

directly or indirectly predisposed foci located in remote organs, such as the lung, into active neoplastic proliferation causing a nonsystemic neoplastic multiplicity. An identical effect may be elicited by the introduction of excessive doses of certain carcinogenic chemicals into the subcutaneous tissue, from where an overflow of carcinogenic material may incite multiple malignant growths in remote internal organs, such as the lung or liver (Andervont; Shear; Lettinga; and Lynch), in addition to the cancers appearing at the site of primary contact.

The observations made in connection with occupational and experimental, neoplastic multiplicity demonstrate the fact that the exogenous carcinogenic agents can produce the various types of multiple tumors mentioned in the classification of these growth manifestations. The evidence presented suggests strongly that more consideration must be given in the future to the causative role which extraneous factors may play in the development of primary multiple neoplasia.

This localistic conception of the action of carcinogenic agents in connection with the occurrence of nonsystemic multiple cancers is of fundamental significance. Murray; Cramer; and Peller recently contended that the presence of a cutaneous malignancy counteracted the development of a second primary malignancy in certain internal organs. Murray as well as Cramer claimed that such an antagonism existed between the experimental cutaneous tar cancer and the spontaneous mammary cancer of mice, and that for this reason the coexistence of a mammary cancer and a skin cancer is rare.

Peller maintained that the occupational contact with tar, while increasing the incidence of skin cancer as well as that of gastro-intestinal, hepatic, and vesical malignancies, lowered the frequency of cancer of the lip, tongue, and esophagus. Similar antagonistic interrelations were claimed to exist between solar epitheliomas of the skin and the liability to cancers of the internal organs. Peller suggested that the presence of a relatively easily curable external cancer of the skin might protect against the acquisition of a much more dangerous malignancy in some internal organ. Peller asserted that such a systemic interaction accounted for the statistically demonstrable rarity of internal cancers among the personnel of the United States Navy. Cramer contended that this mechanism offered a plausible explanation for the fact that the populations of different regions show statistically approximately the same total incidence of cancer in man with a widely varying frequency in the proportion of different organ tumors.

Reports from the International Labour Office state that it is a curious fact that nearly all occupations noted for excessive skin cancer mortality also record a cancer mortality for sites other than the skin in excess of the average. Conrad and Bradford, analyzing the same occupational cancer mortality statistics used by Peller (England and Wales for the years 1921-1923), were unable to substantiate the claims made by this investigator. On the contrary,