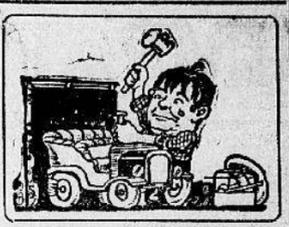


BULLETIN AUTOMOBILE PAGE



Who Is to Teach Wife To Drive Automobile?

Should a man teach his wife to drive the family car or should she be taught by a stranger? One of the headlines in the program of "Perplexing Problems for Motorists" is the foregoing. Many a man has pondered over the proposition or acted on the advice of a friend with misgivings. There is no question that the women should learn to drive, but whether it is policy for the paternal head of the family to do the instructing is another thing. It also has been said that hubby should exert all his influence and if necessary use all his powers of persuasion to see that friend wife is not instructed in the gentle art of driving by someone else, if he wishes any peace of mind when driving in the presence of his wife. For, if she learns to drive under the tutelage of someone else, she'll make flippant and embarrassing remarks about his driving, and pretty soon she'll be showing him things that he never knew anything about, and eventually she'll have him learning all over again from her. Still it is not such a difficult task to teach the wife to drive, and the best results are obtained when a definite program is laid out. The whole secret of teaching anyone to drive is not expecting them to learn too much at once. A schedule of one lesson a day, of one hour each for five days has been found to cover the ground very thoroughly and completely. But the first thing to teach Mrs. Wife is the difference between the left side and the right side. This may seem a very trivial matter, but suppose you told her to turn left and she went to the right, you can see the damage that might occur. First Day. The first day should be devoted entirely to steering instructions although while resting you can explain the action of the clutch and throttle, but do not touch them. After you have taken the car out on a lonely stretch of road, far from the maddening throng, show her how the car can be steered slowly from side to side by the slightest exertion on the wheel, caution her against turning the wheel too much or too quickly. After this is done move over as far as possible on your seat, still remaining behind the wheel, and let her do the steering.

The whole hour should be spent in this practice. On the second day after going out to the same lonely stretch of road, where you are sure no one will be offended by your language, start in precisely as you did the day before. As soon as Mrs. Wife has mastered the steering gear, let her use the foot throttle on open stretches of road, but you should remain behind the wheel. The entire hour should be spent this way, and here while resting you can explain the function of the gears and tell her why it is necessary to shift them. And, while you are steering and operating the clutch, she can shift the gears until she has thoroughly mastered the method of changing from one speed to another. Third Day. On the third day you can again explain the action of the clutch, laying particular emphasis on the necessity of engaging the clutch slowly when starting. You can now let her sit behind the wheel, since she understands gear shifting, it will not confuse if you do the shifting while she gives her attention to mastering the foot throttle, the foot brake, the steering gear, and operating the clutch as you tell her. Start the fourth lesson, if you have the patience and endurance to last this long, by letting her practice the gear shifting for several minutes, while you operate the clutch and steer. Now you are ready for the big job. With friend wife behind the wheel, explain the necessity of giving the motor a little gas to prevent it from stalling, and with her operating the clutch and throttle, start off in low gear, and do the shifting. After this has been done a couple of times, let Mrs. Wife shift the gears until she has thoroughly mastered that lesson. The last lesson is merely a reiteration of the former process of instruction, and in addition explain the use of the emergency brake, the retarder, the method of signaling with the arm in stopping and turning corners. Instructions in jacking up the car, changing the tires on the wheel, and putting up and taking down the one-man top might be added to cover all the phases, and friend wife should emerge a competent driver.

GOOD ROADS SAVE MILWAUKEE FOLKS LARGE SUM DAILY

The improved roads of Milwaukee county, Wisconsin, save \$25,000 a day to the people who use them. This is the estimate of the county commissioner of highways, as reported to the bureau of public roads of the United States department of agriculture. The statistics are based on a census of the traffic taken periodically during the last four years. The census is made by selecting 52 points scattered throughout the county and making seven counts at each point, one for every day of the week. The count is not made on consecutive days, but at various periods from April to November, so as to arrive at average conditions. This census is taken to determine the durability of certain types of pavement, according to the amount of traffic a square yard. It shows that about 25,000 vehicles of all kinds travel the highways each day. Traffic on the road has increased about 42 per cent a year during the four years in which the survey has been made.

CHINA RAISES BIG FUND TO IMPROVE ROAD CONDITIONS

The use of motor cars has been made possible in Foochow, China, by the enterprise of the provincial officials, who have recently spent \$280,000 in improving the roads. The market for motor cars is limited by the lack of good roads, and as the Chinese have shown a decided desire for motor cars whenever their use is possible, the suggestion has been made by prominent men in China that it would pay a combination of motor car companies to finance loans to the different provinces to be used only in road construction.

TRAILERS FIND FAVOR

Western automobilists are combining the pleasures of motoring and camping in comfort nowadays. In former years touring and camping were diversions to be indulged in separately. Tourists who put up at hotels over night found touring an expensive pleasure, while campers pitched their tents in one spot and remained for the period of their vacations. Now the motorist attaches a camping trailer to his car and makes long trips, camping by the roadside over night or for several days on the shore of a lake or bank of a stream to fish. The trailers are equipped with tents, cots, camp chairs, folding table, refrigerator, stove, cooking utensils, and all necessary conveniences and comforts of a model camp.

CURB BACKING HARMFUL

When cars are backed sharply against curbstones or strike road obstructions at high speed the innermost layers are sometimes stretched beyond their elastic limit and the fabric threads or cords break. The tire is weakened at this point and under the strain of active use other plies begin to give way. Eventually the tube is caught and pinched by the jaws of the fabric break and a blowout necessarily follows. Generally such tires can be repaired. With a Goodyear-rim patch a temporary repair can be effected until it is possible to have a permanent repair vulcanized. A repair of this kind usually enables a tire to deliver many additional miles of service.

SOLID TIRES POPULAR

Tire dealers in small towns are showing an increasing tendency to put in a line of solid truck tires, says the United States Tire company. This is largely due to the impetus given to the motor truck industry during the war period, and the demand even in small towns for solid tire service facilities. The most expensive part of the installation of the line is the purchase of a press, but the opportunity for good business is overcoming this difficulty.

SHALE OIL TO BE AUTO'S SALVATION

Supply of Petroleum Rapidly Dwindling and Rival Product Has Future. Indications that the United States cannot continue long to depend on domestic petroleum production to completely supply the demand and must sooner or later use oil shales to supply the deficit is the conclusion of the bureau of mines following an investigation in the oil shale industry. The bureau found no commercial oil shale plants in operation in this country up to this time, although there is a well established industry in Scotland. "The American shale deposits are richer in recoverable oil than the Scotch shales now worked, while at the same time market conditions in this country are less favorable than in Scotland," says an expert on the subject. "There are great quantities of American shales in the Rocky Mountain district from which it will be practical to secure oil if the proper transportation and marketing conditions will be created to make it profitable. "The shale oil industry cannot hope," states the bureau, "to supplant the petroleum industry in a large way for many years, but will probably grow up from local industries in favorable localities. It is an uncertain industry, due to the lack of knowledge of the quantity, products to be obtained from oil shale in this country and because it will require large capital, large technical and business ability and probably involve slow return on the investments. Once completely established, however, the bureau believes the industry will have a successful future. It recommends the use of the Scotch methods for assaying shale in this country. Distilled in Scotland. "Oil shale has been distilled in Scotland since 1860, increasing from 2,350 long tons in 1871 to 4,116,529 long tons in 1917. The Scotch shales are mined underground by methods similar to those used for coal mining in this country. The yield of Scotch shale averages about 2.15 United States gallons of crude oil and 35.7 pounds of ammonium sulphate per short ton. The yield of gas per short ton reported is about 240 B. T. U. per cubic foot. "The products obtained by refining the Scotch crude oil include motor fuel oils, lubricating oils, paraffin wax and coke. "The production of shale oil increased in Scotland from 593,310 barrels in 1871 to 1,965,000 barrels in 1916, while at the same time ammonium sulphate production increased from 2,350 tons to 59,400 tons. "Up to the present more than 100 companies have been organized in the United States for developing or selling stock in oil shale enterprises. PRODUCES MOST RUBBER "The largest rubber plantations in the world are now owned by the United States Rubber company and are producing millions of pounds of rubber annually from the estates which it had never purchased a rubber tree before 1910," says Walter B. Mahony, writing in Commerce and Finance. "Nearly a hundred thousand acres were acquired on the east coast of Sumatra, but a degree or two north of the equator, through the purchase from a Dutch company of lands formerly devoted to growing tobacco. More than 16,000 laborers—largely recruited from the 40,000,000 inhabitants of the adjoining island of Java—are employed in the care of 5,000,000 rubber trees. Oversight largely rests in the staff of Dutchmen, assisted by a force of technical experts. VALUE OF SPRINGS Opinions differ as to the value of the four springs used to hold the chains from sagging. If they hold the chains from creeping they are harmful, but if they are properly fitted they are a decided benefit. RAILROAD TIME TABLE TRAIN SCHEDULES. Trains arrive and depart from Butte as follows: Oregon Short Line. Arrive, 5:05 a. m. and 5:25 p. m. Leave, 7:15 a. m. and 5:35 p. m. Northern Pacific. East bound trains depart: Local 7:00 a. m.; stub, 10:45 a. m.; No. 2, 8:50 p. m.; No. 42, 10:00 p. m. West bound trains depart: No. 41, 6:30 a. m.; stub, 7:35 a. m.; No. 1, 9:05 p. m.; Missoula stub, 6:55 p. m. Local from east arrives 9:15 a. m. and 8:05 p. m. Stub from west arrives 1:00 p. m. and 5:10 p. m. All other trains arrive 10 minutes prior to departure. Great Northern. Leaves 8:00 a. m. and 2:45 p. m. Arrives 2:45 p. m. and 9:30 p. m. Chicago, Milwaukee and St. Paul. East bound leaves 10:45 a. m. and 10:25 p. m. West bound leaves 11:55 a. m. and 10:10 p. m. All trains arrive 10 minutes prior to departure. Butte, Anaconda and Pacific. Leaves 9:30 a. m., 1:00 p. m., 5:00 p. m. and 10:15 p. m. Arrives 8:40 a. m., 12:20 p. m., 4:30 p. m. and 7:45 p. m.

VALVE GRINDING

It is just as important to know when not to grind a valve as to know when grinding is necessary, is the sound advice given by Arnold P. Yerkes in an article on "Valve Inspection and Grinding" in August Motor. It is quite well known by many motorists that not all engines run better after the valves have been ground, a fact which is attributed to the unnecessary grinding which makes for leaky valves. The writer in his article points out how one may distinguish a valve that leaks from one that does not and tells how only the faulty ones should be ground. He says: "On a properly cooled engine and one where the valves are properly timed, it may be accepted as a general rule that valves which are evenly scuffed over and therefore have perfectly black heads, are holding, while those which are red or brownish on top or show the metal plainly, without a covering of soot or carbon, are leaking. By observing the tops of the valve heads as soon as the cylinder head is removed and then carefully inspecting the faces of the valves and the seat, one will quickly learn to tell what is needed. "The reason for the difference in the looks of the tops is simple and obvious upon a little thought. During the power stroke of the piston the burning gases are under high pressure. If there is the slightest leak at any point around the face of the valve, the gases will force their way through at terrific speed and carry away any carbon which may have been formed on the top of the valve near the leak, as well as on the casting near the valve seat, leaving the metal around the leak entirely clear of soot or carbon. Not only will the escaping gas carry away all carbon near the leak, but will also actually wear away the metal itself if not attended to. DON'TS FOR AUTOISTS Don't neglect to change the oil in the crankcase because it is a dirty job. Don't leave the car standing in 15 feet of fire hydrant. Don't operate with damaged or illegible number plates. Apply for new ones. Fee \$1 each. Don't neglect to sound horn at curves on mountain roads. Don't drive a car without the owner's consent. This is punishable by imprisonment in state prison for not less than one year nor more than five years. Don't disregard the child on the curb. Remember he can start quicker than you can stop. Don't forget to give warning of approach to pedestrians and riders, or drivers of animals or vehicles being overtaken. Don't allow animals to stray on the highways. Don't carry luggage projecting more than 12 inches on the left-hand side of car. Don't pass street cars faster than 10 miles an hour. KEEP RECORD OF OIL. Keep careful track of your oil consumption, as it means better efficiency of your engine. If you find you are using an excessive amount it means that there is a leak which is expensive, or that the engine is sucking it up into the combustion space, which means carbon and all the troubles which may follow. VIBRATION IS INJURIOUS In fitting a new carburetor be sure that there is no looseness to cause vibration, because if there is a broken flange will be the inevitable result. If vibration is present a small iron bracket should be installed from a nut on the engine frame to the instrument to steady it, also taking the strain off the intake pipe. GAP FIRES SOOTED PLUGS. When the spark plug develops missing as a result of being sooted and no means of removal is at hand, as may happen sometimes on the road, the plug can be made to fire regularly again by disconnecting the lead and introducing an auxiliary gap of one-eighth or one-quarter between it and the plug terminal. TO REMOVE PLAY In removing play from rod bearings by reducing shim thickness, great care should be exercised to get each rod bearing as free as every other bearing. To make one bearing tight and another rather free in movement is courting trouble, for in most cases it will be found that a knock will result. CLOSE CLAMPS Be extra careful about closing the clamps at the ends of the chains. If they come loose an expensive chain will be lost, and it gives no notice when it leaves, it simply drops off quietly without warning and the driver arrives home very much surprised to find that the chain is missing. DON'T LOSE PATIENCE. When making engine adjustments it is usually necessary to exercise a little patience in order to get the best results, for the reason that the effects of adjustments are not always apparent. IMMENSE FIELD FOR U. S. AUTOS Huge Foreign Market Is Awaiting Development by American Manufacturers. From the fact that 87 per cent of all the automobiles in the world are in the United States, there are two positive conclusions—that there is a huge foreign market as yet unsupplied and that the United States is the logical country to supply it. Add to this the acknowledged condition that other automobile producing countries cannot meet the demand in their home markets for five years to come and it is evident that American manufacturers have a wonderful opportunity for foreign business. Commerce reports and communication from abroad constantly call attention to the crying need of cars from practically every quarter of the globe. China, India, South America, Switzerland, Australia, Nigeria, Mexico and nearly all of the countries of Europe—have been mentioned specifically in recent consular advices. The lack of good roads is the main impediment to more extensive use of cars abroad, but road improvement is being agitated everywhere that motor transportation is so sorely needed. By virtue of being nearer the sources of most of the raw materials and producing in quantities, American manufacturers can deliver, even against the handicaps of freight and import duties, a product that performs as well or better and costs less than that produced in any other country. Hence the American car is bound to appeal to the common sense of any business man wherever his allegiance nationally. People everywhere will buy anywhere to get what they want. It is human nature and no amount of argument or appeal to sentiment will change it. Those who want the most motor car for the price are fast learning that the only place to get it is the United States. TO LINK COUNTY SEATS One of the main projects to be brought up at the second convention of the Louisiana Mississippi Automobile Trades association at Jackson, Miss., in September, will be a highway campaign for improved highways linking every county seat in Louisiana with trunk lines connecting the road systems of the two states. This association was formed in New Orleans when George D. Way of Shreveport, La., was elected president and C. U. McDowell, secretary and general manager. The association now has more than 500 members in the two states, with new applications coming in. Headquarters have been opened in New Orleans, and organization of parish branches in Louisiana and county branches in Mississippi is well under way. The Motor League of Louisiana is working with the Dealers' association in promoting road improvement, and about \$20,000 will be expended this year in a campaign to arouse Louisiana and action for good roads in the two states. BREAKER STRIP HELPS The chief function of the breaker strip in an automobile tire is expressed by its name. This strip of fabric serves the purpose of cushioning the carcass of the tire against road shocks and helps to prevent fabric breaks. When the fabric in a tire is damaged trouble is certain to follow. In Stronghold tires the breaker strip is made of unusually heavy fabric thoroughly impregnated with pure gum. By being impregnated with pure gum, friction is prevented in the fabric and the absence of friction adds to the life of the tire. USE EDGES OF WORN FILE Occasionally it becomes necessary for the man who operates his own car to file a piece of cast iron that has been subjected to friction and has acquired a glassy surface or "skin." The best way to get through this skin is to use the edges of the old file, as using a good file on such surfaces will spoil it. CAUSE OF NOISE Noise in the driving bevels of the rear axle is commonly caused by poor adjustment, allowing too little or too much backlash. Bevel gears in use today have a method of adjusting the depth of the mesh obtained either by moving the whole differential unit sideways or by movement of the driving pinion. APPLYING CHAINS In applying tire chains never use a tool to draw them so tight that they cannot move. If the cross grip cannot move to a new position on the tread everytime it touches the ground it soon cuts deeply into the rubber, and then fabric, seriously weakening the strength of the casing. AT CROSSROADS Drive slowly at crossroads, for another car may be coming, attempting to cross at the same time.

WATER NO AID TO POWER DO NOT NEGLECT TIRES, IS PLEA

The United States bureau of standards has completed tests of the effect of water injection into the cylinders of engines. The results arrived at have been summarized by the experts of the bureau of standards somewhat as follows: "No appreciable effect is produced upon the power, fuel economy and general operation of a gasoline engine by the injection of water into the cylinders at rates varying from 0.63 to 0.44 lb. a brake horsepower hour. When water is injected at a higher rate than 0.44 lb. a brake horsepower hour there is an appreciable decrease in the power output, fuel economy and smoothness of operation. "It is quite probable that in a badly carbonized engine, or an engine of inefficient design and whose learn are hot spots that cause preignition, the injection of water results in an increase of power. CLUTCH-RIDING HARMFUL Are you a clutch rider? Does your foot continually rest on the pedal controlling this important part of your car? If so, you are unconsciously wasting power and are helping put the clutch in a condition where it will slip permanently. Spend a few minutes studying your clutch, its makeup and principles on which it works, learn how to keep it in condition and likewise learn to keep your foot off the pedal when it is not required to be there, and you need never have any trouble from this device. WEAK PRESSURE CAUSES When the oil pressure on the high-pressure system refuses to come up to its maximum amount, generally about twenty-five pounds, it is probable the ball check valve is clogged with dirt. This can be removed very quickly with the aid of a piece of bent wire. Remove the oil line from the pump and snap the ball check valve up and down several times with the bent wire. The wire hook should be made from a 3-16th rod with a 3/8-inch hook at the end bent at right angles. CLEANING VALVE STEMS. A very simple way of cleaning valve stems which are under suspicion of harboring carbon deposits is to inject a little kerosene in the air valve of the carburetor while the engine is running. In this way a little of the kerosene finds its way down into the valve stem and softens and washes off the carbon. It is no bad idea to do this once a month or so. CLEARING RUSTY RIMS When rims are rusty they should be scraped with a sharp tool, polished with a wooden mallet until all the flakes of rust have been battered off and then sandpapered vigorously. The rims should then be painted. Shellac is sometimes recommended for this purpose, but is not satisfactory, as it peels off in a short time. Graphite paint or even ordinary paint is much more serviceable. WHEN THE MOTOR IS WORKN. The addition of a little pure flake graphite to the lubricating oil is a help to motors that have seen some wear. Only pure motor graphite should be used. It forms on the metal surfaces, reducing wear and filling up scores in the cylinders. JUDGE DISTANCES Learn to judge distances and speed at which a car travels. Ability to estimate speed may prevent accidents.

DO NOT NEGLECT TIRES, IS PLEA

"Don't neglect your tires just because they stay up and give you long service," is the advice of the service manager of the Fisk Rubber company. "In these days when the science of manufacture has progressed to the stage where high mileages, unknown in the earlier days, are now the general rule, it is convenient for many to drive recklessly along without thought or regard for their tires. "Tires need attention the same as your motor. They need to be properly fitted to the rim and wheel. They must be trued up and the wheels must be aligned regularly. Gashes and cuts picked up on sharp stones or trolleys should be treated and cured for like any wound. There's a way to do this at a cost of only a few cents. Any reliable tire dealer can provide you with Filibut and show you how to use it. "Look out for those little things regularly, make a habit of it, and you'll add many more miles to your tire life and obtain the full service that modern tire construction builds into your casings. ITALY STRONG FOR TRUCK The use of motor vehicles as feeders to the railroads is believed to be more extended in Italy than in any other country in the world. This is owing to the fact that Italy is a mountainous country in which railroad lines can only be built at considerable cost. The total length of normal track railroad lines in Italy is 8,700 miles, while the length of the routes over which motor services are run with a fixed timetable is 8,970 miles. There are 400 motor lines, over which regular public services are operated. CARRY GOOD WRENCH Only a practical hand can instinctively feel that a nut has been pulled up as tightly as is good for the bolt. A clumsy wrench, particularly if the handle is long, is almost sure to lead to rough treatment of the smaller bolts at the hands of the novice. WARP MAY CAUSE LEAK If there is a lack of compression, and on examination the valve heads seem clean and perfect, give the valve stems a careful looking over to see if they have not become warped by the intense heat of that part of the engine.

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HOW TO CLEAN PLUGS

An excellent method of cleaning spark plugs or, in fact, any mica surface is to wash them first in a 10 per cent solution of acetic acid, which is an infallible solvent of greases and carbon deposits. The plugs should then be washed off with gasoline and finally dried by rubbing them with a cloth. CLEAN MOTOR OF OIL. After the operation of oiling has been completed it is a good plan to go over the parts treated and wipe off any surplus oil on the outside. This oil serves no useful purpose whatever, but it does collect dirt as surely as flypaper attracts flies. Neatness is a healthy sign about the motor car, for the mechanic that is kept clean has probably been given the attention it needs. CARBURATOR TEST SIMPLE. The float valve may be worn, needing grinding. There may be a small piece of dirt in the valve which prevents it from seating. To test the latter trouble, prime the carburetor freely to wash the dirt through into the float chamber. If drip stops the trouble has been remedied. If drip continues the valve must be inspected.

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