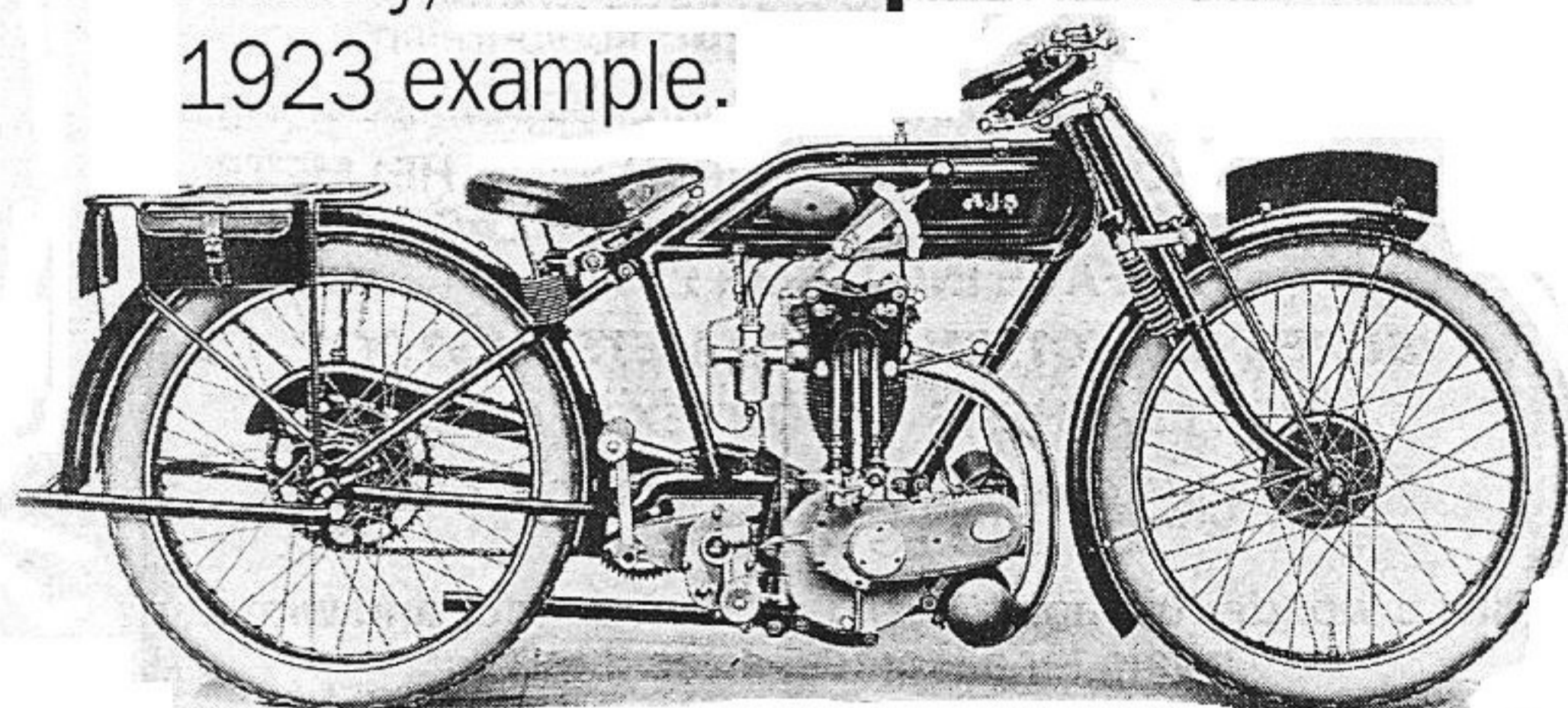


Big port

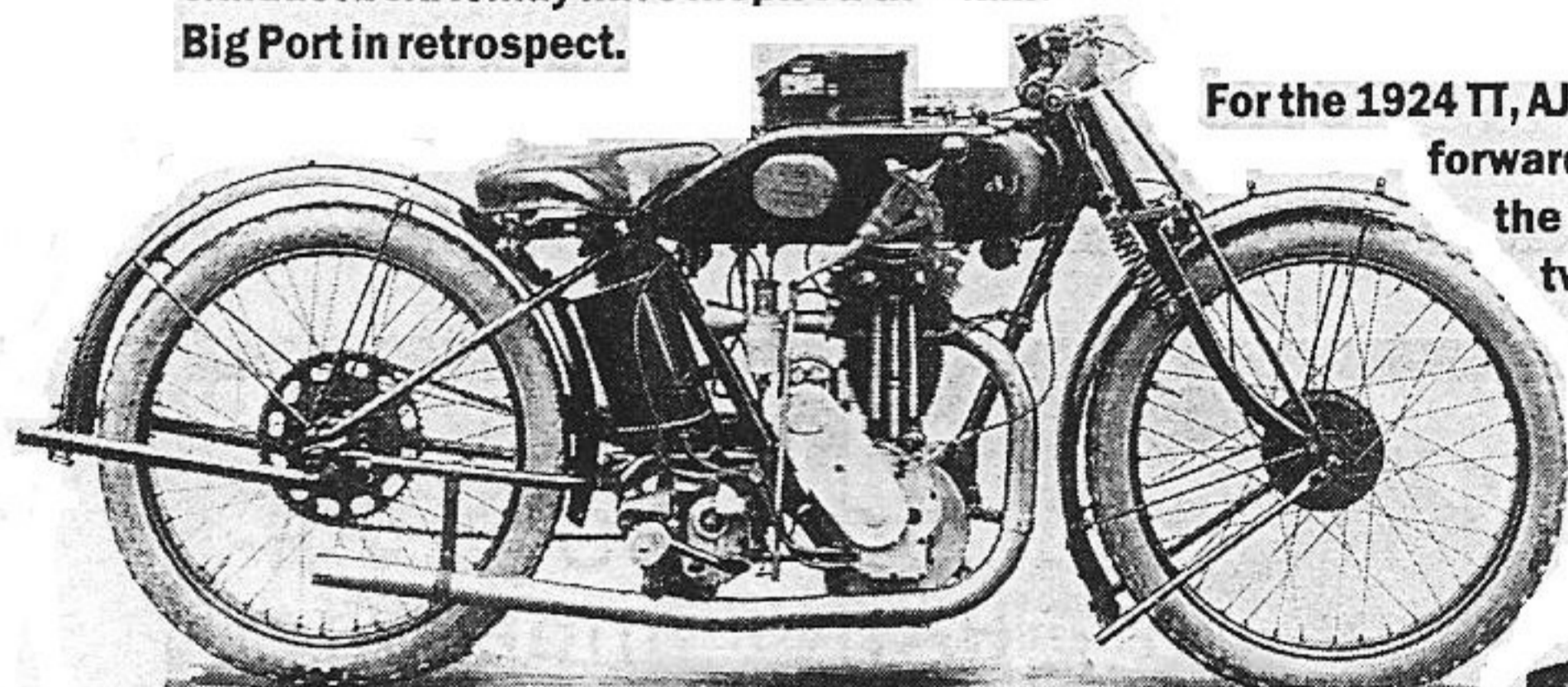
The 350cc overhead-valve AJS gained a larger than life reputation through its TT success.

Brian Woolley tracks down the model's history, while **Phillip Tooth** tests a 1923 example.

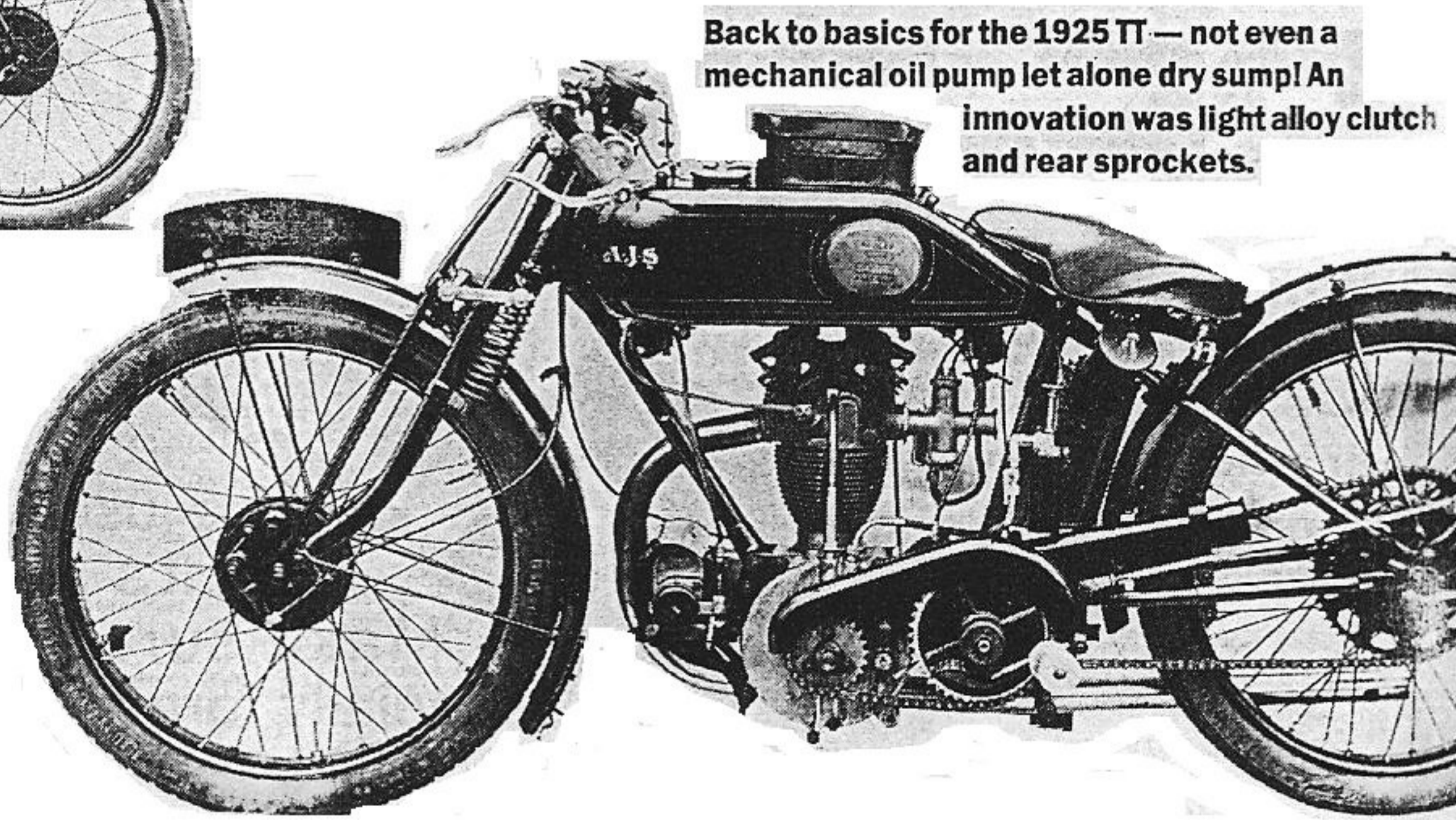
G W Baker with one of the 1920 racing machines, stripped for action at the banked cycle track at New Brighton on May 16th 1921. he broke the standing start mile record, the three mile and five mile records.



The 1925 ohv AJS had a distinctly smaller exhaust port and transverse exhaust box. It may have inspired the name Big Port in retrospect.



For the 1924 TT, AJS moved the engine further forward, shortened the wheel base, moved the magneto to the rear, and used a complicated two pump dry sump lubrication system. Very fast — Jimmy Simpson lapped at close to 65 mph — but not successful.



Back to basics for the 1925 TT — not even a mechanical oil pump let alone dry sump! An innovation was light alloy clutch and rear sprockets.

Few new motor cycles can have stirred as many pulses as did the 349cc ohv AJS that first appeared at the 1922 Motor Cycle Show at Olympia.

Since 1920, AJS had overwhelmed the 350cc class. AJS riders won the 1920, 1921 and 1922 Junior TTs. For good measure, HR Davies had won the 1921 *Senior* TT using the same engine with which two days before he had finished second in the Junior race. AJS had broken records at Brooklands and elsewhere, and works riders had made fastest time of the day at innumerable local speed events the length and breadth of the country. Yet all this while the factory offered no ohv models for the clubman. Now, at last, that was changed. "Overhead-valve AJS available," trumpeted *The Motor Cycle* for 2 November 1922. "New 349cc model based on a famous TT winning type."

Below a picture of a rakish flat tanker was the caption: "A new AJS model which is practically a replica of

the famous TT machine." Absolutely true. The new sports model was to all intents and purposes a 1921 TT racer with the internal expanding front brake introduced for 1922, fitted with number plates and a silencer. No attempt was made to detune it for the road. Valves were not reduced in size or the timings softened. Gear ratios were not widened.

An early road test by *Motor Cycling* published on 5 December 1923 reflects the bike's exciting specification. "When the throttle is opened," said the tester, "the speed becomes in turn

exhilarating, intoxicating, even a little terrifying." The engine "only reached its smoothest running at over 40mph in top gear," but on the other hand, "the ease with which the close ratio gears may be slipped into second on corners enables the rider to keep the engine always revving at about the correct speed."

The handling, the steering under all conditions and at all speeds, and the brakes — especially the front brake — receive extravagant praise. After such obviously sincere and uncritical enthusiasm it comes as a mild shock to

Big port

the subsequent Big Port road going model, altered only in a very few details. The dimensions were 74 x 81mm, 349cc, with a built up steel flywheel assembly running in long phosphor bronze main bearings. Oil was fed into the drive side main bearing by a hand operated pump, and theoretically at any rate, reached the big end by a channel machined in the flywheel face, conveyed by centrifugal force. Thereafter splash, assisted by crankcase pressure took over.

A light steel piston was machined from solid and carried two thin rings. The compression ratio was 5.5:1. A nickel-chrome alloy steel connecting rod was forged and machined to a light H section, and carried a phosphor bronze bush for the gudgeon pin, while two rows of uncaged $\frac{5}{16}$ in rollers made up the big end. The iron cylinder with 1in deep fins was machined all over and like the cylinder head, was copper plated and chemically blackened for heat dispersion.

Both trumpet shaped valves were of nickel steel, with heads each $1\frac{5}{8}$ in diameter. They were at 90 degrees to one another in the hemispherical combustion chamber, and were controlled by single conical valve springs. Forged steel rockers were returned by tiny laminated springs carried on the steel plates that supported the rocker gear. Pushrods were alloy tubes. Maximum

valve lift was $\frac{7}{16}$ in and the timings were inlet opens 15 degrees early, closes 50 degrees late; exhaust opens 50 degrees early, closes 25 degrees late. Thus there were 40 degrees of overlap, generous at the time.

A curious constructional feature was the retention of cylinder and head not by bolts or studs, but by a steel strap, enlarged and pierced for the sparking plug, that passed over the head, and was pulled down on either side by left and right hand threaded turnbuckles.

Power output was quoted as 10hp, though no engine speed was given. It is easy enough to deduce that this was between 5500 and 6000 rpm, and that on the very tall Isle of Man gearing, the bike's maximum speed would have been about 70 mph. With a weight of less than 220lb and four gears, acceleration was remarkable and the AJS team were the sensation of practice. But AJS very nearly went home, not victorious but with their tail between their legs!

Six riders were entered, but Ossie Wade and Tom Sheard fell out on the first lap. For the first two laps Eric Williams, H R Davies and N F Harris lay first, second and third, but on lap three all broke down. Only Cyril Wil-

liams, who had lain sixth, then fifth, was left, and he now moved up to the lead. Then on the last lap his primary transmission broke. Fortunately, he was at Creg-ny-baa and was able to push in and still finish first, nine minutes ahead of the second man.

But a win is a win, and the 350cc AJS was the first ohv machine to win a TT. 1921 saw a sturdier looking machine, lower, and with a flat petrol tank, instead of the slab sided saddle tank of 1920. The gearbox was now a simple three speed countershaft affair with a single plate clutch. Overall weight was down to a remarkable 188lb.

The engine differed only in a few details from that of 1920. There was



PHOTOGRAPHY: JOHN OVERTON

First registered in May 1923 to Herbert Shaw of Knowl Hill, near Reading, this Big Port AJS is probably the oldest surviving example. Both frame and engine numbers are 18173, matching as they should do, but the gearbox is a later one.

now a tension spring hooked to both rockers as a return spring, and sturdier rocker supporting plates. The steel piston now carried four rings instead of two. Just before leaving for the Isle of Man, H R Davies 'ran in' one of the TT bikes at Brooklands, successfully raising the 350cc hour record to a fraction over 66 mph.

For 1921 AJS found the reliability that they had lacked the year before.

Eric Williams won the Junior TT at 52 mph, and H R Davies, who finished second, made fastest lap at a remarkable 55.15 mph. All six entries finished, filling the first four, and sixth and eighth places. Even so, a worrying

challenge had been that of Jim Whalley on a Massey-Arran with the new ohv Blackburne engine. At one stage he had led, and only a crash on the last lap relegated him to fifth place.

Two days later, with his Junior engine bolted into a new frame, H R Davies scored his unique Senior TT win. Lying second for most of the race, he took the lead on lap four and kept it to the end to win at 54.50 mph, a new record for the race.

For 1922, there was little change in the appearance of the AJS racers but there were now internal expanding brakes front and rear. At first these were coupled, with a compensating device that ensured that the rear brake did more work than the front, though this feature was abandoned during practice. The engine had its cams running in ball bearings, but more obviously the finning on the cylinder head was revised, the sparking plug re-positioned, and the strap over the cylinder head simplified. For the first time the valves were of different sizes. The inlet valve was $1\frac{11}{16}$ in diameter, the exhaust the larger at $1\frac{3}{4}$ in. The exhaust pipe was indeed big, with an outside diameter of $2\frac{1}{4}$ in.

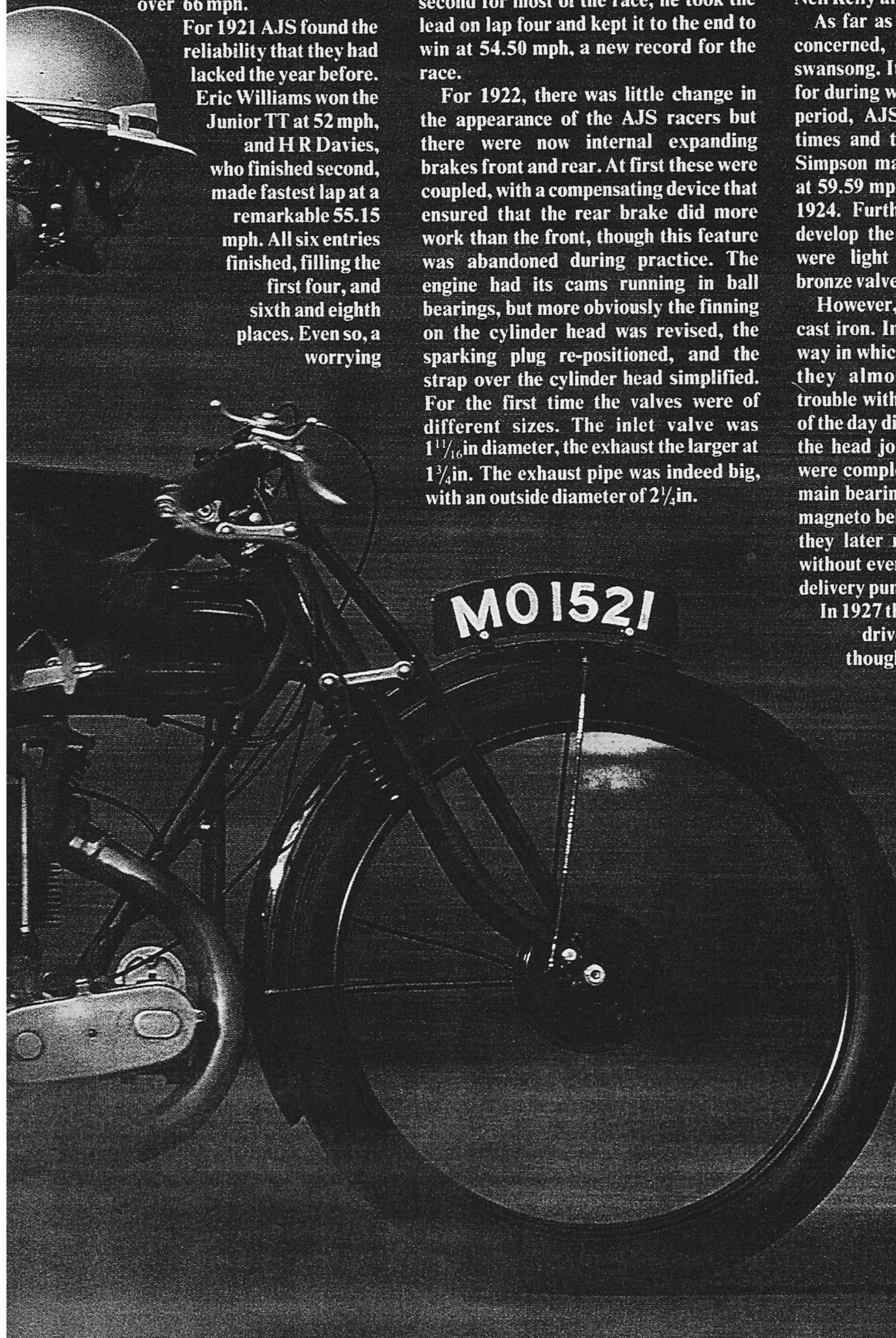
Once again the AJS team were challenged in the Junior TT, this time by Bert Le Vack's overhead-cam New Imperial JAP. Le Vack led for three laps, before retiring and allowing Tom Sheard to take the lead. Sheard won, at 54.75 mph and George Grinton was second. H R Davies, Frank Longman, N F Harris and Neil Kelly all retired.

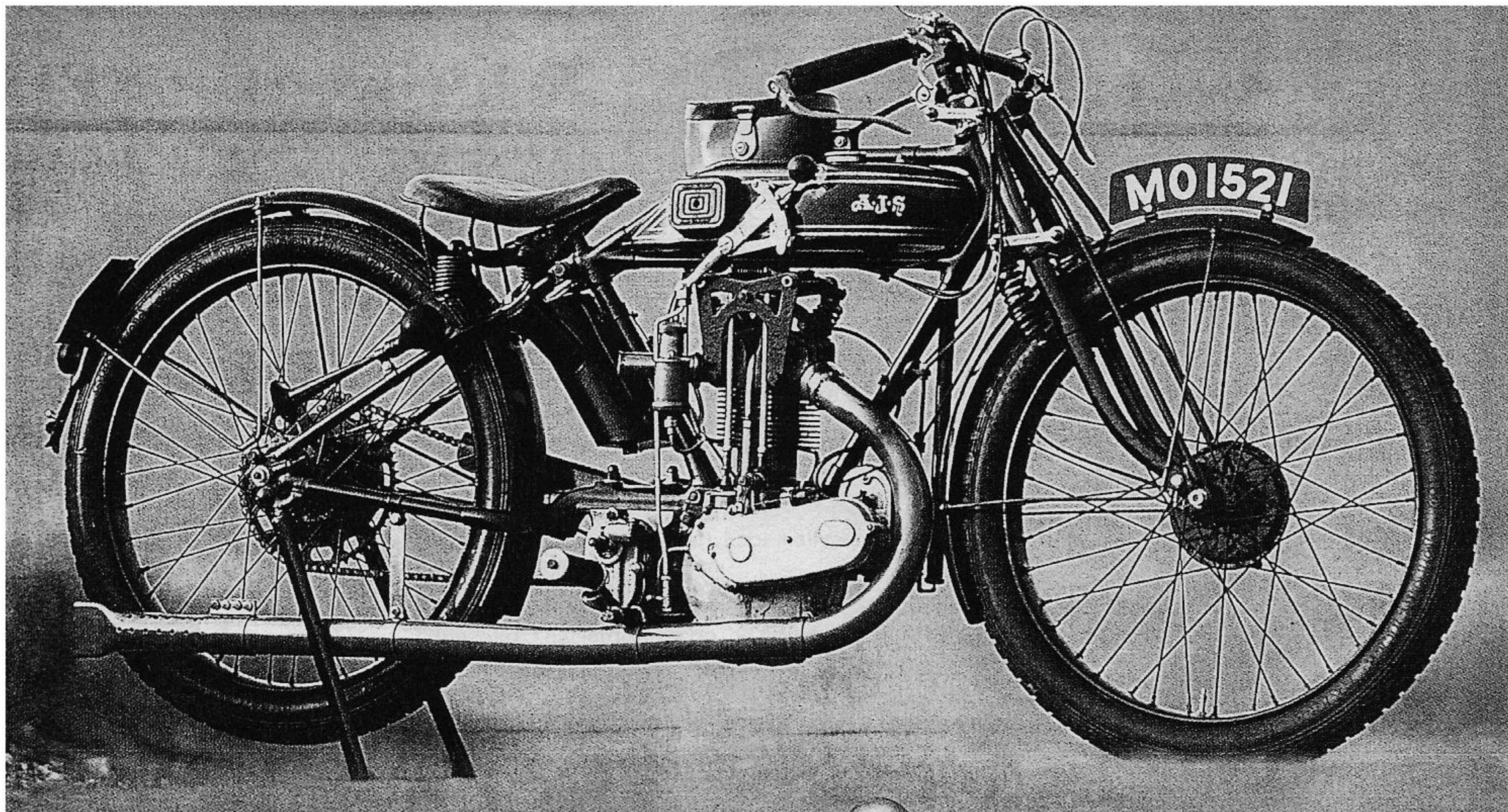
As far as winning the Junior TT was concerned, the 1922 race was AJS's swansong. It was not for want of trying, for during what remained of the vintage period, AJS riders were second three times and third another three. Jimmy Simpson made two notable fastest laps at 59.59 mph in 1923, and 64.54 mph in 1924. Furthermore, AJS continued to develop the engines — for 1923 there were light alloy heads with cast-in bronze valve seats. Surely a first?

However, for 1924 AJS reverted to cast iron. In view of the unconventional way in which the heads were held down, they almost certainly experienced trouble with the poor quality light alloy of the day distorting and causing leaks at the head joint. The 1924 TT machines were completely redesigned, with roller main bearings, dry sump oiling, and the magneto behind the cylinder. Curiously, they later reverted to total loss oiling without even the benefit of a mechanical delivery pump.

In 1927 the first racing AJS with chain driven ohc engine appeared, and though they returned to pushrod engines for 1928, the ohc racers reappeared in 1929 and formed AJS's mainstay thereafter.

Before leaving racing, it must be mentioned that through the lifetime of the road going Big Port, AJS would supply special parts, or indeed com- ▶





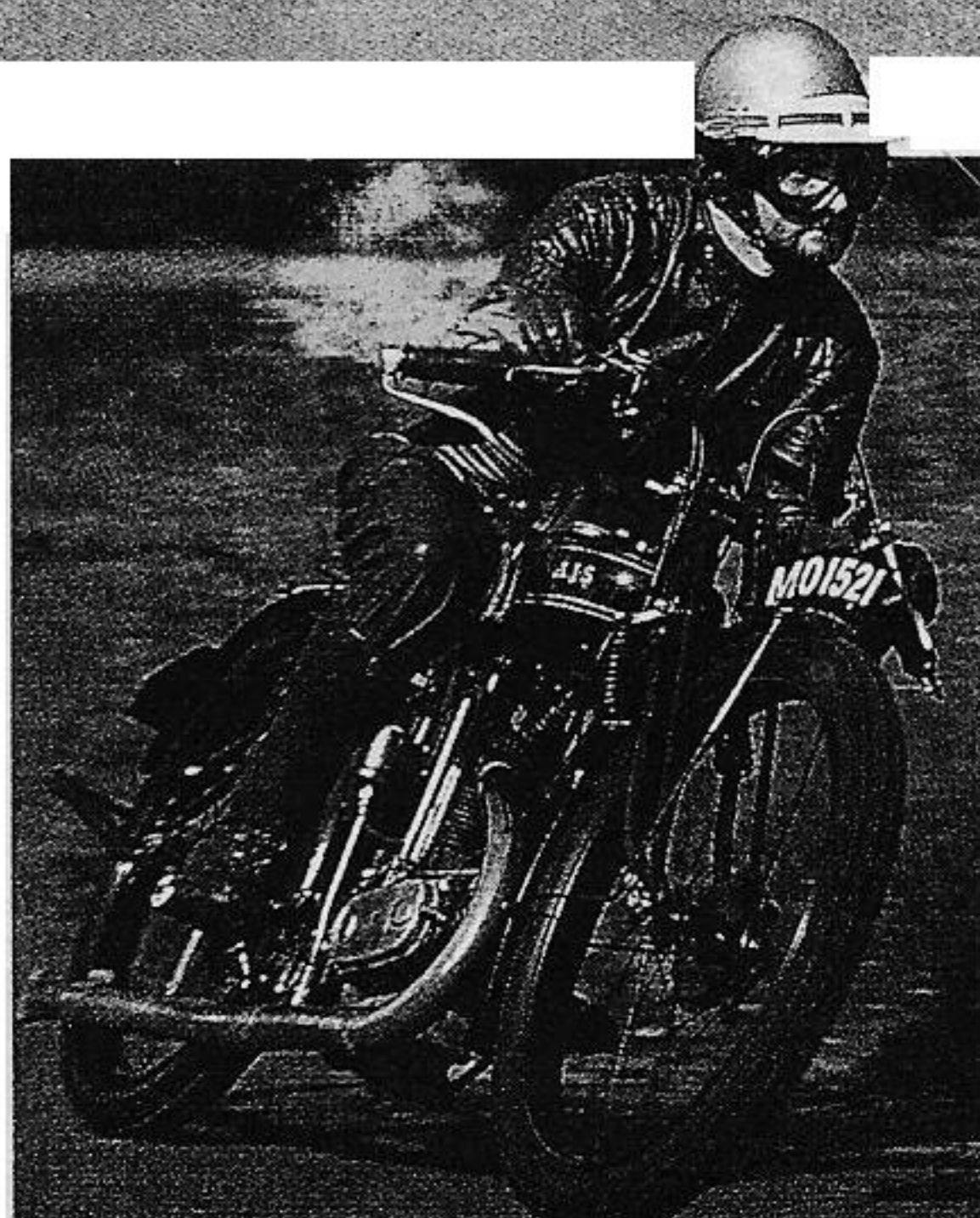
Big port

plete tuned machines to riders who showed themselves able to make serious use of them. These were not special racing models, and apart from careful selective assembly, a bit of port-polishing and perhaps slightly higher compression ratios, it is hard to say how they differed from standard.

However, for 1927 AJS did sell a special racing model, though it was not advertised and did not appear in any catalogue. This was the H7, which had its crankshaft running in roller main bearings and its cams in ball races. It used total loss oiling with a hand pump, and was supplied with standard piston for petrol. A higher compression version was available for use with 50/50 petrol benzol in sprints, or Discol PMS2 (alcohol based) fuel for long events.

Few of these H7s could have been made, and of course they were very soon to be eclipsed by the ohc model. When the original Big Port road model was announced in late 1922, the racing reputation of AJS was at its peak. It would be reasonable to assume that the price would have been prohibitive, but at £87 it was just £2 more than the B2 side-valve model. This fell within a couple of years to £60, then to £54 and in what many people regard as its last year, 1928, to £50. Thus the Big Port was always good value for money.

Not that the 349cc ohv model was ever catalogued as the Big Port. The original model of 1923-24 was the B3,

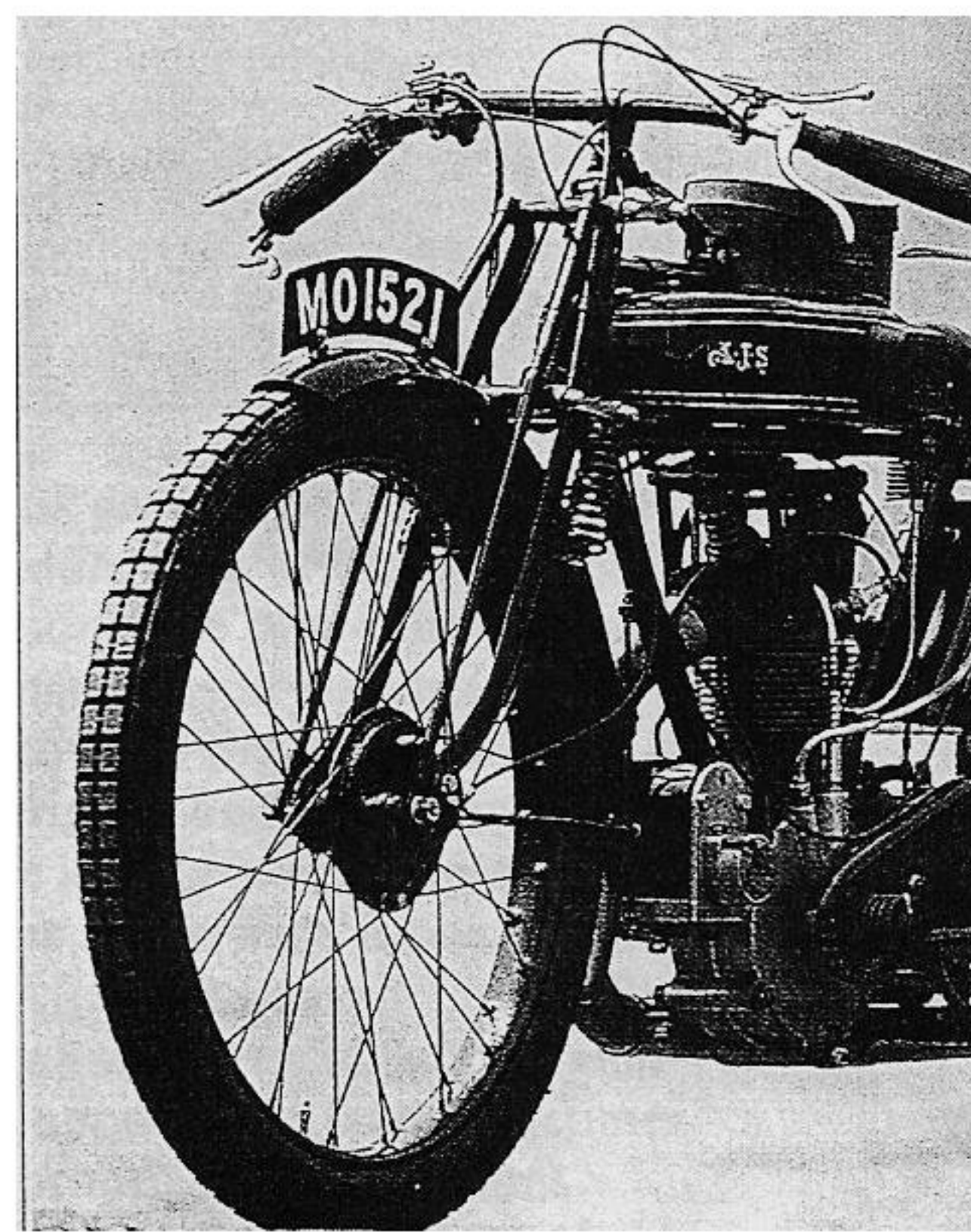


and in successive years the letter changed to E for 1925, then to G, H, K, M and R for each year to 1930.

Throughout its life, the Big Port AJS altered very little either in looks, substance or performance. To the end it retained the simple open frame made of lightweight alloy steel tube, and the side spring Druid forks. The petrol tank contours varied subtly over the years but remained essentially the same. Brakes and tyre sizes were virtually unchanged, and only such details as mudguards, carriers, handlebars, footrests, and saddles altered from time to time. The gearbox, with its single plate clutch and, from 1924 on, its exposed quadrant kickstart (the 1922-1923 Big Port had no kickstart as standard) stayed the same for the life of the model. Wired-on tyres were introduced for 1927.

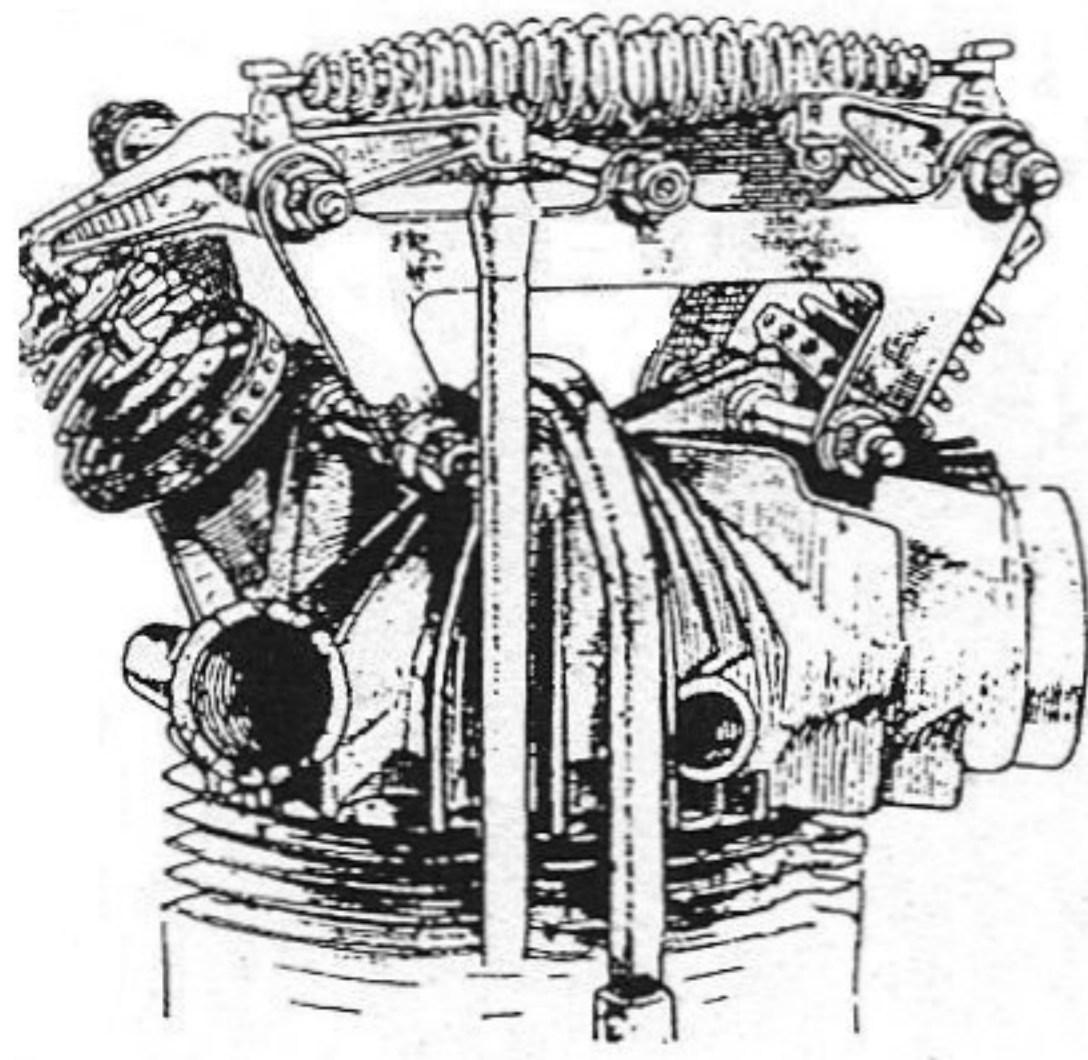
Nor were there any radical changes to the engine between 1922 and 1927. The original 74 x 81mm dimensions were constant. So were the trumpet

A self-closing petrol tap caused the mixture to run weak, bringing a tinge of blue to the exhaust pipe. Lapping in the tap cured the problem.

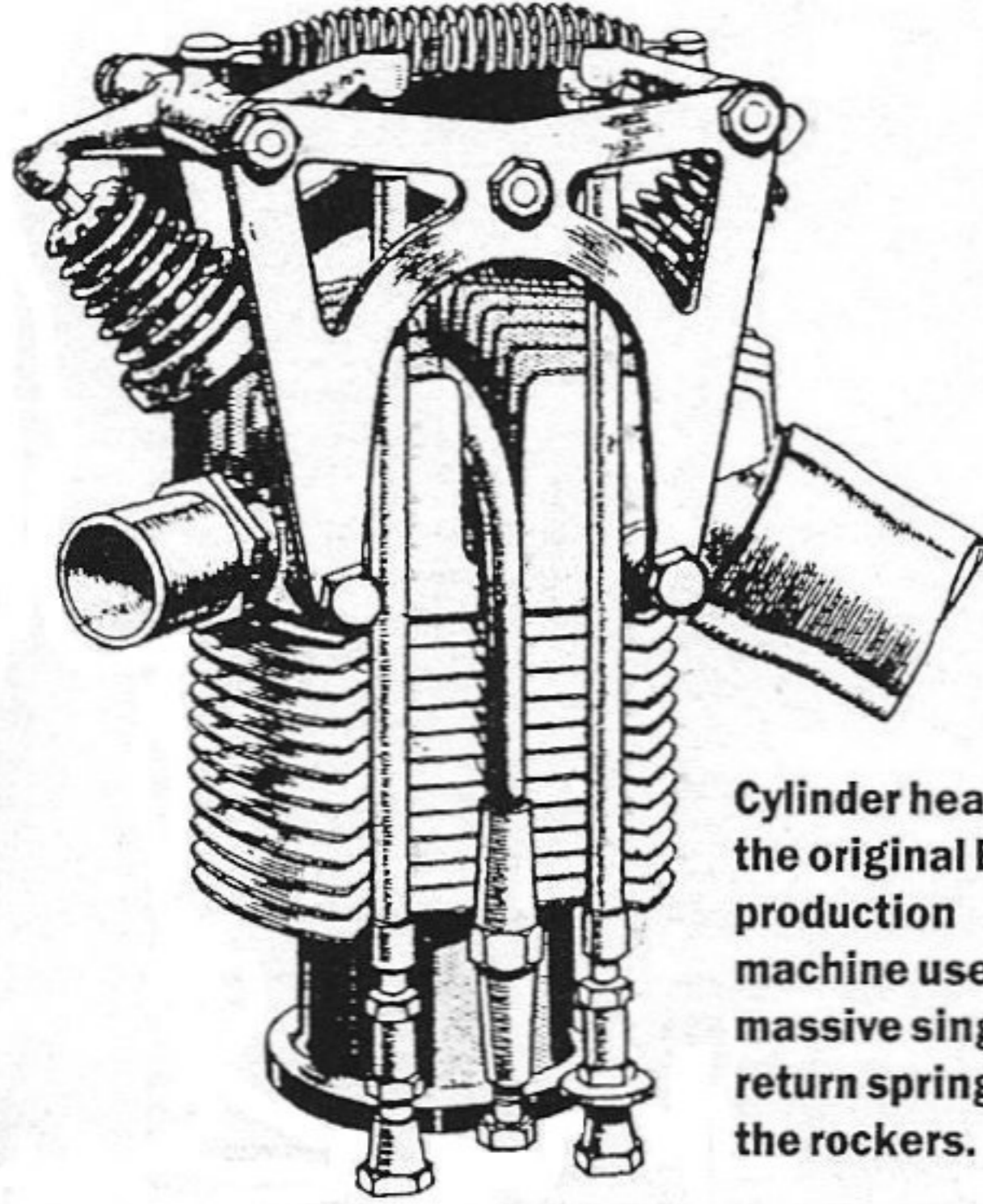


shaped valves which in passing were an example of something that may have looked right, but actually restricted the breathing quite badly. The conical single valve springs originally used gave way to double parallel coil springs in 1925, and in the same year the lubrication system was slightly improved internally, and a Pilgrim mechanical oil pump appeared as an extra.

More noticeable was the introduction for that year of a smaller exhaust pipe, and a transverse sheet steel exhaust box with a long tail pipe. This rather clumsy looking system lasted only the one season. For 1926, the one piece strap which held the head and

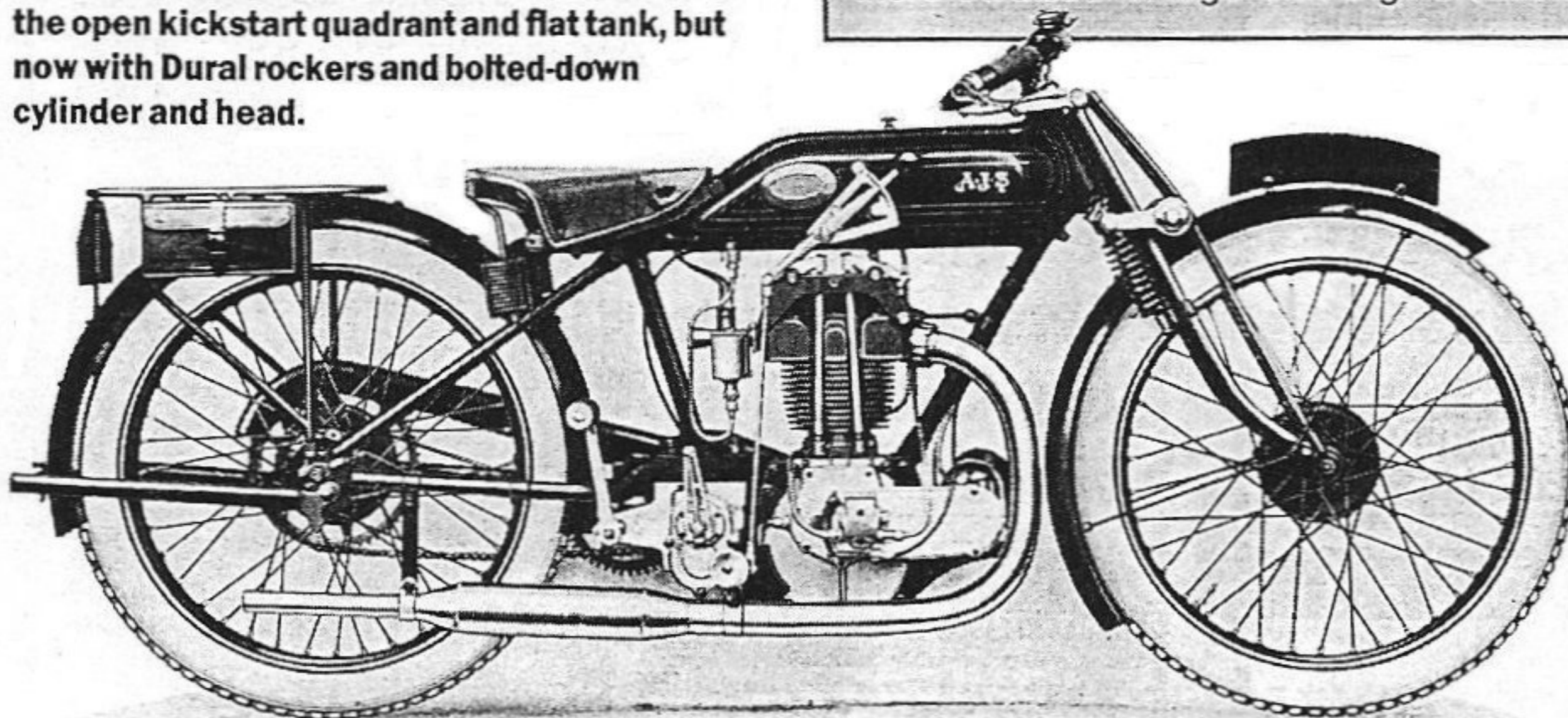


For the 1922 TT, AJS introduced radial fins and two alternative spark plug positions. The exhaust valve was larger than the inlet.



Cylinder head of the original B3 production machine used a massive single return spring for the rockers.

The last real Big Port? The 1928 K6, still with the open kickstart quadrant and flat tank, but now with Dural rockers and bolted-down cylinder and head.



cylinder to the crankcase was replaced by a stout steel bridge, held down by long bolts and turnbuckles. Duralumin rockers were used this year for the first time.

Several experienced Big Port owners to whom I spoke, agreed that the model peaked in 1927. In standard form it still weighed well under 220lb, was utterly reliable, and the engine had benefitted from the factory's experience and development. Top speed was, all agreed, in the region of 70 mph. Strangely, neither *The Motor Cycle* nor *Motor Cycling* road tested the Big Port (as such) between 1924 and 1928. In that latter year, a noticeable alteration was the adoption of a bolted down

Playing at TT racers

IT WAS AN OFFER I couldn't refuse: "Would you like to borrow my Big Port Ajay for a couple of months?" Richard Bossons bought his 1923 ohv AJS five years ago, just at the time he started his own business. He had the wheels rebuilt, replacement fork spindles made, and a new second gear machined for the three speed box. But then work started to take off, and the Big Port — probably the oldest surviving model — had to be relegated to the back of the garage.

"I like to see motor cycles being used," said Richard. "Enjoy yourself!"

A man after my own heart. Especially when I'm on the receiving end.

Spending half an hour in the garage adjusting the controls pays dividends on the road. That large lever on the right handlebar operates the oil pump, not the brake. When I need to stop quickly, I want to feel the front forks dive, not see a puff of smoke from the tail pipe. Raising the oil pump lever and lowering the inverted brake lever removed any chance of grabbing the wrong one in an emergency. And I don't like any slack in my Bowden controls. I like the engine to pick up as soon as I tweak the throttle, and the exhaust to come off its seat without pulling the valve lifter to the handlebar.

The only thing that's big about the Big Port is the exhaust pipe. It is a true lightweight. Stick the front wheel, then the back on the bathroom scales, and you'll find the little Ajay weighs just 210lb, even with a full oil tank and a gallon of petrol.

Not having a heavy load to pull certainly has benefits in the acceleration stakes, but there is a disadvantage. This Big Port has a

high compression piston. Snick it into second, pull it back on compression, run a few paces and let in the clutch as you drop onto the saddle, and three times out of four you'll be rewarded by a screech from the slim back tyre. I found it easier to start using the valve lifter, although it took much finer control of throttle and spark for a clean getaway. Not surprisingly, the Big Port came with a kick start for 1924.

Druid forks are not as responsive as the BSA unit fitted to my own 1924 ohv 350, but thanks to a short wheelbase, the Big Port can be flicked from side to side with ease. This is a motor cycle for the byways, and with a close ratio gearbox and a pair of light flywheels, you can change down to drive through a bend where a touring model would plonk and lose pace. Cruising at an easy 60 mph is a reality.

But the real surprise comes when you ease up, sit back and potter. The engine is delightfully smooth, responding well to the ignition advance lever. Only the oiling system is primitive: give it a dollop every five miles, with a bit more in hilly country or when you are going to indulge in a little scratching. At least you don't have to take your hand off the bar and grope for the plunger.

It's no good going fast if you can't stop safely. Those brakes really are superb; a five inch unit at the front, and a six inch drum at the rear pin the Ajay down in a remarkably short distance, rain or shine. They are years ahead of the dummy belt rims on my BSA. If you want to get down to it and play at being HR Davies, this is the tool for the job. I'd find room for it in my garage any day. ■

ing flat tank gave way — late in the day — to a saddle tank with red panels. It was a motor cycle of a quite different spirit to that of seven years before.

To discover a Big Port AJS that is entirely original and authentic is rare. Parts were largely interchangeable and many later items were fitted to early models. After the last war, many Big Ports were used for racing and scrambling with appropriate (and sometimes very inappropriate) modifications.

The Big Port AJS was one of the most likeable, even lovable of vintage motor cycles. I have never, by the way, heard the model described as temperamental. Let that enthusiastic tester of 1923 have the last word: "In short, the ohv AJS is an ideal machine for the speedman who is willing to spend a reasonable amount of time in keeping the various parts well lubricated and adjusted, but it is essentially a thoroughbred and must not be expected to do the work of a cart horse. It is, in fact, a mettlesome steed that will appeal chiefly to the enthusiastic class of rider, who considers that the little extra attention required in the garage is well repaid by the results obtained."

cylinder, to which the head was secured by four bolts. A new cylinder head casting with differently shaped plates to support the rocker gear was introduced.

The end came with the introduction of a new design for 1929, which reflected the spirit of the time. Without doubt, the Big Port had begun to look old fashioned and of course, in the nicest possible way, so it was.

Priced at £54, the 1929 version had dry sump lubrication, roller main bearings, enclosed push rods and valve gear and a fashionable twin port head — though a single port engine was available. The Druid forks were replaced by Webbs, and the long serv-