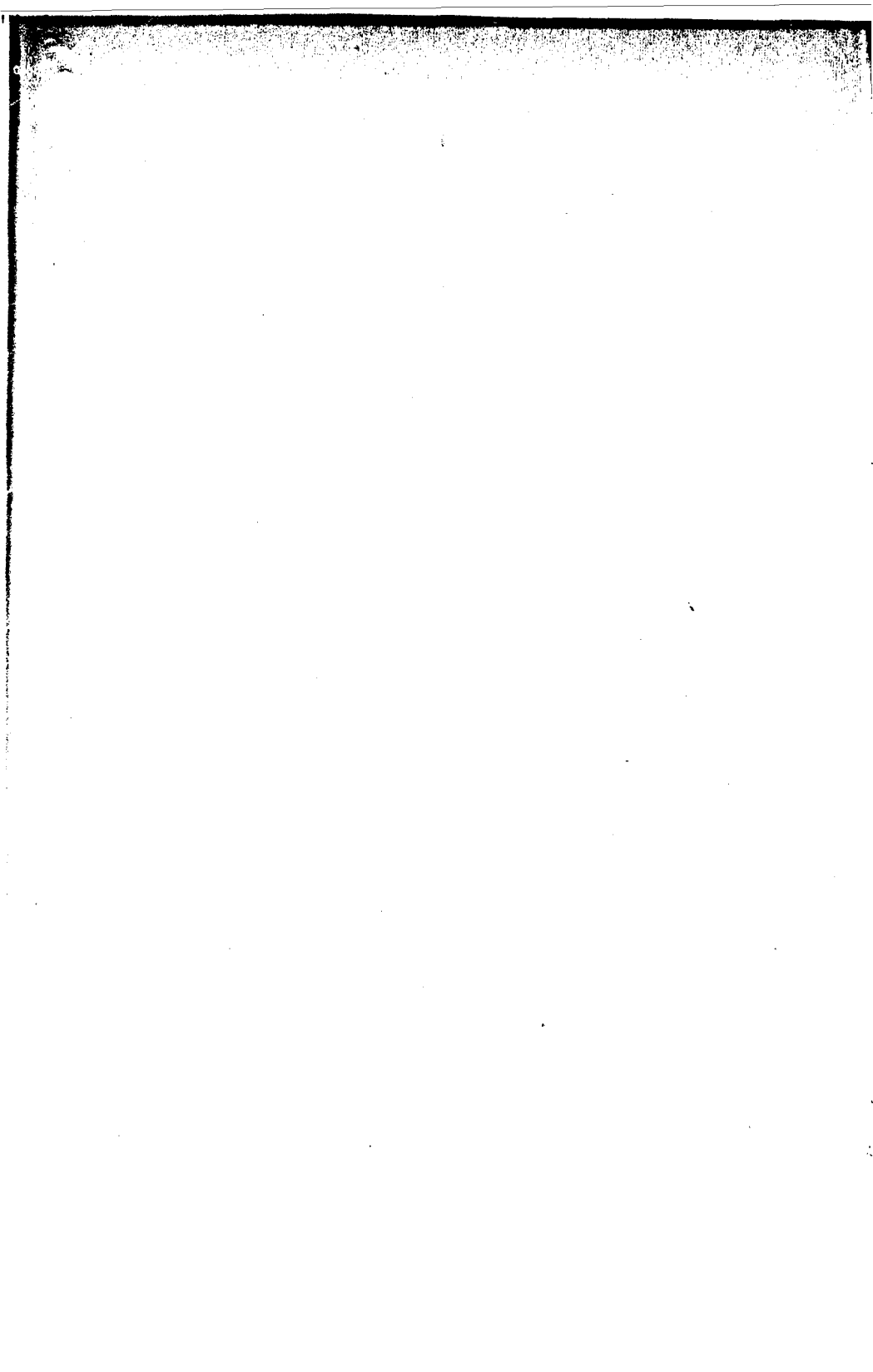


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The Principles and Practice *of* INDUSTRIAL MEDICINE

Edited by
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A William Wood Book

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FOREWORD

Advancement in the knowledge of industrial medicine presupposes a far wider dissemination of instruction than that which has obtained to this time. The instructional effort in this field must increase tremendously, both in its purely didactic and in its clinical aspects before the student in medicine may be considered as having received adequate general training. Not only for the student, but for those already engaged in the art of healing is such instruction eminently useful.

Concern for the welfare of the industrial worker is no longer a matter in the realm of mere sentiment. It has become a vital, concrete necessity even when completely divorced from its humanitarian implications. The day has actually come when the absence of well-conducted medical departments in industry is suggestive of medievalism when measured by the criterion of social progress and of financial obtuseness when measured by the more tangible criterion of profits and losses.

Scientific discovery, in its ever accelerating pace, has brought before us new concepts of the relationship of the environment to physical well-being. It is inevitable that industry take cognizance of these facts and be guided by them in providing protection for its workers. The great strides in scientific knowledge have widened the scope of industrial medicine; but our contribution to the worker's health will not be commensurate to the possibilities unless we are, as physicians, aware of the broadened horizon.

We have noted, with the utmost gratification, that of recent years many of our medical schools have included training in industrial medicine in their curricula. We have noted, moreover, that the new offering is being regarded less and less as usurping a place in the roster of courses and more and more as an integral part of medical training. This augurs well for industrial medicine and will assure for it an increasing receptivity both from the worker and from management.

Warm commendation is justly forthcoming to the editor of this book and to the individual contributors. They have made a signal contribution to the student of medicine whether he be still in school or in the active practice of his profession. Their contribution is, indeed, a particularly timely and loyal service to the nation at a moment when a dire need for this service exists.

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VII. OTHER PNEUMOCONIOSES

There is considerable disagreement in the medical literature concerning the exact etiology of certain types of pulmonary fibrosis due to dust inhalation other than silica dust. Asbestosis, siderosis, and anthracosis are the most important of these fibroses.

Asbestosis

It has been well proven that a peculiar type of linear pulmonary fibrosis is caused by minute asbestos fibers inhaled by workers in industries utilizing asbestos for the manufacture of fire resisting material, insulation, certain fabrics and ropes, paints, roofing, tile, etc., as well as the manufacture of asbestos itself.

Asbestos is magnesium silicate and is the only silicate which has experimentally been proven to produce a pulmonary fibrosis without exposure to silica.

The onset and clinical course of asbestosis is similar to that of slowly progressing silicosis and the symptoms in the later stages are identical. Fatal termination is usually by complicating pneumonitis, cardio-vascular decompensation, or tuberculosis. The roentgenopathology is typical and not difficult to differentiate from silicosis. Gloyne and Merewether state that the roentgenological appearances of asbestosis are revealed typically as a general lack of translucency with a fine pinhead mottling. This is the characteristic "ground glass" appearance. The film should always be compared with a film of a normal patient and a film of a silicotic patient taken with the same exposure.

The diagnosis depends upon a definite history of exposure to asbestos dust including sufficient period of exposure, roentgenological appearance, decreased pulmonary capacity, and the finding of asbestos bodies in the sputum of patients not yet removed from exposure to the dust. These asbestos bodies are well described and usually illustrated in most text books of clinical pathology. The pathology may be summarized in the single statement that it consists of a persistent, progressive, diffuse perialveolar fibrosis of the lungs. The fibers may be seen on histological examination to lie embedded in the fibrous walls of alveoli and bronchioli and each fiber appears to be encrusted by an iron-containing yellow pigment. As would be expected, in the later stages the fibrosis becomes confluent and massive.

Siderosis

Siderosis is chiefly a red pigmentation of the lung tissue due to inhalation of iron-containing dust frequently found in hematite miners. Experimentally, fibrosis has not been produced by pure iron or iron oxide dust

and only when mixed with hazardous concentrations of silica dust does fibrosis result. Therefore, unless the patient is also affected with silicosis siderosis by itself is asymptomatic and produces no roentgenological or clinical findings.

Anthracosis

Black pigmentation of the lungs due to inhalation of smoke and other types of carbon particles is common particularly in residents of large industrial cities. Most marked blackening is produced in coal miners. There is some controversy concerning the question as to whether or not carbon dust of itself can produce a pulmonary fibrosis. There is no conclusive experimental evidence that pure carbon dust will produce fibrosis. It is the author's opinion that all instances of fibrosis in anthracotic lungs are due to an admixture of silica dust in the inhaled air or an inflammatory fibrosis due to respiratory disease. Anthracosis is asymptomatic and produces no clinical findings or disability.

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CHAPTER XXIII

OCCUPATION AND TUBERCULOSIS

Sarah I. Morris, M.D.

Tuberculosis is not, per se, an intrinsic part of the industrial manufacturing process. When encountered in industry, the disease exhibits no difference in its basic characteristics than when encountered elsewhere.

Strictly speaking, in those occupations only, which expose the worker to unusual contact with the tubercle bacillus "in line of duty," can it be truly considered an occupational disease; but when workers are drawn by Industry from those groups of the population where a high incidence of the disease exists, and low wages or plant conditions favor disease development, then Industry must assume its share of responsibility for the ultimate consequences. However, the extreme chronicity of the disease and its long association with industry present so many factors in common that it becomes increasingly difficult to determine its exact relationship to industry and to place the responsibility for the effects of the disease. Today, values are constantly shifting and the picture becomes kaleidoscopic.

It is a disease of the masses and its epidemiological phenomena illustrate its most distinctive characteristics which render it so grave a problem both in employment and in the general population. Some understanding of the basic principles of the disease and its epidemiology are essential, therefore, to a proper evaluation of its role in industry and for the development of a practical control program.

EPIDEMIOLOGICAL EVOLUTION OF TUBERCULOSIS

Tuberculosis is as old as medical history and has accompanied man on his perigrinations from antiquity, altering and being altered by the adverse factors of his social existence. It has appeared in all races, locations and walks of life, attacking any age and both sexes. It has been variously known as a disease of the family, the home and races; of cities and slums; of penal institutions, schools, and places of employment; and heredity, race, occupation, and other factors have at various times been considered its primary cause.

It is a disease of the people, of the masses, the closer the massing and the greater the mingling, the more widespread the disease; and the poorer the economic status the higher the mortality. Paradoxically, it has accompanied civilization and, as civilization has progressed, evolution in the disease has followed, changing from an acute sporadically epidemic, rapidly fatal disease, as it appears in all primitive peoples, to the slow, insidious,