

# GARDNER

## *Engine Forum*



*Autumn 2016*

[www.gardnerengineforum.co.uk](http://www.gardnerengineforum.co.uk)

No. 30



*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](http://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*

Note 1: Please note that all information in this publication is given in good faith and is not necessarily checked for accuracy and hence the Gardner Engine Forum cannot accept responsibility for any errors.

Note 2: All material contained in this newsletter is the copyright of the Gardner Engine Forum and must not be reproduced without permission

Note 3: The Gardner Engine Forum does not specifically endorse advertisements placed in this publication and it does not accept responsibility for the products advertised.

<b>Contents</b>	<b>Page</b>
Chairman's Notes	2
Fiat Mephistopheles	3
Legacy Discovery	5
2017 Rally	7
A Sketch of My Father Dr Rudolph Diesel	8
Dennis Fire Tender	12
Screwdrivers	13
Membership Renewal	14
Some new Gardner engines Reprint from Motor Boat magazine	15
Wanted HF 8 Spares	18
Merchandise	19

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

**Cover Picture**  
**See page 5**

## Chairmans Notes

This is my first chairman's notes to you as members of the Gardner Engine Forum, so a few words about myself. I commenced my engineering career at L Gardner and Sons Limited of Patricroft in the 1960's. I started on the 10<sup>th</sup> of September 1962 living in digs at Monton then moving to Peel Green. The training that I had was first class, starting off in bay 1, which was the original building that the company moved into at Barton Hall in 1898. When I started there it was the grinding department, Albert Middleton was the foreman and Ernie Greenfield the chargehand, I still have my first work card! I went right through the works, maybe I can tell you more some other time. I attended Technical college one day a week plus one night, I then I had homework to do, some of the other lads with me were Doug Harper, Gordon Parker, Eddie Raynor, Mark Houghton and Peter Brierley. (We didn't have time for girls) My late father Charles Naylor and his brothers, (my uncles) were brought up in the Ellesmere Park area of Eccles and were near neighbours to Hugh and John Gardner, with whom they had been at the same school, as you can imagine later motorbikes came into the picture. My father learnt his engineering at the works and as a young apprentice worked on the first Riccardo tank engine with the engine fitter he was under. Having spent some time in the U.S.A and Australia. In 1929 he started the Rozalex barrier cream company, some members may remember it. (I certainly do, Ed) Post war he saved the Mephistopheles (see page 3) from the scrap man and as a youth I worked with Peter Gresham and Bill Brigg on it. On the other side of my family, great aunt "Minnie" who died in 1975 aged 102, lived as a young girl in Duke Street, the same street that L Gardner Machinist started. Often regaling me with memories of the machinery being lifted in and out of the basement workshops. Aunt Minnie had a brother who was crippled and as a young man would get together with Lawrence Gardner.

With this newsletter you will find a new window sticker to advertise the forum, if you have an old one on display please replace it with the new one.

You now know a little about your new chairman, I look forward to meeting members at the next Forum rally on 3/4<sup>th</sup> June 2017 at Huddlesford and at a rally to celebrate the 150<sup>th</sup> anniversary in 2018 of this Legendary Engineering Family.

I would also like to take this opportunity to welcome new members.

Mr Richard Ford of Kenilworth with a 6LXB in an Atkinson.

Mr Andrew Blacker of Huddersfield withn a 3LW

Mr Derek Priddle with a 5LW in a Bristol Bus

Mr Graham Lane of of Rugby with a 2LW.

Mr & Mrs Paul and Jessica Pharaoh of Gretna Green with a No 0 Gas Engine

Mr John Hodgkinson of Swadlincote Derbyshire

Mr Ken Birch of Sutton Coldfield with a 2LW

Mr David Onslow of Shaldon, Devon with a 2LW

*John Naylor*

## Fiat 'Mephistopheles' A famous veteran racing car is reborn.



Image from <http://www.autoviva.com>

After thirty-five years in obscurity, Fiat 'Mephistopheles' was seen again in action at the race meeting of the Vintage Sports Car Club at Silverstone on Saturday, 22nd April, 1961, and at the rally of the Veteran Car Club of G.B. at Prescott the following day. Many will remember it as the car in which Ernest A. D. Eldridge regained the World's Land Speed Record for England with a speed of 146.01 m.p.h. at Arpajon, France, in July, 1924, (it would appear that this record still stands as being the highest recorded for a land speed record set on public roads) beating by a comfortable margin the previous record of 143.31 m.p.h. set up a few days earlier by the Frenchman, René Thomas, in a Delage.

The car has not, however, always existed in the form in which it was used by Eldridge on this historic occasion. It first appeared on the race track at Brooklands on Whit Monday, 1908, the year after the opening of Brooklands, when as an 89.5 h.p. Fiat driven by Felice Nazzaro, Fiat's crack driver, it was matched against one of Mr. S. F. Edge's 6-cylinder Napier's driven by F. Newton. The Fiat, nick-named 'Mephistopheles', contained a 190 x 160 mm. push-rod o.h.v. four-cylinder engine with chain-drive, with detachable rims to its artillery wheels. The race was to be over six laps, a total distance of about 271 miles. Unfortunately the Napier broke down on the third lap and victory went to the Fiat. It has never been possible to state with any conviction the speed which the Fiat attained on this occasion, because, while the B.A.R.C. newly installed electric timing apparatus showed Nazzaro to have lapped at over 120 m.p.h., hand timing did not confirm this speed, making it only 107.98 m.p.h.

It was not until after the 1914-18 war that 'Mephistopheles' was seen again in England, when it was resurrected and raced with considerable success at Brooklands. In 1921 and 1922 it was raced by John Duff, who in the latter year had fitted new aluminium pistons. Although some doubt had been expressed as to whether the crankcase would stand the strain, especially as the compression ratio would be appreciably raised, Duff decided to take the chance, but it proved to be his undoing. In the Lightning Long Handicap at the Whitsun meeting 1922,

Duff got 'Mephistopheles' off to a good start, but it was soon in trouble. The rear pair of cylinders came adrift from the crankcase, which had proved unable to stand the increased power from the new pistons. The engine was wrecked beyond repair, but it was by no means the end of 'Mephistopheles'.

The next year the car was on the track again but rather different in appearance from before. It had been acquired by Ernest Eldridge, who had already made his name in motor racing circles, and completely rebuilt. He had installed a 160 x 180 mm. six-cylinder 21,714 c.c. A12 Fiat aero-engine, and to accommodate this he had to lengthen the chassis eighteen inches. Also, a special deep radiator was made up, and a brief two-seater body was built into the extreme rear of the chassis. With 'FIAT' painted in huge letters on the bonnet and radiator, 'Mephistopheles' first appeared in its re-hashed form at the Midsummer meeting at Brooklands in 1923, and on 28th June that year set up a lap record of 124.33 m.p.h. The Fiat appeared at many other meetings at Brooklands in 1923 and again the following year, until Eldridge took it to Arpaion in July, 1924, to make an attempt on the World's Land Speed Record. On his first attempt he reached a speed of 142 m.p.h. but this could not be accepted as a record because the Fiat had no reverse gear. By dint of much hard work, Eldridge provided the Fiat with a reverse gear and on another attempt later that month broke the record established a few days earlier by his French rival, René Thomas, with a speed of 146.01 m.p.h. Eldridge was not, however, to hold the record for long, because it was taken from him the following September by Malcolm Campbell with a speed of 146.16 m.p.h. After his record-breaking run in July, 1924, Eldridge continued to race the Fiat at Brooklands and at Montlhery in France until 1926, when it was sold to Le Champion and seems to have passed into oblivion. Little is at present known of its history from 1926 until after World War II, when in 1947 it was acquired by Mr. C. F. Naylor, of Manchester, who conceived the idea of restoring it to the condition it was in when Eldridge raced it so successfully. It was not an easy task, but one which absorbed a prodigious amount of time, skill and patience on the part of his two associates, J. P. H. Gresham and W. A. Briggs, who were also assisted by Mr. Naylor's son, John. It still contains the 21,714 cc. Fiat aero-engine which Eldridge installed in 1923 and the modified chassis and radiator; the original drilled external control levers, gear-box, and chain drive have been retained from the 1908 version of the car. It has, however, been equipped with new Dunlop tyres, Renold chains and Ferodo brake linings. It is fitted with an Exide battery, type 3-XNFA27-R, for ignition. The Fiat is 17 ft. 6 in. long and weighs 35 cwt. A Leyland single-decker bus has been converted to transport it to race meetings. This also uses Exide 24 volt Ironclad bus battery type 4/3-BMF9-1.

*Mephistopheles is now in the ownership of Fiat and was seen again in England at the 2011 Goodwood Revival. More information and video can be found online by searching- Fiat Mephistopheles*

## Legacy Discovery

Very briefly “ Gardner” developed its now famous name for quality engineering and reliability during the the late 19<sup>th</sup> century, that’s the 1860,s onwards. It initially commenced producing engines in a small way with the, Hot Air type then modifying the design to the “Town Gas Engine”.

The technology improved rapidly with the introduction of hot tube ignition in the 1890,s.

Following up on an unexpected legacy, an exceptionally old Gas Engine has been unearthed from beneath a deceased engineers work bench, having been there since goodness only knows when! The name “Gardner” soon became apparent through a thick collection of general dirt and discarded junk, you know the stuff one never throws away as one day it may be useful for something!.



Eventfully the engine came out from beneath a shelf and daylight revealed it to be a horizontal “Town Gas Engine”, but still didn't reveal its true identity.

A serious restoration commenced, this revealed the serial number, from the records kept at the “Anson Engine Museum” its identity was revealed.

From the original test report for engine no 2518 it was ascertained that is was run and tested on December 3<sup>rd</sup> 1901 between 11-40 am and 1-45 pm.

It was quickly realised that this engine was much older than first thought, putting it into the very rare category. It had at some time in its life been modified with the fitment of a spark plug and magneto which was chain driven from the crankshaft. This had replaced the gas mixture chamber, ignition hot tube, chimney and various other bits, consequently a shroud of mystery still remains.

It was decided to return everything back to its original because of the rare value of this



old engine. This created a lot of unexpected work firstly by identifying details of the various missing pieces, all of which would have to be homemade from the information gained from the records at the Anson Museum. Fortunately some comprehensive drawings had been produced by a late "friend" of the museum, Although the information was compiled from a smaller and larger B.H.P. engine it was possible to scale the drawings to make replacement parts. It was an

interesting task and that on occasions proved to be challenging, especially when it came to the gas burner and mixture chamber! Several other small but non the less important parts were also conspicuous by their absence.

Modifications were kept to a minimum, however "Town Gas" as such is no longer available, consequently propane bottle gas (that is the red Calor cylinder) was selected as easily obtainable in various size bottles. It was then realised that two different gas pressures were required, A very low pressure for the engine cylinder and a higher pressure for the Bunsen burner used in the hot tube ignition.

When the engine had been completely dismantled overhauled as found necessary and then carefully rebuilt theoretically it should be ready to test run, however this was not to be, yes it is accepted that there maybe a few teething troubles at first however its all a matter of trial and error a guessing game estimating the gas pressures, the amount of heat to be applied to the ignition tube and the positioning of the flame within the chimney are all very critical, gas pressure and air mixture for the cylinder need to be determined as it only needs the slightest sniff to make it run hence the need for a very low pressure gas supply pressure. Its all

to easy to flood the cylinder with gas, the consequences can be alarming, spectacular or exciting or all three at the same time, but the results are not the engine working as designed. Valve timing is the hit and miss type controlled by spring tension, the set up is purely by intelligent estimating and exercising very sensitive care with the adjustments. The first thing is to get it running and then play around to obtain the



best results, at this stage a light load can be very helpful in evening out of the governor hit and miss mechanism. Its a question of suck it and see, you know what I mean. Then sit in the old arm chair and listen to its musical performance. That's the satisfaction one really gets for bringing back to life an "old donkey" once running just leave it alone and don't mess, That's the motto.

#### Test Report details

Make	Gardner
Model	1 codeword DEC1MO
No	2518
Year, Date	Dec-3-1901
B.h.p.	1.3 approx
R.p.m.	350 max
Bore	3.5"
Stroke	5"
Flywheel	24" Single wheel at 126 lbs
Engine weight	540 lbs

Test engineers comments:- "Alright" and starting very satisfactory

Peter Freakley

## 2017 Rally

Earlier this year, your committee and other members met at the headquarters of Lichfield Cruising Club with a view to holding the next rally on and around their site at Huddlesford Junction on the Coventry canal.

The site is approximately two miles from Lichfield town centre and about one mile from the A38.

After a tour of the site and discussions with committee members from Lichfield Cruising club we decided that it would make a suitable venue for our rally.

The first thing to do was get permission from Canal and River Trust for use of the land that they control, this took 4 months!

### **The rally will take place on the weekend 3<sup>rd</sup>-4<sup>th</sup> of June.**

We are planning a meal in the club house on the Saturday evening which will be limited in numbers and will NEED to be booked in advance.

More information and booking forms will be in the next newsletter and on the website around the start of the new year.

We are also looking ahead to an additional rally to celebrate the 150<sup>th</sup> anniversary of L Gardner and Sons and the 50<sup>th</sup> anniversary of the LX series. This would be in conjunction with the Anson Engine Museum and would take place in July 2018.

FIFTY YEARS . . .

## A Sketch Portrait of My Father

**Dr Eugen Diesel Contributes an Intimate Memoir Which Contains Some Little Known Information about Dr Rudolph Diesel**

Even as a child Rudolf Diesel took such delight in engines and other mechanical contrivances that he began to make drawings of them in the Technical Museum of Paris, in which city he was born. When he was fourteen he wrote to his parents that he wanted only to be an engineer and as a young man he stated that through some kind of technical achievement he would make the name of Diesel famous throughout the world.

My father was really a born engineer, but it was also the astonishing technical and scientific development in the Paris of the sixties that aroused his enthusiasm for engineering. In quite early years he realised that technique and natural science were the forces making for the greatest progress. He was also greatly impressed by the working of the steam engine in the countless ships, cranes and railway engines in the docks of London, in which city his parents, as Germans, had taken refuge after the battle of Sedan.



### Early days in Augsburg

When only twelve years of age Diesel left London for Augsburg, where he saw for the first time the famous steam engines in the engineering factory there. In Augsburg he attended the technical school that was packed with physical apparatus and machines of all kinds. Diesel's letters show that already as a young man he was deeply stirred by social and industrial problems. When, therefore, he heard about the very low level of efficiency of even the largest steam engines, and of the still poorer efficiency of the small ones, his technical feeling were aroused and he determined to attempt to construct a heat engine with a much higher standard of efficiency. This, he thought, would benefit also the "small man" and the owners of the small plants everywhere by enabling them to obtain mechanical power as cheaply as did the big industrialists.

At first he believed that he could reach a very high efficiency by means of an engine driven by ammonia gas at a pressure of 30-40 atm. To this end he carried out an immense number of careful experiments. At the end of five years, however,

he gave up experimenting with the ammonia system, but he had gained the conviction that only an engine with exceedingly high gas pressure could achieve the high efficiency which he desired. The definite idea of compressing pure air very highly and injecting fuel into it must have come to him early in 1890.

My father lived constantly in a state of great mental tension. This was due to the fact that, conscious as he was of a special call and with an impatient sense of vision, he was at the same time fully aware of the unprecedented difficulties that would accompany the carrying out of his plans. He was, at the same time, level-headed and practical, and in no way the real visionary. He knew well enough that he had to keep his enthusiasm in check and go forward step by step, for he venerated almost religiously the laws of physics and engineering. During this period of experimentation he was obliged to practise the strictest self-discipline as well as patience. Many of those around him only grasped certain aspects of his nature and considered him, accordingly, as being either patient or impatient, composed or pushing ahead, practical-minded or merely a theorist, as the case might be. Certain pedantic professors were also only too ready to subject his theories to ironical criticism. The head of the engineering works at Augsburg, Heinrich Buz, on the other hand, was just the qualities that were necessary in order to turn his theories, in part at least, into practical success. He therefore placed his factory at Diesel's disposal for his experiments with the "rational heat engine." The experts on internal-combustion engines ridiculed Diesel and his efforts. They maintained that his new-fangled engine would never work, and that its inventor, the former refrigerating engineer, was lacking in the necessary experience. But this ice-machine man had much experience in high-pressure technique, and since he was not a specialist in internal-combustion engines he was not inhibited with the expert's prejudices against truly new projects.

### **Unsuccessful lawsuits**

Until 1897 other inventors had not considered it worth while to contest my father's patents. Now, however, some of them maintained that Diesel had stolen their ideas. But Diesel won all the lawsuits that were taken up against him. After his success in 1897 no fewer than eight different inventors came forward with assertions that in point of fact they had invented the engine! The latest claim to such priority comes from Soviet Russia, where a certain engineer named Grinevetski is reputed to have invented the diesel engine.\* Some of Diesel's opponents attributed his success principally to his business acumen.† Put in that way the assertion is incorrect, and yet I myself have come to the conclusion that, apart from the qualities already described, my father did possess an extremely adroit way of dealing with people. Without these inborn psychological gifts, the development of the diesel engine would have been a much more long-drawn-out affair, and might even have failed altogether.

Unfortunately there is much fundamental misconception as to what it was that

*\* Claim has also been made in the U.S.S.R. that Russian engineers produced a practical "jet" engine well in advance of Whittle.—Ed.. G. & O. P.*

*† In his book entitled "The History of the Oil Engine." published some years before the last war. Mr. A. F. Evans (who writes interestingly in this number), makes the following rather startling comment: Was Diesel the inventor of this engine? The author would prefer to allocate the credit to Emil Capataine. who probably sold his invention to Diesel, and to remove any ambiguity he will put this forward as an historic fact—Ed. G. & O. P.*

my father aimed at inventing, and therefore his personality and achievement are often discussed from quite the wrong angle. Diesel aimed at an engine with the highest possible efficiency, and his theory taught him that in order to achieve this he would have to compress the air to as high a degree as possible. Actually, he aspired to create a high-pressure, and not a self-Ignition engine. True, he was aware that fuel injected into the "red-hot" air would burn without an ignition device, and the elimination of ignition equipment was to him one of the advantages of his engine. He often told me, however. that he would have been ready to make a concession in this respect if the successful operation of the engine had depended upon it.

Like the self-ignition engine, the heavy-oil engine was also in no sense Diesel's main goal. This was quite simply to attain a higher efficiency in engines whether driven by liquid fuel, coal-dust or gas. It is to an important extent owing to the increasing production of mineral oil since that time that the diesel engine has become primarily an oil engine.

## The " Diesel " engine

It is an astonishing fact that the name Diesel stuck to the engine from the very beginning. and in spite of various efforts has never been replaced by any other designation, Perhaps I may be allowed, to point out some of the reasons which have led to this almost exceptional association of an inventor's name with a machine. As early as 1893 my father called his invention by his own name, on account of its shortness, both in speech and writing, and other engineers associated with the development in any way also took to it at once. The mechanics in the Augsburg factory also used the term "diesel engine." after having first called it "Mr. Diesel's engine" In 1895 my father, who had never thought of the name as final, began to consider seriously the question of a name for his engine, which was at that time beginning to run successfully. He announced this fact one day in triumph to my mother, and asked her what she thought about a name. He himself. he told her, had the idea that something like "Delta-motor" might not be bad. My mother, however, felt that it lacked all connection with the character of the engine and it seemed to her rather meaningless. She therefore replied: "Why not call it simply Diesel engine. as the mechanics and others have always done? "

After thinking it over awhile my father answered: "That's true, after all." And so Diesel—or diesel it was, and is.

Why has the name stuck to the engine up to the present day? For one thing it is concise and to the point: it was then also new and unusual. Another reason may be because it could be pronounced easily in many languages without appearing too foreign. The chief reason, however, was that, at a time when various competing systems of prime mover were appearing, everyone knew at once what qualities were meant when one spoke of a diesel engine. This by no means the case when speaking oil engines in general, for in course time various oil and kerosene engines had been produced.

### **Philosophical outlook**

In conclusion, I would add two anecdotes which reveal something of my father's state of mind as the end drew near. It was not only the many attacks, especially in his own country, on his integrity as an inventor and the many disappointments which had turned him as time went on into a kind of philosopher, but also the prophetic feeling he had, and which he often expressed in words for future upheavals which were already threatening humanity. Only four days before his death on September 29, 1913 my father had been inspecting with me a 600 b.hp. two-stroke diesel engine. At that meeting he turned to me and said: "There is really something grand in constructing and inventing, just as an artist constructs and invents in his own way. Whether there is really any aim and purpose in the whole thing and whether mankind has become the long run the happier for it, that shouldn't like to pretend any longer. On the other hand, a few hours before he was drowned in the Channel on my way to England, he was apparently filled anew with enthusiasm for the bright aspects of modern technique. He foresaw the great future that lay ahead for his engine and spoke of this with calm assurance and optimism to his fellow travellers.

Gardner's were amongst the engine manufacturers that weren't happy with the term "Diesel" engine as shown from this 1930's LW catalogue extract.

The modern name for such engines is "Compression-ignition Engines," or briefly, "C.I. Engines."

They are, however, often spoken of as "Diesel Engines," which is not a happy term, for the good reason that the device of (1) drawing in a charge of air only and (2) of injecting the fuel into the compressed air charge was the invention of a British subject, Herbert Akroyd Stewart, the inventor of the Akroyd engine so well known a generation or two ago and whose patent ante-dated that of Dr. Diesel's first patent by about two years. A more appropriate name would therefore seem to be Akroyd" and, indeed, is already in use by certain authorities.

## Dennis Fire Tender

From Australia we were sent a 40' container of Gardner engines for restoration. It included 5L2, 2LW, 4LW, 5LW and 8LXB.

Amongst the items was a 1957 Dennis fire tender - all the way from New South Wales! It was powered by its original Dennis four cylinder petrol engine (with two spark plugs per cylinder!). It also had a very old fashioned crash gearbox. Our job was to replace the petrol engine with a Gardner 4LK and fit an automatic gearbox!

After much research on gearboxes we settled for a ZF 061, originally used in a Range Rover. Like many automatic gearboxes the ZF needs an effective oil cooler, especially in Australia where ambient temperatures can be 40C. For the cooler we plugged for Gardner of course and used a finn type from an ERF truck. Heat is dissipated from this using three large electric fans. As the total current drawn is 21A, we employed a modern 90A alternator, belt driven from the crankshaft pulley. As far as we know neither the ZF nor the 4LK has ever been used to power a Dennis.



Unsure how that combination would behave on the road, the ZF was supplied with an ECU (Engine Control Unit). This is programmable from within the vehicle, so we were able to dictate under what circumstances the ZF would change gear. The shifter has the normal P, R, N, D, 1, 2, 3 configuration.



More here with an on the road video  
<http://www.tangentengineering.co.uk/live/index.php/dennis>



# Membership Renewal

It became apparent during last summer that the system in use for receiving and processing both new and renewal of forum membership was not working as well as might be desired, particularly during the summer months when holidays become concurrent, leading to a period of three months or more between the cheque's being received by Joe and then being presented by the treasurer to the bank. Unfortunately Joe cannot bank the cheque's as there are no H.S.B.C branches in Northern Ireland, so after some consideration and discussions it was decided to make a change to the way that we work.

All renewals should be sent to the treasurer direct, payment will be recorded on the membership database accordingly.

The membership form has now been changed so that all new applications will go to the treasurer first, they can then be dealt with promptly.

Joe will continue to send out the annual reminders to members who do not pay by standing order.

Should members who pay by cheque wish to change to standing order then a membership application form can be downloaded from the website, this includes a standing order mandate. Completed forms should be sent to the treasurer. For security reasons this does not contain our banking details which will be added by us then forwarded to the appropriate bank.

For members without Internet access please contact the treasurer and she will happily post one out.

Any member who wishes to pay by electronic transfer is welcome to do so. Please contact the treasurer either by telephone or email for the bank sort code and account number.

**Please ensure that all future renewal payments are sent to the treasurer at the address on page 1.**

## Membership Cards

We discontinued the practice of sending out new membership cards each year some time ago due to the cost of postage. Consideration was given to including them with the newsletter, this was not really practical as we don't have a single renewal date and if a renewal just missed then it would be six months before it was sent out.

The eagle eyed amongst you may have spotted that the address label for each newsletter, has both your membership number, and the date for which your subscription is paid up to.

New members now receive a card on joining.

Thank you Judith Gray

# The MOTORBOAT

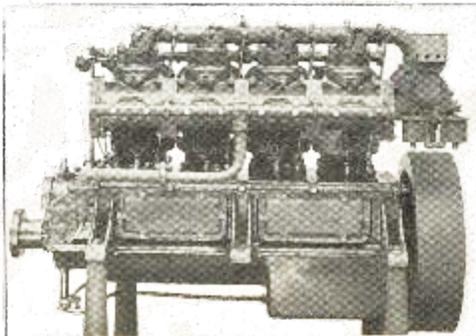
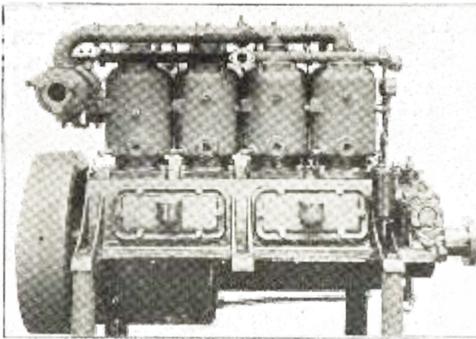
For all interested in large and small Pleasure Motor Craft and Commercial Motor Vessels for Coastal Service and Inland Waterways.

## SOME NEW GARDNER ENGINES.

Three Petrol-paraffin Models from 19-48 h.p

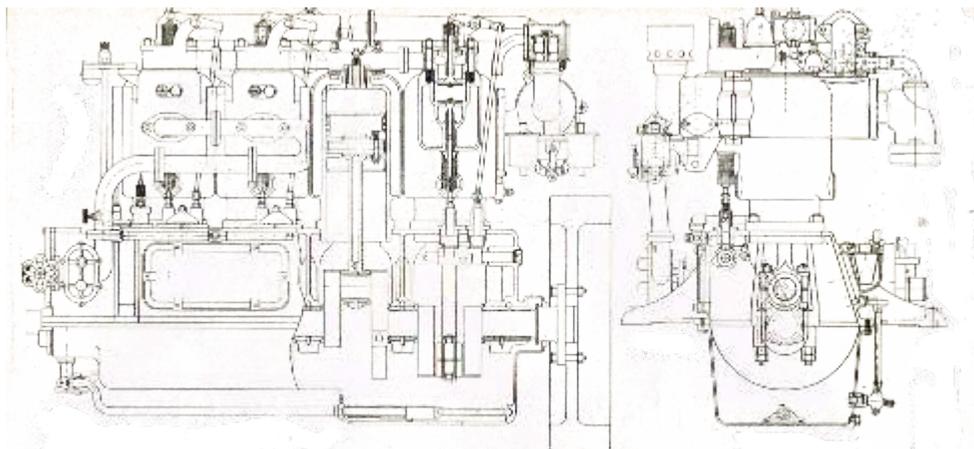
There are probably many who, like the writer, have had experience with various makes of engines, manufactured by individual firms, and who have recognised from experience that of the Gardner four cylinder 20 h.p \* engine is one of those designs upon which it is difficult to improve. There are numerous good marine engines now on the market, No unbiased observer can deny that fact, but, for reliability, sweet and silent running, as an example of a high class no-trouble machine, it would in the writers view, be extremely difficult to find a superior to the motor in question. It is therefore more than ordinary interest to learn that Gardners are now building a series of three model (two, three and

four cylinders, respectively), based essentially on the design of the four cylinder 20 h.p. Type but having larger cylinders with increased output and a some what lower speed. This series, which has cylinder dimensions 5½" bore and 6 ½" stroke, and comprises engines running at 800 r.p.m., Gives rated horse-powers of 19-24 h.p. For the two cylinder types, 28-36 h.p. For the three cylinder, and 38-48 h.p. For the four cylinder, the lower figure being the b.h.p. on paraffin, and the higher the power developed



*Port and starboard views of the new Gardner four cylinder petrol-paraffin engines.*

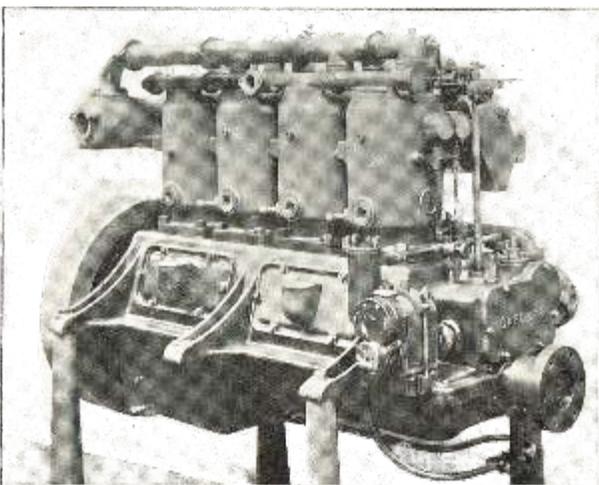
when running on petrol. All those familiar with the older engine will recognize its similarity to the latest design. The cylinders are separate as before, bolted onto a box shaped crank chamber, arranged for the utmost accessibility by the provision of two large doors on each side, in addition to one at the end. Inlet valves are of the overhead type, the exhaust valves being immediately below, with the exhaust manifold at the same level. The inlet pipe is at the top of the engine, leading direct from the vaporisers



*Partial sectional side and end elevations of the Gardner four-cylinder engine. The method of operating the overhead inlet valves will be noted.*

Which is mounted horizontally at the fly-wheel end of the motor. The valve tappets are, of course, adjustable, and operate the

overhead inlet valves, which are arranged somewhat out of the vertical, to clear the cylinder projection for the reception of the valves. These tappets give a quick release, the short valve operating levers being pivoted on

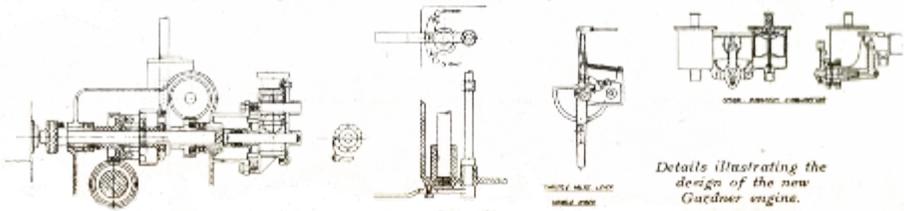


pins carried on brackets cast on the valve cages. All the accessory gear is grouped at the after-end, the magneto and the water circulating pump (which is of the gear type) being driven by a cross shaft, the magneto on the port side and the circulating pump on the starboard side. Also carried on this shaft, is the governor, which is totally enclosed and operates the vertical governor spindle, at the upper end of which is at-

tached the throttle lever, The governor comes into operation at the definite speed for which it is set, say above 1,000 r.p.m.,

The throttle lever control being, of course quite independent. This is effected by means of a horizontal throttle lever seen in the various illustrations. The gear lubricating oil pump is also driven at the after end of the engine through the me-

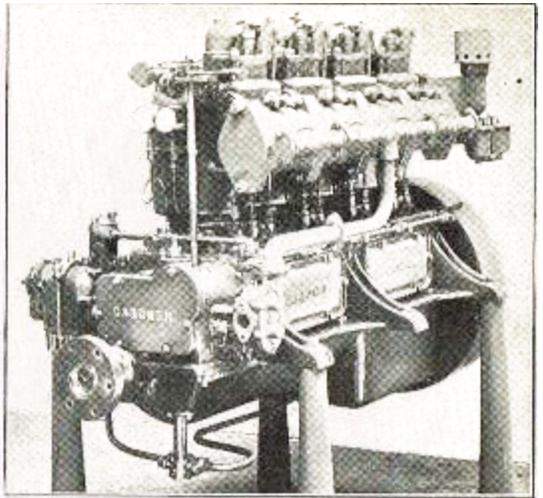
di-um of a vertical spindle, and is, approximately, at the level of the bottom of the sump which it will be noted is lower than the case of the after end. For easy starting a half compression lever is fitted at the forward end just aft of the flywheel, The starting handle is geared to the engine by a chain, and can be fitted at either end. The vaporiser has an air jacket, so that it does not become unduly hot, and is



*Details illustrating the design of the new Gardner engine.*

provided with an automatic extra air inlet valve. Two separate float chambers are provided, for petrol and paraffin, the manufacturers considering this preferable to the employment of one float chamber and a three way cock. There is little likelihood of the engine being stopped when running on paraffin, with the consequent necessity for emptying the float chamber when requiring to start again after the engine has cooled down. It is claimed that owing to the well balanced system of fuel vaporization in this engine, it will run light indefinitely and at all loads with a clean exhaust; further, that in

no circumstances, is there any un vaporized fuel to find its way past the pistons to contaminate the crankcase lubricating oil. Finally, when running on paraffin, the behaviour this engine is claimed to be in every respect exactly like that of a really good petrol engine. It is to be noted that practically all the lubricating oil pipes are external to the engine, and the ready method of removal of the horizontal fuel strainer by hand pressure against a spring is a point of interest. Lubricating oil is supplied under pressure to the gudgeon pins through the hollow connecting rods. The design of the pistons is new, the upper portion being of aluminium alloy and the lower portion of cast iron. This is the patented arrangement which has recently been brought out by Gardners, and is claimed to be specifically suitable for employment with paraffin motors. The exhaust manifold is water jacketed and there is a change over valve utilised, so that the water may be either injected into the exhaust pipe or may be discharged overboard if desired. These new engines undoubtedly represent an example of high class British workmanship in marine motor and with the existing models of 10 h.p., 15 h.p., and 20 h.p., provide a wide power range of powers, above which it will generally be admitted that the semi Diesel motor offers greater scope on account of the savings in fuel. We believe this is the view which Gardners take, considering that up to 40-50 h.p. The paraffin engine will be chiefly in demand, and that for motors above 50 h.p.



*The lubricating pump is seen at the bottom and the cooling-water pump on the right.*

These new engines undoubtedly represent an example of high class British workmanship in marine motor and with the existing models of 10 h.p., 15 h.p., and 20 h.p., provide a wide power range of powers, above which it will generally be admitted that the semi Diesel motor offers greater scope on account of the savings in fuel. We believe this is the view which Gardners take, considering that up to 40-50 h.p. The paraffin engine will be chiefly in demand, and that for motors above 50 h.p.

Users, whether pleasure or commercial craft, will in future tend towards the hot bulb design.

\* Although not mentioned anywhere in the text the 20 hp engine type referred to is a B.C.R, the review is of the D.C.R range, information on which is somewhat sparse.

The entire article is from a reprint which unfortunately is un-dated, and has been reproduced as near to the original as is possible in a smaller publication. However this is one of four articles all reprints which have been kept together one of which is dated 1917.

According to J. J Francis in his publication A product history over 125 years The B.C.R range was introduced in March 1906 with the largest the 4 D.C.R being manufactured in July 1914

A further extract from an addendum to an index catalogue

The next series is the BCR-DCR each of 2,3 & 4 cylinders, having a range of powers from 9 B.H.P. Up to 48 B.H.P. These engines are of the high speed type but as they are fitted with substantial wearing parts and highly efficient lubricating services, they have proved very suitable for boat propulsion, electric lighting, welding, and other similar purposes and on account of weight lend themselves to being mounted as portable or semi-portable outfits. We may say that engines of this type are in practically all the Chief Steam lines and for various welding outfits by the chief companies engaged in this class of work. It may be interesting to you to know that Marconi and Co have placed orders for hundreds of Gardner Engines of various sorts and sizes, including the sets of 110 B.H.P. Which were used during the war to constitute the ring of wireless stations around the world. Such sets are, we believe, still in use in Bermuda and Jamaica. Although these engines are of the higher speed type there is nothing abnormally light or flimsy in their construction and they are perfectly satisfactory for heavy continuous work such as Town lighting or commercial boat propulsion

## Wanted

HF 8 parts for a restoration project in Australia. Contact Joe McCool on  
Tele 07802 572441 or email: [tangent.gardner@gmail.com](mailto:tangent.gardner@gmail.com) if you can help.



## ASHORE'D BOAT MOVING

NARROWBOATS AND CRUISERS  
MOVED ON ALL INLAND WATERWAYS.

OVER 25 YEARS EXPERIENCE.

C.C.B.M. & R.Y.A. INLAND WATERS HELMSMAN QUALIFICATIONS.

[www.ashoredboatmovingservices.co.uk](http://www.ashoredboatmovingservices.co.uk)

Email: [mike@ashoredboatmoving.co.uk](mailto:mike@ashoredboatmoving.co.uk)

Tel: 07719 034 583

## 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.



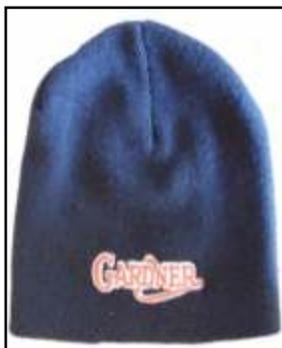
Cut Vinyl Sticker  
External Surface Fixing  
Size. 175mm x 45mm  
£2.00 each



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  
£30.00 each  
Currently To Order Only



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](mailto: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](mailto:classicdiesel@hotmail.com)

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

# ANSON ENGINE MUSEUM



The museum is also open each Friday, Saturday & Sunday between 27th Mar - 30th Oct 2016 but on these occasions the number of engines running may vary depending which volunteers are available. If no engines are running a reduced entry fee will apply.

The Museum holds many records of Gardner and other makes of engine and also offers a dating service. Go to <http://www.enginemuseum.org/news.html> to find the downloadable enquiry form

Special events occur throughout the year normally at Bank Holidays  
See the Museum Website [www.enginemuseum.org](http://www.enginemuseum.org) for up to date information

Anson Road, Poynton, Cheshire, SK12 1TD

Tel: 01625 874 426 Email: [enquiry@enginemuseum.org](mailto:enquiry@enginemuseum.org)



Centurion Court  
Centurion Way  
Leyland  
Lancashire  
PR25 3UQ

Tele 01772 642460  
Fax 01772 621333

## WALSH'S ENGINEERING LTD

COMMERCIAL DIESEL ENGINE SPECIALISTS

Barton Moss Road



Eccles  
Manchester  
MR30 7RL

Parts & Services

Tele:- 0161 787 7017 Fax:- 0161 787 7038

E Mail:- [walshs@gardnerdiesel.co.uk](mailto:walshs@gardnerdiesel.co.uk) [www.gardnerdiesel.co.uk](http://www.gardnerdiesel.co.uk)

Disclaimer please see note 3 on page 1