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OCCUPATIONAL CANCER

131

TABLE 4

## INCIDENCE OF CANCER IN ASBESTOS TEXTILE WORKERS AT POSTMORTEM EXAMINATION

|                                              | Un-<br>complicated<br>Asbestosis |    | Tuber-<br>culosis and<br>Asbestosis |   | Lung Cancer<br>and<br>Asbestosis |     | Peritoneal<br>Cancer and<br>Asbestosis |   |
|----------------------------------------------|----------------------------------|----|-------------------------------------|---|----------------------------------|-----|----------------------------------------|---|
|                                              | M                                | F  | M                                   | F | M                                | F   | M                                      | F |
| Number of cases investigated postmortem (72) | 22                               | 18 | 12*                                 | 3 | 12*                              | 2   | 1                                      | 3 |
| Incidence of lung cancer (per cent)          |                                  |    |                                     |   | 26.1                             | 8.7 |                                        |   |
| Average age at death                         | 54(21)†                          |    | 47(12)                              |   | 56(11)                           |     |                                        |   |
| Average age at starting work                 | 31(21)                           |    | 28(12)                              |   | 27(10)                           |     |                                        |   |
| Average period of exposure (years)           |                                  |    |                                     |   |                                  |     |                                        |   |
| Total                                        | 23(21)                           |    | 18(12)                              |   | 26(10)                           |     |                                        |   |
| Prior to 1931                                | 14(19)                           |    | 14(7)                               |   | 12(10)                           |     |                                        |   |
| In cases entering after 1931                 | 5(2)                             |    | 7(5)                                |   |                                  |     |                                        |   |

\* One man had asbestosis, tuberculosis and lung cancer.

† Figures in parentheses represent the number of cases for which the information was available.

and 26 females. In Table 4 the data in regard to the association of asbestosis and cancer are given. Cancer arising primarily in pleurae, lungs or bronchi was present in 26.1 per cent of males and 8.7 per cent of females. This significantly higher incidence in males may be accounted for by the fact that 7 women died before the cancer age, 4 following parturition or abortion and 3 from tuberculosis. There was no significant difference in average age at death, average period of exposure or average age of starting work between males with uncomplicated asbestosis and those with the complication of lung cancer. This is interesting, as in the dyestuff industry death was accelerated by the supervention of bladder cancer. It was noted that the degree of fibrosis was rather less in the lungs with cancer than in those without. Tuberculosis significantly lowered the age at death.

A fair assessment of the period of exposure is difficult in such a series of cases. Taking into account the known fact that after a carcinogen has ceased to be applied to a tissue a latent period is required before the development of the malignant change, it was decided to use the period from the first entry into the factory until death as the period of exposure. This disregards absences from the factory for any reason. It also presupposes that once the fibers have gained access to the lung the carcinogenic process is set in motion, becoming fully developed at the end of the latent period.

Two interesting features deserve mention. The morbid anatomy and histology of the 13 lung cancers of which full notes were available was unusually varied. Four were large tumors situated near the lung hilum, disseminating in characteristic fashion and of adenocarcinomatous or oat-cell type. Seven were situated in the periphery of the lung, usually near the base, 3 disseminating by blood and lymph streams and the other 4 remaining confined to the lung substance. Six of these were adenocarcinomatous or of oat-cell type, 1 being spindle cell and possibly a rhabdomyosarcoma. Small peripheral cancers were described by Raeburn and Spencer (1953)<sup>11</sup> as the likely precursors of the large hilar masses

## F INTERMEDIATES

## Tumor

Ider carcinoma

Ider carcinoma

known

known

stoma

dder papilloma

stoma, acoustic gland

arcinoma, intestinal

reinoma

dder papilloma

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layson, 1953).<sup>6</sup>

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iated with asbestosis, 33  
8 cases with coexistence

## Workers

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peculiar bodies and the  
in the sputum (Stewart,  
all and Haddow, 1932<sup>10</sup>).  
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as fibers. In 8 persons no  
small numbers of bodies  
ation is thus 72, 46 males