Under the general head of 'ether-waves,' the unity of the so-called heat, light, and actinic rays is explained. The theory of exchanges, and Stokes's law, are considered. The treatment of color is extremely satisfactory. The origin and propagation of ether-waves, reflection, refraction, and polarization, together with the postulates of Fresnel, Neumann, and MacCullagh, occupy considerable space. All of this precedes what is generally known as geometrical optics, which is not elaborately discussed. In double refraction the Huyghenian construction is given, and the study of optical instruments is remarkable for its brevity.

Electricity and magnetism are provisionally defined as properties or conditions of matter, the matter referred to being that extraordinary form known as the ether. Just enough in the way of experiment is given to enable the student to understand the development of the principles of the subject, which are established under the assumption that he has mastered the chapter on attraction, potential, etc., already referred to. Some of the notable features of this part of the work are more than ordinarily intelligible discussions of thermo-electricity, Peltier's and Thomson's 'effects,' the presentation of Maxwell's theory, with his electromagnetic theory of light, and brief mention of Rowland's, Kerr's, and Hall's experiments. There is also a comparison of units in the electrostatic and electromagnetic systems, and a discussion of the meaning and value of the constant v. The arrangement of topics in electricity and magnetism may be criticised, in that it would seem desirable to have introduced the subject of magnetism and magnetic potential at an earlier stage, thus making possible an earlier exposition of the origin of the electromagnetic units of measure.

In connection with the matter of units, it is worth while to remark, that throughout the work the author has felt constrained, possibly out of respect for an unwholesome English prejudice, to make frequent use of the foot, inch, pound, ounce, grain, etc. It is, perhaps, hardly fair to expect an English author to adhere strictly to the use of the metric system; but in the present instance the confusion of the units is a blemish all the more noticeable by reason of the otherwise simple and elegant methods of treatment. Clumsiness of statement and solution is frequently the unavoidable result. No evidence of this is needed; but it may not be amiss to quote from so conservative a source as Thomson and Tait (Nat. phil., art. 408), who, although selecting the foot as being 'for British measurement generally the most convenient,' remark, that "the British measurements of area and volume are infinitely inconvenient, and wasteful of brain-energy and of plodding labor. Their contrast with the simple, uniform metrical system of France, Germany, and Italy, is but little creditable to English intelligence."

Not the least remarkable feature of the book is, that its author is a lecturer in a medical school, and it "was primarily designed as a contribution to medical education."

Altogether the book must be regarded as one greatly in advance of those of a similar grade generally in use. It is not intended as a substitute for a laboratory and laboratory practice, for no book can be this; but it is admirably adapted for a preparation to a laboratory course, in that it furnishes the student with such "a store of general principles, that, when he comes to enter a physical laboratory, he may then find around him, in the concrete form, a collection of pieces of apparatus the construction and the action of which he is able, by the application of principles already familiar to him, promptly and intelligently to comprehend."

The belief that such a text-book will be gladly welcomed by many teachers of physics in this country may justify the somewhat extended reference to its character and contents, given above.

PROPAGATION OF TUBERCULOSIS.

The influence of heredity and contagion on the propagation of tuberculosis, and the prevention of injurious effects from consumption of the flesh and milk of tuberculous animals. By A. LYDTIN, Carlsruhe, veterinary adviser to the Baden government; G. FLEMING, LL.D., F.R.C.V.S., principal veterinary surgeon to the British army; and VAN HERTSEN, veterinary surgeon, and chief inspector of the Brussels abattoir. New York, *Jenkins*, [1884]. 175 p. 8°.

THIS volume is a translation, by one of the committee upon its preparation, of a report prepared for discussion at the International veterinary congress, held at Brussels in September, 1883. The question of the etiology of tuberculosis is one of the most important of modern medicine, and occupies the attention of a large part of the profession to-day. Its importance is not confined to the human race, in so far as it attacks mankind; but, be-

ing so wide-spread among domestic animals, it necessarily affects humanity in this direction also.

The report before us is a valuable summary of the condition of scientific knowledge at the present day, upon this question, in its relationship to domestic animals, and, through them, to mankind. It begins with an account of the nomenclature of the disease from the earliest times to the present, discusses the best means of diagnosis, the course and the anatomical appearance of the disease. In regard to the latter point, the conclusion already generally accepted by medical men is reached, that the 'criterium' of the disease must be sought in the irritant which causes it, and that this irritant is found in the bacillus of Koch. In connection with this portion of the report, there is a very good discussion of the predisposing causes of the disease (pp. 35–49), followed by a consideration of the animals (other than cattle) that are known to be subject to attack by it. The conclusion is reached, after all this, that "tuberculosis is, of all maladies affecting the domesticated animals, that which is the most wide-spread, and which, of all others, most deserves the qualification of 'panzooty.'"

The second chapter of the book is devoted to a consideration of the question, "What is the influence of heredity on the propagation of tuberculosis?" (pp. 55–68.) After the consideration and quotation of many cases and authors, a number of conclusions are reached, of which the last seems to contain the essence, — "that tuberculous parents may transmit to their progeny a predisposition to tuberculosis."

The second question, "What is the influence of contagion on the propagation of tuberculosis?" receives very thorough consideration. A large number of authors — from Ruhling in 1774, to Villemin and Koch in our own day — are cited to prove the contagious nature of the disease. A summary of the reasons for the opinion that animal and human tuberculosis are one and the same is given (pp. 85–98); and this portion of the work is concluded by a short *résumé* of Koch's labors on this disease.

The discussion of the third question, "What are the preventive measures which should be had recourse to, in order to arrest the injurious effects which may result from the use of the flesh and milk of tuberculous cattle?" is opened with a review of the ancient laws against the use of diseased meat, together with some account of the various attempts made in more recent times to regulate this traffic.

The two plans for the regulation of the sale of diseased meats are thus summarized: "*a*, All preventive measures may be reduced to the simple advice to cook the flesh well before eating it; and, *b*, Flesh of tuberculous animals should be confiscated, either in every case, or in certain circumstances." The first method of procedure is unsafe; because, in the first place, it would probably not be thoroughly done, and, in the second place, a recommendation alone would not influence in the least those who are in the habit of eating raw or almost raw meat (a common practice in Central and North Germany). The objections to, and the difficulties in the way of, the adoption of the second method, that of regulation, are mentioned, and discussed in an exhaustive manner; the effect of laws of partial or complete confiscation of affected animals is shown; the action of 'warranty' laws upon the morals of the butcher and owner, and the general effect of any attempt at regulation upon the cupidity of owners and of all concerned, are well illustrated.

A number of recommendations to the congress are made for adoption, too long for quotation, but seemingly based upon a firm ground-work of knowledge and experience. The report was brought on for discussion at so late a period in the session that not much was done in this direction. The sense of the meeting, however, seemed to be, that some law should be framed, restricting at least the sale of the meat of animals affected with tuberculosis.

The report, as a whole, contributes nothing, from an experimental point of view, to our knowledge of this disease, but, as before stated, is a very complete *résumé* of the question as it stands to-day in its hygienic and pecuniary relations. It will be of interest and importance to all veterinarians, as a summary of the knowledge thus far obtained, and as an index to the original sources from which this knowledge may be drawn. To scientific men actually engaged in the working-out of the problem of the etiology of tuberculosis, it can be of interest only as presenting the case from the veterinarian's stand-point.

The book is well gotten up, and clearly printed, but few errors having escaped the eye of the proof-reader. For ourselves, we should prefer *cyst* to *kyst*. The addition of an index would have made the book more serviceable to the general reader, and for purposes of reference.