Goldsmith

The Pyrenees Heritage Preservation Magazine
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Next Event:- Spring Rally 104 **The Caterpillar Rally** November 1st & 2nd 2014
Then the Autumn Rally 105 **The Lighting Plant Rally** May 2nd & 3rd 2015

The 1903 Bucyrus Rail Mounted Steam Shovel Steams up at the 103rd Rally in May 2014

This photo of a 1923 Bucyrus Electric Powered Crawler Tracked Face shovel in action at Kandos (near Mudgee NSW) was presented to Lake Goldsmith by the Fyansford Museum. See feature inside.

Bucyrus's last days at Fynsford Quarry, with the Conveyor in the Background

The above photo of the Bucyrus, taken at Fyansford in 2009. Its working life as a face shovel ended in the 1960's when the bucket and dipper were scrapped and the jib was rigged as a crane, which ran on compressed air. It had not been used for 30 years. A replacement Dipper was drawn but not built.

Steam Shovel Steams up at the 103rd Rally May 2014 Photo from Eva's Gallery

As it stands today, a tribute to the efforts of Warren (Rabbit) Arnott and his dedicated team. It sits on its own standard gauge track, with a new bucket and dipper, in working order for all to see

This project will be a feature in a future edition of Goldsmith, so to those involved, expect a call.

For this edition there will be story of the Kandos Bucyrii.

In 2011, when the Bucyrus company was over 125 years old, it became part of the Caterpillar organisation as part of their expansion into other aspects of mining.

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.

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A REMINDER FOR ALL EXHIBITORS

Attached to the end of this edition is an exhibitor's entry form. Whilst no one is going to be turned away if the form is not supplied, life is going to be easier for you and the organisers if you are expected. For the organisers they can provide a place for you to display you exhibits, park your trailers and floats, and where needed provide a place for you to camp (1 vehicle limit at the camp, any more will be in the car park)

Additional entry forms can be downloaded from our website:- www.lakegoldsmithsteamrally.org.au , And those of you who receive the condensed version in print, there is a form on the reverse side of the address sheet.

For the exhibitor, you get a mention in the program, so visitors have a chance of finding you, and if you are in the Grand Parade the commentator has a chance of knowing who is who.

We all like events to go smoothly, and the entry form goes a long way to minimise any fuss.

The Committee and Members of the Lake Goldsmith Steam Preservation Association thank all the groups and individuals who display their exhibits at the Spring and Autumn Rally's. The range and variety of your displays are a major attraction and contribute to the popularity of these events

A WORD FROM THE EDITOR

There is a lot happening this month. The Beaufort Goods Shed and Station renovation has progressed well, and soon it will be time to move into our High Profile Heritage Precinct Area and display building at the Beaufort Railway goods shed.

Our new neighbours in the renovated station buildings will be the Pyreneess Arts Council and we have an introduction to their Group from President Heather Featherston.

The Caterpillar Rally is approaching fast, and William Adams have been working with the committee to ensure that an interesting range of Caterpillar equipment will be on display.

When this edition reaches you the CAT rally will only be less than 8 weeks away. This edition includes a feature on a pair of D2 CATERPILLAR's that will appear at the Rally.

Also featured in this edition is the story of a WW2 AVRO ANSON twin engine aeroplane display at the Ballarat Airfield, and the role of the Wireless and Gunnery School. From Alan Penhall.

For those interested in Steam Traction engines, Andrew Provans 8HP Foden is in steam after a 10 years rebuild at Colac in Victoria

Chis and Lesley from the Phoenix shed have a new entry on Neil's list, at over 200 years old this entry is the oldest entry so far.

Bob Yohnck's story on the Brown and Marshall carriages has had some more input from Norm Bray and Rod Giri of 707

John Norris has written a feature on the operation of the clubs 200HP boiler and offers an opportunity for future steam enthusiasts to gain some supervised hands on experience.

The last e-mag edition had a collection of photos taken by Eva at the May Rally. This edition continues with Eva's Gallery. If you spot something that you like Eva can supply a print from the original. Just Ring on 0409 858 336

The cover showes a photo presented by the Museum which previously housed the artefacts from the Fyansford Limestone quarry. Bruce Fleming from Kandos in NSW, a sister company of Fyansford, has provided a brief history and pictures of these machines.

A late entry from John Couch in New Zealand tells the tale of a three generation IH Titan Tractor.

AN INTRODUCTION TO THE PYRENEES ARTS COUNCIL

Heather Featherstone, President of the Pyrenees Arts Council has provided us with an introduction to their group which has operated in the Pyrenees area for 20 years or so.

Their members represent most disciplines of the Arts. Music, Acting, Sculpture, needlecraft, woodwork, Art and sketches are all practiced.

Their Pyrenees Chorale performs at Federation Square in Melbourne for Senior citizens week, they sponsor and run Music competitions for local and surrounding schools. On occasions they have run Yarn events and poetry evenings.

Patrons of the Golden Age Hotel in Beaufort will be familiar with the paintings and drawings of their members which are displayed on the walls of the dining room where they have meetings.

Next June 2015, will be their 10th Annual Art Show & Sales held in the Shire Hall at Beaufort
This will be a BIG LONG WEEKEND.

At some point in August or September the Arts council and ourselves will move into our respective renovated Railway Building Quarters on opposite sides of the Rails at Beaufort Station in preparation for the formal opening in September.

The Arts council expect to man their new Gallery rooms from 10AM to 4PM on Friday, Saturday, Sunday and Monday each week. Paintings, cards and crafts will be on display and for sale.

The Arts council can be contacted at the Station from September at the times above, or by mail at
P.O. Box 52 Beaufort 3373

Members of the Pyrenees Arts Council have been regular visitors to Lake Goldsmith Rallies over the years and many displays at the Rallies have been captured by brush and pencil as can be seen in the sample below by Heather which highlights steam in action at a past Rally.

When you get a chance, drop in to the new Gallery and enjoy the Art in a heritage Station setting. Ed.

THE CATERPILLAR RALLY IS ON THE WAY

The first Caterpillar featured in the run up to the rally comes from David and Ian Smith, who with Jim Smith operate the Emu Creek Sawmill at the Lake Goldsmith Rally grounds.

The caterpillar D2 was introduced in 1938 and continued in production until 1957, and over 26000 tractors were built. Tractor weight varied from 7420 pounds to 8536 pounds depending on the configuration and Nebraska test max HP increased from 30 to 41.9 between tests in 1939 and 1955.

All models had a 4 cylinder inline Diesel engine and 5 speed gearbox, and a 12" diameter belt pulley was available for the PTO. All models used the same twin cylinder petrol starter motor

David and Ian Smith warm up their D2 Caterpillars for the November Rally.

These D2 crawler tractors have been in the Smith family for many years.

The tractor fitted with the Bulldozer blade was used in the bush for timber work. It is a model 4U. The tracks are 12" wide on 40" centres. The perforated radiator protection plate also houses the hydraulic pump and valve block, and the blade can be manually angled as required.

The crawler tractor is a model 5U. The tracks are 14" wide on 50" centres. This tractor was purchased from a William Adams branch in Western Victoria in 1956 and spent its early life in the Ballan area. Unfortunately it was left unattended driving a water pump and suffered engine damage when an oil line to the oil pressure gauge developed a leak with major oil loss.

When the tractor arrived home Ian's first job was a major engine rebuild. It has been in action ever since, and from time to time has been handy on the farm during wet weather.

Both tractors have 4 track rollers, but both are arranged differently. The 5U rollers are on the same flat plane as the front roller and rear drive sprocket. This gives the track a large bearing area on the ground, and a very stable ride

The 4U dozer track rollers are proud of the flat plane between the front roller and rear sprocket. The ground contact is shorter on firm ground which makes steering easier, with less ground damage, but is less stable when the blade is used.


D2 Starter Motor Start Up

Ian starts the 10 HP horizontally opposed twin cylinder petrol starter (or Pilot) motor, and after warmup, he sets the overcentre starter clutch open (vertical lever) and engages the drive pinion by pulling the gear lever up. The starter throttle is set and the drive motor decompression lever is set to open, before the starter motor is engaged by closing the starter motor clutch.

The drive motor is spun over at starter speed to circulate oil, and is then started by closing the decompression level. When the engine starts, the starter pinion is automatically disengaged.

The small pully midway along the starting rope is a modified Holden starter motor fitted in a prior life. A V belt can be fitted to drive the starter on the rare occasions when things are not going to plan.


Starter Clutch and engaging levers with 1 cylinder Head in View

On the left the curved overcentre clutch lever is in the engaged position, and the horizontal starter pinion engaging lever in the disengaged position, which isolates the starter motor.

On the right, the hand operated overcentre drive clutch lever is at the front, and the steering clutch levers are either side of the 5 speed gear shift. The engine speed control lever is mounted on the oil bath air cleaner.

We can look forward to seeing these machines near the Emu Creek Sawmill in November. And thanks to David and Ian for the story on these very original tractors. Ed

The Experiment Station
University of Nebraska College of Agriculture
W. V. Lambert, Director, Lincoln, Nebraska

Department of Agricultural Engineering
Dates of test: July 25 to July 30, 1955
Manufacturer: CATERPILLAR TRACTOR COMPANY, PEORIA, ILLINOIS
Manufacturer's rating: 38 maximum drawbar horsepower (corrected to standard conditions)

NEBRASKA TRACTOR TEST NO. 553

CATERPILLAR D-2

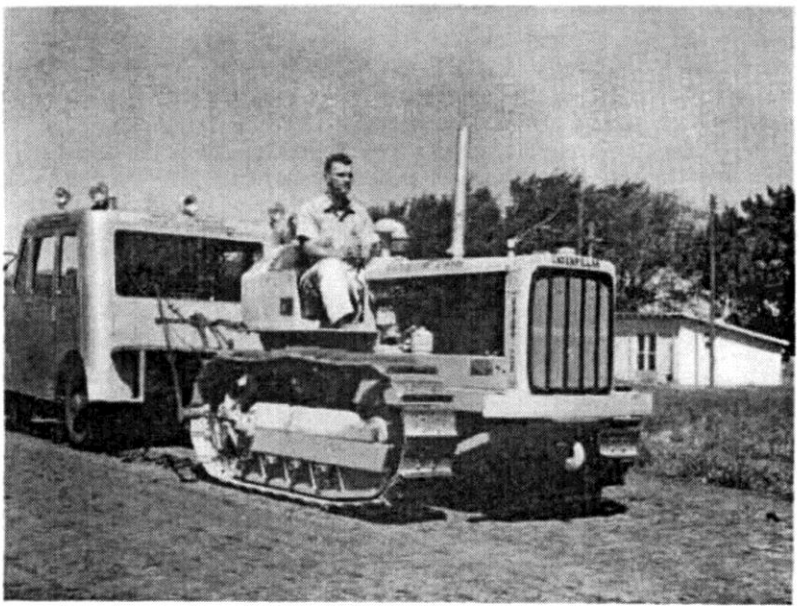
BELT HORSEPOWER TESTS

Hp	Crank shaft speed rpm	Fuel Consumption: Gal per hour	Fuel Consumption: Hp-hr per gal	Fuel Consumption: Lb per hp-hour	Water used gal per hour	Temp Deg F: Cooling med	Temp Deg F: Air	Barometer inches of mercury
TESTS B AND C—100% MAXIMUM LOAD—TWO HOURS								
41.86	1650	3.402	12.30	0.571	0.00	199	106	28.757
TEST D—RATED LOAD—ONE HOUR								
38.68	1650	2.991	12.93	0.543	0.00	199	106	28.700
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
38.74	1650	2.991	12.95	0.542	...	197	106	...
3.07	1764	1.184	2.59	2.707	...	154	104	...
20.75	1755	1.970	10.53	0.667	...	157	104	...
39.01	1445	3.073	12.69	0.553	...	206	103	...
10.46	1757	1.509	6.93	1.012	...	157	102	...
30.38	1732	2.440	12.45	0.564	...	164	100	...
23.74	1684	2.194	10.82	0.649	0.00	172	103	28.700

TORQUE (At Dynamometer)										
Eng rpm	1647	1567	1478	1392	1305	1225	1142	1052	964	879
Lb-ft	274.4	280.5	287.9	294.0	297.5	302.2	304.9	307.8	306.6	298.9
Dyn rpm	807	767	723	681	638	598	556	511	466	425

DRAWBAR HORSEPOWER TESTS

Hp	Drawbar pull lb	Speed miles per hr	Crank shaft speed rpm	Slip of drive wheels %	Fuel Consumption: Gal per hour	Fuel Consumption: Hp-hr per gal	Fuel Consumption: Lb per hp-hr	Water used gal per hour	Temp Deg F: Cooling med	Temp Deg F: Air	Barometer inches of mercury
TEST H—RATED LOAD—TEN HOURS—2nd Gear											
29.03	4147	2.63	1651	2.69	2.717	10.68	0.657	0.00	177	96	28.854
TESTS F & G—100% MAXIMUM LOAD											
34.55	7413	1.75	1648	4.17	1st gear (part throttle)			...	173	95	28.840
36.62	5205	2.64	1655	2.81	2nd gear			...	172	83	28.920
35.84	4223	3.18	1653	2.17	3rd gear			...	177	87	28.920
35.01	3436	3.82	1652	1.70	4th gear			...	178	89	28.920
32.85	2234	5.51	1653	0.89	5th gear			...	180	89	28.920



FUEL, OIL and TIME Diesel fuel Cetane No. 50 (rating taken from oil company's typical inspection data) **weight per gallon** 7.020 lb **Oil** SAE 30 **to motor** 3.022 gal **drained from motor** 2.348 gal **Total time motor was operated** 42 hours.

CHASSIS Type Tracklayer **Serial No.** 5U15427 **Tread width** 50" **Wheel base** 60 13/16" **Measured length of track** 196" **Cleats** integral with shoes **Cleats per track** 32 **Size of cleats** 12" x 1⅞" **Advertised speeds mph** first 1.8 second 2.7 third 3.2 fourth 3.9 fifth 5.5 reverse 2.2 **Belt pulley diam** 12" **Face** 7½" **rpm** 960 **Belt speed** 3015 fpm **Clutch** dry single plate clutch operated by hand lever **Seat** upholstered **Brakes** contracting bands operated by two foot pedals one of which can be locked by latch **Steering** two hand levers controlling multiple disc clutches.

ENGINE Make Caterpillar Diesel **Type** 4 cylinder vertical **Serial No.** 5U15427 **Crankshaft** mounted lengthwise **Head** 1 **Lubrication** pressure **Bore and stroke** 4" x 5" **Rated rpm** 1650 **Compression ratio** 18.5 to 1 **Displacement** 252 cu. in. **Port diameter valves** inlet 1⅜" exhaust 1⅜" **Governor** variable speed centrifugal **Air cleaner** oil washed wire mesh with precleaner **Muffler** not used **Oil filter** replaceable paper element **Fuel filter** four cotton wound replaceable elements **Cooling medium temperature control** thermostat.

STARTING ENGINE Make Caterpillar **Type** 2 cylinder horizontal opposed **Mounted** behind Diesel engine **Mfg. rating** 10 hp at 3000 rpm **Bore and stroke** 2¾" x 3" **Ignition system** magneto **Air cleaner** oil washed wire mesh **Starting system** rope.

TOTAL WEIGHT AS TESTED (with operator) 8536 lbs.

REPAIRS AND ADJUSTMENTS Track roller guards were mounted on tractor following test A.

REMARKS All test results were determined from observed data and without allowances, additions or deductions. Test F was made with a fuel pump setting, selected by the manufacturer to develop approximately 38 corrected maximum drawbar horsepower in second gear and data from this test were used in determining the horsepower to be developed in tests D and H, respectively. Tests B, C, D, E, G, and H were made with the same setting.

HORSEPOWER SUMMARY

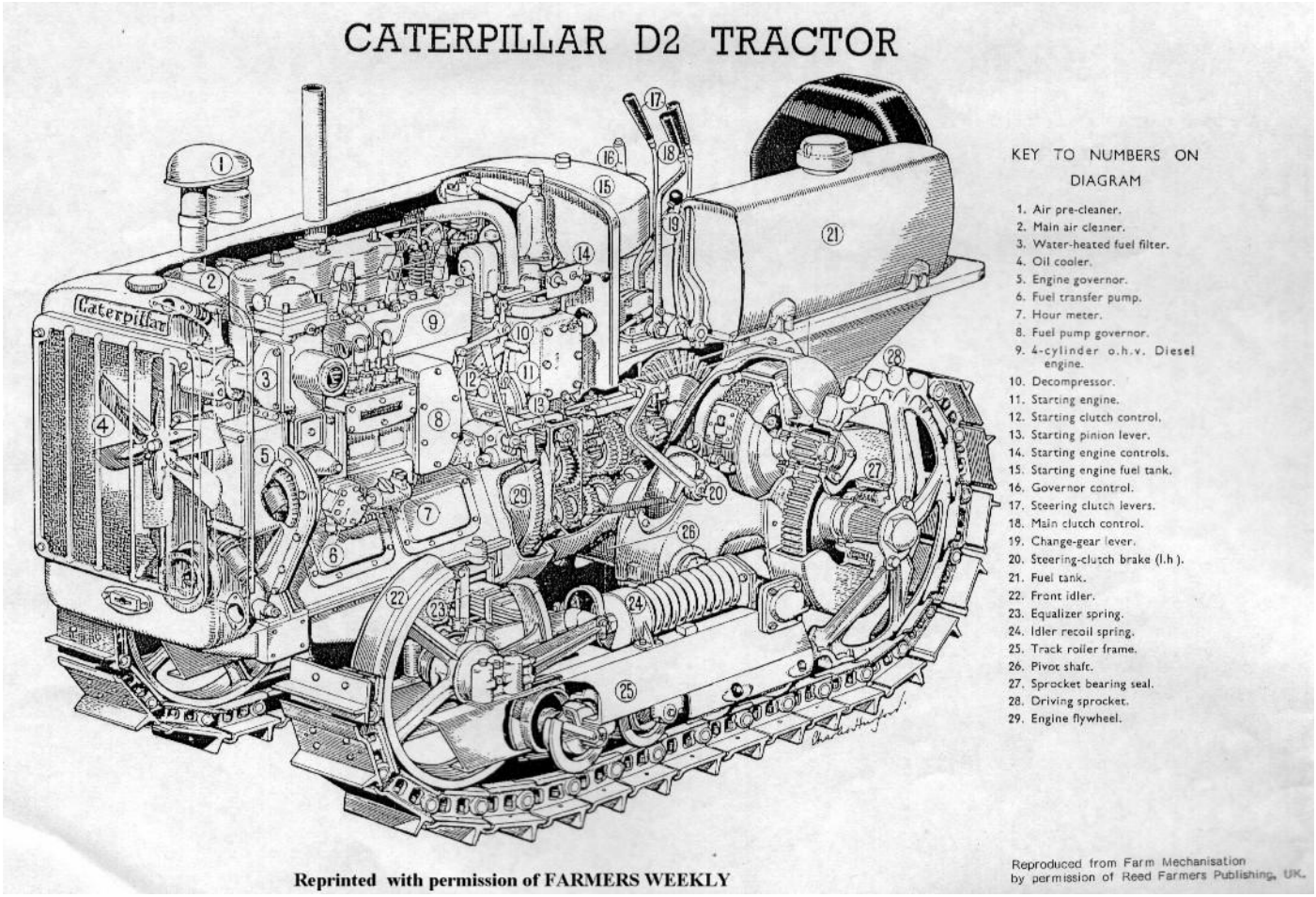
	Drawbar	Belt
1. Sea level (calculated) maximum horsepower (based on 60° F and 29.92" Hg)	38.75	45.43
2. Observed maximum horsepower (tests F and B)	36.62	41.86
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	29.06	38.62

We, the undersigned, certify that this is a true and correct report of official tractor test No. 553.

L. F. LARSEN
Engineer-In-Charge

L. W. Hurlbut
G. W. Steinbruegge
J. J. Sulek
Board of Tractor Test Engineers

The above is the reprint of the 1955 Nebraska test of the Caterpillar D2 5U Tractor.



Stephen Larcombe supplied this cutaway drawing of an early D2 Tractor by Charles Hurford which appeared in Farm Mechanisation and is now reproduced with the permission of Farmers Weekly UK.

ANOTHER BUCYRUS

The front cover has a copy of a picture that was recently presented to Lake Goldsmith by the custodians of the recently wound up Museum at Fyansford, near Geelong which housed the memorabilia from the Fyansford Cement works and quarry.

The Bucyrus Steam Face Shovel at Lake Goldsmith last worked in this quarry, and some of the components had been on display at the Museum before they were donated for the shovel restoration.

Stephen Larcombe accepted the photo on our behalf. The photo was scanned and the original is hanging in shed 80 until a permanent spot is found for it to be displayed.

In an earlier visit to the Museum, Max Parker, one of the Museum Curators, who had worked at the cement works said that the Shovel in the photo came from an associated company with a quarry at Kandos near Mudgee in NSW.

Attempts to search for information on the net found a lot about the Kandos Quarry, which started in 1913, but made no mention of the shovel.

Later searches revealed that the Engineering Heritage Committee of Engineers Australia had invited Bruce Fleming, who had a 27 year association with "NSW Cement Limestone & Coal Company' to present a paper on the history of the cement works to the public in their Chatswood Auditorium in October 2013.

Bruce Fleming was contacted with the help of Neil Hogg of Engineers Australia, and at last the background of the machine in the photo was revealed.

The Kandos Quarry received the first Bucyrus Electric shovel to come to Australia in 1923. This Model 68c was assembled at the quarry and had a bucket capacity of 2 ½ cubic yards.

It moved on caterpillar tracks, with a steerable rear "Tracked Bogie". It was powered by a Westinghouse electric motor, which was connected to a transformer by a flexible cable.

The Shovel was used to load rail trucks manufactured by Gibson Battle & Company, which were towed by a DC powered electric locomotive manufactured by American General Electric. The power came from an overhead wire and collector arm. The power cable was offset to the side of the locomotive away from the shovel to avoid contact with the bucket.

A second Bucyrus model 103c with a 3 ½ c.y bucket arrived in 1925 and was served by a similar electric train.

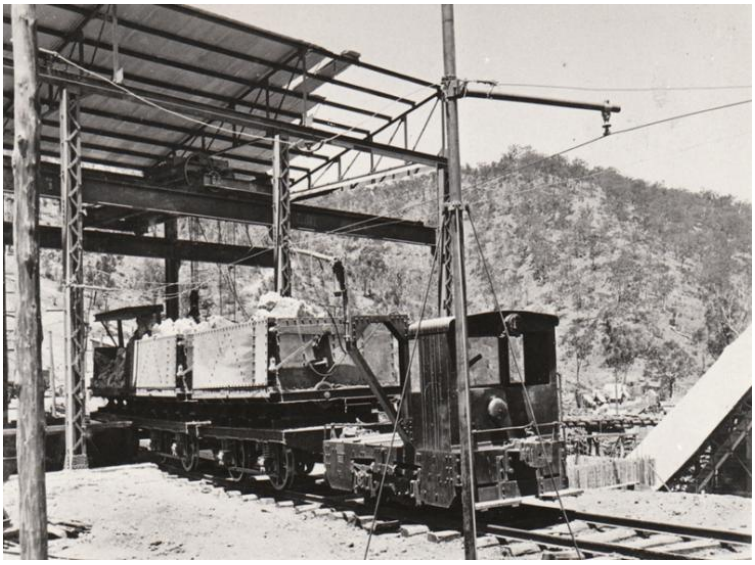
Bruce supplied some additional photos as seen below.

The book " KANDOS CEMENT " written by Bruce and a book on the Kandos Collieries are sold as a set through the Kandos & Rylstone Newsagencies for $40 the set plus $15 for postage.

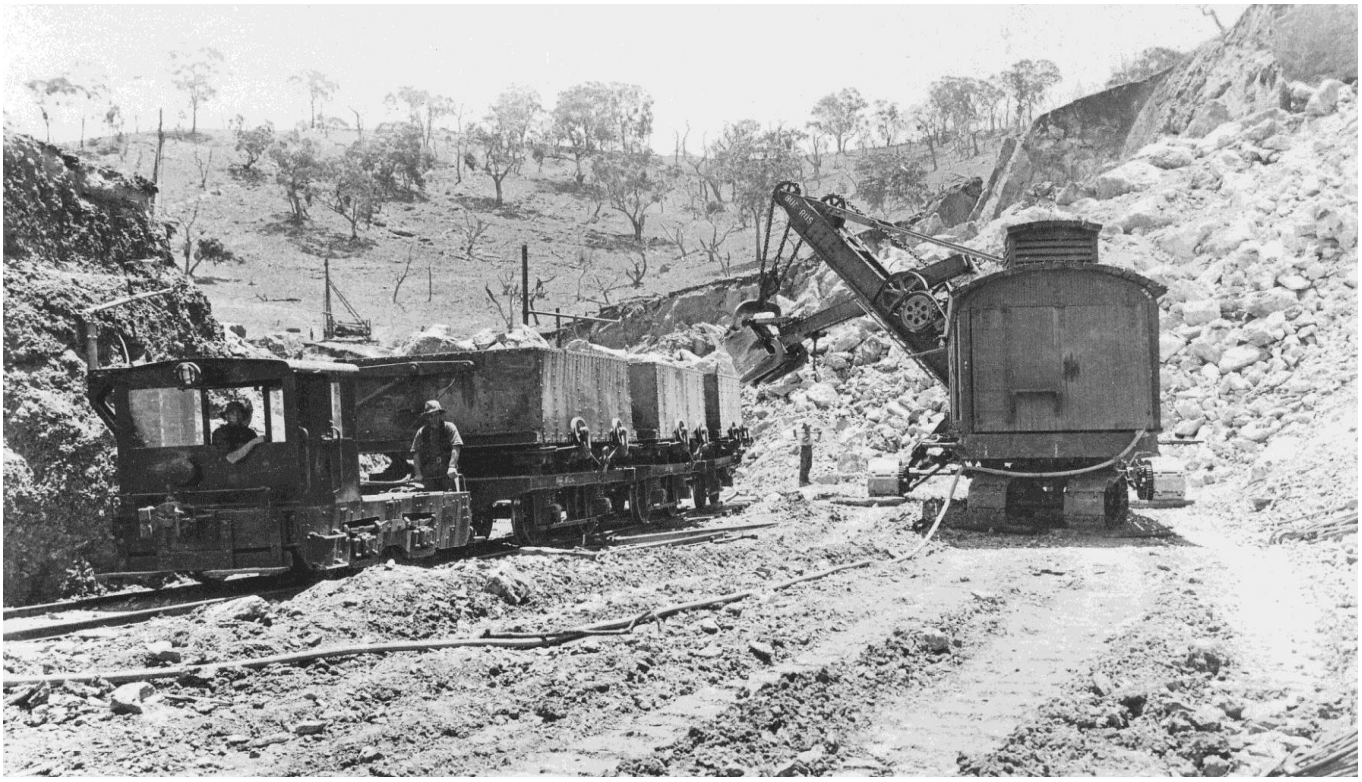
Go to www.KandoscementandCollieryBooks/timeline which directs you to:-

KandosCandCBooks@yahoo.com.au to place orders

The Cement and Colliery works were closed in 2011



Bucyrus Model 65C in No 1 Quarry in 1923



A loaded loco and trucks leave for the crusher. Note the wide front Caterpillar tracks and the narrow steerable rear tracked bogie. The power cable can be seen on the ground.

The crushed limestone was transported from the quarry by a 5Km aerial ropeway.

I would like to thank Bruce for his help in confirming the source of the machine in our photograph, and for providing some pictures of a similar environment in which our Bucyrus worked.

<u>Post Script</u>:- Bruce has advised that Fyansford and Kandos were closely linked. In 1929 Australian Cement Ltd at Geelong Victoria, and Kandos Cement Co. Ltd at Kandos in New South Wales merged and became Australian Portland Cement Pty. Ltd. which continued until 1964 when they were taken over by Australian and Kandos Cement Holdings Ltd.

This lasted until 1971 when they were brought out by Cement Industries Pty Ltd, which was owned jointly by CSR and Pioneer Concrete Services. In 2003 this company was acquired by Cement Australia Pty Ltd, who operated the Kandos plant until it was closed in 2011. The Fyansford plant was closed in 2000, and the quarry is operated for non-cement products by Adelaide Brighton Cement.

Adelaide Brighton Cement was instrumental in the arrival of the Bucyrus at Lake Goldsmith and contributed to its restoration and preservation. This will be the subject of a future feature.

Bruce has also supplied a picture below of a Ruston grab working at the plants clinker heap

I would also like to thank Neil Hogg of Engineers Australia for putting us in contact with Bruce and opening up the story behind the photo, and the use of 3 Bucyrus Face Shovels by the same Company

While we are talking about Fyansford, the following article retrieved from a 1925 copy of the Melbourne Argus and forwarded by Richard and Kelly Newell is a timely arrival, and is be of interest from a few points. It mentions an aerial tramway, a railway and of more significance to us is the assembly of 2 Ruston Hornsby steam shovels. Fortunately both of these shovels survived. The picture below shows one at Lake Goldsmith in action at the May Rally, and the other has recently arrived at MSTEC where it will be rebuilt.

The Argus (Melbourne, Vic.) Saturday 4 April 1925

The Australian Cement Company, at Fyansford, which provides work for 400 men, is launching a programme of extension which will result in the weekly output 2,500 tons of cement being increased to 4,000 tons a week. The most modern plant in the world is to be established at Fyansford opposite the existing mill. The extension will mean an additional quantity of limestone being quarried from the company's quarries at Batesford, three miles from the mill. At present the stone is conveyed to the mill by an aerial tramway, but to meet the new demand a railway will be run to the quarries, and the preliminary work for this is already in hand. For this purpose an extensive area of land has been purchased. At the quarries two Ruston Hornsby steam shovels are being assembled. Each will be capable of shifting 1500 tons of earth a day.

A recreation committee is associated with the works. An area of land has been purchased on Fyansford road, Herne Hill, and a contract has been let for a recreation hall, which will embrace a library, billiard-room, and a concert hall. In addition, tennis-courts, seven-rink bowling-green, and a croquet-lawn will be laid. For this purpose the company has contributed

One of the Ruston Hornsby Steam Shovels in Action at the Lake Goldsmith Rally in May 2014
Photo from Eva's collection

Thanks to everyone who contributed to this story, it started as a thankyou for a picture, and ended up as a 4 page story. Ed.

FODEN COLONIAL TRACTION ENGINE BACK IN STEAM IN COLAC

Engine No 1972 Build Date 1909

After a 10 year renovation, Andrew Provan's 2 speed compound Foden moves under its own steam

This engine was sold by agents Langwill Bros & Dawson in Melbourne, and in 1914 it was acquired by R.R. McDonald of Drysdale near Geelong in Victoria for farm and rural contract work.

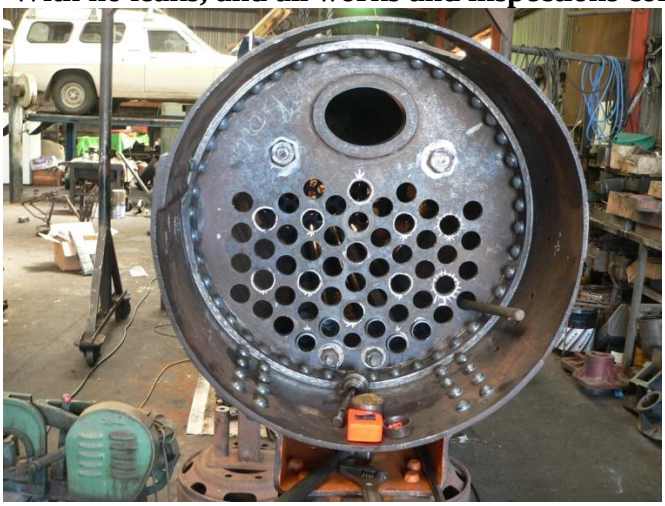
It remained in the family, on the same property until 1979 when Andrew acquired it from the family and the traction engine made its move to Colac.

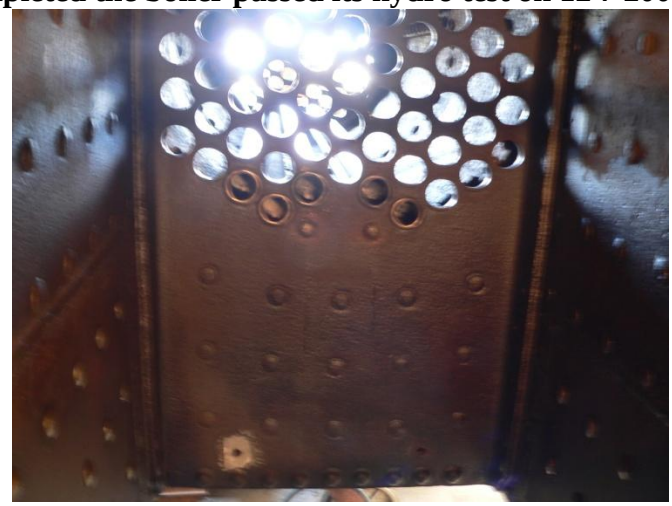
The engine had had a hard working life, and sections of the boiler, had thinned and were very much under gauge. Another boiler, in better condition was sourced and work began to bring it up to specification, and ultimately it was ticketed for the full original working pressure of 180psi.

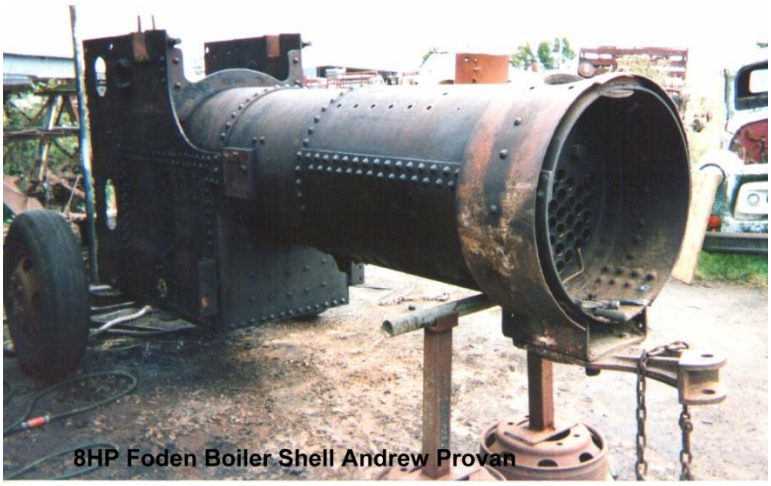
To achieve this, sections of the fire box, front tube plate and tubes were replaced, and the riveted long seam was fully X rayed, and tell-tale cuts were made at strategic locations along the seam.

38 new 7/8" stay bolts were fitted and beaded, and the new tubes were fitted and their ends were beaded. All riveted joints were hand caulked.

With no leaks, and all works and inspections completed the boiler passed its hydro test on 12 7 2007

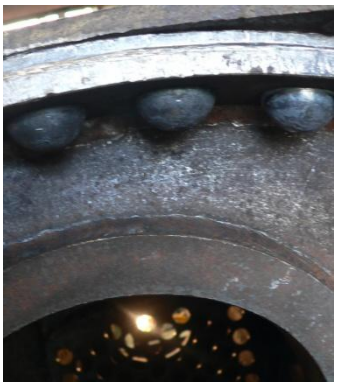






The boiler was a mobile assembly during restoration; rear shows live axle penetrations in horn plates.





Tube swaging tool and worked tube ends in fire box tube plate. Hand caulked smokebox tube plate.

Work continued on the twin cylinder compound engine. Like the boiler it had also had a hard life and much work was required on all major components.

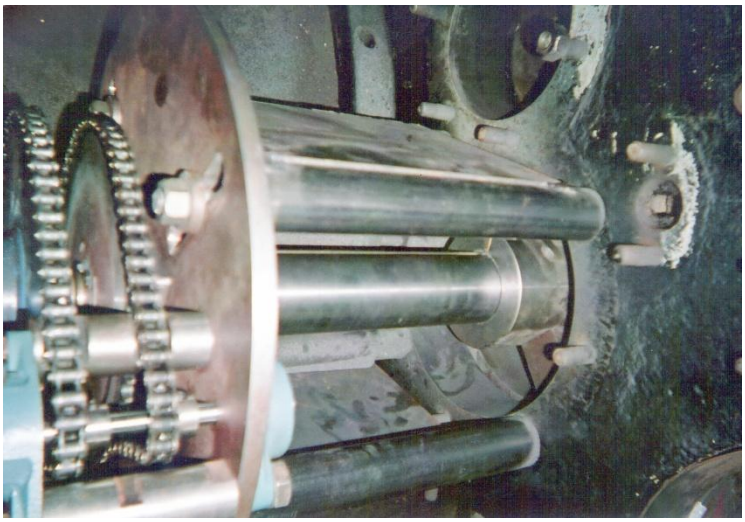
The crankshaft was a major exercise. The original was unserviceable and beyond repair. The new crankshaft was machined from a billet of 4140 steel. The shape was roughed out and then finished by Crankshaft Rebuilder in Blackburn Victoria to their normal high standard.

The cylinder block was rebored and honed. This was done in-house by Andrew as shown in the picture below.

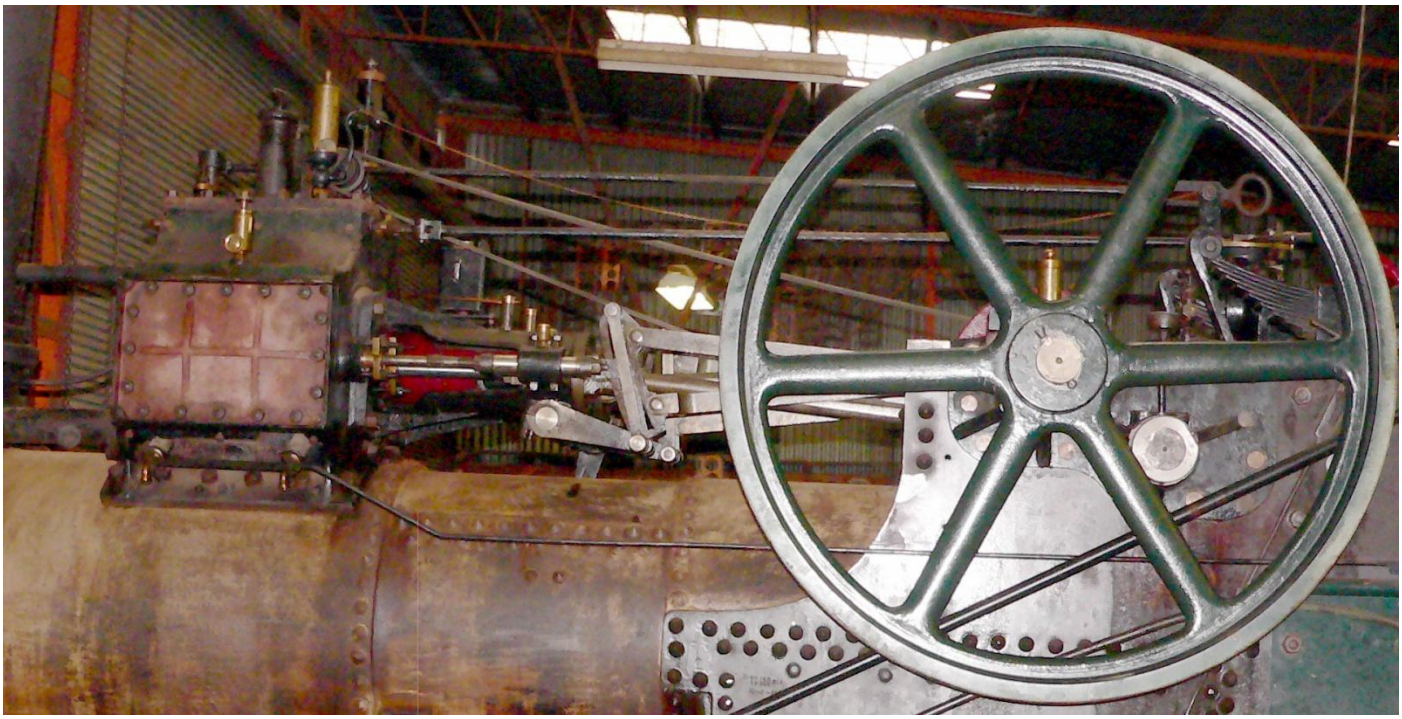

Crankshaft assembly starts with the valve eccentrics and the cylinder boring assemble setup

A new 6" Diameter rear Axle was made, and the slide ways and bearing boxes were built up and dressed to control the movement of the sprung rear axle.

The 4 pinions in the differential were cast in SG cast iron, and the matching Sun gears were built up and dressed, as were all the gears in the gear train.



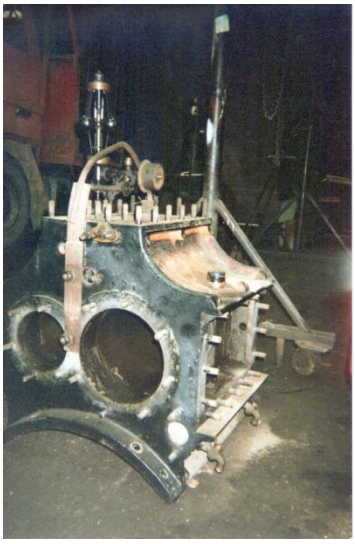

Boring bar close up and a look at the bore after the job is complete (the LP Cylinder was sleeved)



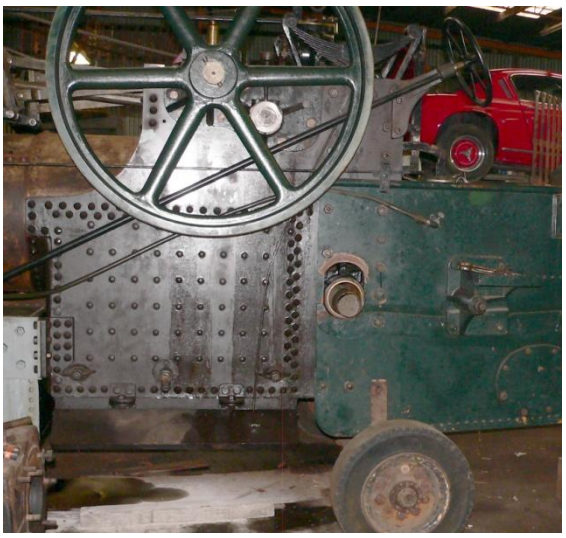
The assembled block and motion

With the boiler and engine works completed, a new smoke box door was made, and a new chimney was rolled and fitted with a brass cap ring, and at the other end a new tender was fabricated. The original water tank was saved. Next job was the wheels. The inner spacer plate had rusted badly on both wheels, so new ones were made and fitted in sections. Theses sections were then welded to recreate a ring and riveted to the outer wheel rim plate.



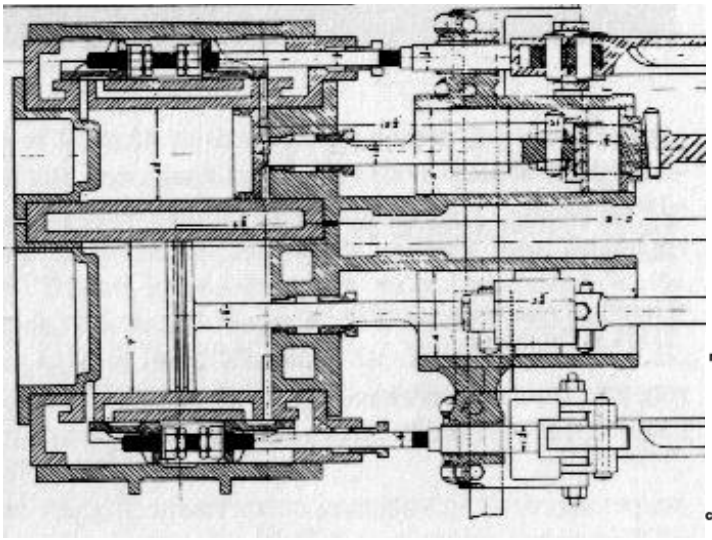
The Compound Cylinder block and smoke box tube plate.



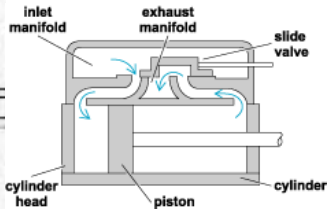
Side view with Wheel & axle removed.

Foden claimed that there compound engines had a better fuel economy than other makers by as much as 25%, which seems to have been confirmed by Military and other field trials. Whilst there are many factors that affect efficiency, at least part is attributable to the short small volume steam ports which were possible with their slide valve design in the high and low pressure cylinders as shown in the diagram of the very similar C Type Wagon which Sam Newman and the Navy Steam Club display at Lake Goldsmith.

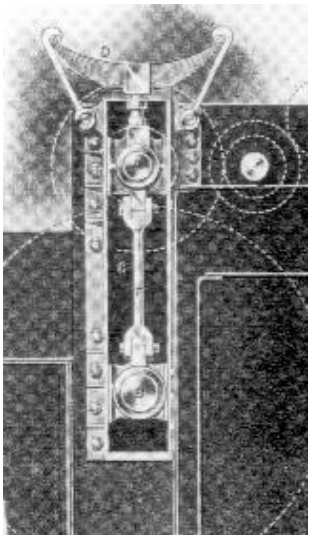
When compared with a conventional "D' slide valve these frictional and volumetric efficiency losses are more obvious. The advantages of using a twin cylinder design are enhanced by compounding them and recovering as more energy from the system than a twin high pressure system.



Typical Foden cylinder & valve arrangement



Typical D plate



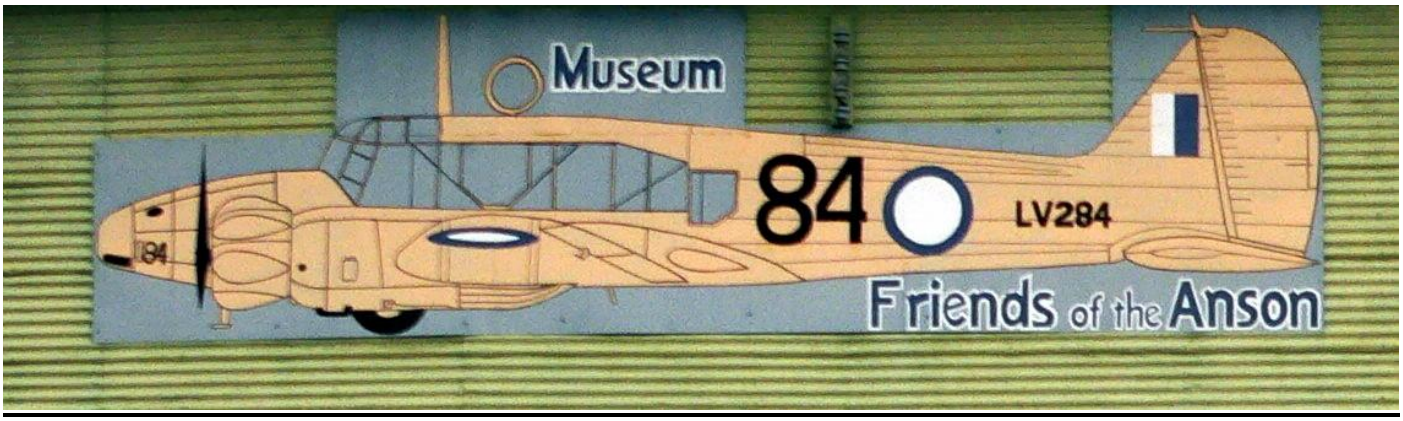
Sprung rear Axle

Information on Foden vehicles can be gleaned from various sources. The Book FODEN by Harold Nancollis (ISBN 1 898432 14 7) who worked for Fodens for 45 years after starting in 1937 is a good source, The section of the rear axle springing arrangement is a good example from the steam era.

The rear axle was sprung to minimise structural damage which can result from travelling on hard bumpy roads. In this design the live axle passes through the sliding axle bearing in the lower section of the sideway. The 3rd shaft sits in a similar bearing box at the top of the sideway, held at a constant distance from the axle (to ensure gear mesh) by a spacer rod. The combined sliding assembly is attached to a stiff leaf spring by a push rod, in a manner similar to steam Locomotive practice.

The work bringing this Traction Engine back into operation has required much knowledge, skill and patience, a high standard has been maintained throughout. Thanks Andrew Ed.

BALLARAT AIRPORTS AVRO ANSON
JUST 1 of 72 REMAINS



A familiar sight to all of those who visit Ballarat Airport or the Ballarat Swap meet is Yellow Anson painted on the wall above the entrance to the Anson Air Museum, home of the Friends of Anson.

During World War 2 Ballarat was home to about 100 Avro Anson twin engine trainer planes, 72 of which were later sold from the base.

It was also home to the Wireless and Gunnery training school, which used the Anson's for training and coastal patrols from Mt Gambier to Mallacoota in search of submarines, mines and raiders.

The planes had bomb bays in their wings which could carry 8*50 pound and 2*250 pound bombs.

Armament varied from a manually operated turret with a single Lewis machine gun, to a hydraulically operated Turret with twin .303 Browning machine guns. Some were fitted with a single .303 browning machine gun fixed in side of the bomb aimer's nose compartment and used by the pilot.

These planes were a familiar sight in the air around Ballarat until the end of World War 2. Soon after the war 72 planes were sold off for parts or scrap. The timber wings were cut off outboard of the engines to make sure that their flying days were over.

15 or so were sold around the district, one ended up near Mt Emu, which was the prompt for this story, and another ended up as the main truss in a shed roof in Ballarat, which became the start of the Museums main exhibit when aviation enthusiast Alan Penhall decided to retrieve whatever Anson parts he could find, and create a static exhibit of a complete plane in RAAF spec.

Alan's mission began in the mid 1970's, and as the collection grew the search for a display area started and ended in the building which had been Wireless and Gunnery School during WW2. Whilst not big enough to accommodate the 52' wingspan of the Anson, it is ideal for the fuselage and wide range of exhibits and photos which are the heart of this display.

And yes the radio and armament displays are back in the building which trained so many of our airmen how to use them.

Parts of the Mt Emu plane, the front Browning location and a view of the pilots side of the cockpit. The bomb aimer/observer/co-pilot moved forward through the tunnel, or sat to the right of the pilot. The circular hole is for the landing light, and the rectangular holes below are for the bomb aimer.

Inside the cabin, on the left the wireless operator's cabin is behind the navigator who is behind the pilot. The back of the co-pilots seat can be seen on the right. If the plane was fitted with a turret, the wireless operator often doubled as the gunner. The Wireless operator and Navigator are over the wing spars and the pilots sit lower in front of the front spar.

Looking through the bomb aimer's side and a part dismantled Armstrong Siddeley Cheetah 9 engine.

Alan and his group of volunteers have made an incredible effort to get the fuselage to this state of completeness. Numerous sections of steel tubular frames from different planes have been cut and fitted to make one complete frame. A new light spruce timber frame which supports the doped Irish linen outer skin has been made and fitted to the completed frame and a rudder and tail plane have been built and attached. The elevators on the tail plane are original and steel framed.

A Section of the wing spars, long enough to support the engines, landing wheels and bomb bay has been fabricated and fitted into the fuselage using the original wing mounts. **Cont**

For anyone interested in how these planes were put together, and how everything was arranged to keep the weight distribution correct, they cannot do much better than have a look at this display. Features that are impossible to see on a complete plane are in complete view here.

The landing wheel retracts into the engine support frame, behind the engine. The shock absorbers are attached to the radius arms that lower the wheels when rotated down by winding a crank handle under the pilots seat

The frame attaches to the front and rear laminated wing spars. The picture on the right shows the tail wheel on its caster mount and a spare landing wheel.

THE CHEETAH 9 ENGINE

The Anson Museum has a complete engine at the B24 restoration Group in Werribee, who are rebuilding similar Cheetah 10 engines for their Airspeed Oxford project. The Cheetah 9 is being prepared for start-up, which hopefully will happen in the near future

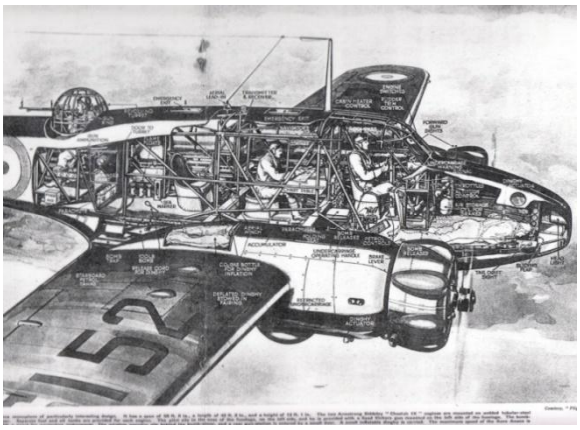
Armstrong Siddeley's Cheetah engines were a development of their 230 HP Lynx Major engine introduced in 1930. The Cheetah 9 was introduced in 1937 with 345 HP at 2425Rpm. at 7875 ft Alt. on 87 Oct fuel. COMP Ratio 6.35:1. Fuel consumption was 0.45 pounds/hp/hr and oil about .35oz/hp/hr.

The engine is a 7 cylinder air cooled single row radial with a displacement 834 cu in or 13.65L for those of us with a Metric bent. It had a centrifugal supercharger at the rear of the motor. The stroke was 5.5" with a bore of 5.25". Valves were pushrod operated. The engine had a dry weight of 637 pounds which gave it a power to weight ratio of .54hp/pound

The last model was the Cheetah 27 which produced 385 HP. Production ceased in 1948 after 37200 had been produced. It was the first engine of its type with a UK certification for 1200 hours operational time between overhauls.

Variants, in particular the 3000 or so made in Canada, of the Anson used similar powered Wright Cyclones, P&W Wasps and Jacobs engines.





Friends of the Anson's Cheetah at B24 Group, & Anson 4 man crew with Wireless/Gunner in Turret.

THE AVRO ANSON MK 1

The Avro Anson was developed from AVRO's successful Type 652 passenger plane. The name Anson honoured the successful Admiral George Anson who ultimately became First Lord of the Admiralty in 1757. The name seems fitting for a plane designed for "general reconnaissance' for the RAF Coastal Command.

It entered service in 1936, and had the distinction of being the RAF's first Monoplane with a retractable under carriage, which increased its maximum speed by 30MPH to 188MPH, which was a long way below the German Fighters that it would meet over the ocean when hostilities broke out.

This apparent inequality was offset by the fitting of internal side firing machine guns for the crew and the Anson's manoeuvrability. Flying at sea-level to protect the underside, they could " flat turn" and bring the side guns to bear on a following fighter, who's high speed forced the pilot to swerve tightly in close proximity to the Anson giving the side gunner a perfect shot. They were credited with 6 kills and various damaged. These side guns were only used in combat coastal areas, particularly near the French Coast, until the more combat effective Lockheed Hudson replaced the Anson's in 1941.

The Anson's main roll was as a training plane for Wireless, Air Gunnery, Pilots and Armourers involved in the Empire Air Training Scheme. Training bases were in Australia New Zealand Canada South Africa.

Empire Air Training Scheme No 1 Wireless Air Gunnery School (WAGS). EATS was established at Ballarat Showgrounds on 22 4 1940 and soon moved to the new aerodrome on land which had been acquired by the Commonwealth. The airmen started to train in Panel Vans, until 1941 when CAC Wacketts, and later, Anson's which arrived and stayed in service at Ballarat until December 1945 when the No 1 WAGS was disbanded.

Variants of the Anson were produced until 1952 by which time over 11000 had been built

The RAAF used the base as a Radio and Radar School until 1961. The earlier Shire of Ballarat took over the civil operation of the airfield until they were merged with the Ballarat Council who are now the operators of the Ballarat Airfield site although the airfield proper is under Commonwealth control.

Many of the RAAF buildings were sold off by the Commonwealth, one of which became our club room. See the shoebox photo for details.



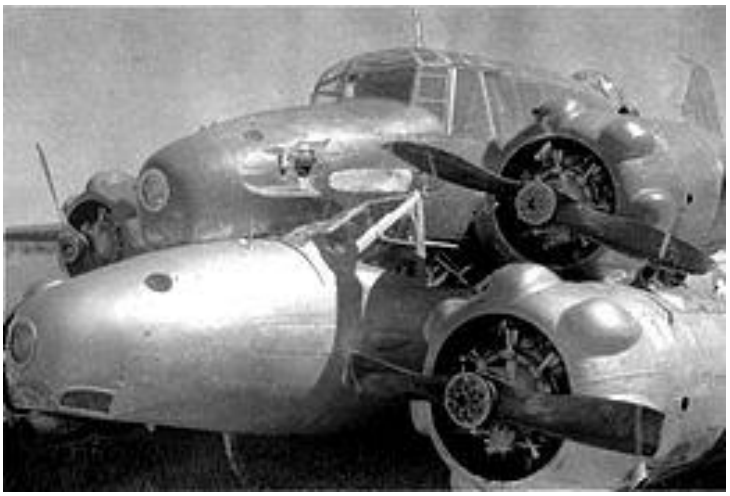
Recognition silhouette drawing, Anson's in flight and a 1948 Anson T21Navigation Trainer

Although it did not involve a Ballarat Anson, in September 1940 2 Anson's were involved in an unusual mid-air collision. The two planes were locked together when the turret of the lower plane became jammed between the wing spars of the up plane. The 2 man crew of the lower plane and the navigator of the upper plane were able to bail out.

The engines of the lower plane were still running and the Pilot of the upper plane found that he could still fly the combination with his controls.

The interlocked planes were landed near Brocklesby, a small town about 30KM North of Howlong in New South Wales. All 4 crew survived and the upper plane was repaired and returned to full flying service. The lower plane was repaired and used for static training.

Many years ago I drove through Brocklesby and was amazed to see a mural of interlocked planes on the local Hotel. This was all the excuse I needed drop in for an explanation and it was the first time that I heard of this rather famous accident. Unfortunately I cannot find the photo that I took at the time, but luckily there is a lot available, and for anyone interested to know more check the net.




The piggy back pair of Anson's at Brocklesby, and a memorial and mural commemorating the event

The Friends of the Anson Museum at Ballarat ties a lot of history together. The Airfield was the site of the No1Wireless and Gunnery School, The Building was used to train the wireless and gunnery aircrew, and the Anson, and so many other relevant exhibits inside were used by the Training base.

The collection is becoming more relevant as younger generations take an increasing interest in our nation's military past and try to learn more detail of how their families were involved.

During WW2 thousands of pilots, bomb aimers, wireless operators and gunners from all over Australia were trained at this base before they moved to combat squadrons around the world, making this Museum an important collection of National significance.

The base was occupied by nearly 2000 staff and trainees at its peak, it was active for 5 years and the Anson's were a familiar sight in the Ballarat area. Of the 100 or so Anson's that were at Ballarat, it appears that about 28 were moved on to other rolls and 72 remained to be disposed of locally or sold for scrap. Of the 72 only 1 lives on, as a display to the memory of the RAAF's No1 Wireless and Gunnery School, and the 1000's of Aircrew who were trained there.

Ian and his group are still looking for parts for the Anson, or anything else that served at the base. If you can help give Alan a call on the number below.

In particular, there are some parts high on the list, an RAAF Bombsight, Spark plugs for the Cheetah engines and Wireless No's T-1083 R-1082 and Motor Generators C30A-7532.

Anson Propellers, for Alan's and other projects are in short supply, and as a concession to age, an electric starter of a Cheetah 10, which can be retrofitted to the 9 is on the wish list.

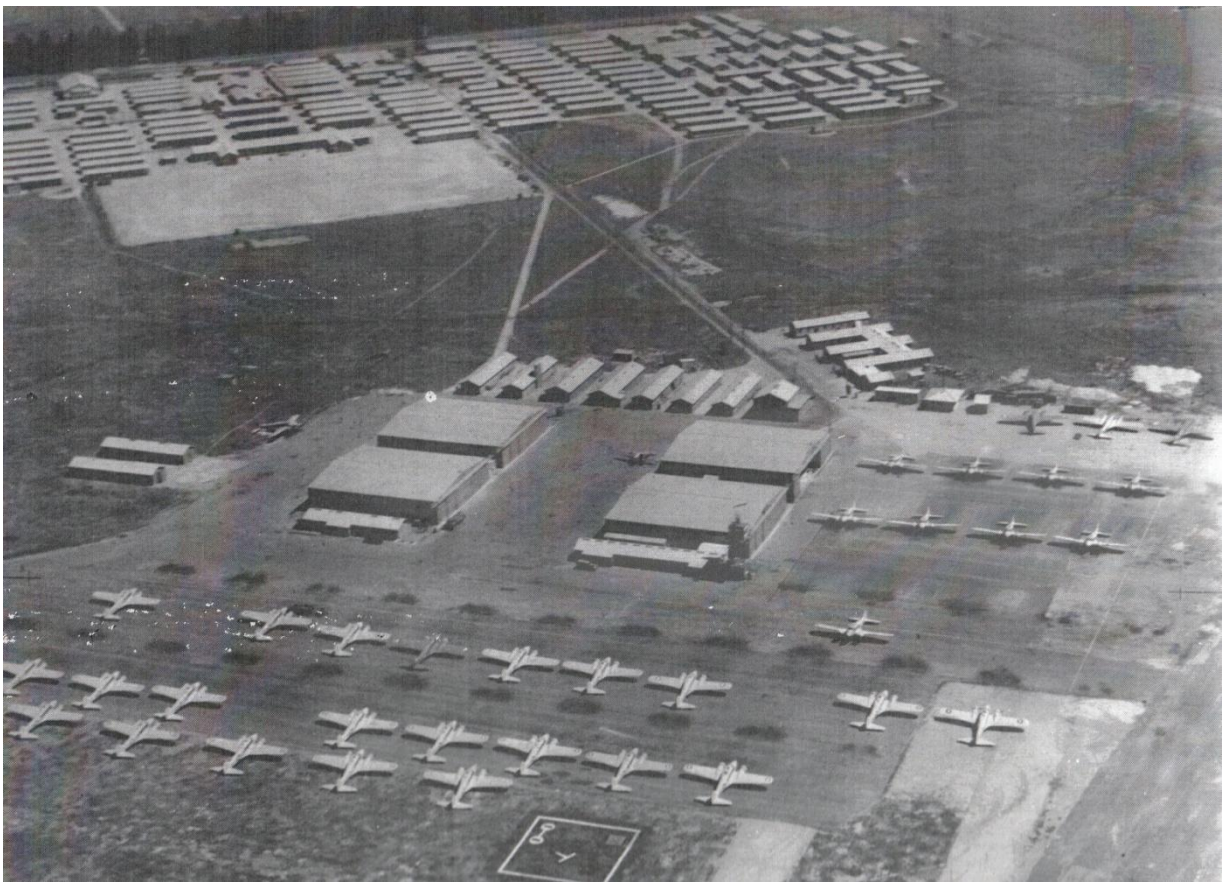
For anyone interested in a large slice of local history, or RAAF history, or Anson history this museum is a must. Thanks to Alan Penhall and his crew for their 40 year effort putting this display together and making the photographs available for this feature.

It has been an interesting time for me discovering the history of the Ballarat Avro Anson's.

The Museum is open both days on most weekends

Allan can be contacted on 03 5332 4651. Enjoy a day out with "Friends of the Anson". Ed.

Try www.ozatwar.com/museums/fotam.htm for more pictures



Avro Anson line up at RAAF No1 Wireless and Gunnery School Ballarat Airbase during WW2

AUGUST SHOEBOX PICTURE

For this issue Alan has provided a photo of the Ballarat air base in the late 1940's. On the right hand side you can see a collection of sheds. One of these sheds belongs to the Friends of Anson, and most were sold and removed in the 1960's.

Of significance to the Lake Goldsmith Steam Preservation Association! One of those sheds was moved to Beaufort and used by the Bowling club until 1972 when the Association purchased it.

The turnaround time from the date of purchase to installation on our site was 1 week. This included splitting it in 2 parts, transporting both parts, setting them on stumps, sealing back to lockup and having the first meeting. This building is still our club room. Would anyone like to take that move on today? Perhaps someone can remember which one we ended up with? Thanks Alan for the picture and John Norris for the story. Ed.

Ballarat RAAF Base barracks and training buildings before the sale, which one came to Goldsmith.

MELBOURNE STEAM TRACTION ENGINE CLUB

On Sunday September 28 2014 from 11AM to 4PM
At The National Steam Museum Rally Grounds
Entry:- GOLD COIN DONATION

MSTEC
will be having a
ROAD MAKING DISPLAY DAY
With Dumping, Spreading, Grading and Rolling. Bigfoot will be taking Giant Steps as the Massive Ransome Rapier Walking Dragline moves around the Parade ground with a variety of other Heavy Construction Equipment Including the Gradall
The Museums, Steam & Diesel will be open with engines running, and the miniature Railway will be open for busines, so bring the family.

NEIL'S LIST

For August Neil's list, (which is a search for the oldest exhibits on site) has an entry from before 1800 which can be found in the Phoenix shed where Chris and Lesley have it on display.

In keeping with period there will be a change of text font to suit the times! Read on.

FROM THE PHOENIX SHED

We have here at the Phoenix my life's collection of

"Items pertaining to the Goldfields"

In which is an early dome top chest covered in ponyskin and numerous iron straps and nails. The lining is newspaper, and interesting to see is the writing in Old English style where they substitute F for S. I say F as it appears, but it is in fact the so called "long S" which is different to the "terminal S" which would normally appear at the end of a word. Oddly though, this practice doesn't seem to be done consistently. It would seem that this was largely used for ornamental purposes in writing and printing. Maybe it depended on the school one attended!

Thus the date we read is *Auguft 1788.* **We read various articles of the day…an early environmentalist if you like complaining of "***The scarfity of the fifh***" in the River Thames. Apparently the** ***fwans*** **are eating all the weed and "***ought a number of thefe birdf of prey therefore to be encouraged, to the deftruction of the river fifhery? Ought there not to be rewards therefore iffued out for deftroying thefe birds?"*

But perhaps the most interesting snippet from our standpoint is little that *"Government are in daily expectation of receiving intelligence from GOVERNOR PHILLIP at Botany Bay as he was to difpatch a frigate from thence as foon as he got there"*

Thanks to Chris and Lesley for this contribution to Neil's list, at 1788 it is the current frontrunner for all categories.

Chris and Lesley will have this chest on show in the Phoenix Shed in Sunshine Avenue, so drop in! Look around, there is plenty to see.

John Norris has provided the following insight into the operation of the Club's Boiler House.
On Rally days this display just seems to tick along like clockwork, but read on

THE LAKE GOLDSMITH BOILER HOUSE

One of the Club's most popular displays is our Boiler House and the collection of steam engines and other equipment that it supplies with steam. The focal point of the display is the 200HP Boiler which was built by Thompsons at Castlemaine in Victoria, and came to us from the Maryborough Knitting Mill. This boiler is thought to be the largest working boiler in preservation in Australia.

There is a second boiler on the boiler house which is used intermittently. This smaller boiler is a Cornish type made by Union Engineering in Adelaide South Australia. This boiler can only just cope with running the display engines, and uses an enormous amount of fuel to do so.

To return to the main theme!

To bring this boiler on line, work starts 1 week before the Rally. This physically large boiler is enclosed in brickwork which all must be brought up to temperature slowly to prevent thermal stressing and possible distortions which could damage pipework and machinery, and reduce the working life of the plant.

This long lead time means that there has to be someone on hand to light it up and keep a low fire going. Fortunately there are enough members around in the lead up to each rally to keep the fire under control in the early stages, the hard bit starts on Friday when there are more tasks than toilers as the final preparations for the opening get under way.

On the Friday, the final preparations start, more wood is needed (The boiler uses about 6Tons of wood for each Rally), The brass all gets a last polish, the engines get a final clean up, and everything is made ship shape ready for the opening on Saturday, when the working display engines are warmed up and turned over.

The Boiler House display is manned by at least 3 operators at any time, and currently has a 6 man team time during the Rally. Ideally it would be have a team of 9 operators on hand to spread the load around, and have operators to answer visitor questions.

If you have any interest in steam, or would like to be involved there is always an opportunity here to join the team and still have time to get around the Rally

For anyone contemplating getting a steam ticket or engine drivers ticket at some time in the future, or if you just want to keep your hand in and get some hours on a log book, or gain experience with different engines, this could be a chance for you.

If you are fit enough to handle firewood and shovel ash, this could be a chance for you to enjoy some time while supervised under qualified operators in a unique environment in the world of steam.

Contact:- John Norris on 03 5349 5566

After the rally the fire goes out, the steam fades away, the boiler is blown down and tubes cleaned, and the displays are covered ready for their next Rally

The boiler wood supply

Thanks John for the rundown on what goes on to bring the Boiler and the steam display on line before and after every Rally, and thanks to the unseen team that make this possible, and provide a fabulous display of Steam in Action at every Rally. And to those who choose to join them.

Leigh Buckley cleans the boiler with the air lance. The 94 3"ϕ tubes are 15' long

MARYBOROUGH WINGS & WHEELS HISTORIC CAR SPRINT

September 13 & 14 2014

If you like old cars and planes you should put this weekend on your Calender

PROGRAMME

for the Historic Maryborough Car Sprint:-

Saturday 13 September 2014 from 10.30AM

CLASSIC CAR DISPLAY AND RALLY
Entry fee:- $5 per person

Starting in the Domain at Maryborough's magnificent Railway station the display and Trophy Presentation will be followed at 1pm by a touring Rally of the historic sites in the area which has been organised by the MARYBOROUGH HISTORIC VEHICLE CLUB. This tour will finish at the Maryborough Aerodrome about 4pm.

The Wings and Wheels reception will start at 4.15pm
Refreshments will be served in the Old Aviators Flying Museum.

Enquiries for the Classic Car Display & Rally:-
Contact Russel Bell on 0428 134 654

Sunday 14 Sept. 2014 from 10am to 4.00pm
$10 entry fee for adults, children free.

AIRCRAFT DEMONSTRATIONS & DISPLAY

HISTORIC MARYBOROUGH CAR SPRINT
400M EVENT ON THE AIRSTRIP

CLASSIC CAR DISPLAY AND OLD AVIATORS FLYING MUSEUM TOURS, RACING CARS, 1920 TO 1970 & SPORTS CARS TO 1975

PERIOD SPORTS AND REPLICA SPECIALS & HISTORIC MOTOR BIKES

TROPHY PRESENTATION AT 4.15pm

Enquiries for the Race & Sprint events contact:-
David Lowe:- 03 9827 8124 after 7pm
Race Secretary Austin 7 Club Inc.

www.wingsandwheels.net.au

For anyone who wants to get an idea of the races, vehicles and planes that appear at this event there are many websites on Google. They come up on the same page as the address above, but show some of these fabulous cars and machines of yesterday, and if you can make it to Maryborough you can hear it as well. All up this is an event not to miss.

Thanks to David Lowe for making the program available, and enjoy the day. Ed.

Google:- Maryborough district historic vehicle club and The old aviators flying museum inc Maryborough for more info.

Rally at Deniliquin September 21 and 21 2014

Many readers will be familiar with the Deniliquin Collectors Club display at Lake Goldsmith Rallies just over the Road from the Cody's Corner. They are having their 10th Annual Spring Rally at Memorial Park on the Edwards River in Deniliquin in September.

Daryl Whateley has sent in some pictures on what to expect:-

Being the Birth place of the David Brown Tractor Club, there should be a few of them on display, and for this rally Ferguson Tractors, Dodge vehicle, Hot Rods, Customs and Classics will all be on show for the Rally

All up it looks like a good line up with lots of variety, engine and machinery display, A tractor pull on the Sunday with practice on Saturday (2 sleds) Draught Horse Cart Rides. A large (100 Metres long) display of collectables, tools, models and kitchen ware.

There is also a tractor Trek (starts 9AM Sat) to the site of the Ute Muster

If you can fit in a trip to Dennny on Rally weekend, you will have a good weekend. Ed.

Now for some follow up on the BROWN & MARSHALL Hospital Carrige.

Norm Bray of 707 operations Inc. has an interest in carriages, and included in his collectio are some photo's of No 1 Hospital Carriage. This carriage ended up in a yard at Bulla along with a collection of assorted mechanical relics. The area has since been cleaned up and once again the carriage has slipped into History. If any one can help with its later status let me know and I will update Norms records,

Alone and derelict No1 Hospital Carriage **Inside of the Hospital Carriages is stark and severe, but a welcome sight if you are in trouble. It is interesting to see the stretchers double as beds. Thanks to Norm Bray and Rod Giri for the follow up information. Maybe Public Records can help.**

While we are still on Rails

Alexandra Timber Tramway

has the Fowler Steam Locomotive Back in Service after major repairs over the last 2 years
You can catch a ride on

September 13 and14 2014

Saturday starts of with a Heritage Machinery Festival and the Spring Market will be in full swing.

The picture on the right was taken on the first trials on 12 07 2014 after the rebuild.
This locomotive was built in the UK in 1909 and was in service at various Queensland Sugar Mills. After its commercial retirement it went to Museums in Goulburn NSW and Canberra before it arrived at Alexandra in 1981.
This Locomotive featured in the 1988 film

THE MAN FROM SNOWY RIVER 2 with Tom Burlinson, Sigrid Thornton and Brian Dennehy

This drama was released in USA as Return To Snowy River & the UK as The Untamed.

THE TRAVELLING TITAN - USA to UK to NZ

This unusual tale comes from John Couch, who resides at Wakatane on the Bay of Plenty on the North Island of New Zealand. John is the proud owner of an International Titan 10-20 tractor which started work on his Grandfarthers farm in England during WW1 and now drives a Tangye piston as a working display at Rallys in NZ. Now it is over to John for his Story.

The International Harvester Co was formed in 1902 by the merger of the McCormick Harvesting Machine Co. and the Deering Harvester Co, along with three smaller machine companies.

The IH Titan 10 – 20 Tractor was made at Milwaukee Wisconsin USA from 1915 until 1922. By whicht time 78,363 had been made. Production peaked in 1920 when one tractor was leaving the factory every 4 ½ minutes. All tractors were hand made as there was no production line as such.

During WW 1 over 3000 Titans were brought by the British Government war Office and given to farmers on a lend lease scheme to help with food production.

My Titan, serial No TV4069 was one of these tractors. It was supplied by the local War Agricultural Committee to my Grandfarther at " Foxholes Farm", Hertford, UK when new in 1917, and was used on the farm for general duties such as ploughing and cultivating, and it was used for contracting on local farms.

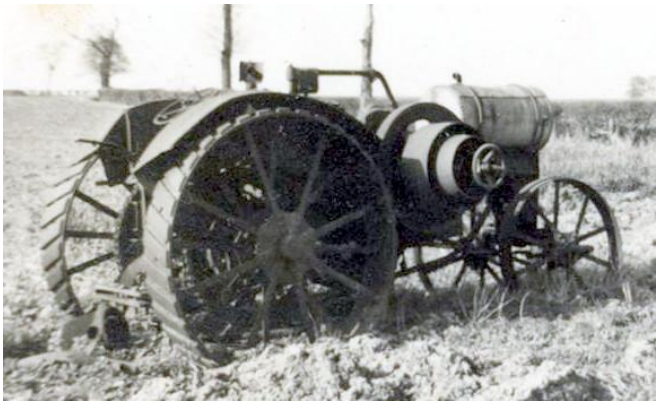
At the end of the war, the War Office gave the farmers the option to buy the tractors at a set price, or they would go into a local auction. Grandfather decided to buy ours.

After grandfathers death my father Harry, in partnership with his brother Wesley took over the farm and contracting business. On September 29 1927, the brothers gave up the tenency of Foxholes Farm and took over the tenency of "Stonards Farm", High Wych, near Sawbridgeworth, Hertfordshire. The Titan followed on November 1 1927, where it also worked on their brother Trelawny's adjacent farm "Hoskins".

Over the years other tractors came onto the farm, and the Titan did less and less work until it finally ended up at the oat crusher. When it threw a big end, it was pensioned off and taken to the top of the stack yard with the other scrap. (I can remember playing on it when I was 6 or7)

Wesley died in 1951 and Harry ran the farm on his own until he died in 1958, and the farm was sold in 1960. I was 10 at the time and was sent of to Boarding School. In 1972 I was talking to my uncle Trelany and the subject of old tractors came up, (he had a Marshall Traction Engine and a couple of Vintage Cars) I said it was a pity the Titan had been sold he said that it wasn't sold, it had been

loaned to someone to restore and show. We both commented that we had not seen it, and tha perhaps it should be looked into. (this was a lucky conversation as 6 months later he had a stroke and never spoke again). Uncle made some enquiries and found it in a farm yard, part dismantled with parts missing.



I then made arrangements, and persuaded George, a friend of mine, who was a thatcher, to help me move it. The day arrived and we went to the farm and with difficulty loaded it onto Georges flatbed Bedford O truck and took it back to uncles farm and unloaded it under a hedge.

In 1978 Trelawny died and I had to move the Titan, in the meantime I got married and we lived in a small cottage in Suffolk which did not have any room to store a tractor, so a fellow member of the Farm Machinery Preservation Society that I belong to allowed me to put in his barn at Foxearth near Sudbury.

One weekend I went to the barn with a friend and we partly dismantled it, and there it stood while we rebuilt the house and started an engineering business. Eventually I collected the parts and put them in our garage.(this was just as well, as the great storm was 6 months later and the barn blew down).

By now it was the 1980's and I thought that I must do something with the tractor. The business had progressed into a small factory unit, so I took the Chassis to the workshop and we started work on it. (mainly as a hospital job). The chassis had to be derivetted as the rust had got between the plates and buckled them, also where the rear axle was fitted the channsls were rusted through. New parts were cut and welded to the rails and riveted up.

The engine was next. We removed the cylinder block from the crank case (this proved to be the easy bit) . Now you have to bare in mind that the tractor had stood outsie from the 1940's to the 60's, and then someone had improved things by removing the engine covers, and it remained outside until the early 80's. The first job was to remove the head from the block. All of the ¾"head studs go through the nearly 9" thick head and were rusted solid. The only way to remove the head was to cut through the gasket and studs with a hacksaw blade. It passes the time as they say.

The engine is a horizontal 2 cylinder with 6"ϕ cast iron pistons which were rusted solid in the bores. We mounted the block vertically on timber blocksand filled the bores with diesel and left it for several months. Then we got a large block of hardwood that fitted the bore so that we could hit the piston. Every time we were in the shop we would give the wood a good hit with a 14lb hammer on each piston. After 6 months of this they came out and we did not break any rings.

Now the engine was in bits, what to do, the bores had nearly ¼" deep pitting in them where water had stood. I managed to get liner castings from the foundry and machined them to fit (you cannot get liners of the shelf to fit). As the pistons were corroded on the outside, I machined the outside until they were smooth, and machined the bores to suit. The original rings were regapped to suit the smaller bore.

The crank was ground and the main bearings scraped to fit. The bearings on these old engines had a lot of shims, so it was not a problem to remove a few to get the bearings to fit. As the restoration had taken 25 years to complete I was always looking for parts that I needed. Auctions are a good source. At one sale I big end shells, at another a fuel tank, and so it went on. By the time I came to put it together I had nearly everything that I needed.

There is a company in England that specialises in old tractor tinwork. They made the wings, air filter and water tank. The welder who worked for me, welded some new spokes into the wheels. The wheels had a type of roller bearing in them that ran straight on the shaft and the hub casting. As these had long since passed their use by date, the hubs and axles were machined and fitted with bronze bushes.

The cylinder head needed new inlet valves as the stems had nearly rusted through. They have a fairly long stem and were proving to be a problem to source until I was talking to a neighbour who restores old crawler tractors. I lent him a valve, snd when I came home the next night there were 2 valves that were slightly to large sitting on the door step. Eric, a chap that was working for me at the time is a very good machinist, and a couple of days later I had 2 new valves fitted.

Now thingss started to progress, the axles and wheels were fitted, and the gearbox dismantled, cleaned and reassembled and fitted. One Christmas I decided it would be a good time to assemble the engine in the workshop, so I started on boxing day with the intention of getting it back together by the time the men came back to work in the second week of January. By the middle of February I was getting asked when it was going out as everyone was falling over it. The following weekend I lifted it with the loader and put it on the chassis.

Work continued steadily until mid July when I took it outside and put a flat belt from the Titan to Ferguson 20 and cranked the engine over. This went fine with the crankcase cover off. It was possible to see that the oil was getting where it should. It is a dry sump engine with a mechanical oiler with 6 outlets , one for each cylinder, big end and main bearing. The oil then drops onto the ground, (this is an American tractor, they have plenty of oil!).

After the engine had been cranking over for an hour or so, my son Richard asked if it would go. He encouraged me to put the plugs in and try it.

At this point we ran into a problem as the Ferguson did not like the idea. First the belt would not stay on. When that was sorted out the engine stalled. After a few more adjustments The Titan started for the first time in nearly 50 years. A good day, followed by a glass of wine.

A helping hand from the Fergy for a cold run in and a first start in 50 or so years

The following day I was talking to a friend who was organising a vintage ploughing match to raise money for the local church, and he said good, I will save you a place, and he said he would find me a plough. So by October I had the tractor finished except for the painting, and took it to the match and she worked all day with no problems. Several of the spectators were horrified, they thought I would break her, and she should be polished and put in a museum. (I am a great beleiver that these old tractors and machines should run and be put to work, as most people would never have seen them run and work, and a static machine is not interesting to look at).

Over the following winter I painted her and had the sign writing done. In the spring I got ready to go to the first show which was the Woolpit Steam Rally where she behaved well and was admired by many.

I took her to as many shows as possible over the years. In 2006 we decided to emigrate to NZ, so she was duly cleaned and packed into a 40' container with all our worthy goods and she arrived in Whakatane in Nov 2006. I took her to as many shows as possible, including Glen brook

Tractor Specs.

The Titan Tractor is rated at 10HP on the draw bar and 20HP on the belt
Engine 2 Cylinders Bore 6" ϕ * 8" Stroke Capacity 7.42L
Fuel:- Petrol start Kerosene Work Weight 2900kg with full tanks
Gearbox 2 forward High speed 2 7/8 MPH forward and reverse Low 2 ¼ MPH

UNIVERSITY OF NEBRASKA
AGRICULTURAL ENGINEERING DEPARTMENT
UNIVERSITY FARM, LINCOLN

Report of Official Tractor Test No. 23

Dates of test June 14 to June 19, 1920

Name, model and rating of tractor Titan 10-20

Serial No. Engine TY 60909 Serial No. Chassis TY60909

Manufacturer International Harvester Co., Chicago, Illinois.

Tractor equipment used KW Model TK Magneto. Own carburator.

Style and dimensions of wheel lugs Angle, 1½" x 2½" high.

Brake Horse Power Tests

Horse Power Developed	Crank Shaft Speed R. P. M.	Length of Test Min.	Fuel Consumption: Kind of Fuel	Fuel Consumption: Amount Used per Hour Gallons	Fuel Consumption: Horse Power Hours per Gallon	Water Consumption Gallons per Hour: In Radiator	Water Consumption Gallons per Hour: In Fuel Mixture	Water Consumption Gallons per Hour: Total	Temperature *Cooling Fluid Deg. F.	Temperature of Atmosphere Deg. F.	Humidity %	Barometric Pressure Inches Mercury
RATED LOAD TEST												
20.18	577	120	Kero	2.57	7.86	x	x	6.00	210	74	67	28.5
	Belt Slippage 1.32%											
VARYING LOAD TEST												
20.13	576.5	10	Kero.									
21.26	572.5	10	"									
1.055	590	10	"									
5.25	590.5	10	"									
10.425	584.5	10	"									
15.555	583	10	"									
11.80	583	60	Kero	2.39	4.945	x	x	5.00	211	69	67	28.5
MAXIMUM LOAD TEST												
28.15	580	60	Kero	4.64	6.06	x	x	7.00	212	63	67	28.6
	Belt Slippage 2.00%											
HALF LOAD TEST												
10.47	586	60	Kero	1.87	5.61	x	x	5.00	212	66	67	28.5
	Belt Slippage 0.61 %											

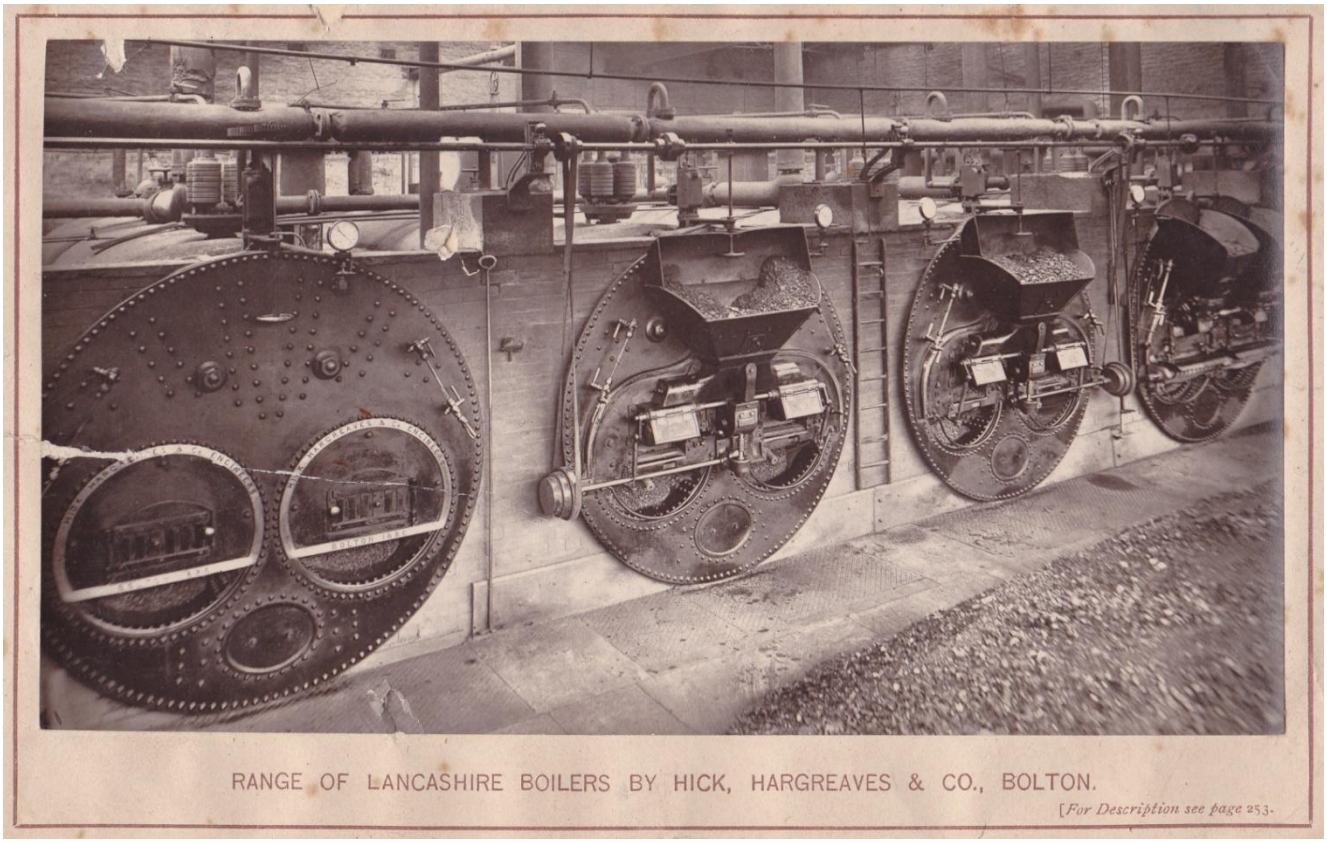
*Taken in discharge line from engine.

Remarks Kerosene used in all tests on this tractor weighed 6.77 per gal.
x Water for radiator and fuel mixture could not be measured separately.

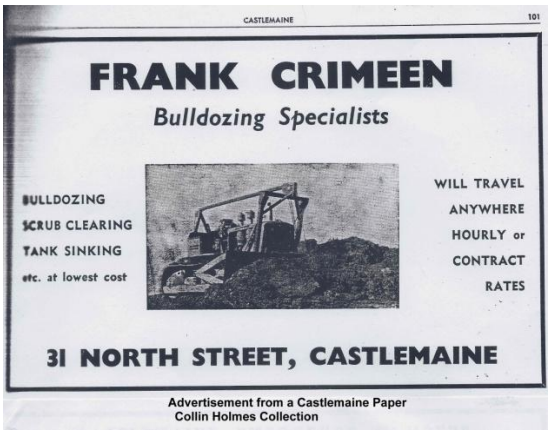
NZ arrival, first contact with new home in Nov 2006 at Whakatane.

Thanks John for this Titan Story. It is not often that a tractor covers 3 generations in one family, especially with a trip half way around the world.

John also provided the story of a 95 year old Tangye piston pump that shared the same trip. This story will appear in the October or December edition.



Above is an impressive array of boilers. John Norris found this gem in an old book. Thanks John



Advertisement from a Castlemaine Paper
Collin Holmes Collection

1882 Ballarat Horse Drawn Tram. Collin Holmes Photo

And from Collin Holmes comes this newspaper add and C1882 Horse drawn tram on show in Ballarat a BEMP Rally. Can anyone identify the make and model of the Bulldozer?

This brings us to the end of the Goldsmith Gazette feature section for August 2014. Again this was to be a quick read issue, but it did not work out that way.

Thanks to everyone who has contributed to this edition of Goldsmith. The chance arrival of a picture of a tracked Bucyrus face shovel revealed new insights into the company that used our Bucyrus, thanks to Bruce Fleming. Andrew Provan has provided a few insights into the work required to get his Foden back in steam, and Allan Penhall has opened up a chapter on the background of Ballarat when the Avro Anson and Wireless and Gunnery school trained Pilots and aircrew for action in World War 2.

Chris and Leslie from the Phoenix shed have added their First Fleet era chest to Neils list, John Norris has revealed the operation of the clubs main boiler, and John Couch has recorded the History of his 3 generation Titan. Heather Featherston has introduced us to the Pyrenees Arts Council, and the Smith Family, operators of the Emu Creek Sawmill have led us into the Caterpillar Rally with the history of their D2 crawler Tractors. Thank you all for your time and effort. Ed.