



LOTUS TIMES

February 2006

No. 1

Club News

Not much of a January to speak of with warmer than average temperatures. Winter is still here and who knows how it is going to evolve. With little recent snowfall promise of an early spring put more pressure on the fettling part of getting our cars back on the road. Time to continue fettling away and whatever needs fettling.

Many thanks all those that came out to our Christmas party. To the amusement of all, we had 3 rounds of stealing presents from each other and Alannah did a great job in keeping it all together and moving. Lots of little autocentric gifts were taken home. Thanks again to Bob Herres of W.O. Stinson & Son Ltd. for providing some of the gifts.

Those that braved the weather to make it to the February meeting were rewarded by being able to obtain a copy of a DVD entitled "Racing through Time – Lotus" courtesy of Paul Hill who stopped by the Wal-Mart in Cornwall and bought every copy that they had in the bin.

The DVD chronicles the feats and failures in the early years of LOTUS. Featured are interviews with Hazel Chapman, Cliff Allison, Ennis Ireland and Keith Duckworth as well as a lot of vintage footage of the early years. 60 minutes of DVD LOTUS centric entertainment for only a Loonie. That's right, one Canadian dollar!

It is only one of a series of marques available in the ESPN series by that name. Others feature Alfa Romeo, Ferrari and a double feature focusing on the early years of F1 and Le Mans in which Lotus is prominent. There is great footage of the early years when racing was dangerous.

We have the monthly meeting on the 3rd Wednesday of each and every month to catch up with each other. We still meet at the Swan on the Rideau, 2730 River Rd., just outside Manotick Ontario on the 3rd Wednesday of each and every month. As always, owning or driving a LOTUS is really optional in this season. Come on out and join us.

Up & Coming ECLC Dates

- Feb. 15
Regular Monthly meeting at the Swan on the Rideau
- Mar. 15
The day after Valentines Day and the Regular Monthly meeting at the Swan on the Rideau
- Apr. 19
Regular Monthly meeting at the Swan on the Rideau
- June 22-25
27th Annual International Vintage Racing Festival – Mosport www.varac.ca
- July 15
2nd Annual All British Car Day – Britannia Beach Ottawa.
www.britishcarday.ca



Elise/ Exige now available in Canada!

Yes, the wait is finally over. I first heard it from Ed Luce who forwarded a link from a feature article in the Toronto star. The story told of a 72 year old Kingston area grandmother, Ruth Bryson, who purchased her BRG Elise at Ontarios only Lotus Dealer Gentry Lane in Toronto. She got hooked on the car while visiting the UK and bought a place on the waiting list. The article quotes the Toronto dealer as giving a base price of CAN\$58,550. Rumour is that this same Elise will be on display at the Toronto car show.

From the article: "It should go to a youngblood that can drive it ten-tenths. But that is a fact of life: by the time you can afford it, you're too old to enjoy it." Amen.

Look for a potential article with more information in the Ottawa Citizen's

Wheels section as soon (this Friday).

The Lotus Exige S - breathtaking performance from the fastest accelerating Lotus ever to come off the production line!

The small lightweight Exige S weighs just 935 kg (2057 lbs), powered by a 162.5 kW (218 hp, 221 PS) high revving supercharged engine, giving a zero to 100 km/h time of just 4.3 seconds (0 - 60 mph in 4.1 seconds). It comes straight off the production line and isn't an "aftermarket special".

Is this the quickest ever real-world production car? It is certainly the quickest Lotus production car - so far!

The Lotus Exige S is the latest addition to the Exige range and is a real sports car that redefines the term "Extreme Performance". With 90.5 kW / litre (121.4 hp / litre, 123 PS / litre), it is one of most powerful production cars in the





world for its engine size but most importantly it has full type approval for all the markets in which it will be sold. The Lotus Exige S is not a limited edition, nor is it an aftermarket special - it is manufactured from start to finish in the world leading and award winning Lotus Manufacturing facility at Hethel, Norfolk.

Because the basic car is so immensely strong but lightweight (935 kg, 2057 lbs), giving a power to weight ratio of 173.8 kW/tonne (233.2 hp/tonne, 236.4 PS/tonne), performance is phenomenal, with 100 km/h being reached from a standing start in 4.3 seconds (0 - 60 mph in 4.1 seconds) and 160 km/h (100 mph) being reached in 9.98 seconds (estimate) before topping out at 238 km/h (148 mph). In spite of this phenomenal performance the fuel economy is impressive with an official combined figure of 9.1 litres / 100 km (31.0 mpg) - extra urban is an impressive 7.2 litres / 100 km (39.2 mpg).

Lotus believes that there is no car on sale anywhere in the world that has such good performance combined with such good fuel economy! Not that many customers will be buying this car

principally for its fuel economy!!

Being a Lotus, straight-line performance is not the most important factor, but every day driving on normal roads, or around a circuit is. There are very few cars on sale today that can match the speed, agility and safety of the Exige S in both day to day and track or circuit driving. However the Exige S is not just a track day warrior. It is a sports car that would be at home on the back roads, freeways and autobahns, as well as on city streets. With an extremely "torquey" engine and the classic Lotus suspension set-up of soft compliant springs and firm controllable dampers, the driving experience is an uncanny combination of telepathic-like handling with a taught and comfortable ride. There is really no car that handles quite like a Lotus.

Clive Dopson, Managing Director of Lotus Cars says, "The Exige S represents the ultimate "extreme" production Lotus, with performance that trumps other supercars costing twice or even three times as much. That it does so with the fuel economy of a family hatchback, stands as a testament to the Lotus concept of performance through light weight. It's an unbeatable package and an unbeatable drive."



Priced at £33,995 including VAT (Manufacturer's Suggested Retail Price) they should start rolling into UK showrooms in March to April of 2006. There are currently no plans to launch the Exige S in the USA market never mind Canada.



Keith Duckworth O.B.E: a tribute to outspoken, and very British, genius - By Doug Nye

He got his BSc degree by criticising the university's methodology. He was canned as a prospective RAF pilot for dangerous and incompetent flying. He quit work with Colin Chapman on a gearbox design by stating: "I'm not prepared to waste my life developing something that will never work." And he designed the most important engine in Formula One history, the Cosworth DFV. But Keith Duckworth, who died last week at the age of 72, was more than just a gifted engineer. Author Doug Nye pays tribute to a true motor racing legend Make no mistake, Keith Duckworth, who died on Sunday, December 18, aged 72, was the outstanding racing engine designer of his generation.

Cosworth Engineering, the company he founded with fellow engineer Mike Costin in 1958, produced a staggeringly successful series of Ford-based and Ford-sponsored engines which from 1960 to 1983 not only won a record 155 World Championship-qualifying Grand Prix races but also dominated international Formula Two, Formula Three and Formula Junior, won the Le Mans 24-Hours sports car race and added multiple victories in American Indianapolis-style speedway racing.

Duckworth was most proud of having manufactured such precision-built engines in substantial quantity, opening Formula One's doors in particular to a flood of new car manufacturers buying competitive Cosworth power 'off the shelf'. To that extent, the Cosworth DFV engine - master-minded by Keith

Duckworth and detailed largely by Mike Hall - revolutionised Grand Prix racing and heralded the era of modern Formula One in highly commercialised, thoroughly well-packaged style.

David Keith Duckworth was born on August 10, 1933, at Blackburn, Lancashire, second of two sons of textile engineer Frank Duckworth, who owned a moderately-sized cotton-weaving works, Oak Street Manufacturing, and traded textiles on the Manchester Cotton Exchange. Keith was thus not a Yorkshireman, as many tributes have declared, but a Lancastrian, the red rose rather than the white...

His maternal grandfather had been a blacksmith and his mother the first lady demonstrator of cookers in the Blackburn electricity showrooms. He was educated as a boarder at Giggleswick in Yorkshire, while at home in Wilpshire on the north side of Blackburn his father fostered Keith's engineering interest by converting the old air-raid shelter at the back of their small house into a workshop, equipped with a Myford lathe, vertical drill and grinder.

Keith used them to craft his own model steam and aero engines while he also earned a reputation as the 'Whizz-kid from Wilpshire' sorting out any neighbours' electrical or mechanical problems. He would recall: "I once won a bet with my uncle by switching on an electric blanket at two miles range by radio control."

He favoured Frog aero-modelling kits and also scratch-built flying models from what he described to biographer Graham Robson as "...spills and bog



paper, rubber bands and all sorts of odds and ends."

His father died in 1944, when Keith was just 11. At 16, he bought his first road vehicle, a non-running side-valve 250cc BSA motorcycle, which set him back £25. National Service conscription loomed. He was keen to fly and decided to seek an early call-up before possibly going up to University, and on his 18th birthday he joined the RAF, and began pilot training, progressing from Tiger Moth biplanes at Digby near Sleaford, Lincolnshire, through Chipmunks at Booker near High Wycombe to twin-engined Oxfords at Holme-on-Spalding-Moor.

There, disaster struck as he fell asleep while flying in the circuit. This was partly due to an allergic reaction to treatment for a sprained ankle (he was allergic to the adhesive in Elastoplast), and partly because he was "clapped-out after having been off for a time and working like a madman trying to catch up on my course." He still found himself being canned as a prospective RAF pilot for "dangerous and incompetent night flying."

Sent for re-training as a navigator at RAF Thorney Island, he then made waves by contradicting his astro-navigation tutor. "I don't compromise easily", he would later admit, "I simply won't accept theories that are wrong. I can spot bullshit at 100 yards, and I have to say so". He was released early, entering Imperial College, London, in 1952, "...where engineering was actually taught as an intended subject".

There he was introduced to motor racing by fellow undergraduates and bought a Lotus 6 kit car from Colin Chapman's embryo company behind father Stan

Chapman's pub in Hornsey, North London. He raced it three times and crashed it through the famously floral-decorated Goodwood chicane, ending up against the bank "with a potted geranium in my lap." He concluded he was not cut out to be a racing driver, and then "just scraped through" his BSc degree at Imperial after his dissertation emerged as a lengthy critique of the course, its content and methodology!

He did holiday work in the Lotus gearbox department in Hornsey, which was then headed by budding racing driver Graham Hill. It was there that he first met fellow-Lotuseer Mike Costin, and when Graham left in August 1957 to concentrate upon a life as a professional racer, Chapman took on Duckworth formally as gearbox development engineer. He identified the notorious Lotus 'queerbox' design's limitations, ultimately telling Chunky: "I'm not prepared to waste my life developing something that will never work."

He and Costin consequently founded Cosworth Engineering in September 1958, renting garage space in Shaftsbury Mews, London. Keith operated there full-time, while Mike worked out his contract with Lotus and attended to Cosworth business out of hours. Their pals - and enemies - within the tight-knit British motor racing world lampooned the new venture as 'Cosbodge & Duckfudge Ltd'. That stage didn't last long...

The new company's first job was to make the jig for the experimental cockpit bubble-canopy tried by the Vanwall Formula One team at Monza before the Italian Grand Prix. Keith also maintained and prepared private owner Dennis Taylor's front-engined Lotus Type 12 Formula 2 car, and spent much



time investigating and tuning all manner of customer engines.

Larger - but rat-infested - premises followed in Friern Barnet where he installed his pride and joy, a dynamometer for serious engine test and development work. In 1959 a new Formula Junior racing class emerged, for which Duckworth recognised development potential in the new Ford Anglia 105E production engine.

He reworked the unit which Cosworth put into production - with great credit going to contract machine shop owner Ben Rood, who would become a full partner in the business alongside Duckworth, Costin and Keith's sometime Imperial College flat-mate Bill Brown who became business director and sales manager.

Keith was a stickler for financial rectitude, with new wife Ursula keeping the books during the evenings. He'd say, "I always employed the 'Jewish Accountancy System'. You extract your money promptly from customers, ensure that you pay up promptly, so that at any time the money in the bank represents your position, and you don't have to do much paperwork."

Ben Rood was not alone in being amazed by this infinitely non-motor racing approach to business. He recalled: "It was unbelievable the way Keith used to pay his bills. Everybody else would string you along, not Keith. He'd actually come to you and say 'We owe you some money', and give you the cheque. People would do anything for him...He was a straight-shooter."

The Ford-derived racing engines manufactured and sold by Cosworth

Engineering went on to dominate Formula Junior for the next four years.

The company grew rapidly, moving to an ex-Lotus works in Edmonton in 1961, then to its definitive home in Northampton in 1964. The new 3-litre Formula One class was due for 1966 and Colin Chapman asked his former employee if he felt ready to tackle a Grand Prix engine design. Keith relished the challenge, though not without trepidation and - typically - not without deep, deep thought. Chapman talked Ford into footing the bill, and their sponsorship famously became "The best £100,000 Ford ever spent."

Duckworth produced first a Ford-based 4-cylinder 1600cc Formula 2 engine with four valves per cylinder and twin overhead camshafts, from which he then developed the 3-litre V8 Cosworth-Ford DFV unit - the legendary 'Double Four-Valve'. Used by Jim Clark's new Lotus 49 it won the 1967 Dutch Grand Prix upon its debut. One rival engine designer - upon looking at the new car - admitted: "We knew then, the game was up!"

Overnight, Duckworth's transcendent DFV engine design had set entirely new standards in Formula One power and ingenuity.

Perhaps most indicative of Keith's peerlessly practical design genius was his adoption of a cushioning quill-drive to minimise destructive shock-loads in the DFV's cam-drive gear train.

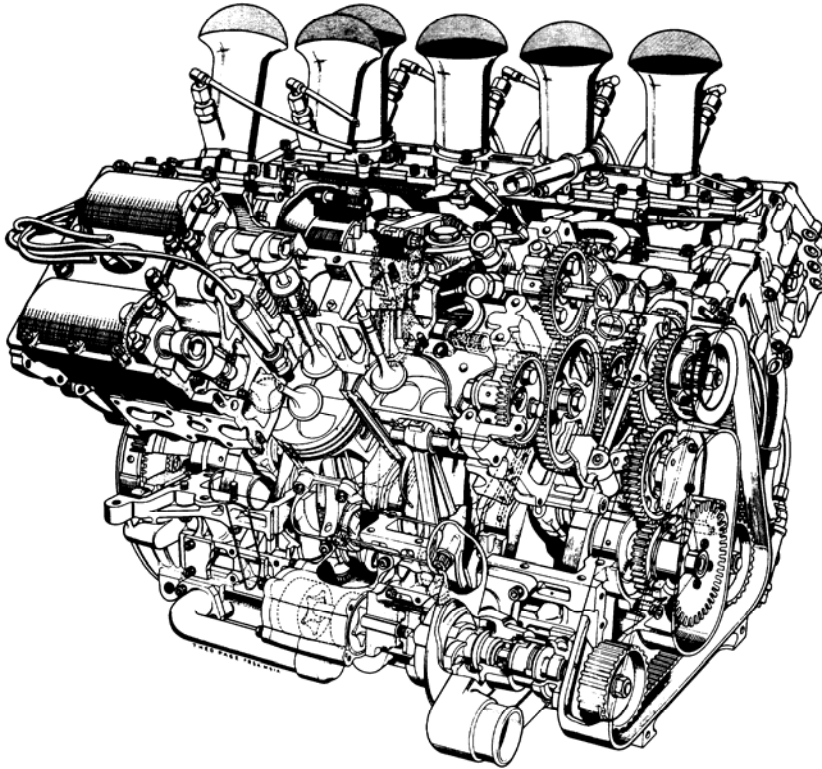
Mike Costin: "That was his master-stroke with that engine - twelve little quills, six mating to one gear, six to the other, and just enough cushion to prevent the gears from eating each other. It



made the DFV reliable, more important than merely being capable of dominating races on power and torque alone..."

informed" - "It's better to keep your mouth shut and be thought a fool, than to open your mouth and prove it" - "A

genius can make for a penny what a good engineer can only make for 10p" - and, perhaps more deeply: "Very few straight answers are ever possible, the decisive man is a simple-minded man."



"Development is only necessary to rectify the ignorance of designers" was a pretty pointed, and perhaps unusually self-deprecating one, while "It's simple to tell the truth. If you tell lies you have to remember what

yesterday's lie was, so it's safer to be honest" is, like so much of the gospel according to Duckworth, unchallengeably true.

The long litany of successful Cosworth engines from his drawing board and from his team's is well known. But most significantly this man was so much more than just a dry engineer.

He also based his job-candidate interviews upon the simple principle that "Young fools go on to become old fools."

Far beyond the immediate group of men with whom he worked, and particularly in later years amongst those whose careers and futures he so readily fostered - once they had earned the privilege of his respect - he was a truly inspirational figure, a dynamic teacher and a celebrated blunt philosopher.

His directness and incessant questioning left him seldom at ease in dealings with the politicians and empire-builders of big business, but Cosworth grew rapidly as he and his co-directors reinvested its profits in the company.

'Duckworthisms' have become renowned throughout the motor racing and engineering worlds - including "It is better to be un-informed, than ill-

However, Duckworth had suffered a heart attack in 1973 - forcing him to stop piloting his adored helicopter - and with



his 85 per cent stake in Cosworth threatening huge death duties, in 1980 he sold to United Engineering Industries - "too cheaply" as he would later observe.

He continued to be involved in a consultative role with Cosworth engine design and development of a new turbocharged Formula One engine, but difficulties with it coincided with the emotional turmoil of divorce from his first wife, Ursula.

Early in 1987 he was found to require urgent and major heart-bypass surgery. He would subsequently remarry - Gill - and effectively retired to his hill-top house, 'The Folly' outside Northampton, gradually losing interest in the company whose engineering work in every area he could no longer control. He relinquished his Chairmanship on August 30, 1988, and while remaining a consultant, particularly on race engines, he was made Honorary Life President in April 1989.

One of the hobbies he indulged was a return to his boyhood interest in steam, and he and a group of friends took it in turns to be master, mate and engineer of a lovely steam boat, whose engine he - of course - rebuilt and perfected. He also supported a deep family interest in microlight aviation, taking control of both Cyclone Airsports Ltd and Mainair Sports Ltd, constructors of Pegasus and Mainair microlights.

Mike Costin remained a close and

staunch friend, and in their retirement they have worked together part-time in recent years as consultants with the revived Triumph motor-cycle company, where their input - particularly regarding general engineering practises, outlook and philosophy - has been immensely valued by the full-time staff.

Talking this week about Keith's passing, Mike Costin said it all: "I have been privileged to spend more than forty years learning at the University of Duckworth..."

The great man was apparently hospitalised only two week ago with a badly infected knee, undergoing minor surgery but failing to recover. He passed away due to cardiac failure around 8pm last Sunday evening.

Keith's sudden death has come as a body blow throughout the motor racing world, for this singular personality was one of its most widely-respected - indeed revered - not-so-elder statesmen. He is survived by his second wife, Gill, by his son Roger (a director of Integral Powertrain Ltd, Bletchley) and daughter Tricia, by his step-daughters Amber and Tina, and by his first wife, Ursula.

What an engineer, what a man...what a very great Briton. Whenever the ultimate history of 20th Century engineering is written, Keith Duckworth should be amongst its brightest stars.

Lotus Times is the unofficial newsletter of the Eastern Canada Lotus Club (ECLC) and may be published anytime between January and December. The opinions within may not necessarily represent the views of its members, directors or anyone else living or deceased and knowing that the Exige S and Europa S won't be available in Canada.

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