CRANKING

February 2014
Thirty seventh year of publication
Club website now at www.wessexsec.org

The Wessex Stationary Engine Club's Monthly Newsletter

From The Sump

In the continuing saga of the recalcitrant hip, my operation is delayed. Well, who'd of thought it! Something was not quite to the anaesthetist's liking and in these litigious days, they played it safe. Thus, another two months trickle by in exquisite boredom...

My Velocette "arm's length" restoration proceeds as planned, but of course being able to stand up in the workshop to assemble it, let along swing my leg over the crackling beast and ride it anywhere recedes into the days of summer.

So here I am typing when I thought I'd not be able, assembling another newsletter for your delectation, pleasure and possible amusement. There is a dearth of rally reports this month as there're aren't any!

Mary Butler has – for the last twenty five years or so – collected the newsletters from the printer, put them in envelopes, addressed them by hand and posted them off to those members who didn't turn up to Club Night. It is one of those invisible jobs that generally goes unremarked, but I know exactly what it means to stagger to the postbox with a stack of envelopes that will fill it to the brim as I have done in myself in Another Place! And now Mary is retiring from this task and the club is looking for yet another helpful soul to do this job. I am quite certain that there is not one of you reading this that will not join me in a most heartfelt expression of gratitude to Mary. One of those people without whose unsung work, our world will be the poorer.

So, we need another quiet hero, It is a job that will fill a few hours on one day in the week after Club Night (the last week in the month) so the envelopes can all be posted together. Brian Baker now has an electronic file of address labels and in future the task will be much easier. Obviously, there are logistical problems to consider, the printer being in Frome. But nothing that can't be overcome with the application of a little common sense, I'm sure.

Please contact Brian Baker in the first instance as he will be able to explain the nitty-gritty detail of the job. You can get him on his landline – 01749 342671.

Patrick Knight, Editor of Stationary Engine magazine asks if Wessex member Ralph Chapman would please contact him about a little pumping outfit he owns and rallies. PatrickKnightpk@aol.com or Patrick's number is in any edition of SEM.

Moving the Metal

For sale

Kerrison Predictor Generator. Scott PAB engine, some instruments missing but mostly complete. Rarely advertised! £350. located in Salisbury. Keith Winch k.winch@virgin.net

Lister D Engine no.522DH5 HP 1.5 RPM700 to include Two water pumps one Stuart Turner and the other is a Leo £150 the lot. Keith Nash .07976 162347

Horse hair Combing Machine. Built by Gauntlets of Trowbridge. Only unaltered and complete one known. £490 ono. MUCH REDICED PRICE! phone Eric Gay 01225 754374

Lauson engine on steel frame. This interesting lightweight Canadian engine dates from WW2 and is driving its own petrol pump (underslung tank) and a small air compressor. Light, easily fits in the boot. Painted and ready to rally! £175.

Power Hacksaw. Five feet long and tall, Free standing and an impressive lump begging to be driven by your engine! £199 (reduced) or swap either for something small and interesting.

Watermota K2. Mid thirties twin cylinder marine engine. Complete with square bodied ML magneto. manifolds and original frame. Standing many years and is seized but is just stirring! £190. (reduced for last time otherwise it can go back in its corner!) Tel; Kim on 0117 964 6818

Suppliers

Recommended Bearing Supplier – very helpful!
Solent Bearings, Unit 20&21, Test Valley Business Centre, Test Lane, Nursling, Southampton, SO16 9JW Phone - 02380 667100. www.solent-bearings.co.uk

Fuel Tanks and Crank Guards made.
Tel John Hedges 01635-268359 or 07831-410473 (Newbury Area). Robin Says – "I have known John for over 30 years and he is a good engineer. He has sold all his engines and thought he would have a go at Tanks & guards and is doing quite well, "

Martin Dry Tel: 0117 9675225
Email: vintagemagnetos@blueyonder.co.uk

- **We repair and supply parts for British and American magnetos as fitted to Veteran and Vintage stationary engines, motorcycles, cars and tractors .**
- **We carry a wide range of spares for Lucas, Wipac, BT-H, Thompson Bennet, ML, Simms, American Bosch, Fairbanks Morse, Wico International**
- **Repair and supply 6v and 12 v control boxes.**
- **Rewind (replacement basis only) low and high tension coils**
- **Repair and supply 40-watt and 60-watt dynamos for British motorbikes.**
- **Supply low and high tension cable and connectors, distributor caps & pickups**

Articles, cartoons, photos etc are always very welcome – this is not a one-man band, but an expression of all our thoughts and experience. Submissions should be preferably typed or word-processed or even handwritten, (**if brief**), - it is the content we're after, not the grammar or spelling, so please don't feel your efforts will be ignored. The editor reserves the right to change, edit, augment or lessen your Deathless Prose and asks all to note that opinions expressed in this newsletter may or may not represent club policy

Phone - 0117 964 6818

J. Kim Siddorn, 9, Durleigh Close, Bristol. BS13 7NQ or by e-mail to kim.siddorn@blueyonder.co .uk.

Featured Engineer Number 1.
Douglas Hele by Frank Melling

July 13 1919. Died 2nd Nov 2001

Doug was one of the few world-class engineers the postwar British motorcycle industry produced, and probably the greatest motorcycle development engineer of all time. His race mechanics would often bet Doug that he could not measure a piece of metal by eye. The stake was 1s (5p), and he could always get within ten-thou!

He was incomparable in integrating every aspect of the machine into a harmonious entity and a delight to ride. He was also one of the last craftsmen engineers - men who had an intuitive feel for an engineering solution in the manner of the great Victorians.

The Hele family came from humble Cornish stock. Doug's father, a gardener, moved to Birmingham in 1916 to join the Austin motor company as a shopfloor worker. After King's Norton secondary school, where he was viewed as an outstanding scholar, his son felt fortunate to get into the same firm's rigorous, five-year apprenticeship scheme, and soon came to management's notice as the most brilliant student of his intake.

During the second world war, he was kept at Austin working on the design and manufacture of forging dies. But his heart was in motorcycles and, after 1945, he moved to Douglas - only to undergo an experience all too common in British engineering.

The Douglas flat twin bikes had good engines, but dire handling. Doug, full of hope and enthusiasm, approached the chief designer, George Halliday, with a series of innovative ideas to cure the problems. The result would have been an outstanding all-round motorcycle, but, as Doug remembered: "Instead of encouraging me, [Halliday] made it very, very clear that my career at Douglas was over and that it was not a good idea to stay."

In 1949, Doug was recruited by Bert Hopwood, chief designer of BSA, then the world's biggest motorcycle manufacturer, to redesign the BSA MC1 road racer. The bike was to be BSA's blue riband project, and had been drawn by Hopwood. But, in its original concept, the engine could not have run because the valves would not have opened. As Doug noted: "This is not a minor mistake."

Doug was given two years to design a masterpiece of practical race engineering - and he was proud of it - but political bickering within the factory killed off the bike when it was on the verge of success. But no one became a design engineer, he observed, if he was the kind of person devastated by management decisions.

In 1955, he joined Norton, based in Bracebridge Street, Birmingham. Here, in the midst of Victorian squalor and archaic working practices, he worked alongside Polish designer Leo Kusmicki refining the ageing Manx Norton race engines.

Doug designed and made two desmodromic heads in 1957. Work continued in 1958, and in 1959 a 500 engine was taken to the TT. Bob McIntyre tried the desmo in TT practice but reverted to a conventional engine for the races. The desmo programme showed promise but they didn't have the time or resources to recognise its potential. There were too many other things going on at the time and the desmo project died a quiet death.

"Hele: "We spent a lot of time making different cams, but we never got more power from the desmo than a standard engine would produce. More time was needed on the engine, but that is one resource that development engineers are always short of."

Norton's world-championship winning era had been ended by the domination of multi-cylinder Italian machines; new designs should have replaced the Manx Nortons, but had not done so. There was an alternative, developing the Dominator 88 tourer into a briefly successful production racer, the Domiracer, but, starved of investment, it was abandoned.

In 1963, Doug rejoined the BSA group. There, he produced the three-cylinder bike - known as the BSA Rocket 3 and the Triumph Trident - which kept the two marques in business five years after they should have collapsed in the face of the more technologically-advanced Japanese and continental industries.

Doug's triple machine was a stroke of genius, providing a cash-starved factory with a modern, multi-cylinder design for the minimum of investment and development. He designed the bike at home, and, once again, factory politics delayed its introduction; it could have been available years before its main rival, the 750cc four-cylinder Honda, had Doug received the recognition he deserved.

Again, with almost no funding compared with the Japanese race teams' mammoth budgets, he then developed the three-cylinder road bike into one of the great race machines of its era, dominating both American and European racing. Working with volatile and strong-willed racers and engineers, he won affection bordering on near-worship from everyone with whom he came into contact.

American Grand National motorcycle champion Gary Nixon recalled Doug as "a hell of a smart guy". "He was liked by all the Triumph people in America -and that was hard because they often didn't even like each other."

One of Doug's development mechanics, Norman Hyde, described the atmosphere at Triumph. "Doug was incredibly focused and absolutely meticulous. He was also genuinely interested in the mechanics' opinions. He used to say: 'There are no bosses in a technical discussion.' All he ever wanted was to get things right."

Until a few months before his death, Doug worked with me on a series of articles for Classic Bike magazine, full of revelations about his career.

Calendar of Events

Key. CN = Club Night. E = Event

Feb 24th CN. AGM. 8.00pm at The Court Hotel. Please do make the effort to attend and have YOUR say in the running of your club. No buffet this year.
March 1st. (Sat) **E. Wessex Spring Sortout** at Cranmore Station.
March 31st. CN. **"Big Boots And Tall Hats"** My Life In The Metropolitan police. Guest Mike Chipperfield
April 6th (Sun). **Crank Up** At Nunney Catch.
April 12th. (Sat) E. **"Enstone" Spring Sale.** ***NEW VENUE*** Oakley Airfield. HP18 9JX. The new venue is 22 miles east of Enstone Airfield. Check the distance for you before you set off! info: Mrs. Anne Harris 01367 810415
April 21st. E. **Easter Monday at Mells**. Contact Robin Lambert 01373 463526 if you want to attend as space is always limited
April 28th. CN. **Photo Night.** Bring Along 10 Photos.
May 19th CN. **Alternative Hobbies Night**. Bring Along Your fascinating stuff! *Early Because Of Bank Holiday.*
May 24-26th E**. Selwood Rally.** Southwick Nr Trowbridge.
June 21/22nd E. **Wessex Midsummer Vintage Gathering**, Semington
June 21/22nd. E. **29th 1000 Engine Rally**, Astle Park.
June 30th. CN. To Be Announced
July 19/20th E. **West Oxen Steam & Vintage Show**. Ducklington, Whitney, OX29 7TY *(off junction of A40/A415)* Info: Gary Leach 01993 700716
July 19/20th. E**. Much Marcle Steam Rally.** Rye Meadows near Ledbury. HR8 2LX Phone, Richard & Gareth Hall, 01452 840862
July 28th. CN. **Crank Up** At The Court Hotel
Aug 18th. CN. **Engines At Wessex Events** Slide Show. *Early Because Of Bank Holiday.*
Sept 29th CN. Quiz. Anne Kempson As Quizmaster.
Oct 11th Sat. **Wessex Autumn Sortout** At Cranmore Station.
Oct 27th. CN. **Engines at the 1000 Engine Rally**" by Kim Siddorn
Nov 8th. E. (Sat) **"Enstone" Autumn Sale.** ***NEW VENUE*** Oakley Airfield. HP18 9JX. The new venue is 22 miles east of Enstone Airfield. Check the distance for you before you set off! info: Mrs. Anne Harris 01367 810415
Nov 24th. CN. **Decoys On Mendip, World War 11**. Talk by Mike Chipperfield
Dec **No Club Night.**
Dec 7th Sun. **Anti-Freeze Crank-Up** at Nunney Catch
Dec 27th Sun. **Mince Pie Crank-Up** at The Court Hotel.

This events calendar is prepared by the editor based upon the Wessex SEC calendar produced by Brian Baker. I have added to it outside events that I know Wessex members like to attend. Please do not take this as Holy Writ! It is up to YOU to make sure the event is actually on as indicated before you set out!

Chairman's Report *(printed as received)*

The end of an era – Brian's last Chairman's report

The first meeting of this year was on Monday January 27th at the Court Hotel. The entertainment for the evening was provided by Robin Lambert who gave us a talk on his travels to New Zealand that he undertook some years ago with Jackie and Arthur and Liz. Obviously he brought back loads of photographs from this trip but wanted to show them on the projector, so enlisted help of his granddaughter who photographed the photos with her digital camera and put them on a memory stick. The only problem was when Robin came to view them they were on the memory stick back to front; the photo he wanted to open the show was the last one on the stick. He asked me if I could help sort this problem out, I said no, but I know someone who can, Oliver. I took Oliver to Robins and Oliver transferred it from the stick to his lap top in the correct order so Robin could go ahead with slide show. Luckily that week Oliver was on holiday so he came along to the meeting where he set up the projector with his lap top ready for Robin to go ahead. I have moaned for a few months about the poor turn out at the Court Hotel but this night we had a really good audience, I counted around 40 people present, well done all the members who attended. A really good night's entertainment followed, with stunning shots of the scenery from both the North and the South Islands. Robin had visited various museums there so we saw plenty of engines and other vintage machinery including lots of aircraft. Robin had brought along friends of his who were going to New Zealand a couple of weeks later so it must have been brilliant for them to see what a treat they were in for. The usual raffle followed the slide show with lots of prizes on offer due to a lot donated by the members attending. I only hope we have similar numbers attending the AGM.

URGENTLY WANTED

We have had no nominations to replace Keith as Treasurer, as he is standing down at the AGM. The club cannot function without a treasurer so it is imperative that someone comes forward to take on this very important task, ring me on 01749 342671 and I can tell you what the job entails.

URGENTLY WANTED

The club urgently requires someone to take over the Newsletter distribution which has been carried out for the last quarter of a century by Mary Butler, who is retiring. Without anyone coming forward for this job your newsletter is in jeopardy. Give me a ring if you can help when I can let you know what is involved.

URGENTLY WANTED

Members are needed to join the committee to help run and administer the club. After the AGM, the committee will be under the ten we like due to retirements. I appeal to all members to consider doing your bit to ensure the well being of the club.

Subscriptions are now overdue. If you have not rejoined yet, this will probably be your last newsletter. Send your subs to Wendy Gane 45 Welsford Avenue, Wells, Somerset. BA5 2HX. Double£16. Single£13. Juniors 16 or under is free.

That's all this month folks, and I would like to remind you that this is my last chairman's report. I have worked out that I have written 240 chairman's reports since I became Chairman, I only hope the new Chairman keeps up the tradition. I shall write reports on events and meetings that I attend, and I shall give any support I can to the next Chairman and committee.

Desmodromic valve gear

Compiled By Kim Siddorn

from various sources

In general mechanical terms, the word **desmodromic** is used to refer to systems that mechanically open and close the valves in an internal combustion engine.

The word itself comes from the Greek words *desmos* translated as "bond" or "knot") and *dromos* "track" or "way"). Denoting this way the major characteristic of the valves being continuously bound to the camshaft, a tied way.

The common valve spring system is satisfactory for traditional mass-produced engines that do not rev highly and are of a design that requires low maintenance. At the period of initial desmodromic development, valve springs were a major limitation on engine performance because they would break from metal fatigue. Vacuum melt processes developed in the 1950s helped remove impurities in the steel used to make valve springs, although after sustained operation above 8000 RPM often springs would still fail. The desmodromic system was devised to remedy this problem. Furthermore, as maximum RPM increases, higher spring force is required to prevent valve float (the valve has so much momentum that it bounces off the seat, thus limiting available revs), leading to increased cam drag and higher wear on the parts at all speeds, problems addressed by the desmodromic mechanism.

The valves in a typical four-stroke engine allow the air/fuel mixture into the cylinder at the beginning of the cycle and exhaust gases to be expelled at the end of the cycle. In a conventional four-stroke engine valves are opened by a cam and closed by return spring. An engine using desmodromic valves has two cams and two actuators, each for positive opening and closing without a return spring.

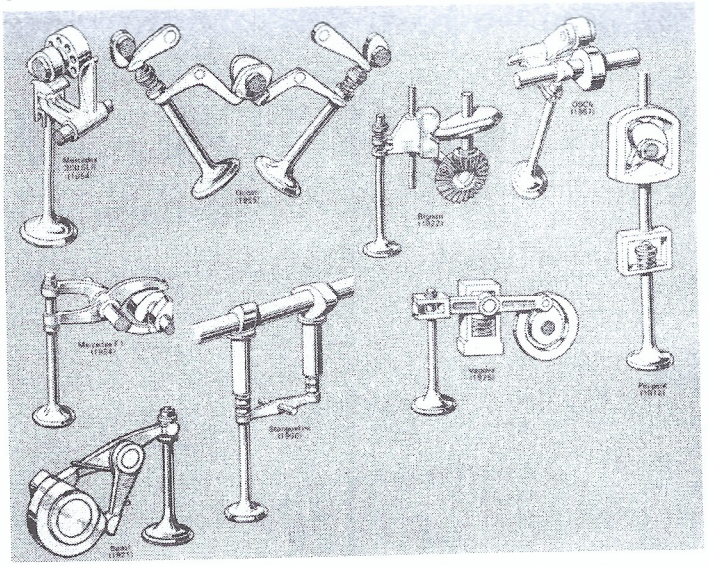
Fully controlled valve movement was conceived during the earliest days of engine development, but devising a system that worked reliably and was not overly complex took a long time. Desmodromic valve systems are first mentioned in patents in 1896 by Gustav Mees. The 1914 Grand Prix Delage and Nagant (see Pomeroy "Grand Prix Car") used a desmodromic valve system quite unlike the present day Ducati system.

Azzariti, a short lived Italian manufacturer from 1933 to 1934, produced 173 cc and 348 cc twin-cylinder engines, some of which had desmodromic valve gear, with the valve being closed by a separate camshaft.

The Mercedes-Benz W196 Formula One racing car of 1954-55, and the Mercedes-Benz 300SLR sports racing car of 1955 both had desmodromic valve actuation.

In 1956, Fabio Taglioni, a Ducati engineer, developed a desmodromic valve system for the Ducati 125 Grand Prix, creating the Ducati 125 Desmo. He was quoted to say:
"The specific purpose of the desmodromic system is to force the valves to comply with the timing diagram as consistently as possible. In this way, any lost energy is negligible, the performance curves are more uniform and dependability is better."

The engineers that came after him continued that development, and Ducati held a number of patents relating to desmodromics. Desmodromic valve actuation has been applied to top-of-the-range production Ducati motorcycles since 1968, with the introduction of the "widecase" Mark 3 single cylinders.



In 1959, the Maserati brothers introduced one of their final designs: a desmodromic four-cylinder, 2000cc engine for their last O.S.C.A. Barchetta.

In modern engines, valve spring failure at high RPM has been mostly remedied. The main benefit of the desmodromic system is the prevention of valve float at high rpm. It has the primary disadvantages of complexity, since there are more components, and lack of understanding, which prevents people from straying from the well-known conventional valvetrain with its valve springs.

In traditional sprung-valve actuation, as engine speed increases, the momentum of the valve will eventually overcome the spring's ability to close it completely before the piston reaches Top Dead Centre. This can lead to several problems. First, and most damaging, the piston collides with the valve and both are destroyed. Second, the valve does not completely return to its seat before combustion begins. This allows combustion gases to escape prematurely, leading to a reduction in cylinder pressure which causes a major decrease in engine performance. This can also overheat the valve, possibly warping it and leading to catastrophic failure. In sprung-valve engines the traditional remedy for valve float is to stiffen the springs. This increases the seat pressure of the valve (the static pressure that holds the valve closed). This is beneficial at higher engine speeds because of a reduction in valve float. The drawback is that the engine has to work harder to open the valve at all engine speeds. The higher spring pressure causes greater friction in the valvetrain and the need for heavier componabts and bearing surfaces.

The desmodromic system avoids this problem, because it does not have to overcome the static energy of the spring. It must of course work against the momentum of the valve opening and closing, and that force still depends on the effective mass of the moving parts. The effective mass of a traditional valve with spring includes one-half of the valve spring mass and all of the valve spring retainer mass. However, a desmodromic system must deal with the moment-of-inertia of the two rocker arms per valve, so this advantage depends greatly on the skill of the designer. Another possible disadvantage is that it would be very difficult to incorporate hydraulic valve lash adjusters in a desmodromic system, so the valves must be periodically adjusted. *"Desmo gear isn't for people who are not of a mechanical turn of mind. An owner should not object to spending the occasional Sunday with oily hands and a stack of shims"* ***Ed.***