

freedom from diseases of the respiratory organs. Differences in food or housing accommodations can not account for the comparative freedom of these classes from pulmonary disease."

The causal relation of foul air to tuberculosis is shown by the fact that since the British government has paid attention to air space and ventilation the death rate from consumption among the soldiers, sailors and prisoners which was formerly excessive is now considerably less than among the civil population.

The dangers of sewer air are being revived again by recent experiments of Horrock's at Gibraltar, which gave results at variance with those obtained by Laws and Andrews. He found that specific bacteria present in sewage may be recovered from the air of drains and sewers, even when the sewage is flowing smoothly and without splashing. He believes that they may be ejected into the air by: (a) the bursting of bubbles at the surface of the sewer, (b) the separation of dried particles from the walls of the sewers and pipes, and probably (c) by the ejection of minute droplets from flowing sewage.

A similar explanation was offered by Uffelmann over twenty years ago and Horrock's experimental data, which also showed that the disconnecting trap on a house drain prevents the passage of bacteria present in sewer air into the house drains, will naturally tend to revive the opinion, formerly held, that sewer and drain air may be the means of spreading infectious diseases unless the house drain and fixtures are properly trapped.

The section on vitiation of air in industrial occupations is very complete and the table on page 182, giving the comparative mortality figures for males engaged in different dust-inhaling occupations shows conclusively that the hard, sharp and angular fragments of mineral and metallic dust are especially calculated to cause irritation and abrasions of the respiratory passages and thus favor the invasion of the tubercle bacillus and also the production of other diseases of the respiratory organs in general.

The book is accurate and up to date in every

respect and can be confidently recommended to all interested in hygiene and public health.

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*Soils and Fertilizers.* By HARRY SNYDER, Professor of Agricultural Chemistry and Soils, University of Minnesota. Third edition. 8vo, 350 pp. New York, The Macmillan Company. 1908.

The first edition of Snyder's book, then entitled "Chemistry of Soils and Fertilizers," was at the time of its publication in 1899 a most welcome addition to the libraries of teachers of agriculture. It gave in logical and systematic form a brief course in agricultural physics and chemistry, and in the practise deducible therefrom, and was widely used in our agricultural colleges by both students and teachers. But the rapid advance of agricultural science made it advisable to publish a revised second edition in 1905, without, however, materially increasing the length of the text. In the new, third edition we have instead of the 287 pages of the previous editions, 344 pages, slightly smaller than before.

The increase is partly due to the addition of illustrations, as in the excellent chapter on laboratory practise, which has been enlarged from 13 to 19 pages, and forms one of the most useful features of the book for the guidance of teachers, who often fail to illustrate the facts and principles of their course in a manner both attractive and profitable to their students. Many of these experiments and apparatuses are original with Snyder, and very cogent. The twelve pages of review questions, also, are very well calculated to impress upon the student the practical applications of what is brought before him during his course, and to induce attention in advance of the final examination, in place of the "cram" so commonly indulged in at the end of the session.

The body of the text itself has been thoroughly revised so as to include the results of the latest researches in the agricultural field, and one recognizes plainly the ring of the diction of one who knows whereof he speaks from personal investigation. This influence, difficult to define exactly, is nevertheless most

potent in securing the interest and attention of students, who instinctively recognize the difference between the teacher who merely transmits what others have said and done, and the one who as an active investigator has increased the store of knowledge.

Snyder's important researches on humus and the nitrogen of soils are well summarized and render this portion of the book especially valuable and complete, in showing quantitatively the increase and decrease of nitrogen under different methods of culture, largely on the basis of investigations made by the author himself. The entire subject of soil fertility and fertilization is so comprehensively yet briefly treated, that while nothing really essential is omitted, one is forcibly struck with the immensity of the field, and the total inadequacy of the time and preparation usually bestowed upon it even by those who are attempting to prepare themselves to be active workers in experiment stations. The one-sidedness and narrowness of the ordinary course of preparation for such activity is strongly emphasized by what, for brevity's sake, Snyder has to leave unsaid in this excellent book. But the practical applications of the facts and principles given are so well interwoven with the latter that "a peg is struck" in connection with each, in the mind of the reader or student, and will strike the practical farmer as well. To both classes of readers, and more especially to teachers of agriculture, this volume will be most welcome and useful.

Intended as the book is mostly for the temperate humid region, its omissions as concerns the arid region and the tropics are perhaps not a fair subject for criticism. The index is somewhat scantier than it should be for convenience of reference, when such subjects as alluvium, subsoil, leaching of soils, root penetration and others of similar importance, can not be conveniently located by its aid.

E. W. HILGARD

*The New Physics and Its Evolution.* By LUCIEN POINCARÉ. Authorized translation. Pp. 344. New York, D. Appleton & Co. 1908.

Professor Poincaré says in his preface:

It has occurred to me that it might be useful to write a book which, while avoiding too great insistence on purely technical details, should try to make known the general results at which physicists have lately arrived, and to indicate the significance of the recent speculations on the constitution of matter and of the recent discussion of first principles.

One of the most interesting things to the physicist in this book is the author's insistence on the atomic theory as a fundamental principle which he would place on a par with the principle of the conservation of energy and the principle of Carnot and Clausius (the second law of thermodynamics). Indeed, it may be said, using the author's words, that the atomistic synthesis, but yesterday so derided, is to-day triumphant.

Professor Poincaré is one of the leading exponents of the view, which has always been held by the experimentalist, that the truth of a theory is solely its availability for use, and the value of Professor Poincaré's recent books lies to a great extent in the manner in which he sets this view before that great body of insistent and shameless theorists, the general public.

The scope of Professor Poincaré's book is sufficiently indicated by the above extract from his preface, and its quality is sufficiently indicated by the statement that it has an interest to the physicist and a value to the general reader. Let us, therefore, return to the paradoxical statement concerning the general public, our persistent and contented theorists, and let us illustrate by taking an example which every one should be able to appreciate. It is very well for a sailor, perceiving that the wind blows, to set his sails accordingly; and he usually knows well how to do it. But a sailor's grandson who sets himself to studying the wind, let him be careful how he uses the idea which pervades this simple perception.

Even the apparently steady flow of a great river is an endlessly intricate combination of boiling and whirling motion; and the jet of spray from