

AUTOMOBILE SECTION

LAMP BULBS OFTEN CAUSE OF EXTREME TROUBLE ON CARS

Lamp bulbs, though they constitute but a small part of the car, are nevertheless important, and those who have been unfortunate enough to be caught without a spare and no garage for miles will forever believe the lamp-bulb as important as the storage battery.

There is no more exasperating moment than when you fuss around trying to put a bulb in a socket, and the bulb won't fit, or you have a bulb with a single contact base, and the socket calls for a double contact base. Or, perhaps, your car is fitted with a twelve volt system and you have a

six volt spare—blowout.

It should be the duty of every automobile owner to carry spare bulbs, and also know that he is carrying the right kind, for headlamps, tail light, dash etc. He should also carry fuses of the right kind and made for the car. The bulbs and fuses should be kept in a special carrier, otherwise you won't have the bulbs long, and the fuses cannot be found even by a process server.

Throwing bulbs around is not the best thing for them, even though the modern bulb can stand a little punishment. Door pockets and other receptacles should not be used for storing bulbs or fuses. Any supply store will show you a bulb carrier, sell you the proper bulbs and fuses, and make your lighting worries that much less.

You ought to know enough about your car so that you can buy bulbs intelligently. You must know the voltage of the system. Nearly all are six volts now, but some use twelve and some older cars eighteen or twenty-four volts. In some cars a twelve volt system is divided, and six volts used for lighting. You must know these things to know the type of bulbs to buy. The candle power also is important to know. When you go into a shop for bulbs be ready to tell the type, whether double or single contact; the voltage, and whether you want vacuum or nitrogen types. The latter is the more economical, giving more light for the same current, so it pays to spend a little more for them.

Headlamps are often so connected that when the switch is thrown to

"dim" the bulbs are in series owing to the use of a series connection. When in series connection if one lamp burns out the other will not burn. In series wiring only one wire is used. In parallel wiring two wires are used, and this is the connection employed when the lamps are burning brightly. You may find that when "dim" is used one lamp will burn brighter than the other, especially when the engine is stopped. This is due to differing resistance in the bulbs, and a change of bulb sometimes remedies the trouble.

If you put a six volt bulb in a twelve volt circuit you will burn out the bulb. It will flare up for a second and burn out. If you put a three volt bulb in a six volt circuit the same thing happens. If you put a twelve volt bulb in a six volt circuit the bulb burns dimly. All bulbs are marked 6-8, 12-6 or 2-4. This means that the lower figure is the voltage at which it is designed to operate, but it will stand the higher voltage without burning out.

In many cars the dash lamp and tail lamp are connected in series, that is one wire is used to connect the two lamps the circuit being completed by a ground connection. In this case, or any case where there is a series connection, if one bulb burns out the other in series will not burn.

Goodyear Company Devotes Department to Roads

Despite the fact that the United States has 7,000,000 motor driven vehicles in operation—leading the world in this respect—motorists will be sur-

prised to learn that but 12 per cent of roads in this country are surfaced. Out of an estimated total of 247,842 miles of public rural roads only about 29,325 are surfaced or improved.

Indiana shows the greatest percentage of improved highways, 42.5 per cent of its roads being surfaced, based on the last available figure of 1918.

That there is a great need for good roads can be deduced from the increased tendency for long distance hauling by motor truck, and particularly by the fact that 60,000 employees

of the United States Post Office Department travel 1,400,000 miles daily in delivering mail on rural routes.

With an estimated 920 production of 1,600,000 automobiles, the need for better highways is evident. That this fact is recognized by states and municipalities is shown by estimated appropriations of \$600,000,000 to be spent on hard-surfaced roads during the year.

In 1918 approximately 11,944 miles of roads were improved in this country and the enormous sum of \$34,974,000 was spent on maintenance. More than \$20,000,000 have been spent on the 3,229 miles of Lincoln Highway between the Hudson River and San Francisco in the last six years.

To stimulate the interest of both public and the states in the value of better roads, the Goodyear Tire & Rubber Company has created a new department to be devoted entirely to this work. It is in charge of C. M.

Wood, who is exceptionally well qualified for the work. This department will gather data on the cost of good roads, methods of taxation, and other valuable information necessary before legislatures can frame and pass good roads legislation.

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