordings.

ALL UP IT LOOKS LIKE A GREAT FORTNIGH FOR VINTAGE MACHINERY IN VICTORIAS WEST



Two Great Rallies Every Year

The Threshing theme chosen for this Rally takes us back to the roots of the Lake Goldsmith Steam Preservation Associations origins, and its first working exhibits.

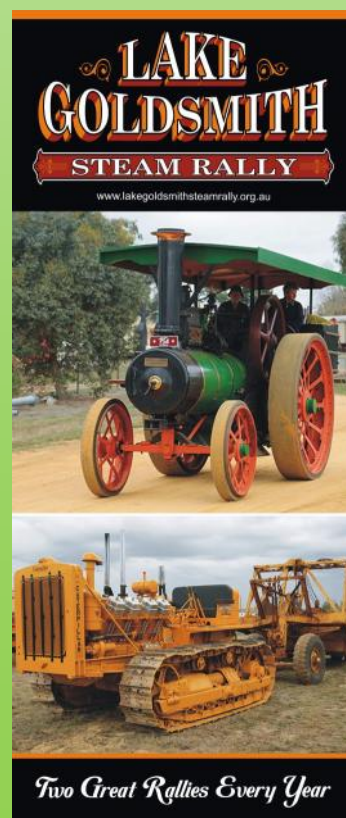
It also takes us back to the early rural contractors who were able to apply Portable Steam power to ease the burden that had changed little since the time when the sickle, scythe and hand beater were still in use.

The early reapers and later the reapers and binders provided a feed for the threshers, and the threshers gained cleaners to sort grain, and hay presses eventually bailed the loose hay, so that the grain was graded and bagged and the hay bailed for stacking in sheds.

The labour intensive past had been mechanised, and a new era of bulk handling was about to take over and move the steam Thresher-men and bagged grain into history.

It will be interesting to see what relics of the past, from horse-works to combines turn up at the rally, but either way the thresher-mans will return for a weekend in November.

Come along and relive a day in our forbears past.



Two Great Rallies Every Year