Loose FILLINGS

GOOD VIBRATIONS

Auctions in the past 12 months have seen serious money paid for air-cooled Coopers. It remains to be seen if this ever translates into a) a revival of air-cooled activity, or b) a rise in the value of non-factory air-cooleds. Whatever the case, for those of us with the air-cooled bug, the interest continues. Loose Fillings must be one of the very few special-interest publications which is largely written by its readers.

In this issue: Crankcase corrosion - a lost N/E Victorian aircooled - cars for sale - Ron Frost's notes on 500cc racing - Ron Ewing

BITS AND PIECES

*West Australian motorsport identity Don Hall, who owns the ex-Bob Gerard Cooper Mk V Norton, passed through Sydney in February.

*Brian Reed's ex-Patterson Mk V Cooper JAP 500 was bid to $38,000 at Shannon's post-AGP auction, and negotiations with an Australian purchaser are believed to be continuing.

*Cameron Macmillan has sold the Sidney Vincent's engine to the States, and is in the process of installing a 1930s four-valve Rudge 500, the type of engine the car used when it first appeared in in the late 1950s.

With the Vincent, Cameron weighed the car at 299kg (658 lbs) on the Eastern Creek weighbridge. In August 1959 in Australian Motor Sports magazine the car was said to weigh 4 ¾ cwt - 530 lbs - with the Rudge.

*Neil Videan has had new rear stub axles made, derived from Datsun 1600 components, after the blown Vincent-powered ex-Davison Cooper Irving lost a rear wheel at Rob Roy last November.

*Another Vincent enthusiast, this time in South Australia, is planning a near-future restoration of the Rilstone Vincent, which was a very competitive car in SA hill-climbing in the middle-'50s.

WHAT'S ON

April 10-16:Adelaide Speed Week, includes Collingrove hillclimb Ap. 11 - Joan Shearer, 08 8390 160.

April 22:Mangalore Sprints, VHRR - Garry Simkin has entry forms.

April 21-22: Oran Park Historic races, HSRCA, entries close April 4.

May 5: Catalina Park - last-ever hillclimb, VSCCA, no CAMS paperwork.

May 9: CEAR - Wakefield Park, no CAMS paperwork.

May 26-27: Winton Historic, A7Club.

John Wynne sent in this great photo from Darley, about 1960, showing Alan Staton (BRM 500, 55) Colin Williams (Sidney-Rudge, 32) Bert Flood (JGS, 1), John Wynne (JMW250, 20), unknown (Broadway, 33), George Lloyd (JMW150, 18), Jack Smith (JMW150, 21), Leon Bernadou (JMW150, 19) plus Noel Clark (JMW150), out of picture.

Quarterly Exhaust

THE LOG

HERE we record those air-cooled cars which have run in public - no matter how briefly - since the previous issue of *Loose Fillings*.

As has been noted before, a mention in The Log is not boasting, it's celebrating. We rely on our readers for input, and for this issue there hasn't been a lot to tell.

March 7, 2001 - Golden Era Auto Racing (GEAR) Club, Wakefield Park - Rob Gunnell (Cooper Mk IV JAP 500) Jeff Hodges (Burke Special Triumph 650), Terry Wright (Walton JAP 1100).

Good to see Jeff Hodges out with his fast ex-Hank Northey car, believed to have been built in the Lithgow area in the late '50s or early '60s. Jeff also owns the Walkem Vincent and what appears to be the remains of a pioneer Australian 500, the Lowe/Lane special.

FOR SALE

Ewing Norton ES2, built late '50s by Ron Ewing. Log-booked, spare ES2 plus remains of 1300cc Harley Norton. Realistic price, Malcolm Thorn, 03 9807 1244.

Cooper Mk V Norton, ex Bob Gerard UK, immaculate, Don Hall, 08 9386 2436.

N/E VICTORIAN AIRCOOLEDS

TARRAWINGEE, Winton and Undera programs from 1961-62 copied by Bon Jackson in Winton mentioned several unfamiliar air-cooled cars, one of them simply described as an "FWD special."

The car's constructor, Ron Cooke, still lives in Benalla, nowadays building and flying ultralights.

He told *Loose Fillings* he built the car about 1960, using a pre-WW2 f.w.d. DKW chassis shortened "by about a yard".

He removed the DKW's transverse two-stroke twin and its gearbox, but retained the DKW diff, to which he mounted a sprocket connecting back to an alloyTriumph 500 and gearbox.

The DKW's beam rear suspension and dual transverse leaf front suspension, and the cable-operated brakes, were retained, and the 17-inch DKW wheels were replaced with 12-inchers. It had "sort of half a body," Ron Cooke said, which included a firewall.

The car would keep up with the Austin 7s, he said, and he raced it for two or three years at Winton, Tarrawingee, Barjarg and Hume Weir.

For some reason the car caught fire regularly, and eventually its die-cast carburettor had to be replaced with a brass one with a higher melting point.

The car was sold and went to Melbourne, where it was stolen. It has not been heard of since.

YOU HAVE BEEN WARNED!

by Terry Wright

SOME years ago I was involved with an entry in the first of Ivan Mauger's long track classic events at Bathurst.

To cut a complicated story short, after magneto problems with my JAP, another engine was installed and some days later this new engine was found to be locked solid with acrid smelling stuff which was obviously the result of corrosion of the magnesium alloy crankcases

Enquiries of Shell, who had made the alcohol fuel, and Castrol who had made the R40 oil, resulted in both denying any possibility of the either or both being responsible in some way.

The same problem was recently discovered by Gary Simkin (thus spoiling his Christmas Day) who had last used his Manx engine IBS a few weeks previously at Wakefield Park. On this occasion there had been ignition problems (yes, those magnetos again) and a lot of pushing around the paddock, resulting, he guessed, in alcohol fuel getting into the crankcase where over the next few warm weeks it reacted with the castor oil based lubricant. So what was going on?

I put this conundrum to the only chemist I know, Nigel Howard in the UK , and the following is his analysis:

Magnesium alloys are 90-95% magnesium with alloying additions of Zinc, Aluminium Zirconium. They'll react like buggery in acid and the ones rich in zinc and aluminium will also corrode in alkaline conditions.

Such metals can only stop themselves corroding away very quickly by forming passive oxide coatings which can easily be penetrated by acids.

Castor oil apparently comes from the seeds of the *ricinis communis* plant.

It is a vegetable oil so will be low in sulphur (the normal cause for acidic properties in decomposing mineral oils). However, castor oil is itself 87% ricinoleic acid which looks like this:

$CH_3\text{-}(CH_2)_5\text{-}CHOH\text{-}CH_2\text{-}CH{=}CH\text{-}(CH_2)_7\text{-}COOH$

The only bit that matters is the - COOH on the end. This makes it an acid. The rest makes it an oil (long chain hydrocarbon with odd bits and pieces tacked on and bits missing requiring a few double bonds).

A stronger version of this type of acid is acetic acid (extra strong vinegar) but it is very much diluted by the other oily bits of the molecule so it will be a very weak acid indeed, unlikely to do any damage on its own.

The long chains of hydrocarbon tangle up (hence the viscosity of the oil) and the acid bit can't get to the metal surface to react. However, if the oil burns (shortening the oily chains) all bets are off.

The final ingredient is methanol CH_3OH. This would react with the ricinucleic acid to form methyl-ricinoleic ester and water:

$$CH_3.(CH_2)_5.CHOH.CH_2.CH{=}CH.(CH_2)_7.COOH + CH_3OH \rightarrow$$
ricinoleic acid + methanol

$$CH_3.(CH_2)_5.CHOH.CH_2.CH{=}CH.(CH_2)_7.COOCH_3 + H_2O$$
ricinoleic ester + water

So this is where the water, which could provide the medium for the corrosion, comes from. The methanol can also react with oxygen, especially in a warm engine (but only very slowly in a cold one) to give:

$$2CH_3OH + O2 \rightarrow 2HCOH + 2H_2O$$
methanol + oxygen → formaldehyde + water

With more oxygen$_2$

$$2HCOH + O_2 \rightarrow 2HCOOH + 2H_2O$$
formaldehyde + oxygen → formic acid + more water

So now we're in business, a COOH with only an H on the front of it -formic acid is a much stronger acid (but not strong like sulphuric, nitric or halogen acids).

I think this is what's happening - the methanol turning to formic acid and corroding the alloy."

The lesson of this? If using castor oil and methanol, drain your crankcase after meetings.

Left: Garry Simkin's white Christmas - heavy corrosion in his Manx crankcase

Random Notes on 500 Car Racing

by R.W.A. Frost, AMIME AMInstBE Part 1

With this issue of Loose Fillings we carry the first instalment of a remarkable document, a guide to 500cc racing written in 1950-51 by an active and successful UK competitor. As such it is an interesting piece of history in its own right, but it is even more so for Australian and New Zealand readers.

This is because it was written by Ron Frost, who was not only an outstanding Cooper Norton racer in New Zealand in the late 1950s, but also an influential motor sport administrator, managing director of the NZ International Grand Prix Association and for 21 years president of the Motorsport Association of New Zealand.

As his 500cc guidelines indicate, he was a man of very definite opinions, but this was hardly surprising. He was captured at Dunkirk in 1940, spent 4 ½ years in coal mines in Silesia before escaping - his 12th attempt - in 1944.

He took his family to New Zealand in 1952 and started again from scratch. Ron was a key figure in the emergence of the Tasman Series, and in 1978 was elected a vice-president of the FIA. He died in the late 1990s..

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The writer assumes that the reader of these notes is ful1y conversant with the fundamentals of cars and/or motor-cycles. The experienced racing driver will find nothing new in these notes. It is hoped that the newcomer will.

The writer would have been most grateful if he had been able to read something simi1ar when he first entered a racing pit in the role of a competitor. There is nearly twenty years of varied racing experience behind some of the advice given. Do not lightly dismiss it.

Competitively, the half'-litre racing car is the most potent piece of' racing machinery ever produced. The reasons for its amazing performance can be summed up thus:

(a) A1l-up weight of approximately 500 lbs, and power plant developing approximately 45 bhp gives e very good' power to weight ratio of nearly 200 bhp per ton.

(b) frontal area is very low.

c) brakes are seldom required to work et maximum efficiency ~ the area of lining/weight of vehicle ratio being extremely high. Consequently braking at speed is outstanding

(d) low roll-centres and low centre-of-gravity, independent f'our-wheel suspension with controlled hydraulic damping all combine to give these cars the ability to corner as fast as the world's best.

(e) motorcycle dog-type gearboxes with positive-stop gear change mechanism have long been acknowledged to be one of' the fastest, simplest and nearest to automatic gear changing mechanisms ever used on racing vehicles of any type.

The sire of' all 500 cars was the Fiat mouse. Many prominent production racing 500' s still adhere rigidly to the geometrical layout of these cars The Fiat mouse car (designed in 1935 and first mass produced in 1936) is probably still the nearest the man-in-the-street can get to acquiring a car possessing handling, cornering and steering qualities comparable with the modern 500 (would-be designers note well).

Cars employing near identical layout with the Fiat are the modern Morris Minor and the Baby Renault.

CHASSIS. Tubular ladder-type construction of grade A Accles and Pollocks steel tubing is undoubtedly the best. Sif-bronze jointing is highly popular due to lower temperatures required to weld.

SUSPENSION WISHBONES. A part very prone to fatigue especially after the car has been spun. Best type have eyes which are "lugged" and sif-bronzed to main arms (e.g. cycle-frame construction).

ENGINE MOUNTINGS .These must be not one whit weaker than the strongest member of the chassis. They must be completely inflexible and as far as possible integral with the chassis. Rubber mounting of power units is completely useless in any form whatever. Do not use dural engine plates.

GEARBOX MOUNTINGS. Read as for engine mountings. Always bolt gear-box very tightly indeed.

BODY. Try to keep each panel of the body insulated from its neighbour A properly insulated body will last a whole season without cracking. Watch especially for chafing between panels at corners and edges Watch too where panels are affixed to chassis lugs end where they are shaped around tubes etc.

TANKS. The best proved method for fixing fuel tanks is to mount them in small, shaped, rubber or felt-lined saddles and secure them with aero-elastic bands hooked at either end. The advantage of this method is two-fold: ease of fitting and removal, and the tank is "nursed", rather than fixed and therefore some movement is allowed for as between chassis and tank.

Tanks should be rnade from 16 guage best quality aluminium. Baffles must be welded in very securely whilst tank is being made. Do not rivet in baffles. The most common failure in fuel tanks is brought about by the breaking away from the tanks of the unions for the fuel-lines. This failure has been traced to having lengths of heavy fuel line 'hanging' as it were (either in horizontal or vertical runs) from these tank unions without exterior support of any kind.

Aluminium brazing is now being used very widely for building tanks and body panels.

EXHAUST PIPE. Support the exhaust pipe near its joint with the cylinder head, but to the engine itself. Support the other end of the pipe to the chassis, but insulate pipe from chassis with very generous rubber bracket. Wire gland nut at head.

ENGINES. Do not waste time and money experimenting with any other 500cc engine other than Norton or JAP. Many thousands of pounds have been spent by people better than you or I learning this lesson.

Provided that the engine unit of your 500 car is treated properly (see under Technique) 250 safe racing miles can be obtained from a speedway type JAP.engine and 800 from a Norton (either single or double O.H.C.).

Over 75% of all engine failures in the period 1949 to 1951 were caused by wrong mixtures and nearly all these were directly due to fuel supply layout faults.

Approximately 25% of failures were due to mechanical failures. Practically all these latter were due either to dropped exhaust valves or broken con-rods. To race a JAP.a steel rod must be fitted as well as a heavy crown piston.

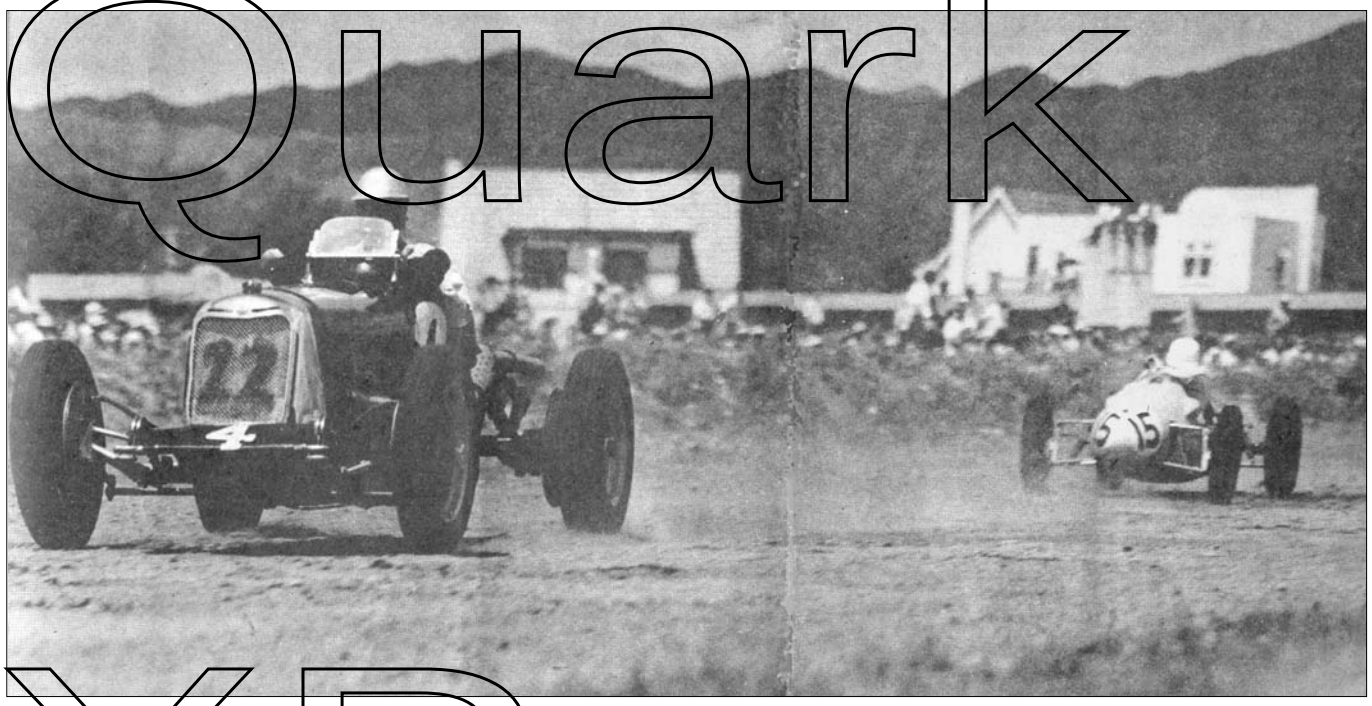
The rod must be either changed at 250 miles, or heat-treated and crack-detected (electrically not magnetically).

Big-end, valves and springs must be changed also at this mileage. Pay special attention to circlips and collets. Examine valve-end pads extremely carefully for hair cracks (even new ones). Collets can be lightened.

Pistons fitted with "plenty of head-clearance" can throw and grow up to .010 in. Practically the whole secret of 'tuning' an engine lies in getting the flywheel assembly trued up in the lathe afterwards. The

Continued on p 4

Quark Xpress



Ron Frost's self-prepared Mk IX Cooper Norton in hot pursuit of Tom Clark's supercharged 3-litre 1934 8CM Maserati at Levin in January 1956. With this Cooper he finished eighth in the 200-mile NZ GP in 1958.

From p 3

accuracy of this part of the engine has a direct bearing on the number of trouble-free hours it will run.

Remember, polishing an engine is the very last thing on the menu and can be looked upon almost as a luxury. Ensure that the barrel-flange at the mouth of the crankcase is parallel to within 0.001 in. , with the main shafts of the flyvheel assembly, and that the little end is parallel with the mainshafts too. Make the same replacements on the Norton engine after 800 miles as on the JAP after 250 miles.

Shot-blasting of con-rods and valve springs is a technical refinement employed quite extensively today. Drain your engine oil and fuel tanks immediately after a race. Turn over the engine a few times with all plugs removed. Do not let your engine stand even for a few seconds with the fuel supply to the carburettor switched on. With pressurised systems flooding easily takes place and the inlet port fills with fuel. This finds its way into the crankcase via the piston rings. Oil dilution and wet plugs are the pay-off.

RON EWING

RON Ewing, constructor of the air-cooled Ewing special which ran with Norton, Vincent and Harley-Norton engines in the late '50s and early '60s, died in Sydney in February, aged 84.

Ron raced pushbikes in the 1930s, and owned a Fronty Ford before starting to build his straight-eight Buick special He joined the RAAF, and survived more than three years as a Japanese prisoner of war in Burma.

After the war he developed and raced the Buick, built other road and race specials, and was active in Singer Car Club's building of the first version of Oran Park.

He started on his air-cooled car in the mid'50s, initially using an Inter Norton and rear swing axles with rubber suspension. When the Norton was replaced with Ron's Harley-Norton (ES2 heads on the Harley barrels) it broke universal joints and collapsed the rear suspension, which was then modified to a Cooper-style transverse-leaf system.

The Harley-Norton engine was continuously developed, progressing to special barrels which used International truck sleeves onto which Ron cast alloy muffs which he then machined into fins.

With these barrels the engine had a capacity of 1340cc and was run in three forms - 16:1, or 7:1 supercharged, for sprints, and 11:1 unblown for racing. At a Tamworth hillclimb in the '60s the car broke a valve and popped the guide out an exhaust pipe, re-appearing later in the day running as a single, with the damaged head removed but with the barrel and piston still in place.

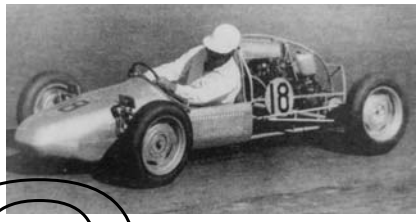
The team's tow-car at this time was a Mk VII Jaguar which Ron had acquired engineless, giving it another 8/40 Buick.

The owners of the ex-Shipway Mk V Cooper wanted to buy the Harkey-Norton engine for the Cooper, but Ron persuaded them to buy the Inter.

Some time later, planning to build a Formula Junior, they returned with the Inter blown up, and swapped the Cooper for a Lotus 20 body Ron had.

Ron and his son John repaired the Norton, and the car was sold to Ashley Cowan in the late 1980s and is now with the Hallidays.

The Ewing special, now running a strong ES2 single but still with the remains of the Harley-Norton engine, is for sale in Melbourne with Malcolm Thorn (see *For Sale* p2).



Ron Ewing in his Ewing Special at Mt Druitt in 1957.

Open

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