The Health Hazard of the Automobile

The pessimist who has exalted the “drawbacks of civilization” will find new additions to his theme in the contemplation of some of the dangers brought by the automobile. The weekly toll of deaths chargeable in one way or another to this motor vehicle is largely exceeded by the number of nonfatal accidents in which health may become temporarily or permanently impaired; and attention is called to a subtle menace in the form of the poisonous exhaust gases from the automobile. Reference has frequently been made to this, for the most part in relation to workers in automobile repair shops and garages. And now the important studies of Henderson and Haggard add a new concern. Their findings are said to apply to garages. And now the important studies of Henderson and Haggard1 add a new concern. Their findings are said to apply in all large cities, and to the business portions even of cities and towns of moderate size. One is impressed, in fact, with the statement that the conditions are much more inimical to health than has heretofore been supposed.

The foremost danger lies in the carbon monoxid contained in the exhaust gases. It is colorless, and may be present when there is neither smoke nor smell to betray the obtrusion of something objectionable in the way of unconsumed fuel into the atmosphere. The presence of more than one part per ten thousand in respired air over any considerable period is now admitted to be harmful, or at least objectionable. In some parts of the country the exhaust gases from other types of fuel contain, in addition to carbon monoxid, the toxic vapor of benzene and other substances. Analyses made in New York showed that one part of carbon monoxid in ten thousand parts of air is a quite frequent condition in streets where traffic is heavy; and two parts of carbon monoxid are not unusual. It is asserted that even more than this occurs in limited areas and for short periods, so that subacute asphyxiations may actually become possible not only in confined spaces but also at open posts where traffic policemen are continuously stationed.

Henderson and Haggard believe that the conditions can be ameliorated largely by the use of the vertical exhaust on motor vehicles, whereby the hot toxic gases are carried up out of the streets. The attempt to improve the combustion processes in the automobile is not so immediately practicable. We are not concerned so much with the chemistry and mechanics of the automobile as with the recognition that methods of prevention are desirable. In any event, the report of these physiologists should make us alert to detect actual cases of poisoning with exhaust gases in every-day practice. The incipient symptoms—headache, fatigue, nausea, disturbances of temper—are familiar. Their etiology is, of course, manifold and by no means always clear.

The Development of Red Blood Cells

The development of red blood cells is a function of great importance to the organism. What the restoration of a sufficient number of erythrocytes may mean to the body when its circulation has been seriously depleted by hemorrhage or blood-destroying disease is obvious. If it happens, as is currently believed, that a physiologic destruction of red blood cells is proceeding in some degree even in health, their replacement belongs to the continuous normal activities of the hematopoietic tissues. To locate their function in the bone marrow and spleen gives only an incomplete suggestion of what the process may be. There has been considerable embryologic evidence that in the earliest stages of the development of the organism the red cells of the blood differentiate intravascularly. For the adult bone marrow it has been taught, on the other hand, that there is a different type of genesis. Thus, the belief that the erythrocytes develop there in extravascular clumps has been so generally accepted that investigators have labored assiduously to discover how the mature red cells formed in this manner make their way into the blood stream. Studies conducted in the Department of Anatomy at the Johns Hopkins University on the bone marrow of both birds and mammals seem destined to present the problem in a new light. When this structure is largely depleted of its myelocytes by suitable procedures and has not yet begun to form new white cells to any appreciable extent, the endothelial membranes come into prominence. It appears there that the red cells arise by proliferation of endothelial cells, which remain in the bone marrow in a relatively undifferentiated state. The erythrocytes are observed only intravascularly, the leukocytes extravascularly. If these findings prove to be tenable, an additional and most important physiologic significance for the endothelium will have been discovered.