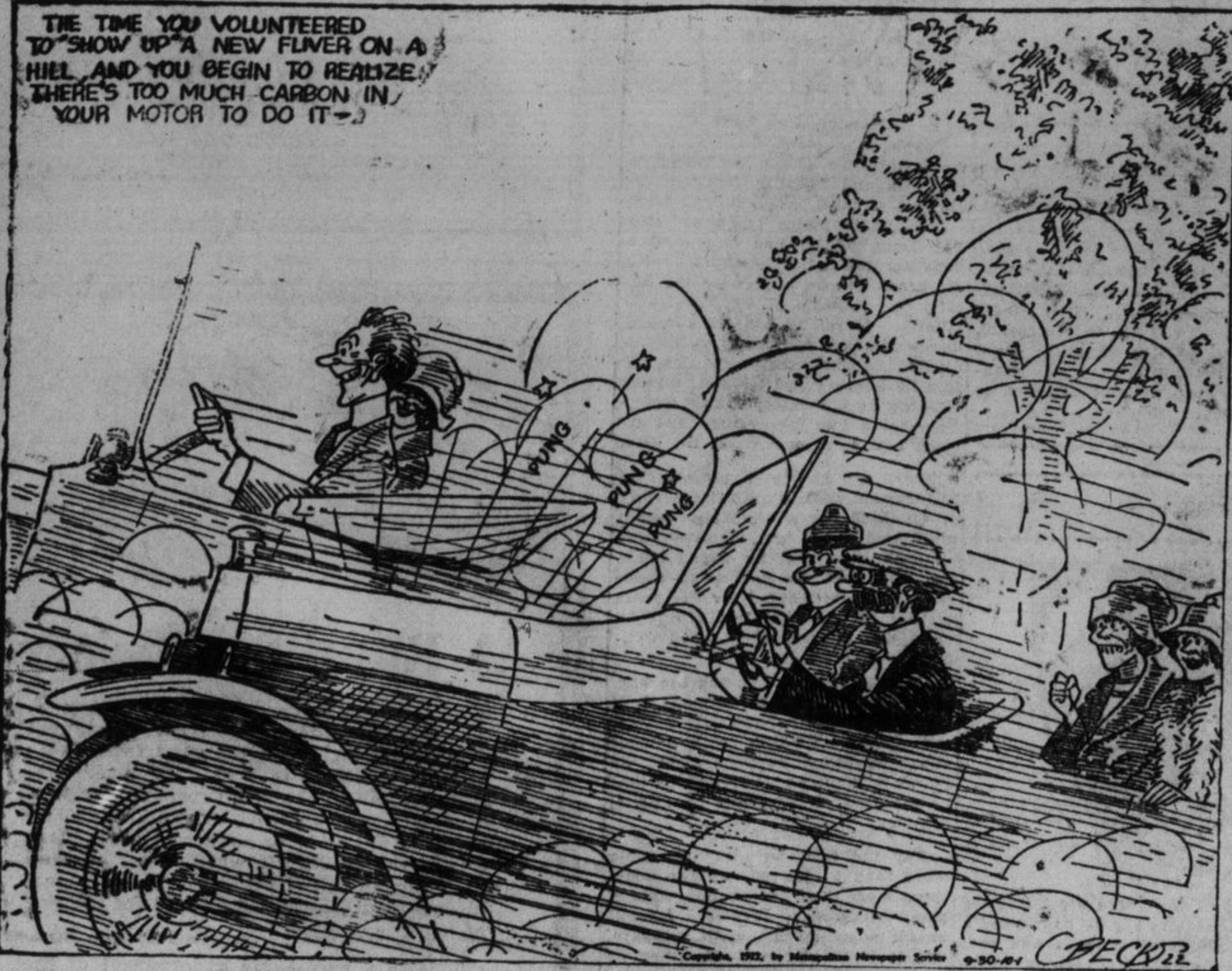


IN THE AUTOMOBILE WORLD

DOWN THE ROAD



EXASPERATING MOMENTS IN THE LIFE OF A MOTORIST.

MUST TAKE JOLTS OUT OF MOTORING

Many New Designs For Springs and Shock Absorbers.

Automotive engineers are directing their attention to the riding qualities of their products. They are bound to take the jolts out of motoring.

Designs have been submitted in the United States and other countries for springs and shock absorbers which, their inventors say, should help smooth the roughest roads. Unsprung weight is being reduced to a minimum.

One of the plans submitted to automobile manufacturers in Australia consists of the use of six, instead of the usual four, springs. These six springs are ranged three

along each side of the car and in series, so as to take up a jolt over the whole car. They are semi-elliptic and are shackled together, the end of each of the outer springs being fastened to the front and rear axles. In this way, length is obtained—an essential for smooth driving. While the spring itself is staunchly built, its stiffness is neutralized by its length.

Another form of spring suspension, shown here, was invented by a Frenchman. It is practically a shock absorber. But this is designed to replace springs. Even the axles are eliminated. Instead there is a mounting on each side of the four wheels, consisting of a lever arm the end of which bears against a coil spring housed in a glycerin-filled cylinder. A piston in the lower end of the cylinder is provided to check rebound.

When the car hits a bump the upward movement of the wheel compresses the spring, which checks part of the jolt. At the rebound, the

sudden jolt back is impeded by the chamber full of glycerin, which can escape only through small holes in the piston head. As soon as the pressure is removed the liquid returns to the bottom of the chamber by gravity.

Since there are no axles, on this car, the differential housing is mounted solidly to the rear frame crossmember. Two universals are used for each wheel because of the upward and sideward motion.

American inventions for eliminating rough riding consists of an adjustable leaf for any weight, transverse leaf springs in place of axles, and an air cushion in place of springs.

In practically all designs of this kind the main purpose is the reduction of unsprung weight. That is, the total weight unsupported by the springs. This includes the wheels, tires, axles and parts of the springs that move with the axles.

In the average five-passenger car the unsprung weight is more than

one-third that of its total weight. It is on the unsprung weight that a car's riding qualities depend.

The First Lesson in Driving.
The careful and cautious driver starts his car with an even, quiet acceleration of his motor, dropping in the clutch with a smooth, velvet-like motion, shifting into the various gears without clashing, the change from low to high being accompanied in such a manner that the passengers in the car are hardly conscious of the change that has taken place.

A motorist's side car, equipped with a radio receiving apparatus, and newly invented police automatic weighing but seven pounds and carrying 120 shots a minute, are among the latest equipment of the New York police force.

In the United States, the average annual cost of rural postmen using motor vehicles is \$2,570, as compared with \$1,830 for those using horse-drawn vehicles.

By Beck

ROADS OF PROVINCE ARE WELL CLASSIFIED

Various designations have been applied to roadways serving different sections of the province. Some are called provincial highways. Others are county roads, or provincial suburban roads or township roads. The designations have all been applied as a means of classification of the highways so that the apportionment of expenses may be made equitable. The table below shows the mileages of the various subdivisions and the manner in which the expense of their improvement and maintenance is met:

Township roads: Mileage, 38,745; Provincial subsidy 20 per cent.
County roads: Mileage, 7,621; Provincial subsidy, 40 per cent.
Provincial suburban roads: Mileage, 1,697; Provincial subsidy, 60 per cent. Provincial 20 per cent. municipalities, remainder financed by district served.

Provincial highways: Mileage, 1,815; Provincial subsidy, 80 per cent. The last designation refers to the system which has come to be the backbone of the highways of the province. The mileage is made up of the roads which might be termed trunk highways and it is by means of this basic system that travellers by road may motor between any two points in the province with the assurance that an open road is available.

Steering Gear Adjustment.
Go over the steering gear occasionally to see if any part is coming loose. If this mechanism fails, there is usually a serious accident. If all parts are tight, put oil or grease wherever necessary, and then see if there is any lost motion at the steering wheel. If there is an inch or so it should be taken out. Details differ with different designs, but they all have some means of adjustment. Have this attended to at the service station.

It is false economy to use an old tube. To shift gears at the proper time and in the proper way will save racking the mechanism of the car.

Oil is cheaper than metal. It is less expensive to have a well-lubricated car than to replace costly parts. To gain maximum power from each explosion with minimum fuel advance the spark as the speed of the engine is increased.

An operator of an automobile should be a good sport. Let waiting pedestrians and drivers pass a busy intersection. They may be in as great a hurry as you are.

Danger of Back-Firing.
An automobile will catch fire more quickly from back-firing than from any other cause. Too lean a mixture fed to the cylinders will produce a sheet of flame from the air intake of the carburetor.

Foolish chance taken.
Foolish chance taken.
Missteps to mechanism.
Misjudging road distance or speed.

LICENSE PLATES WILL BE BLACK

Ontario Markers for 1923 to Be Stronger and More Legible.

The contract for 1923 number plates for automobiles has been awarded to the Canadian Colorite Company of Hamilton, at a price of 23 cents per pair.

In view of the unsatisfactory results from the plates now in use, it was felt by the department that the item of cost alone should not be the controlling factor in the selection of plates. The plates for 1923 have white numbers on a black ground. The background is dull finish and the enamel is of the most durable kind. The plate is made of heavy twenty-four gauge steel, and is strengthened by a new design of double edging along the top and bottom. By this improvement the slots also are strengthened so that the markers may be more securely fastened to the car and are thus less liable to be lost.

Plates for the current year have cost 14-1-2 cents per pair, but a large number have rusted, become illegible and have had to be replaced by reason of inferior materials and method of manufacture.

The new design differs from all previous years, so that it will indicate clearly the year of issue, thereby assisting in the collection of revenue. The legibility of the marker is particularly effective and will be of assistance in securing the enforcement of the motor vehicle laws respecting speed, reckless driving, finding of stolen cars, etc. In all respects—durability, strength, legibility, appearance and distinctive design—the markers show superiority to those of any previous year, and will undoubtedly be appreciated by the motorists of Ontario.

The total investment in motor vehicles in the province now amounts to more than \$250,000,000. Effective number plates assist in the protection of this large investment, and,

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by assisting in the enforcement of the motor vehicle laws, are an aid to public safety.

In China, Shanghai has approximately 2,500 motor vehicles, or more than three times the total of horses. Cocle-drawn rikshas total 16,000. Chewing gum makes an excellent temporary stoppage of a fuel line or carburetor connection leak.

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HINTS FOR THE MOTORIST

ALBERT L. CLOUGH

Causes Of Untrue Rear Wheels

Generally The Heavier Side Stress Sustained In A Collision

SKIDDING INTO CURBS and side swipes from other cars are the usual causes of the above. Backing into the curb rarely causes them, as the impact is cushioned by the tire, but when the rim and felloe of the wheel strikes the curb, with the momentum of the car behind it, something usually has to give. A wood wheel has but slight side strength, as against "dishing," but it may not actually be broken by the collision. The rim and felloe may however, be bent, the spokes started by the hub and felloe and the hub and hub flange sprung out of true; so that it will run "out," by a considerable amount near the top of a wheel, may produce the same effect. Such a wheel can be trued up by the wheel specialists and as replacements, all wood parts and all metal parts, such as the hub, brake-drum and felloe-band, can usually be obtained. Bending of an axle shaft-end, so that it will cause its wheel to wobble, may take place in conjunction with wheel damage, as just referred to, and is most likely to occur in the case of axle shafts of the semi-floating type. Acol-dents so severe as to cause the wheel to fall entirely, very often involve a bent axle shaft-end. In the full floating construction, with the axle shaft held rigidly in the wheel and with a hub of considerable spread, with double bearings in line with the wheel, axle-parts themselves are seldom thrown out of true. To tell if a shaft-end is bent, remove the wheel, jack up the axle and arrange a board, as a steady rest, so as nearly to touch the shaft when it is turned, when any wobble present can be detected. If there is any, it is best to replace the shaft.

CARBURETOR DERANGEMENT PREVENTS IDLING



C. E. writes: The engine of my car will no longer run idle, but stalls as soon as the throttle is closed, although I have done nothing to the carburetor. I have to keep the hand throttle open considerably in order to keep the engine turning over, but as long as the engine is moving the car, it runs well enough. Just what is wrong?

Answer: Your carburetor compresses a heavy piston guided in a vertical cylinder, which is raised by engine motion, thus increasing the air and gasoline openings and which is supposed to return to position by its weight. However, if it or the walls of the cylinder become dirty, it may fail to fall back, when engine motion becomes as slight as it is during idling and, if this happens, the air opening to the mixing chamber is left so wide open that the velocity of air through it is insufficient to raise enough gasoline out of the spraying nozzle to make a combustible mixture. Remove the carburetor, cylinder-head, take out the piston, clean it, smooth its surfaces with metal polish and oil it, replacing it



a small amount of some rather cheap engine oil and circulate it by cranking the engine, discarding this before filling up with the fresh oil supply. There is no need of the kerosene treatment every time the oil is changed, but only occasionally, especially if the old oil is drawn off immediately upon stopping the engine after a run, when most of the dirt will be in suspension and will be carried off with the oil.

System In Car Maintenance

LOTS OF TIME CAN BE SAVED and much "dirtying up" avoided if lubrication and other car maintenance acts are performed methodically, rather than in a haphazard way. Turning up a grease cup here and there, giving a few squirts with the oil can and then forgetting when and where the slight attentions were administered is ineffective, but still consumes considerable time in the aggregate. Practically all manufacturers now recommend systematic lubrication of all parts of their cars at regular mileage intervals, but not all motorists have adopted this excellent practice. These lubrication acts are generally grouped into those required at intervals of 500, 1,000, 1,500 and 2,000 miles and by following out this routine, there are intervals, during which 250 miles are covered, when a car requires practically no attention and the hands need not be soiled upon it. Some little time necessarily is required, when each division of the lubrication schedule is attended to, but much less than is likely to be expended when the car is puttered with unsystematically every little while. Anyone who wishes to substitute the methodical for the hit-or-miss method of maintenance will find it best to start in and lubricate every part of his car at one time, chalk down the then odometer reading and follow out the mileage interval idea from then on. If the start is made when the odometer reads an even number of thousands, it is very easy to keep track of the lubrication periods.

DIFFICULTY IN UP-MESHING GEARS



E. S. writes: When changing from first to second speed, with the car in motion, the gears will not disengage from first speed position without very noticeable binding, although, when the car is at rest, they will do so very freely. What is wrong about them?

Answer: Two strong clutch-brake action is the usual cause of this difficulty. So long as there is pressure acting between the teeth of two meshed gears, there is considerable friction acting there and they separate with some difficulty. Normally, there is no load on the gears and no pressure between them, when the clutch is released, preparatory to shifting, and they disengage readily, but if the clutch-brake acts with excessive violence there is a load thereby imposed on the clutch shaft and its gears, when the clutch is operated, and the momentum of the car, acting against this resistance, creates considerable tooth pressure and friction at the gears which are in use. With the car at rest, there obviously is no tooth pressure acting, so the gears unmesh readily. We suggest that you adjust the clutch-brake to act less powerfully or that you only barely release the clutch at shifting, instead of pushing it away out.

WATERED GASOLINE

A. J. S. writes: After a long period of annoying trouble with my car, during which almost all causes except the right one were assigned for it, the difficulty was found to be from water in the gasoline tank, vacuum tank and carburetor, several gallons in all being drained out. How could so much water as this get into the tanks and how can a repetition of this trouble be prevented?

Answer: Aside from the practical joker or malicious meddler, practically the only explanation of the presence of this water is that it was put in with the gasoline which you took on. A very little sometimes enters through the vent-hole in the tank filler-cap, during hard rains, but not a substantial amount. If you have been patronizing some particular filling station, it might be well to go elsewhere in future. If you care to keep a supply of gasoline on your own premises and fill up your car through a funnel with a chamalo filter, you can see any water that may be present and exclude it. The most effective precaution is to remove the main tank drain-plug, after each 1,000 miles of driving, and catch what first flows out in a tumbler. If this is water or partly water, keep on drawing until only pure gasoline escapes.



Questions of general interest to the motorist will be answered by Mr. Clough in this column, space permitting. If an immediate answer is desired, enclose self-addressed, stamped envelope.

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