were vitally interested the story of his connection with it might have been different. As it was Ohio saw adjoining states rapidly developing their mineral resources as the result of geological surveys while her own organization seemed to be producing only beautifully illustrated volumes concerning fossils.

There are enough sins legitimately left at the door of state and national legislatures, in connection with their dealings with science, without adding to their number the failures and mistakes which should really be charged to men of science themselves.

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NOVEMBER 7, 1922

THE COLLOIDAL STATE

EDITOR OF SCIENCE: It seems that one important basis of the anomalous behavior of matter in the colloidal state of subdivision lies in the fact that, in the colloidal zone, increase in dispersion is accompanied by a disproportionately large increase in kinetic activity of the ultramicrons, which reaches an extreme at atomic or molecular dispersion. The speed of motion of ultramicrons is itself the resultant of several factors (including size, temperature, viscosity of dispersion medium, concentration, free electronic fields, etc.), but it probably exercises a very considerable influence in reactions where colloids are involved, *e.g.*, diffusion, adsorption, enzyme action, etc.

For some time I have been accumulating data bearing on this question, and would be pleased to hear from any readers of SCIENCE who know of pertinent experimental facts. Thus Zsigmondy ("Colloids and the Ultramicroscope") has given the size of certain gold ultramicrons and their relative amplitudes of motion. Ultramicrospic examination indicates that gel formation involves aggregation with cessation of visible kinetic activity, and the zone of maximum degree of colloidality (J. Alexander, *J. Am. Chem. Soc.*, 43, p. 434, 1921) may be that zone where the curve of free surface plotted against particle size, approaches and crosses the curve of kinetic motion plotted against particle size.

An investigation will also be made of the variations in size of ultramicrons and ultramicroscopic activity with changes in free acidity (H-ion cencentration or p_H value).

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NOTE ON THE FUSARIUM WILT DISEASE OF BANANAS

IN the journal, *Phytopathology*, of September, 1919[1], Dr. E. W. Brandes described in detail his out-door pot inoculation experiment, demonstrating that *Fusarium Cubense*, E. F. Smith is the cause of the very destructive wilt disease of the banana, heretofore generally known as the Panama disease. Since then there has been published in Java a paper by E. Gaumamm on a vascular disease of the banana[2], in which the author attempts to discredit the work of American investigators of this disease, but particularly that of Dr. Brandes. In a statement by Brandes, of which the writer has a typewritten copy, he reviews Gaumamm's paper and points out various errors and confusion of facts. As the writer, while connected with the United Fruit Company, recently conducted an experiment of exactly the same kind as the one by Brandes above mentioned, it may be important to those interested to briefly describe this experiment and the results. The experiment was made just outside the Company laboratory, in Changuinola, state of Bocas del Toro, Panama. In this case the common Gros Michel banana was employed, instead of the variety Chamalucco employed by Brandes. Otherwise the two experiments were almost perfectly parallel except as to locality.

This experiment was begun November 1, 1921. Twenty-five cement pots were employed, set in corresponding holes in the ground, and

[1] Brandes, E. W., Banana Wilt. *Phytopath.* 9. No. 9, pp. 339-389, pl. 22-34, 1919.

[2] Gaumamm, E., Over een bactericele Vatbundelziekte der bananen in Nederlandsch., Indie. Meded. V. H. Instituut V. Plantenziekten, No. 48, Dept. N. Landbouw, Nijverheid en Handel, pp. 135, pl. 8, 1921.