
This admirable book, well written by a recognized British authority, deals with "ventilation and heating in terms of basic human needs." It gives a full presentation of the fundamental physical and physiological principles involved in providing a comfortable thermal environment in the home and in the working place, and is intended to supplement the technical details of heating and ventilation practice found in standard works. The historical reviews of the research work, often extending over many years, leading to our present knowledge of comfort needs and their measurement, heat loss and gain from the human body and from buildings, heating and ventilating appliances, etc., form a valuable feature of the book. Dr. Bedford has himself made extensive contributions to several aspects of the subject.

Enough is known about the requirements for thermal comfort for it to be possible to assess an environment instrumentally and to define it in terms of the "effective temperature" (U.S.A.) or of the "corrected effective temperature" (Bedford). Not only must air temperature and humidity be taken into account, but also air movement and the effect of radiating surfaces. A sense of "freshness" must be maintained, not only by removing odours and atmospheric contaminants, but also by providing variable air-movement (but, of course, not enough to cause noticeable draughts). Adequate ventilation, suitably introduced and distributed, is an important consideration in providing suitable factory conditions. Most people feel comfortable within a narrow range of (corrected) effective temperature, the actual value depending on the extent of the activity and on the clothing worn.

The necessity for understanding basic principles completely is clear from the following quotations:

"In a fully occupied workroom some people must generally work near windows, and in cold weather they are liable to be exposed to unpleasant draughts. Even when the windows are closed, the warm air of the workroom coming into contact with the cold window surfaces is cooled and falls rapidly towards the floor. This descending current of air often provokes complaints of draughts" (p. 185).

"It is therefore preferable to circulate a larger quantity of air at a moderate temperature rather than a small quantity at a high temperature" (p. 210).

We are all conscious of the poor standard of household heating in this country. Bedford describes modern methods and appliances and discusses the characteristics of the environment produced by both the new and old. Again, an understanding of the principles involved in providing thermal comfort would seem to be of importance when appliances are being designed and installed. The choice of building materials and the placing and design of windows, doors, etc., must be considered when striving for maximum efficiency.

The book is well produced and contains 123 illustrations and 345 references to the literature. Heating and ventilating engineers, industrial medical officers, and all interested in the many aspects of thermal comfort should find Bedford's book of great value.

H. H. W.


Koelsch begins his first volume with an interesting historical introduction. He notes that Aristotle described diseases peculiar to couriers, the deformed ear of the boxer, and other occupational stigmata. In Germany the first publication dealing with industrial disorders appeared in 1473, when Ulrich Ellenbog of Augsburg wrote on poisonous vapours and smoke. He had observed the effects of these on metal workers who used gold, lead, and mercury. In later years Paracelsus, Ramazzini, and many other notable writers preceded the authorities of today.

It is suggested that accident proneness may be detected in school children and will accompany them through life. Other characteristics of mental and physical constitution may be noted in youth and may perhaps be of value, even at an early age, in judging suitability for work. The writer has also described the commonest disabilities and has noted the types of employment that cannot be undertaken with these. In discussing fatigue, Koelsch notes that it is harmful when the point of exhaustion is reached, which may occur in the young, the ambitious, or in those anxious about supporting their families. Such fatigue may fall on part of the body only, which is an implied criticism of the working conditions demanding enquiry by the employer.

Working places should have roofs not under 3 metres in height, and 2 square metres and 10 cubic metres are the minimum needed for each worker, assuming not less than three air changes an hour.

Night work in general is condemned though certain occupational groups such as writers, type setters, artists, and those doing fine mechanical work may work better at night.

The chapters dealing with accidents and with various forms of industrial poisoning are well arranged, and there is a useful table of the common industrial solvents, in which boiling points and explosive concentrations are given. Some attention is given to the parasitic diseases occurring in industry. In 1900–20 more than 20,000 workers in the Ruhr were infected with ankylostomes, but an intensive campaign has almost eliminated the disease from this area.

An account of social insurance and of the law concerning employment in Germany is given at the end of the first volume.

In his second volume Koelsch considers in detail the hygiene of various occupations. He includes many which are rarely considered in English textbooks. Among these are gardening and viticulture, forestry,