

# The Cadwell engine

John Fingles asks (August) about the 'Intriguing AJS' push rod racer.

This is the late great Les Graham, on what in AMC Circles is known 'The Cadwell engine'. It refers to the indecently fast (Matchless powered) AJS built by AMC's Comp Shop lads (including the late Wally Wyatt) and unveiled by Les at Cadwell during 1948, where he trounced the rival factories' OHC engines and smashed race and lap records. This just should not have been possible, and there were questions asked at Velocette and Norton, on how AMC and Les managed it with what seemed to be an ordinary looking, long stroke, push rod roadster engine, which was never seen or heard of again. (Not so Don, keep an eye on The Classic Motorcycle - Nigel C.) Thus this exciting project became another 'What might have been' within the British motorcycle industry, and arguably one of road racing's greatest losses. Its story, as related to me by Wally Wyatt, was that he and his Comp Shop colleagues built this engine as a mobile test bed to develop an enlarged version of the over the counter AJS 7R. The 7R itself was still new at the time, and so with a proposed 500cc version in mind, and whilst keeping very quiet about what they were doing, they simply experimented with Les's push rod engine, and though it looked standard roadster externally, internally it had the OHC racer's intended dimensions.

Bore and stroke was over square, and even utilised a 7R crank and rod, but with the crank pin ground eccentric so as they could in fact fine tune and alter the stroke dimensions. As your reader spotted, the cylinder head was the only real giveaway for it alone was a one off job, cast up to replicate the port sizes of what as early as 1948 could have been the Matchless G50.

Sadly, however, none of it was to be, for

despite this engines instant success AMC's directors decided to push a racing version of the company's roadster parallel twins, reasoning that a twin cylinder racer would have a greater boost on roadster sales.

History hence now records that Wally and colleagues tweaked the AJS model 20 or Matchless G9 500cc twin instead, and housed it in the 7R cycle components for it to become the undoubtedly beautiful but unsuccessful G45. The near total failure soon proved a major embarrassment, and cost the company a fortune in guarantee claims!

The Cadwell engine experience was not entirely wasted however, for not only did we eventually get the fabulous Matchless G50, albeit many years late, but also a number of other beneficiaries such as successful scramblers, desert racers and ISDT or Enduro machines, based on short stroke Cadwell engine principles.

Most off road 350s and Matchless' famous big bangers like the G80CS or even the 600c (Typhoon) similarly enjoyed 7R type cranks and connecting rods, likewise much the same massive valves and camshaft profiles, all very closely based upon the lessons learned all those years back from Les Graham machine. Not least because they would be running on dope.

Finally, and this might really surprise today's younger readers, even Gordon Jackson who was AJS' most successful trials rider, used an engine based on 7R innards, to contest the British Championship Trials from 1959 until the end of his AJS riding career, what's more, so armed he i won the 1961 Scottish Six Day's with just a single dab, a feat never since equalled, let alone bettered.

Don Morley  
Reigate  
Surrey

