bodies the various classification systems which have been advocated by American writers, and, in addition, presents a very conveniently arranged list of varietal names and so far as identified places them in the various classification systems under their group names. This should prove of no little convenience to those interested in the subject.

The three chapters devoted to "Climate, Soils and Rotations," "Manures and Fertilizers," and "Planting," are excellently treated, the suggestions being clear, concise and practical. In the opinion of the writer, the value of the subject-matter in these chapters would have been enhanced by a few well-selected illustrations of potato implements and cultural methods. The discussion of potato diseases and their control is clear and convincing and should prove very helpful to both the farmer and the student. A chapter on "Markets, Marketing and Storage" is both suggestive and helpful, as is also that on the cost of growing potatoes.

As a whole, the book is unique, in that it is strikingly devoid of illustrations, as compared with most of the recently published agricultural text-books. It is a welcome addition to our present text-books on the potato, and should find a place in the classroom of agricultural schools and colleges.

WM. STUART

Health and Disease: Their Determining Factors. By ROGER L. LEE. Little Brown, Co., 1917. $1.75.

This book gives a very pleasing presentation of the factors of health and disease in strictly non-technical language. The author has successfully and very commendably avoided a consideration of the treatment of ailments, and has emphasized throughout the preventive measures which may be performed, or encouraged by the cooperation of the layman. The most reprehensible thing in the book, from the reviewer's view-point, is the title of Chapter XII., "The Air-borne Diseases!" After the struggle that has been, and is being made to disillusion the popular mind of the idea that air is an important conveyor of disease, it is a misfortune to use this phrase in any sense. The author goes to some pains to explain that he includes under this term chiefly "droplet" or mouth-spray infection, but the use of "air-borne" throughout the book is bound to nourish the age-old fallacy.

The first nine chapters consider chiefly matters of personal hygiene, the next nine, communicable diseases, and the last six, matters of general sanitation. The sequence and point-of-view throughout are good. Specially to be commended are the chapters on Alcohol, Tobacco and the Habit-forming Drugs and on the Venereal Diseases and Sex Hygiene.

There are a good many minor criticisms which might be made, as, for example, the loose use of the term antitoxin on page 173, speaking of the "*Spirochæta pallida*" instead of *Treponema pallida,* the sentence "'Red flap' is caused by a ringworm which is really a vegetable bacterium" (p. 243), and the statement that "tubercle bacilli are only present in milk when there is tuberculous disease of the udder" (p. 306).

The book contains 378 pages, is printed on rough paper in good print and is amply indexed. There are no cuts or diagrams in the book and no specific references are given. It is to be most cordially recommended to the lay reader and might find a useful place as a text in a general elementary college course in hygiene and sanitation, and should certainly be on the desk of every teacher of biology and hygiene.

CURTIS M. HILLIARD
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SPECIAL ARTICLES

A NOTE ON THE EFFECT OF ASPHYXIA AND AFFERENT STIMULATION ON ADRENAL SECRETION

RECENT observers have expressed some doubt as to the effect of asphyxia and afferent stimulation on the secretion of the adrenal glands. Under the circumstances it is desirable to have simple methods which any one may use to demonstrate the effect. During the past few months, with the aid of Mr. H. F. Pierce, I have devised such methods.

If both carotid arteries, both subclavian arteries and the aorta just anterior to the inferior mesenteric artery are tied, and the

nerves accompanying the cœliac axis and the superior and inferior mesenteric arteries are then carefully severed, a rise of blood pressure taken from the carotid must be mainly due to contraction of the splanchnic area which is now denervated. If a vigorous cat is operated upon in this way under light urethane anesthesia, asphyxia for one minute will result usually in a rise of blood pressure at the end of forty seconds and a very considerably greater rise as soon as respiration begins again. These results do not occur if the adrenal glands are removed. If these glands are left in the body, but disconnected from the central nervous system, a rise of pressure may still be produced if the asphyxia is continued for a considerably longer period than is required when the splanchnic nerves are intact.

If the heart is completely denervated by severing both vagi in the neck and removing both stellate ganglia, it becomes a very delicate indicator of increased adrenin in the blood. Stimulation of the central end of the cut sciatic nerve (in a cat under urethane) will then cause the heart rate to increase, in some instances 50 beats a minute. The phenomenon does not occur if the adrenal glands are removed or if the splanchnic nerves are cut. The method is advantageous in that it shows the latent period and the duration of the secretion. The effect on the heart of asphyxia is not so great as the effect of afferent stimulation, in all probability because of the antagonism between the influence of carbon dioxide and of adrenin.

A great deal of care must be taken in operating on the abdominal cavity to avoid manipulation. As was shown many years ago, such operations produce changes which can be best accounted for by continuous discharge of the nerve impulses along splanchnic courses. Thus the adrenal glands would be persistently stimulated. A potent source of error in previous work, in which the abdominal cavity has been opened, has doubtless been the failure to exercise extreme care to avoid rough manipulation.

A full account of this investigation will be published in the *American Journal of Physiology*.

W. B. Cannon

SOCIETIES AND ACADEMIES

THE BIOLOGICAL SOCIETY OF WASHINGTON

The 567th regular meeting of the society was held in the assembly hall of the Cosmos Club, Saturday, March 10, 1917, called to order by President Hay at 8 P.M., with 45 persons in attendance.

On recommendation of the council Mrs. L. O. Howard and Dr. Martha Brewer Lyon were elected to active membership.

Under the heading book notices, brief notes, etc., Dr. H. M. Smith exhibited a manuscript and hand-illustrated book dealing with beetles. It was about 60 years old. Dr. Smith presented it to Dr. L. O. Howard. Professor W. P. Hay presented some notes on the flying squirrels of this vicinity with observations on their habits and behavior as pets. Dr. H. E. Ames called attention to a newspaper clipping recording the flight of two tagged ducks a distance of 2,000 miles in about 60 hours. He sought verification of the statement.

The regular program consisted of two communications:

Precipitins: M. W. Lyon, Jr.

Dr. Lyon described an anti-beef serum he had lately prepared, and set up a series of test tubes containing dilutions of beef, sheep, hog and human serums, and demonstrated the action of the anti-beef serum on these, viz., specific precipitation when added to the diluted beef serum, group precipitation with diluted sheep serum, and the non-precipitation with diluted hog and human serums. He mentioned briefly the history and theory of precipitating serums and explained their use in identifying suspected animal proteins and in showing the blood relations of various animals. In discussing this communication A. H. Jennings explained how he had made use of the precipitin reaction in determining the kinds of animals bitten by biting flies. Dr. George W. Field and H. F. Taylor also took part in the discussion.

Porpoises and Steamers: William Palmer.

Mr. Palmer commented on the frequency with which porpoises are found about the bows of steamers and advanced explanations as to their presence there and methods of progression. His communication was illustrated by diagrams and lantern views of porpoises and other cetaceans. It was discussed by Dr. H. E. Ames.

M. W. Lyon, Jr.,
Recording Secretary