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A STUDY OF THE EFFECTS OF COMBUSTION PRODUCTS OF NATURAL GAS UPON PUBLIC HEALTH*

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In presenting this paper I shall avail myself largely of material collected through three main sources: (1) A review of the literature; (2) personal clinical investigations; (3) recent combustion products studies sponsored by the Resources Committee of the West Virginia University.

Since carbon monoxide ranks as the leading hazard among the products of combustion of natural gas and other fuels, the discussion will be limited to the consideration of this gas from the standpoint of a domestic and industrial health problem.

The immediate effect of carbon monoxide in producing acute asphyxiation and death is well known. It is the remote or residual effect occasionally following acute asphyxiation, and those cases of chronic states of ill health resulting from repeated and prolonged exposures that need to be especially emphasized. It was with the hope of establishing more definitely the role carbon monoxide plays in the causation of these delayed or chronic forms that led me to undertake a prolonged course of clinical investigation.

During these investigations 150 patients whose illness could be definitely traced to the effects of the gas were under observation. The incidence among residents in districts where natural gas is the chief source of fuel was found to be higher than among those residing in other districts, and

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that the gas affected more individuals in the homes than in the industries. Thus, in the state of West Virginia 80 per cent of those affected by the gas were engaged in non-industrial pursuits, housewives and domestic employees predominating; whereas in Maryland where less gas is consumed for domestic purposes, only 36 per cent were non-industrial. Hence, properly to evaluate carbon monoxide as a health hazard the domestic problem as well as the industrial and the late or secondary manifestations as well as the acute must be considered.

Many investigations have been made with respect to carbon monoxide as an industrial hazard but no systematic clinical survey has been made with respect to the gas as a domestic problem. Fortunately, such a survey was made available through a special fund created for the purpose of studying the clinical aspects and by provision made for the study of the problem from an engineering standpoint. Both features were combined in the combustion product study sponsored by the West Virginia University and assisted by the West Virginia State Department of Health, the West Virginia Geological Survey, the Utilities Gas Companies of West Virginia, and Cities Service Oil Company of New York.

SCOPE OF CLINICAL SURVEY

Careful inquiry was made as to the age, sex, marital status and occupation of the residents of each domicile; the facilities for ventilation, the length of residence in gas-heated homes, the period of possible exposure and the number of hours exposed daily; the state of health of all occupants and the effect upon health incident to change of air, residence or season of the year was ascertained.