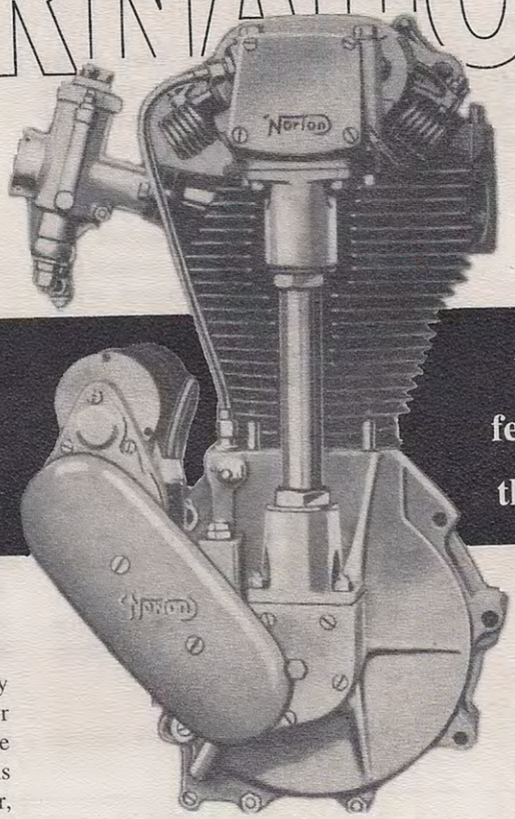
SORTING OUT the Unapproachable Norton "INTERNATIONAL"

with PHIL HEATH



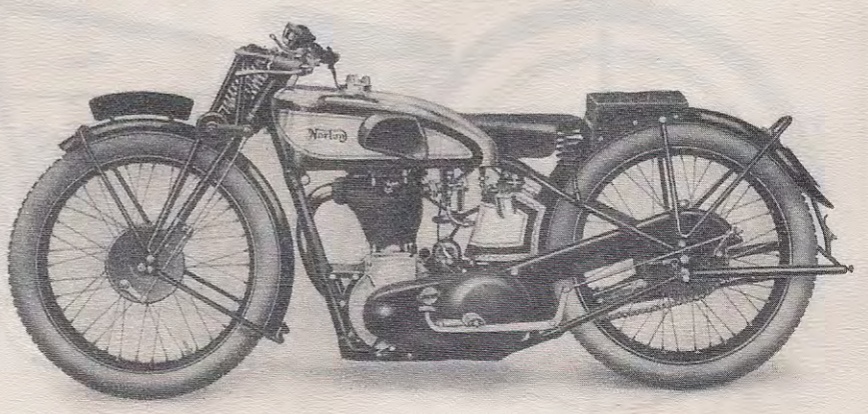
Of all the machines made through the 1930'S, few achieved the glamour and desirability of the Norton International.

Whether or not this is wholly justified, is another matter altogether, for there were several competing single-cylinder designs with equal performance. The Rudge Ulster, Sunbeam Model 95 and Vincent Comet Special for instance; while the Ariel Red Hunter and, BSA Special, were not far behind. And although fast, the Inter was also noisy, oily, thirsty and expensive!

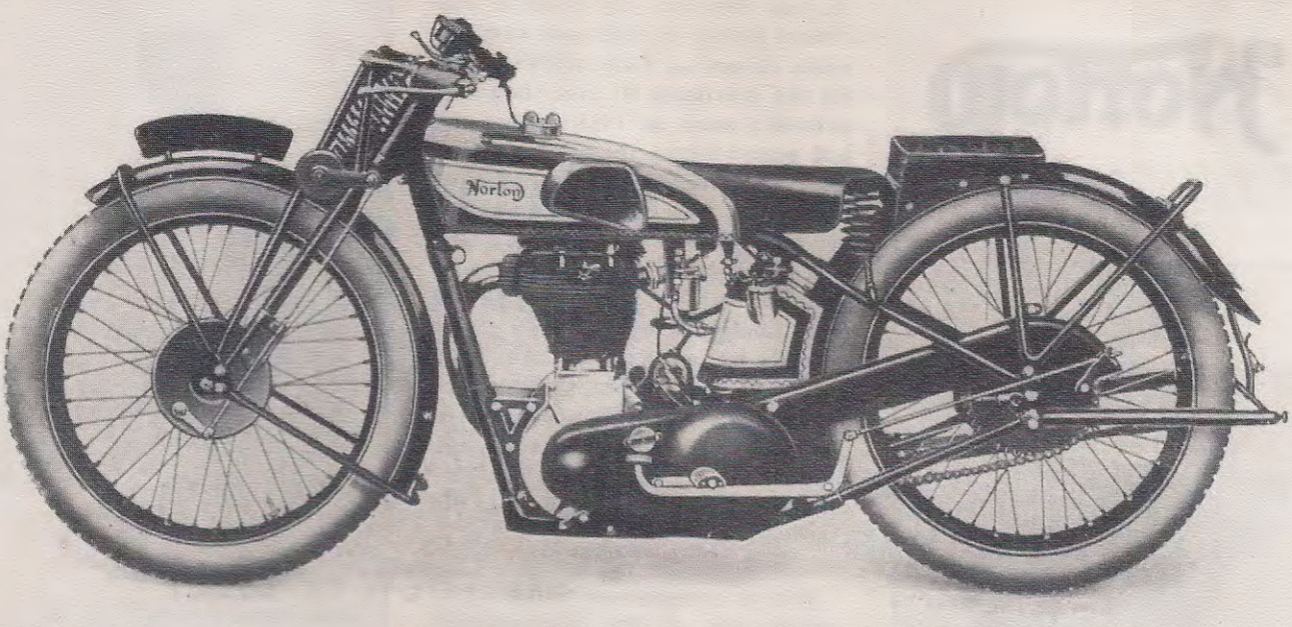
But, on looks alone, the Norton had them all beaten. With that long 3 1/2 gallon petrol tank and the evocative OHC engine, it just oozed speed and superiority and, of course, it boasted an enviable pedigree.

Nortons had been making overhead camshaft models for some time, first cataloguing the 490cc CS1 in 1927, to be joined later by the 348cc CJ; both having the Walter Moore designed engine, known sometimes now as the "cricket bat" motor, from the shape of its cam drive housings. In 1930/31 new engines designed by Arthur Carroll made their appearance and it was with this design that Nortons started their incredible run of success in road racing, beginning with the Senior/Junior double in the 1931 TT and followed by twelve or more wins in Grand Prix races on the continent that year. Engine dimensions of 79mm x 100mm bore and stroke for the 490, and 71mm x 88mm for the 348 are a part of Norton folklore.

So, in 1932, the company introduced a model which was more or less a race



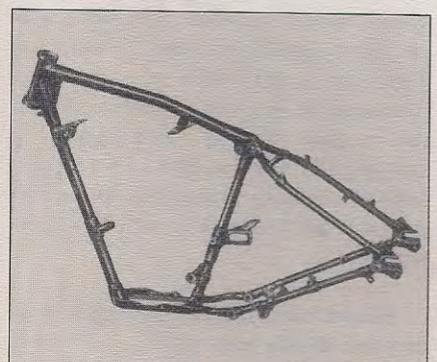
1932 – Introductory year for the "Inter" models, based firmly on the 1931 factory racing machines but, sharing forks and brakes with the rest of the catalogued range.



Compare the smaller petrol tank on this 1932 350 Model 40, with that of its bigger brother, Model 30, on facing page. Check springs didn't appear on the forks until 1933

replica and instead of naming it after a single race win - as Rudge had done with their "Ulster" - they chose to call it the "International" in respect of its many overseas victories. It was not named after the International Six Days Trial as claimed in one of the many books written about Norton, although Inters were indeed used in the ISDT, but not until several years later. Like all Nortons the new models - the Inters were made in the both 350 and 500 form - had numbers, the 350 being known as Model 40, the 500 as Model 30.

At this stage perhaps it should be mentioned that during the period when the pre-war Inters were made, the overhead camshaft CS1 and CJ were still being produced alongside, however, these were now touring/sports models which shared common cycle parts with the remainder of the ride-to-work range and their engines always utilised cast-iron heads and barrels, coil valve springs, non-downdraught inlet ports and were stamped with the "CS" "CJ" engine number prefixes.

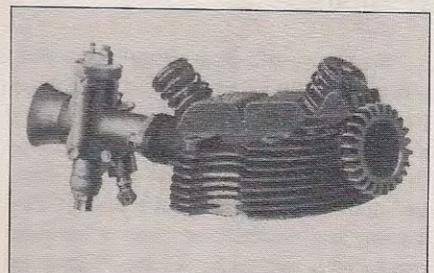


The cradle frame used until the 1935 season, after which front of the cradle was canted up to improve ground clearance.

The 1932 Inters, as already mentioned were more or less racing models, the ohc engine was fitted with a downdraught Type 27 TT Amal carburetter, racing ML magneto, 4-speed Sturmey-Archer gearbox with close ratios and positive-stop footchange and fuel tanks of $3^3/4$ gallons capacity on the 500, $3^1/2$ gallons on the 350 (racing Inters only, came with $4^1/4$ and $3^3/4$ gallon tanks respectively). Wheel hubs and detachable brakes were common to other models in the Norton range, but rim sizes were different, at 2[illegible]" for the front, 2[illegible]" rear. A full width oil tank with oil filler neck on the nearside featured a quick action cap; the petrol tank having a similar cap, plus anchorage points for the André steering damper, to complete a specification with which one could go racing.

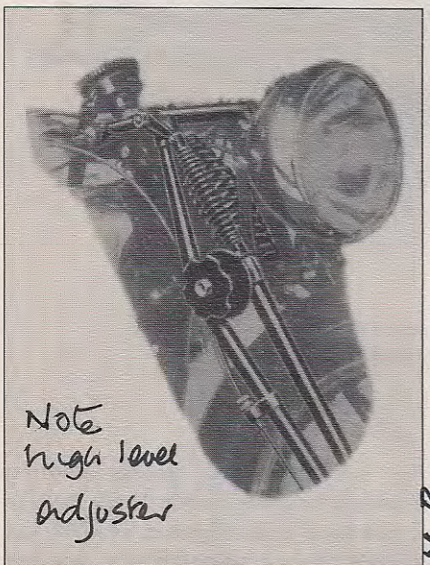
Tank lining and finish is always an important factor in correctly rebuilding a machine, and today one sees more variation in the finish of Inter tanks than most. The very first Inters shared the same livery as the "works" racers, that is overall dull nickel plate (please note professional restorers - that is dull nickel) with wide black band around the tank and a thin red line beneath it. But, unless supplied expressly for racing (in which case the bike would have a non-kickstart gearbox and straight-through exhaust pipe), very few sported this tank finish. Otherwise, tanks would be chrome plated with silver top and side panels, lined out in black and red. George Dance kneegrips and Petroflex flexible fuel pipes were further racing touches. Prices of this first season's productions (and which remained unchanged until the outbreak of war in 1939) were £90 exactly, for the Model 30 (490cc) and £82.10.0 for the Model 40; neither price was inclusive of dynamo lighting, but this could be specified, in which instance a Lucas Magdyno replaced the racing magneto.

Both the weekly magazines carried a road test of the 500 Inter in '32, they were to be the only ones to appear until after



Downdraught inlet port with flange fitting TT carb, identified the Inters from their CS1/CJ touring stablemates, from the outset.

Norton "INTERNATIONAL"



Forks special to the "Inter" to suit the revised front brake came in 1934. Note addition of check springs.

World War II. "Motor Cycling" undertook a "stunt" ride in which their sports editor "Castor" planned to ride from London to York and back, emulating a similar previous ride on Tim Hunt's Junior TT winning Norton. Unfortunately, foul weather (this was in February) curtailed the test and he turned round at Grantham and headed back for London, with the revised idea of covering the 111.5 miles to Hyde Park Corner in two hours. In spite of having to stop for 2½ minutes to remove the temporary acetylene lamp when the brackets broke, he missed his target time by only 30 seconds.

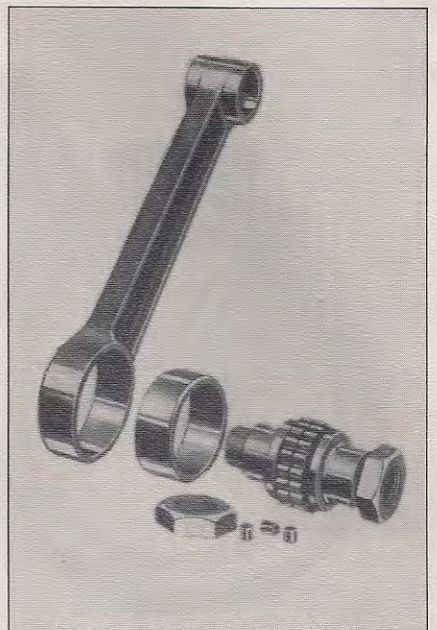
There was talk of cruising in the 90s, when weather and road allowed (remember, even on the Great North Road there wasn't that much traffic in those days). However, as a speedo wasn't fitted, this may have been wishful thinking! The steering and roadholding came in for high praise, so, surprisingly, did the braking, as at that time the model had those "cocoa-tin lid" brakes on the front.

"The Motor Cycle" tested the same bike - registration number OV 6794 - later in the year. This time it was kitted out with dynamo lighting, the additional weight of which, claimed the works, knocked 7 mph off the maximum. It also showed a different silencer; the 1933 standard type with pointed fishtail. The maximum speed achieved by the magazine was 85 mph. Incidentally, "Motor Cycling" also carried out a maximum speed test, after the "Cyclops" bash. This was organised by the works on a secluded stretch of straight road near Birmingham, with no less a person than Jimmie Simpson in attendance. Timed by dropping flags and working a stopwatch over a carefully measured ¼ mile, a speed of just over 90 was achieved. Afterwards, they altered the exhaust to "straight-through", fitted a hotter plug and did exactly the magic "ton".

Most of the significant changes to the specification of the Internationals happened in the first two years following the 1932 introduction. In '33 check springs appeared on the front forks (not, on the rest of the range) and the next year the fork width was reduced, to suit a front wheel hub with integral brake drum. The early engines had an engine shaft shock-absorber, but this was dropped in 1934 when the whole Norton range benefitted from a new clutch with transmission shock-absorber in its centre. The primary transmission now ran inside an oil-bath chaincase, although, the Inter could be supplied with a simple racing type top run cover if required.

In 1933 and '34 the silencer with detachable pointed fishtail, already mentioned, was standard wear. The original 1932 design also had a removable fishtail, but this revised layout was said to be more efficient.

With the introduction of the oil bath primary chaincase in 1934, Norton moved the transmission shock absorber into the clutch centre.



At the heart of the robust single cylinder OHC engine, lay this substantial big-end bearing with double row of rollers, its outer race being pressed into the con rod eye.

Other small but important changes during this period included larger cylinder finning, rockers, rocker spindles and bearings, with oil feeds to the valve guides from the cambox. Although by 1934 the Inters were moving away slightly from the racing image, a Dunlop rubber competition saddle was specified.

Throughout the Thirties, Norton's seemed to be consumed by a desire to alter the shape of their silencers! 1935 saw another of these exercises, this one being cylindrical in outline - it was again common to the whole range, something the Inter always shared with the touring models, although it could have done with a special one giving as little back pressure as possible, a Brooklands "can" for instance. Top end performance is very much influenced by any sort of baffled exhaust, the engine having been designed specifically for racing; a fact surely acknowledged by frequently fitting just such a device to machines loaned for Press testing.

Hairpin valve springs appeared in 1935, they had already been on the works racers for some time by then and, in a tidying up of the foot gearchange arrangement, the so called "doll's head" gearbox end cover was first seen. The end cover incorporating the positive stop mechanism within a circular alloy "box". The George Dance style

Model No. 30 International

4.90 H.P. O.H.C. **Code Word: CLYDE**

Price - £94 : 0 : 0

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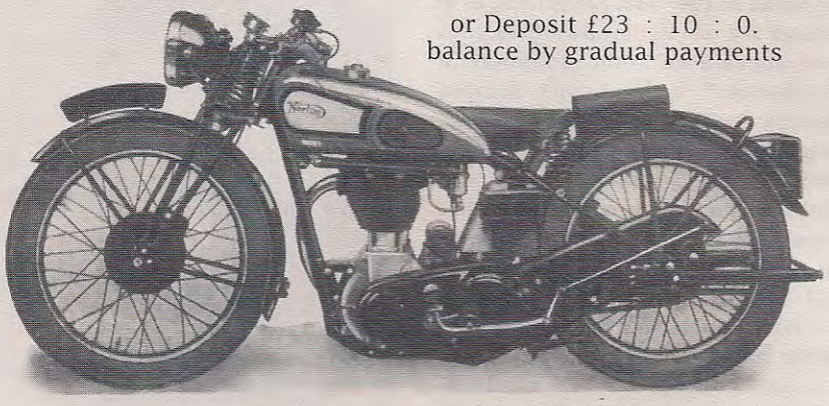


Nearside view of the 1938 Model 30, showing the T-type battery and Lucas Magdyno.

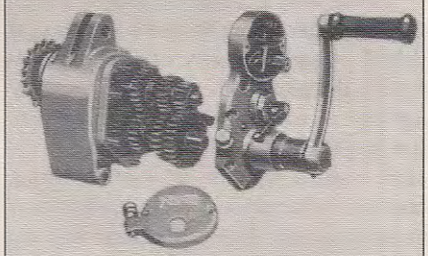
kneegrips were dropped, but the handlebars were now fixed within rubber mounts, reducing vibration transmitted to the arms.

The most noticeable change for 1936 was to the frame. The Inter frame had been the two-stay full cradle type as used on the 1931 works racers; on this, the front downtube went right to the bottom of the engine where the cradle started. However, it was found that in certain conditions, especially when racing, this limited the ground clearance (not great at the best of times). So, the front of the cradle was now angled up, at about 45 degrees. For the first time, in '36, the company's sales catalogue listed the Models 30 and 40 to racing specification - in other words, the "Manx" spec, though the bikes were never known by that name until after the war. Between their introduction in 1932 and 1936, Inters had been supplied, particularly for TT or Manx GP entrants, to special racing specification, but 1936 was the first year that Norton went "public" on this.

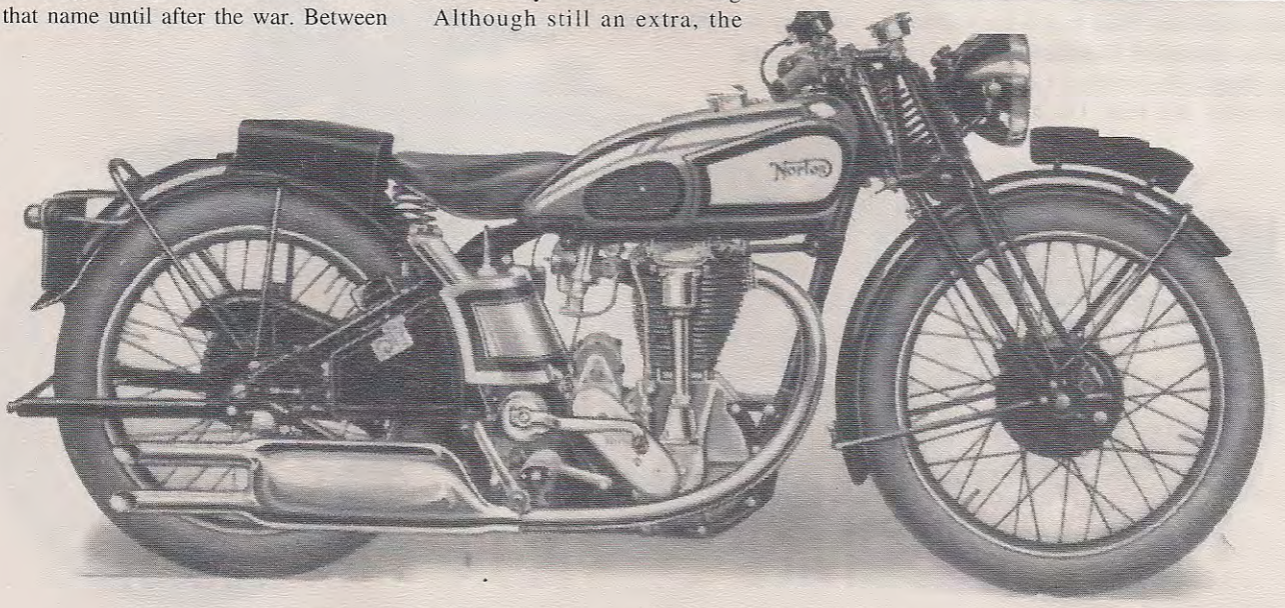
On production Inters in '36, light alloy cylinder heads became available, the steering damper anchorage was moved from the tank to the frame and the front brake cable adjuster moved to a lug on the forks, where the rider could adjust the brake from the saddle.

1937 was a year of few changes, the most significant being from 18mm to 14mm diameter spark plugs. By this date, the Internationals looked more and more like touring machines than the racers to which they owed their heritage. Although still an extra, the dynamo lighting was now shown on the machine illustrated in the catalogue; thus a half-width oil tank replaced the previous full-width style, its space being needed for a "T" type battery and mount.

On the works racers, the frame had been redesigned to accommodate plunger boxes for rear wheel springing and, some of the Inters supplied to riders for the 1937 Manx GP had these frames. In '38 it was to be made standard on the racing Inters and an extra on the roadster versions. Another small change for this season, was the smooth exterior of the magneto drive case cover, the long-running ribbed cover giving way to a highly polished smoothie on all Norton engines. It was also silencer change time again! And what a monstrosity they came up with - the infamous "cow's udder". Its main body was oblong in outline, fairly voluminous, with two short tailpipes looking for all the world like teets! It did nothing for the



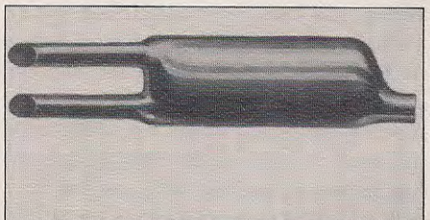
The "doll's head" gearbox end cover first appeared in 1935. Post-war, this was further revised to give a cleaner outline enclosing the clutch lift worm.



By 1937, a full lighting set was shown in the catalogue, although it remained an "extra" on the price quoted. Addition of a battery however, meant that a half-width oil tank with offside filler became necessary. (1938 model shown)

Norton "INTERNATIONAL"

appearance of any of the Norton models and, most certainly, not for the International.

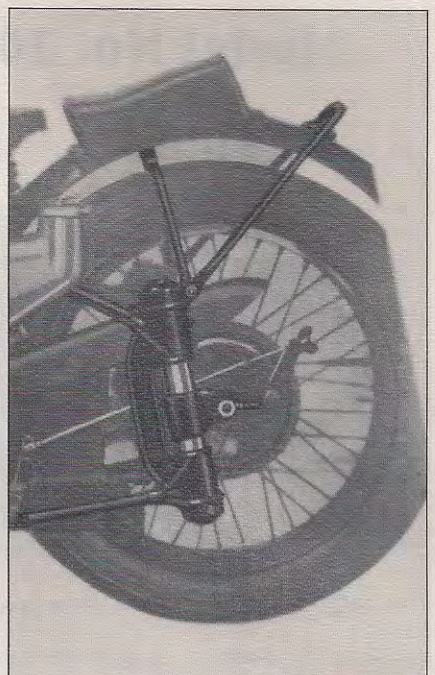


Just one of numerous Norton attempts at silencer styling, the infamous "cow's udder" lasted a single season!

Those first plunger frames featured large diameter spring boxes (tuners such as Francis Beart liberally drilled these to lighten the plot) with screwed light alloy top covers, having hexagons for removal. But in 1939 this layout was changed to the more familiar type having slimmer spring boxes of different construction which was to continue after the hostilities and until the introduction of the Featherbed. But, the 1939 frame had one curiosity, a centre stand which pivoted - forwards! Highly dangerous if it ever dropped while travelling, though there was a special catch in addition to the return spring, engaging with a pear-shaped lug on the nearside bottom chainstay. Find such a lug and you have an immediate identification point for your frame, for it wasn't continued with after the war. Oh and the "cow's udder" lasted just one season, it was back to the cylindrical form for 1939.

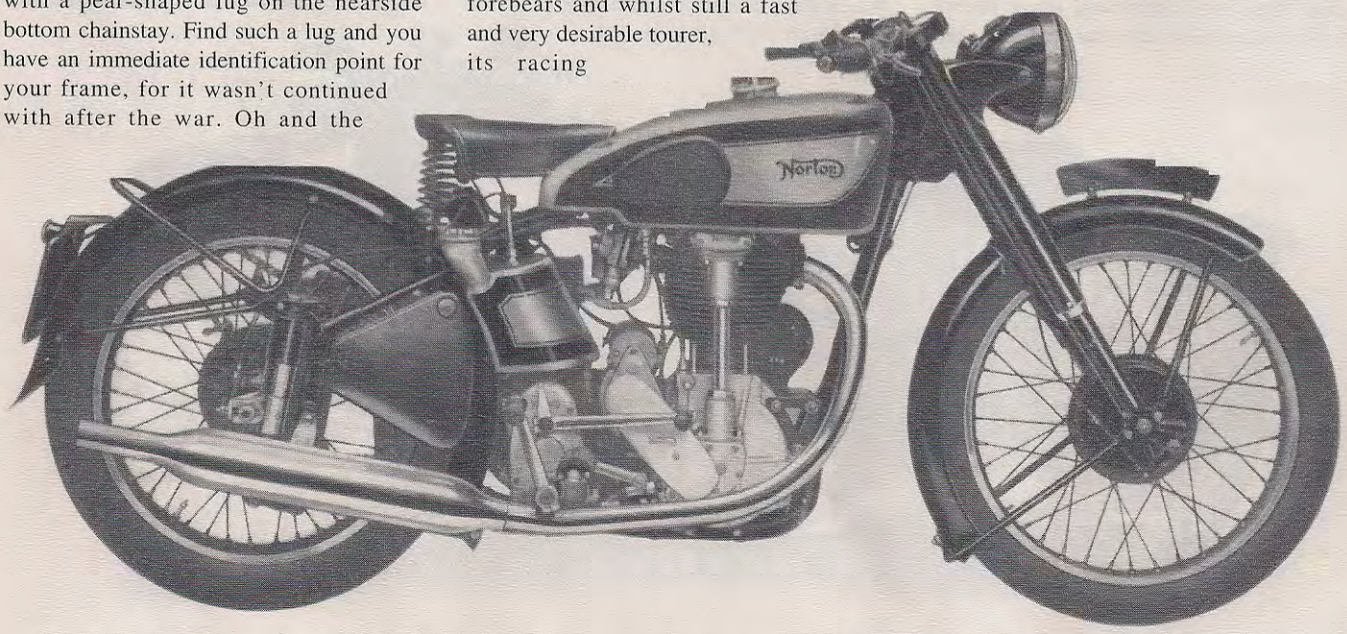
After the second major conflict of this century, the International models reappeared in 1947 with plunger frames as standard and one significant difference in their appearance - the adoption of "Roadholder" hydraulically damped telescopic forks. Coupled with these went mudguards of a very touring outline and common throughout the range. It was another step away from the TT replica image, reinforced by the cataloguing of separate racing machines as the Model 40M and 30M - the Manx Nortons. Nevertheless, the basic Inter remained a popular choice for Clubmans TT entrants (a series introduced in 1947) and Inters won both Junior and Senior class races in the inaugural year. But, it is interesting to note, that the winning bikes, ridden by Dennis Parkinson and Eric Briggs were actually pre-war models. The reason being that alloy heads could be used (not a standard spec item on the early post-war catalogue models) and so run a higher compression ratio for the low octane "Pool" petrol that was then the staple fuel. The edge on performance thus conferred, was more than enough to offset the loss in handling, through retention of girder spring forks.

To the end of our direct era of interest, it was to be little or no change in appearance or specification until, in 1953, the International acquired the famed Featherbed frame plus an alloy head and barrel. It was to run on until 1958 but for some, the Featherbed Inter doesn't share the magic and appeal of its pre-war forebears and whilst still a fast and very desirable tourer, its racing effectiveness had been largely undermined by the continuing development of the BSA Gold Star. It was the Goldie that would become the popular choice for Clubman's racing.



First offered to certain 1937 Manx GP runners, the spring frame became an option of the roadster "Inter" for 1938 and standard wear on the racers.

Whatever the model, early or late pre-war, post-war plunger, or Featherbed, all Internationals are sought after and valuable; witnessed by the prices these Bracebridge Street thoroughbreds command today.



"Roadholder" telescopics graced the models from re-introduction after WWII, in 1947. The cleaned up gearbox end cover and all-iron top end are clearly visible here. Appearance was largely unchanged then, until the "Featherbed" Internationals came in 1953