

headlights

specular) black floor and walls minimize reflected light."

On the agenda for phase two are studies on private stretches of road, restricted sections of new highways and possibly public thoroughfares. Targets representative of the animals, pedestrians, other cars and obstacles which present hazards to normal highway travel will be placed on the road.

Continuous recording of data of these and other tests involving other aspects of traffic safety will be possible through the use of an instrumented vehicle developed by R. C. Baker of the Structures and Materials Laboratory. Data-gathering apparatus, including a small computer, all placed so as not to affect the performance of vehicle or driver, will make it possible to record car speed, time to detect and reach target, illumination of the target, glare at the driver's eyes and electrical data on headlight performance with high accuracy. All data gathered in the instrumented vehicle are controlled by an accurate clock which, if synchronized with other clocks in other vehicles used in the tests, permits simultaneous recording of data in the vehicles to a high degree of accuracy.

"Phase three, it is expected, will involve field tests with highway conditions similar to those in phase two," Mr. Huculak says. "Here, however,

emphasis would be placed on the physiological effect of different headlight systems and situations on the driver. Eye motion studies and a general time history of the eyes during the eye-headlight interaction would be among the main points of the study."

"Phase one results on illumination from fixed headlights come from no less than 630 readings per test," Mr. Brown says. "This gives us quite complete distribution of the luminous intensity at all angles for many varieties of European and SAE sealed-beam standard headlights we study. Although the European lights are much brighter, these two kinds of headlights differ little with respect to the distribution of light intensity for regular beams (brights). This is not the case though for the depressed beams (dims) where there is a significant difference between SAE and European models. Our 50 or so isocandela diagrams from two to three dozen different headlights should really bring this out."

Keen interest in the NRC traffic safety research on headlamps has been shown by members of the International Commission on Illumination, an autonomous organization which grew spontaneously out of the interest of individuals working in illumination. This Commission is generally recognized as representing the best authority on illu-

mination and provides an important international forum for all matters relating to the science and art of lighting. Canada is among the 29 member nations of this Commission and the Canadian National Committee of the Commission is appointed by the National Research Council.

"Our principal aim is to study the driver-headlight interaction in order to reduce accidents," Mr. Brown says. "Once headlights now in use have been analyzed and catalogued, it will be possible to formulate recommendations regarding how they might be built, focused, powered, installed and so on, for greater safety. Windshields may also enter into the picture."

"We are particularly interested in determining what effect two different types of interacting headlights have on driving," Mr. Hall says. "We hope to uncover any unsuspected factor which could be hazardous in such a case. Our results will provide data for possible changes in safety regulations covering the importation of headlight beams to be mixed with SAE beams. They will also play a part in considerations regarding the relative candlepower requirements of the two headlight types and regarding methods for introducing headlights of greater intensity in future motor vehicles."

R. G. Brown aligning headlamp in goniometer during tests. Goniometer allows precise positioning of fixed headlight in vertical and horizontal directions.



Lors des tests, R. G. Brown ajuste le phare dans un goniomètre, appareil qui permet de mesurer avec beaucoup de précision l'angle que fait le feu avec l'horizontale ou la verticale.