so well known to electro-chemists, that but a brief allusion to the contents as a whole is necessary here. The well-balanced chapters deal with the fundamental principles, historical development, theory of electrolytic dissociation, migration of ions, conductance of electrolytes, electrical endosmose and electrostenolysis, electromotive force, electrolysis and polarization, a supplement on accumulators and an appendix describing the scheme of notation employed.

As to the way in which these are handled, the English is above criticism and the presentation is lucid and comprehensible to the last degree. There is nowhere the slightest chance for misunderstanding the writer's ideas, whether one accepts them as a finality or not. As a presentation of the fundamental facts and the prevalent theories of electrochemistry, the work is probably without an equal, certainly without a superior. As prices go, the book is much cheaper than usual—an additional recommendation, probably ascribable to the broad views and sound commercial instincts of the translators and publishers.

As to the plan of the work, the theory of electrolytic dissociation is followed consistently throughout. We regret to say, however, that although so praiseworthy in other respects, the form of statement in terms of the theory is not always free from objection, and to give the student an unbiased, absolutely unobjectionable idea, would need revision by the teacher. To illustrate: "*The value 13,700 calories then really represents the heat of dissociation of water*" (p. 134). The statement should certainly have been qualified by saying *electrolytic dissociation,* or even *ionization,* for *dissociation;* otherwise, the statement as it stands, is certainly incorrect.

A series of inconsistencies is caused by following in too uncritical a spirit the teachings of the dissociation theory. Thus, on page 94 we have:

*The degree of dissociation of a substance in solution is equal to the ratio of its equivalent conductance in that solution to its equivalent conductance in a solution of infinite volume.*

But on page 148, discussing the di-electric constants of solvents, we have:

From this fact it follows that it is inadmissible to draw a conclusion, as often has been done, regarding the degree of dissociation from the value of the equivalent conductance alone.

Such inconsistencies (and there are others of analogous character) are the chief defects of the book. The tenets of the dissociation theory are laid down with emphasis, usually in italics, as above, and then later the experimental facts which negative some of those statements are either not mentioned, or mentioned with very slight emphasis, or else freely admitted, and yet their full import and effect glossed over. There is in many cases an apparent willingness to admit facts contrary to the tenets of the dissociation theory, and yet such facts are not pushed to their full, legitimate conclusion.

All of this shows that the theories of electrochemistry are in a state of transition; even the teachers with the best of purposes to see all sides are sometimes staring at one side and blinking at the other. The perfectly judicial attitude of mind is, at present, difficult if not impossible to preserve. A few years will see a new era of electrochemical theory and teaching, wherein the student is nurtured as a plain eclectic, keen to see and quick to admit the truth wherever and in whatever guise he finds it.

Are we speaking of an unattainable millennium? We hope not.

JOSEPH W. RICHARDS

*Tropical Medicine.* By THOMAS W. JACKSON, M.D.

The acquisition by this government within the last few years of the Philippine Islands, Puerto Rico and the Panama Canal District, and its necessary sanitary supervision over Cuba in its relation to yellow fever, have made the study of tropical diseases one of great interest and, especially for the physicians of the southern states, one of practical necessity, for as our knowledge of these so-called tropical

diseases increases, we find that not only are they to be found in the tropics, but also to a greater or less extent in our own country.

The book is divided into several parts, beginning, of course, with the usual introduction, but in this case including a discussion of tropical hygiene. The treatment of this subject denotes a familiarity with conditions as found in the tropics obtained only by experience, and if the advice given were followed, it would materially decrease the amount of sickness and the number of deaths occurring among those living there.

That portion of the book which treats of mosquitoes, though brief, is well worth studying for those likely to be brought into contact with either malaria or yellow fever.

The book is written in a narrative style, the usual text-book description of the subjects being given, but with sufficient personal experiences interspersed to lend an added interest to the subject under discussion.

The book is divided into three parts, the first part dealing with "Systemic Diseases (Chiefly Bacterial in Origin)." This section is mainly concerned with a discussion of the infectious diseases.

Under the heading of Cholera, the description of bacteriologic technic to be used for diagnostic purposes is faulty and not clear, and leaves the impression that a mere novice could make a diagnosis, whereas, as is well known, cases arise which offer great difficulty, from the presence of other spirilla giving similar reactions and only differentiated by agglutination or animal experiments. The author lays considerable stress on the use of the anti-cholera serum prepared by the Japanese, which, he says, has an anti-toxic action.

It is surprising to note, as is stated, that Haffkine's prophylactic had never been used as a curative agent for plague; its use for such a purpose would certainly seem contra-indicated. Under the same heading, the author recommends for the agglutination test that "the serum be diluted with normal salt solution to a proportion of 1:3." It is very doubtful whether agglutination obtained with such a dilution would be of any value.

The chapter on malaria is written in a more detailed way than those on the other diseases.

The author apparently believes in the infectious nature of beri-beri, accepting the work of Wright, though giving rather full abstracts of the report of Baron Takaki of the Japanese navy, who ascribes the marked decrease in the number of cases in the Japanese navy to a change of diet consisting of the addition of barley and an increased amount of meat to the usual rice diet.

In the chapter on yellow fever, considerable space is justly given to the work of Reed, Carroll, Agramonte and Lazear, composing the board appointed by the government for the study of yellow fever.

The second part is taken up with a discussion of diseases produced by animal parasites. The chapter on ankylostomiasis is excellent, the author here again detailing his own experiences. The remainder of this section is taken up with a discussion of filariasis, trypanosomiasis and those diseases produced by parasites peculiar to the tropics.

The third part treats of diseases of undetermined causation and of the skin. Under this heading is to be found a brief description of such diseases as acute febrile icterus, mycetoma, tropical splenomegaly and of some of the parasitic skin diseases.

At the end is a list of articles recommended for diagnostic purposes which would undoubtedly be of great value for any practising physician.

A perusal of the book would be of benefit to any one likely to come into relation with tropical diseases.

James W. Jobling
Rockefeller Institute for Medical Research

## *Discussion and Correspondence*

### On the Effects of Magnesium Sulphate on the Growth of Seedlings

A recent issue of Science contains a letter from Professor Oscar Loew, which, for some unaccountable reason, is entitled "a correction." I have read the letter carefully several