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## THE ASSOCIATION OF ASBESTOS AND MALIGNANCY

SOME 60 years ago it was suggested by Montague Murray in England that heavy exposure to asbestos dust could produce fatal pulmonary fibrosis. In those days men working under uncontrolled conditions developed asbestosis within a few years and died young, often of its complications, pneumonia or tuberculosis. As working conditions improved, together with the control and treatment of pneumonia and tuberculosis, the onset of asbestosis was delayed and the late effects of fibrosis, such as bronchiectasis, bronchitis and cor pulmonale, became more common. Still more recently, workers who have acquired only moderate degrees of asbestosis have survived long enough to develop an associated bronchial carcinoma. In addition, and unexpectedly, we are at this time seeing the late effects of exposure to certain types of asbestos which were insufficient to produce appreciable lung fibrosis but which have, after a delay of 40 or more years, led to the development of mesothelial tumours in the pleura and elsewhere.

The striking feature in recent years is the new evidence showing that not only is there a high risk of bronchial carcinoma in those with asbestosis, but that other types of tumour develop in exposed persons in the absence of asbestosis in the lungs, sometimes after a small exposure but always with a long delay. The evidence in man indicates that the type of asbestos fibre to which the individual is exposed is of great importance in the development of these tumours.

The first large series suggesting that the association of asbestos and lung cancer was more than one of simple chance was reported in 1949 by Merewether,[1] the Senior Medical Inspector of Factories in Great Britain. The series included 128 males and 107 females whose deaths were due to asbestosis or in whom the presence of asbestosis was proved at autopsy. Lung cancer was found in 22 of the males and in nine of the females, i.e. in 13% of this group of persons with asbestosis. Since 1949 this study has been brought up to date and the proportion of lung cancers has increased to 18%. In 1955, Doll[2] reported a study of 113 workers employed for 20 years or more in the scheduled areas of Britain (i.e. areas in which processes are scheduled by Asbestos Industry Regulations of 1931 as being dusty). The observed number of deaths from lung cancer was 11, the expected number was 0.8; and deaths from all cancers numbered 15 as compared with an expected number of 3.1. Various statistics have been quoted regarding the frequency of association of asbestosis and lung cancer; the Chief Inspector of Factories in Britain lists this figure as 13%, while the Pneumoconiosis Board in London estimates it at 50%.

In addition, 11 cases of abdominal tumours associated with exposure to asbestos were discovered between 1958 and 1963. A remarkable feature of these cases was the minimal extent of fibrosis found in the lungs. It seems that this is yet another clinical condition which must be recognized as part of the asbestosis syndrome.

Experimental investigations in South Africa have suggested that a particular type of asbestos, crocidolite (Cape Blue), is implicated in the causation of mesothelial tumours. Wagner[3] has reported on 33 cases of diffuse pleural mesothelioma, histologically diagnosed at the Pneumoconiosis Research Unit of the South African Council for Scientific and Industrial Research. Twenty-eight of these cases had some association with the Cape asbestos field and four had been exposed to asbestos in industry. Further, it has been discovered that primitive oils and waxes containing small amounts of 3,4-benzpyrene and other cyclic and aromatic hydrocarbons are naturally absorbed on to this type of asbestos, and there is suggestive evidence that the *natural* asbestos oils may be supplemented with *secondary* oils derived either from industrial processing or storage in jute bags.

Very little research has been reported with respect to the effects of the white asbestos fibre, chrysotile, and since this type of asbestos is mined in Canada, there is considerable international interest in any investigation of this subject which may be undertaken in this country. Canada is by far the world's leading asbestos-producing nation and provides 42% of the world supply of this product. In 1963, this amounted to 1.3 million tons, valued at 135 million dollars. Production is limited to the provinces of Quebec, Ontario, British Columbia and Newfoundland. Quebec, where production has been continuous since 1878, contributes 90% of Canada's output of asbestos fibre. Questions of international concern which a Canadian study could answer include the following: Is the type of asbestos important with

respect to the risk of asbestosis, carcinoma of the lung, and mesothelioma and other tumours? Is there any excess risk of bronchial cancer in the absence of asbestosis? Is there a detectable stage of asbestosis at which progression ceases after removal from the dust?

In addition, a Canadian study could be expected to assist in obtaining agreement on the minimal clinical, radiological and lung function criteria for the diagnosis of asbestosis, and in the development of agreement on the types of dust measurements which should be made.

It is encouraging to be able to add that a Canadian study of this nature is being organized by the Occupational Health Division of the Department of National Health and Welfare.

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## THE NATIVES ARE REVOLTING

MEDICAL students form a unique subculture in the medical cosmos. More than ever before they are the object of intensive if somewhat baffled scrutiny by their seniors, especially those interested in or responsible for the future of medicine. It is easy to be overawed, especially if one does not have constant contact with teaching and students. Theirs is a freemasonry whose ranks remain inviolate because no one can for long successfully masquerade as a medical student and no graduate can cast off the weight of years and change so as to return to that quick-silver state.

The great handicap under which student organizations—and student publications in particular—struggle is their impermanence. The student years are an inclined plane down which one moves with increasing acceleration until suddenly, almost before he has time to savour the period through which he is passing, it is over.

With respect to student medical journals, the difficulties encountered in recruiting suitable material for publication, seeing it through the various stages of the editorial process and meeting some sort of publishing deadline in such an environment will perhaps be conceded without further elaboration. However, something of interest for everyone is likely to be found in these publications, especially if it is a national journal that represents some 12,547 students. *The British Medical Students' Journal* appears three times a year: its spring number (Vol. 20, No. 1, 1965) contains such articles as the following:

*Student Investigators*: Of William George and John Bruce MacCallum, Jean Shortland of Westminster Hospital says, "The father of the MacCallum brothers was a country doctor in Canada and a very keen naturalist. He encouraged his children to observe, to inquire and to try. After studying art subjects at Toronto University both went on to study medicine at Johns Hopkins Hospital. William George MacCallum, while a student there in 1899, described the sexual part of the life cycle of the malarial parasite. The asexual cycle had been described some time before this. He found male and female gametes first in crow's blood and then in a malarial patient . . . William George MacCallum went on to have a long and famous career as a pathologist. His brother, John Bruce MacCallum, died at the early age of 30 in 1906. While a student at Johns Hopkins he published work on the development and architecture of the muscular wall of the heart and on the pathology of heart disease."

*Our Beloved Companions* is strongly flavoured with that ambivalence that characterizes the *entente* between medical students and nurses: Donald Justin Bentley's barbed offering begins as follows:

> "She wiggled her curvacious body slenderly towards the bed. Fine beams of light, from some far corner of the ward, glimmered through her exotic hair. And a generous odour of Chanel was wafted into the midnight air. Bedside dust, unsettled for decades, began to rise as she propelled her majestic form towards the sick patient. No errant tending the ill could have moved in a more devoted manner.
>
> "*'Ave yer done with yer bed-pan?*"
>
> "It was only when her cultured tones pierced the absolute hushness of the night that I became truly aware of her presence. How guilty we medical students are of taking for granted our nursing colleagues."

*Voluntary Euthanasia*, by Raanan Gillon, is a carefully researched, well-presented account of the evolution of society's attitudes toward this complex problem. This essay was awarded first prize in the 1964 British Medical Association Students Essay Competition.

*Dr. Locum: or How I Learned to Stop Worrying and Love the Ward Sister* will puzzle many Canadian readers because the "locum" referred to seems to have been a short-term clinical clerkship or externship. However, Rada Karmi of Bristol University strikes a familiar chord, especially in the following gem:

> "At last the fearful day arrives and you present yourself, duly coated and stethoscoped, at the appointed time and the appointed place. The ward's in your charge. The patients lie in their beds as if waiting the moment of your arrival; the sister's office door is ajar, beckoningly. You enter and receive your first shock. After a cursory greeting you are asked to write a number of prescription cards. In terror your realize that you have forgotten drug dosages, but there is no need for panic. Before you have even unscrewed your pen, sister's voice rings out, dictating fluently drugs