

THE MACHINES
THE ARMY USES

The 490 c.c.



On the approach to the final and steepest stretch of Bwch-y-Groes. The pass, the lower section of which can be seen running down the valley, has an average gradient of 1 in 7 for approximately 11 miles. In spite of a strong following wind the Norton toyed with the climb, and would surmount even the steepest part in second gear.

THERE is something a little fatuous about testing a W.D. Norton—the 16H is too well known. I owned one for years and loved it. Tens of thousands of others have also owned and loved them.

The machine has been on the market so long that its birth is lost in obscurity. There was a Model 16 even before the last war! But the present W.D. machine is a very different job from the 490 c.c. side-valve I owned in 1926. Is it as good, better or incomparably superior? Read on and you will see.

Instead of fixing a single day for the test of the Norton I decided to make it a couple of days. Then I should have a comfortable amount of time to run up to the Midlands, pick a machine, chase around North Wales and, finally, take over my own bus again and return home. I might have made it another 495-mile day, but the Norton works being over 120 miles from my house there would be more than 240 miles to cover without a mile on the Norton; also there was that little matter of selecting the machine.

The first day was far from strenuous. It consisted of running up to the Midlands on my own



(Right) A restarting test on the 1 in 31 section of All-y-Bady, near Llangollen

Side-valve Norton

Around North Wales on a Standard
W.D. Motor Cycle Picked at Random :
Up Bwlch-y-Groes, Allt-y-Bady and
Some Really Rough Going

By ARTHUR BOURNE,
Editor of "The Motor Cycle"

machine, interesting chats with many old friends at the works, obtaining the model I was to test and then merely getting a little north of Wellington. Picking the machine took some time. Goodness knows how many Army and R.A.F. Nortons there were in the Despatch Department—rows and rows of them. They, however, were "counted"; they had all been passed off by the Government inspectors and allocated to the various destinations. There was a line of models, any one of which I could snaffle, but it wasn't a very long line. "Right!" I said, "I'll have the next machine that comes in off test."

That was awkward, if you like, because it meant that when the machine arrived it would have to be fitted with its final W.D. equipment, pass through the viewers' hands and so on. If ever there was a case of taking pot-luck on a model this seemed to be it—the machine would be as standard as standard could be.

So the very first tester who arrived had to hand over his machine. It was viewed while I waited and watched, a head lamp mask was fitted, also number plates and a licence and then the tanks filled up. Riding position and, except for two things, every other point was as "Army." One thing was the rear stand. The War Department apparently likes its spring-up rear stands to flick upwards and hang-the-fact-that-there-is-clatter-in-the-rough. I don't, so those two pivot bolts were tightened civilian style. The second point was that I had a bit of rubber tubing pushed on the projecting screw threads of the battery carrier.

When I set forth from the factory the hour was one at which in peacetime the day's work is over. Around, however, was still the sound of a factory in full blast.

Out into the city's traffic and north-west for the Chester road. In what seemed a matter of yards I was at home with the machine. New the model might



Some of the rough going included in the test. On this particular very steep earth-cum-rock track a spinning rear wheel brought the machine uncomfortably close to the edge of the ravine!

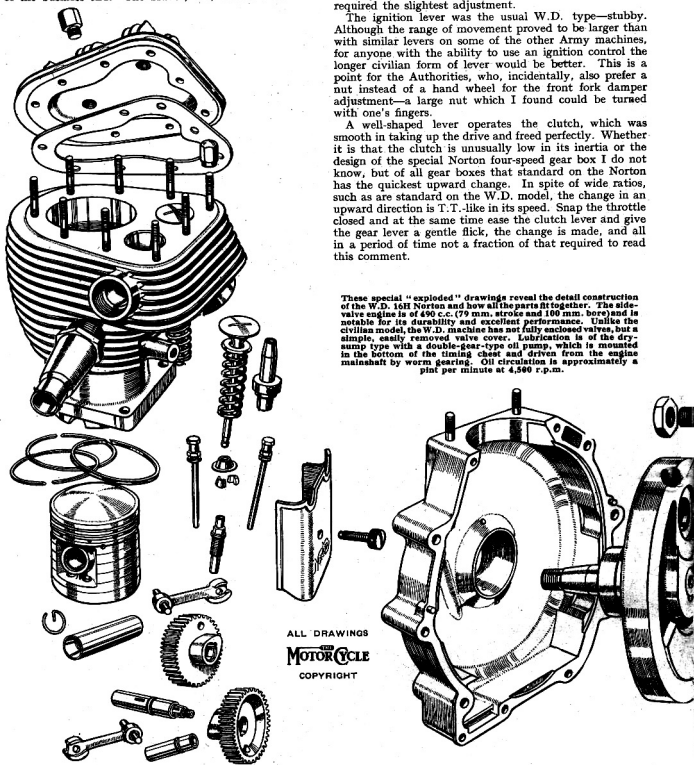
The 490 c.c. Side-valve Norton—be, but it felt good. Unusual in these days, the twist-grip throttle worked perfectly smoothly—not a rough spot any where in its movement, no heavy wrist work needed, nor was there any backlash. And to prevent one barking one's hand there is a moulded rubber sheath enclosing the whole of the business end. The brakes, too, earned a hundred

out of a hundred. To operate the well-shaped front brake lever to the full required merely two fingers—I tried it to see. The rear brake was equally light. Both were as smooth as any brakes I have ever used and with every atom of power one could desire. They apparently stand up very well, too, for at the end of the test I was to find that although the brakes had been used hard and often neither required the slightest adjustment.

The ignition lever was the usual W.D. type—stubby. Although the range of movement proved to be larger than with similar levers on some of the other Army machines, for anyone with the ability to use an ignition control the longer civilian form of lever would be better. This is a point for the Authorities, who, incidentally, also prefer a nut instead of a hand wheel for the front fork damper adjustment—a large nut which I found could be turned with one's fingers.

A well-shaped lever operates the clutch, which was smooth in taking up the drive and freed perfectly. Whether it is that the clutch is unusually low in its inertia or the design of the special Norton four-speed gear box I do not know, but of all gear boxes that standard on the Norton has the quickest upward change. In spite of wide ratios, such as are standard on the W.D. model, the change in an upward direction is T.T.-like in its speed. Snap the throttle closed and at the same time ease the clutch lever and give the gear lever a gentle flick, the change is made, and all in a period of time not a fraction of that required to read this comment.

These special "exploded" drawings reveal the detail construction of the W.D. 16H Norton and how all the parts fit together. The side-valve engine is of 490 c.c. (79 mm. stroke and 100 mm. bore) and is notable for its durability and excellent performance. Unlike the civilian model, the W.D. machine has not fully enclosed valves, but a simple, easily removed valve cover. Lubrication is of the dry-sump type with a double-gear-type oil pump, which is mounted in the bottom of the timing chest and driven from the engine mainshaft by worm gearing. Oil circulation is approximately a pint per minute at 4,500 r.p.m.



ALL DRAWINGS
MOTORCYCLE
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Later, just to see how light the change is, I leant down and went in and out of the gears, using just the clutch and the thumb and forefinger of my right hand. The change is just as it should be—like lightning—and there is not the slightest need to stamp on the control. Because of this exceptionally quick change the machine is remarkably rapid off the mark. If anyone finds the change heavy and it is not a case of brute force and ignorance having strained things, all I can imagine is that they don't realise that here is the quickest, snappiest change it is possible to find.

What of the riding position? This is similar to practically every other machine of to-day—saddle low, footrests high, knees sharply bent. After I had been travelling about 30 miles I stopped, got out the extraordinarily comprehensive tool-kit (I wonder if W.D. tool-kits will set a post-war fashion?) and set about lowering the footrests to the maximum that was possible, a couple of serrations, and then, by means of the adjustable brake pedal stop (excellent point!) and the brake adjuster, arranged the brake pedal to suit. This was better for my 5ft. 10½in. The saddle could be higher with advantage; apart from the question of riding position I found I was liable to bump down on the frame lug that is immediately beneath.

The special W.D. handlebars are a little peculiar to civilian eyes. They can perhaps be best described as a cross between the English bar and that of America in that they are long and swept somewhat back. At first I looked at them a little askance. They reminded me of the bars that the King brothers and Spencer employed in the days when they won the team awards in practically every open trial that was held. I decided it would be wise to reserve judgment. It was as well, for I was to learn to like them. While I do not give them and the War Department many marks when it is a question of going really quickly, they appeared to give one excellent control when in the rough, and as for swerving the bends in twisty Welsh lanes they are the goods.

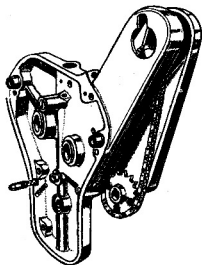
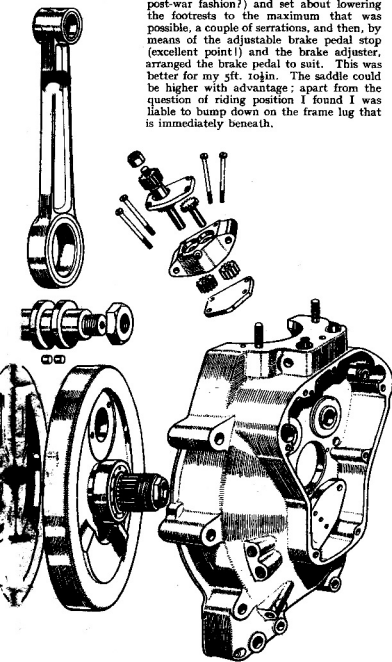
Starting from Cold

The run that evening, as I have recorded, was only to a little beyond Wellington. It was on the morrow that the real test was to take place. And when the morrow came I wheeled the machine out of the shed in which it had lain over-night, flooded the carburettor, retarded the ignition a trifle—about ¼in. at the outer end of the lever—and, without closing the air control, gave the kick-starter pedal a by no means hefty swing. I was astride the machine, not with it on the stand. Immediately the almost brand-new engine fired. I was to find throughout the test that if only one took the trouble to retard the ignition control the fraction named, the engine, whether hot or cold, would always start either first or second kick—generally first kick—and never was any effort required. That air lever, from the time I left the Norton Works until the time I arrived back, was left full open. The only difference about starting from hot or cold was that in the latter case I, of course, flooded the carburettor.

At first there was fine, driving rain. I consoled myself with the thought that it might be the "pride of the morning"—in other words, it might cease before very long. For once "might" was "right," and while the rest of the day, even those parts of it spent among the Welsh mountains, was mostly dull, at least it was fine and warm.

So far the engine had not had much in the way of running-in, for the speedometer showed only 51 miles.

With a side-valve engine one wants to be reasonably kind. I began the day by cruising at 40 m.p.h. and, as usual, flicking the throttle closed just for a moment about every quarter of a mile, the object, of course, being to sluice the



The 490 c.c. Side-valve Norton—

cylinder walls and piston with plenty of coolant (and lubricant) in the form of oil. Everything seemed perfectly happy. Soon the machine was running up to 45 m.p.h. on the level, doing so on little more than a third throttle, and up to 50 downhill. Still the throttle was snapped-to at more-or-less regular intervals, as was duly the case throughout the day whenever the engine had real hard work to do. This, as I have stressed before, is an excellent safety first measure.

Before very long the Norton was on somewhat twisty going, but not before she had done quite a useful amount at an average of over 40 m.p.h. So to Dinas Mawddwy. I had planned to tackle Bwlch-y-Groes, which some little time ago was voted by the most famous trials riders in the country as being the most difficult hill ever tackled by the normal tourist. Allt-y-Bady, near Llangollen, was also on the list, and I had in mind one or two real freaks and a stretch of rough-stuff. The last, I was to find, was no longer available.

Flocks of Sheep

First, the uphill, downhill serpentine lane that leads to Llanymawddwy and the "Bwlch." Already I had encountered numerous flocks of sheep—had done so almost invariably on rounding bends. This portion of the run was no exception, and for the umpteenth time I was to bless the superb pair of brakes. Never have I had brakes that were better. And the gear ratios are an excellent selection. Top is 5.28; third, 6.39; second, 9.35; and bottom, 15.7 to 1. Here, with all the twists and turns, and ups and downs, the gear box was used to the full.

That is not to say that the engine is inflexible. I was out not to waste time unnecessarily. As a matter of fact, the Norton is unusually flexible; it will go down to some 16 m.p.h. in top gear and can be accelerated from this speed without the slightest snatch, so long, of course, as one is reasonably gentle in opening up.

Since by the time the foot of Bwlch was reached there were only 125 miles on the speedometer, to tackle the hill seemed more than a little unfair. As many will know, there is almost invariably a wind blowing up the pass; usually it is a fairly strong wind, with the result the engine has to operate in something approaching still air. This time the wind was a really powerful one. Poor, nearly new side-valve!

On Bwlch-y-Groes

To look at the hill one never gets any real idea of the gradient. The reason is the way the road climbs up the valley. For almost exactly a mile and half the average gradient is 1 in 7, and the steepest pitch, which is 1 in 4.9, is near the top. The total height climbed is some 1,250 feet. I have seen side-valve engines which even in broad daylight glowed red hot well down the cylinder. What would the not-run-in Norton do?

With the object of making the test severe in every way I took the hill on the run. I decided, however, that it was only fair to drive sensibly—not to press the engine unnecessarily—and to continue that shutting-off dodge. I don't think I need have troubled overmuch, for in spite of half a gale blowing up the hill the Norton toured up with the greatest ease, using bottom merely for the very steepest section. Later I was to find that she would go up even the steepest in second. Good enough!

At the top I halted for a smoke and to admire the view. I also decided to be the little gentleman and do what all ought to do with a new engine following the first 100 or so miles, namely, check over the cylinder head nuts and tighten them up after the initial bedding down. I was wise; the majority took their half a turn.

Bad though the Bwlch is as a means of caning an engine especially on a day such as this, I wanted some rough hills too. True, there are not many of the best-known rough stuff hills which I have not tackled on a 16H, whether in Derbyshire, Somerset, Devon, Gloucestershire or a few other counties. However, it would all go to confirm whether the W.D. model is really better than the model I used to own and the others I have ridden.

You see one of the nice freakish types of hill in a picture on an earlier page—and the Norton rather close to the edge. I had some fun on the particular climb illustrated. The tyres were fairly smooth-type standards, and there was no security bolt in either wheel—security bolts are not yet fitted as standard on the W.D. Nortons. Hence I decided it would be unwise to use what otherwise would have been a sensibly low rear tyre pressure. I was miles from anywhere and the thought of a pulled-out valve and no spare tube was not very appealing.

What brought me near the edge was violent wheelspin. I had to do some manhandling of the 376lb. and got more than a trifle hot in the process. However, enough was learnt here and on other roughstuff for me to state that the W.D. model handles very, very much better in the rough than any 16H I have ridden, and that special 5 1/2 in. ground clearance is a boon. Not once during the day did the machine hang fire on a rock outcrop.

Allt-y-Bady's 1 in 3 1/2

Having spent rather a long time finding and negotiating rocky going, earth-coming-loose stone tracks and a not-too-fertile patch of mud I decided I must make tracks to Llangollen for that favourite test hill for Army vehicles, Allt-y-Bady. To get there involved twisty lanes followed by really fast roads. On both types of going the handling was excellent. The machine lay over effortlessly for bends, did not shimmy or do anything else untoward if it hit a bump when leaning well over and leapt perfectly straight over even the worst of cross-gullies. The steering has a pleasantly positive feeling about it—in marked contrast with old-type 16Hs.

Another excellent point is the unusually large steering lock, which was most useful on hairpin bends and when one wanted to turn round in a narrow road.

On the fast going I began to cruise around 50 m.p.h. Once or twice the machine was taken up to 60. At high speeds there was a fair amount of vibration, made more noticeable, no doubt, by the unusually long W.D.-type handlebars. The power on hills was almost surprising—it would have been really surprising if one did not know the 16H and the performance of a good side-valve. About 45 m.p.h. is a comfortable, frequently used speed in third gear. Utilise third in addition to top, and second as well if the speed drops low, and with the ultra-rapid gear change one has a performance which will vie with that of most things. As matters panned out, not once in some 250 miles was the Norton panned.

Anything Else to Test?

From what had been tackled previously it was obvious that the "Bady's" 1 in 3 1/2 gradient would not trouble the Norton. It roared up the hill at over 20 miles an hour without slackening the slightest for the steepest pitch and would have done more had I not felt it cruel to let the engine rev any harder. The next thing, obviously, was to do a restart on the worst part. The clutch, I knew, would not mind, for it had already had a towing on some of the freak stuff earlier.

The machine got off the mark with ease and, thanks to the first-class low-speed steering, my feet were on the rest within a matter of a yard.

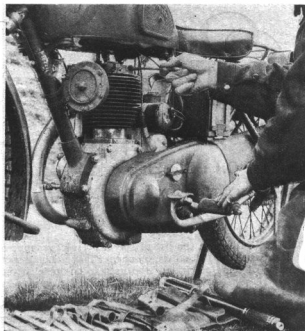
Was there anything else to test? There seemed to be

nothing I did not know already. The task now, it appeared, was to make tracks for the Norton Works, chat over a few—very few points—that had arisen, pick up my own model and return to London.

This time I really let the Norton have it. There was much "55," one burst of "65" with my large body just about bolt upright and 62 with it upright, and plenty of use of the gears. All that happened was the milled-headed hand-screws in the new, huge tool boxes started to slacken off and had to be tightened up good and hard. So back to Birmingham, arriving there appreciably earlier than I expected to do so.

All the Good Traits

What had the outing shown? That this taken-straight-from-test Army machine was in all respects as good as and in a number, considerably better than any of the civilian 16H machines I have ridden. It handles much better, has superb brakes and the best change of any wide-ratio box I know, is much superior in the rough and has all the old traits that have made "16H" known and famed throughout the world. And at the end of a considerable amount of battering the only adjustment that seemed to be desirable was the taking up of a little side-play in the front forks.



(Right) A wise plan: the cylinder-head nuts being checked for tightness as soon as the head has had an opportunity of bedding down

A WORD TO ALL SERVICE MEN

(And Their Friends and Relations)

OVER the months I have found that a large number of you who are in the Navy, Army and Air Force are having difficulty in obtaining your weekly copy of "The Motor Cycle." The trouble in many cases is that you are in out-of-the-way spots; in others it is that you are seldom in the same place for more than a month or two.

So numerous have been the letters on the matter that I asked myself whether there was not some way we could assist—whether we could not get out a really helpful scheme whereby all who wish could have their copy of "The Motor Cycle" with their Thursday morning's post.

On Page 2 of the Advertisements you will find full particulars. Briefly, every one of you who are in the three Services can have "The Motor Cycle" posted direct without having to pay a ha'penny for postage. All you pay is the face value of the issues:—4s. 4d. for three months or 8s. 8d. for six months. Should you be moved it is merely a matter of dropping us a postcard giving the new address. In order to save you trouble the bottom of Page 2 consists of a special subscription form. Not only may you who are in the Services take advantage of the scheme, but others—friends, relations or clubs—can do so for you, having the copies sent direct to you as a little present.

If, as I gather from your letters, this meets a very real need, in the words of Mr. Morrison, one-time Minister of Transport, "Go to it!"

Yours sincerely,

Arthur Bourne
Editor.