RON GARDNER

"BEFORE THE SIGN WAS SECURED TO THE VEHICLE, AN EXCITED DUTCHMAN CAME UP, WANTING INFORMATION CONCERNING HIS GARDNER CARBURETTOR."

THE ORIGINAL JET-SETTER

Ron Gardner set up his eponymous carburettor company a long time ago and his talent for original thinking meant his career involved many interesting projects, as **Alan Turner** discovers.

Words: Alan Turner **Photographs:** Gardner Archive

In the early Nineties, Ron Gardner had all but relinquished the carburettor business he had begun more than 40 years before. There had been turmoil in his personal life when nursing a seriously ill wife took priority over everything.

Working from his Sussex home, Ron was still supplying spares for the carburettors that bore his name, but it was all very low key. Some time later, with wife Daphne on the road to recovery, Ron and his son had gone to a classic meeting at Brands Hatch.

The meeting was a busy occasion and they were obliged to park Ian's Volvo in a far-flung corner of Brands' generous paddock. For old times' sake, they had brought along a signboard that used to adorn one of the Gardner Carburettors service vans.

Before the sign was secured to the vehicle, an excited Dutchman came up, wanting information concerning his Gardner carburettor. Ron went with the rider to try and sort things out, but when he returned son Ian was besieged with people wanting advice on carburettors!

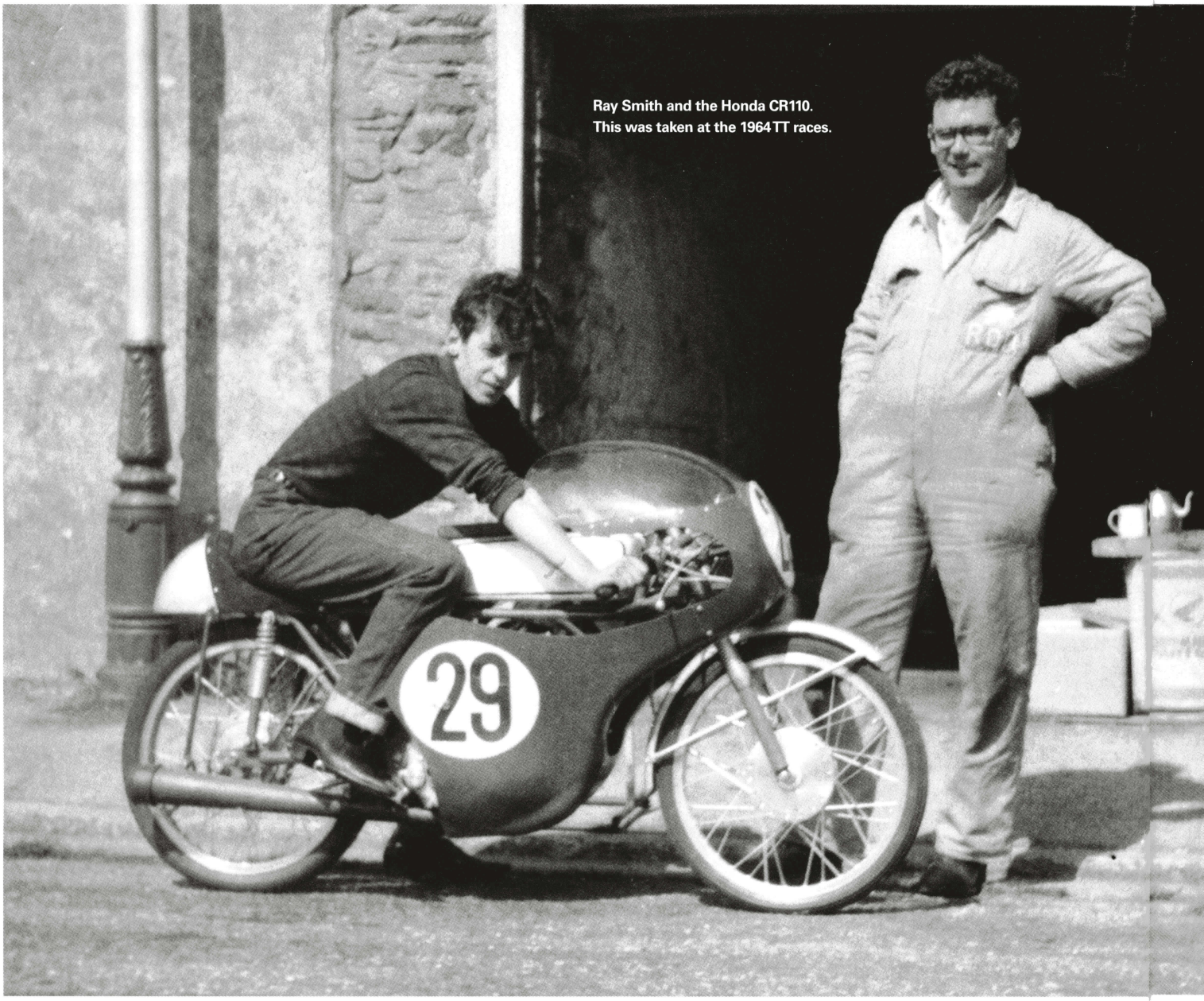
It was flattering, but Ron recalls: "We never saw a single race that day." The following day son Ian attended alone, but when he returned it was with a pile of notes and phone numbers for people wishing to get in contact. The signs were overwhelmingly obvious. "Look," said Ron, "we have just got to start up in business again." So, in 1994, he did.

Nowadays Ron is regarded as an expert in carburation matters on the classic scene, but his knowledge has come through a lifetime's work in that field. For many years, he was a leading authority on all types of contemporary fuel systems and even now lacks only hands-on experience of the later developments in fuel injection.

Above: Ron working on the brake with an X4 carburettor.

Main: A Vincent benefiting from Gardner carburettors.


MADE IN
ENGLAND



Ray Smith and the Honda CR110. This was taken at the 1964 TT races.

A FAMILY AFFAIR

"It must have been in my genes," Ron smiles. The previous generation of Gardners, Ron's father Alfred and his brothers, ran one of the first garage businesses in London's East End. Ron can recall family meals where there were usually 10 at the table. Alf insisted that carburation was correct when a mechanic could stroll alongside a vehicle at tickover in bottom gear.

Alf and young Ron went to Brooklands on occasions. While Alf was soon involved helping wherever he was needed, Ron was left to his own devices. One day, he was helping a racer to get his Riley car running correctly. They were joined by a stranger, who approved of Ron's efforts to get the twin SU carburettors running correctly. "I use four motorcycle carburettors on my car," said the newcomer.

On the next Brooklands visit, the stranger acknowledged Ron. "How do you know him?" asked Alf. "He helped me sort out the carbs on a Riley," said Ron. "Do you know who that is?" asked Alf, not knowing whether to believe Ron. "That's Freddie Dixon!"

"CURFEW HOUR WAS APPROACHING, AS THE GIRLFRIEND'S FATHER HAD THREATENED REPERCUSSIONS IF THE APPLE OF HIS EYE WAS DELIVERED HOME LATE."

Ron served an engineering apprenticeship. His endless curiosity started a lifelong career as an inventor. The recent war had resulted in great advances in the performance of the internal combustion engine. The mainstream manufacturers were still some way from embracing these improvements.

With the meagre ration of petrol allowed for private motoring there was good reason to make the best of every available drop of fuel. Water injection was a recognised performance enhancement so, in 1946, Ron tried it on an ancient Rudge that was his regular transport.

An old Lucas oil lamp base became a water reservoir, supplying a wick, the other end of which ended in the carburettor bellmouth. The system was refined and applied to various bikes, whatever Ron was riding at the time, for he was supplementing his apprentice wages with a brisk part-time trade in motorcycles.

Water injection was only really effective when the engine was under hard acceleration. Further experiment refined the system into a needle valve downstream of the carburettor. The throttle cable operated a splitter that simultaneously opened both the needle valve and the regular carburettor slide. Having developed the idea, he sold on the rights to produce it, but it soon faded from the market.

He continued experimenting, at one time using a 250 four-valve Rudge as his test mule. He came up with a similar system to that perpetrated by Wal Phillips as his 'Fuel Injector' some 10 years later.

MOMENT OF EPIPHANY

On a ride one day, Ron and a girlfriend had stopped near Box Hill, a well-known tourist destination in Surrey. Curfew hour was approaching, as the girlfriend's father had threatened repercussions if the apple of his eye was delivered home late. But disaster had struck!

The parked bike had fallen over and a protruding piece of wood had knocked the float chamber off the bike's carburettor. Fast thinking saw the water feed swapped for the petrol supply. To Ron's considerable relief the bike started and ran! It was a seminal moment. As well as getting him off the hook with the girlfriend's father, it set off the train of thought that would lead to Ron making carburettors in his own name.

The prototype was based on various war surplus bits and pieces, with a gate valve controlling the air admission and a needle valve metering the fuel. It may have lacked refinement, but the unit was reasonably compact, a useful design trait that holds good for the Gardner instruments still produced. A major problem for a carburettor design is a lack of response when the throttle is opened quickly. More fuel is required, but the pressure change in the inlet tract means insufficient is delivered.

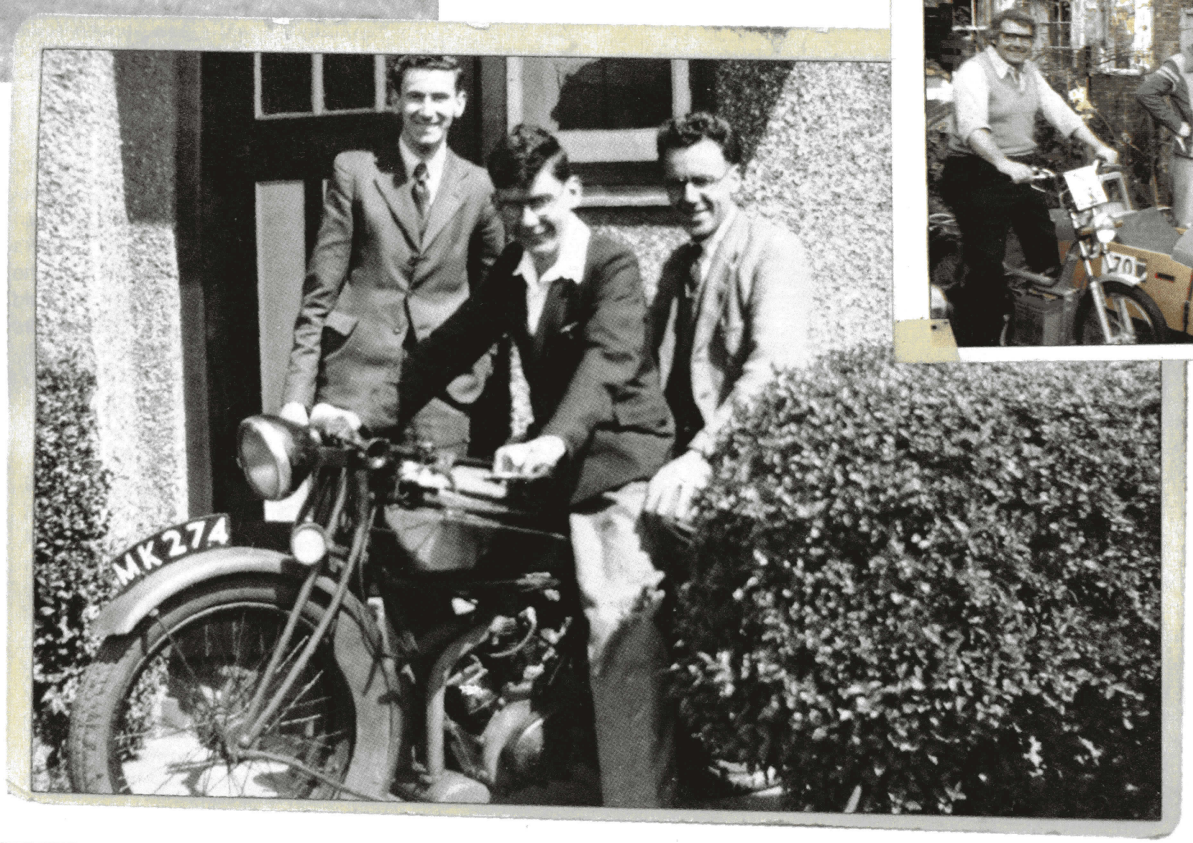
Next experiment was to fit an Amal carburettor upside-down. The idea was that gravity would provide a fuel boost as the slide (and hence the needle) opened. The idea worked. The downside was remembering to turn off the fuel as soon as the engine was stopped, otherwise petrol continued to flow.

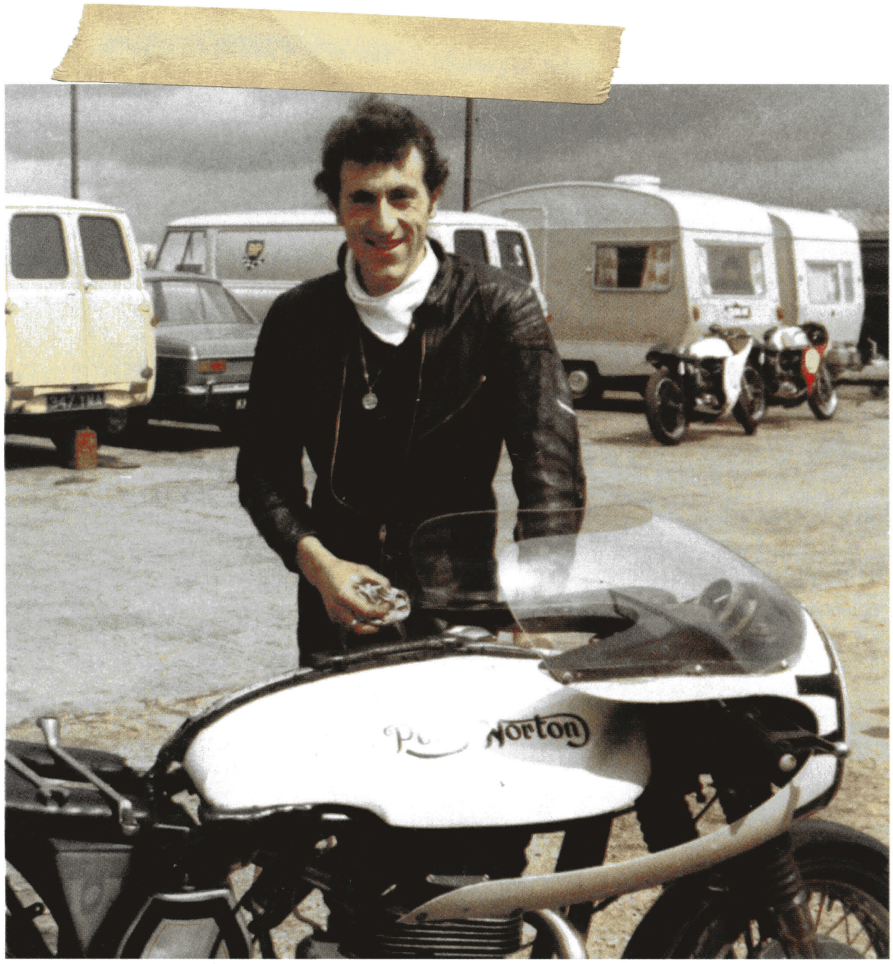
Ron addressed that difficulty and incorporated the principle into his next prototype, which turned just about everything upside-down. The needle was fixed to the top of the carburettor, and the jet attached to the slide. The fuel level, dictated by a remote float chamber, was set to be level with the top of the moving main jet at around a quarter throttle. The circular hole in the flat slide gave a more progressive opening lower down the rev range, but a faster opening towards the top end. The design was further refined with modifications to the needle. This had a taper machined along its length. Altering the height of the needle altered fuelling throughout the rev range.

Progress wasn't easy. In 1947 the Government removed the private fuel allowance altogether! That same year, Ron was called up for National Service. He was posted to an airfield, where the performance of his Ariel and its home-made carburettor in impromptu speed trials impressed many of his fellow riders. They became early customers. Ron had made engineering drawings of his designs and issued these to contacts that could machine the required parts. Using mainly copper and brass, these early examples are now referred to as 'A' type carburettors.

Right: Sven Hakanson of HM fame and his electric race car – Ron is on electric moped – 1980.

Below: The start of it all! Ron, the water injected Rudge and two of Ron's brothers.





"RATHER NETTLED, RON REPLIED – OH, THE NORTON DESMO, THAT'S A LOAD OF RUBBISH, IT WILL NEVER BE ANY BETTER THAN SPRINGS!"

DESMO DREAMS

With his compulsory service career behind him, it was back to picking up whatever he could to earn a living, including singing with a band. He was also pursuing desmodromic valve operation.

Relying on springs to return the valves on four-stroke engines was recognised as a limiting factor in performance. Desmodromics offered a system that opened and closed the valve positively. Ron's solution required a shaft across the top of the cylinder head driven at quarter crankshaft speed.

This drove a 'spider' on which were mounted two rollers. Parallel to the driving shaft, two other shafts acted as pivots for levers. Within the levers were internal cam forms, which were driven from the spider. The other end of the lever located on the valve. Therefore, as the spider turned, one follower opened the valve and the next closed it.

A prototype made a remarkable improvement to an Ariel single. To prove the point, other engines were converted. However, the conversion work involved a lot of machining. With the limited resources he stood little chance of advancing his ideas.

The way forward was for the principle to be adopted by a major factory. As he touted his ideas around the industry the AMC factory at Plumstead expressed interest. He had the ear of Jock West, who seemed to Ron to be rather condescending when he said: "Of course, we are working on desmos within the group."

Rather nettled, Ron replied – "Oh, the Norton desmo, that's a load of rubbish, it will never be any better than springs!" The discussion closed shortly after that.

FUTURE FUEL

Ron's wife diffused the increasing frustration; while desmodromic valve operation might have been a major advance in engineering terms, trying to sell it to a disinterested industry was never going to make Ron's fortune.

He would be better off developing the carburettor business where he could make the parts, market the product and maintain control of the business. As the concept keeps Ron active more than 50 years later, it was obviously the way to go. The company was originally 'Gardner Fuel Systems' but Ron wished to avoid confusion with Wal Phillips, who was actively selling his disingenuously named 'injector', so the business became the Gardner Carburettor Company Ltd.

The first production carburettor was the 'C' type, available from 1950. It consisted of an aluminium body with the slide machined from Tufnol.

Ron explains: "People wonder why I didn't start pushing the carburettor business earlier. The problem was that you could not get hold of materials, especially suitable fuel pipe. A Gardner required the fuel supply pipe to move with the slide. The old flexible gas pipe, the only stuff we could obtain, soon disintegrated. Fine for racers, but road riders were not prepared to throw away a fuel pipe every day."

Experiments with the needle taper were a common tuning dodge, learned from the Brooklands days. The straight taper used originally had already evolved into a long S-shape. Experimenting with a two-stroke hack one day, the penny dropped. The carburettor could be fine tuned by adjusting the angle of the flat on the needle to the axis of the inlet tract! From then on, carburettors were offered with needle holders allowing the needle to be turned in four-degree steps.

Motorcyclists tend to be conservative in thinking and it took a long time for Gardners to catch on. A Gardner unit certainly looked different. "That flat slide is all wrong," he was often told. Many years later, Honda vindicated his thinking!

It was competition use where the advantages of the carburettor really came to the fore and the improvements could be validated on the dyno. A wide variety of bikes were improved. Ray Smith's 50cc CR110 Honda was so transformed that he beat regular 50cc ace George Ashton at Brands Hatch.

By the end of the Sixties, Ron's engineering expertise was complemented by Roland James, who shared Ron's flair for making things happen. About this time, Australian racer Kevin Cass was sharing the Gardner Carburettor premises. Ron gave him a pillion ride one day and responded to Kevin's derogatory comments about his old Ariel by cracking open the throttle. Kevin insisted Ron supplied carburettors for his Bultaco racers followed this graphic demonstration! With the results that Kevin achieved as he chased world championship honours, Gardner Carburettors made its mark on the international scene.

Above: Alan Peck – enthusiastic and effective user of Gardner carburettors.

Top right: Ron's father Alfred in about 1920 with a V-twin AJS outfit.

Middle right: Alan Peck's Manx Norton is fitted with a Gardner carburettor. Alan raced short circuits and endurance events in the Sixties.

Bottom right: Kevin Cass warming up at Brands Hatch.

GIVE ME GARDNERS!

Within months Ron was supplying anyone and everyone. The British scratchers' circus all wanted them. ACU champion Ron Chandler was using them. Rex Butcher was suitably impressed when he knocked a second off his lap time at Brands Hatch.

One-time Manx Norton manufacturer John Tickle used only Gardner carbs, Tom Kirby turned his team over to them. The many privateers running in the world championships were eager customers. Chas Mortimer was another regular. He was convinced his works Yamaha 125 was running out of breath at 14,000rpm. Ron was reluctant to interfere, but Chas persuaded him to fit a pair of carburettors. There was a gain of 2000rpm, but at the cost of a broken crankshaft!

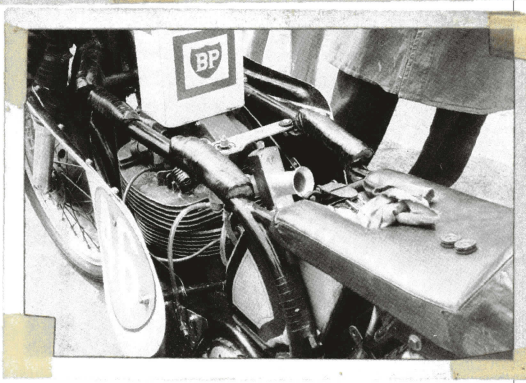
By the Sixties and Seventies, the Sussex company reached a peak. Carburettors were produced in batches of 100, but total sales were measured in thousands. Ron had several employees and at one time the company needed four service vehicles. A tuning and supply service was offered at the European dates on the Grand Prix calendar, the TT and many Nationals.

The British industry finally began to sit up and take notice; Manganese Bronze owned much of what was left of the motorcycle producers. Company head Dennis Poore was impressed and wanted to switch to Gardners as a factory fitment. Ron considers Poore was 'really switched on'. However, Ron did not have the investment or resources and soon his potential customer was in big financial trouble. As he reflects, with some relief: "They would have taken me down with them."

Ron had a good working relationship with Weslake, as the company pursued a number of motorcycle-related projects. Many of the top horsepower figures from Weslake products were obtained with Gardner carburettors.

In 1976 came wife Daphne's illness, the enforced hiatus from business and the full time nursing commitment. It was some time later, with the domestic situation stabilised, that Ron looked to enter the fray once more.

The company that had originally purchased his business had collapsed and Ron reacquired his jigs and the rights to recommence manufacture. Right-hand man Roland James (who had left to work for Piper Cams) was keen to join the rejuvenated company. Suddenly and prematurely, Roland died. It was a huge shock and a further setback for the business.



FUN WITH FIFTIES

While slowly getting established, Ron resumed an earlier collaboration with road racer Mike Cook. Through this arrangement Ron came into contact with many of the 50cc racers. The smallest capacity class had a strong following at the time and still had world championship status. Mike and Ron made regular forays to the Netherlands where they bought Kreidlers to import for sale in Britain. Mike had bought the rights to the Rudge name, which he tried to re-establish by using it on the Kreidlers.

The up-and-coming Steve Patrickson was an early customer, buying Mike Cook's own bike. Ron knew the family and helped out in Steve's campaign for 50cc junior championship honours.

Later, the engine went back to Jan de Vries' workshop in Amsterdam. A new Gardner carburettor, and some experimenting on the dyno, saw the gain of a whole brake horsepower, a significant step forward, and sufficient for the lightweight and talented Patrickson to take the title in 1982.

Ron calculated the power output was sufficient to achieve three-figure speeds. To prove the point, they entered the Records Meeting at Elvington, Yorkshire, and set five new records. A flying distance record was achieved with a mean of 99.11mph, but this included a one way run at more than 102mph. Steve recalled: "It was the fastest I'd ever been on a bike!" Ron felt his theory had been proved and recalled that he had predicted in 1950 that 50cc bikes would eventually be capable of 'the ton'.

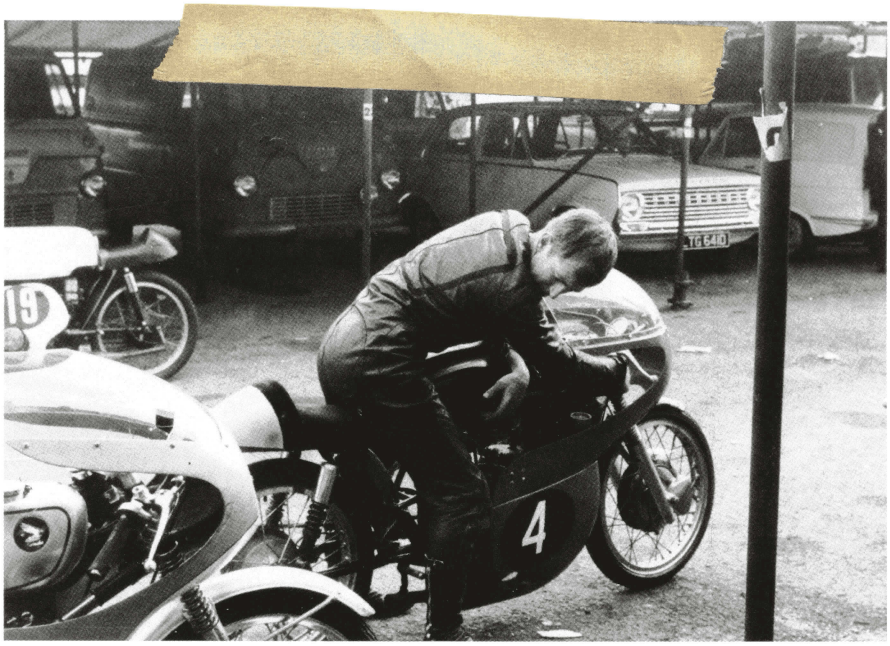
Ron had also predicted that the 80cc championship would be won, initially, on a 50cc bike. Steve, still riding the Kreidler, proved this theory correct when he was crowned 1982 champion. Ron acted as Steve's guide and mentor for a couple of years. Steve went on to 10 British championships and spent three years as part of the Grand Prix circus. As he progressed, he went with Ron's good wishes. "I'd taught him all I knew," says Ron, "so he had to move on".

The burgeoning classic race scene had everyone looking for that competitive edge creating a demand for Gardner carburettors from all around the world. Cutting edge race bikes he once serviced gained a new lease of life in classic events.

Yet again, Ron fell foul of the politics and for some time the rules imposed by the bigger race organisations banned the use of Gardner carburettors in the USA, Australia (where long-time convert Kevin Cass was the agent) and New Zealand.

This was ironic, as some of the original types of carburettors were no longer available and the instruments then chosen were of dubious eligibility and quality.

It took a lot of time and persuasion to get the rules relaxed but eventually, he won. In America, an Irving Vincent running Gardners won the Battle of the Twins race convincingly at Daytona in 2009.



AND NOW

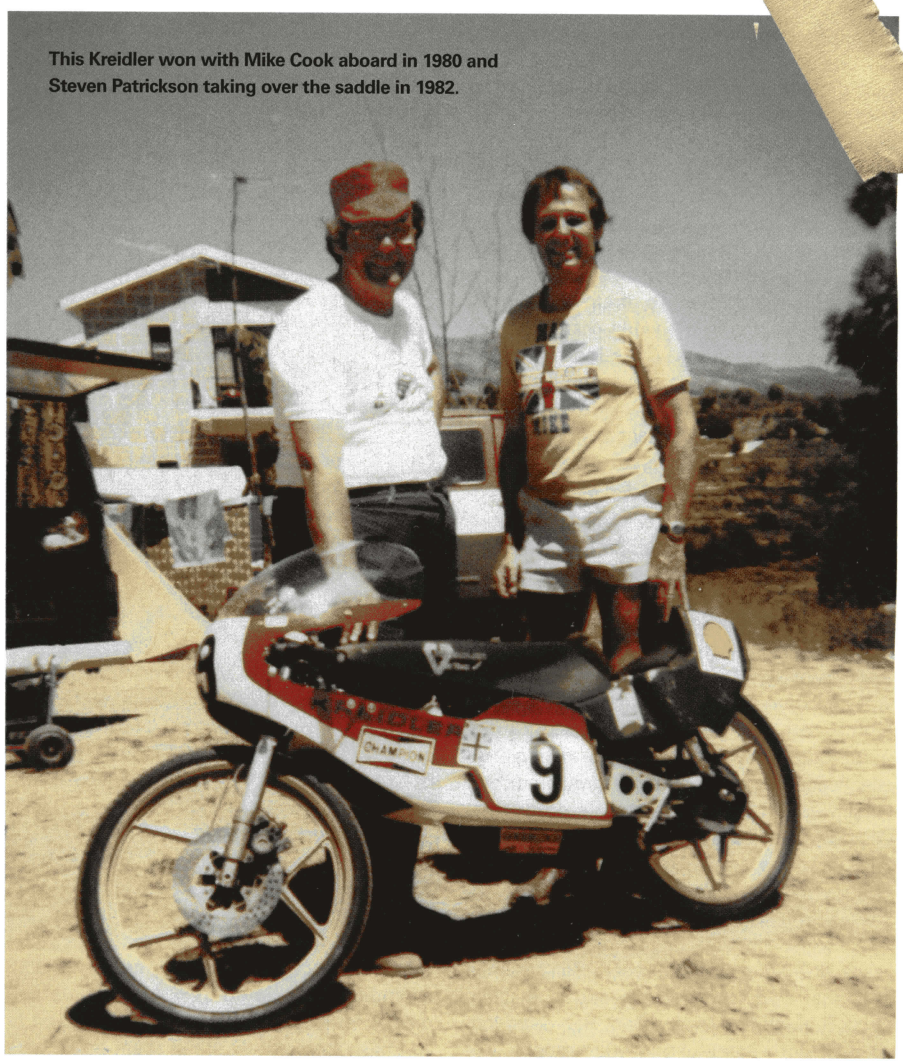
The day-to-day running of the Gardner Carburettor Co, is left to his son, Dr Ian Gardner. The company has just enjoyed its two best years since the 1994 restart with increasing sales, especially to Baltic and Pacific Rim countries. Speedboat and microlight users also favour Gardners.

Ron's abilities in problem solving have earned him worldwide respect. His lifetime of motorcycling and involvement in the competition scene means that he has met and dealt with many leading racers, sponsors, team owners and trade barons. His financial rewards have been modest but being immersed in motorcycling and making a living from it has been something to treasure.

Ron recalls falling foul of Steve Lancefield and being blanked by him for some years until Steve finally agreed to give the carburettors a try. A visit to legendary tuner Francis Beart at home achieved a more satisfying result. "I was given a cup of tea," says Ron, "and that was a privilege granted to few."

Does he have any regrets? Ron considers that the saddest aspect of his life is that his father, who gave him so much inspiration, never lived to see what he achieved. Unfortunately, Alf was caught in the wrong place and was killed by a flying bomb.

Health considerations restrict Ron's outings nowadays, but problems and enquiries by phone and post keep him as enthusiastic and as actively involved as ever. "What's new for this year, then?" I asked. "Could be something happening with a 50cc racer," Ron hints, with the caution that the years have taught him. Whatever the project is – no doubt it will be quick!

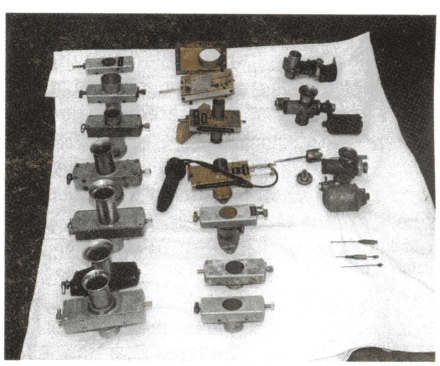


This Kreidler won with Mike Cook aboard in 1980 and Steven Patrickson taking over the saddle in 1982.

Below: Showing Derek Minter the carburettor.

BUSINESS ETHICS

At one IoM TT some riders were using Gardner carburettors for the first time. Ron was in the paddock advising on set up. Engine seizure resulted in a serious accident for one rider. As a safeguard, in case there was some unidentified problem, Ron immediately went around the paddock and bought back carburettors from all the riders he had supplied. Some were reluctant, understandably, but Ron was adamant. Thankfully, the injured rider recovered and when Ron asked, he admitted that, contrary to Ron's instructions, he had leaned the mixture further. The seizure was entirely human error and Ron's reputation remained intact, possibly even enhanced, by his response.



Bottom right is water/fuel injector; bottom left is a 1990s reproduction of a 1950s C-type carburettor.