

History on **wheels**

Twin cylinder machines have, in general, never featured large in the Senior GP class, though some have come close. The AJS Porcupine's brief reign at the top epitomises the point.

Alan Cathcart takes a close look at what could have been.

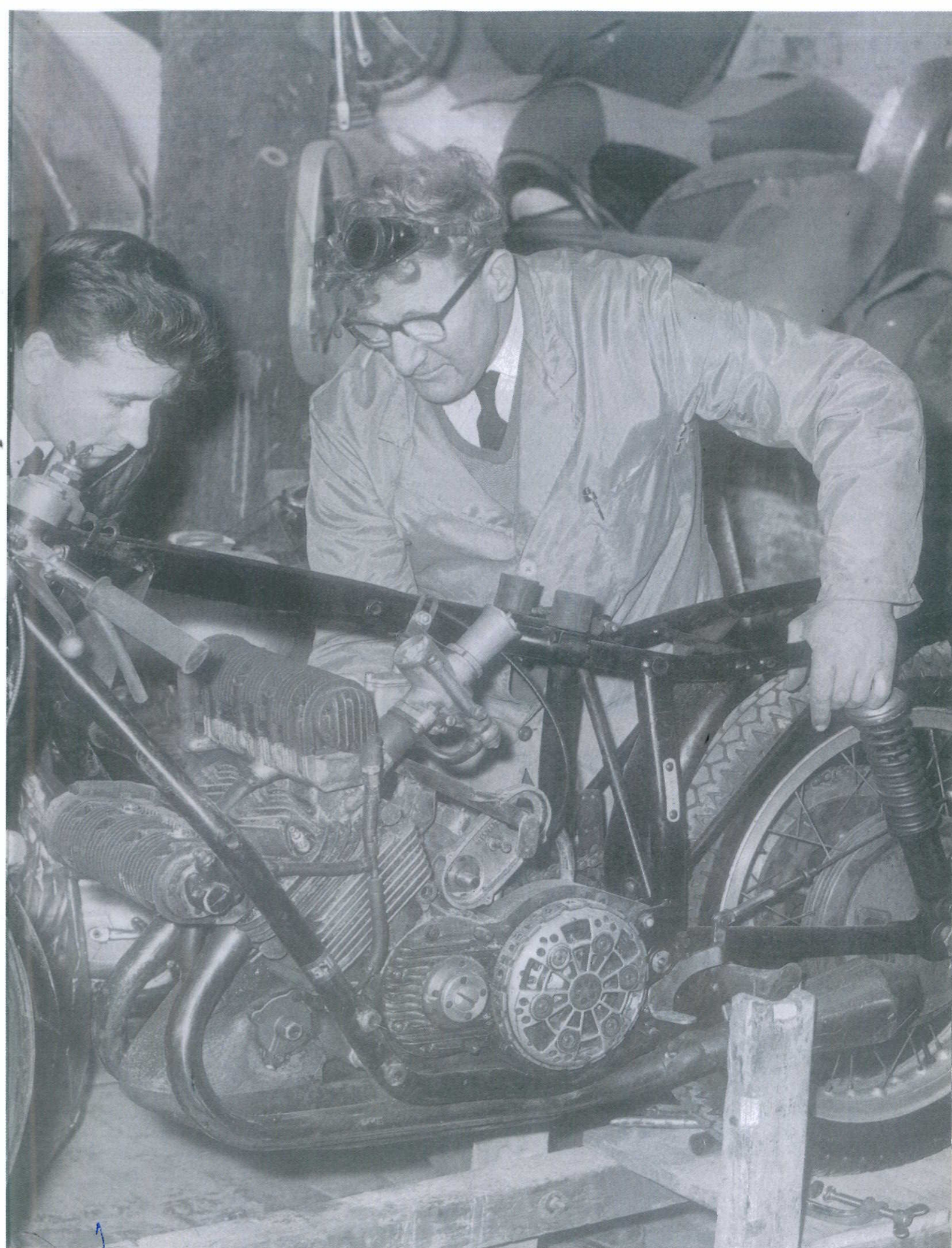
PART ONE – A COMPROMISED CHALLENGE

The 500cc parallel-twin dohc AJS Porcupine is the most exotic and rare of the works racers entered by British factories in the 55 years of World Championship Grand Prix racing and also the most frustrating. Yet it's gone down in history as the first-ever winner of GP's blue riband 500cc World Championship, with Les Graham winning the title in 1949, the year in which the world series kicked off. What's more, it remains the only twin ever to have won that title. The Porc' was both first, and last.

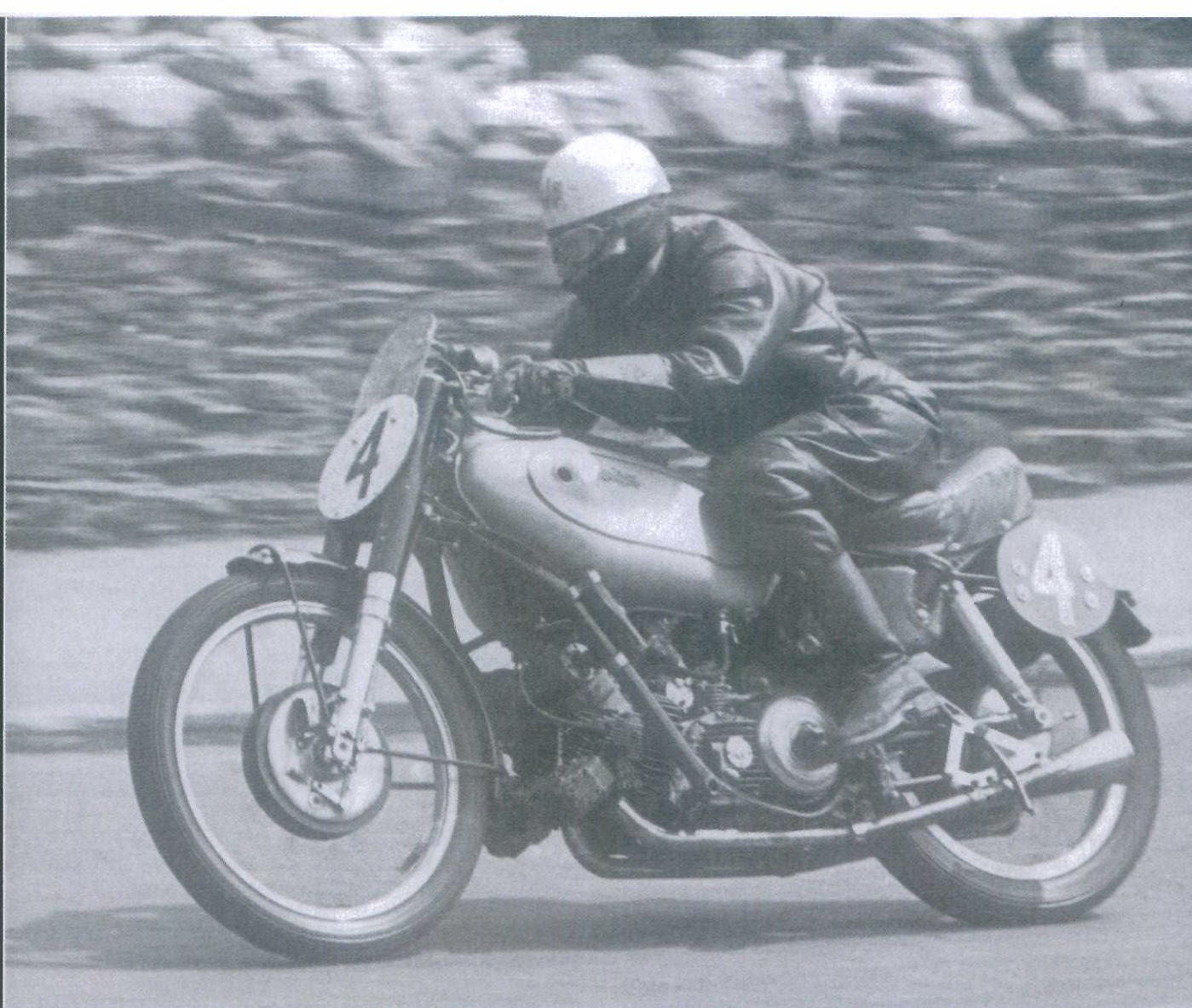
The twin-cylinder motor originated during the latter days of WWII as a supercharged design, under the EgoS factory reference – 'E' for experimental, 'S' for supercharged, and the '90' designation because it was originally to be raced under the Sunbeam badge, recalling the Model 90 works racers of the Twenties. AMC had purchased the run-down Sunbeam company from ICI in 1937, and were set to re-launch the marque post-war on the back of a GP racing campaign – until the rival BSA group made them an offer they couldn't refuse for Sunbeam's bicycle line in 1943, and had the motorcycle marque thrown in too, leading to AMC's future GP racer being re-branded AJS.

The EgoS project was, ironically, the brainchild of former Norton race engineer Joe Craig, who joined AMC briefly in 1939, in the wake of Norton's decision to produce military bikes, at the expense of racing. Craig was planning a post-war replacement for the fast but unreliable supercharged V4 AJS, and originally dallied with an in-line blown triple before, doubtless impressed by the TT-winning performance of BMW's Kompressor twins, settling, in 1942, on a parallel-twin near-horizontal supercharged layout, with 100-degree valve angles and hemispherical combustion chambers, to optimise combustion. This layout would have allowed a gear-driven Roots-type blower to be positioned in a cradle above the gearbox of the unit-construction engine which, like the V4, would also have been water-cooled to combat the higher temperatures of forced induction. The shock 1946 FIM ban on supercharging meant that the Sunbeam EgoS became the AJS Ego, and designer Vic Webb – who had created it in his spare time, with the help of Phil Irving – had to hastily convert the design to an air-cooled, atmospheric induction format. It then had domed pistons and a very different cylinder head with 90-degree valve angles, featuring the distinctive spiked finning which gave rise to the 'Porcupine' nickname.

In this form, the twin delivered just 29bhp when first run on the

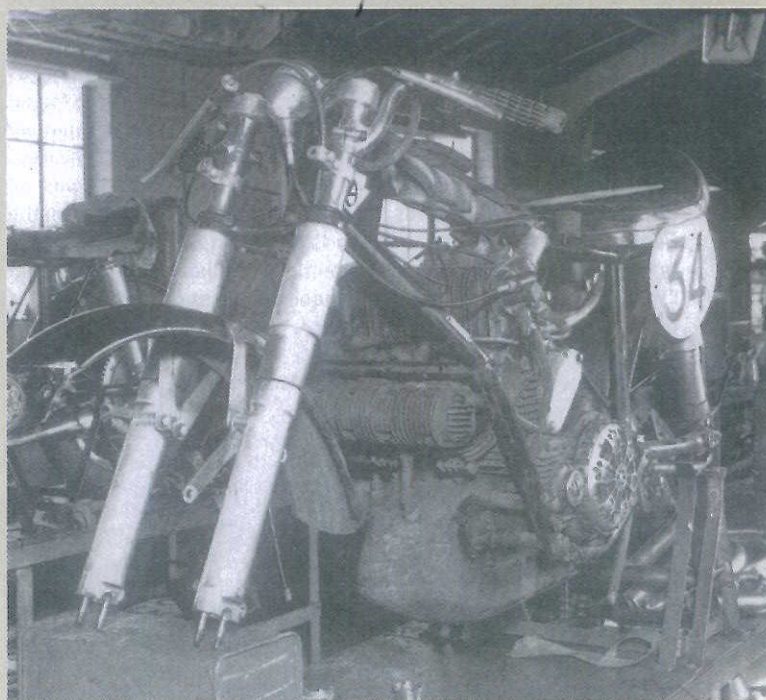


RIGHT: Mike Duff and Bill Jakeman prepare the Porcupine in 1964.



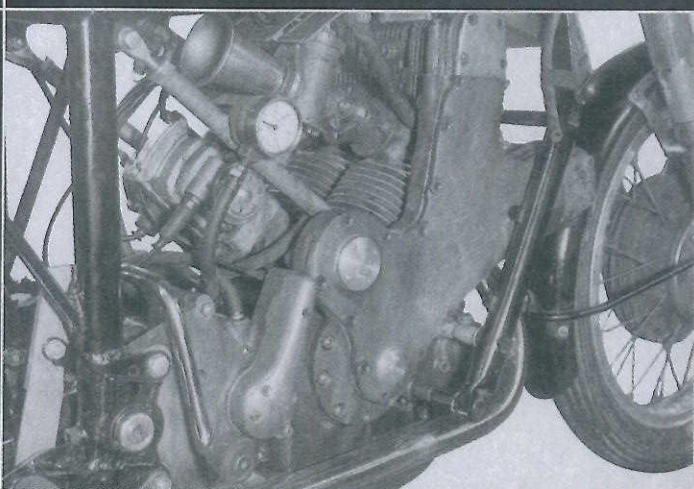
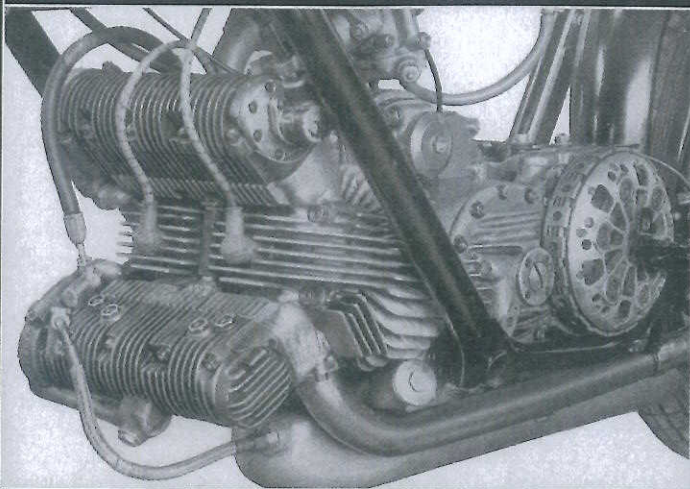
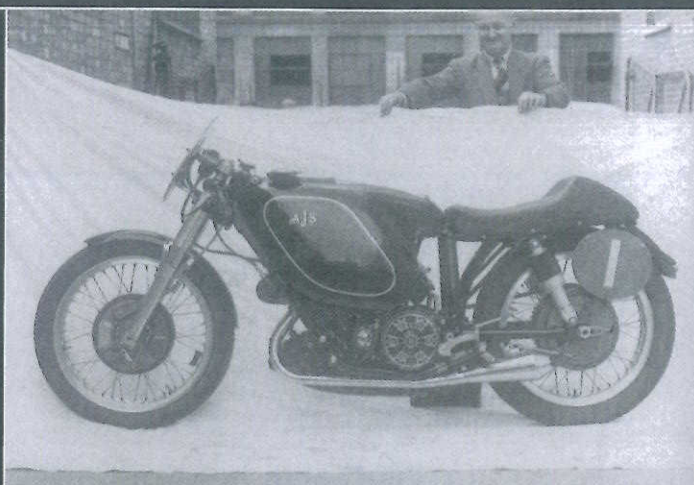
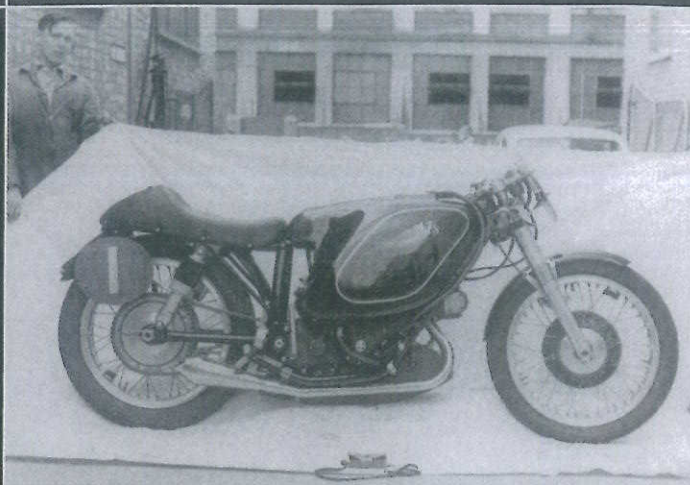
obstinate refusal, for financial reasons, to allow nothing but their own ineffective Teledraulic forks and Jampot shocks. Graham finished a Senior TT at last, but only fourth behind a trio of Nortons led by rising star Geoffrey Duke. He retired in Belgium but Ted Frened averaged 100.39mph to finish third behind a pair of Gileras. Then, like all the other British works teams, AJS and Norton ran into problems with their Dunlop tyres at Assen, which Graham led on his Ego before retiring with a thrown tread, owing to a combination of high speeds and equally high temperatures. Although Graham repeated his Swiss GP victory, this time in Geneva, and finished second to Duke's Norton in the Ulster GP, third was best the defending champion could achieve in the final best-four points table, behind Gilera's new world maestro Umberto Masetti, and Duke. At the end of the season, disillusioned, he switched to the new MV Agusta team, whose Gilera-inspired four seemed to hold more promise than the British twin.

Realising the Porcupines were being outpaced, Matt Wright's development team revamped the twin for the 1951 season, reducing weight and introducing chain magneto drive, thus curing the problem of fractured armature shafts, wet-sump lubrication which removed the need for an oil tank, a shorter wheelbase for the tubular steel duplex frame, 19in wheels replacing the previous 21in, a new fuel tank, and separate cylinder heads with conventional finning – in spite of which the Porcupine tag still stuck. With Irish rider Reg Armstrong joining Bill Doran, the AJS was now more reliable,



TOP: En route to the first World Championship, in 1949, Les Graham winds up the Porcupine at the Senior TT.

ABOVE: Possibly 1953, venue unknown, though may well be a factory building, a Porcupine is prepared amongst other AMC race-ware.



AMC dyno in 1946 – perhaps leading Craig to return to Norton, but by the time of the bike’s debut in the 1947 Senior TT, this had increased to 37bhp at 7600rpm, running on the low 70-octane pool petrol of the time, necessitating a mere 7:1 compression ratio. In fact, the Porcupine’s arrival in the Island was a race against time, with the existence of the bike only revealed to the press in May, just one week before AMC sales manager and works rider Jock West first rode the bike down the A2, before it was packed up for the Island. Given the lack of testing, the performance of the AJS riders, in a race dominated by Craig’s Norton team, was promising, with Les Graham in fourth when he fell off, before remounting and then pushing in with a thrown drive chain, to finish ninth. Jock West suffered from clutch slip from the start but, after adjustments, lapped within three seconds of the fastest lap, en route to 12th. That promise was confirmed by Ted Frennd’s victory in the 100-mile Hutchinson 100 at Dunholme (*just across the fields from my home – Ed*) later that year, and West’s third place in the Ulster GP.

In 1948, development continued with West third, at Assen, then second the following weekend in Belgium, where the Porcupine’s turn of speed showed to good effect on the ultra-fast Spa-Francorchamps circuit. All three AJS riders retired from the Senior TT, but Graham finished third in the Ulster before a works Porcupine sped to a total of 18 world records at Montlhéry, in November, a good omen for the introduction of the first-ever motorcycling World Championships the following year.

This six-race series was crowned with success for the AMC works team, with Les Graham winning the riders’ title, and AJS the manufacturers’ crown. This came after a poor start to the season, when Graham led the Senior for the entire race, before breaking down in sight of the flag, with a broken magneto drive. He pushed in from Hilberry to finish tenth. The Isle of Man was not a happy place for Porcupine riders, who only once (in 1951) in its eight-year career, finished on the rostrum. Graham took the Swiss GP on Berne’s gruelling Bremgarten circuit, to record the twin’s first GP win, a success he repeated in the Ulster. He also finished second to Paganini’s works Gilera, at Assen, before retiring with a split fuel tank at Spa, won by teammate Bill Doran. Even before the end-of-season Italian GP at Monza, in which Doran finished third, with only a rider’s best three results counting in the final points table, Graham had done enough to win the inaugural 500cc title for the British marque.

For 1950 the twins were improved under the direction of project leader Matt Wright, whose influence had been crucial in winning the title. This included a larger fuel tank and a streamlined seat, but the ignition problems, which were a constant problem, were not resolved. Combined with troublesome carburation, eventually traced to fuel starvation, these were the cause of many Porcupine retirements. Even worse, the more assured handling of the new Featherbed Norton frame, coupled with the better top speed of the Gilera fours, meant the AJS was now second-best in both these departments – a situation not helped by AMC management’s

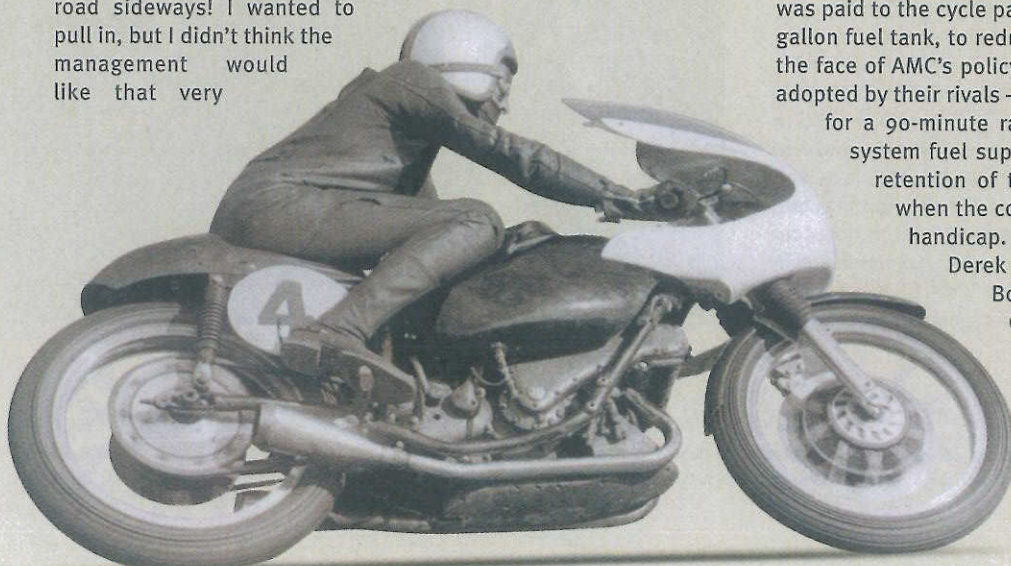
TOP LEFT AND RIGHT: AMC factory shots from 1954 show that the TO machine is dead right.

ABOVE LEFT AND RIGHT: What a difference a year makes. The 1951 engine shows why the bike was christened Porcupine. Compare it to the more upright less radically finned 1952 version.



allowing Doran to claim second place in the Senior TT and again in the French GP, at Albi, with Armstrong second in Switzerland. It was no more competitive though due to ongoing carburation problems, failing to win a single race. Fourth for Doran in the eight-round World Championship points table, with Armstrong sixth, were the best the uprated Porcupine could achieve.

These disappointing results convinced the AMC board to commission a complete redesign of the AJS twin for 1952, with R&D boss Ike Hatch producing a revamped engine with cylinders at 45-degrees from horizontal, while retaining the same essential internal layout, which was then fitted as a semi-stressed member in an open-cradle frame. This new bike, dubbed the E95 – presumably as witty reference to the Model 95 Sunbeam, which replaced the Model 90 – had a dream debut by finishing one-two in the season-opening Swiss GP in Berne, with new teamster Jack Brett winning the race ahead of Doran, and Kiwi Rod Coleman placing fifth. It was all downhill from there onwards, with Doran and Brett retiring from the Senior. Coleman was fourth in the Island, with Bill Lomas fifth in a brief two-race AJS Porcupine career on a bike he hated riding: “When it was banked over, one cylinder would cut out intermittently, then chime in hard again. One place, the second pot came in so viciously, I rode 50 yards up the road sideways! I wanted to pull in, but I didn’t think the management would like that very



much, so I decided to overrev the engine until it blew up. We were told not to rev it above 7000rpm, but I took it to over 8000rpm – and it survived, so I ended up fifth. Bloody thing!” recalls Bill.

Rod Coleman was also fifth at Assen, and again at Spa, while after a disastrous German GP at the Solitudering in which all three twins retired, the promising Kiwi took second place in the Ulster GP, the last ever run on the Clady circuit with its punishing seven-mile straight. He was fortunate though – for Jack Brett had rounded the last turn, less than a mile from the finish, in the lead on his Porcupine, only to have its chain jump the sprocket. Forced to push in to finish fourth, he was also passed in doing so by eventual winner Cromie McCandless, having a one-off ride on a works Gilera four. With Brett’s seventh place the best the team could manage at Monza, AMC opted to withdraw from the final GP, in Barcelona. 1953 was no better, with no AJS rider once finishing on the rostrum in the eight-race series, and fourth and fifth in the Senior for Coleman and Doran was little consolation for a dismal tenth in the points table for the New Zealander, AMC’s highest-placed rider.

In an effort to make the Porcupine competitive again, it was completely revamped for the 1954 season by AMC’s pragmatic, effective, new development engineer, Jack Williams. Since engine performance had topped out at 54bhp at 7800rpm, most attention was paid to the cycle parts. These saw a new lower frame and a 6½ gallon fuel tank, to reduce the frontal area of rider and machine in the face of AMC’s policy not to utilise the streamlining then being adopted by their rivals – even if the result was not very comfortable for a 90-minute race, and required a completely new weir-system fuel supply, incorporating a car-derived pump. The retention of the four-speed Burman gearbox at a time when the competition had five-speeders, was a further handicap. Rod Coleman was joined for the season by Derek Farrant and another rising star, Scotsman Bob McIntyre, but with Duke now riding for Gilera, whose fast bikes now handled

TOP: Handsome is as handsome does. The Porcupine is without doubt a fine looking piece of kit.

LEFT: Oulton Park 1965. Mike Duff airs the Arter Porcupine. For a ten year old machine with a dubious track record, it put up a creditable performance.



properly thanks to his Featherbed-inspired input, the Porcupine was still outpaced and now out handled. A pair of fourth places for McIntyre in Belgium and Coleman at Assen, were the best GP results. The New Zealander got the better of the works Gileras just once, by winning the non-championship Swedish GP, at Hedemora, in what would be the Porcupine's final race in factory guise. His 12th place in the table and AJS's fifth in the manufacturers' points, underlined that the Porcupine's day was done. Rod Coleman's victory in the Junior TT on the 7R3A single with similar pannier-tank architecture, was of little consolation, and at the end of the season the AMC board pulled out of GP racing officially. From then on, it was left to privateers to wave the AMC flag with their customer Matchless G45 pushrod twins and 7R singles. The Porcupine had gone into hibernation.

It did stir from its slumbers once, though. A decade later, established AMC dealer and race tuner Tom Arter obtained a complete E95 racer and parts from the factory, which he fitted with a fairing and gave it to his rider Mike Duff, to race in the Hutchinson 100 at Silverstone in 1964. Duff finished seventh in the rain on the born-again vintage racer, which Arter then took to the Isle of Man for Duff to ride in the Senior. The AJS was clocked at 143mph past the Highlander, pulling the tallest gearing possible to fit – not as fast as his works Yamaha 250cc two-stroke twin, but better than the G50 Matchless single. Sadly, plans to race the AJS twin were aborted when a cracked magnesium crankcase was discovered in pre-race preparation but realising that the Science Museum had a similar bike on loan, Arter arranged to swap the cases. This allowed him to enter Duff for the Belgian GP, at Spa, for which the Canadian qualified on the front row of the grid in fifth place, a superb performance on such a fast circuit and proof of the Porcupine's genuine potential. After winning the 250cc GP on his works Yamaha, Mike held second place at half distance before retiring with a broken sparkplug electrode – a

sad end to a sterling performance on a ten year old bike. A final race that season at Oulton Park saw the twin jumping out of gear, and with Arter now concentrating on his fleet AMC singles, the Porc' returned to its slumbers for another four decades.

The AJS Porcupine's place in history is perhaps best summarised by period racing guru Vic Willoughby, who once wrote: "Notwithstanding spasmodic success for a few years following Les Graham's championship, the Porcupine never really recovered from the attempted transition from the comparatively low-revving, high-boost machine it was originally intended to be, to the high-revver, with much wilder valve timing, that the post-war formula demanded." For just one year, the greater power of a higher-revving twin, compared to a single, coupled with the better handling of a low-slung twin, compared to a four, could have proved the best of both worlds. Sadly it became a compromise that delivered little.

WORDS BY ALAN CATHCART

PHOTOGRAPHS BY MARK WERNHAM, IANNUCCI COLLECTION AND MORTONS ARCHIVE.

NEXT ISSUE – WHAT'LL IT DO MISTER?
T.O PORCUPINE ON THE RUN



TOP: Team Obsolete boss Rob Iannucci poses with his 'Holy Grail of British motorcycles'.
RIGHT: Rod Coleman on the pannier-tanked version