

various sources. Kennaway pointed out that there had been a pollution of air with soot for a long time before the increase in the incidence of pulmonary malignancy was noted. The rarity of this type of neoplasm among chimney sweeps (one case among 65 cases of chimney sweep cancer (1920-1923)) was cited by Kennaway in confirmation of his contention. Fischer-Wasels mentioned that the tar and pitch workers who inhale considerable amounts of tar dust suffer rarely from lung cancer in spite of the fact that they develop cutaneous carcinomas from their occupational exposure to this carcinogenic agent. A similar statement was made by Barnewitz and Behring in regard to the low incidence of lung carcinoma among the pitch and tar workers in the Ruhr district.

*Habitual Exposure to Tarry Substances.* The tobacco smoking habit provides an additional source through which tarry substances of known carcinogenic quality may enter the respiratory system. It has been suggested by investigators that this rapidly spreading habit, especially in regard to cigarettes, may have some relation to the increase and production of pulmonary malignancy (Bogen and Loomis; Schürch and Winterstein; Hruby and Sweany; Roffo; McNally; Lickint; Brockbank; Müller; and others).

It is contended that not only persons who smoke, but also those who inhale tobacco smoke because of environmental reasons over prolonged periods (waiters, housewives, etc.) show an excessive liability to lung carcinoma (Editorial, *J.A.M.A.*). The amount of tarry substances introduced into the respiratory tract by a heavy smoker is, in the opinion of Lehmann, much greater than that inhaled by an automobilist travelling on a tarred road. The occurrence of pulmonary malignancy in two heavy smokers was reported by Campbell. Similar observations on a large series of lung cancers (96) were reported by Müller. Lickint asserted that carcinomas of organs which are situated in the so-called smoke-tract (lips, oral cavity, larynx, trachea, bronchi, lung) are found more frequently in smokers than in non-smokers. This investigator sees in the exposure to tobacco tar the reason for the numerical discrepancy in the incidence of lung cancer among the two sexes, and for the more rapid increase of this type of cancer among men than among women. It may be added that this argument is open to question, in view of the increase of this habit during the last two decades among the female sex. Jackson and Jackson presented in 1941 statistical data indicating a small but progressive yearly increase in the incidence of laryngeal cancer probably caused by smoking. The proportion of men to women with this lesion was 10:1, and 95 per cent of the men were smokers.

*Occupational Atmospheric Mineral Oil.* There exists also some evidence incriminating the respiratory contact with carcinogenic oils for the development of malignant tumors of the respiratory organs. A relatively high ratio of laryngeal cancer was found by Kennaway and Kennaway in mule-spinners, who, during their work, inhale a mist of a carcinogenic shale oil used