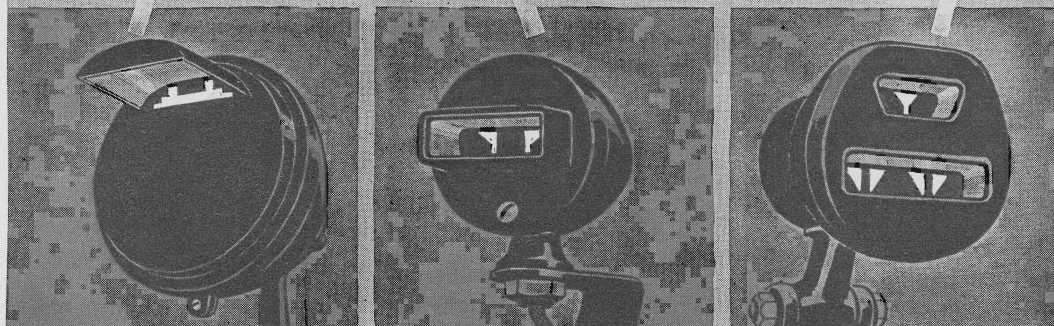
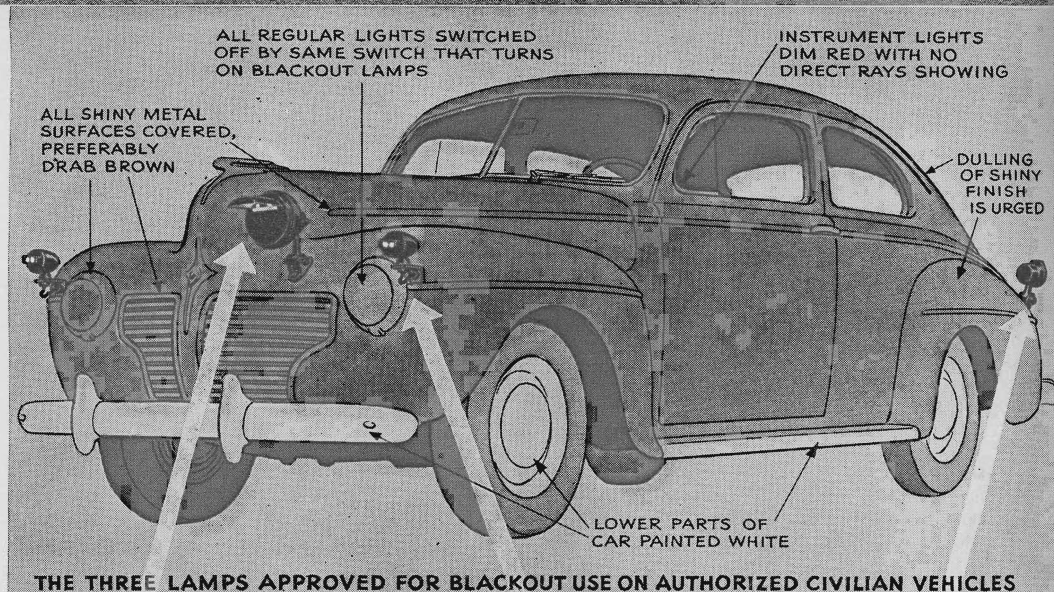


Blackout Road Rules



DRIVING LAMP. One at front between center and side of car

CLEARANCE LAMP. One at each side of front of vehicle

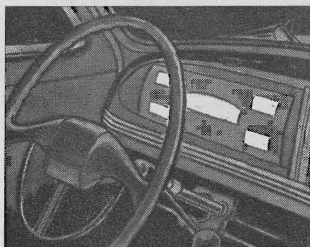
TAIL AND STOP LIGHT. One; two if vehicle is 80" or wider

IF YOU are authorized to drive during a blackout from now on, your vehicle must carry the special new blackout lights just approved by the War Department. The lights consist of a driving lamp and two clearance lamps for the front, and a combination tail and stop light for the rear of each motor vehicle. If you ride a bike, push a cart, or drive a horse, required equipment is specified for them, too. And every authorized vehicle must be prepared in advance so that its bright metal work is dulled, shiny surfaces covered, and, in some cases, it is equipped with approved reflector elements properly attached.

A recent War Department specification tells how the lights and permissible

marking devices must be mounted on private and commercial cars, trucks, bicycles, pushcarts, ambulances, horse-drawn vehicles, and practically everything on wheels. And it warns frankly what the well-dressed pedestrian should wear when, and only when, duty or necessity compels him to venture abroad during a blackout.

Pictures and many details of the three new approved lights are being withheld by the War Department as capable of giving aid to the enemy. But permission was given to POPULAR SCIENCE to show, in the illustrations above, its conception of them, as



DASH LIGHTS must be dim red or out; automatic lights inoperative with blackout lights on

WAR DEPARTMENT SPECIFICATIONS TELL WHAT LIGHTS TO USE; HOW AND WHEN TO USE THEM

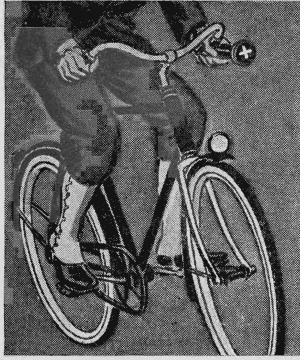
drawn by its own artist from information that has been released.

You probably won't be able to buy the lamps for some time, since the output of several manufacturers is going to the Government. Until then, there are no other officially approved blackout driving lights. Co-operating in drawing up the specifications were the Army Engineer Board, the National Technological Civil Protection Committee, the National Defense Research Council, the U. S. Bureau of Standards, the Interstate Commerce Commission, the Office of Defense Transportation, and the War Production Board.

The main driving light has a hood projecting out over its large black mask. A lens fitted under the hood forms a horizontal light slot, flat on the bottom but with several short vertically extending slots along its upper edge. The hood permits from 25 to 50 candlepower to be projected on the road, but cuts this value to .005 candlepower one degree above the horizontal—virtually invisible from a few yards away. A pair of standard sealed-beam headlights throw 50,000 candlepower on the road.

It is for use on all motor-driven vehicles, including streetcars, busses, trolley-busses, and motorcycles. On all but the last it is mounted between the left side and center. Motorcycles carry it center-mounted. It must be far enough forward to eliminate objectionable reflection from the vehicle itself, as near as possible to the normal line of the operator's vision, and between 36 and 55 inches above the road in a normally loaded vehicle, but no higher than the top of the steering wheel.

Mounting calls for critical adjustment so that the slot is level and the beam projects straight forward.



BICYCLE. Amber reflector at front; red, rear. Whiten lower parts. Blackout flash is urged

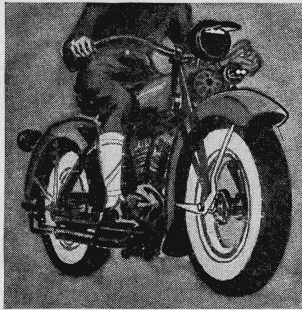
The visual cutoff of the top of the beam on a vertical screen 10 feet in front of the lens must be between two and three inches below the bottom of the slot.

The clearance lamps—a pair to each motor vehicle except motorcycles, which have one—show white for emergency vehicles only, amber for all others. Smaller than the driving light, they are securely mounted as near to the sides of the front of the vehicles and as close to the headlight level as possible, without interfering with the function of the headlight. Aimed straight ahead with the face of the lens vertical and the slot horizontal, the lamps shine with the driving light to show the width of a vehicle. Motorcycles use just one clearance lamp at the front center.

Casting no usable light on the pavement, the clearance light has a rectangular hood with a lens over the front end and a light-absorbing inner surface. The hood, about an inch long, carries a light mark at its back consisting of two more-or-less triangular lenses with the apex of each triangle pointed down. Thus they appear brightest from straight ahead, the brightness diminishing to zero as the viewing angle rises. They can be seen from about 1,000 feet dead ahead.

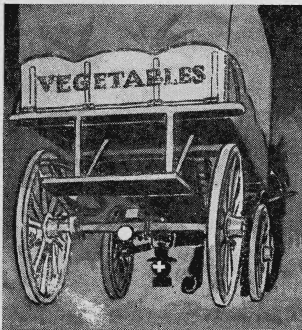
The approved combination tail and stop light is to be mounted close to the left rear of the vehicle. Its red tail-light lens goes at the bottom, its amber stop-light lens at top. The light openings are recessed in the housing. Recessing gives the same effect as a rectangular hood.

The masked opening of the tail-light unit takes the approximate shape of four V's lined up beside each other, with a wide space between the two center ones giving the appearance of two separated pairs of V's to the lineup. From some



MOTORCYCLE. Driving and one clearance lamp front; tail-stop rear. Dull all shiny areas

ANIMALS. Use blackout flash or lantern to reveal them. Reflectorize wagons same as bikes

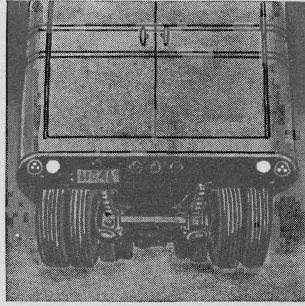


distance away, the four V's blend to the eye so that they appear as a single red glow. Closer, the outside pairs of V's appear as two distinct glow spots. Still closer, all four V's appear distinctly in their separate positions. Thus the tail-light lens is at once a warning of the presence of the vehicle and a gauge of its distance from the observer.

The clearance lights forward display a similar, though modified, distance-gauging effect with their two small openings. It is of less importance, however, since the two lamps themselves furnish the eye, accustomed to judging perspective, with ample distance information.

The War Department says that the blackout lights must have their own separately fused wiring systems controlled from a combination master switch that turns off all regular lights when the blackout lights are turned on. It must also turn out both sets of lights in its "off" position. Instrument lights are an exception. They may remain lighted if they provide only dim, red, indirect illumination, though you will see better by putting them out. Directional signal lights, normal stop lights, and others that are manually operated must be made inoperative and never used during blackouts.

Vehicles 80 inches or more wide must carry extra combination tail and stop lights on the extreme right rear, balancing the left rear ones. Also, two approved red reflectors must be attached no higher than 30 inches on the extreme rear near the sides, as well as two amber ones at front near the sides. If over 35 feet long, a vehicle must also display low-mounted red reflectors on the sides near the rear, and amber ones on the sides near the middle and the front. Such side and rear reflectors are strongly recommended for all vehicles, as is flat-white or reflectorized paint on bumpers, hub caps, and lower portions of all vehicles. All shiny sur-



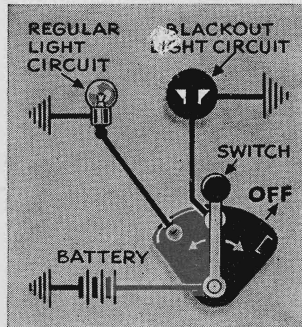
WIDE MOTOR VEHICLES. Extra tail-stop lamp plus special reflectors at sides, rear, front

faces should be dulled, preferably with drab-brown paint.

Streetcars and busses of all descriptions must carry approved driving, clearance, and tail-stop lights and specified reflector elements. Bicycles, the lowly pushcart, and other human-powered vehicles must have approved amber reflectors on the front and red ones on the rear, and white paint on lower portions is urged. Approved blackout flashlights and lanterns—not yet announced as this issue goes to press—may supplement or substitute for the reflectors. Animal-drawn vehicles—even ridden or herded animals—must stay off highways unless protected with blackout flashlights or lanterns, displayed so the animals are visible to approaching traffic.

The special reflectors for use on the sides and ends of vehicles during blackouts are far different from plain colored reflectors and mirrors. Place two glass mirrors at right angles to each other and you can then see your own reflection in them from a wide, horizontal viewing angle. The blackout reflectors use this principle, but add an extra mirror for three-dimensional viewing. Thus, light striking them is reflected straight back to the source, but in no other direction. As a result, your own car's lights will pick out a reflectorized vehicle, but not reveal that vehicle to anyone else.

Individuals must stay off streets during blackouts. Necessity or official duty is their out. Then, they should wear white or reflectorized leggings, or anklets equipped with approved clear reflectors, and should carry a blackout flashlight or lantern. In lieu of leggings or anklets, white cloth should be wrapped around the lower legs. Finally, pedestrians should remember that under blackout conditions "they generally are not visible from moving vehicles." That's fair warning. —SCHUYLER VAN DUYN.



SWITCH puts out normal lamps as it turns on blackout lamps. Also puts out everything

PEDESTRIAN. Must wear white or reflectorized leggings; should carry approved flash or lantern

