

definite parallelism between the absolute incidence of scrotal and penile cancer in the different occupational groups, the reason for which, however, is obscure. Hoffman felt that it is unlikely that social factors, such as special uncleanness allegedly prevailing in certain occupational groups, would account for the high frequency of scrotal as well as penile cancer among laborers, farmers, commercial, and clerical workers.

Analyzing his data for the influence the state of marriage played in regard to incidence, Hoffman made the surprising observation that both types of cancers are significantly more frequent in married males than in unmarried males over 15 (scrotum: married 1.1, unmarried 0.4, per one million; penis: married 6.1, unmarried 1.9). Hoffman's studies of occupational groups on the basis of 3,462 deaths from cancer among males during the years 1920-27 (San Francisco Cancer Survey, Seventh Report, Prudential Press, 1931) did not render any significant information that would connect any particular occupation with some special type and site of cancer.

Haagensen made statistical studies regarding the significance of the occupational factor on the incidence of skin cancer, especially of the penis and scrotum, among various occupational groups. He attempted to obtain more definite information by applying the following formula:

$$\frac{O}{P} \times P_m = E.$$

In his calculations H represents the population of New York, Jersey City and Newark; P is number of occupied in Metropolitan area; P_m is the total number of males with skin and mucocutaneous cancers listed by occupation on the records of the Memorial Hospital; O stands for the number of males in a particular occupational group; A is the actual number of patients from the occupational group in question; E is the expected number of cases. Haagensen reasoned that if the morbidity of cancer is the same in all occupational groups the expected number for the Memorial Hospital records could be expressed in the formula given. A and E are then compared and the percentage of excess or defect determined. The statistical significance of the data thus obtained can then be ascertained by ordinary statistical calculations.

With this procedure Haagensen found that a high excess of penile and scrotal cancer existed in machinists and mechanics occupationally exposed to lubricating oil. This observation confirmed a finding previously made by Young and Russell, who reported a high incidence of penile cancer among equally exposed millwrights, turners, fitters, etc.

There was, moreover, an excess of skin cancer in brick and stone masons in Haagensen's as well as in Young and Russell's statistics, which was attributed by the English investigators to an occupational exposure to solar rays and mechanical trauma. Occupational factors of physical or chemical nature (sun light, tar, etc.) are blamed by Haagensen for the highly excessive incidence of skin cancer observed among sailors and boatmen (420 %), locomotive