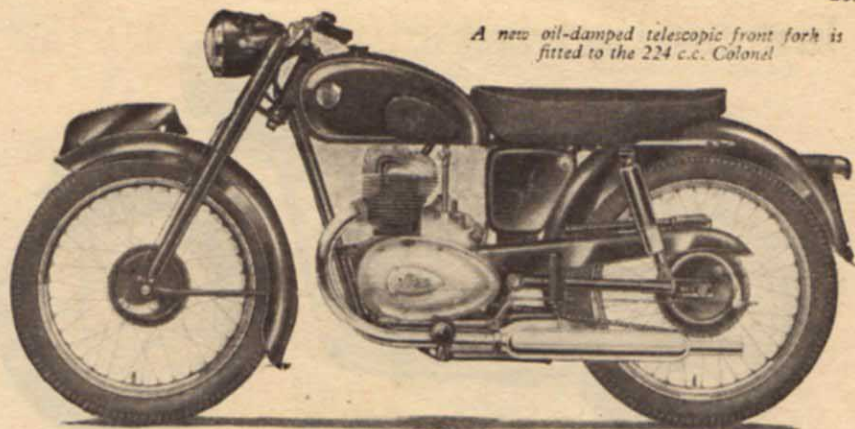


slider. The fork assembly is completed by two, 2in-diameter top outer covers, which are bolted to the fork crown and located by the top pressing. A spring-loaded oil seal is interposed between the top of the slider and the inner fork leg. Filler plugs are provided in the top pressing; 160 c.c. of S.A.E. 20 mineral oil is carried in the fork legs and sliders; oil enters each damper tube through an orifice at the lower end.

On deflection of the front wheel, as the fork slider and damper tube move upward against the resistance of the main spring, oil is forced up through the annular clearance between the damper tube and the leg. Because the damper tube is tapered, the clearance progressively diminishes, resulting, obviously, in increased hydraulic resistance to the upward travel of the fork slider. When the maximum diameter of the damper tube is concentric with the end of the tube, annular clearance is almost nil, providing a hydraulic limit stop. A certain amount of rebound damping is provided by oil drag.

Because of the more arduous conditions of usage, this pattern of fork, when fitted to the competition models, is modified to



A new oil-damped telescopic front fork is fitted to the 224 c.c. Colonel

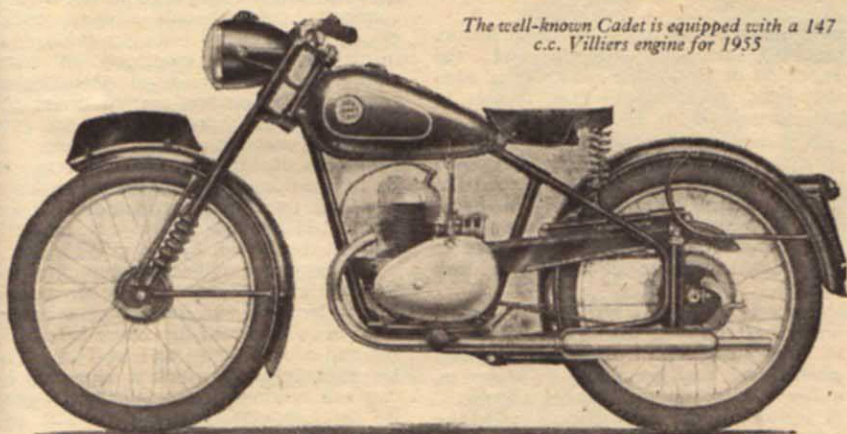
into a competition fork. The same compression spring is employed in both; the load required to bottom it is 291½ lb. Oil of S.A.E. 50 grade is used in the competition fork. The 160 c.c. of oil for the fork can be accurately gauged by using the measure attached to the fuel-tank filler cap; this holds exactly one-third of the amount required for each fork leg. A

mentioned earlier, the new front fork, are standardized. As a result of experience gained with the factory trials machines, the wheelbase of the Commando has been extended to 51in—an increase of 1in—to improve the handling. Various gear ratios are available for the competition models. Those supplied as standard are: Trials Commando: 6.54, 8.83, 15.0 and 22.6 to 1; Cotswold Scrambler: 6.27, 8.48, 11.3 and 18.2 to 1.

Finish on all models is maroon, stoved enamel. Tanks are gold lined and carry a three-dimensional plastic badge. Wheel rims are chromium-plated on the Colonel and the two competition models; those on other models are Argenized—a lacquered, matt-silver finish.

Makers are the James Cycle Co., Ltd., Greet, Birmingham, 11. Prices (in which total price includes purchase tax, payable only in Great Britain) are as follows:—

	Basic Price £	Total Price £
J11, 98 c.c. Comet .....	64	76 16
J15, 147 c.c. Cadet .....	76	91 4
K7, 197 c.c. Captain .....	104	124 16
K12, 224 c.c. Colonel .....	125	150 0
J9, 197 c.c. Commando (trials) .....	115	138 0
K7C, 197 c.c. Cotswold (scrambles) .....	120	144 0



The well-known Cadet is equipped with a 147 c.c. Villiers engine for 1955

give positive damping on the recoil stroke. This is achieved by the addition of a fixed piston inside each damper tube. Of phosphor bronze, the piston is riveted to a rod which runs inside the leg, and passes through a phosphor-bronze guide block screwed into the top end of the damper tube. The upper end of the rod is anchored at the top of the leg.

As the fork slider moves downward towards the static-load position on the rebound stroke, oil is trapped above the piston in the damper tube, owing to the movement of the tube relative to the piston. The oil, under pressure, flows out through two small metering holes, providing the initial positive damping. As travel of the fork slider and damper tube continues, first one and then both metering holes are cut off by the piston; this, of course, results in progressively increased damping until, finally, a hydraulic limit stop is formed when the oil can no longer escape. Oil returns to the damper tube by way of the radial drillings in the lower end.

Total range of movement on both the standard and the competition forks is 4½in. Owing to the simplicity of design, a standard fork can, if necessary, be converted

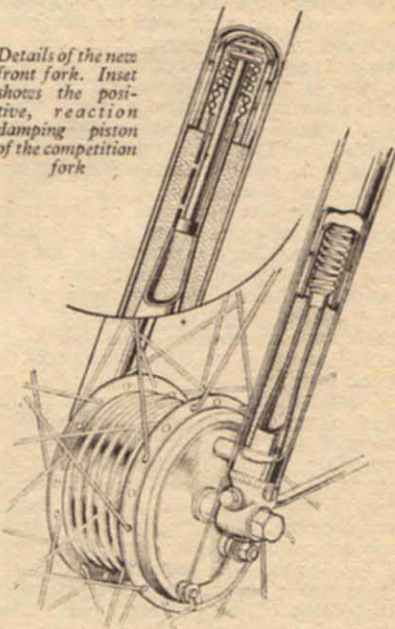
similar design of fork end to that employed on the smaller models is used, with the mudguard stays acting as cotter pins for the wheel spindle nuts.

On the 197 c.c. and 224 c.c. roadsters, a new headlamp, with built-in 80 m.p.h. magnetic speedometer, ammeter and switch, is recessed neatly into the fork top pressing. The headlamp is equipped with a 6in-diameter pre-focus light unit. As on the smaller models, the handlebar is retained by adjustable ball-pegs. The restyled, deep-section fuel tank has a central filler cap, and holds 2½ gallons of fuel.

A transverse member on the front down tube affords a two-point forward attachment bracket for the tank, and also carries the electric horn. The horn is completely concealed, being located in the channel between the two sides of the tank. Full-width hubs, running on ball bearings, are fitted. Brake diameters are 5in front and rear on the one-nine-seven Captain, 6in front and rear on the two-two-five Colonel. Tyre sizes are 3.00 × 19in front and rear on both models.

On the two 197 c.c. competition models, full width hubs, 2½-gallon tank and, as

Details of the new front fork. Inset shows the positive, reaction damping piston of the competition fork





# James Lightweights for 1955

A 150 c.c. Model Added to the Range : New Oil-damped Front Fork : Many Detail Modifications

FOR the coming season, the range of James machines will continue to comprise six models, varying in engine capacity from 98 to 224 c.c. The current one-two-five Cadet, however, is superseded by a new one-fifty Cadet. In the luxury lightweight class are the 197 c.c. Captain and the 225 c.c. Colonel, while catering for the increasing demand for lightweight competition models are the sturdy 197 c.c. Cotswold and Commando, scrambler and trials model respectively. An appreciable amount of restyling and redesigning has been effected, and an attractive new feature on all models is the use of full-width, ribbed wheel hubs. For the three two-hundred and the two-two-five Colonel, there is a completely new oil-damped, telescopic front fork. All models are powered by Villiers two-stroke engine-gear units, and all except the Commando have spring frames.

Power unit of the new Cadet is basically the same as the 122 c.c. engine, but with a new-type piston, cylinder barrel and light-alloy head. Bore and stroke dimensions are 55 x 62mm, giving a capacity of 147 c.c. This engine-gear unit will be described with the Villiers 1955 programme in next week's issue of *The Motor Cycle*.

## New Fork Lug

Frame and front fork of the latest Cadet are virtually unaltered. However, a new fork-slider end lug has been introduced; this lug facilitates wheel removal and also furnishes an ingenious mode of attachment for the twin, tubular mudguard stays now fitted. Each forward end of the horizontal stays (they are actually formed by a single U-shaped member in  $\frac{1}{2}$ in diameter mild-steel tube) has a solid-steel insert which is pushed through a hole in each fork end lug; the hole is at right angles to the wheel spindle. A scalloped recess in the stay is located by the sleeved wheel-spindle nut. The end of the stay (that is to say, the solid insert) is tapped to receive a  $\frac{1}{8}$ in draw-bolt; this bolt retains the vertical mudguard stay and also causes the horizontal stay to act as a cotter pin, locking it firmly against the sleeve of the spindle nut. For removal of the wheel, the draw-bolts need only be slackened and wheel-spindle nuts removed.

Extremely smart in appearance, the new full-width hubs are fitted front and rear. They are fabricated from ribbed, light-alloy centre pieces, and pressed-steel end covers—one end cover is also, of course, the brake-shoe plate. Brake diameters are 4in front and 5in rear. Each hub is supported by  $1\frac{1}{2}$ in-outside-diameter journal ball bearings—cup-and-cone-type bearings were used on the former Cadet model. Tyre sizes remain at 2.75 x 19in front and rear.

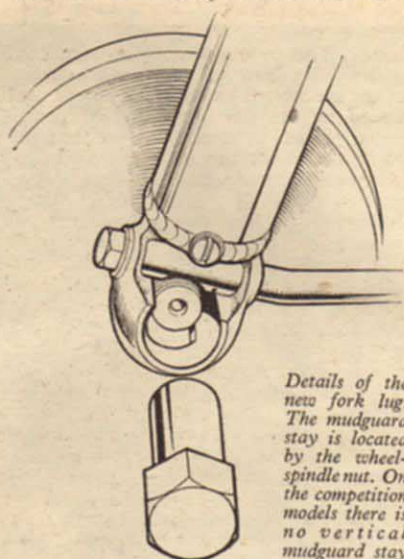
Welded-on pivot blocks are employed for the clutch and front-brake levers, and

the neat appearance of the handlebar is further enhanced by a new form of handlebar mounting, which eliminates the need for a clamp and pinch-bolts. Two ball-end pegs are welded to the underneath portion of the handlebar and locate through slotted sockets in the fork top-lug pressing. Each peg is tapped axially, and held firmly from below by a  $\frac{1}{2}$ in bolt. Slackening the bolts permits the handlebar to be adjusted for the angle of the grips. Also contributing to the neat lines of the machine is the 6in-diameter headlamp (with pre-focus light unit), which has a built-in Smiths magnetic speedometer, calibrated up to 80 m.p.h. A direct-lighting system is employed. A baffle-type silencer is fitted; the straight tail-pipe and baffles are detachable for cleaning. This type of silencer—as opposed to the packed, steel-wool type—is now standardized throughout the range.

An economy model, but one with a very attractive specification, the 98 c.c. Comet is powered by the Villiers Mk 4F, two-speed, engine-gear unit. The gear box selector mechanism is operated by means of the improved, handlebar-mounted ratchet control lever, which was introduced earlier this year. A Bowdenex control cable is fitted. A finger-operated adjuster is provided at the control lever, and there is a secondary, spanner-operated cable adjuster at the gear-box end of the cable. An ordinary 5in-diameter headlamp is fitted, but in most other respects the machine has a cycle-parts specification similar to that of the Cadet.

Pivoted-fork rear springing, with two-way hydraulic damping, is a standard feature of the 197 c.c. Captain and 224 c.c.

*The 197 c.c. Captain with light-alloy hubs as fitted to all models*

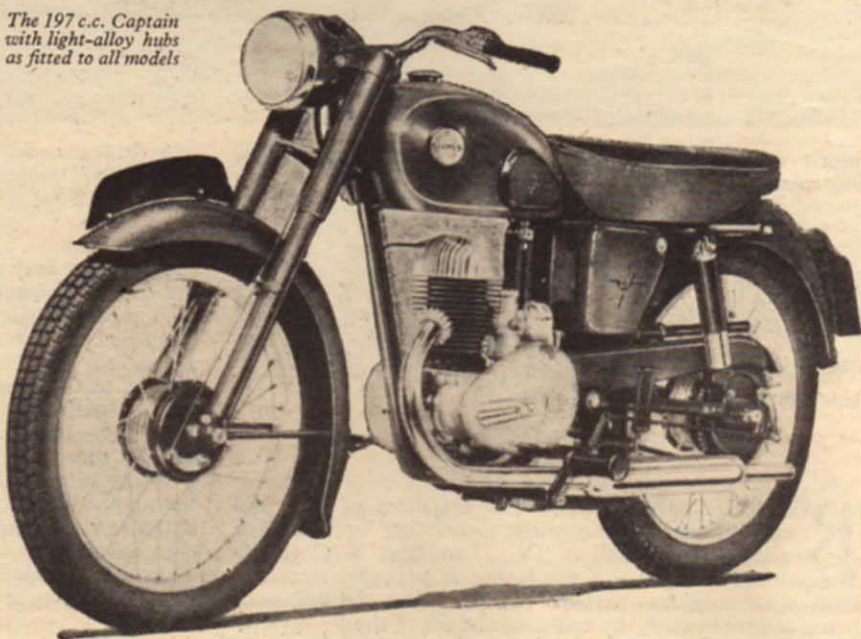


*Details of the new fork lug. The mudguard stay is located by the wheel-spindle nut. On the competition models there is no vertical mudguard stay*

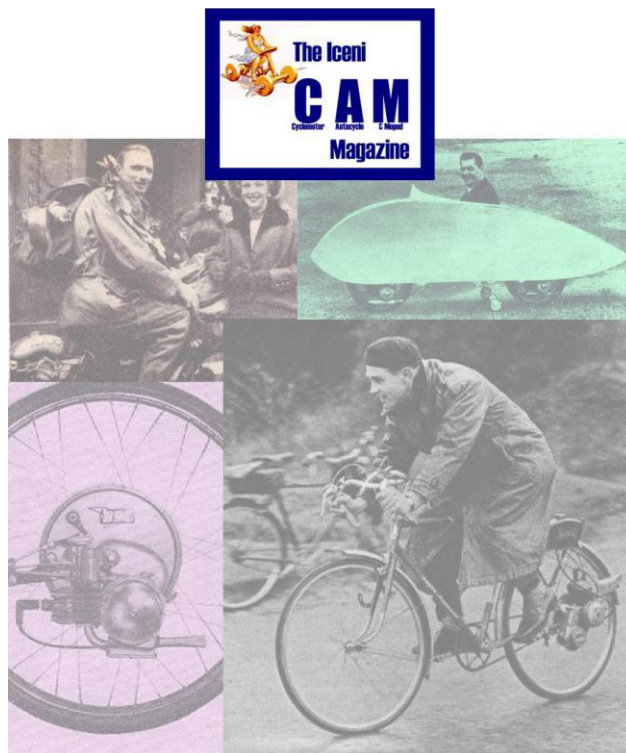
Colonel. Complementary to this excellent frame suspension is the new oil-damped telescopic front fork.

The main fork structure comprises two  $1\frac{1}{2}$ in outside-diameter fork legs, in 10-gauge material, and welded-up fork crown and top pressings. Carried externally on each inner leg is a pair of  $1\frac{1}{2}$ in-long, oil-impregnated, sintered-bronze bushes. These bushes are spaced 6in apart and provide the bearing surface for the fork sliders, which have a  $1\frac{1}{2}$ in-diameter bore, and are in 14-gauge tubing. Located inside the main legs, the springs have 89 working coils. Each spring is attached at the upper end of the leg, while at the bottom it is attached to the damper tube which, in turn, is pegged by a cross bolt to the slider with which it is co-axial.

The damper tube is a two-diameter member, with an intermediate taper; the larger diameter is at the base of the tube which seats at the lower end of the fork



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