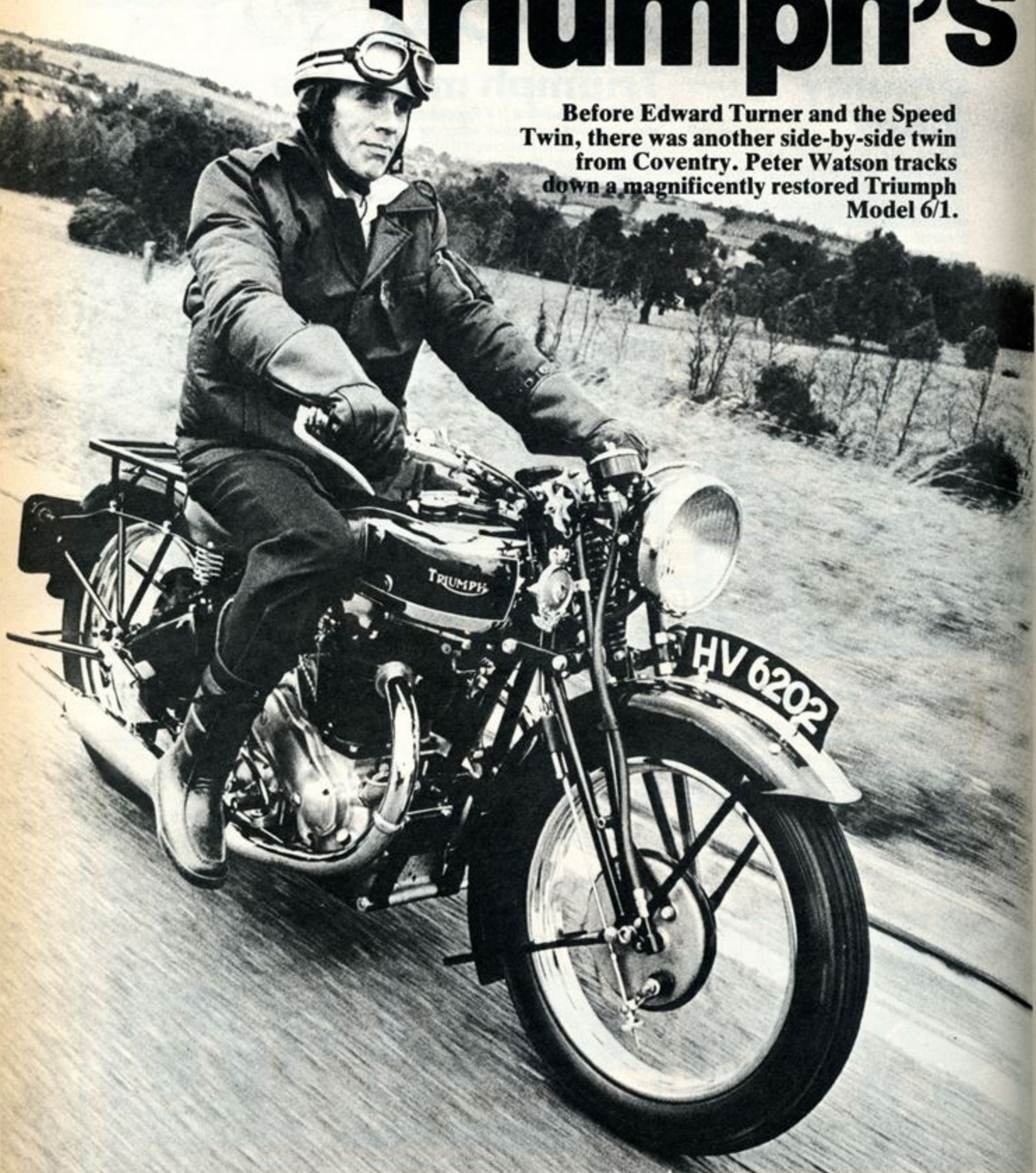


Triumph's

Before Edward Turner and the Speed Twin, there was another side-by-side twin from Coventry. Peter Watson tracks down a magnificently restored Triumph Model 6/1.



other twin

WE ALL KNOW the Triumph twin. Indeed, the familiar outline of Edward Turner's engine design now seems almost as British as the Union flag or Churchill's jowly, Bulldog scowl. But its very popularity from 1938 to today has tended to obscure an interesting predecessor, a machine designed by another man, but also a side-by-side vertical twin which bore a Triumph badge upon its tank.

Val Page's Triumph 6/1 was not a runaway sales success like the Speed Twin and its successors. In terms of numbers sold it was a dismal failure. Launched in August 1933, it was discontinued after 1936 with perhaps — according to some estimates — less than 40 examples sold. Thus you will discover otherwise perfectly knowledgeable motorcyclists who deny the 6/1's very existence and, if confronted with one of these rare birds, refuse to believe it can indeed be a Triumph.

Ted Smith knows otherwise. His 1935 6/1 is a triumph of the restorer's art, and looks it. Yet this 48-year-old sheet metal worker's re-creation is no museum exhibit, trailed from one concours competition to the next. It runs superbly, with a throaty rumble that had my stomach churning with excitement, and once he's licked an inherent design flaw in the machine's transmission it promises to be reliability itself.

Ted's restoration has already consumed three and a half years of his spare time, a period broken for seven months by an horrific accident that not only threatened to end this project, but his working life.

Pushing his car into the lock-up garage near his house one day, things got out of control. Within seconds his right hand was trapped between the car and garage wall, all but severing two fingers and smashing the knuckle of a third.

The determination of a man who could tie a hammer into his right hand so that he could continue to work, and rig up a left-hand throttle control for his Triumph, says much about his personality. He now has almost full use of his right hand, as much due to his own efforts as those of the surgeons who sewed his fingers back into place.

The machine came his way by chance, for he spotted it while collecting a BSA C10L 250cc side-valve engine for his son Kevin in Colchester. It had last been registered in the 1950s and spent 17 years in a hedge. The seller thought it was a Triumph, and after some research to discover just what it was, Ted returned to clinch the deal. You can see the sort of state it was in before he bought it, but only two bolts and a small plate were missing from the engine. However, it had also lost its mudguards and many other cycle parts; the frame and forks were badly pitted.

Much more serious was the damage to the rear of the inner half of the primary drive case. A split battery had dripped acid on to the ageing aluminium alloy, which has a high zinc content and was tricky to weld up. The firm which carried out the work had to consult their metallurgist first, and most people advised Ted to give it up as a bad job. But now you have to look carefully behind the clutch drum to spot the repair.

However, before we go much deeper into the tale of how this particular Triumph twin came once more to resemble the machine that originally rolled off the production line in Coventry, it's worth examining that relatively unknown quantity, the 6/1.

Val Page was 41 years old in 1933, an age at which many professional men are at the peak of their powers. Behind him he had a good record with J A Prestwich of Tottenham in London. He had joined JAP in 1914 as a draughtsman, moving up to become their chief designer at a time when they produced some really exciting engines, from massive pushrod V-twins to dohc racing singles.

Page was reputedly a quiet, scholarly man considered by many



Drive side view of the 6/1 engine reveals partly exposed valve gear, oil feed to head, ingenious plunger and ratchet parking brake and patent spring-loaded side stand.

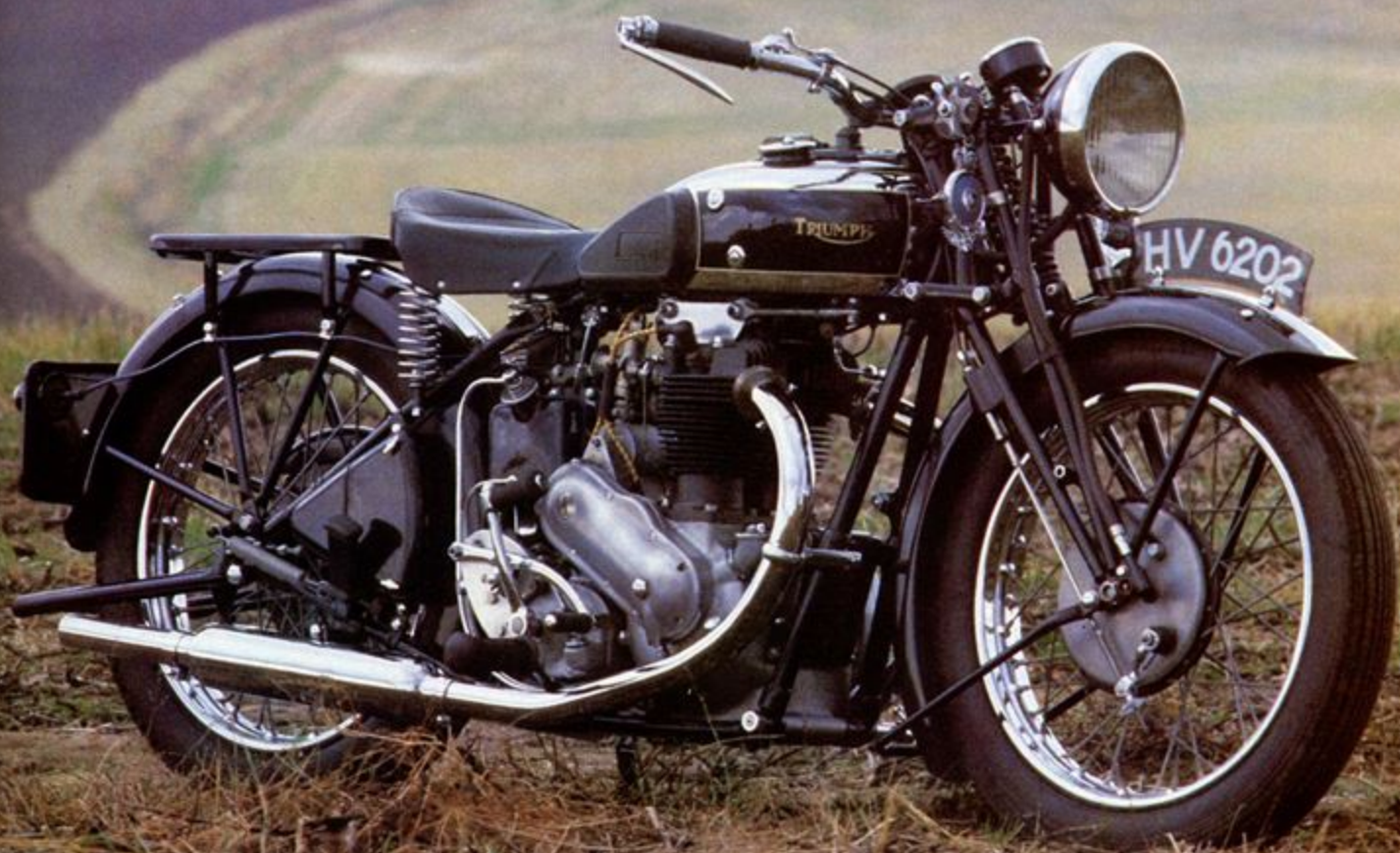
to have been Britain's outstanding motorcycle designer. With a whole range of Ariel singles, the BSA M20, and the post-war Gold Star and Ariel Leader designs to his credit, he was a man who achieved much in a long and distinguished career. Most of his designs were highly commendable — he was even responsible for making a success out of Edward Turner's Square Four — but somehow the 6/1 didn't make it.

Part of the blame must lie with the great British motorcyclist, conservative to a fault. Yet another problem was price (a hefty £75 15s in 1934; the '38 Speed Twin was £75, just £5 more than a Tiger 90 single) while in some ways the 6/1 was old-fashioned. It was also designed solely as a sidecar machine and must have been much more expensive to produce than the Speed Twin, which used stock Tiger 90 frame, forks, gearbox and brakes, while the earlier 650 had its own chassis and many other unique components. For that reason alone Triumph would probably have been quite glad to drop it, especially if they had something very similar — but smaller, lighter and cheaper to produce — up their sleeve.

The 649cc 6/1 engine, with 70x84mm bore and stroke, is a relatively large unit, with a massive crankcase containing a seven-pint oil tank. In addition to its bulk, careful examination reveals that the whole motor is mounted offset to the right in a strong cradle frame which features four very substantial sidecar mounting lugs on the left. There is also a telescopic head steady running from each rocker spindle plate to the front down tube, with a tubular cross-member bolted at one end just below the steering head and at the other to a lug on the frame's top rail.

The rear wheel is spoked in a distinctive 'four cross' fashion, while the friction damper on the girder fork is on the top link, another departure from standard Triumph practice. All these features have one thing in common: they are there to ensure that the 6/1 provides trouble-free sidecar haulage. Indeed the machine has only four inches of ground clearance and, says Ted Smith, it is easy to start grinding footrest rubber away when cornering fairly briskly.

Yet the engine offset makes the left cylinder run hot (it is masked by the front mudguard), while another seemingly laudable design feature is one of the model's failings. It's a real pain to have to adjust a primary chain with a sidecar frame in the way, and indeed the 6/1's expensive and refined double helical



primary gearing — sometimes popularly known as 'herringbone gears' — meshes silently and means that the four-speed, foot change gearbox with its tacked-on positive stop mechanism is bolted up to the engine's crankcase.

But for some strange reason the clutch drum gear is allowed to float on its caged roller bearings so freely that no less than a good quarter-inch of play can be felt by tugging at it. The engine-shaft gear butts up to the large outside flywheel — the one-piece crankshaft has three small counterweights and plain, white-metal big-end bearings — and is contained on its left-hand side by a spring-loaded face-cam cush drive. So alarming is the wander of the gearing that Ted Smith has made up a 1/8in packing plate in alloy which spaces out the primary drive's outer cover.

On the inside of the cover can be seen the damage wrought by the clutch shedding its centre nut. For the clutch is the machine's Achilles' heel, a quite remarkable failing in view of its sidecar role. With nine plates and four springs, you'd imagine that it could cope with the 6/1's excellent torque and modest 25bhp at 4500rpm. Yet the friction plates have their tags torn off, while the original 16-gauge steel plates have such a multiplicity of holes stamped about their centres that they are simply ripped apart where there is least metal. To combat this failing, Ted Smith has made new plates in better quality steel, at the same time subtly redesigning the arrangement of holes to promote strength.

A friend in West London with another 6/1 has had identical clutch trouble and it is interesting to note that Triumph's blown 6/1 (an attempt to lift *The Motor Cycle's* trophy for the first 500cc British multi to cover 100 miles in the hour) featured not only 63 x 80mm dimensions, but also outrigger bearings in the special primary case. The Zoller supercharger was gear driven from the clutch and no less than eleven plates were employed. Although the trophy went to New Imperial in 1934, the Triumph apparently lapped Brooklands at 116mph and produced a then staggering 47bhp.

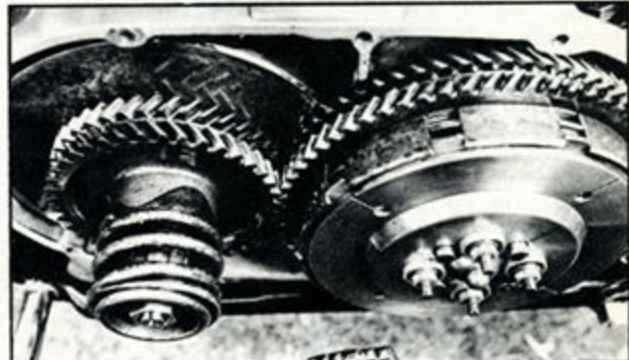
In the previous November a 500 miles in 500 minutes stunt for a 6/1 and Triumph single-seater chair at the bumpy bowl had netted the Maudes Trophy. The evidence is therefore a little confusing and further complicated by Harry Perrey's remembrances of the machine recorded in *The Story of Triumph Motor Cycles* (Louis Currie; Patrick Stephens). 'Mechanically, it ran like a train and engine trouble was unknown,' said the man who designed a special sidecar chassis to complement the Val Page vertical twin. I think that time may perhaps have gilded memory; the sight of those original steel clutch plates with their much-brazed centres seems to give the lie to total reliability under harsh usage.

Like Turner's twin, the 6/1's pistons rise and fall together, and the crankcase splits vertically. But there is only one gear-driven camshaft, mounted behind the cast-iron cylinder block which is topped by separate iron heads and exposed double-coil valve springs and short rocker arms. The pushrods are contained within a common tower which is separated from the cylinder casting by small air spaces. A two-inch wide gap is provided between the two cylinders, with plenty of space for cooling air to flow around the partially enclosed valve gear. It's a quite remarkably noisy engine at tickover, the major component of the racket being tappet clatter.

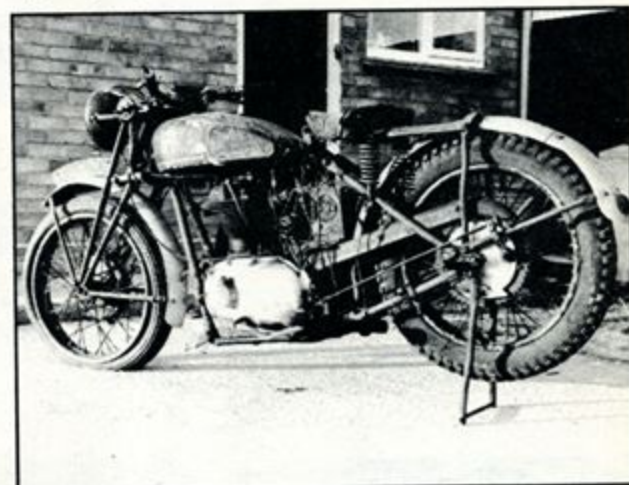
A very curious aspect of the engine is the lubrication system, something that altered consistently throughout the 6/1's three-year production life. The system is a dry-sump one with a simple one-plunger pump driven by a camshaft eccentric. This pressurises a separate pressed-steel oil filter housing to be found — on Ted Smith's '35 model — where one would normally expect to see an oil tank if it were not to be found within the crankcase. This is pressurised to about 35psi — there's an oil pressure indicator button on the tank top — and pushes lubricant around the engine. The return is by gravity, with a fascinating feed system to the valvegear. When the pistons fall, crankcase pressure causes a shuttle valve to close, sending oil up two tiny 1/16in tubes on either side of the cylinder block. There is also a final drive chain oiler.

The lubrication system caused Ted some headaches, and he still claims that he doesn't precisely understand its manifold intricacies. One major problem was the valve I've just mentioned. Ted needed to get a look at one because his had

Triumph's other twin



Primary drive details: outside flywheel, double helical gearing and fragile four-spring clutch. Engine-shaft shock absorber is a typical spring-loaded face cam design.



Ted Smith's Triumph 6/1 as it was about two years before he bought it.

gone missing. But how do you get someone to take a 6/1 engine apart? First locate your motor: Kevin has a friend who owns that superb — and sadly out of print — paperback *Motor Cycles: a technical history* by C F Caunter, published by the Science Museum. The Science Museum has a lot of motorcycle engines in its cellars; Plate 13 of Caunter's book reveals that they have a 1935 6/1 motor down there in South Kensington. A phone call made an appointment, and Ted Smith took a trip to town from Essex. The man from the museum kindly obliged with his spanners, Ted got out his calipers and micrometer and, hey presto, one new valve.

More kindness was shown by the man in West London with another 6/1. He loaned Ted his rear carrier, and with the consummate ease of a skilled craftsman he knocked up another that's so accurate that its top just slotted on to the other as if they'd both been made in Coventry. The silencers — in superbly chromed 18-gauge steel — are also Ted Smith productions. I challenge you to tell them apart from the original components.

Still more incredible are the mudguards. Absolutely unobtainable, with their wide raised band of chrome plate down

the centre, they almost stumped even a man who works with metal every day. In the end he bought a pair of plain guards from Brian Verrall in Tooting, South London, which were of the correct dimensions. After that it was a case of constructing a substantial two-piece tool which, with the aid of a large fly-press, was capable of producing the raised central band. Once this tricky operation was completed the guards were plated and then all but the central bands were sprayed Humbrol black. The three-and-a-half gallon fuel tank had its bottom removed before it was carefully renovated and treated to a very heavy deposit of copper prior to nickel, chrome and stove enamel.

Although the gearbox required only one new bearing, the engine had a bent steel conrod and Ted made new small-end bushes in Admiralty bronze, a superior grade of material to the original metal. It now runs +40 pistons — they seem readily available and also fit '24 Rudge singles — but only inlet valves were available from L Stevens in West London and Ken Bryant Motorcycles of Penge, so they are fitted all round. In about 700 miles since the rebuild they have survived as exhaust valves.

Although the exhaust pipes are a professional one-off job, Ted made up oversize clutch roller bearings himself from silver steel when no bearing company would quote him. The machine is fitted throughout with rubber-covered, cotton braided wiring, proper Bowden cables, genuine Amal handlebar grips and celluloid-bodied inflator. For runs Ted fits an extra modern brake light/rear lamp which detaches — like his neat sheet-metal toolbox on the carrier — in seconds to reveal the Triumph in all its standard glory.

Because the primary drive is by gears the 6/1 'runs backwards' like many a modern engine. This created problems for Ted in finding a suitable replacement magneto, and he had just completed modifying a stock slip-ring when a new 6/1 mag turned up at a Knebworth autojumble. Simple items like chain adjusters were copied by Ted, who spent hours filling the pits in frame and fork with braze rather than use resin filler.

Relatively few changes were made to the 6/1 during its short life. It always had linked brakes — useful on a combination — as well as large 8 x 1in drums which will accept turned-down Thunderbird brake shoes. Also fitted is an ingenious spring-loaded plunger at the rear of the primary drive case which locks the rear brake on via a ratchet. The neat spring-loaded EsWay side-stand is from about 1938, and was repaired by Ted. It works very well.

Launched with a hand-change gearbox, the 6/1 went to foot change for the 1935 season, and a change of ratios for '36. In that year the separate oil filter tank was eliminated — it changed position from '34 to '35 — and the Lucas horn moved from front fork to below and to the left of the saddle and then back again to the fork. A twistgrip advance/retard mechanism was fitted on '34

Triumph's other twin

models, and then discontinued. For sidecar work a 53-tooth rear wheel sprocket was fitted, for solo a 49. Ted runs a 53, and I know that most of you will be as amazed as I was to discover that the rear wheel is QD — via the same system of splines I had fitted to my 1964 Triumph 3TA! The 6/1 is a real education . . .

But what is it like out on the road? In a word: magnificent. Ted just tickled the tiny 1in bore Amal carburettor — whose float requires a body with a unique five-degree tilt — and fired it up first kick. Then I slipped into the comfortable sprung saddle, dropped down into first gear and pulled away. The clutch feels a little grabby, and the straight-pull twistgrip a trifle stiff, but the 6/1 certainly packs a punch.

On smooth roads the vertical twin feels superbly comfortable and has brakes quite powerful enough to restrain its 412lb. A fair amount of vibration comes through the handlebar, but once you're up to 60mph that really smooths out, says Ted. At 4500rpm the 6/1 should be comfortably over the legal limit at 80mph, and handles remarkably well on a mixture of 3.50 x 21in Dunlop rib and Avon Speedmaster tyres. Ted says he can notice a distinct difference in the way the machine handles on either left or right hand bends, but I wasn't going that fast.

My impression was of a motorcycle with delightful power characteristics; there's an abundance of low-down torque and the one-down, three-up gearbox feels fine if you take your time. Ted knows of at least five other Page 650s at present running around Britain. He has got to know all their owners and, even after all his efforts with this model, I bet he'd jump at the chance to rebuild another.

With the hand change gearbox fitted to early models, its old-fashioned partially exposed valvetrain and its curious lubrication system, the 6/1 was something of an oddity. It represented too big a change too soon for motorcyclists raised on a diet of singles and more singles. Yet however much Edward Turner might have basked in the glory of 'inventing' the vertical twin, he must have known that it was Val Page who rediscovered this potent configuration, embodying many of its most attractive characteristics and possibilities in the 6/1. Triumph's other twin set a trend that the world followed for more than 40 years.



The pressurised oil filter housing is mounted just above the gearbox positive-stop mechanism.



Tank top features include oil pressure indicator button (left), ammeter, lights switch and inspection lamp.



Note the engine's significant offset to the right, and consequent shrouding of the left cylinder.