

“Scott”

TWO STROKE

1913

*“The car on two wheels.”*

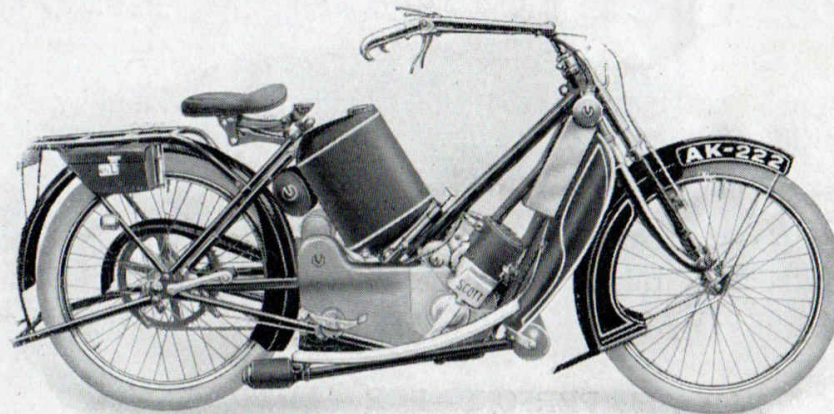


PRICE SIXPENCE

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Makers  
of the  
"Scott" Motor  
Bicycle.

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Telegrams:  
"Twin, Shipley."

Telephone:  
No. 337 (two lines),  
Shipley.

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# The Scott Engineering Company

Limited

Saltaire,

SHIPLEY,

YORKSHIRE.

"MADE TO LIMIT GAUGE"



## *Introduction*

# *The Scott Motor Bicycle*

has proved its worth by its striking list of successes ever since its introduction in 1909, and by an unbroken series of victories in hill climbing, and reliability competitions (quite out of proportion to the number of machines on the road) has justified its claim to be regarded as

*“The only Successful Two-Stroke Motor Bicycle.”*

We are supported by the experience of “Scott” riders and by the expert opinion of the Motor Press in claiming an excellence of design, placing the Scott years ahead of the ordinary make. The “Scott” is in a class by itself.—**The Only Motor Bicycle.**

### **FOR ALL PERSONS—FOR ALL PURPOSES.**

For example. As a **SPEED MOUNT**, the “Scott” is notorious for its exceptional power on hills, and can more than hold its own with engines of the same capacity, as shown in the T.T. races, when, in 1911, the “Scott” with the smallest capacity on the list, made the two fastest laps, improving on this in 1912 by making the fastest time on any lap and **winning** the race in the record time of 3 hrs. 51 mins. 3 secs., being about 6 miles ahead of the nearest competitor.

**FOR ALL WEATHER RIDING**, its immunity from side slip, its protection from mud, and proved reliability, are all essential for serious winter work.

**FOR TRAFFIC RIDING**, the instant starting from the saddle the almost unconscious operation of the foot lever engaging the gears, and the general feeling of security derived from the smoothly running engine and low centre of gravity.

**FOR THE ELDERLY MAN** who is unable to manage the usual “running alongside” with the precarious leap into the saddle, or the laborious winding up of starting handles, there is an especial attraction in the “Scott” which can be started with comfort and ease while seated on the saddle, and where the complete absence of engine vibration, coupled with the silent silky running, reduce to a minimum the fatigue of long-distance touring.

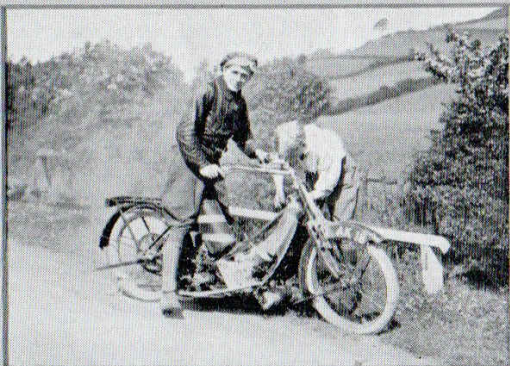
And all these things :—The dropped frame, the safe starting, the easy control of the gear, the low centre of gravity, and the smooth and silent running of the two-stroke engine—special features all combined in one machine—justify the frequent comment of the “man in the street,”

*“A Lady could ride that!”*

and finally, in addition to all these desirable features, the “Scott” is particularly adapted for successful combination with **SIDE-CAR**, on account of its simple system of water cooling.

# 100 Continuous Ascents & Descents of Sutton Bank

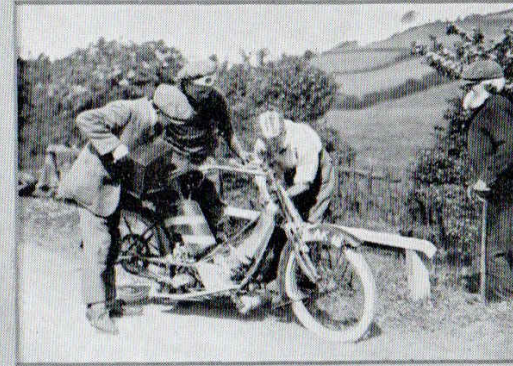
By Mr. Philipp on a  $3\frac{3}{4}$  h.p. "Scott," in  $7\frac{1}{2}$  hours, May 28th, 1911.



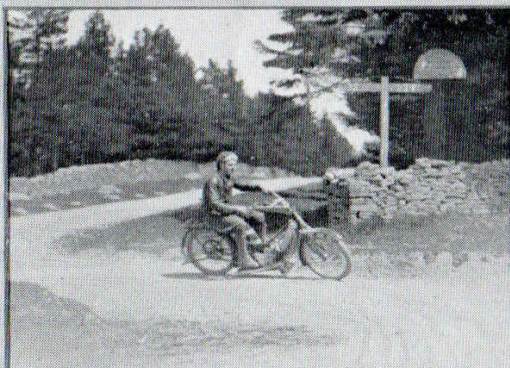
TAKING IN OIL.



FINISHING.



TAKING IN PETROL.

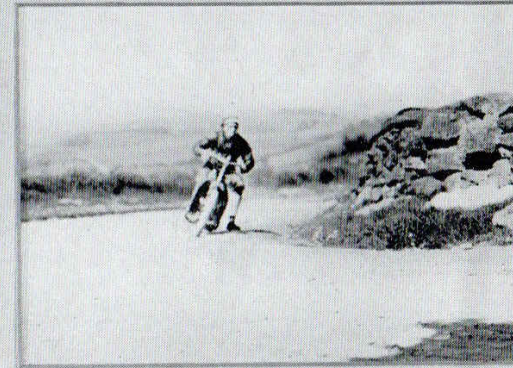


AT THE TOP.

The length of Sutton Bank is nine-tenths of a mile; height from base, 569 feet; average gradient, 1 in 8; steepest, 1 in 3'96; 1 in 4 and 1 in 5 occur frequently; a severe hair-pin corner halfway.

MR. PHILIPP, riding a standard 1911  $3\frac{3}{4}$  h.p. SCOTT, geared 4'4 to 1 and 7'3 to 1, completed the 190 miles in 7 hours 31 $\frac{1}{2}$  minutes. Stoppages for petrol and front tyre trouble due to excessive braking occupied 18 minutes.

The day was extremely hot. No water was added to the cooling system, and the **last round** was the fastest, taking 4 mins. 5 secs.



HAIR-PIN CORNER.



AT THE FOOT.

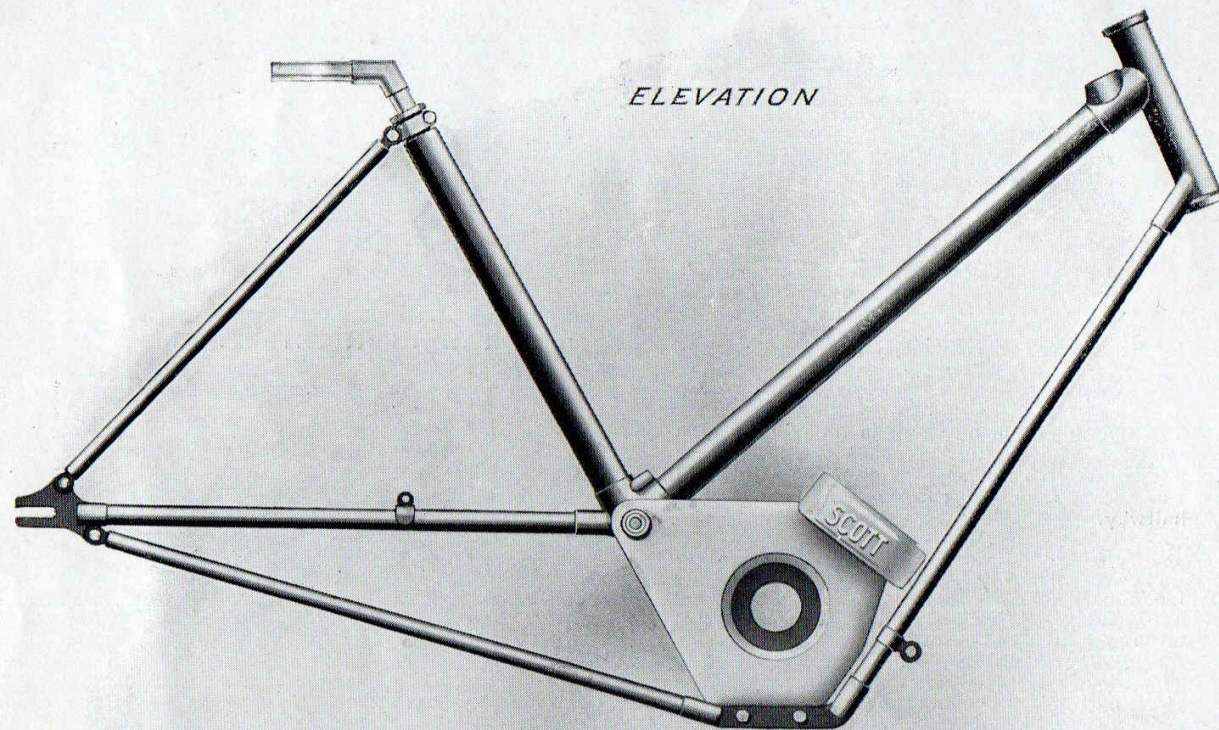


CONGRATULATIONS.

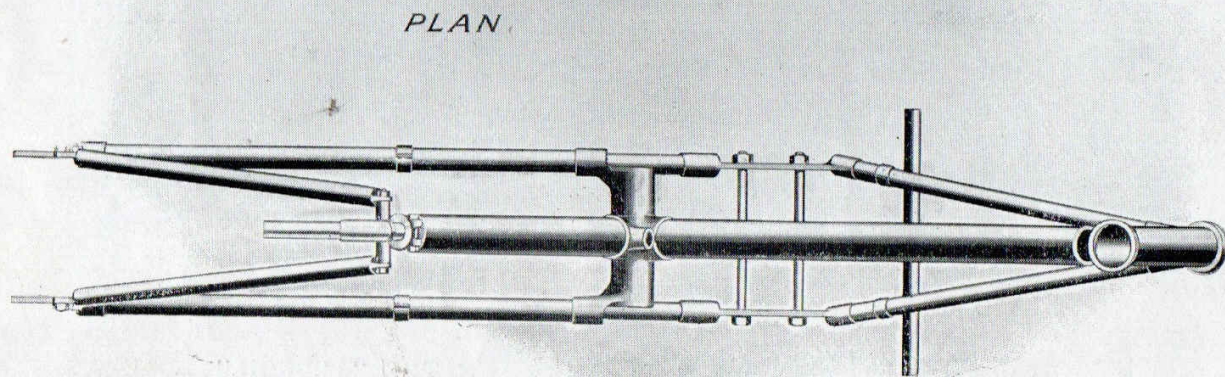


ON THE "TROUGH."

# The "Scott" Frame.



STRENGTH.



RIGIDITY.

# The "Scott" Ideals.

The "Scott" Motor Cycle was first placed upon the market in 1909, and the many original features which have now become identified with the Scott were at its first introduction all boldly offered to the public.

## **In the Beginning.**

The 1909 "Scott" specification included: the open "straight tube" frame and "one piece" spring fork, the water-cooled twin cylinder valveless two-stroke engine, the central chain drive, the foot operated frictionless two-speed clutches, the original foot starter, the long luxurious spring footboards, the straight tube handlebars, the half compression lever device and complete handlebar control, etc.

It has not been necessary in 1913 to alter, or to withdraw any of the original "Scott" features, and now that other makers are attempting to imitate, and adopt one by one each of our specialities, we remind our readers that in all of these, the "Scott" upon its first introduction in 1909 made a startling departure from standard practice.

First of all the "open frame" and low saddle position called forth criticism from those whose first conception of an open frame motor bicycle was that of a lady's machine!

## **An Engineering Proposition.**

The customary top tube, however, was not dispensed with simply to allow of an "open frame." This open frame was incidentally provided in designing a tubular frame to satisfy the conditions of a powerful motor-driven bicycle.

It is therefore necessary in describing the "Scott" to emphasize the fact that the "Scott" frame is designed (in accordance with accepted mechanical principles) for the special purpose of a motor bicycle, in striking contrast with ordinary standard type of motor cycle frame, which is simply the common push-bicycle frame distorted in various ways to make way for the motor equipment.

## **The Weakness of Distorted Frames.**

In comparison with frames of this sort the "Scott" shows a superiority which can be best appreciated by a simple application of a fundamental mechanical principle which may be briefly stated as follows:—"The tubular members of the frame must be subjected, as far as possible, only to compression or tension, and not to bending."

Now it is obvious that a curved tube can resist neither without deformation, and that an intermediate junction on a tube will permit of direct bending thereon, but in the usual thoughtless adoption of the push bicycle "diamond" frame a purposeless extra tube is added below the tank to "stiffen things up," and by its intermediate junction with the diagonal down tube and seat tube, a direct bending movement is thrown upon these two important members of the frame—the result of which is an inevitable weakness in spite of the apparent strength presented by this extra tube and its gas pipe joints.

## **Tortured Tubing.**

By a further distortion of the "diamond frame" the top tube is tortured into a convenient curve to make room for a low saddle position, with the result that a further structural weakness is derived.

# The "Scott" Ideals.

Frames of this sort are ill adapted for the purpose of a motor-driven bicycle, and the severe strains set up by the engine must eventually cause a tubular distress ending in crystallization of the deformed tubing.

## Future Design of the Frame.

In the development of the motor cycle there can be a survival **only of the fittest**, so there can be no doubt that in the long run these "rule of thumb" distortions will become extinct.

For the present day it may suit the convenience of the manufacturer to claim that "everything is properly stiffened up," and that the bent tube frame is strong enough for its purpose, but:—

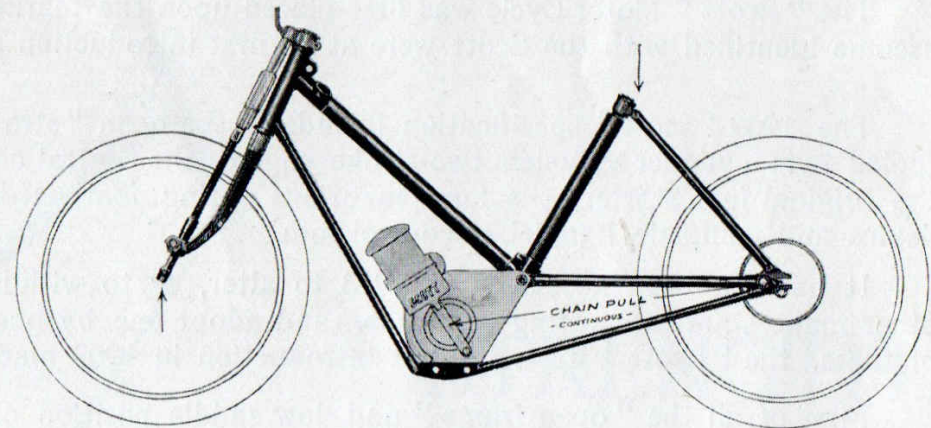
*MAGNA EST VERITAS, ET PRÆVALEBIT.*

## The Position of the Engine.

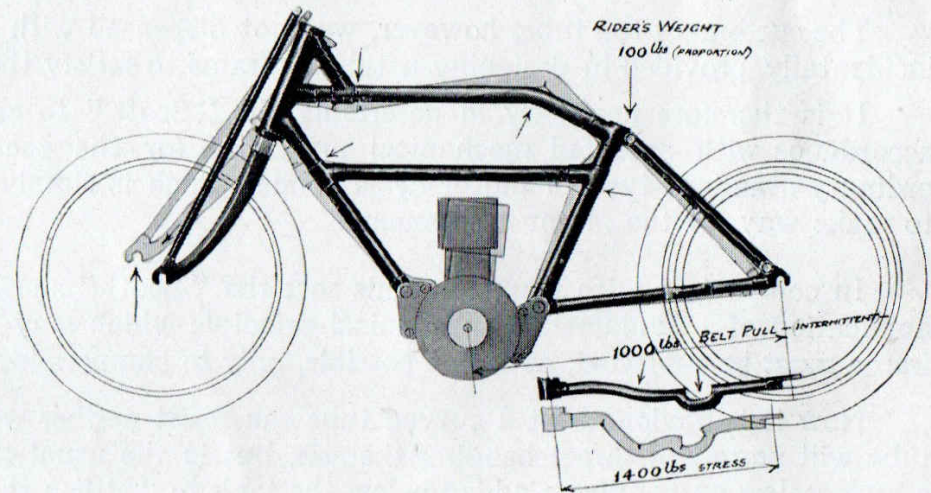
In describing the individual features of the "Scott" we cannot altogether regard each as a separate unit applicable to any machine, since the frame, engine, two-speed gear, radiator and petrol tank all depend upon one another to form a homogeneous construction, so in turning our attention to the "Scott" engine, the first thing to be noted is that it forms the nucleus of the frame (serving as a compound strut from the bottom bracket to the lower tension tubes), and is arranged so that the stress produced by transmission of power to the driving wheel is resisted by a strong triangulated structure instead of the ordinary bent tube as generally used in belt-driven machines.

It is important to remember that by far the greatest stress thrown upon the frame of a powerful motor bicycle is that produced by the chain or belt pull. This, in an ordinary  $3\frac{1}{2}$  single-cylinder motor cycle, may exceed 1000 lbs., whereas the stress produced upon the frame by the application of the rider's weight at the saddle will seldom exceed 100 lbs. (for at least one quarter of the rider's weight is applied to the foot-rests), consequently the relation of the engine to the frame is of primary importance.

THE SCOTT FRAME UNDER STRESS.



THE ORDINARY STANDARD FRAME UNDER STRESS.



# The "Scott" Ideals.

## The Engine of the Future.

The "Scott" two-stroke water-cooled engine, if compared with the ordinary four-stroke air-cooled engine, or with the new comers who are attempting to follow our lead in the two-stroke line, shows a **superiority in construction and in effect**, resulting in a marked increase of **Efficiency**, which, in our opinion, will eventually lead to the universal adoption of the two-stroke cycle for motor cycle engines.

**Superiority in Construction** is shown, first, by the extreme simplicity of the engine, the reduction of moving parts and the absence of gear wheels, intermittent cam motions and valves. Second, by the sound mechanical details—for instance, the central outside flywheel and overhung crankshafts working in separate crankcases—as contrasted with the usual practice of a built-up crankshaft consisting of internal flywheels secured by the necessarily small diameter crankpin, a construction open to this practical objection, that the correct alignment of the crankshafts depends entirely upon the good fit, and careful setting of the crankpin, and since this must be disturbed every time the connecting rod is removed for rebushing (a process frequently undertaken by incompetent hands), the truth of the crankshafts is generally a questionable point.

Again we may claim as evidence of superior design the system of **offset crankshafts**, first introduced in motor-cycle engines in the early 1904 "Scott" two-stroke, and only now being adopted by other motor cycle makers.

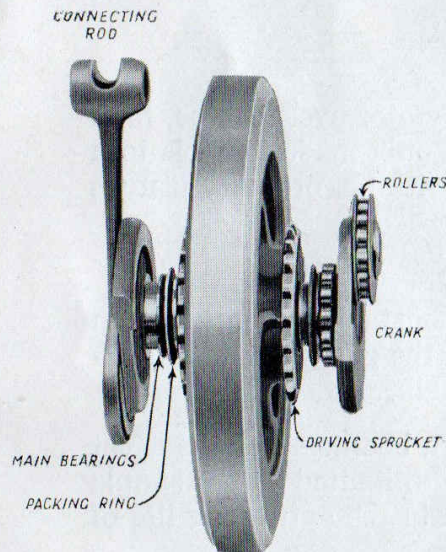
## The Get-at-ability of the "Scott."

**Accessibility** is another strong constructional point. It should not be necessary to pull the engine out of the frame and to take the crankcase, flywheels and crankshafts to pieces in order to remove the connecting rods and pistons.

In the "Scott" engine, access to the crankcases is gained by the simple removal of the crankcase doors, so that **all the working parts can be readily examined**. The pistons and rods are also quickly detached without risk by inexpert hands, and even the crankshafts can be removed without taking the engine from the frame. The working of the two-stroke engine can be easily followed from the diagrams given on page 35.

The "Scott" engine is, of course, a departure in every way from standard practice, and for this reason is difficult to compare with the ordinary four-stroke, but in its many original details of construction there will be found evidence of thoughtful designing, apparent in the least as well as in the most important parts:—

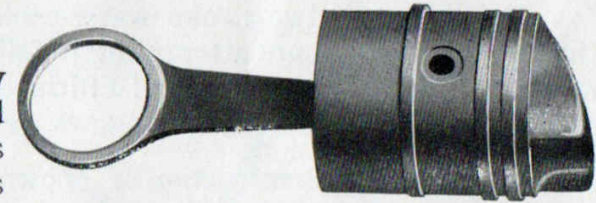
The mechanical lubrication device (effected without the addition of a single moving part), the self-adjusting metallic packing glands, the roller bearings, the unusual but correct design of connecting rod, the piston and gudgeon pin fixing, etc., are all details which tell.



# The "Scott" Ideals.

## Superior Engine Efficiency was admitted by A.C.U.

In effect the "Scott" has already been admitted to be superior in efficiency to any other engine of the same proportions, for by the special formula devised and (up till 1912) applied by the Auto-Cycle Union, the  $3\frac{3}{4}$  h.p. "Scott" was assumed to be equal in power to a standard 5 h.p. four-stroke engine, and it was on this basis that the "Scott" entered into competition with the four-stroke.



In addition to this increased power, we gain other equally important advantages in the improved torque, the turning effect of a four-cyl. four-stroke engine, and the system of "constant thrust," whereby the inseparable bearing connection of moving parts is ensured.

The "Scott" was the first two-stroke engine to maintain this principle of constant thrust at all working speeds irrespective of the ignition of the charge.

## No Knock!

To extend this extremely important working condition to the very high speeds attained by a motor cycle engine, high cylinder compression combined with a light piston and rod is necessary. The high compression is only made possible in a practical engine by water-cooling, and we need hardly point out that air-cooled two-stroke engines, with the ordinary pistons and heavy section rods, have no advantage in this respect over the ordinary four-stroke engine.

## Advantage of the "Constant Thrust."

We have at the outset particularly emphasized the very great practical advantage of a "Constant thrust" system maintained at all working speeds as in the "Scott" engine, since this simply means that wear on the gudgeon pin, crankshaft or main bearings is immaterial and has no effect on the sweet and silent running of the engine.

It is also impossible for the crankcase compression to be affected by leakage resulting from worn bearings (for the effect of wear on the packing glands tends to improve the running joint), so that repairs and renewals are limited to the simple replacement of piston rings. Here again the additional advantage of water cooling is experienced in the extra long life of the piston rings.

## The Lasting Conditions.

It will therefore be seen that the "Scott" engine is not only designed to give greater power and more even turning effect with the least number of working parts, but is specially designed to last.

Just as the "Scott" is the first successful two-stroke motor cycle, so also the "Scott" is the first successful water-cooled motor cycle.

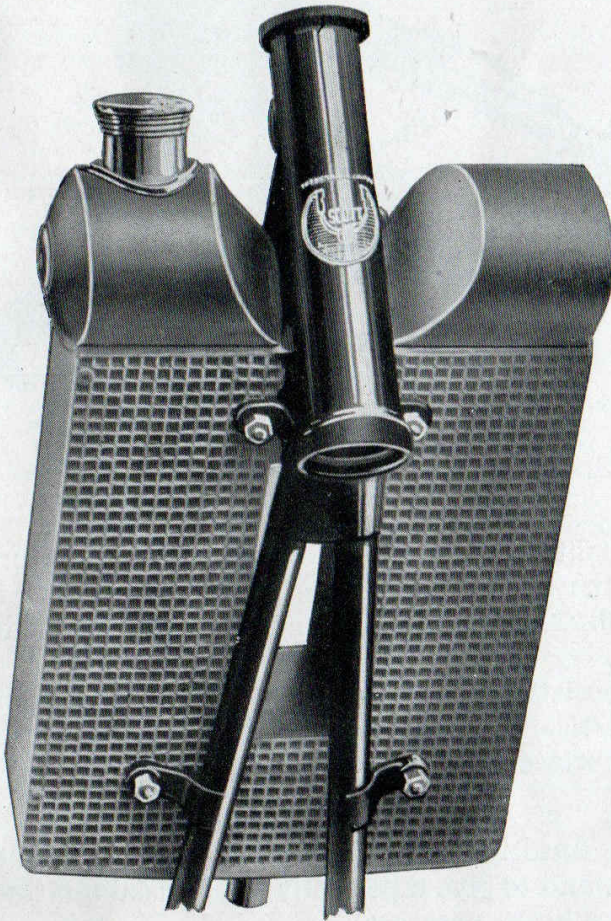
# The "Scott" Ideals.

## The Long Life of Water-cooled Engines.

The advantages of water cooling must be obvious to those accustomed to "overheating" and "carbonization," but there are further advantages not so generally appreciated, such as the long life of sparking plugs, and the reduced wear on piston rings and cylinder walls owing to the improved conditions of lubrication maintained by the water-jacketed cylinders.

We need only point to the performance of the "Scott" during the 100 continuous ascents and descents of Sutton Bank (as recorded elsewhere in these pages)—a performance impossible with any other make of machine, to bring home the peculiar advantage of water cooling.

THE "SCOTT" RADIATOR.



## No Boiling! No Leaking!

Now that other makers are following our lead in this as well as in other points of our practice, we would remind our readers that the "Scott" is a well-tried successful system of water-cooling, **not an experiment**, and that it has been particularly noted by official observers and mentioned in the judges' report of the A.C.U. Trials, that in the Quarterly, and during the whole of the Six Days' Trials,—no water was added to the radiator tanks of the competing "Scott" machines, and the same observation has been reported by the official timekeepers of the record performance on Sutton Bank.

## Full Throttle all the Time.

It is owing to this perfected system of water-cooling that the "Scott" gives its maximum power when most needed, and thus renders the ideal service of full power on hills after full speed on the level.

## Entirely Controlled from the Handlebar.

This ideal output of power is controlled entirely from the handlebar, either by the use of the ordinary throttle and air-adjustment levers placed on the right-hand handlebar, or by the combined "half compression lever and magneto cut-out" on the left-hand handlebar,—a special device which takes the place of the "exhaust lifter" as used on the ordinary type of motor cycle, and which answers the similar purpose of providing means, first, for reducing the compression for easy starting; second, for instant cessation of power; third, for conveniently reducing the power for slow running on top gear.

## The Half-compression Lever.

The compression is lowered by the uncovering of a "fourth port" opening into the cylinder wall immediately above the proper exhaust ports.

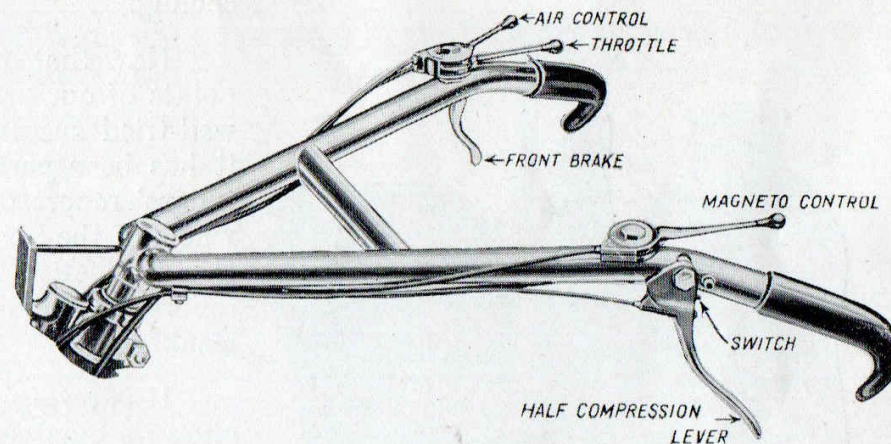
## The "Scott" Ideals.

This port is connected with, but normally closed off from, the exhaust pipe, but is brought into use upon lifting the half compression lever, with the result that the effective compressing stroke of the piston is considerably shortened, and the resulting compression reduced. By a further lifting of the half compression lever, the switch operating the magneto cut-out is brought into action, so that the power of the engine is instantly cut off. It will be noted that upon dropping the lever the cut-out switch is first of all put out of action, so that the engine starts firing on reduced compression, before the full compression is attained upon the return of the lever to normal position.

### Smooth and Instant Action.

By this combination of the magneto cut-off with the operation of the half compression lever, the sudden and detrimental jerk which otherwise would be caused by the first few exceptionally powerful explosions resulting from the sudden ignition of the fully charged cylinders, is avoided, since the first explosions are always on reduced compression and so the full power of the engine is derived smoothly and yet instantly.

The half compression lever is extremely useful in traffic for instant control, with quick pick up, in the same way as the ordinary valve lifter, but without the disadvantage presented in the "four-stroke," by the deteriorating effect on the valves after frequent and prolonged use of the ordinary lifter.



### The Control of the Carburettor.

The ordinary control by throttle and air-adjustment levers affects the quality and quantity of carburetted mixture admitted to the engine in the usual way, but owing to the different action of the two-stroke engine, where the mixture is first drawn into the crankcase, and thence to the cylinder, instead of by direct induction, an unusual arrangement of carburettor and throttle is required.

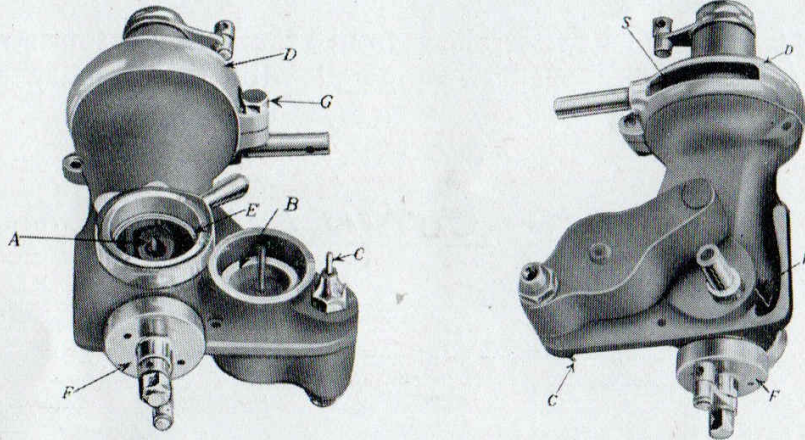
The carburettor of the ordinary motor-cycle four-stroke engine generally consists of a vertical tube branching off from the inlet pipe, containing sliding throttle and air adjustment sleeves, with a vertical jet from which petrol is drawn more or less in "blobs" and deposited directly in the cylinder in an incompletely vapourized condition.

### An Effective Vapouriser.

The "Scott" carburettor takes the form of a substantial aluminium casting fixed to the flat top of the crankcase, and is designed to instantly respond to the crankcase suction of the two-stroke engine, and to give a perfectly vapourized mixture at all speeds (so as to avoid condensation and deposit of liquid petrol in the crankcase passages).

# The "Scott" Ideals.

First of all the throttle by a simple combined movement of the two twisting inner sleeves presents an "iris" diaphragm opening, so that the air-stream effect on the jet is always of the same intensity at all positions of the throttle. Secondly, effective vapourizing of the petrol sucked from the jet is maintained at all speeds by the pneumatic effect of the specially shaped horizontal vapourizing passage through which air is drawn so as to be driven at right angles against the stream of petrol issuing from the vertical jet.



admitting air through a "by pass" opening in between the loaded air-valve and the jet, and thus reducing the negative pressure in the vapourizing passage.

The throttle is also arranged so that by a further movement of the throttle sleeves after closing, an extra air port is opened, and air is freely admitted to the mixing chamber below the inlet pipe when the throttle is entirely closed off.

All air intakes are arranged so that the in-coming air is drawn from the fly-wheel case, so as to avoid the direct drawing-in of dust-laden air.

Both throttle and air-adjustment levers are worked from the handlebar by detachable and interchangeable Bowden wire cables, all pull-off springs are concealed, and the inlet pipe from carburettor to engine is secured in position by a spring grip. The jet is made readily accessible by sliding aside a twisting cover lid, and all the component parts, jet, needle valve, float, throttle sleeves and air-valve, are easily removed and replaced without disturbing the body of the carburettor.

We have already pointed out how the "Scott" engine, although readily detachable from the frame, yet forms an integral part of it, and similarly both engine, frame and "two-speed gear" are so arranged in relation to one another that efficient transmission of power from the engine to the back wheel is attained; first of all by a structure capable of resisting stress

## Automatic in Action.

To compensate for the effect of throttling, the actual suction on the jet produced by the action of the engine is kept constant by a spring-loaded valve on the air intake to the carburettor. This air-valve is controlled in its movement by a dash-pot, and is loaded by a spring synchronized so as to automatically provide the correct adjustment in relation to the movement of the throttle.

To provide for the variations required for starting up from cold, weather conditions, etc., an arbitrary adjustment of the mixture can be made by

## Pure Air sucked in.

## Accessibility of Parts.

## Efficient Transmission of Power.

# The "Scott" Ideals.

without deformation, and secondly by the arrangement of central chain drive, devised to maintain correct alignment of the chain wheels, and to avoid the unequal strains and springing of the frame caused by the usual overhung one-sided drive.

The rigidity thus ensured is the first condition necessary for efficiency in transmission.

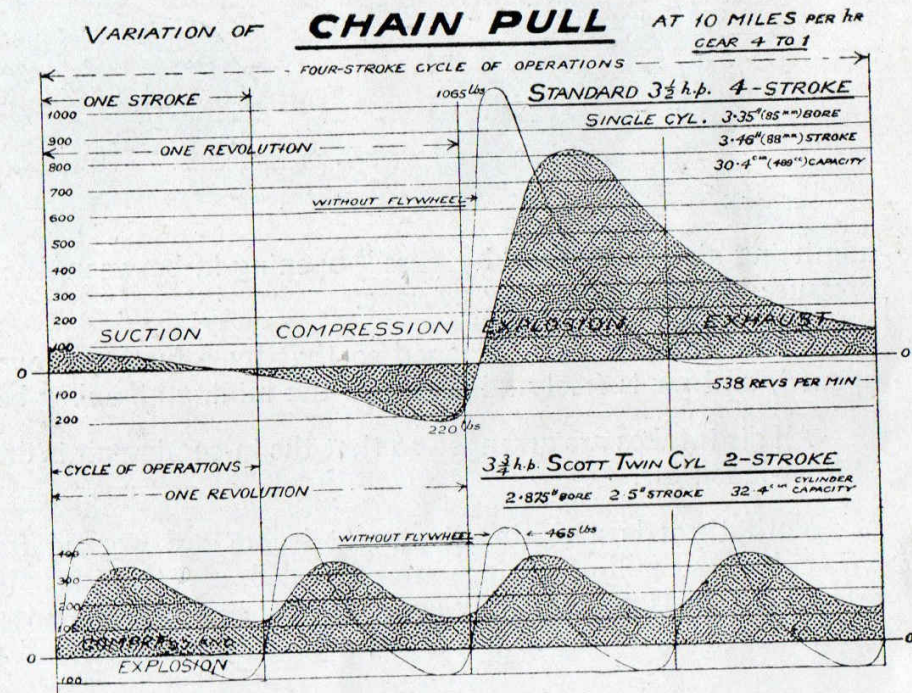
## Reduced Chain Load.

The fact that we have the same even turning effect from the twin-cylinder two-stroke as from a four-cylinder four-stroke—and consequently have considerably less load thrown upon the driving chains—compared with the ordinary single-cylinder four-stroke, makes the "Scott" the ideal engine for chain drive.

This is graphically represented in the diagram here reproduced, in which the comparative chain pull of the  $3\frac{3}{4}$  h.p. "Scott" and the ordinary  $3\frac{1}{2}$  h.p. single is shown.

## Silent Running Chains.

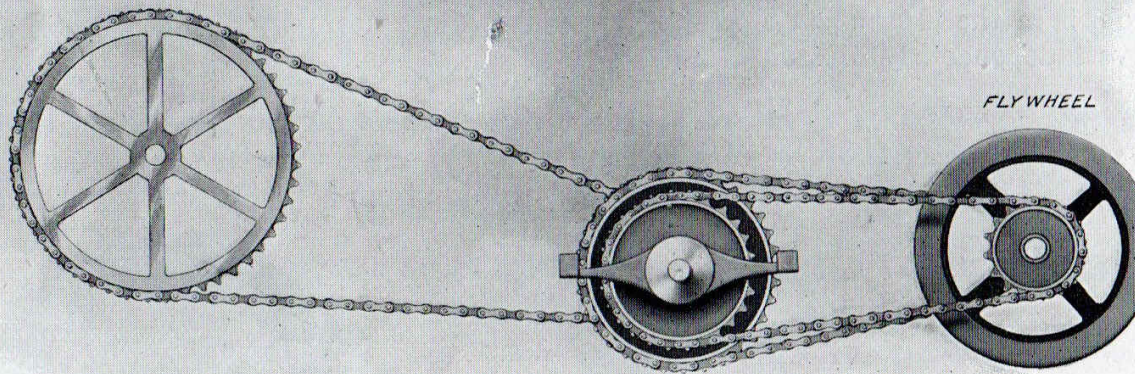
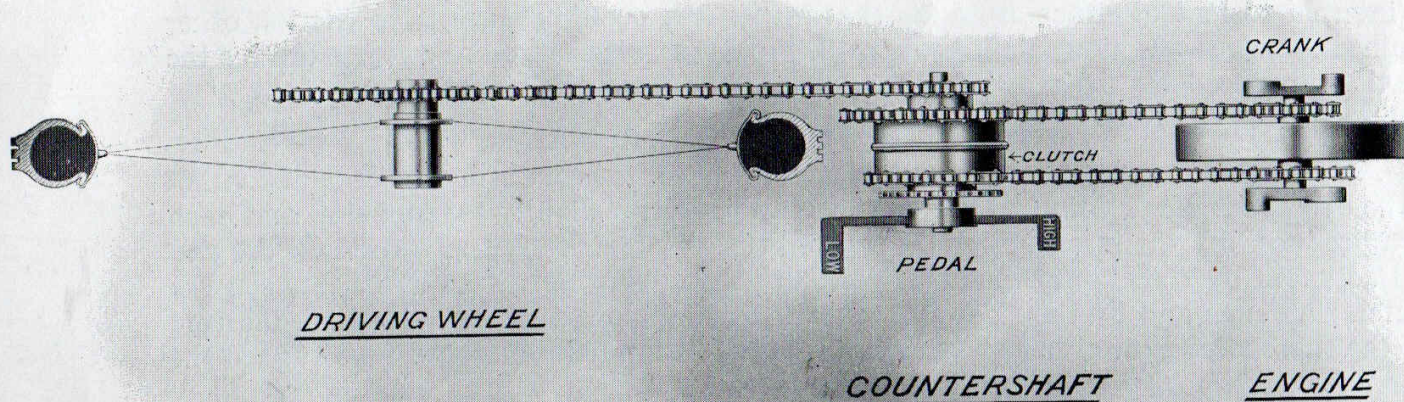
From this it will be easily seen how it is that the even and continuous power output of the "Scott" engine can be transmitted (without the complication of spring drive, or slipping friction devices) through the medium of light,  $\frac{1}{2}$  in. pitch chains, instead of by the comparatively clumsy and noisy  $\frac{5}{8}$  in. pitch chains as used in other chain drives.



By the use of these flexible and silent running chains, and by the correct proportion of chain wheels (no sprocket having less than 18th) a degree of mechanical efficiency is attained superior to any form of belt drive, or to those other wasteful forms of transmission which depend upon gear, or bevel wheels.

# The "Scott" Ideals.

## No Gear Wheels in the Two Speed Gear.



Gear wheels do not enter into the "Scott" proposition, and the patent two-speed gear consists simply of a pair of expanding ring clutches mounted on a ball-bearing countershaft, and operated by the rocking motion of a double-ended pedal, by which either clutch can be alternately engaged by the foot, whilst its companion clutch runs free.

The countershaft axle is mounted at each end on adjustable sliding lugs gripping the lower diagonal tubes in a position immediately behind the engine.

A ball-bearing Hub revolves on the countershaft axle and is provided with a sprocket (which can be conveniently varied to give different gear ratios) and which drives on to the back wheel by chain, so that it and the hub always revolve with the wheel.

## How the Two Speed Gear Works.

This hub can be driven from the engine by the engagement of either of the gear clutches, which consist of large diameter drums revolving on ball-bearings on the hub, and driven from the engine by chains. The clutches are arranged side by side and are similar in construction, but owing to the difference in the size of the chain wheels by which they are driven, the low-gear clutch revolves at approximately half the speed of the high-gear clutch, so that this variation of gear ratio can be obtained by the selective use of either clutch.

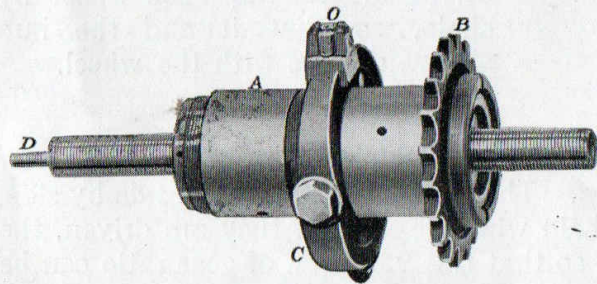
## The "Scott" Ideals.

The clutch drums contain internal expanding rings, which are held so as to revolve with the hub. These are normally kept from frictional contact with the internal surface of either drum (so that in the free position there is no friction other than that of the ball bearings and chain drive), but are alternately brought into contact with more or less pressure by the expanding of either ring under the action produced by the movement backwards and forwards of the gear pedal.

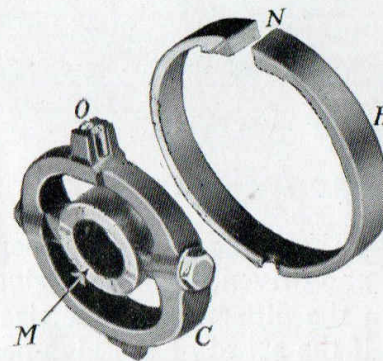
### The Expanding of the Clutch Rings.

The clutch ring is a plain split ring, and when expanded the whole of its circumference is brought into frictional contact with the inner surface of the drum. The open ends of each ring are formed so as to present a slightly tapered slot, and each ring is expanded by the wedging action produced by the insertion in this tapered slot of a pair of rollers carried on the end of a lever lying between the rings and actuated by the exterior pedal. Normally these wedging rollers lie in between the two tapered slots presented by the clutch ring ends and by the sideway movement of the actuating lever they are inserted with more or less pressure in between the tapered ends of either clutch ring, so as to expand the ring and thus engage the corresponding clutch drum by frictional contact.

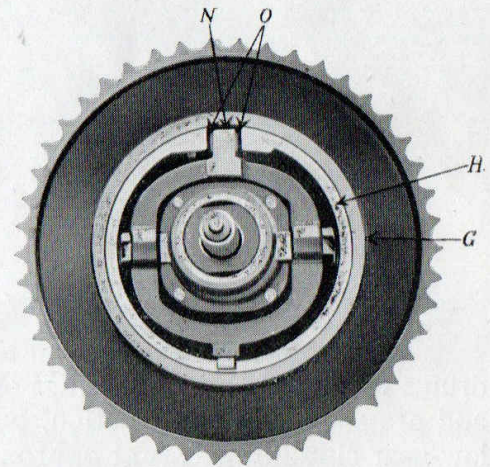
It will be clear that the clutches can only be alternately engaged and cannot therefore be both brought into action at the same time, and that when the pedal is in the intermediate position the clutches are normally out of contact, so that either engine or back wheel can revolve independently of each other.



Axle, Hub and Thrust Lever.



Thrust Lever and Split Ring.



Expansion of Split Ring within Drum.

## The "Scott" Ideals.

### Gear Changing by Foot Pedal.

The foot operation of the clutch pedal (first introduced in this convenient form on the "Scott") has been brought to perfection by the invention of an automatic grip device, by means of which either high or low-gear clutch is retained in position by the action of a "spring grip" which is automatically released when the pedal is placed midway or neutral, so that the "free engine" position can be easily found by the slack feel of the pedal in contrast to the increasing stiffness of movement as the pedal is pressed over to engage either clutch.

### Sensitive Effect.

By this method the hands are left free for the control of the machine whilst the gear changes are conveniently operated by foot, and owing to the sensitive action of the automatic spring grip device, the exact position and corresponding engagement of the clutches can be gauged to a nicety by the "feel" of the pedal.

### Advantages of the "Scott" Gear.

The practical advantages of the "Scott" gear compared with other "selective clutch" gears are:—1st, **Reduced friction**, owing to the frictional surfaces of the clutch being normally kept from contact with one another, and also by the use of ball bearings for the clutch-drums as well as the hub.

2nd, **Lasting wear**. The large wearing surfaces presented by the whole circumference of the expanding ring are brought into frictional contact, instead of only a small portion at opposite sides of the ring, and the use of **glass hard** tempered steel surfaces (made possible by the simple shape of the ring), instead of the comparatively soft cast-bronze rings usually provided in this type of gear.

3rd, **The simple adjustment**, without taking the gear to pieces by the insertion of larger diameter wedging rollers, instead of the usual and expensive process of filing and fitting new wedges, etc.

4th, **Economy in lubrication**, due to the use throughout of oil retaining ball-bearings.

5th, **The truth of chain wheels**, owing to the symmetrical expansion of the clutch ring and the rigid support of the gear in the frame.

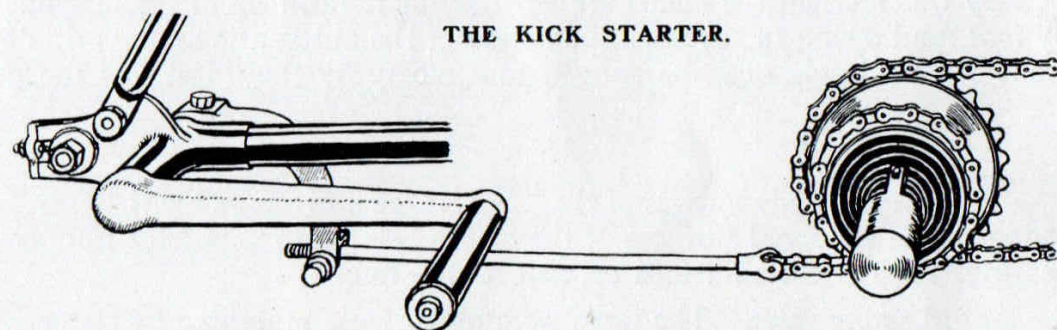
6th, **Light weight and immense strength**. Weighs, complete with pedal,  $11\frac{3}{4}$  lb.; case-hardened steel throughout; no castings are used in any part of its construction.

7th, **Ideal foot operation**, whereby the complication of external links and operating levers is avoided.

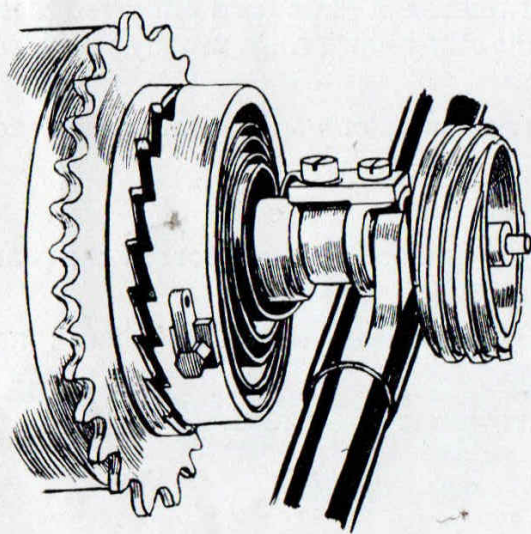
# The Famous Kick Starter.

A natural consequence of the selective clutch and free "engine" is the means of starting-up, and perhaps the most striking of all the "Scott" features is the unique **Kick Starter**, whereby the engine can be at any time started without effort from the saddle. This original device introduced for the first time a new and vastly superior system of starting the motor cycle engine, compared with the usual primitive method of running alongside and vaulting into the saddle, or the laborious winding up of starting handles. Now that other makers are attempting to provide kick starters in imitation of the "Scott," it might be pointed out that any effective foot-operated starting device must satisfy the following requirements:—

- (1) Ease of starting from the cold.
- (2) Strength to resist damage from the most violent kick.
- (3) To be adapted for instant use whilst seated in the saddle.
- (4) General reliability.



## How the "Scott" Starter Works.



RATCHET SPROCKET OF  
KICK STARTER.

The well-known "Scott" Starter consists of a substantial foot lever mounted on the back fork end, so as to be well out of the way when out of use. This is connected by rod and chain to a sprocket mounted on the gear countershaft spindle, and normally out of contact with any rotating part of the gear. Upon pressing this lever with a smart push of the foot, the sprocket moves sideways in towards the gear so that ratchet teeth formed on its inner face engage with corresponding teeth on the high-gear clutch, and the engine is rotated whilst the gear is in neutral position. When the foot is lifted off, both lever and sprocket return to their normal positions under the action of a scroll spring contained within the sprocket.

This ratchet-sprocket is made as a complete self-contained unit which can be readily slipped off the gear spindle for examination or replacement.

There are no exposed gear wheels and clumsy toothed quadrants, and the complete device is extremely simple, out of the way, and hardly noticeable on the machine.

# The Famous Kick Starter.

Why only the "Scott" is Easily Started.

The first essential—**Easy Starting**—is due to the favourable conditions presented by the twin-cylinder two-stroke engine, where we have two small cylinders firing alternately and giving two explosions every revolution, instead of one large cylinder which can only fire once in every two revolutions; then again, with the "Scott" engine the **Magneto** revolves at the same speed, instead of at half the speed of the engine, so that any really effective foot-starting lever on an ordinary four-stroke motor cycle would require to be operated **twice as quickly** as the "Scott" lever to obtain the same sparking results, apart from the greater friction and fewer ignitions of the four-stroke engine.

Any attempt to "gear up" so that the engine and Magneto can be rotated smartly without an unduly quick action of the foot, would of course correspondingly increase the friction to be overcome in starting.

Instead of the usual compression taps (subjected to high pressure and temperature), ball valve injection nipples are provided on the transfer port covers of the "Scott" engine (where they are only subjected to slight pressure and low temperature), and through these petrol can be quickly injected on to the piston rings; the engine can then be instantly started without effort on half compression at the first kick of the starter.

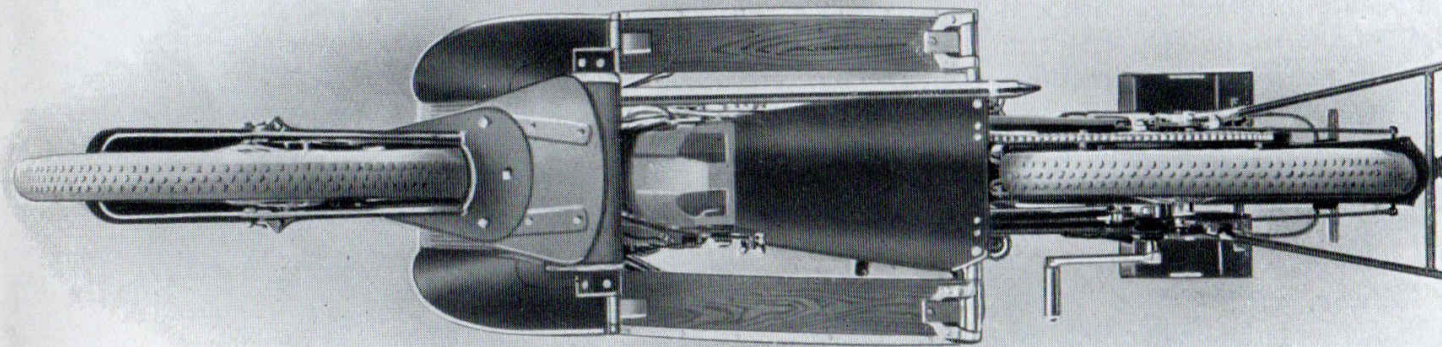
**Injection of Petrol Seldom Required.**

Under ordinary weather conditions this injection process is quite unnecessary, since when the special "knack" of working the lever smartly has been acquired, the engine can be started from the cold upon the second or third push of the starting lever.

The strength, convenience and reliability of the "Scott" starter (due to the patented constructional details) are points well illustrated by the experience of "Scott" riders, and nothing has so impressed the public at large as the safe and easy starting of the "Scott."

**Comfort on the Road.**

Next to the convenient handling of the machine comes the equally important consideration of the actual riding conditions encountered on the road.



### **Fork Blades Relieved from Strain.**

Although the "Scott" spring fork presents the appearance of an ordinary girder fork, in which the usual curved oval tube members, from fork crown to axle, are used in combination with a pair of tubular struts from axle to steering head, it must be remembered that in the "Scott" fork the front compression members are free to slide at the steering fork ends, and therefore the direct compression stress is taken entirely by the sliding fork and directly applied at the steering head lug, and since these curved blades are relieved from all direct stresses and serve simply as steering guides, the objection to curved tubes does not apply, as in the case of the ordinary girder fork.

### **Large Fuel Tanks without Frame Distortion.**

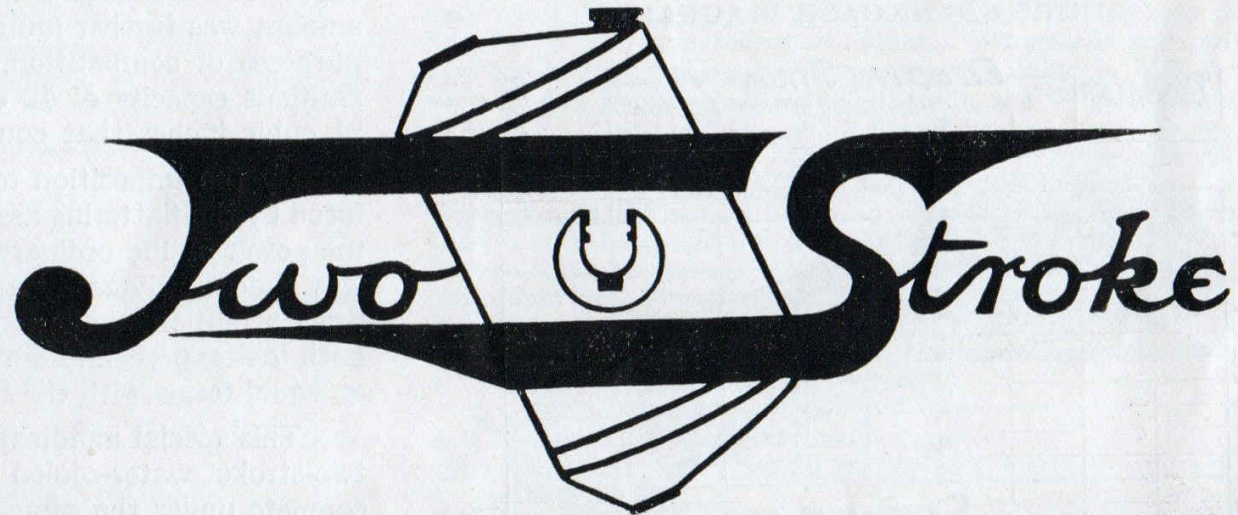
Finally, in sympathy with the ideals underlying the design of both frame and fork, no weakening distortion of any of the structural members of the frame is tolerated in making provision for the position and shape of the fuel tanks.

The oil chamber is conveniently provided by making use of the space contained within the main compression tube and seat tube, and the bottom bracket connecting these two tubes serves as a supply branch on which is mounted the hand-pump fitted with screw adjustment for regulating the mechanical lubrication.

### **Strong 2-Gallon Petrol Tank.**

The petrol tank is made with die-stamped ends and oval-shaped body, thus dispensing with the usual square corners, flat sides and numerous soldered joints, and is built upon a central steel tube, a sliding fit over the seat tube, in which position it is held by the screwed lock-ring securing the seat lug.

It is by the distinctive appearance of the petrol tank that the "Scott" can be instantly recognised, and although in the 1913 model there is a change in finish, chiefly remarkable by the absence of the "two white bands," the well-known "Scott colour" still remains the same, and our riders, and all who have been interested in this development of a new type, will still be reminded by the familiar "royal purple" of the ideals represented and attained by the—  
**TWO-Stroke, TWO-Speed "SCOTT."**



### **The Mud-Proof Machine.**

The "Scott" rider is insulated from the most acutely felt road-shocks by the action of the spring fork, the luxurious spring-mounted footboards, and the efficient make of saddle provided; whilst complete protection from mud is afforded by the long curved footboards, forming effective shields, which are continued in front by the substantial aluminium beaded wind shields, extending in a graceful continued curve from the front edge of the footboards to the upper edge of the radiator.

The mud or dust thrown from the front wheel is retained by the deep sideplates on the mudguard, with which is incorporated our patent detachable spring clip number plate, and further protection is given by the **original horizontal tail of the mudguard** (a device introduced in 1909), on which is mounted and supported on flat springs, a wide flat leather splasher, which effectively intercepts the mud stream thrown up by the contact of the wheel with the ground.

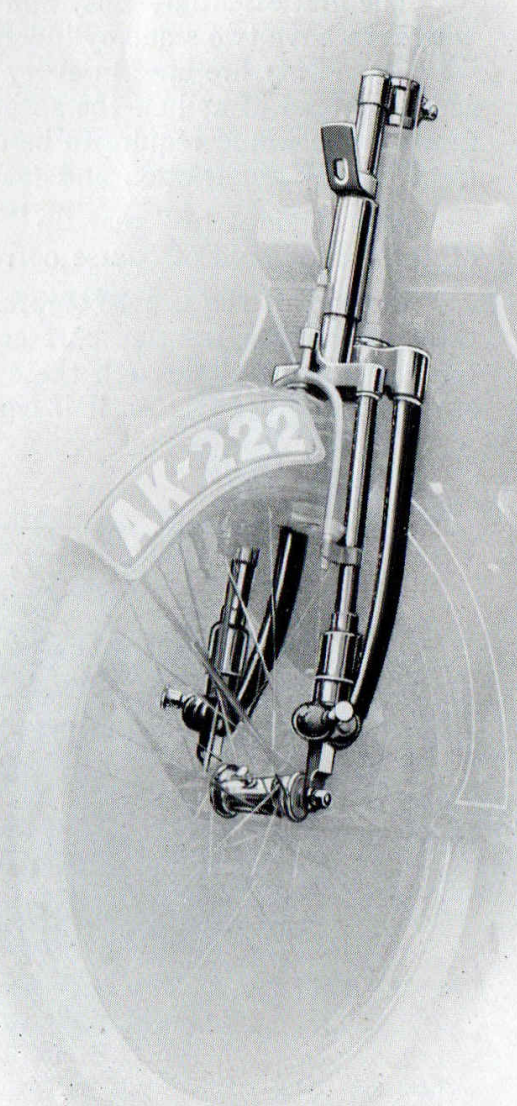
### **The Perfected Spring Fork.**

The "Scott" patent spring fork deserves special attention as an efficient shock absorber, which, without the usual defects of the ordinary spring forks, allows of a direct vertical movement only, controlled by the compound action of compression and recoil springs, which are neatly protected within tubular cases.

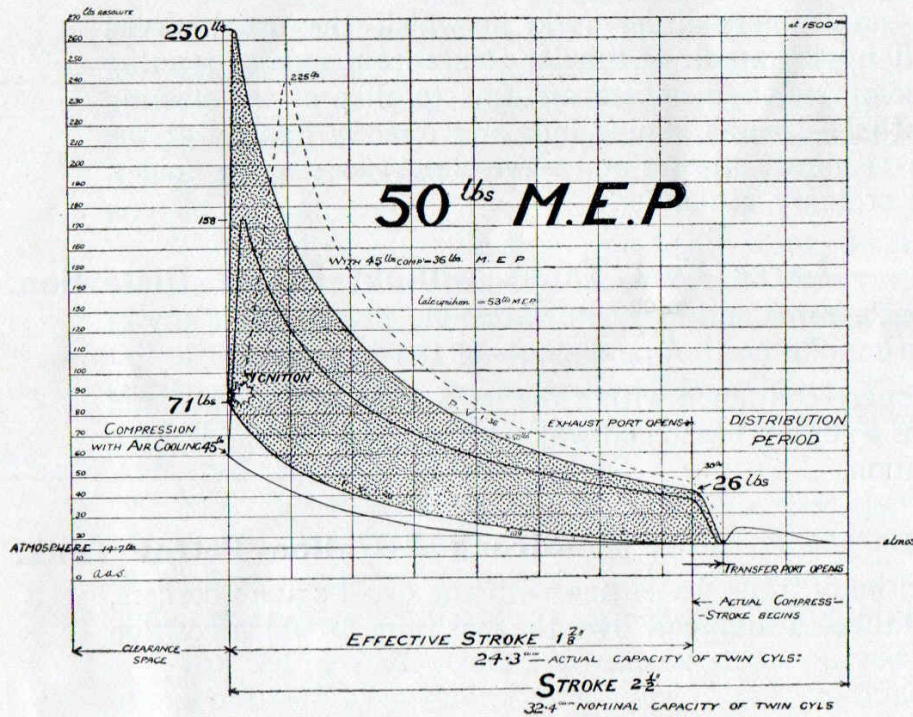
The sliding fork consists of duplex struts curved from the axle, and bridged above the tyre by a strong box crown, and continued by single tube to the steering head lug. The steering fork blades are provided at each end with boxed-in roller guides in which the lower ends of the front fork are arranged to slide vertically, but are supported against movement in other directions, whilst the upper single tube of the front fork has a sliding support in the steering head lug. It will be seen that the actual spring fork consists of a rigid **one-piece structure** which can slide up and down, but which is firmly supported at three points, without the use of levers, links, toggles and the other complicated devices in common use

### **No Rattle. Automatic Adjustment for Wear.**

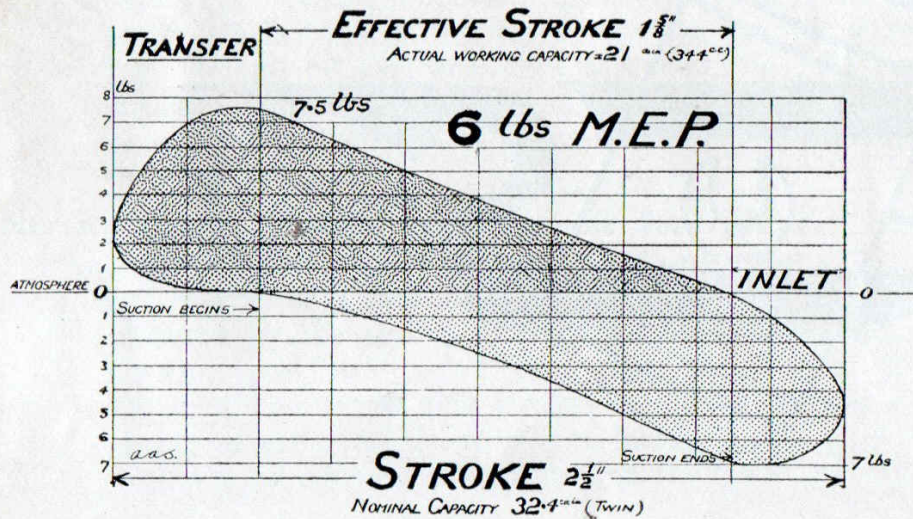
The possibility of sideplay and consequent rattle developing after prolonged use (particularly after use with sidecar) is prevented by the automatic adjustment afforded by the spring of the steering fork blades. These (as well as the steering post) are drawn to a taper gauge so as to present immense strength to resist the severe side strains caused by sidecar steering, and the permanent spring of each fork is utilized to maintain the guide rollers in constant contact with the hardened slides formed on the lower ends of the spring fork.



"SCOTT" CYLINDER DIAGRAM.



SCOTT CRANKCASE DIAGRAM.



## How the "Scott" was Handicapped by the A.C.U. Formula.

In estimating the value of the performances of the "Scott" in competition with other makes, it must be remembered that, prior to 1912, the "Scott" two-stroke water-cooled engine was heavily handicapped by the imposition of a special formula, whereby its effective capacity was assumed to be double that of a four-stroke engine.

It is generally admitted that:—"The power of an engine is proportional to the actual volume drawn into the cylinders."

Owing to the reduced effective stroke in the crankcase of the "three-port" valveless type of two-stroke engine, the greatest volume that can be drawn into the crankcase of the 3 3/4 h.p. "Scott" is only 21 cu. in., compared with the 32 cu. in. which can be drawn into the cylinder of a four-stroke engine of the same mechanical proportions.

It was not only assumed by the A.C.U. that the "Scott" engine could induce the full 32 cu. in. to start with; but this amount was further multiplied by 1.32—with the result that for purposes of competition, the "Scott" engine was swelled to a fictitious capacity of 42 cubic inches, compared with the actual 21 cubic inches that could be induced.

By the imposition of this "equalizing factor" (?) we were faced by the flattering assumption that—the "Scott" was double the power of the ordinary engine—and since the A.C.U. formula was almost universally applied to hill-climbing competitions, we draw attention to the exceptional merit of the positions gained, both by expert and amateur "Scott" riders, in competition on equal terms with the 5 and 6 h.p. machines of other makes.

This special handicap has now been removed by the A.C.U., two-stroke water-cooled engines being allowed in future to compete under the same formula as four-stroke engines.

# First Three Years' Competitive Performances of the "Scott" Two-Stroke

## 1908. 3 h.p. Experimental Machine.

(1) July 29th.

Bradford M.C.C. Hill Climb on Wass Bank.  
3 h.p. Scott 1st and 2nd, winning Gold Medal  
and Dyson Shield.

(2) Aug. 15th.

Coventry M.C. open Hill Climb on Newnham  
Hill. 3 h.p. Scott.

Class 3 (Twin. Cyl.) out of 17 entries **FIRST**  
on formula.  
,, 4 (open to all), ,, 26 ,, **FIRST**  
on formula.  
,, 6 (variable gears),,, 6 ,, **FIRST**  
on formula.  
Winning **Three** Gold Medals.

## 1909. 3½ h.p. "Scott."

(3) July 28th.

A.C.U. Quarterly Trials.  
3½ h.p. Scott **Non-Stop, full marks.**

(4) Sept. 3rd.

Tourist Trophy Race.

Extract from the "Car," 6/10/09.

"A point which probably appealed more to  
the public than anything else was the sensational  
start of the Scott with two-speed gear and  
clutch, which enabled it to move off the mark  
with great celerity, and without effort on the  
part of the driver."

(5) Oct. 16th.

A.C.U. Quarterly Trials.

3½ h.p. Scott, one stop, 93 marks.

(6) Oct. 20th.

Amulree Hill Climb. 3½ h.p. Scott.  
Class 2 (Multi Cyl.), **First on formula and time.**

,, 4 (Variable gears), **Only One** to get up  
out of 8 entries.

,, 9 (Unlimited), **THIRD.**

Extract from the "Scottish Cyclist," 20th Oct.,  
1909.

"The Scott, which made its first public  
appearance in Scotland, went away with a  
greatly enhanced reputation, its ease of starting,  
sweetness of running, and hill climbing capa-  
bilities being greatly admired."

## 1910. 3½ h.p. "Scott."

(7) Jan. 29th.

A.C.U. Quarterly Trials. 3½ h.p. Scott, **NON-STOP**, 192 marks.  
Full marks for Hill Climb and **highest total.**

(8) March

Harrogate Open Hill Climb on Sutton Bank.  
3½ h.p. Scott, **First, Second and Third**, and fastest time of the day.

(9) April 20th.

A.C.U. Quarterly Trials. 3½ h.p. Scott **NON-STOP**, 175 marks.

(10) May 20th.

Edinburgh M.C.C. 150 miles Reliability Trial.

(11) May 26th.

3½ h.p. Scott, **Highest Award**, 100 marks (Amateur).

Edinburgh M.C.C. Speed Contest.

3½ h.p. Scott. Class 1 Second and Third. (Amateur.)

(12) May 28th.

,, 4 **First** and Second.

Tourist Trophy Race. Winner .. 3 h. 7 min. 24 sec.

5 h.p. Scott 3 h. 31 min. 47 sec. (ten minutes lost through puncture).

**TWO ENTERED, TWO FINISHED.**

Press extract from "Motor Cycle," June 9th.—"The Scotts have now got  
what they have been looking for, a great public test of reliability  
with banners flying."

(13) June 9th.

Dublin and District M.C.C. Hill Climb on Sugar Loaf Mountain.

3½ h.p. Scott, **FIRST on formula and time** (Amateur).

(14) June 17th.

Pontefract M.C. Hill Climb on Milnthorpe Hill.

3½ h.p. Scott. **Fastest Time of the day** (Amateur, 15 stone rider).

(15) June 28th.

Bradford M.C.C. Open Hill Climb on Stockshott Hill.

3½ h.p. Scott, Class 1. **FIRST** and **SECOND.**

(16)

5 h.p. ,, ,, 5. **FIRST.**

A.C.U. End to End 6 days' Reliability Trial.

3½ h.p. Scott, **GOLD MEDAL.**

Judge's Report.—Condition of machine clean and excellent. Engine  
very clean. Magneto clean and protected, same chains used throughout,  
half-inch pitch, in excellent condition. Mudguards and control good.  
Machine in excellent condition throughout. Water in tank not changed  
since leaving Bradford. Starting apparatus and wheel bearings perfect.

**ONE ENTERED, ONE FINISHED.**

(17) July 16th.

A.C.U. Quarterly Trials. 3½ h.p. Scott, **NON-STOP, FULL MARKS.**

Tying for first place for "Motor Cycle" Cup.

(18) Aug. 11th.

Westmorland M.C.C. Hill Climb on Orton Scar. 3½ h.p. Scott, **FIRST.**

(19) Aug.

Dublin and District M.C.C. Reliability Trial, 160 miles.

(20) Sept. 15th.

3½ h.p. Scott, 96 marks (Amateur).

Pontefract M.C. Non-Stop Reliability Trial, 85 miles.

(21) Sept. 13th.

3½ h.p. Scott, **NON-STOP**, 2nd (Amateur).

Westmorland M.C.C. Hill Climb on Underbarrow Scar.

4 h.p. Scott, **First** and Second (Amateur).

(22) Sept. 17th.

,, ,, Winning the "Wakefield Cup."

A.C.U. Open Hill Climb on Sutton Bank.

Class 6, 3½ h.p. Scott Second on especial handicap. (Bradford M.C.C.  
section).

(23) Oct. 12th.

Class 3 4 h.p. Scott, **SECOND.** Class 5 4 h.p. Scott, **FIRST.**

A.C.U. Quarterly Trials.

3½ h.p. Scott. **NON-STOP, FULL MARKS**, winning **A.C.U. Cup.** (Ties  
with Newsome on Triumph).

# Performances in 1911.

- Jan. 28th. **A.C.U. Quarterly Trials** (Croydon).  $3\frac{3}{4}$  h.p. Scott, **NON-STOP. FIRST-CLASS** certificate.
- Feb. **Sutton Goldfield A.C. Winter Reliability Trial.**  $3\frac{3}{4}$  h.p. Scott, wins **Colmore Cup, Gold Medal** and **special Gold Medal** for best **AMATEUR** performance.
- April 14th. **Hill Climb, Kirkstone Pass, Cumberland.** West Lancashire and Westmorland M.C.C.  $3\frac{3}{4}$  h.p. Scott. **FIRST, SECOND, FOURTH, FIFTH (ALL AMATEURS).**
- April 17th. **Open Hill Climb on Shap Fell** (Westmorland M.C.C.). Twin-cylinder Class. 4 h.p. Scott **THIRD. AMATEUR** on A.C.U. **Two-stroke handicap.** Members' Class. 4 h.p. Scott, **SECOND. AMATEUR** on A.C.U. **Two-stroke handicap.**
- April 22nd. **A.C.U. Quarterly Trials, Harrogate.**  $3\frac{3}{4}$  h.p. Scott, **NON-STOP. FIRST-CLASS** certificate (sixth in succession).
- May 7th. **Walthamstow M.C.C. Annual Dinner Competition.**  $3\frac{3}{4}$  h.p. Scott and Side-car. **FIRST. Silver Cup and Gold Medal.**  $3\frac{3}{4}$  h.p. Scott, **NON-STOP. Gold Medal (AMATEUR).**
- May 18th. **Hill Climb.** Westmorland M.C.C.  $3\frac{3}{4}$  h.p. Scott, **SECOND and THIRD (AMATEUR).**
- May 20th. **Members' Hill Climb.** Walthamstow M.C. Class B.  $3\frac{3}{4}$  h.p. Scott, **FIRST (AMATEUR).**
- May 23th. **Competition for Stanton Cup.** Walthamstow M.C.  $3\frac{3}{4}$  h.p. Scott and Side-car, **THIRD. Silver Medal.**
- May 28th. **100 Times up Sutton Bank in 7 hrs. 31 min.** (including 18 minutes' stop for puncture) by Mr. F. Philipp, standard  $3\frac{3}{4}$  h.p. Scott.
- May. **Newcastle M.C. Club Run.**  $3\frac{3}{4}$  h.p. Scott and Side-car, **FIRST (AMATEUR).**
- June **London—Edinburgh, 1911.** Side-car, single journey,  $3\frac{3}{4}$  h.p. Scott and side-car, **Gold Medal (AMATEUR).** Special return journey. **Gold Medal (AMATEUR).**
- June **Bath M.C.C. Bath to Salisbury and back Reliability Trial,** won by  $3\frac{3}{4}$  h.p. Scott **(AMATEUR).**
- June **Peninsula M.C.C. Open Hill Climb Handicap (S.A.).**  $3\frac{3}{4}$  h.p. Scott. **Gold Medal** for best performance (A.C.U. Formula) **(AMATEUR).**
- June **M.C.C. Team Trials.** ( $3\frac{3}{4}$  h.p. Scott.) **Silver Medal (AMATEUR).**
- June **Bath M.C.C. 100 mile run.**  $3\frac{3}{4}$  h.p. Scott, **NON-STOP (AMATEUR).**
- June 10th. **Westmorland M.C.C. Hill Climb at Orton Scar.**  $3\frac{3}{4}$  h.p. Scott, **SECOND and THIRD.**
- July 29th. **Pontefract M.C.C. Hill Climb at Minsthorpe** won by  $3\frac{3}{4}$  h.p. Scott. (**FIRST** on formula and fastest time.)
- July **Tourist Trophy Race.** 4 h.p. Scott made **fastest lap,** 44.52 minutes, only machine to average over 50 m.p.h. per lap. Winner's fastest lap 46.33 minutes.
- July 13th. **Pontefract M.C.C. Reliability Trial** (190 miles). 11 started, 3 finished. **FIRST,** 8 h.p. Chater Lea. **SECOND,**  $3\frac{3}{4}$  h.p. Scott. **THIRD,** „ Scott.
- July **Bath M.C.U. Flexibility Hill Climb.**  $3\frac{3}{4}$  h.p. Scott, **FIRST** Winning "Captains" Silver Cup **(AMATEUR).**
- July **Quarterly Trial, Newcastle.** **FIRST-CLASS Certificate (AMATEUR).**
- July 15th and July 16th. **York County M.C.C. 2 Days' run, Leeds to Edinburgh and back.**  $3\frac{3}{4}$  h.p. Scott, **FIRST. CUP. (AMATEUR).**
- July 25th. **Bradford Dunbar. Bradford 24 hours' trial.**  $3\frac{3}{4}$  h.p. Scott and Side-car **(AMATEUR).** Passenger machines. **First.** Winning "P. & M." Cup, presented by Messrs. Phelon & Moore. Solo machines.  $3\frac{3}{4}$  h.p. Scott, **SECOND.**
- July 25th. **North Staffordshire M.C.C. Hill Climb.** **THIRD. A.C.U. formula (AMATEUR).**
- July **Cape Peninsula M.C.C. First Open Hill Climb.** 4 h.p. Scott, **FIRST (AMATEUR).**
- August **Doncaster M.C.C. Flying Kilometre.**  $3\frac{3}{4}$  h.p. Scott, **SECOND.**
- August **A.C.U. Six Days' Trials.** 3 Scotts entered and finished. 1 Silver and 2 Gold Medals **(ONE AMATEUR).**
- August 10th. **Westmorland M.C.C. Hill Climb, Underbarrow Scar,** for Parker Cup.  $3\frac{3}{4}$  h.p. Scott. **FIRST (AMATEUR).**
- Sept. 10th. **Walthamstow M.C. 250 mile Reliability Trial.** **Silver Cup,** presented by W. S. Low, Esq.
- Sept. 14th. **Pontefract M.C.C. NON-STOP Trial** for Members' Trophy. **FIRST.**  $3\frac{3}{4}$  h.p. Scott **(AMATEUR).** (Tied with Triumph.)
- Sept. 17th. **Walthamstow M.C.**  $3\frac{3}{4}$  Scott, awarded **Silver Cup** for 200 mile standard ride **(LADY AMATEUR).**
- Sept. **Edinburgh Club Hill Climb on Amulree.** Class 11. **SECOND** on A.C.U. Formula **(AMATEUR).**
- Oct. 8th. **Walthamstow M.C. Team Trials.**  $3\frac{3}{4}$  h.p. Scott and Side-car, **NON-STOP (LADY AMATEUR).**  $3\frac{3}{4}$  Scott and Side-car, **NON-STOP (AMATEUR).**
- Oct. **A.C.U. Quarterly Trial.**  $3\frac{3}{4}$  h.p. Scott. **First-Class Certificate.**
- Nov. 5th. **Walthamstow M.C. NON-STOP Speed-Judging Competition.**  $3\frac{3}{4}$  h.p. Scott and Side-car. **Best Individual Performance.**
- Dec. 27th. **Harrogate and District M.C.C. Winter Trial.**  $3\frac{3}{4}$  h.p. Scott, **NON-STOP.**
- Dec. 30th. **N.W. London M.C.C. Winter Trial to Gloucester and back.**  $3\frac{3}{4}$  Scott and Side-car, **NON-STOP, Silver Cup.** Obtained **special prize** passenger class.

# Performances in 1912.

Dec. 1911. **Harrogate M.C.C. Winter Reliability Trial.** 3½ h.p. Scott, **SECOND.**

Jan. 1912. **Stockport M.C. Non-Stop Reliability Trial.** 3½ h.p. Scott, **FIRST.**

Mar. 24th. **Wigan M.C. Reliability Trial to Buxton and back.** 3½ h.p. Scott, **FIRST and SECOND.**

Mar. 29th. **Essex M.C. Open Hill Climb.** Passenger Class. 3½ h.p. Scott and Side-car, **THIRD (on A.C.U. formula).** (Winning Members' Gold Medal.)

April 13th. **Walthamstow M.C. Non-Stop and Speed-Judging Competition.** 3½ h.p. Scott, **NON-STOP (AMATEUR).**

May 4th. **Westmorland M.C.C. Hill-Climb** at Aughton. 4 h.p. Scott, **FIRST.**

May 5th. **Walthamstow M.C. Non-Stop and Speed-Judging Competition.** 3½ h.p. Scott and Side-car, **NON-STOP (AMATEUR).**

May 12th. **Walthamstow M.C. Annual Competition to Newmarket and back.** 3½ h.p. Scott, **NON-STOP (AMATEUR).**

May 16th. **Westmorland M.C.C. Hill-Climb,** on Greyhound. 3½ h.p. Scott, **FIRST, SECOND and THIRD (TWO AMATEURS).**

May 18th. **Bath M.C.C. 60 mile Reliability Trial.** 3½ h.p. Scott, **SECOND (AMATEUR).**

May. **Pontefract M.C.C. Annual Speed Trial,** Multi-cyl. Class. 3½ h.p. Scott, **FIRST (AMATEUR).**

May. **M.C.C. London-Edinburgh Run.** 3½ h.p. Scott, Gold Medal **(AMATEUR).**

May 18th. **Bradford M.C.C. Open Hill Climb.** Class 4. 3½ h.p. Scott, **THIRD.** Ilkley Club Class, 3½ h.p. Scott, **THIRD (AMATEUR).**

May 19th. **Walthamstow M.C. Standard Ride to Norwich and back.** 3½ h.p. Scott and Side-car, Silver Cup **(LADY AMATEUR).**

June 2nd. **Westmorland M.C.C. Reliability Trial.** 3½ h.p. Scott. Full marks and ties for Lord Lonsdale's Challenge Cup.

June. **Wigan M.C. 200 mile Non-Stop run to Coventry and back.** **FIRST.** 3½ h.p. Scott **(AMATEUR).**

June 6th. **Walthamstow M.C. 250 mile Reliability Trial.** 3½ h.p. Scott and Side-car, **FIRST.**

June 15th. **Westmorland M.C.C. Hill Climb at Orton Scar.** 3½ h.p. Scott, **FIRST and SECOND.**

June 29th. **Westmorland M.C.C. Speed Trial** at Lowther Park. 3½ h.p. Scott, **FIRST and THIRD.**

July 1st. **International Tourist Trophy Race.** 3½ h.p. Scott, **FIRST,** in record time of 3 hrs. 51 mins. 3 secs. Only two Scotts entered, and both finished; the other Scott was Second until the last lap, when, owing to a tyre mishap, it finished 11th.

July. **Scottish Six Days' Trials.** 1 Scott entered, winning Gold Medal and Ten Guinea Cup for best performance by **AMATEUR.**

July. **Bath M.C.C. 85 mile Reliability Trial.** 3½ h.p. Scott and Side-car, **SECOND (AMATEUR).**

July 24th. **Westmorland M.C.C. Hill Climb** at High Crow Moor. 3½ h.p. Scott. **FIRST and THIRD.**

Aug. **Harrogate M.C.C. Hill Climb.** Class 11. 3½ h.p. Scott and Side-car, **SECOND and THIRD (AMATEUR).**

Aug. **A.C.U. Six Days' Trials.** 3 Scotts entered **(TWO AMATEUR),** winning 3 Gold Medals and Private Owners' Prize for Slow Hill Climb.

**Judge's Report.**—Protection of Machine and Rider:—  
“Once again the Judges have to call attention to the fact that the mudguards as a rule do not give adequate protection to the machine and rider. The Scott machines, with their footboards and sloping shields, are notable exceptions.”

Aug. 6th. **Westmorland M.C.C. Secret Hill Climb** on Tow Top. 3½ h.p. Scott, **SECOND and THIRD.**

Aug. 18th. **Clapton and District Motor Club Non-Stop and Speed-Judging Competition.** 3½ h.p. Scott and Side-car, **NON-STOP.**

Aug. 22nd. **Westmorland M.C.C. Hill Climb on Underbarrow Scar.** 3½ h.p. Scott, **FIRST and SECOND.**

Sept. **Bath M.C.C. 82 mile Reliability Trial.** 3½ h.p. Scott and Side-car, **SECOND (AMATEUR).**

Sept. **Bath M.C.C. 85 mile Reliability Trial.** 3½ h.p. Scott and Side-car, **FIRST.** 3½ h.p. Scott, **SECOND (AMATEUR).**

Sept. 1st. **Walthamstow M.C. Reliability Trial.** 3½ h.p. Scott, **NON-STOP.**

Sept. 7th. **Westmorland M.C.C. Fast and Slow Hill Climb at Hutton Park.** 3½ h.p. Scott, **SECOND and THIRD.**

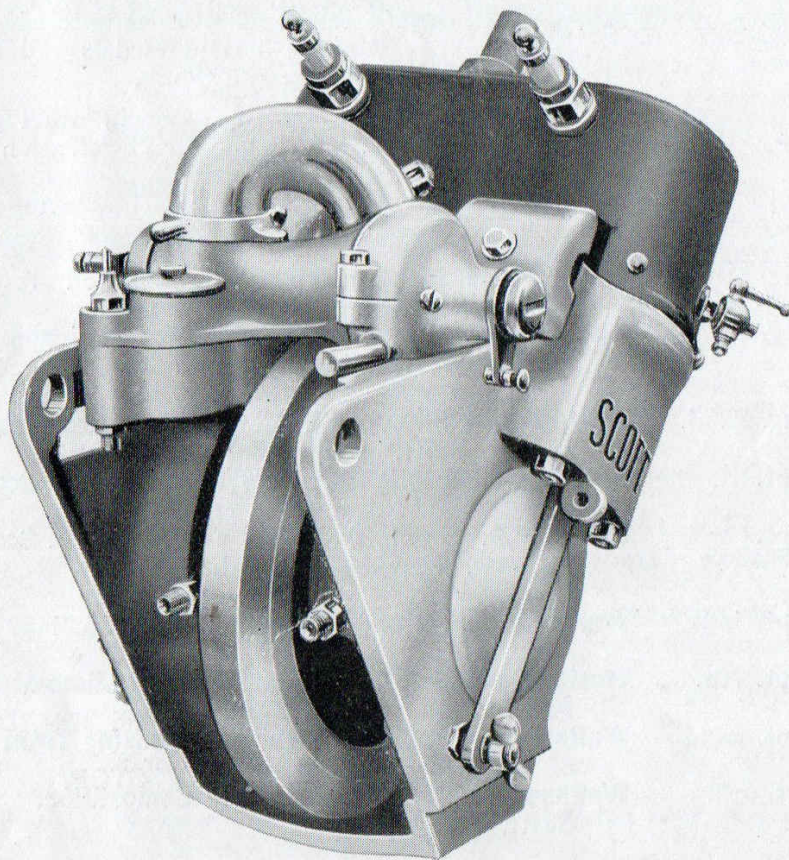
Sept. 22nd. **Walthamstow M.C. Non-Stop Speed Judging Team Trials.** 3½ h.p. Scott and Side-car, **NON-STOP.**

Oct. 6th. **Walthamstow M.C. Henbrey Cup Competition.** 3½ h.p. Scott, **NON-STOP.**

## The 1913 $3\frac{3}{4}$ h.p. "Scott"

The result of last year's experience of the behaviour of the "Scott" in the hands of all classes of motor cyclists has fully confirmed our confidence in the special features we have introduced, and all the well-tried points of the 1912 machine are reproduced in our new model. We have, however, still continued the development of the "Scott," and many valuable improvements suggested by its daily use in the hands of our riders, and by the further experience of the side-car in combination with our machine, have been introduced into the new model, so that we can confidently claim that in the production of this high-grade touring machine we are still years ahead of anything else.

**ENGINE.**—The 1913 engine retains the same bore and stroke as the 1912 model. We have, however, gone a step further and, profiting by the experience gained from our eminently successful Tourist Trophy machines, have re-designed the cylinders, doing away with the water-cooled head, the advantage being increased thermal efficiency without sacrificing any of the undoubted benefits of water-cooling.



Further, owing to the decreased area now exposed to the water we are able to fit a smaller, lighter radiator, with a consequent saving of weight and improvement in general appearance.

Spun aluminium covers are now fitted over the crankcase doors, presenting a smooth polished surface for cleaning.

**TWO-SPEED GEAR, BACK-WHEEL AND SIDE-CAR LUGS.**—Still larger bearings, all parts of gear case-hardened steel and ground to limit gauge, driving sprocket can now be changed without removing gear from frame, special four-point attachment side-car lugs on steering-head, engine cradle, seat pillar bolt and left-hand fork end, so that the back-wheel axle is independent of these fixings.

**OTHER DETAILS.**—Extra large petrol and oil fillers, very conveniently placed. Special No. 11 X'1 all saddles, incorporating oil filler, fitted as standard. Rexine leather-covered petrol tank. Pressed aluminium side shields entirely protecting gear and chains. Spring fork blades still further strengthened, and fork rollers entirely covered in and fitted with screw-down grease lubricators. Improved back mudguard support giving easy access to tyre. New type silencer, smaller and placed higher, to give more ground clearance, extra silencer fitted to end of exhaust pipe, easily removed for cleaning. Petrol injector carried at hand on tool back, spare tube case standard with each machine.

$2\frac{1}{2}$  in. "Standardized" Palmer "Cord" or Hutchison "Passenger" tyres with butt-ended tubes.

# Specification

**Engine.** 3 $\frac{3}{4}$  h.p. Scott, two-stroke Twin cyl., water-cooled. Roller bearings throughout, all parts in "constant thrust," central outside flywheel. Bore 2 $\frac{7}{8}$  in., stroke 2 $\frac{1}{2}$  in., capacity 32.45 cu. in. (532.5 cc.)

**Radiator.** Immensely strong and efficient, improved Honeycomb type, Thermo syphon.

**Carburettor.** "Scott" Semi-automatic special synchronized throttle, automatically allowing pure air only to enter cylinders when throttle closed. Concealed control springs.

Inlet pipe and all parts of the Carburettor instantly detachable.

Throttle and extra air adjustment controlled from handlebar.

**Lubrication.** Mechanically operated by engine and automatic in action, also hand pump. Adjustable oil control.

**Two-Speed Gear and Free Engine.** "Scott" foot operated, frictionless expanding ring clutches. No gear wheels. All steel case hardened and ground to limit gauge, thus avoiding wear and renewals, ball bearings **throughout**. Driving sprockets removable without disturbing gear.

**Frame.** "Scott" girder principle, immensely strong and rigid, providing open frame with low centre of gravity designed to meet the strains of a motor bicycle, not an adaptation of a pedal cycle frame.

**Sidewings.** Affording complete protection to the legs and feet, enamelled and lined, with substantial aluminium beaded edge.

**Side-Car Lugs.** Four point attachment. Incorporated with frame, and eye bolt provided on seat lug.

## "The Best of Everything"

**Forks.** "Scott" spring forks, vertical movement only, no side play, compound springs and working parts entirely covered in and protected from dust and mud, made with taper gauge fork blades to stand the strains of side car use.

**Starting Lever.** The ideal method (see Motor Press), much easier and safer than hand starting; simply requires smart push with the foot when seated on the saddle—the original kick starter.

**Fitted to back axle, always ready for use.**

**Transmission.** Central Drive, by Hans Renold, heavy type  $\frac{1}{2}$  in. pitch chains, silent, efficient and reliable.

**Saddle.** Special No. 11. X 1-all.

**Tyres.** Palmer Cord and Hutchinson 26 in.  $\times$  2 $\frac{1}{2}$  in., back and front. Butted tubes.

**Carrier and Stand.** Very strong oval tube carrier, with "kick operated" tubular stand.

**Control.** Handlebar, throttle and extra air on right hand, concealed fixings.

**Half Compression.** Obtained by the lever fitted to left-hand bar, working in conjunction with magneto cut-out (serving similar purpose as the ordinary valve lifter).

**Brakes.** Bowden heavy pattern front rim brake. Footbrake actuating on large chain wheel drum.

**Wheels.** 10 gauge spokes back wheel, 12 gauge front. 26 in.  $\times$  2 $\frac{1}{2}$  in. "standardized" rims.  $\frac{5}{8}$  in. backaxle.

**Mudguards.** Substantial 4-in. guards with large mud flap and side wings. Improved back chain guard. Front extension (combined with No. plate) instantly detachable, giving immediate access to front tyre.

**Gear Shields.** Pressed aluminium shields with spring clip attachment fitted to each side, completely enclosing gear and chains.

## Specification.

**Undershield.** Metal spring clip undershield (immediately detachable), fitting under engine chains and countershaft.

**Chainguard.** Substantial rear chain guard.

**Footboards.** Luxuriously sprung on compound springs. Aluminium matting and substantial aluminium edge beading, instantly detachable.

**Ignition.** Bosch twin cyl. ball bearing.

**Petrol.** Capacity 2 gallons, oval tank (no square corners), large spring catch filler cap. Box body spring plug petrol taps with petrol filter.

**Oil.** Capacity 1 quart, sufficient for 200 miles held in frame tubes, with large filler cap on seat lug.

**Tool Bags.** Twin pannier bags fixed to carrier, fitted with spring locks and keys.

### Spare Tube Bag

- Tool Outfit in Tool Roll**
- (1) Tyre repair outfit.
  - (2) Large adjustable spanner.
  - (3) B.S.A. Spanner.
  - (4) Pliers.
  - (5) Jet Key.
  - (6) Magneto Key.
  - (7) Lock Ring Spanners.
  - (8) Oil Can.
  - (9) Screwdriver.
  - (10) Spare Gauze.
  - (11) Tyre Lever.

Petrol squirt, Tyre inflator.

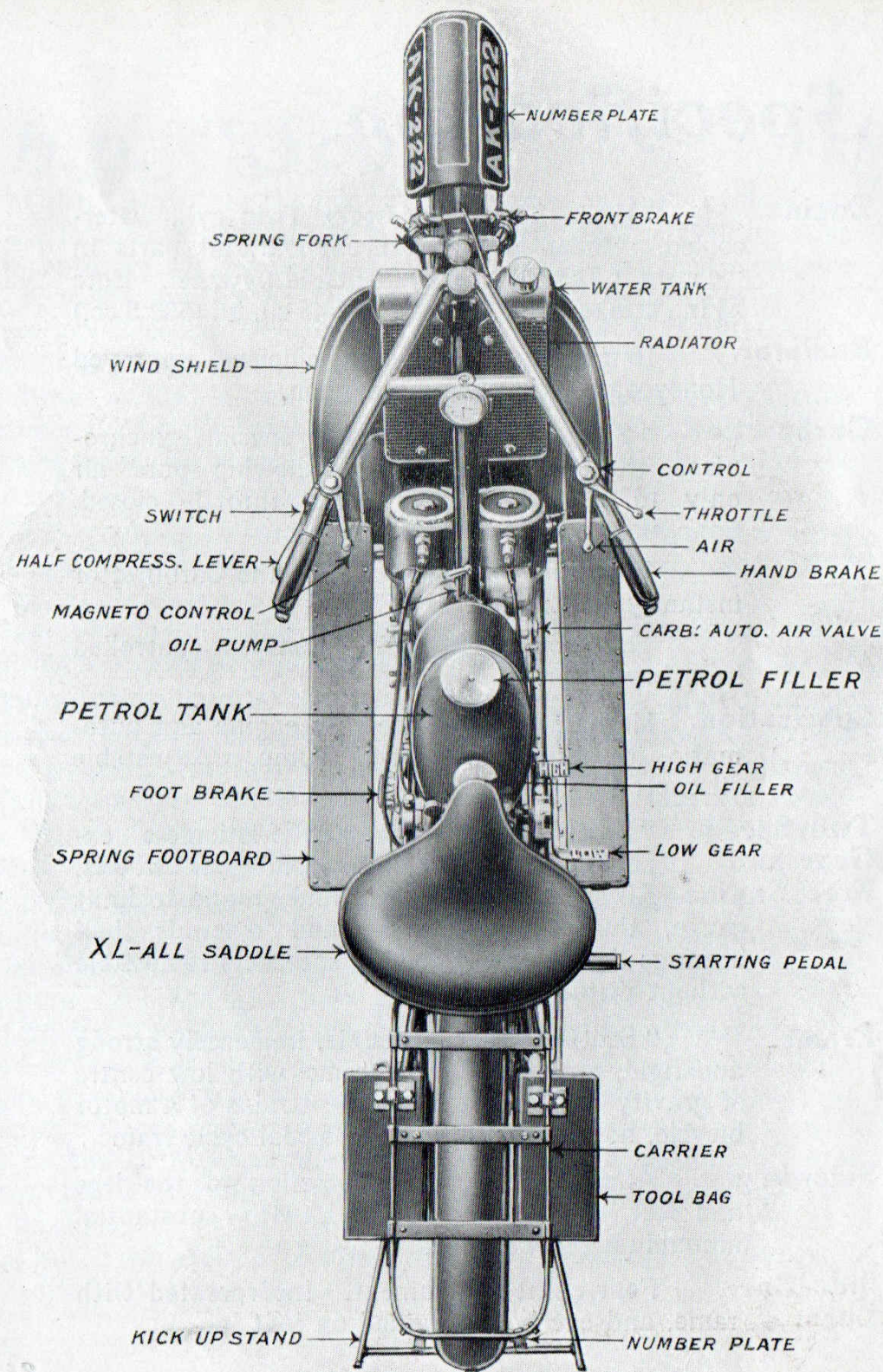
**Finish.** Finest black enamel on cosletised tubing, Plated Radiator, Tank artistically finished with "Rexine" cloth.

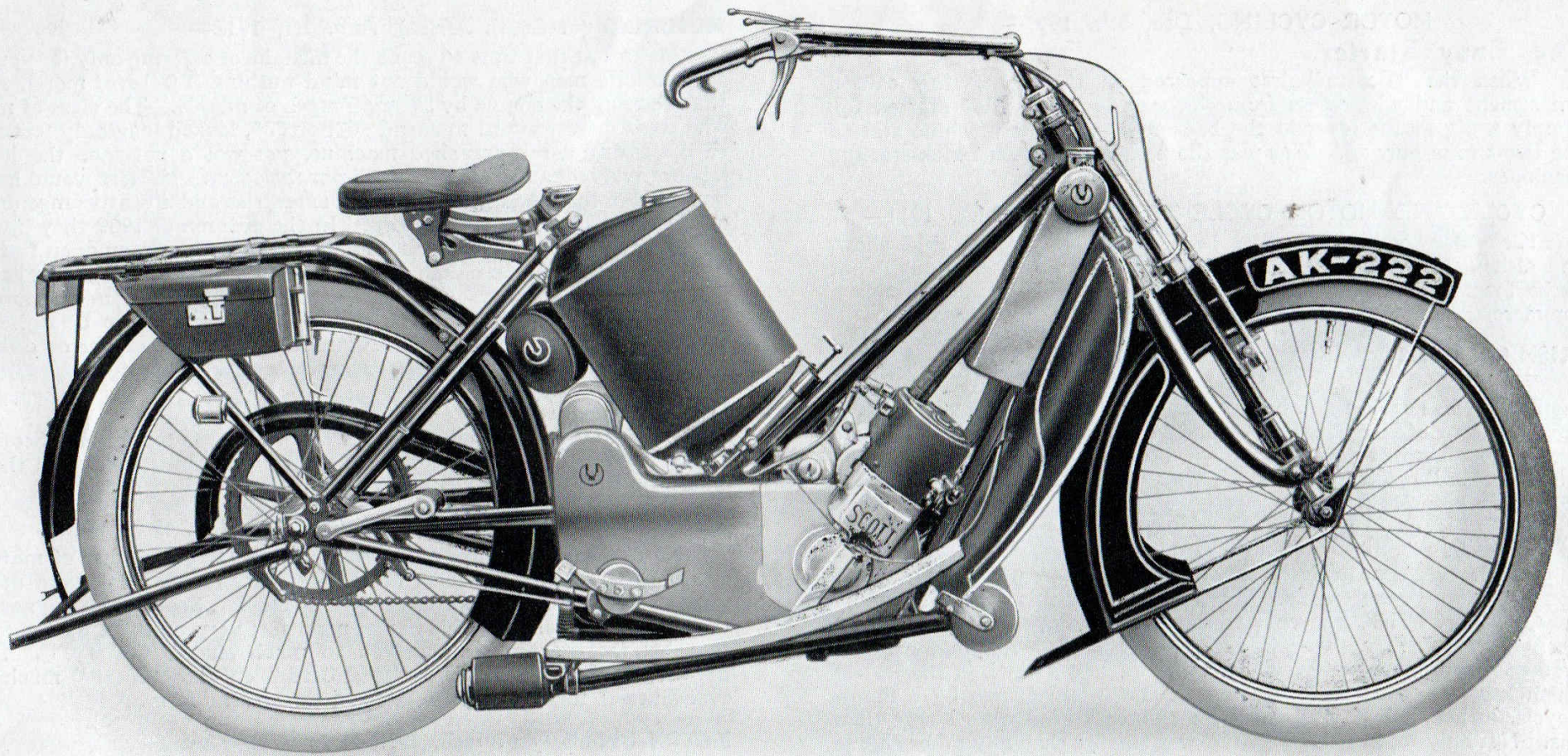
**We reserve the right to deviate in minor particulars from this specification.**

*Every machine is subjected to a severe road test of 20 miles, over a course including 1 in 4 gradient, and every engine is subjected to a three hours' test on the testing bed, and a certificate of its performance is sent out with the machine.*

# Price 65 gns.

**TERMS: £15 deposit with order. balance when ready at Works.**





THE  $3\frac{3}{4}$  H.P. "SCOTT," 65 GUINEAS.

# The Expert Opinion of the Press.

MOTOR CYCLING, Dec. 5th, 1910—

## The Easy Starter.

When the "Scotts" first appeared on the scene, they caused amazement and admiration from the way in which they started up. Simply a dig at the lever in the back regions of the machine started the two-stroke purring. This was the pioneer of efficient kick-starting machines.

CYCLE AND MOTOR CYCLE TRADER, Dec. 1st, 1911—

Kick starters will hereafter be associated with the 1912 show, and although so many firms are now fitting this device, it ought not to be forgotten that the designer of the "Scott" first made this a commercially practical fitment.

IRISH CYCLIST (writing of the "Scott"), July 31st, 1912—

We are unable to see how anyone could fail to be interested in an engine that has such a number of attractive features, and which is the simplest form of reciprocating engine known, and we also fail to see how anyone having once had experience of the working of an up-to-date "two-stroker" could be anything else but biased to a certain extent at all events in its favour.

AUTOCAR (July 6th, 1912), (T.T. Race, 1912)—

For the first time in the history of motoring a great contest has been won by a two-stroke engine. We refer to the Senior Tourist Trophy Race. . . . This, as reported in the "Motor Cycle," was won by a bicycle with a two-cylinder two-stroke "Scott" motor at an average speed of nearly forty-nine miles an hour, which is the fastest which has ever been performed on the mountain course by a motor bicycle, although last year the twin cylinders used were larger than this. Not only so, but the "Scott" was smaller than any other engine in the "Senior" category, and would have secured second place as well as first but for a tyre burst in the last circuit. . . .

THE SCOTTISH CYCLIST, Oct. 16th, 1912—

**Imitation.** . . . "As further instances of what I mean look at the 'Scott' machine. It was the first to show that **water-cooling** was practicable, and absolutely desirable when properly carried out, and it was the first to have a **kick-starting device**. To-day the latter is fitted to a big percentage of all new machines, and the former principle is gaining more adherents every day. And in each case it is practically slavish copying."

MOTORING (of South Africa), Aug. 1st, 1912—

Makers at that time all made the mistake of catering only for young and athletic men who would not mind pushing 200 lbs. of metal, and thus starting the engine by sheer strength of muscle. The class of men who could better afford to spend £50, or £70, looked longingly forward to possessing a self-propelled machine, yet would not face the hard labour involved, and so kept away from the sport. Matters would have remained in that condition but for the enterprise and inventive ingenuity of the Scott Engineering Co., Ltd. In the autumn of 1909 they introduced a two-cylinder two-stroke engine, mounted low in an open frame, fitted with free-engine clutch, two-speed gear, chain drive throughout, and a "kick" starter. With but a few modifications in detail, the 1912 "Scott" follows the same general design proved to be right in 1909. Without doubt the Scott Engineering Co., Ltd., can be described as the originators of the modern motor bicycle.

MOTOR CYCLE (Article by Rev. B. H. Davies)—

But for style in hill climbing there is nothing to touch the "Scott." It may be beaten for speed, but for pretty work on a tricky hill there is nothing to touch the two-stroke.

SCOTTISH CYCLIST AND MOTOR CYCLIST, Jan. 17th, 1912—

No one could fail to be impressed by the large number of motor-cycles fitted with some form of easy-starting device that were upon view at Olympia, and I should imagine that Mr. Scott, the designer of the machine which bears his name, must feel very gratified by the fact that his foot-starter has received so much sincere flattery. . . . the original, which has been "standard" on the "Scott" machine ever since it made its appearance in its present form.

MOTOR CYCLE, Jan. 18th, 1912—

Needless to say it is dealt with first, as Mr. Scott was without doubt the originator of the kick-starting gear for motor-cycles.

SCOTTISH CYCLIST AND MOTOR CYCLIST, Mar. 13th, 1912—

## The First Kick- Starter.

Within the last two years kick-starters have become very popular. Readers will remember the sensation caused by the appearance of the "Scott" machine, and the striking departures from ordinary design it showed were the cause of much comment. This firm were the pioneers of this easy way of starting, and the simplicity with which Mr. Philipp glided away from a standing start excited the admiration of all.

## The Expert Opinion of the Press—continued.

### MOTOR CYCLE.

#### “With Brains behind it.”

No machine is more cleverly designed than the famous two-stroke, two-speed, two-cylinder, water-cooled “Scott.” Its powers of acceleration are extraordinary, the joy of driving it supreme. Above a speed of 15 miles an hour, the sensation of riding a “Scott” seemed to us more akin to sailing than to motor-cycling. No matter how steep the hills—and we took the machine over some of the trickiest and severest test hills in Yorkshire—the “Scott” sailed up them with ease. There was no labouring or knocking, but just a swish as the gradient was annihilated. Should the hill be too steep for high gear, a press of the pedal and the low could be dropped in, the wonderful rhythm of the two-stroke twin changing its note accordingly. Other features of interest in this machine are the fact that for several years past it has performed creditably in the Six Days’ Trial and T.T. Races, and in last year’s T.T. the “Scott” made the fastest lap of the day—at over 50 miles an hour!

SCOTTISH CYCLIST AND MOTOR CYCLIST, Mar. 27th, 1912—

#### Distinctive Design of Frame.

The ordinary diamond type of frame was so prevalent in the construction of motor-cycle frames some years ago that the appearance of the “Scott” open frame created no small measure of discussion. . . . Apart from the frame were the other features which exhibited so plainly a break-away from ordinary practice. . . . One of the features of this design of frame is the complete absence of curved tubes. The whole structure is designed upon thoroughly sound principles.

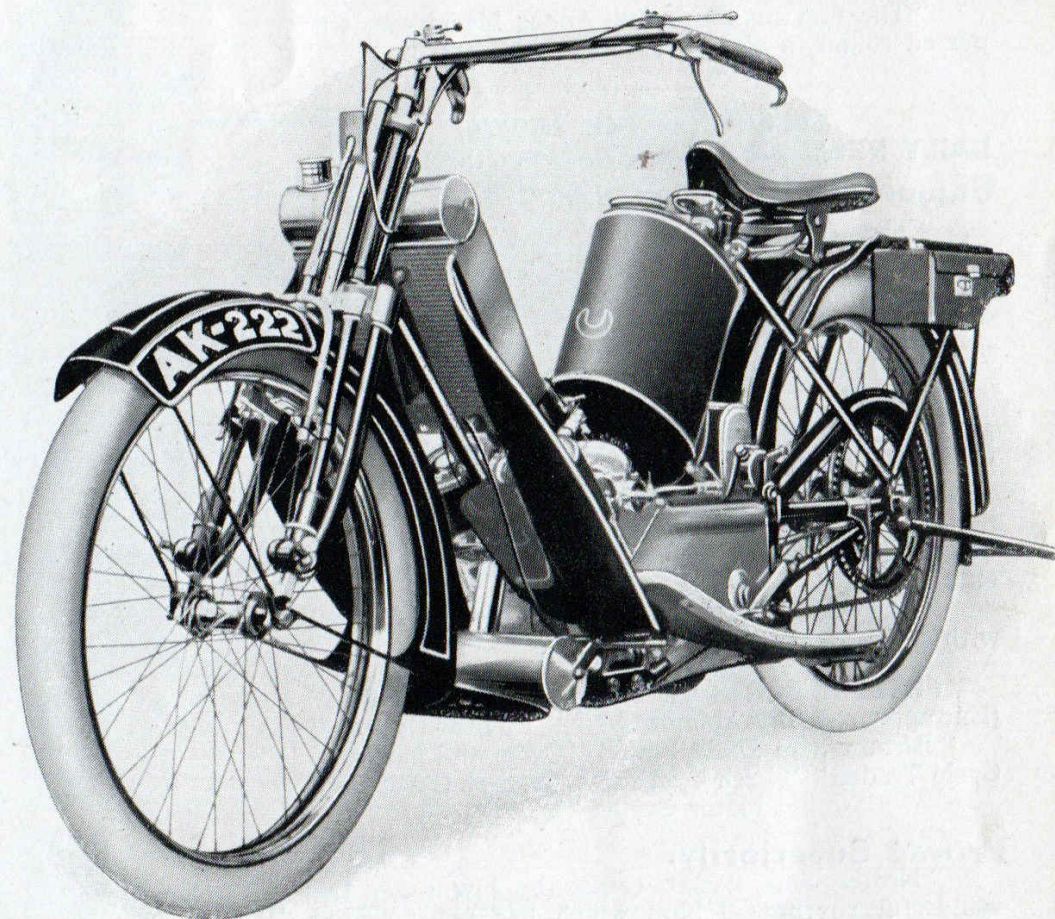
#### Uniform Turning Effort. MOTOR CYCLING, May 7th, 1912— (Our best-known two-stroke).

In the matter of torque the two-stroke again has the advantage, and the tale of belt or chain troubles should be very considerably shortened, owing to the comparative uniformity of turning effort. This is particularly exemplified in the case of our best known two-stroke, the “Scott.”

#### REPORT OF THE A.C.U. SIX DAYS’ TRIAL, 1912.

Extracts from “Motor Cycle,” “Scottish Cyclist and Motor Cyclist,” “Daily News and Leader.”

“The buzzing ‘Scotts’ are making a good show, as usual, and look spick and span” “The ‘Scotts,’ too, were pretty to watch. How easy to steer they look.” “Frank Philipp, alarmingly baulked by Miss Hammet’s ‘Douglas,’ which was *in extremis*, did a beautiful S-curve round her, then a figure 8 sort of skid, recovered splendidly, and went up covered with credit.”



## Expert Opinion of the Press—continued

### REPORT OF THE SCOTTISH SIX DAYS' TRIAL, 1912.

Extracts from "Motor Cycle" and "Scottish Cyclist and Motor Cyclist," 1912.

"The first competitor on the hill was R. A. Macmillan, of Edinburgh, whose  $3\frac{3}{4}$  'Scott' made light of the gradient and the course."

"The first man up was Angus MacMillan, who purred round in clean style on his 'Scott.'"

### REPORT OF THE SHOWS.

DAILY NEWS AND LEADER, Dec. 7th, 1912—

#### Unique Design. (Military honour).

"The unique design of the 'Scott' frame secured for it the military honour of being shown at Olympia carrying a new quick-firing machine gun of remarkable design."

### SCOTTISH CYCLIST AND MOTOR CYCLIST,

Dec. 11th, 1912—

#### The Most Popular.

"We now come to some points on the 'Scott' machine, which I for one am exceedingly pleased to find has at last come into its own, and is deservedly amongst the most popular and coveted machines extant."

"The 'Scott' was the first machine to be fitted with sprung foot-boards."

### PRESS REPORTS OF THE 1912 T.T. RACE.

(Extracts from the "Motor Cycle," "Motor Cycling,"

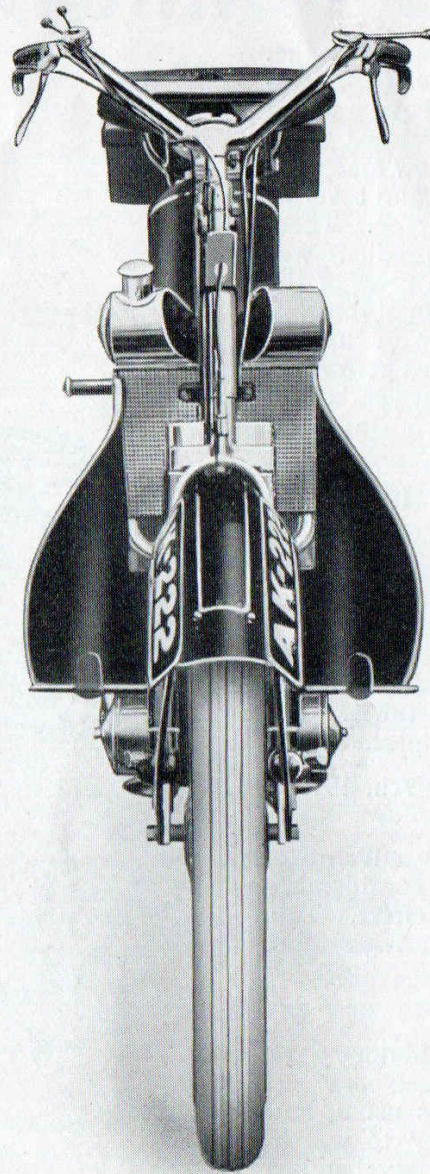
"Birmingham Daily Post," "Cycle and Motor Cycle Trader," "Irish Cyclist," "Scottish Cyclist and Motor Cyclist").

#### Proved Superiority.

"Nearer and nearer came the low purr, the wonderful rhythmical hum which had never ceased for four hours on end, until at last F. A. Applebee, winner of the 1912 T.T. Race, sped past the post amidst a tremendous tornado of applause."

"There can now be no doubt but that, size for size, the two-stroke engine is more powerful than the ordinary four-stroke motor."

"There is no doubt that water-cooling aided the 'Scott' enormously in winning the T.T. Race."



#### Sticks to the Road.

"Two machines which hold the road better than any others . . . it is to their even weight distribution on each wheel and their even firing engines and silky drive that they largely owe their success."

"I saw both 'Scotts' flit past me when 'all out' without a swerve or bump."

"One of the most extraordinary sights of the race was to see the 'Scott' riders leaning over at a most alarming angle and yet with the wheels of their machines apparently glued to the ground."

#### Silent Speed.

"Noise is not speed. Spectators had several proofs of this during the Senior T.T. A noisy machine would come along and impress the onlookers with its fleetness, but it needed a buzzing 'Scott' to pass these machines to gain an idea of the pace they were travelling."

#### First and Second.

"The two-stroke twin, however, has proved too much for its four-stroke contemporaries, and the 1912 Senior T.T. has been won by F. A. Applebee on a two-stroke 'Scott.' Up to the last lap, Frank Philipp, on a similar machine, was lying second, and had not a tyre delayed him for some time it is most probable that 'Scotts' would have been placed first and second."

"A noteworthy point is the almost certainty that its success would have been repeated by its sister machine had not the latter met with tyre trouble."

#### British Productions Best.

"A triumph for the British-built machine, the American motor-cycles . . . being completely outdistanced and outraced."

#### Easy, Speed.

"Applebee approached us moving most beautifully and very fast, the apparently entire absence of effort on the part of the machine impressing the numerous spectators."

# *The Ideal Side-Car Machine.*

In view of the increasing popularity of the side-car, the design of the "Scott"—so peculiarly adapted for this purpose—has received special attention in the 1913 model, and we have no hesitation in recommending the  $3\frac{3}{4}$  h.p. "Scott" as capable of drawing a side-car anywhere, and under all conditions.

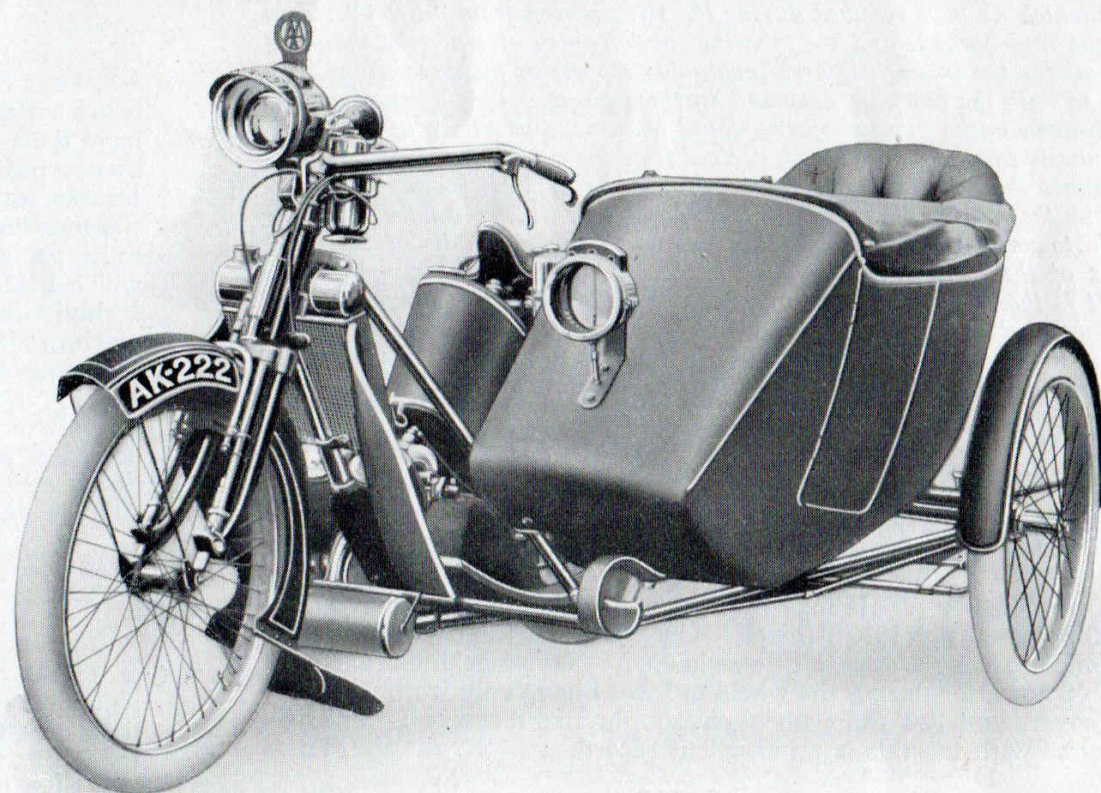
In order to meet the severe strains thrown upon the side-car machine by high speed on rough roads, and to prevent the abuse and damage of the frame caused by the improper position and fixing of heavy side-car clips, we have made special provision in the 1912 model for the safe attachment of the side-car by means of lugs built into the frame at the steering head, engine cradle, fork end and seat bracket.

The "Scott" is particularly adapted for convenient use with the side-car by reason of its open frame, allowing of easy dismount from in front, and presents immense strength and rigidity for this purpose owing to the scientific design, and the use of "butted" tubes and taper gauge forks; also an unusually strong back axle is fitted with large ball-bearing hub built with 10 gauge spokes into a strong section standardized rim.

The larger engine in combination with the two-speed gear provides ample power for all contingencies, and owing to the complete water-cooling system, **overheating is impossible**, so that the full power of the engine is maintained under all conditions.

The silent vibrationless working of the engine through the "no trouble" chain drive, the sensitive foot operation of the gear changes, and lastly the ever-ready "kick starter"—are points which give to the "Scott" side-car combination all the advantages of the motor car, whilst finally the  $2\frac{1}{2}$  Palmer Cord or Hutchinson Passenger tyres, fitted with butt-ended tubes, complete the specification of the ideal machine for heavy side-car work.

All the leading makers of side-cars supply special attachments to fit the "Scott" frame.



# Experiences of "Scott" Riders.

We have not space to reproduce all of the very many appreciative letters which we have received during the 1912 season from "Scott" riders at home and abroad, and we take this opportunity of sincerely thanking them all for the interesting and invaluable reports of their experiences on the road with the machine described in these pages. This description has been limited to the purely constructional features, and for an appreciation of the many practical advantages derived from the actual use of the "Scott," we cannot do better than refer our readers to the convincing testimony given by the many enthusiastic riders of our machine, who have taken the trouble to write (without solicitation on our part) to tell us of the great doings of the "Scott."

It is therefore a pleasure to us to acknowledge that in our endeavour to attain that greater perfection which comes only from perfected detail, we have the benefit not only of the experience derived from our own personal daily use of the "Scott," but also of the comprehensive experience of "Scott" riders.

\* \* \*

(COPY.)

VARNISH AND COLOUR WORKS, WOLVERHAMPTON,  
August 8th, 1912.

Dear Sirs,—. . . It may interest you to know that I have done 33,000 miles on my 1910 "Scott"—during which the engine has been back once to your Works to be overhauled. Your machine is excellent on back tyres, for during the whole mileage I have only worn out three back covers and two front wheel covers, for this distance I think you will agree with me this is an excellent record. E. A. WHITE.

\* \* \*

(COPY.)

KELLAS, BATU GAJAH, PERAK,  
FEDERATED MALAY STATES,

July 5th, 1912.

Dear Sirs,—You will be glad to hear that I have now run my "Scott" some 1,500 miles out here and never touched a plug or done anything beyond a general periodical look round and tighten up till last week, when I put in fresh washers to transfer ports. The machine is admirably suited for this hot climate as she never gets hot. I have never boiled the water yet and have frequently ridden with a shade temperature of well over 90°.—Yours faithfully,

COLONEL H. G. KENNARD.

(COPY.)

WESTERHOLM, DUMFRIES,

March 26th, 1912.

Dear Sirs,—. . . I may say that the bicycle is giving me the utmost satisfaction. I got delivery of it on January 4th and to date have done 1,829 miles over all sorts of roads and practically all done in pouring rain. I have not had a single stop due to engine or tyre trouble, and my repair bill has so far amounted to 4d. all told. I find the machine to be fast and a magnificent hill climber, and can get 64 miles per gallon of petrol and 1,100 miles per gallon of lubricating oil, which I think is very good considering the awful roads I have traversed. I think the machine improved every day. I have had four 4-stroke machines previous to the "Scott" and now I wonder how I put up with their vagaries and their slipping belt drives; next year I hope to have a 1913 "Scott."—Yours truly,

R. N. LEWIS,

Veterinary & Sanitary Inspector to the County Council of Dumfriesshire.

\* \* \*

(COPY.)

13, JUNCTION ROAD, BATH,  
August 29th, 1912.

Dear Sirs,—After the great 1912 achievements of the "Scott" motor bicycle this letter may have little interest for you, but a sense of duty prompts me to send you particulars of what I may term a novice's reliability trial of one of your machines.

Five months ago I knew practically nothing of auto cycles, but at the end of April last that keen local "Scott" enthusiast and expert, Mr. H. L. Bush, communicated to me some of his enthusiasm, purchased for me a 1911 3 $\frac{3}{4}$ " "Scott" (engine 936), and taught me to drive.

The confidence and experience gained from several enjoyable runs in the locality decided my wife and self to ride to Pwllheli, North Wales, for our holidays. We left Bath on July 26th, and travelling *via* Gloucester, Ludlow, Llangollen, Capel Curig and Beddgelert, reached Pwllheli the next day, distance 236 miles. During our stay we explored practically the whole of the Lleyn peninsula, in doing which we had to climb severe hills and to traverse several stretches of bad roads.

We were to have set out for home on Friday last, but the continuous downpour compelled us to postpone our departure, and to take one instead of two days for the journey. Leaving Pwllheli at 7.5 a.m., we

## Experiences of "Scott" Riders.

returned *via* Harlech, Barmouth, Dolgelly, Dinas, Mawddy, Welshpool, Montgomery, where our ascent of the hill pleased at least one of the natives, Ludlow, Leominster, Ledbury, Gloucester and Stroud. Almost all the way we had a strong head wind against us, and for three hours heavy rain. The roads in many places were inches deep in water, and outside Welshpool we had to be hauled out of the flood which made the road to Bishop's Castle *via* Chirbury impassable to us. Bath was reached at 9-30 p.m., and allowing at least 2½ hours for lunch, petrol, wrong turnings and stoppages for cattle and sheep, the actual ride of 223 miles was accomplished in less than 12 hours. A Milford Cabriolet side-car was used and the combined weight of passenger, driver and luggage was 3½ cwts.

As the roads for many miles were heavy with mud, the return journey (for hills see contour book) was a very severe test of the soundness of our outfit, surely as severe as any of the runs without side car, passenger and luggage, in the recent Six Days' Trials.

During the whole of the 723 miles which we covered, we experienced no mechanical troubles of any kind, indeed the running of the machines for the last 100 miles was as sweet as the humming of a bee, and the Palmer Cord tyres as fitted by you in August last came through without a puncture.

With very best wishes for the continued success of the "Scott."—  
Yours faithfully, E. H. BENCE.

\* \* \*

(COPY.)

REDVERS, EXMOUTH.

October 12th, 1912.

Dear Sirs,— . . . I have now run the "Scott" which was purchased from your London Agent in December, 1911, exactly 5,445 miles by Cowey Speedometer.

After having ridden a motor tricycle, and one, two and four-cylinder bicycles since 1903, my opinion is that the "Scott" is far and away the most comfortable of the lot.

Moreover the frame design allows of a long overcoat or mackintosh being worn, the unique mudguarding keeps one quite clean, mounting and dismounting are easy, and the machine is started without any fuss or gymnastics, or danger of heart strain.

The water-cooling arrangements are perfect, and no semblance of a leakage has occurred, and without this system, it would have been impossible for a machine of this power to take my wife in sidecar (with

wind screen) and heavy luggage from Exmouth to Hampstead, 182 miles, by Cowey, in 9 hours, on one of the few broiling hot days last July.

I consider the machine is ideal for medical men, where constant stopping and starting is unavoidable, and where reliability in all weathers is a *sine qua non*.—Yours faithfully,

CLARENCE BEESLEY,  
L.R.C.P., L.R.C.S., D.P.H. (Cantab.).

Messrs. Scott, Ltd.

\* \* \*

(COPY.)

MOSSPAUL, LONGLEY ROAD, WEALDSTONE,

June 8th, 1912.

Dear Sirs,— . . . My machine runs simply grand. I have done 1,270 miles and have not had to undo my tool bag yet except for two punctures. Of course this mileage is quite unobserved, unlike a popular two-speed machine, which essayed a 1,000 miles' run without using a tool, but, unfortunately, ran into a telegraph post after doing 600 miles.

During the past eleven years I have ridden seventeen different makes of motor-cycles, and finished up last season on one of your 1911 machines, which was a revelation to me; the other machines were good, bad and indifferent, but the smooth running, comfort and quietness of the "Scott" appealed to me immediately; I could not return to the four-stroke under any circumstances.—Yours faithfully, A. EARP.

\* \* \*

(COPY.)

ROPEMAKER STREET, FINSBURY, LONDON, E.C.,

26th February, 1912.

Dear Sirs,—At last I have had an opportunity of trying the "Scott" on the road, and state with much pleasure that I find it a great revelation both as regards speed and comfort as compared with the ordinary Poppet valve engine.

I find after using this exhaust valve lever I can throttle down to four miles an hour still on the top gear, and the engine will accelerate from this speed still on the top gear on dropping the exhaust valve lever.

The flexibility of the two-stroke engine is a great improvement on the four-stroke.

I have never experienced such comfort as I have on your machine, I think it is the very finest and most up-to-date motor-cycle made.—  
Yours faithfully, J. FRANKENSTEIN.

# Experiences of "Scott" Riders.

(COPY.)

LYNDHURST, POCKLINGTON,

July 12th, 1912.

Dear Sirs,—I would like to express my appreciation of the 1912 "Scott" I purchased from Messrs. Everingham Bros., your Pocklington agents. I may say that I have run the machine close on 3,000 miles and have not had a mechanical trouble. The bulk of this mileage has been done with a side-car attached, and my many different passengers have nothing but praise for the same.

As regards speed, I have done 49 miles per hour with side-car and passenger, and 60 miles per hour solo (as registered by 1912 Cowey speedometer). I have climbed Garrowby Hill several times with a passenger with ease, total weight 48 stones.

My petrol consumption runs out at 50 miles per gallon, with side-car and passenger, and about 120 miles per quart of oil.

The main features of the "Scott" are, to my mind, the starting device, which is very easy (I may say that I never inject petrol and start with ease from cold), and the sweet purr and smooth running, like a car, and vibrationless.

I have not ridden any other make of motor-cycle, but I can say that I have ridden your "Scott" machine now for two years, the whole years through wet and fine, also fields, and have not been held up for any kind of engine trouble, and am now a "confirmed Scottist." I may say that I intend purchasing your 1913 model.

You have my heartiest congratulations for the wonderful performance you put up in the Senior T.T. Race held in the Isle of Man.

Wishing you every success in the future.—Faithfully yours,

R. C. ENGLISH.

\* \* \*

(COPY.)

WOHNRIED, RICCARTSBAR AVENUE, PAISLEY,

24/7/12.

Dear Sirs,—After several years of experience with four-stroke air-cooled motor-cycles, I purchased a 1912 "Scott" two-stroke, more out of curiosity than knowledge of its capabilities, and I am delighted with it.

Quite recently I put the machine and sidecar (I never ride solo) to a very severe test extending over ten days. From Paisley the route to Oban over "Rest and be Thankful" was taken, thence to Pitlochry via the terrible Dalmally-Tyndrum road. The third day included the climb up Glen Shee, over Cairnwell to Aberdeen. Fourth, fifth and sixth days were not strenuous, the main trunk roads to Inverness, Perth, Berwick and Carlisle being comparatively easy. In the Lake District the combination was called upon to climb Kirkstone Pass and the precipitous rise out of Keswick, with its double hairpin direct on to the Ambleside road. On no hill throughout the tour had the passenger or luggage to be disturbed, and only on the Devil's Elbow had I to leave the saddle after rounding the first bend, and this was entirely my fault in taking the hairpin incorrectly and having to slow up too much. I was in the saddle again within ten yards. No part of the machine gave any trouble during this trip of 1,100 miles.

To those who are dissatisfied with the "barking and konking" of an overloaded single-cylinder engine, or with the noise and the transmission trouble of a heavy twin, I recommend the "Scott" as the perfection of refinement and sweet running. It is the motor cycle of the man of taste and discrimination.—Yours truly,

HANS M. STICH.

\* \* \*

(COPY.)

49, BRIDGE STREET, GAINSBOROUGH,

Jan. 4th, 1913.

Dear Sirs,—The 1912 "Scott" I purchased last July from your Sheffield agent—Mr. Laughton—has now done 2,400 miles by speedometer, all with side-car and passenger, without any adjustment or trouble. I have not even had to have the engine down for cleaning out deposit as yet, and not a sign of a knock from same.

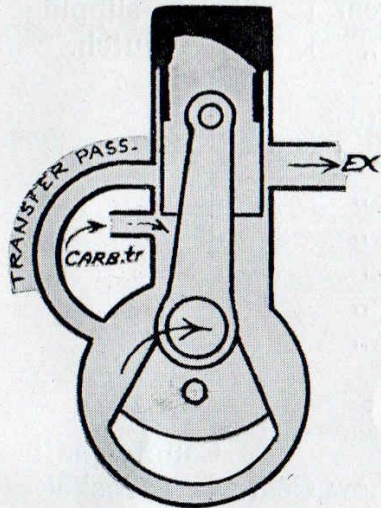
I have owned various other well-known makes, but the "Scott" is a long way ahead of any of them for comfort, flexibility, power, control, easy starting, cooling system, transmission and silence.

Without a doubt the "Scott" is the very last word in motor cycles.—Yours truly,  
(Signed) A. E. KAY.

# The Action of the Two-Stroke Engine.

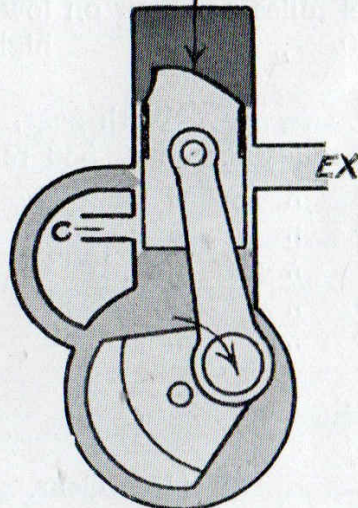
(The shading indicates pressure in the cylinder or crankcase, while blank spaces indicate suction or vacuum.)

**Explosion.**



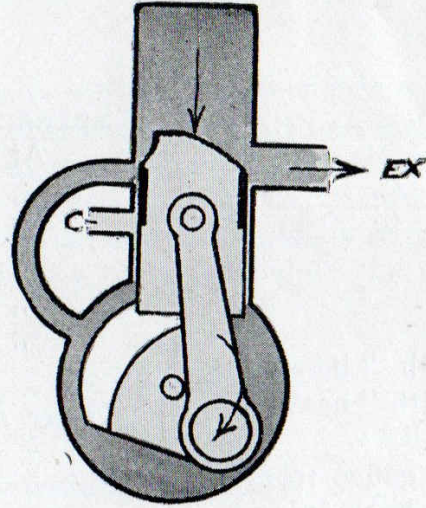
**1. Inlet**

**Expansion:**



**2. Compression.**

**Exhaust.**



**3. Compression.**

(1) The piston at the beginning of the power stroke begins to move downwards under the force of the explosion, whilst at the same time, a carburetted mixture enters the crankcase at the **inlet ports** (below the piston) from the carburettor.

(2) The piston descends further with expansion of the products of combustion in the cylinder, and the lower edge of the piston now **closes off inlet ports**, so that the mixture begins to be compressed in crankcase by downward movement of piston.

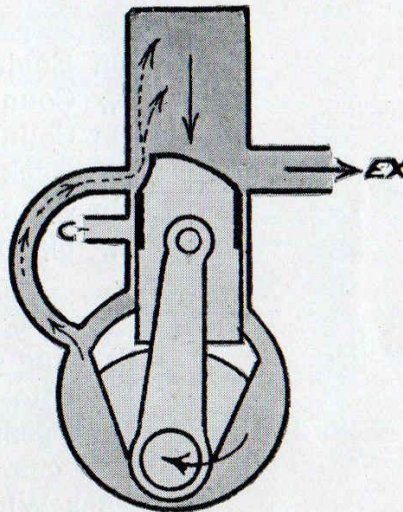
(3) The top of the piston **uncovers the exhaust ports**—allowing the exhaust gases to escape to the silencer, with an instant reduction of pressure in the cylinder. At the same time the further downward movement of piston causes continued compression in crankcase.

(4) The top of the piston now **uncovers the transfer ports**, and the charge compressed in crankcase blows through (by way of the transfer passage) and is deflected upwards by the piston deflector ledge, so that the remaining exhaust gases are swept out, and the cylinder filled with a fresh charge of carburetted mixture.

(5) The piston begins to move upwards, and **first closes off the transfer ports**, and **then the exhaust ports**, whilst its upward movement creates suction, or partial vacuum in the crankcase.

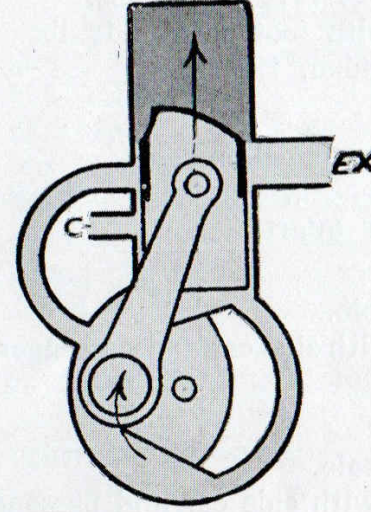
(6) The piston moves further upwards, and compresses the charge in the cylinder whilst increasing the suction in crankcase until the lower edge of the piston **uncovers the inlet ports**, allowing a flow of carburetted mixture from the carburettor to enter and restore the vacuum produced in the crankcase by the outward movement of the piston.

**Distribution Period.**



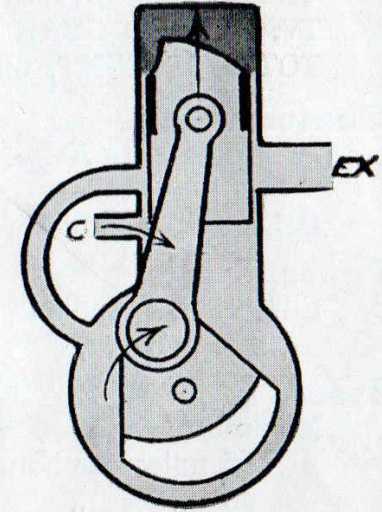
**4. 'Blow-through' from Crankcase.**

**Compression.**



**5. Suction.**

**Compression.**



**6. Suction and Inlet.**

# Useful Particulars of the $3\frac{3}{4}$ h.p. "Scott"

## Dimensions.

ENGINE, 2.875 in. (73 mm.) Bore; 2.5 in. (63.5 mm.) Stroke.

32.45 cu. in. capacity (532.5 c.c.).

WHEELBASE, 4 ft. 5½ in.

OVERALL LENGTH, 6 ft. 11 in.

WIDTH, 19 in. over Footboards.

20 in. Handlebars.

HEIGHT OF SADDLE from Ground, 29 in. to 30 in.

ENGINE CLEARANCE, 5 in.

TYRES, 26 in. dia., 2.5 in. wide.

MUDGUARDS, 4 in. wide.

CHAINS, Engine, ½ in. pitch,  $\frac{3}{16}$  in. width "heavy."

Back driving chain, ½ in. pitch, ¼ in. width "heavy."

Magneto, ½ in. pitch, ⅛ in. width "light."

WHEELS, 10 gauge spokes back wheel, 12 gauge front.

26×2½ in. "standardized" rims. ⅝ in. back axle.

## Weights.

ENGINE and CARBURETTOR, 50 lbs.

TOTAL AMOUNT OF WATER, 5.25 lbs.

TWO-SPEED GEAR with foot pedal, 11¼ lbs.

TOTAL WEIGHT, unladen, 196 lbs.

## Consumption.

PETROL 60 to 70 miles per gallon solo.

40 to 50 " " side car and passenger.

OIL 200 miles per quart.

## Power.

Climb 1 in 4 gradient, solo.

" 1 in 5 " with side car and passenger, 140 lbs.

## Speed.

Maximum.

55 miles per hour solo.

40 " " with side car and passenger.

## Speed—continued.

Minimum.

4 miles per hour on low gear	} without slipping clutch.
10 " " high "	

## Speed of Engine. With gear, 4 to 1.

At 10 miles per hour, 538 revolutions per minute.

" 15 "	" "	807	" "
" 25 "	" "	1386	" "
" 35 "	" "	1883	" "
" 45 "	" "	2420	" "
" 55 "	" "	2961	" "

## Gear Ratios.

	High Gear.	Low Gear.	Countershaft Sprocket.
Standard D ..	3.9	7.23	21 tooth.
" E ..	4.125	7.6	20 "
Standard F ..	4.34	8	19 "

## Chain Wheels.

On Engine, 20 th. sprockets.

" Countershaft, 25 th. and 46 th. }  $\frac{3}{16}$  in. width.

On Countershaft, 19 th., 20 th. or 21 th. }  $\frac{1}{4}$  in. width

" Back Wheel, 66 th.

On Countershaft, 20 th. }  $\frac{1}{8}$  in. width.

" Magneto, 16 th.

## Standard Chain Lengths.

Starting gear ..	19 links	} $\frac{1}{8}$ in. width "light."
Magneto ..	44 "	
High gear ..	67 "	} $\frac{3}{16}$ in. width "heavy."
Low gear ..	78 "	
Back Wheel ..	115 "	$\frac{1}{4}$ in. width "heavy."

# How the "Scott" is Tested.

The "Scott" Motor Bicycle is made at our specially equipped Works, at Saltaire, Yorks., where we specialize in the manufacture of motor bicycles only.

Every machine which is sent out from our works is subjected to a vigorous system of fault-eliminating tests. The engine is first of all run on the "testing bed" for a period varying from three to six hours, during which observations and adjustments are made, and brake readings taken. Then the complete machine is tested on the road, so that the behaviour of the Carburettor, control, lubrication, two-speed gear, brakes, etc., can be observed under road conditions, and the required adjustments made. Finally, the machine is subjected to an exhaustive analytic examination, by which the minor defects, which might otherwise escape detection, are detected, and corrected before the machine can be passed.

## How the "Scott" is Tested.

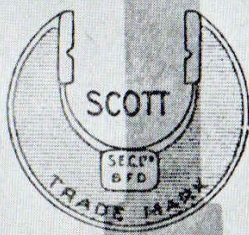
## Recorded Tests.

Detailed information regarding the behaviour and condition of engine and machine during these tests is given by signed reports issued from the Engine Testing and Road Testing departments, and from these are taken the particulars given on the test-card, which we here reproduce.

This test-card serves the purpose of giving a certified assurance that the machine has passed through our Testing Departments, and has received a searching examination at our works before being sent out, and also bears a certificate of the guarantee issued with each machine; so that by reference to the Engine No. given on each card, we are enabled to promptly refer to the history of each machine,—or by the return of the test-card, repairs under our guarantee can be undertaken without the delay which might otherwise be caused.

**The Scott Engineering Company, Limited,  
Saltaire, Shipley.**

Telephone 337 Shipley  
Telegrams: "Twin,  
Shipley."  
*"MADE TO LIMIT GAUGE"*



### ENGINE NO.

*This number must be quoted in all correspondence  
relating to the machine.*

### CERTIFICATE OF ENGINE TEST.

No. \_\_\_\_\_

Date \_\_\_\_\_ Duration of tests        hrs.        min.

Power = \_\_\_\_\_ b.h.p. at \_\_\_\_\_ revs. Max Speed \_\_\_\_\_ revs. per min.

Signed \_\_\_\_\_  
*Engineer in charge of Testing Department.*

## How the "Scott" is Tested.—Continued.

Fresh test-cards are issued from the Repair Department upon the retesting of machines sent in to be overhauled, or for repairs under the terms of our guarantee.

### Engine No.

It is therefore necessary, to ensure prompt attention, that the Engine No. given on this card should be always quoted in correspondence relating to the machine. Although by our checking system an inventory is made of all accessories, such as lamps, horns, tools, etc., we do not hold ourselves responsible for these, or any other accessory parts which may be sent with the machine. Under these conditions we advise that wherever possible all accessories should be removed from the machine. If side-cars are attached to machines sent for repairs we shall be compelled to charge for storage of same.

### Repairs.

Before sending machines or parts to our works for repair and alterations, either under our guarantee or otherwise, it is necessary to notify us of the date and Railway Company by whom despatched, and to clearly state the Engine No. and nature of alteration required.

Upon receipt of advice from customers that machine or parts have been forwarded to our works for repair, the preliminary particulars are entered upon a repair sheet, which is completed upon actual receipt of the machine, or parts, by the full particulars of Engine No., condition of the machine, accessories and tools, nature of defects, and reference to previous correspondence relating to same.

<b>The Scott Engineering Company Limited, Saltaire, Shipley.</b>	
<b>CERTIFICATE OF ROAD TRIALS.</b>	
No. _____	
Date.....	Total distance run.....miles by.....
Gradients climbed on high gear.....	on low gear.....
Gear ratio.....	Signed..... ROAD TESTER.
<b><u>GUARANTEE</u></b>	
<i>This certificate must accompany any request for free repairs under the terms of our guarantee, and will be exchanged for a fresh certificate upon retesting of the machine.</i>	
Our Examination No. ....	
Supplied by..... date.....	
Owner's Name .....	

# Terms of Business

## Payment.

£15 deposit with order.  
Cash against Pro Forma Invoice.  
Terms nett.

## Carriage.

In all cases must be paid by the customer. Machines are signed for by the Railway Companies as being received in good condition, and unless otherwise ordered are consigned at the lowest rates, *i.e.*, at consignee's risk. \* In case of damage all claims should be addressed to the carriers.

Packing Cases and Crates being charged at less than cost price, are **NOT RETURNABLE**.

Crates for single Motor Bicycles, 4/6 each.

Crates for export for single Motor Bicycles, 25/- each.

We give the following guarantee with our motor cycles instead of the guarantee implied by statute, or otherwise, as to the quality or fitness of such machines for the purpose of motor cycling ; any such implied guarantee being in all cases excluded. In the case of machines which have been used for " hiring out " purposes, or in respect of which our Trade Mark or manufacturing number has been removed, no guarantee of any kind is given, nor is to be implied.

**We Guarantee**, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship ; but this guarantee is to extend and be in force for three months only from the date of purchase, and the damages for which we make ourselves responsible under this guarantee are limited to the replacement of any part which may have proved defective.

**We undertake**, subject to the conditions mentioned below, to make good at any time within three months any defects in these respects. As motor cycles are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear-and-tear, misuse, or neglect.

Any motor cycle sent to us to be plated, enamelled, or repaired, will be repaired upon the same conditions as if it were a new motor cycle, *i.e.*, we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of material and workmanship, such guarantee to extend and be in force for three months only from the time such work shall have been executed, and this guarantee is in lieu and in exclusion of any common law or statute warranty, and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.

## Conditions of Guarantee.

If a defective part should be found in our motor cycles, it must be sent to us, carriage paid, and accompanied by an intimation from the sender that he desires to have it repaired free of charge under our guarantee, and he must also furnish us at the same time with the number of the machine, the name of the agent from whom he purchased, and the date of the purchase.

## *Terms of Business—continued.*

Failing compliance with the above, no notice will be taken of anything which may arrive, but such articles will lie here at the risk of the senders; and this guarantee, or any implied guarantee, shall not be enforceable.

We guarantee only those machines which are bought either direct from us or from one of our duly authorized agents, and under no other conditions.

We do not guarantee the specialities of other firms, such as: tyres, saddles, chains, lamps, gear cases, bells, etc., or of any component part supplied to the order of the purchaser differing from our standard specification, supplied with our motor cycles or otherwise.

The term "misuse" shall include, among others, the following acts (1) the attaching of a side-car to the motor-cycle in such a manner as to cause damage to, or render or calculated to render the latter unsafe when ridden; (2) the use of a motor-cycle and of a side-car combined when carrying, or having carried more than two persons; (3) the carrying of more than one person on the motor-cycle itself, whether with side-car attached or not.

### **The Term "Agent"**

is used in a complimentary sense only, and those firms whom we style our agents are not authorized to advertise, incur any debts, or transact any business whatsoever on our account, other than the sale of goods which they may purchase from us; nor are they authorized to give any warranty or make any representation on our behalf other than those contained in the above guarantee.

