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.

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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.

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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-