## The Smoky Exhaust Nuisance.

THE emission of unburnt, or partially burnt, evil-smelling smoke, with the exhaust gases, either in town or country, is a serious source of annoyance to road users. There is, however, no excuse for anyone to regularly permit smoke to pour out with the exhaust from his car. The whole cause, it is perhaps superfluous to mention, is superfluity of lubricating oil in the cylinders. When the engine is fitted with a lubricating system by which the oil is measured out in doses of the required amount, and is delivered regularly by a forced feed to the cylinders, there is practically no difficulty. In this case, if the feed is adjusted in the first instance until the car runs smokelessly, no smoke need be feared.

Where ordinary splash lubrication is employed, the level of the oil in the crank-chamber must be carefully adjusted, as well as the rate at which fresh oil is fed into it. With those requirements properly attended to there will be no smoky exhaust. It should not be forgotten, however, that with any gravity-feed device, what is a proper adjustment in cold weather will not answer in hot weather, as the viscosity of lubricating oil varies considerably with the temperature. Even though the same grade of oil is regularly used, a certain amount of adjustment is occasionally necessary.

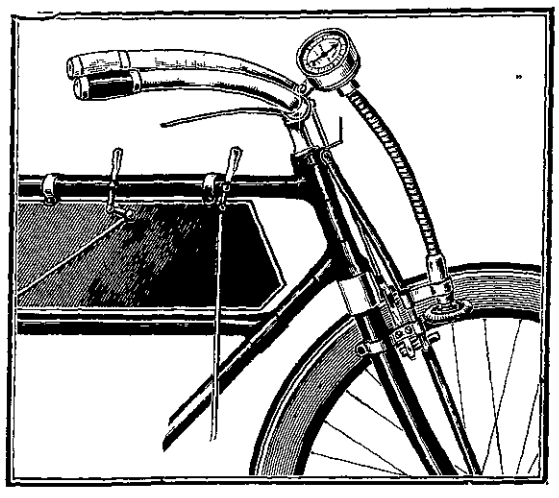
If the lubrication is properly managed, the exhaust should be unobjectionable, except, possibly, when the engine first starts running. To avoid this, the engine should be started in the garage, and any oil that may have settled in the exhaust passages allowed to escape before taking the car out. Final exhaust pipes, fitted so that the gases issue straight out behind the vehicle, should also be avoided.

## A Cheap Screen.

A medical motorist, writing to the *British Medical Journal*, mentions an invention of his own peculiarly suited to a small-power doctor's car. This consists of a glass screen fitted at an inclined angle so that the top of the screen comes just over the heads of those occupying the front seats, protecting them from wind and rain, and offering little wind-resistance seeing that the wind plays along instead of directly on it. The doctor mentions that his own is of ordinary window glass, cost but a few shillings, and he allowed the carpenter who made it to take out a patent.

## Know Your Speed.

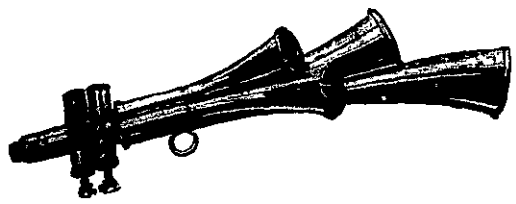
An effective and accurate speed indicator is an accessory that undoubtedly adds much to the pleasures of the push-pedal and the motor bicycle. Such an instrument is illustrated herewith, the originator being Mr. Robert Goodlad, an experienced English chronometer maker. The indicator is attached to the cycle by means of a strong clamp fastening on the front fork, just below the crown. The mechanism comprises a miniature centrifugal fan, revolving in an air-tight compartment. The air pressure created impinges on a small arm like a windmill sail, which is free to revolve and turn a pointer on an indicating dial, showing the various speeds, according to the velocity of the fan. Between the windmill arm and the pointer intervenes a fine hair spring, fitted on an eccentric cam, by which its pressure is raised to bring the pointer back to normal, as the speed of the fan is varied by the speed of the road wheel. The transmission is by friction pulley, which is held in contact with the rim of the road wheel by suitable clips, and thence by encased flexible shaft to indicator, which may be clipped in any convenient position to the handle bar.



NEW SPEED INDICATOR.

## Four-note Horn.

Dunhill's four-note horn is an attractive novelty for enthusiastic motorists. The horn is fastened to the steering wheel, and is connected by means of a flexible tube with a bellows secured beneath the footboard. The bellows are worked by a plunger,

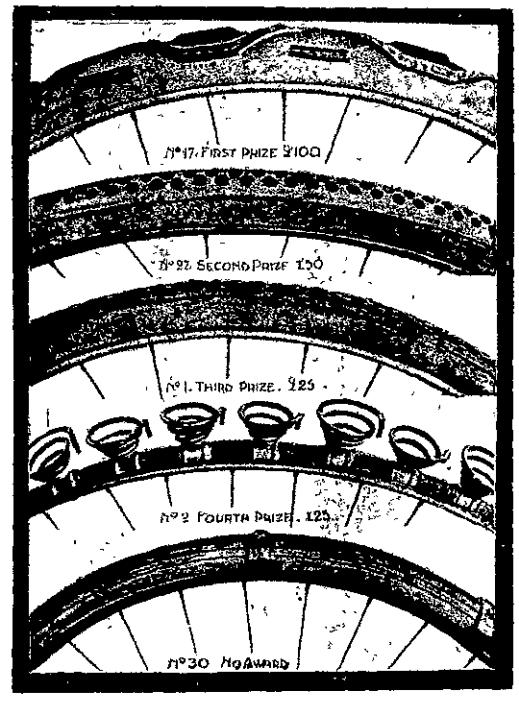


A NEW HORN.

placed within easy reach of the foot, and supply the pressure of air to blow the horn. The four notes are produced by pressing piston keys similar to those used on a cornet. With this instrument one can play all the tuneful coaching calls so familiar in the last decade.

## Non-skids for Motor Cycles.

In a competition recently instituted in England, to test the suitability of the various forms of non-skids for motor cycles, 33 devices were entered. The successful contrivances are illustrated herewith. The highest award was obtained by a smooth-treaded rubber tyre, on which was sewn a narrow serpentine band of rubber. In actual manufacture this band is, of course, moulded on the tread. Second prize was awarded to the Grose steel-studded leather band. The device that secured the third prize has the merit of simplicity, for it is nothing but a number of small metal bolts pushed through the cover from the inside, and secured in place by nuts on the outside. Most curious of all is the spring tyre of Mr. W. H. Robson, which secured fourth prize. The spiral springs are detachable and are fixed to the special rim by wedges. It is said to be a splendid non-slipper, and is, of course, unpuncturable. Its chief defect is the noise the springs make upon all roads, but particularly upon stone sets.




EXAMPLES OF NON-SKIDS.

The judges were at first disposed to be sceptical of the value of this device, but in practical use they found it to be more resilient than many of the pneumatic-shod wheels to which anti-side-slipping appliances had been fitted, and, had the springs withstood hard usage on the road, this exhibit might have taken a higher place. It is the best non-slipper tried, and no grease, mud or dust were met with that it failed to negotiate; it is at its best on very uneven surfaces, and at its worst on well-laid stone sets. It is, however, decidedly slower than a pneumatic, and the "dragging" is very perceptible, especially uphill.

## Steel for Motor Car Use.

Among the improvements gradually being introduced in the higher priced cars, the most important, but the most difficult to see, are improvements in the quality of the metal employed. Already the demand for the highest possible class of shock-resisting material which modern automobilism has created has produced a considerable effect on the manufacture of the higher grades of steel. Some idea of the importance of the motoring industry to the up-to-date steel maker can be gathered from the paper read by Dr. Leon Guillett on "Steel Used for Motor Car Construction in France" at last year's meeting of the Iron and Steel Institute (Eng.). The chief steels used are nickel steels, chrome steels, silicon steels, chrome-nickel steels, and steels of mysterious composition. The use of steels with a low content of both carbon and nickel has become general in the motor-car industry, but when it is desirable to avoid the operations of case-hardening and quenching a steel containing 7 per cent. of nickel and 0.12 per cent. of carbon may be used. Steels with a low nickel content (1 to 6 per cent.) and a medium percentage of carbon (0.25 to 0.4) are employed chiefly for shafts, forgings, axle-journals, axles, bearingsand various sections. The use of steels containing from 10 to 30 per cent. of nickel has been abandoned, but those containing from 32 to 36 per cent. with 0.12 to 0.2 per cent. of carbon have an important application in making valves. Chrome steels are employed for bearings, and silicon steels for springs and gearing. Tungsten steels might serve the same purpose, but they would be more expensive. Chrome nickel steels come in for use in shafts and journals (with C 0.25—0.45, Ni 5—6, Cr. 0.5—1.0 per cent.), and for axles and for valves (with C 0.55—0.75, Ni 21—23, Cr. 1.5—2.5 per cent.). Then there is the new "UY," with remarkable properties and mysterious composition, which is being used for crank shafts and gearing.

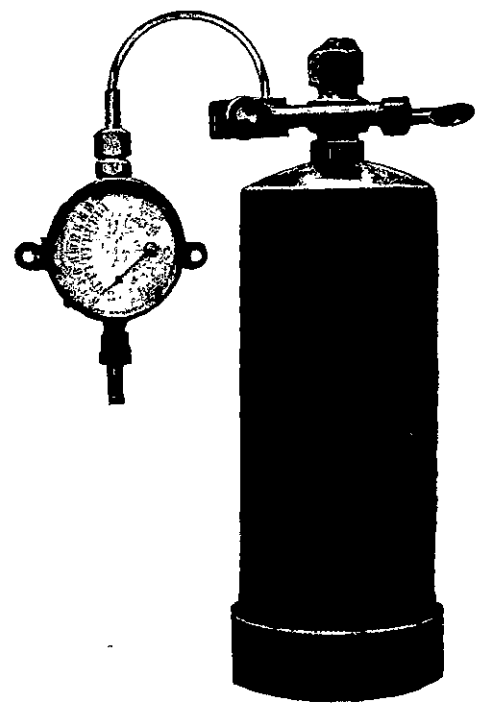
## Royal Motorists.

King Edward, who keeps a careful motor log book, and has completed a large number of car miles, said recently in a private letter, "I am grateful to the motor car, since it has permitted me to see my country as I should never otherwise have been able to see it. And I think my country very beautiful."

King Alphonso, of Spain, has just had his first experience of a motor car and balloon chase, and offered several valuable prizes and enjoyed the sport immensely. The chase was organised at Madrid in honour of the President of the French Republic, and King Alphonso drove his car for six hours, and when he caught a balloon His Majesty personally assisted the balloonists in their descent and deflation manœuvres with the zest, ardour, and muscular enthusiasm for which he is notable.

## Acetylene for Motor Lamps.

In none of its many fields of application has dissolved acetylene proved more successful than in motor car lighting. It does away with the necessity for charging, cleaning out and recharging generators, and avoids waste, smell and burner troubles. The process is, briefly, as follows:—The containers are filled with a porous material, soaked with a chemical which has the peculiar quality of dissolving 100 times its own bulk of acetylene under slight pressure. As this pressure is released, acetylene is given off as pure dry gas. In Great Britain the sole right for the manufacture and supply of dissolved acetylene in a form suitable for lighting motor cars and such vehicles has been acquired by Alfred Dunhill, Ltd.



CONTAINER FOR DISSOLVED CARBIDE. WILL LIGHT AN ACETYLENE LAMP FOR 40 HOURS.