DISCUSSION AND CORRESPONDENCE

CHARCOAL ACTIVATION

At the thirty-sixth general meeting of the American Electro-Chemical Society held in Chicago in September, N. K. Chaney presented a paper on charcoal activation in which he states that the general theory *in its complete form rests* upon two postulates, one of which is "that elementary carbon (other than diamond and graphite) exists in two modifications, 'active' and 'inactive' or *alpha* and *beta*."

It would seem from data obtained here that the definitions of active and inactive would need to be modified before this classification can have any meaning, since charcoal can be made which is the reverse of other charcoals in that it is relatively more active for hydrogen than for nitrogen as shown by the following data:

Each of the volume measurements given were calculated from pressure readings and are reduced to normal pressure and temperature. The amount of charcoal used in each case was 25.7 gms. and this was left at liquid air temperature until saturated. The gases were used separately and not as mixtures.

Charcoal	Initial Volume	Volume of Hydrogen Adsorbed	Volume of Nitrogen Adsorbed
Usual type.....	926 c.c.	914 c.c.	926 c.c.[1]
Usual type.....	1,780 c.c.	1,657 c.c.	1,780 c.c.
New sample 1....	926 c.c.	907 c.c,	666 c.c.
New sample 2....	926 c.c.	900 c.c.	755 c.c.
New sample 3....	926 c.c.	874 c.c.	406 c.c.

The difference in treatment of the last three samples was slight yet Sample 1 shows figures lying on the outside of those for Sample 2, *i. e.*, the figures of Sample 1 have approached each other for Sample 2. Much more striking samples can no doubt be prepared.

A report of this work will be published when completed but this will serve to point out an apparent incompleteness in the theory set forth by A. B. Lamb[2] and by N. K. Chaney.

[1] Not saturated in this particular case.

[2] *J. Ind. and Eng. Chem.*, 1919, 11, 420–467.

The author is indebted to Dr. H. B. Lemon for valuable advice and assistance in this work.

H. H. Sheldon
The University of Chicago

AGED BEAN SEED, A CONTROL FOR BACTERIAL BLIGHT OF BEANS

During the progress of the investigational work on bacterial blight of beans (*Bacterium phaseoli* E. F. *Sm.*) at the Oklahoma Agricultural Experiment Station many measures for control were attempted. The most successful method so far evolved is that of eliminating the disease by the use of aged seed. It was known that the causal bacteria could be cultivated from infected seed for only a limited time.

With this fact in mind the infected seed raised in our experimental plots each year was saved and stored. Seed four and five years old has never produced blighted plants but the percentage of germination has been so low as to prohibit its use under actual farming conditions. Two- and three-year-old seed has with one exception given blight-free plants. This one exception occurred early in the work and in view of later results must be ascribed to accidental infection.

Results secured indicate that the use of two- and three-year-old bean seed furnishes blight-free plants when planted upon uninfected land and at a sufficient distance from other bean patches to insure no accidental infection. Such seed moreover has a sufficiently high percentage of germination to make its use practical under actual farming conditions.

The results of the investigational work which have been completed will be published in the near future.

C. W. Rapp
Department of Horticulture,
A. & M. College,
Stillwater, Oklahoma

NOTE ON THE FLAGELLATION OF THE NODULE ORGANISMS OF THE LEGUMINOSÆ

In again taking up the question of flagellation of the nodule bacteria, the findings re-

ported in a previous paper[1] are confirmed. Proven cultures from *Vigna sinensis* and *Glycine hispida* were repeatedly stained and examined, the organisms in every trial being found to have a single polar flagellum.

Attention was then turned to the organisms, which had before given unsuccessful stains owing to the more abundant slime production. Pure cultures isolated from the nodules of *Trifolium pratense, Vicia villosa,* and *Melilotus alba* were tried, this time successfully, though the staining of these organisms is obviously more difficult and uncertain. The bacteria in every case were found to be peritrichous. It was further noted that whereas the organisms of *Vigna* and *Glycine* have a very stout flagellum, the flagella of the organisms from *Vicia, Trifolium,* and *Melilotus* are much finer.

This confirms the work of De Rossi, Kellerman, Zipfel, and Prucha (but one convincing photomicrograph exists, that by De Rossi of *Trifolum repens*), and attention is called to the fact that these workers devoted their efforts to the more slimy group, *i. e., Vicia, Trifolium, Pisum, Phaseolus, Medicago.*

It is now evident that on the basis of flagellation, the nodule bacteria are to be divided into two distinct groups; the *Glycine-Vigna* group, and the *Trifolium-Vicia-Melilotus* group. Further observations confirming this grouping and dealing with cultural and physiological characteristics as well as with the systematic position of these and related organisms, will be the subject of a paper entitled, "The Nodule Bacteria of Leguminous Plants" soon to be published by Lohnis and Hansen.

ROY HANSEN
ILLINOIS AGRICULTURAL EXPERIMENT STATION

THE SUPPOSED SCALES OF THE COTTID FISH JORDANIA

THE Cottidæ are in general scaleless, but the rare fish *Jordania zonope* Starks, from Puget Sound, is said to have the body above lateral line closely covered with ctenoid scales. Dr. D. S. Jordan has very kindly sent me fragments of one of the cotypes and the appearance is exactly as described. But when the material is treated with hot caustic potash, it is found that the apparent scales are nothing more than rows of strong ctenoid spines, placed as they would be in true scales. In the dorsal region the rows are curved as they would be were they margins of ctenoid scales. In the presumably related fossil *Lepidocottus brevis* (Agassiz), from the European Miocene, the ctenoid elements are as in *Jordania,* but the complete scales are present, with the circuli and basal radii as usual. It must be supposed that *Jordania* came from such an ancestor, and represents the survival of certain elements of scale structure without the scales, something like the grin of Lewis Carroll's Cheshire cat.

T. D. A. COCKERELL

[1] Ill. Agr. Exp. Sta. Bul. 202.

REPORT OF THE COMMITTEE OF THE AMERICAN CHEMICAL SOCIETY ON THE PREPARATION OF A LIST RECOMMENDING CHEMICAL TEXTS FOR LIBRARIES

ON January 15, 1919, announcement was made of the appointment of Messrs. W. A. Hamor, A. M. Patterson, and L. C. Newall, as a committee for the preparation of a text for the use of librarians, in recommending books for the chemical reading of the public, in accordance with the suggestion submitted to President Nichols by Mr. Joseph L. Wheeler, librarian of the Youngstown Public Library, Youngstown, Ohio. Following the presentation of its preliminary report[1] at the Buffalo, N. Y., meeting of the society, the committee membership was strengthened by the addition of Mr. Wilhelm Segerblom.

The study of the needs of librarians which was conducted by the committee at the inception of its work, made it clear that what was most desired was an authoritative series of *reading courses,* and not a mere book-list, on chemical subjects. In fact, Mr. Wheeler formally requested a mode of presentment consisting of running texts so prepared that the

[1] See *J. Am. Chem. Soc.,* 41, 95–96 of *Proceedings.*