STORY OF THE CAMMY AJAYS: PART 2

"THE BOY RACER"

. . . or, for those few unfamiliar with the terminology: the 348 c.c. overhead-camshaft AJS, as built from 1948 to 1963

IN the first part of this article on the camshaft A.J.S.s I described all the pre-war machines, including the special 1,000 c.c. vee-twin record-attempt machine and the factory four-cylinder racers, but in this second part I intend to deal only with the three-fifty racer, the 7R. Designed in the early post-war years by Philip Walker, unlike the contemporary Manx Norton, it bore no resemblance whatsoever to its predecessors except for the chain drive to the overhead camshaft. It was intended from the beginning to be a machine for the private owner. The design was straightforward so that maintenance and tuning were well within the capabilities of the average rider—hence the nickname, Boy Racer, coined I believe by Jock West, who as sales manager of A.M.C. at the time and a racing man himself had much to do with the 7R, especially in its early years.

The 7R was announced in February 1948 and the first production machines left the factory towards the end of March. They were in regular production, although always in limited quantity, for 15 years.

Of course, A.J.S. had already built and used a special racing five-hundred—the famous Porcupine parallel twin—a year earlier and some of the cycle parts of the Junior bike bore a resemblance to that machine. The brakes —both $8\frac{1}{4}$in diameter, twin-leading-shoe, with conical hubs and brake plates of magnesium alloy—were almost identical to those fitted on the twin, and the all-welded frame with oval tubes, massive single top tube, and the pivoted-fork rear suspension bore a distinct resemblance to the Porcupine layout, as did the Teledraulic front fork. The engine had a bore and stroke of 74mm × 81mm, giving a displacement of 348 c.c. Full use was made of modern light alloys—magnesium alloy being the material for the heavily webbed crankcase, cambox and timing cover. To protect these from the corrosion from which Electron suffers, they were covered with a distinctive special gold paint. The flywheels were in 35 ton steel, narrow and compact, and the mainshafts ran on a single large-diameter ball race on the timing side and, on the drive side, a double roller bearing with single duralumin cage next to the flywheel, and then a single roller caged bearing outside that. The big-end consisted of duralumin-caged single rollers ($\frac{5}{8} \times \frac{1}{4}$in) running on an oil-hardened crankpin to which was fitted a case-hardened alloy-steel sleeve. Between the sleeve and the flywheel faces were two plain steel washers. The H section con-rod of 70 ton heat-treated steel was fitted with a phosphor-bronze small-end bush and a case-hardened steel ring for the big-end. Circumferential ribs ran round the big- and small-end eyes.

A Specialoid piston was fitted, full skirted and carrying two compression and one slotted scraper rings. The original compression ratio (standard) was 8.45 to 1 but it must be remembered that in those days the only petrol available was 72 octane. The large finned aluminium-alloy cylinder barrel, with its shrunk-in austenetic-iron sleeve, was very deeply spigoted and fitted well down into the crankcase mouth, being clamped by the two top crankcase bolts. These bolts had to be done up last when re-fitting the barrel, and it was omitting to do this that probably caused me to come off in the 1954 Senior T.T., as described in "Twenty Years of Racing" in the April issue. The crankcase carried long cylinder-holding-down studs which passed right through the barrel and head.

Perhaps the most interesting part of the whole engine was the cylinder head and cambox, employing many ingenious methods of construction and adjustment. The aluminium-alloy cylinder head had ample finning, especially around the exhaust port. Underneath the cambox, between the valves, the finning ran at 45 degrees so that air flowed from the drive side front to the timing side rear through a gap in the camshaft chain cover. Shrunk-in valve seats (ali-bronze for the inlet and iron for exhaust) were employed and phosphor-bronze valve guides. Inlet valve diameter was $1\frac{9}{16}$in inlet and $1\frac{3}{8}$in exhaust, both valves being made of KE 965 steel and Stellite tipped. The double hairpin valve springs were overlapped and fitted into recesses in the head, into which the spring seating blocks were positively located to prevent turning. The exhaust port came out forward but the inlet, of $1\frac{3}{8}$in diameter, was offset, down-draught and had a fibre distance piece between the port and the $1\frac{1}{8}$in 10TT Amal carburettor.

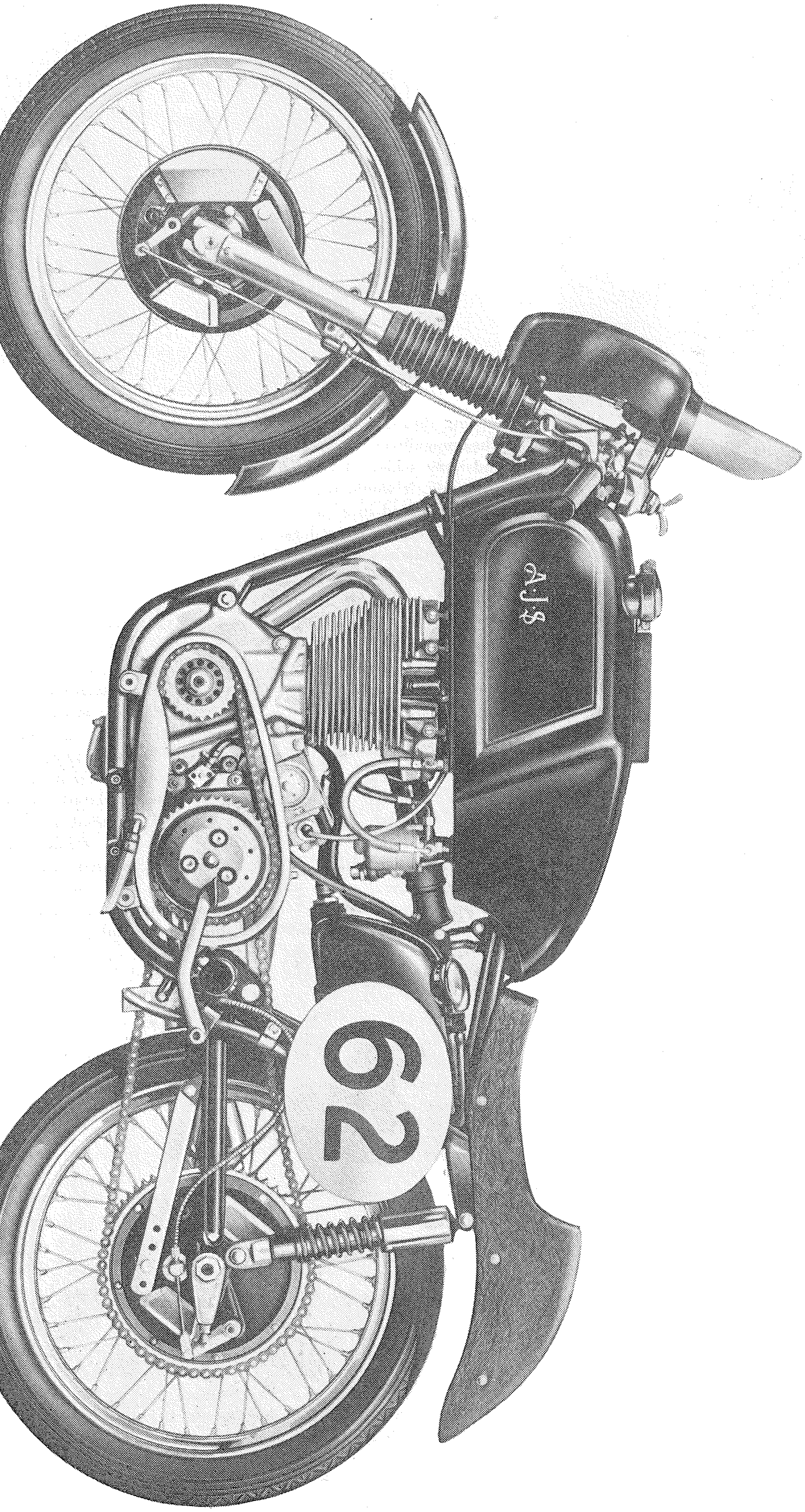
The head was face jointed to the barrel and held down by four long nuts screwed on to the long holding-down studs. The cambox was constructed so as to completely enclose the valves, springs and rockers, small detachable covers being provided to get at the rockers for valve clearance adjustment. This was provided by employing eccentrically mounted rocker spindles of case-hardened mild steel, and the polished straight-type rockers were provided with phosphor-bronze bushes. A ball race on the drive side and an aluminium-bronze bush on the other carried the camshaft with its integral cams which were copper plated on their working faces. At first the rockers had pads with Stellited faces—rollers came later. To adjust the valves a tommy bar was put into a slotted cup which, with a flange, formed the external end of the rocker spindles. The bar was turned in the appropriate direction and the spindle locked by means of a circular clamp screwed down on the flange. The tachometer drive was mounted between these spindle adjusters and driven by the camshaft which was provided with a slot to take the tongue of the drive gearbox.

The method of fixing the cambox was ingenious. Four main bolts screwed down into inserts in the head, but in addition 12 small bolts held the box round the outside of the valve spring wells. These bolts screwed into small trunnion nuts which fitted into bosses cast in the cylinder head. The nuts were slotted and a loose fit in their holes, so with a screwdriver it was easy to locate them exactly to take the holding-down bolts. It also meant that the cambox could be removed easily with the engine in the frame, with no danger of stripping threads in the alloy head.

As already mentioned, the drive to the camshaft constituted the one likeness to the pre-war models—a chain ($\frac{3}{8} \times 0.225$in), with Weller steel tensioner and spring-loaded damper—and the well-known A.J.S. vernier timing arrangement on the camshaft end of the drive. This employed a pinion boss keyed on to the camshaft, carrying a number of holes radially disposed. An unequal number of holes were drilled in the chain sprocket and a pegged washer, nut and lock-nut screwed on to the end of the camshaft locked them together. The position of the sprocket in relation to the camshaft could therefore be adjusted very finely.

At the bottom of the chain the sprocket was keyed to the shaft carrying the half-time pinion mating with the pinion on the end of the mainshaft. The magneto drive was by pinion and not by chain as on the older machines, but the vernier arrangement of drive to the magneto—a Lucas instrument strapped to the back of the crankcase—was again used.

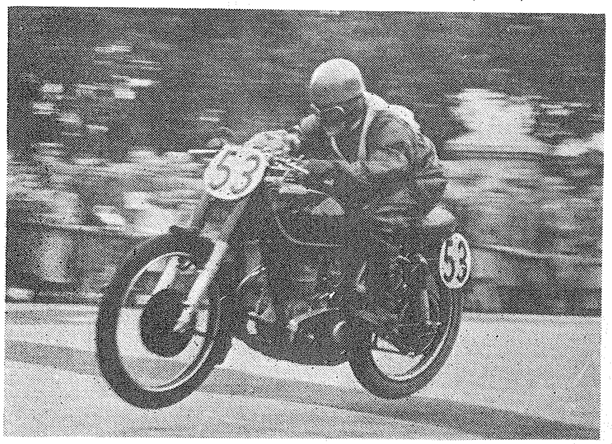
Mention should be made here of the method of adjusting the camshaft chain. Between the cambox and the valve-spring recesses in the head were laminated metal shim washers which

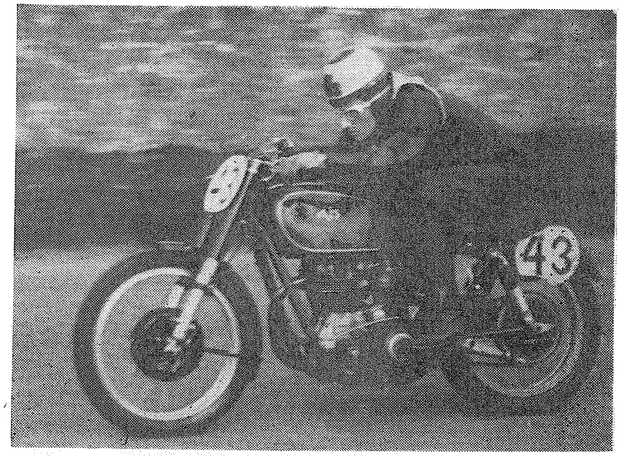


THE 1954–1962 7R A.J.S.

Philip Walker, A.M.I.Mech.E., had been appointed chief designer for A.M.C. after the war and designing the 7R was just one of the jobs which came his way. The firm decided to build a 350 c.c. production machine in order to have a Junior bike, as well as the 500 c.c. Porcupine twin, for the factory team, and to supply the up-to-date racer for which enthusiasts had been clamouring since racing restarted after the war . . . and also, presumably, to carry on the tradition of offering a true production racer, in the style of the pre-war 7R. In 1948 when the Boy Racer was first announced, British racing machinery was still supreme in 350 and 500 classes, but among the 250s there was nothing in this country to compete effectively with the Italian Guzzi and Benelli. Some patriots had hoped, volubly, that if a brand-new British racer was to be built it would be a 250, to combat the Italian " menace." A.M.C.'s answer to that was terse : they had already spent a lot of money on the Porcupine—and it was about time some other factory got down to building a racing 250!

The post-war 7R, theoretically capable of 106 m.p.h., proved reliable in its early races—but in speed not quite a match for Nortons and Velocettes. One of its first successes was a win by Ernie Lyons (right) in the N.W. 200; another notable rider was Maurice Cann (below)





provided an oil seal. But by adding or taking off various thicknesses of these shims, the height of the cambox above the head could be varied, so adjusting the chain. With the aid of a sharp knife it was possible to peel off thicknesses down to 0.002in. Of course, with the length of chain used a very small variation in distance between head and cambox made a considerable difference in chain tension. But a ready way of checking the correct adjustment was to have the tension such that a $\frac{1}{4}$in diameter bolt would just slip in the gap between the chain tensioner blade and its spring at the widest part. The cover for the timing gear had, as before, small detachable plates to enable one to get at the magneto and camshaft verniers.

Lubrication was looked after by cylindrical gear-type pumps, mounted on a separate casting and bolted over the timing pinions, the supply being driven by the half-time pinion shaft and the return by the idler. No external oil pipes were used except for delivery and return to the tank. Oil was pumped through drillings to the mainshaft, timing side flywheel and crankpin to the big-end. Another supply went via the timing cover to the camshaft and cams, and on its return lubricated chain and timing wheels. Surplus oil found its way via drillings in the valve spring wells, head, barrel and crankcase mouth to a small sump at the rear of the crankcase and was drawn from there by the scavenger pump and so back to the tank.

The engine was held in the frame at the front by a long bolt passing through lugs welded into the duplex down tubes and the front of the crankcase. Another bolt passed through the frame tubes themselves at the bottom and a lug at the back of the crankcase behind the sump. Plates also held the back of the engine and the specially constructed four-speed Burman gearbox. There was a further attachment at the top of the engine where a bolt passed through a lug on top of the cambox and two plates bolted to the top tube.

The clutch was a normal multi-plate type running in the open, and with the compact gearbox a short primary drive ($\frac{1}{2}\times\frac{5}{16}$in chain) was possible. Rear drive was by $\frac{5}{8}\times\frac{1}{4}$in chain. An upswept, U-shaped curving loop extension on the back of the main frame carried the seating arrangement—a dualseat affording much more comfort than the old type of saddle and back pad still fitted at that time to other production racers such as the Manx Norton and the KTT Velocette.

Rear suspension was by oil-damped spring units of A.J.S. design and manufacture and the front forks were the Teledraulic pattern which originated during the war on W.D. Matchlesses.

The alloy petrol tank of $4\frac{3}{4}$ gallon capacity was of the true saddle or pannier type, rubber mounted and fixed by bolts passing through the *side* of the tank into lugs on the top tube. The one-gallon oil tank, also of light alloy, was similarly mounted and very wide. The idea was that, being stuck out in the airstream, it would benefit from increased cooling but in actual fact it resulted in a rather uncomfortable riding position—and, believe it or not, burnt legs. In a long race the tank could get so hot that the inside of one's legs could be quite badly burnt, even through leather boots !

Wheel sizes were 21in front and 20in rear; steel rims were fitted as standard but alloy ones could be fitted as extras. As already mentioned, the brakes were of the 21s variety and were very powerful—the front was so good that one or two riders, unaccustomed to such efficient stoppers, got into trouble the first time they applied them hard. The rear brake was cable operated with a large knurled adjuster screw—and talking of adjusters, the method of moving the rear wheel in the frame to adjust the rear chain was unusual. The end of each arm which took the wheel spindle was not forked but contained a closed elongated recess and a boss at the extremity with a threaded hole. The spindle also passed through a U-shaped steel plate which enclosed the end of the arm and which also had a threaded boss at the bottom of the U. An adjuster bolt with left and righthand threads passed through this portion of the plate and into the boss at the end of the fork. By moving this bolt the plate was moved in relation to the arm—thanks to the opposite-direction threads—and so the wheel was either pushed forward or pulled back. There was also a number of slotted distance pieces which fitted into the recess, plain washers and distance pieces which went between frame and wheel bearings; getting the wheel into the frame was one of those jobs which required about three hands as well as both feet. But once the wheel was in, adjusting the chain or lining up the wheels could be done quickly and accurately. The considerable total fore-and-aft movement of the wheel enabled a variety of rear sprockets to be used without altering chain length.

The normal method of varying the gear ratio was to change the rear-wheel sprocket, not the engine. These sprockets were of light alloy and fixed to the hub by an endless number of small nuts and bolts—at least, it seemed so when trying to change one in a hurry.

Footrest fixing was also unique. The cranked spindle was welded to a cup with two holes drilled diagonally; this fitted over a boss on a gusset plate welded to the tubes forming the rear portion of the frame loop. The boss carried several holes all round and so by turning the cup round until its two holes coincided with two in the boss and putting a bolt through, the rest was securely held, and a variety of positions could be obtained. The only snag was that if the bike was " dropped," the footrest did not just bend—it almost invariably snapped off at the weld.

The exhaust pipe fitted into the head with a normal screwed-in flange nut, was well tucked into the frame (at least for those days) and ended with the most enormous megaphone ever seen. The size and method of fixing the megaphone underwent several changes in the early days before becoming standardized. Weight worked out at about 296 lb and the wheelbase was 55½in.

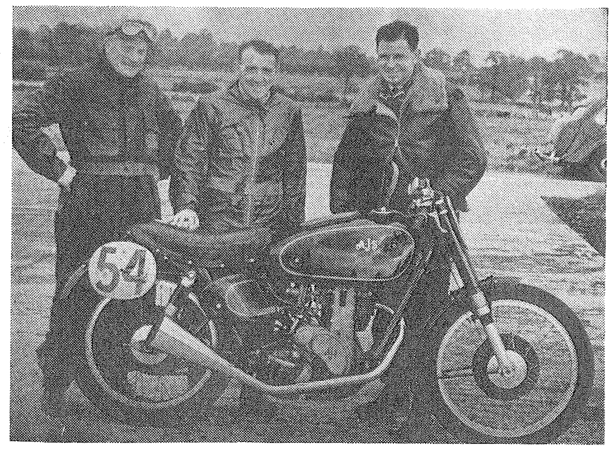
Attention to detail was much in evidence—for instance, the front mudguard (both were light alloy, of course) was fixed to its stays by no fewer than eight very small nuts and bolts, each with its own rubber grommet. The finish was excellent, and at the price of £316 4s 8d, including tax, it was said that the firm lost considerably on each bike, at least when the early batches were turned out.

losing their damping properties after a while. To get the best out of a 7R you had to let it "buzz." The "megaphonitis" caused by the enormous trumpet, combined with the general characteristics of the engine, meant that power was developing high up in the rev range—from about 5,500 r.p.m. on. But the engine was smooth and seemed very tolerant of high revs. On most circuits it was advisable to gear well down from the standard ratios.

Towards the end of 1948 Matt Wright joined A.J.S. once again and was responsible for development of the racing machines.

One of the first things Wright did was to flatten the head shape and alter the valve angle—this he was able to do without any drastic alteration to the operating mechanism. The new angle—74 degrees 20 minutes (originally 80 degrees)—remained unaltered throughout the engine's life. By the 1950 T.T. many changes had taken place. The crankpin was modified to make the flywheel assembly more rigid, retaining nuts on the mainshaft were dispensed with, the shaft becoming an interference fit in the flywheels which themselves were reduced slightly in diameter to cut down oil drag. The timing-side main bearing was changed to a roller type and the crankcase was altered to include a different sump with detachable ribbed cover. There were also one or two minor alterations to the lubrication system generally, including the introduction of an ingenious method of primary chain oiling whereby oil was led to the main-bearing boss and picked up there into an annular groove at the rear of the engine sprocket which had holes drilled to the teeth. In operation, however, the scheme did not work very well and the best method of lubricating the chain was found to be in the use of a small separate tank with pipe leading to two smaller outlets positioned to drop oil on to the inner faces of the chain sideplates.

In October 1948, a few weeks after the writer of this series had made second place in the Junior M.G.P. on his new 7R, a testing session was arranged at Ansty airfield for George Rowley (left), Charles Markham of "Motor Cycling" and F.P.H. Here, in part, is what Markham wrote about the 7R: "A brief pause in the proceedings whilst Phil Heath swops a 'candle' in the A.J.S. Ferdinand, a neighbouring bull of bellicose temperament, marches threateningly towards the barbed-wire fencing which separates us and bellows defiance until he's brought to a hic-coughing standstill by the rorty thunder of the fast A.J.S. Be seein' you soon, 'Ferdy,' my belligerent bovine. For the present I am being transported by as neat a piece of 350 c.c. engineering as ever was. Knees tightly braced at the rear of the deep black-and-gold tank, I slide into a comfortable position on the long racing seat and feel my way around. Watch the jerking finger . . . 5,500 . . . 6,000 r.p.m. Here we go—all change! Cooer! Was there ever such a light clutch on any motor? For a split second it feels totally disconnected and when it re-engages I receive a kick in the pants, accompanied by jerked arms. That's megaphonitis—that was! Each upward change produces this hearty response, with the front tyre saving five clear yards of tread wear as it aviates. But if anyone is worried about the aerobatics it certainly isn't me, because the handling is superb. Six thousand-four in third—approximately 85 m.p.h. . . ."



These 1948 engines peaked at 7,000 r.p.m. and produced about 30 brake horses. The standard top gear was 5.14 to 1, which meant that maximum speed was about 106 m.p.h.—if one could get peak revs in top. But with the average 7R, 6,800 was about the most one ever saw on the clock. Bikes varied quite a lot, one from another. Private tuning helped, of course, but different engines varied by one or more b.h.p., for no apparent reason, when they came off production.

The first 7R to be used in a race was ridden by Fergus Anderson at Pau on Easter Monday, 1948. He retired with clutch trouble when lying second. Other riders of early models were Ernie Lyons, Maurice Cann, Syd Barrett, Bill Doran, Les Dear—who had been a consistent rider on pre-war 7Rs—and the Australian Eric McPherson. I myself also took delivery of one from the early batches . . . my first brand-new racer . . . and the first time I rode it, I dropped it! It was at Eppynt, that tortuous circuit in the middle of Wales. I came off on loose stuff on a slow left-hander, and distinctly recollect trying to lift the bike as it slid along on its side, to prevent scratching that beautiful black and gold-lined petrol tank!

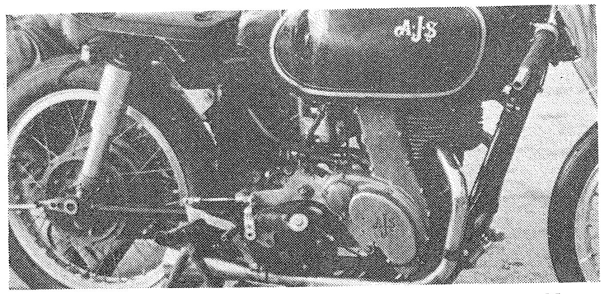
One of the first successes of this new model was a 350 c.c. class win in the Leinster 200 in 1948, by Ernie Lyons, but the Isle of Man T.T. was the first real test of the new 7R. Twenty-three were entered for the Junior Race, including the works trio of Jock West, Les Graham and Ted Frend. The policy of the factory was to use virtually identical machines to those supplied to private owners, except that experimental bits and pieces were tried from time to time. Sometimes indeed a privateer's machine was faster than those from the works; for example, the most successful 7R rider in the 1948 Junior was Maurice Cann who finished fifth. Les Graham finished seventh, Jock West 13th and Ted Frend came off at Glen Helen on the second lap. Altogether 17 machines finished.

The Boy Racer was proving reliable but not fast enough to beat the Velocettes or works Nortons. Also, although handling was good, it was often spoilt through the rear-suspension legs

Other modifications to the engine included a larger inlet valve, higher compression ratio—8.85 to 1 (for the 80 octane fuel which had become available)—and a different method of retaining the valve spring cap—i.e., normal collets instead of a circlip. Brake horse power went up by about 2 b.h.p., with peak power now at 7,200 r.p.m.

Externally there were some obvious changes. The oil tank was made much slimmer so that riders could tuck their legs in, with no fear of burning; the capacity remained at one gallon. A smaller megaphone was fitted and exhaust-pipe length was reduced by making a sharp bend from the port which carried the pipe inside the front down tube. For better ground clearance the whole pipe was set much higher and closer to the engine and gearbox.

The front fork had a new light-alloy top lug and there were alterations to gearbox bearings, footchange and clutch. The previous year some gearbox trouble had been experienced and



The triple-valve three-fifty designed by H. J. Hatch and ridden to success in the 1953 *Junior T.T. by the New Zealander, Rod Coleman*

in the 1949 Junior T.T. both Les Graham and Bill Doran were put out with trouble in that department after each had led the race at one stage. In 1950 Graham finished fourth in the Junior with Frend fifth, after the winning Norton trio of Bell, Duke and Daniell. So although A.J.S. had found more speed and cured the gearbox trouble, Nortons were faster still. But the 7R was having many successes elsewhere, at home and abroad, and was especially popular among "Continental Circus" riders. A good 7R engine, properly prepared, would carry on for meeting after meeting with hardly any attention and without losing tune. Among those who had several successes on the 7R were Bill Petch, Ergé the Belgian, Reg Armstrong and the Monnerets, père et fils.

There was not much change, in appearance at any rate, in 1951, the main innovations being the bigger "jam pot" rear-suspension units and a different primary chain guard of rounded section to help keep oil off the rear tyre. But the new suspension legs did not make handling first-class. It was not until A.M.C. realized that people like Girlings, who had been making spring units for years, knew all the answers and they, A.M.C., did not, and changed to proprietary units, that troubles in that direction were over. Changes in the engine included modified cams as used on the 1950 works machines, a piston giving a still higher compression ratio (9.4 to 1) and alteration to the oiling in the cambox.

The works 7Rs for the T.T. in 1951 took on quite a different appearance, with 19in wheels, modified front forks to match, clip-on bars, the engine slightly further forward in the frame and a raised backrest on the dualseat.

As far as engine modifications were concerned, modified cams were employed, and the oiling to the cams was altered. Previously, oil was fed via the end of the camshaft through a drilling and annulus to the bearing. Through drillings in the cam box oil was passed to the exhaust cam. The inlet was also supposed to receive some of this supply, but in practice it was found that insufficient got there, so a separate supply was arranged via further drillings to the inlet cam. The compression ratio went up to 9.4 to 1 and a further 1—2 b.h.p. resulted from these changes.

In the T.T. of 1951 that year A.J.S. lost Les Graham, who left the firm and in the T.T. had his first ride on the MV. But they had Bill Doran, who was a tower of strength, Reg Armstrong and Mick Featherstone, who had finished second on a Norton in the Senior M.G.P. the previous September, But a T.T. win still eluded them. Doran lay fourth behind the Nortons at the end of the fourth lap but retired soon afterwards with engine trouble. Armstrong and Featherstone, occupying the next two places behind Bill, moved up to fourth and fifth and remained there until the last lap when Armstrong had the misfortune to have his primary chain break two miles from the finish; although he pushed in, he dropped from fourth to 23rd position. Featherstone finished fourth.

In the Manx G.P., however, the 7R had had more success. In 1950 Dan Crossley won the Junior race, and in 1951 Robin Sherry won with Harold Clark third. Crossley was second on that occasion but was Norton mounted that year. But as far as the T.T. was concerned, they had to wait until Rod Coleman's 1953 Junior win and that was on the "Triple Knocker."

Although the triple-valve never went into production, and did not influence the Boy Racer, it warrants a brief description. It was designed by H. J. Hatch, who took over development work at A.M.C. after Philip Walker had designed the original racing three-fifty. Hatch will be remembered for the Mechanical Marvel two-fifty Excelsior which won the 1933 Lightweight T.T. ridden by Syd Gleave. The Excelsior was an overhead-camshaft four-valver.

The triple knocker could hardly be described as a pretty engine. The familiar camshaft chain drive in its flat cover was still there, but sloping backwards as the drive went direct to the inlet camshaft, which was positioned transversely across the inlet valve. From this camshaft a parallel layshaft, occupying the position normally taken by the cambox, was driven by spur gears, and that in turn, by means of bevels, drove two separate camshafts for each of the pair of radially disposed exhaust valves. As these camshafts were placed longitudinally there was plenty of space for air flow around the exhaust valves. The sparking plug was positioned between the two exhaust camshafts, access being from the front of the engine. The bottom half was more or less as in the normal 7R.

Triple Knocker's success

The three-valve machine had some success—apart from the T.T. win mentioned above—but the works boys did not particularly like riding it as it was little if any faster than the normal type—the two were often raced together—and it had to be geared down considerably and "buzzed" even more than the early 7R engines.

However, one particular achievement with the model should be mentioned—when at Montlhéry in October, 1952, 21 records were captured including the 350 c.c. one-hour at 115.66 m.p.h. Much of the credit for this must be given to Pierre Monneret, son of the famous French ace George Monneret, who together with Bill Doran and Rod Coleman had a share in the riding. It was Pierre who took the 50 and 100 kilometres, the 50 and 100 miles and the coveted one-hour. With his intimate knowledge of the track and ability to tuck himself away, he could lap faster than any of the other riders. But it was a case of keeping absolutely streamlined the whole time, as lifting as much as a finger (no streamlining shell was used) caused speed to drop. At the end of his stint he had to be lifted from the machine.

As far as the Boy Racer was concerned, the next major changes came in 1953. Thanks to a new frame and tanks the whole machine took on a new appearance, which, except for the petrol tank, did not alter much right up to when the last machines were made.

The frame was of circular-section tubing and gave a shorter wheelbase and narrower cradle section to take the engine. In place of the engine plates behind the engine, there was a cast-aluminium bridge, which also formed the top fixing for the gearbox and made the engine and gearbox a much more rigid unit. Flanged bushes welded into holes through the frame tubes took the bottom engine attachment bolt and gearbox pivot bolt.

Modifications to the engine were mainly to stiffen the bottom end even more, and to replace the slipper-ended valve rockers with a roller type. In reducing the width of the crankpin, the crankcase became much slimmer, which was emphasized by the removal of the external stiffening ribs which were found to be unnecessary. To complete this altered appearance to the drive side, a different engine sprocket, liberally drilled, and a primary chain guard, which encircled the whole of the drive, were employed.

Another change was the way in which the exhaust pipe was

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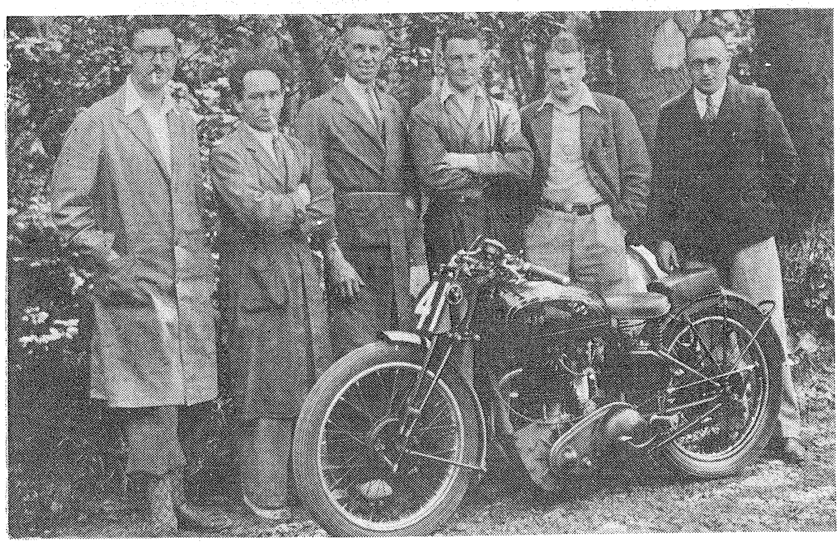
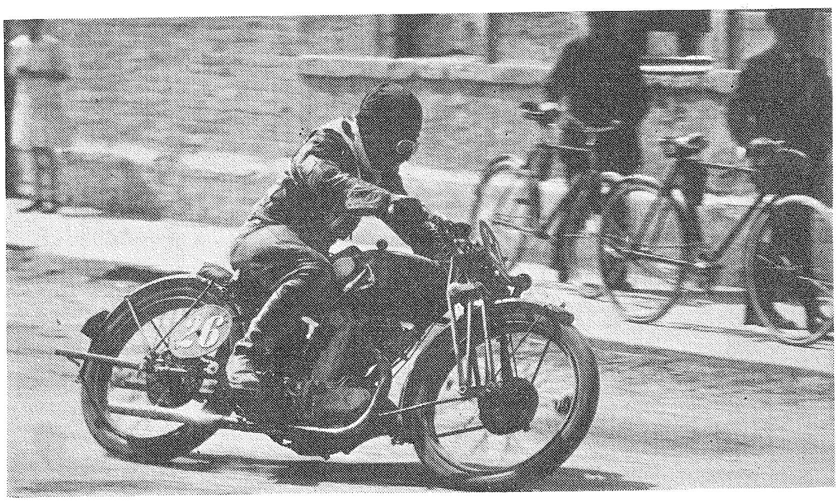
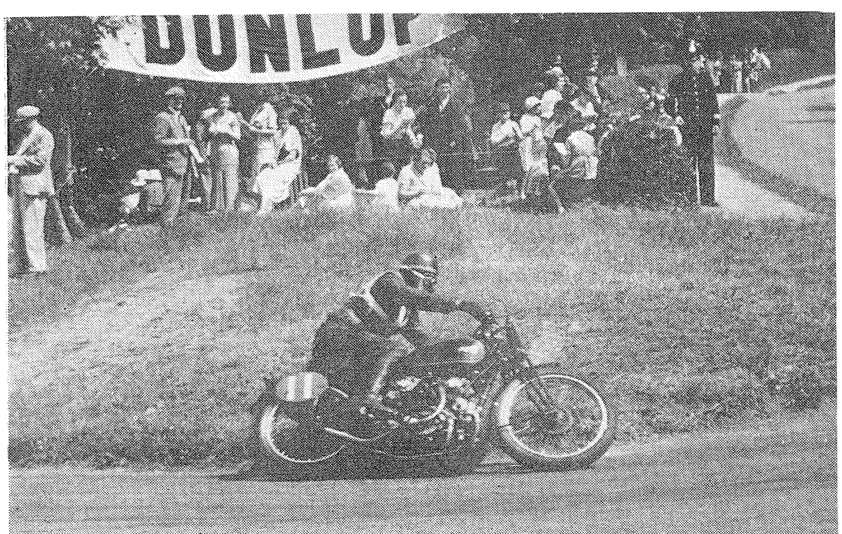
EARLY DAYS OF THE CAMMY AJAYS



One of the 1934 works T.T. three-fifties with a group of well-known "characters." From left to right: Bert Collier, son of Charlie Collier, A.M.C. director, Reg Barbour, race mechanic, tester and Brooklands rider, Fred Neill, I.S.D.T. Matchless teamster and service manager at A.M.C. at the present time—he rode in the Island in 1923 on a Matchless, Tyrell Smith, 1930 Junior T.T. winner on a Rudge, who rode for A.J.S. in 1934 and 1935, George Rowley, 100 per cent A.J.S. man, and Harold Daniell, "Dandy" as he was known in those days, who, although best known as a Norton rider, had a short spell on A.J.S. machines between 1934 and 1936. The heavily webbed crankcase—a feature of all cammy A.J.S. engines—is clearly visible on the machine

George Rowley enjoying one of his many successes on the Continent—winning the 1928 Austrian Grand Prix. The machine is basically the type used in the 1927 T.T.—the first year the model appeared—but the front fork is an experimental bottom-link type, as used in the 1928 T.T. Normal fork blades were fitted rigidly to the top and bottom of the steering column; the wheel was carried on short links attached to the bottom of the blades, and short tubes went up from the wheel spindle to another pivot link at the base of the steering column. A single spring was located between fixed and moving members at the top. The idea was to cut down unsprung weight, but it was dropped after a year





Another shot of George Rowley, in the 1936 Senior T.T., this time on the massive air-cooled four-cylinder which was first introduced as a production road machine at the 1935 Olympia Show (but never went into production). Fours were raced in both blown and unblown form; this photograph shows the supercharger mounted in front of the forward cylinders. Performance was disappointing. Rowley retired on the last lap, not having been above 11th position, and some four minutes per lap slower than the winner, Jimmie Guthrie (Norton). The other four, ridden by Harold Daniell, fared no better. Daniell retired on the sixth lap after being in ninth position but his speed was little better than Rowley's. But the decibels must have been sweet....

THE BLACKPOOL SHOW

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bike with non-cling tyres skids on the slippery patch, the cling equipped one does not. Some people apparently think it is all a fiddle—done by magnets or something ! Dunlops, taking advantage of their present monopoly in racing, made a big show of their 1964/5 successes.

Wal Phillips was there in person to answer queries on his fuel injectors, and on display were the latest types of 1$\frac{3}{8}$in and 1$\frac{1}{2}$in bore for racing engines. Also for racers, Mitchenall Bros. showed fairings to fit most of the production bikes, including their controversial nose cone on a Greeves Silverstone. Something new on the Lucas stand was an item called a Clipper Diode—a semiconductor for overcoming bulb blowing problems on machines equipped with direct lighting systems. Also a new headlamp flasher switch which enables the main headlamp beam to be illuminated by pressing a lever. The lever, being spring-loaded, returns automatically to the " off " position.

Filtrate had their very popular trials course again—bigger and better than at Earls Court—and electrically driven trials mounts . . . and a couple of privately owned racing machines which gained some success on Filtrate Oil before the company was forced to give up official support. Not many dealers took advantage of having a stand at Blackpool, but two well-known specialists did. Allan Jefferies of Triumph fame—although his exhibits were not confined to that marque—and Bill Jukes (A.J. Motor Cycles) who displayed Honda spares and accessories.

In a special display in the Planet Room were machines of historical interest. Most had been shown elsewhere before, but a new one was the Velocette 600 c.c. vertical twin built pre-war and mentioned in Titch Allen's article on prototypes. Another interesting one, not in this display but on the Britax stand, was the Excelsior Mechanical Marvel which won the 1933 Lightweight.

THE BOY RACER

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fixed into the head. A flange, held by three Allen screws, replaced the screw-in ring. The new arrangement no doubt ensured a more secure and gas-tight fit but it was a fiddling job to get at the screws and took about three times as long to take off or put back as by the old method.

The 5$\frac{1}{4}$ gallon petrol tank was very handsome and the means of fixing it was altered to the " strap-over-top " method which had been used for some time on the Featherbed Norton. The strap was held in position by a strong spring-loaded clip and the factory thoughtfully provided a special tool with which to pull the clip into place. Support for the tank consisted of rubber bushes and pegs attached to the frame. The front ones were adjustable on the frame down tubes—which was very useful, because several riders preferred to use smaller tanks of about two gallons capacity for short-circuit use.

A smaller front tyre—2.75 × 19in—and a 3.25 × 19in rear and a shorter racing seat with raised back completed the picture of this " new look " 7R.

WEST GERMAN GRAND PRIX

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Yamahas had it all their own way in a comparatively dull 250 c.c. race. Read and Duff both made a good race of it, with no punches pulled (lapping only 5.6s slower than Hailwood was to do in the following 500 c.c. race). Passing and re-passing, they built up a 40s lead on Torras (Bultaco), who held an unchallenged third after Perris (Suzuki) retired with gearbox trouble. Making a determined effort to beat Read, Duff built up a 10-yard lead into the last lap, but missed a gear halfway round. Read slipped past, to win by a second.

A brief shower of rain dampened the track as the five-hundreds lined up, but it failed to deter Hailwood and Agostini. With the Italian shadowing him, Hailwood eased his way round for the first 10 laps until the track dried. Confident he then knew his way, he began to blast ahead, and soon shook off Agostini. Within a few laps, the Italian was 30s down. Main excitement was the battle for third among Driver (Matchless), Findlay (McIntyre Matchless) Ahearn (Norton) and Scheimann (Norton). The Commonwealth trio tried everything they knew to hold the exceptionally fast Norton of Scheimann, and the pace told. Driver's connecting rod snapped, then Ahearn's big-end broke up through over-revving . . . and Findlay could hardly see through oil-spattered goggles.

As the sidecars completed their opening lap, the heavens opened and rain swamped the riders. Then it changed to sleet, then snow ! The effect was chaotic. Fritz Scheidegger (B.M.W.) had been challenged strongly for the lead by Max Deubel (B.M.W.) for three laps. Then one of Deubel's pistons collapsed, as Scheidegger called to his pit for a change of goggles.

Over a minute astern was that push-rod B.M.W. outfit of Schauzu, going remarkably well—although the conditions did favour an under-powered engine. Veteran Charlie Freeman (Norton) was in his element down in a worthy sixth place, battling along without any goggles. Even the leader at this stage had abandoned *his* goggles and was painstakingly squinting through his glasses. The only other notable feature of a terrible race was the effort of Arsenius Butscher (B.M.W.) to grab second place. He failed by only 30 yards.

F. de H.

125 c.c. Race : 13 laps—62 miles

	m	s	m.p.h.
1 H. R. Anderson (Suzuki)	48	1.7	78.17
2 F. G. Perris (Suzuki)	48	57.3	76.74
3 R. Torras (Bultaco)	50	23.8	74.50
4 E. Degner (Suzuki)	51	15.4	73.26
5 D. Woodman (Mz)	51	28.2	73.01
6 W. Scheimann (Honda)	51	38.5	72.76

12 laps : 7, G. Visenzi (Honda); 8, P. Eser (Honda); 9, G. Havel (CZ).
Record Lap : H. R. Anderson, 3m 37.3s, 79.66 m.p.h.

350 c.c. Race : 20 laps—97 miles

	h	m	s	m.p.h.
1 G. Agostini (MV)	1	8	9.7	84.75
2 S. M. B. Hailwood (MV)	1	10	38.1	81.71

19 laps : 3, G. Havel (Jawa); 4, R. Pasolini (Aermacchi); 5, E. Kiisa (Vostok); 6, E. G. Driver (A.J.S.); 7, J. J. Ahearn (Norton); 8, J. Findlay (A.J.S.); 9, W. Nelson (Norton).
Record Lap : G. Agostini, 3m 17.1s, 87.86 m.p.h.

50 c.c. Race : 13 laps—62 miles

	m	s	m.p.h.
1 R. Bryans (Honda)	51	6.8	73.50
2 L. Taveri (Honda)	51	24.6	73.01
3 H. R. Anderson (Suzuki)	51	25.4	72.95
4 M. Itoh (Suzuki)	51	41.7	72.64
5 A. Nieto (Derbi)	51	42.1	72.58
6 H. G. Anscheidt (Kreidler)	51	56.3	72.33
7 R. Kunz (Kreidler)	53	17.9	70.46

Record Lap : L. Taveri, 3m 49.6s, 75.50 m.p.h.

250 c.c. Race : 17 laps—81 miles

	m	s	m.p.h.
1 P. W. Read (Yamaha)	58	25.2	84.01
2 M. A. Duff (Yamaha)	58	26.1	83.92
3 R. Torras (Bultaco)	59	51.9	81.96

16 laps : 4, G. Visenzi (Aermacchi); 5, G. Beer (Honda); 6, G. Milani (Aermacchi); 7, G. Thurow (Adler); 8, G. Dickson (Bultaco); 9, S. Lohmann (Yamaha).
Record Lap : P. W. Read, 3m 19.6s, 86.18 m.p.h.

500 c.c. Race : 26 laps—125 miles

	h	m	s	m.p.h.
1 S. M. B. Hailwood (MV)	1	27	8.0	86.18
2 G. Agostini (MV)	1	28	47.6	84.57

25 laps : 3, W. Scheimann (Norton) 24 laps : 4, J. Findlay (Matchless); 5, E. Lenz (Norton); 6, W. Nelson (Norton); 7, L. P. Young (Matchless); 8, H. J. Meicher (Norton); 9, H. O. Butenuth (B.M.W.).
Record Lap : S. M. B. Hailwood, 3m 13.0s, 89.78 m.p.h.

Sidecar Race : 13 laps—62 miles

	m	s	m.p.h.
1 F. Scheidegger (B.M.W.)	53	27.5	70.27
2 S. Schauzu (B.M.W.)	54	6.0	69.41
3 A. Butscher (B.M.W.)	54	10.3	69.34
4 A. Wolf (B.M.W.)	57	32.7	65.24
5 F. Huber (B.M.W.)	57	39.9	65.12

12 laps : 6, T. K. Davies (Matchless); 7, J. O. Sweet (Norton); 8, C. Freeman (Norton); 9, G. Seldmann (B.M.W.).
Fastest lap : F. Scheidegger, 75.50 m.p.h.