GARDNER

Engine Forum

Spring 2017

www.gardnerengineforum.co.uk

No. 31

GARDNER Engine Forum

Membership Application

Title	Mr / Mrs / Miss / Dr / Other		
Forename(s)			
Surname			
Address			
	Post Code		
Telephone Number		Ex Directory	Yes / No
Mobile			
Email Address			
Engine Model			
Engine Serial Number			
Engine Application	Stationary	Road	Marine
Year of Manufacture			
Name Vehicle /Vessel			
Signed		Dated	
Any Other Info			

This information will be held on a computer database

Membership fee £10.00 per annum
Renewable on the anniversary of joining,
Payable by cheque electronic funds transfer or standing order.
For electronic payment please tick the box ☐
The treasurer will contact you with the banking details
A complete application form can be downloaded from the website at www.gardnerengineforum.co.uk/subscribe
Please complete the above and send to

Mrs J Gray
29 Verity Walk
Wordsley
Stourbridge
DY8 4XS

Tele 01384 827745

Gardner Engine Forum Philosophy

The aims of the Forum are to promote and foster interest in all Gardner engines"

Forum Officers

Chairman:
John Naylor.
Thatched Folly.
Lindow End, Mobberley.
Knutsford. WA16 7BA
Tele 01565 872222

Secretary. Linda Kemp
See below for contact details

Treasurer.
Judith Gray 29 Verity Walk
Wordsley Stourbridge West Midlands DY8 4XS
Tele 01384 827745

Membership Secretary.
Joe McCool, Artasooley,
Bendurb, Co Tyrone, Northern Ireland BT1 7LN
Tele 07802 572441

Editor-Webmaster-Vice Chairman.
Steven Gray 29 Verity Walk,
Wordsley, Stourbridge, West Midlands. DY8 4XS
Tele 01384 827745

Andrew & Linda Kemp.
Korna Cottage,
Works Lane,
Barnstone,
Notts.
NG13 9JJ
Tele 01949 860867

Contact email address
gardnerengineforum@blueyonder.co,uk

Contents **Page**

Advertising Rates:
Free for Members Personnel Ads
Trade ½ page
£25 per 2 editions

Cover Picture

See page 5

Chairmans Notes

As I write these words of wisdom, I look out of the window and notice that we have a very cold night, to paraphrase the singer Tom Waites "colder than a well diggers bottom" (a line from Diamonds on my Windshield. Ed) I love that one.
This reminds me of January 1963, my first winter at L Gardner and Sons. Some of you will remember how cold and long it was, going on I think well into March. Living in digs with Doug Harper, Gordon Parker and Neil Peterson we had to get to the works either by bike or bus. I did walk it sometimes when it was foggy. I well remember crossing the Bridgewater canal, in those days working boats were still taking coal to Barton power station. As you can imagine this winter they were truly iced in.
At this period of my training, I was in the centre lathe department working on a Colchester Student lathe, the foreman was Harry Winter who took me under his wing and taught me a lot. One morning I arrived so cold that I nearly passed out. Harry gave me his flask of tea!, I kept in touch with him for many years.
One job I still remember is a modification to the aluminium and steel bosses on the dynamo and alternator drive shafts, the problem was slipping. The decision had been made to knurl the boss, I got the job to modify all the current stock, this was a considerable amount as I did container after container, earning the nick-name Knurly Naylor.
For those of you that have an interest in canals, I attended the first ever Bingley Canal Festival on Sunday 16th October. I have always marvelled at this set of locks. (For the non boaters this is a staircase flight of 5 wide beam locks. Ed.) To see the historic original Leeds and Liverpool Short boat "Kennet" making a passage of the canal (partially loaded) to celebrate the 200th anniversary of the opening of the canal. (Although "Kennet" is not Gardner powered some of the last boats carrying coal had 3LW's fitted . (Ed))
Whilst there I was introduced to the Hazlehurst's who have Gardner's in boats, are they members of G.E.F (not currently Ed)
The end of October saw the closing event at the Anson Engine Museum, Geoff Challinor and his helpers had all the Gardner engines running, a first for a number of years, well done to all involved.
In this edition you will find a poster for the forthcoming rally at Huddlesford where I hope to see many members in attendance.
As the only hostelry that is near to the site is a little more upmarket. We felt that they probably would not be too keen on our usual entertainment more than ably provided by our semi resident musician (Jimmy). We have organised a Hog Roast and a marquee for the Saturday evening, this is open to all members whether they have an exhibit there or not. If you would like to participate in this part of the event, please complete the section of the rally entry form to reserve places and return to Paul Syms at the address on the form. Lastly I would like to welcome new member

Master Finley Worsfold of Leyland.

John Naylor

Reliable Gardner's

I started my interest with Gardner's when I bought my first lorry fitted with a Gardner, this was a Foden S20 fitted with a 6LW, it was a Chinese 6 wheeler wrecker. It had a Fordson major on its back driving a Garwood winch and a Harvey Frost suspended tow crane. (Cover photograph)

Then I moved on to purchase a Scammell Highwayman ballast box tractor unit with a Gardner 6LX fitted in it, remaining with us for more than 25 trouble free years and was a pleasure to own and drive.

Last of all I went on to purchase an ex WW 2 Gardner 5LW searchlight set with a Maudsley giant of a dynamo. "What a set". It had served with the army during the war, then on to running a set of dodgems with a fairground. It was purchased nr Hereford then returned home to Wales where it was stripped down and rebuilt to a high standard.

My father (Denzil) drove lorry's with road haulage for many years and told me when I was a teenager, that there is not another engine so reliable and of such quality as a Gardner and he is so right!!!. God himself must have built these engines !!!

Thanks to Kerry Barr for the article and photographs

100 Years Ago

VOL. XXVI. No. 672. 24TH MAY, 1917.

The MOTOR SHIP and MOTOR BOAT

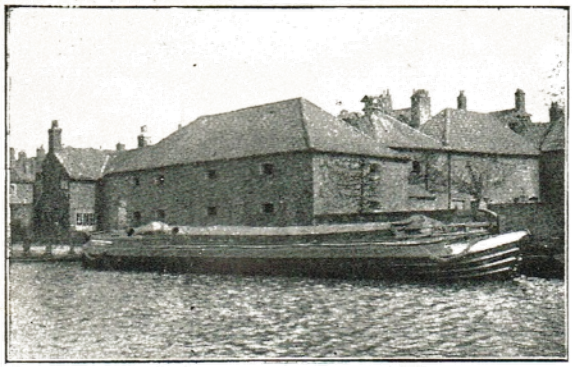
The Authority on Motor Craft for Commercial, ... Naval and Pleasure Purposes. . . . . .

Motor Barge "Derwent."

One of the First Motor Cargo Boats for the Trent.

Owing to the fact that the canals and inland waterways have now the official recognition of the Ministry of Munitions,and, in fact are practically controlled by the government, a good deal of interest has been created in official quarters,and various representatives are making a careful inspection of the British canal services.

Comparatively few people in this country have hitherto recognized the existence in Great Britain what other nations consider one of the most important methods of carrying both raw materials a manufactured goods from the inland towns direct alongside foreign going ships, and vice versa but these times when the great railway companies are taxed to the limit of their carrying capacity, certain go ahead canal companies have come along and doing much to relieve the strain.



"Derwent" alongsidequay.

This feature will awaken many firms that have works or farms on the banks of rivers and canals the fact that a cheap and good method of carrying goods, which only needs developing a little, is at their doors, One of the aforementioned canal companies, namely, the Trent Navigation Co., Ltd with headquarters at Nottingham and branches at Newark,Leicester,Hull, and various other places on the system, have seriously considered the whole [problem of waterborne traffic,and

with the usual foresight have seen the great possibilities of the internal combustion engine for propulsion, especially now that the cost of horse fodder has increased to such an extent.

Some years ago this company tried one of the older type heavy-oil engines with fair success, but it was found to be rather expensive for fuel. A few month back the directors decided to go into the matter again, as, of course, marine oil engine construction anti design had advanced considerably. They wanted an engine of rather special features to suit a peculiar system of waterways, as they control, or have running powers over, both canal and river waters in their journey from the Midlands to the North Sea and the West Coast.

Thus the comparatively short journey from Leicester to Newark consists of canal for a considerable distance, with 20 locks in almost as many miles on the first stage; then about five miles of river between Frampton and Beeston; canal again for five miles to Nottingham; three miles of river beyond this point followed by a dozen miles of river abounding with shoals and rapids (which call for careful navigation) and ending up again with canal at Newark.

From the foregoing it will be seen that, firstly a very reliable engine is required ;" secondly, one that easy to manoeuvre in locks and round sharp bends with swift currents and shoals, also one that start and runs entirely on paraffin, it being considered unsafe to have petrol or other inflammable spirit aboard boats that may be carrying any, cargo—from food stuffs to explosives

After careful consideration of these essential points, it was decided to install a Gardner standard fishing boat and barge type of engine, with reverse gear of the same make. Developing 22 b.h.p. at 750 r.p.m. was installed

The "Derwent " (the barge in question), which is standard wood boat, was brought up to the company' .dockyard at Newark, and the stern altered to accommodate the propeller, the diameter of which had not to exceed 19 ins., as the barge only drew 20 ins. of water aft when light. As will be seen by the drawing, most of the original sternpost was cut away, and a strong oak sternpost aft of the propeller aperture let in, this being bound together with a strong iron band, starting well up the post and extending round the heel of the barge along the keel. .By adopting this design the propeller is absolutely, protected if the barge touches the bottom of the river or canal aft, as they so often do, and it is also a protection in the locks especially the smaller ones, were the vessel is apt

"Derwent" leaving a lock.

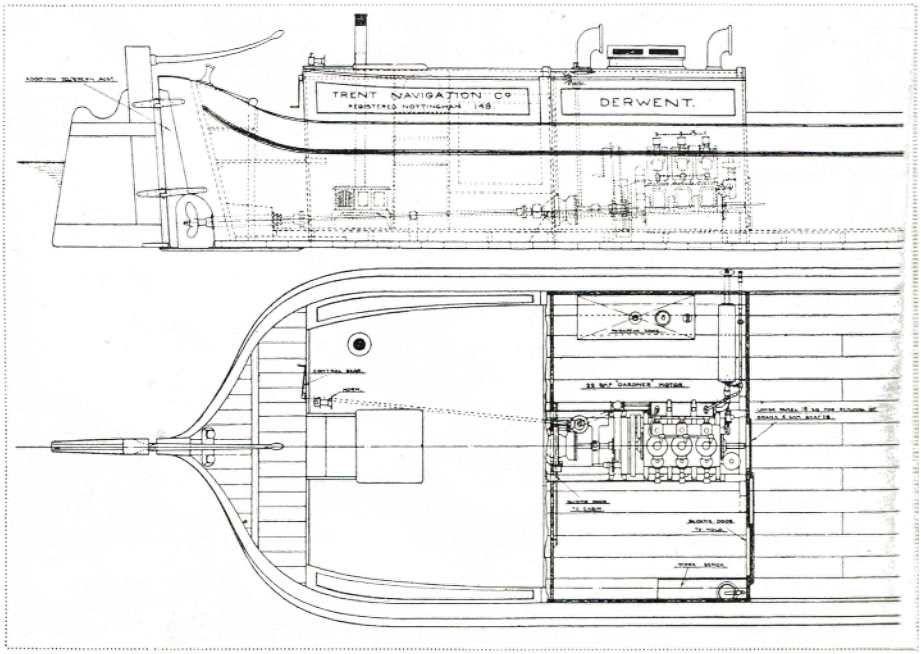
to surge against the lock gates ; also in turning in the river where the practice is to bring the rudder against the bank, and swing the bow round.

For this particular canal service, the portable or outboard type of motor would not be a workable proposition, as it would soon come to grief.

The ' Derwent " was fitted with crew's space right aft, and when all the points were taken into consideration it was decided to make no alteration, but to form an engine-room by bulkheading off a few feet of the hold, immediately forward of the cabin, this making practically no difference to the carrying capacity of the barge.

Stern end of motor barge "Derwent."

Over the engine-room a substantial skylight was fitted, also two cowl ventilators. A sliding door was fitted both between the sleeping quarters and the engine-room, and the engine-room and hold.



Plans of machinery space and cabin of motor barge "Derwent."

Turning to the general arrangement of the engine-room, as will be seen, the motor has been carefully arranged so as to afford a maximum of room at both sides, and a substantial bench with tool shelves under has been fitted.

The circulating water strainer is so fixed that when clearing is necessary (as is often the case in canals) this can he easily done while the engine is running, while, should the skin fitting be clogged with mud or gravel through the barge going aground it can be instantly cleared by means of a steel rod, there being no bends in the suction pipe.

The engine flywheel, which is about 2 ins. clear of the bottom of the barge, is provided with a galvanized sheet metal tray to protect it from bilge water.

All the engine controls are brought aft and fixed alongside the steersman, so that one man can absolutely steer and control the engine', a great point when negotiating locks or coming alongside wharves or piers.

The control lever operates the horizontal shaft is connected by bevel wheels to the reverse gear shaft, The operator can instantly go from full ahead to full astern or neutral position the engine is automatically governed and just ticks over whilst waiting in locks etc., but takes up the full load the instant the clutch is put in.

Gardner epicyclic reverse gear is fitted, together with a multiple thrust block ring.

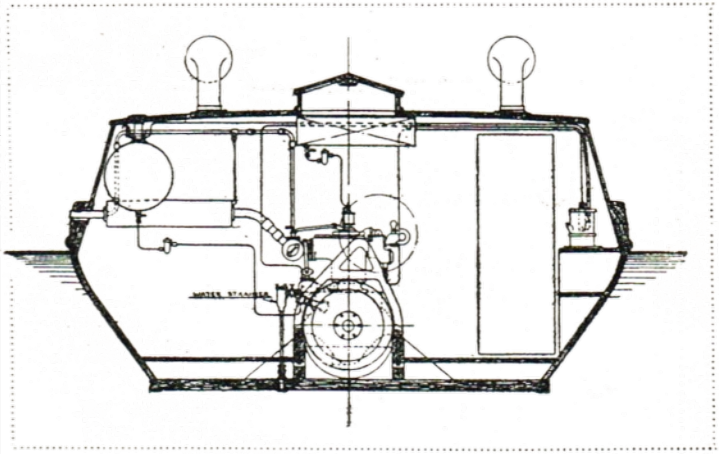
The principal features of the engine used are:- Starting and running entirely on paraffin; half-compression lever combined with chain and free wheel gear, ensuring easy starting; forced lubrication to all bearings; sensitive governor at all speeds and loads; instant operation of gear from ahead to astern with neutral position. Including engine reverse gear, stern gear, fuel tanks (empty) and fittings. the weight of the machinery comes to just under 30 cwt.

The Trials.

The vessel described ran her official trials on the Trent navigation service on Tuesday, Wednesday and Thursday (1st to 3rd \May. inclusive), and a brief summary is given below. A short preliminary trial trip was run with about 4½ tons of cargo, which, having proved quite satisfactory, the " Derwent " returned to the Newark Depot to load about 20 tons of cargo for Leicester. Particulars of the trip to Nottingham are as follows - 2nd May Started from Newark Depot, 12.10 passed Farndon Ferry, 12.55; passed Fiskerton. 1.45, (strong adverse current) ; passed Hazleford (Star and Garter Hotel), 2.30; under Gunthorpe Bridge 4.5 (shoals and adverse currents) ; passed Burton Joyce 5.10 ; passed Stoke Bardolf Ferry, 5.20 : under Radcliff Railway Bridge. 6 ; entered Holme Lock.. 6.50 left Holme Lock. 7 (entered Nottingham canal) ; arrived Nottingham Lock, 7.30; distance covered, 23 miles. We might mention that after leaving Newark the is good water in the Trent up to a point just below Fiskerton,, but from Fiskerton to Holme Lock a yery rapid stream is met with and a good many shoals particularly in one or two places where a similar barge without a motor requires four horses and takes over double the time to negotiate the same distance. From Holme Lock to Nottingham is excellent water and the Derwent;'s " speed here was over seven miles per hour.

On 3rd May the " Derwent" after taking aboard a few tons more Cargo, left the Trent Navigation Co Nottingham Depot, which is situate on the Nottin ham Canal. at 11.25. and reached Beeson Lock 12:37. She then entered the Trent at 12.44. arrived Red Hill Lock of the Loughborough Navigation Co at 2.29, and proceeded bv this navigation to West Bridge Junction with the Leicester Navigation. Going through the Loughborough shallow lock at 6.40 p.m. and finally arriving at her destination, the Trent. Navigation Co.'s Leicester Depot at Belgrade Gate at 11.17 p.m.' the distance being slightly over 36 miles.

The Treat Navigation Co. 's engineer, Mr. Ward, represented them, on the trials, while on the trip. from Nottingham to Leicester Mr. Spencer (their traffic manager) was in attendance. These gentlemen expressed themselves as being entirely satisfied with the results from, this installation.



Cross section through engine-room.

From experiments made, the owners find that they can tow another fully loaded barge on the service between Nottingham and Leicester, which will show a great saving in working cost.

Altogether no fewer than 19 locks have to be negotiated between Nottingham and Leicester, and on the trip in .question practically all of these had to be drawn off and then filled, so that in going the complete journey of 36 miles in just under 12 hours, including time lost locking through, the very good average speed of three miles per hour was realized.

The consumption of ordinary paraffin (common lamp oil) works out at two gallons per hour, on which consumption the " Derwent " is capable of towing a 40-ton barge loaded.

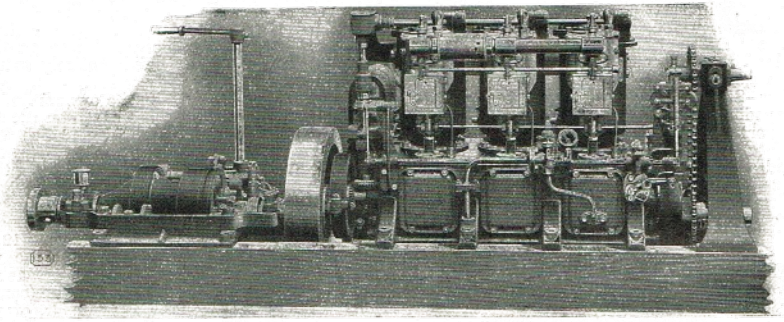
The installation of the machinery and the alterations to the barge were carried out by Messrs. Norris, Henty and Gardners, Ltd., Tower Building, Liverpool, with the assistance of the barge-owners engineer, Mr. Ward.

News has just. come to hand of the return trip from Leicester to Nottingham, the barge being " light," when the time taken was nine hours, in spite of the poor immersion of the propeller, especially in shallow water.

A novel feature of the installation is a cock on the circulating water discharge pipe, from which warn, water can be drawn for. washing purposes.

"GARDNER"
Marine Type Paraffin Engine

22½ Brake H.P., as fitted in Barge
:: "DERWENT" for the ::
Trent Navigation Co., Limited.



This is a Paraffin Engine requiring
no fuel but Paraffin to operate it.

With Compliments of . . .

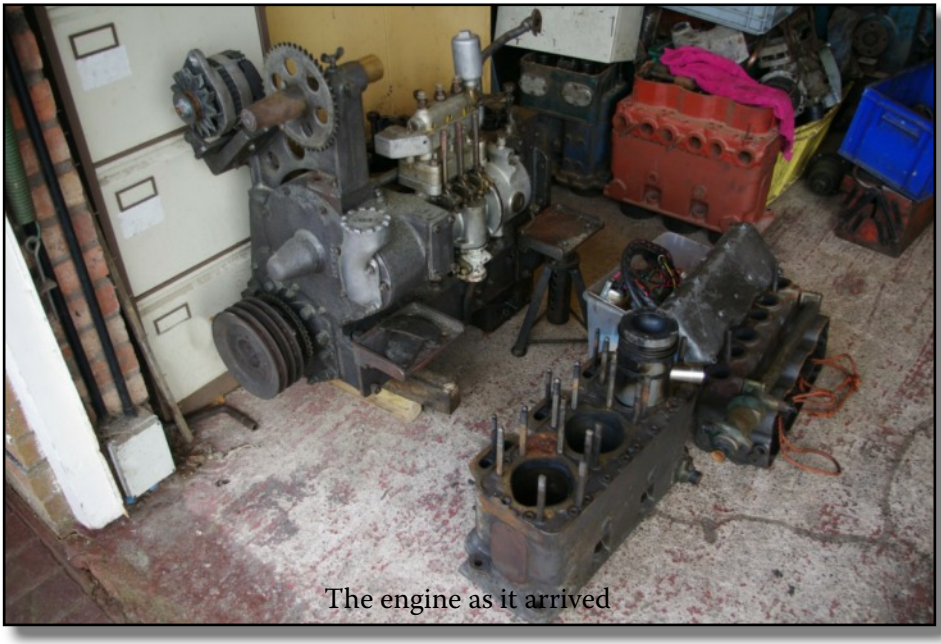
Norris, Henty & Gardners,
LIMITED
87, Queen Victoria St., LONDON, E.C. 4.

Works—PATRICROFT, LANCS.

GLASGOW	124, St. Vincent Street.
NEWCASTLE-ON-TYNE	Milburn House.
BELFAST	66, Scottish Temperance Buildings.
LIVERPOOL ...	701-802, Tower Building, Water Street.

Something a bit different

The telephone rang, when can I come and talk to you about rebuilding a Kromhout 3LS was the question, 30 mins later Jim turned up at my workshop. I then got the rest of the story. I know where there is a 3LS in Holland, which has been removed from a boat because it was getting hard to start. It is lying partially dismantled but with some bits missing, although all the main components are there, definitely missing are the push rods and sprayer pipes. The reason for this was there had been a dispute between the owner and the Dutch engineer who were going to rebuild it, eventually leading to the engine being retained for works already done. Now some of you may be wondering why am I reading about a Kromhout in a Gardner newsletter, well like many engine manufactures Gardner's not only licensed particular patented designs from other manufactures, Kromhout being one such company, they also licensed their own products for manufacture as well. Kromhout were the biggest manufacturer of Gardner licensed engines, building their own versions of the L2, LW and LK. The LS is a hybrid having an L2 type bed plate and crankcase with an LW block and head. The LS stands for Light Ship (so I am told), once installed like the Gardner L2, the engine can be completely dismantled without having to get the bed out. A price was agreed for the rebuild not including any parts and I sat back to await delivery of the engine. A few weeks later most of the engine arrived in the back

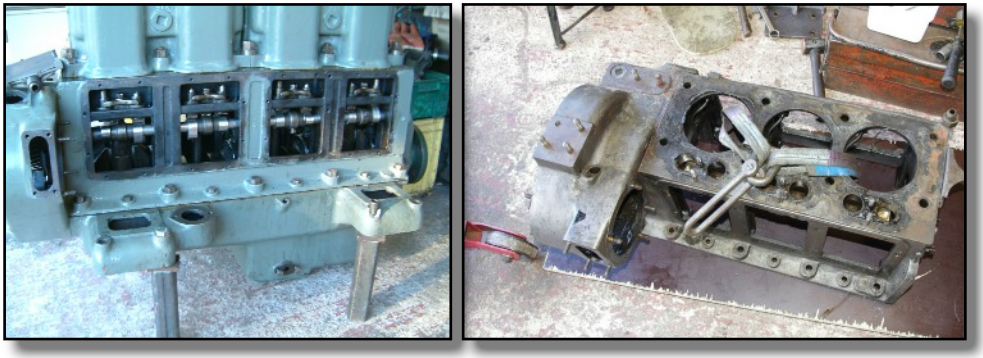


The engine as it arrived

of a Skoda Octavia estate, having been driven over from Holland. The flywheel had been left behind for another journey. After going through all the boxes, it was determined that not only were the push rods and sprayer pipes missing,

there was also the sprayer clamp plates, exhaust/inlet manifold clamp plates and studs. Some cylinder head studs and all of the nuts.

The first job was to remove the front pulley arrangement, this proved to be interesting, the vee pulley was retained by a pointed setscrew on to what appeared to be the front of the crankshaft, it turned out to be the hand start ratchet assembly, but there was nothing apparent retaining the whole assembly onto the crankshaft. In the end there turned out to be nothing other than a good fit keeping it all together, the clamping screw that should have been there was missing. The raised hand start and alternator bracket was only placed on, as it had arrived as a loose item. The timing cover and timing chain were then removed along with the bolts around the crank case, these were mainly metric hexagon, as may be expected with a continental built engine. However, in most cases the threads are imperial whitworth sizes, so any replacement nuts that have been fitted over the years are of imperial hexagon sizes. Before removing the upper crankcase the oil feed pipes from the external main

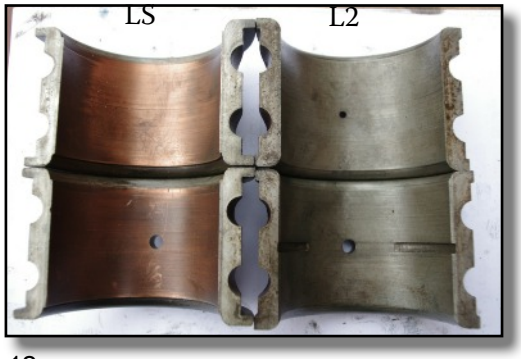


A notable difference between an L2 and the LS upper crankcase that the timing cover is integral on the LS

gallery (the same as an L2) to the main bearing caps were removed, the crankcase was then lifted off, leaving the crankshaft and con rods in position. Here can be found another difference, from a careful look at the photographs it can be seen that the L2 (Lower photo page 12) has separate studs for the main bearings, whereas the LS has single studs which change diameter above the bearing cap nuts. Before removing the con rods the big eng bearing fit was checked by simply pulling on the rod with the crank at TDC for each individual rod. There was more movement than desirable as was to be confirmed later. The main bearings were also checked, although in this case a dial test indicator was used to check

the lift on the crank in the bearings at each end, then the end caps were removed and the inner bearings checked. All indication was that the main bearing clearance was within serviceable limits, at this point the end float was also checked using the DTI and found to be within limits. Once removed the crankshaft was thoroughly cleaned and measured. The crankshaft was in very good condition with no scoring and ovality of less than 0.001'. The main bearings were cleaned and refitted so that they could be measured. The main bearings had a clearance of 0.003/4" which is within serviceable limits.

The big end bearings were another issue altogether, they had 0.010" clearance so remedial work was required. The bearings themselves are quite different, as can be seen in the photograph. They are both steel backed but the Kromhout bearing has a shell like insert made from a bronze material, which appears to be bonded onto the steel shell. This is contrary to text book information, which says that bronze type bearing materials are not suitable for this type of application. Enquiries to other engine restorers suggested that they should have had a thin layer of white metal as the bearing surface. There was no trace of any other bearing material ever being present, so the jury is still out on that one. This left the choice of either white metaling the original bearings, which would have entailed machining out the existing material or finding replacement shells. As luck would have it, I had 4 spare L2 conrods complete with bearings from a previous project, which had entailed building one engine from two, using the best available parts. Visually they appeared to be the same and after measuring, the only difference that could be found was the width of the shell. The original Kromhout ones were not white metaled around the sides so were narrower overall. An added bonus was that the bore of the spare bearings was nominally the

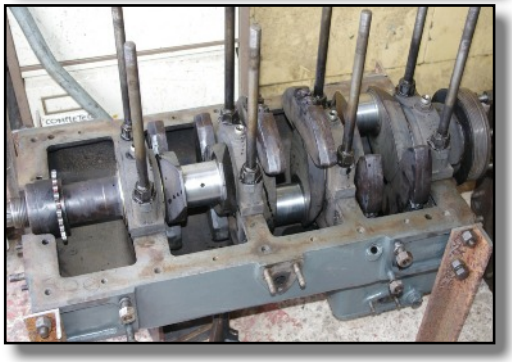


same size as the crank pin.
Each one was clamped together and set up in a lathe, the shells were faced off back to the steel and the side radius re-cut, the bearings were then hand scraped to each individual journal and the con rod stamped appropriately. The crankshaft assemble was now ready to refit.

Prior to working on the crankshaft the cylinder block had been inspected, the end covers were removed any crud raked out from the water gallery, there turned out to be very little and the visible areas were in good condition, with very little corrosion evident. The bores were measured and found to have significant wear, the worst area measured 0.026" oversize on No 3 cylinder, the other two being less than 0.020". Despite this excessive wear I am assured that the engine ran reasonably well once started. Having heard on the grapevine of a potential supply of +0.030" pistons, enquiry's were made. The supplier was not initially certain that they were suitable, but after checking some old catalogues it was determined that they were older style LW pistons of the short skirt central pin type. The original type (photo) had three compression rings and two oil control rings, this is the same as the pistons fitted by Gardner's to the early LW engines. Gardner's later removed the lower oil control ring, before modifying the piston further, it is this type that was supplied and fitted. The block was sent of to a local machine shop for boring and honing, not unexpectedly No 3 cylinder was worn too much to clean up, a replacement liner was sourced from Westwood Cylinder liners of Droitwich part no (WCL 40).

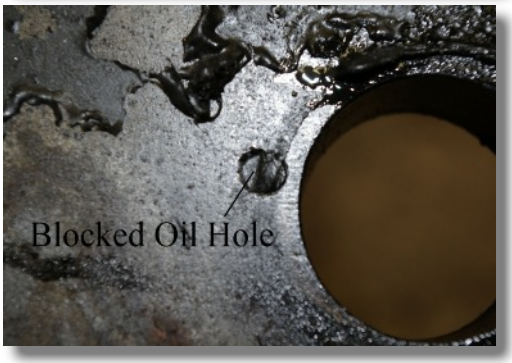
Next up, refitting the crankshaft, first the bearings were carefully cleaned and dried, the bear-

ing surface being polished using a fine grade of scotchbrite, unlike wire wool it doesn't leave any residue behind. The bearings were liberally oiled before fitting the crankshaft and bearing caps. Prior to refitting the crankshaft the nip on each bearing was checked, this is to ensure that the bearings are pushed home into the housings correctly. To do this the cap is tightened down, then the nuts undone and re-tightened to just hold the cap in place. There should be a gap between the abutment faces of the cap and the bed plate of 0.002-3".

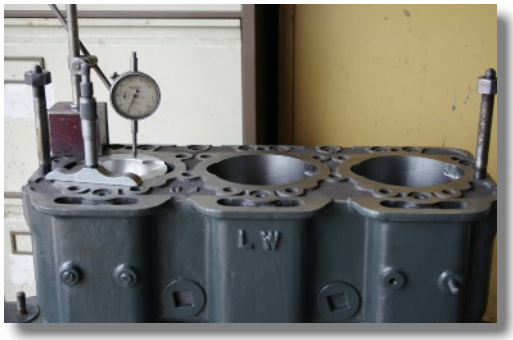


Attention now turned to the upper crankcase and the camshaft. This was a good example of how not to use silicone sealant. It was obvious from the extensive and liberal use of silicone sealant that the engine had been dismantled before, used sensibly this can be a saviour when dealing with old machinery, over use can easily destroy an engine by blocking oil ways. The photo shows what should be the oil feed hole for a camshaft bearing, despite being completely blocked the bearing had survived with little wear.

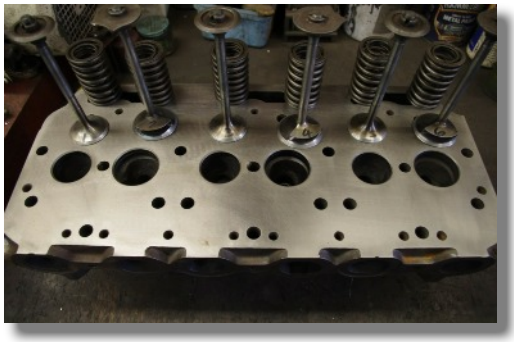
After much careful scraping and cleaning the old silicone was removed, the camshaft was removed, cleaned and checked, it showed very little signs of wear and was all refitted, a testament to the original design. The upper crankcase was then assembled using a thin bead of silicone sealant, after nipping it down it was lifted off again and any excess that had spread beyond the edges was removed before finally being refastened into place. The pistons and block were next. The photo shows checking the piston to cylinder head clearance using a depth micrometer



and a Dti to check that the piston is at TDC.



The cylinder head was completely striped and cleaned, the valves and guides measured, both were showing little signs of wear and were within the recommended wear limits. All that was needed was to reface the valves and seats, then regrind to one another. Hairline cracks were visible from Nos 1&2 sprayer hole towards the valve seats, the head was pressure tested, which showed that it was sound. The cracks were carefully dressed out using a small rotary file and welded up, the cracking was only a couple of millimetres deep. The studs for retaining the water rail were badly corroded and the contact face on the head badly eroded. This was welded up and re-machined, the old studs having been drilled out and renewed. The head was then reground and assembled ready for fitting.



As mentioned earlier, there were some cylinder head studs and all the nuts missing. This was where Kromhout deviated from the use of imperial threads with metric head sizes and used M13 x 1.5 pitch threaded studs, compared to 1/2" BSF which is 16 tpi (12.7mm X 1.587 pitch) so close, but not interchangeable.

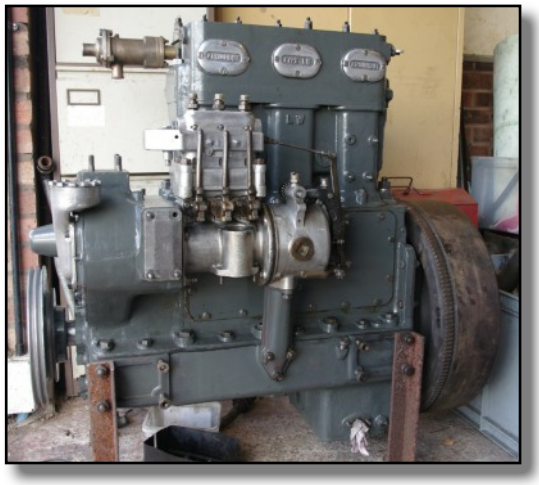
Consulting engineering hand books, even ones dealing wholly with screw threads, reveals that not only is this a non preferred size, it is not even listed. Fortunately it is not completely unknown and I was able to source a tap and die at a reasonable cost. The die was only used for cleaning up the existing studs, the new ones being machine cut. This still left the question what material were the original studs made from, clearly they need to be of a suitable tensile steel, so surplus crankcase studs from the L2 rebuild were used. The nut hexagon size proved to be another interesting conundrum, the nearest commercially available pre finished hexagon sizes either turn out too be too big or to small. The nuts have to be the same size as the BSF nuts fitted to LW's, any larger and there is not enough room for a socket to fit on. Any smaller then the contact face becomes too small. So the nuts were machined from a piece of round bar.

Once all the studs and nuts were made, fitting the head was straight forward, even the head gasket was able to deal with the slightly larger stud size.

By now the flywheel had arrived, having made a roundabout journey from Holland via the south of France before arriving in the West Midlands.

This allowed the valve timing to be set up to the settings on the flywheel, the timing chain having been refitted, this being a single row 1/2" pitch as per early

L2 engines.



Moving on to the injector pump, this being different in that it used the Gardner governor with a Bosch top, although basically the same, the CAV and Bosch unit differed in that the Bosch does not have the rack buffer or any separate bleed screws, the pump being bleed by removing the element locating screws, the Bosch version does however have a guide pin to stop the rack rotating.

The injector pump and governor was completely stripped, the only difficulty being that the pointed screw holding the balance weight carrier to the main shaft had a 10mm square and was down a hole. I normally use an inverted 3/8" square drive socket and an allen key on this type of screw. So my normal tools wouldn't fit. In the end an old 3/8" drive socket was driven on enough to undo the screw.

Overall the pump unit was in reasonably good condition, there were obvious signs that it had received attention in the past. Two new rollers and pins were made for the governor and a new bush for the rack, the cams, cam followers and rollers being in very good condition. The cam box and governor being reassembled with new bearings. One of the fuel elements had broken, so all three were replaced along with the gear quadrants on which the locking screws had seized.

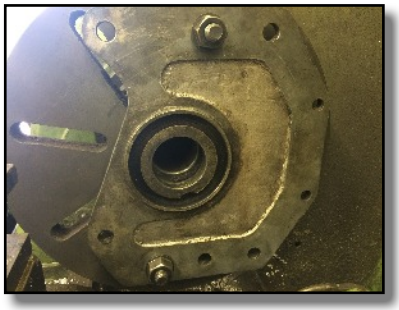
The pump was then calibrated and fitted to the engine The sprayers were stripped and cleaned and once again there were some notable differences, the body on the left in the photograph being the Kromhout version having an annulus around the end, the L2 version being flat ended with the feed hole breaking through on the corner of the main bore. The spindles also having a

difference, the upper one being the Kromhout version. The spring pressure and lift on each sprayer was checked and if necessary reset.

The water rail being made from bronze was in good condition, the thermostat being of the early variety, in this case without the bypass blanking slide, this being necessary due to the water pump being a positive displacement gear pump. Not a particularly common fitment.

The thermostat had at some time been replaced as it carried a 1950's date, a dip in a saucepan on the stove proved that it still opened at the correct temperature

The pump itself was cleaned and new mechanical packing fitted, then installed onto the engine. A new bypass pipe was made replacing the rubber pipe that came with the engine. Clearly some of the pipes had fallen foul of the rotting disease and had been replaced by a combination of welded steel and rubber.

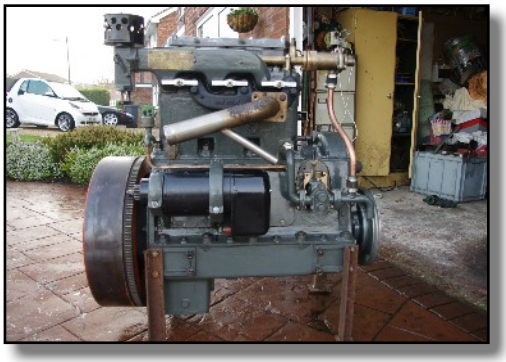


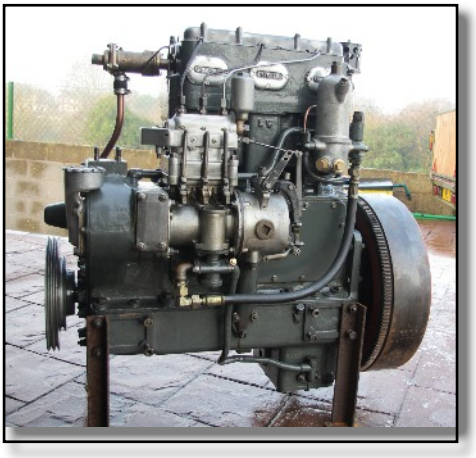
In its new installation there will not be enough room for the hand start to be utilised, so this was dispensed with. As the engine owner had an aluminium pulley of the type sold for LW's which was of the correct bore to fit it was decided to utilise it.
This entailed a few more modifications, the first of which was to machine the front housing, removing the original scroll seal section, machining it out to the location diameter. A new housing with provision for a lip seal was fitted from the front and secured in with screws and loctite. The area on the pulley which would have taken the felt seal had it been fitted to an unmodified LW was machined away, leaving only the centre spigot which was fitted with a steel sleeve, to prevent the seal running area wearing rapidly. This left just the oil pump, external pipes and filter to refit. None of the pipes were the right shape to fit correctly, each one was annealed and reformed to get a good fit. The oil filter is the same as the early LW and LK engines and only contains a washable gauze. The brass drain plugs had seen much abuse and were no longer hexagon headed. New ones were made and fitted, so should be good for a few more years.. As you will see from the photograph there is one rubber hose fitted, in its previous installation there was an oil cooler fitted, as this will be utilised in the new installation, a selection of fittings and pipe were used temporarily.
During the rebuild process, I had picked up the air filter and intake casting on numerous occasions and wondered, what is that arrangement for?. Recourse to a Gardner L2 general directions manual was of no help, there was no mention of it at all. Having cleaned and painted the assembly ready for refitting the penny dropped. Inside the intake is a rotateable flap which is kept in the down position by the visible spring, (there should be a lever on the boss but this has been broken off).

Moving the flap to its upper position, blanks off the air from the air muffle and draws it from the lower end. This is normally kept blanked off by a plate held in place by two wing nuts. Releasing the nuts allows the plate to be rotated out of the way so that air can be drawn in, this leaves the shallow lower tray. In the parts list, it is labelled a heating tray. So filling this shallow tray with a spirit fuel and lighting, pre heated air is drawn into the air intake, once running the flap would be returned to the upper position and the blanking plate refitted.

Time to fire it up,

A temporary fuel supply and some leads to the starter, a spin over until oil pressure shows on the gauge. Turn the stop lever to run and away it went, settling down to a fast tickover. After further running with the engine up to working temperature, it settled down to a nice steady 330 rpm tickover with no visible smoke from the exhaust. From records held at the Anson Engine Museum, it was established that Gardner's received the royalties for this engine between October and Dec 1935 confirming the date stamped on the crankshaft.





The engine just prior to delivery to the customer. A short You Tube video of the engine running can be found at https://youtu.be/c2TRWfecykw

Steven Gray

Merchandise

Fleece
Sizes L,XL,XXL
Colour. Black.
£20.00 each

Gillets
Sizes. L,XL.XXL.
Colour. Black.
£15.00 each

Long Sleeve Sweat Shirt.
Sizes. M,L,XL,XXL.
£17.00 each

Round Neck Tee Shirts.
Sizes. M,XL,XXL.
£9.00 each

Polo Shirts.
Sizes. M,XL,XXL
£12.00 each
Colour. Light Grey.

Cut Vinyl Sticker
External Surface Fixing
Size. 175mm x 45mm
£2.00 each

Self Adhesive Aluminium Sign
Size. 285mm x 170mm x 1mm
£8.00 each

High Quality Fleece
Sizes. S.M,X,XL,XXL
Colour. Navy Blue or Black
£30.00 each

Beanie Hats £5.00 each
Colour. Black

Baseball Hats £7.00 each
Colour. Black

China Mug 300ml
Colour. White
£5.00 each

Thermal Mug 300ml
Colour. Black
£4.00 each

Sizes listed are in stock, other sizes available to order
Postage and packing to be added at time of despatch
To order please email your requirements to gardnerengineforum@blueyonder.co.uk
or
Telephone 01384 827745

Classic Maritime Diesels.

Thames Diamond Jubilee Pageant: Gardner Engine Builder.

Gardner vintage oil engine specialists.

Marine engine erectors & repairers. Gearbox rebuilders.

Long skirt/offset pin LW pistons modified to suit

left hand L2 engines.

L2 & LK inlet valves manufactured. Timing chains renewed/adjusted.

LW conrod & crankcase conversions to thin wall (shell) bearings.

Cambox & governor rebuilds. Worn ram tappet bores sleeved.

Cyl. head & block overhauls. New pistons supplied & fitted.

Nationwide marine engine service for BCR/L2/L3/LK/LW/LX

Broken stud/screw extraction & stripped thread renovation.

Custom parts manufacture, milling,turning,etc.

Preferred supplier to premium boatbuilders & discerning owners.

Works Pithead Yard, Anson Engine Museum, Poynton, SK12 1TD.

07712 052 635. classicdiesel@hotmail.com

We actively support the Anson Engine Museum in preserving our Internal Combustion & Engineering heritage.

Disclaimer please see note 3 on page 1