

Cross inoculations from forms on fruits seem to indicate that the fungus may soon adapt itself to a different host and after a few generations develop about as readily on one fruit as another. All are perhaps only slightly specialized physiological forms of one omnivorous species.

A Bacterial Gall of the Daisy and its Relation to Gall Formations on Other Plants: Dr. C. O. TOWNSEND, Bureau of Plant Industry.

In 1904 some Paris daisy plants affected with galls of different sizes were received from a commercial grower of this plant in New Jersey. Work upon the cause of these gall formations and their relation to similar abnormal growths upon other plants was undertaken by the writer in cooperation with Dr. Erwin F. Smith, in charge of the Laboratory of Plant Pathology. Much of the technical work in connection with the problems investigated has been performed by Miss Nellie A. Brown, scientific assistant in the Laboratory of Sugar Beet Investigations.

After repeated efforts an organism was isolated from the galls, which had the ability to induce the formation of new galls upon healthy plants when inoculated into the stems and branches or even into the leaves of healthy daisy plants. From these galls formed by inoculation, the organism has been isolated and the process of inoculation repeated until no doubt remains regarding the cause of the gall formations.

The organism which produces these growths is a short rod, motile, possessing from one to three polar flagella, non-gas forming, and does not cloud bouillon heavily. On agar plate cultures the colonies come up slowly, usually in from three to five days, at a temperature of 25° C. The surface colonies are translucent white, round, with entire margins, smooth and dense. The growth is viscid on agar streak cultures after three days. The organism blues litmus milk, does not liquefy gelatin and does not grow at blood temperature in either agar or bouillon cultures. It will grow slightly at a temperature below 0° C.

The daisy organism will produce galls upon a large number of other plants, including tomato, potato, tobacco, sugar beet, hop, carnation, grape, raspberry, peach and apple. This work has led to the isolation of pathogenic Schizomycetes from the galls of peach, hard gall of apple, hairy root of apple, hop, rose and chestnut. The organisms obtained from the galls of these different plants are cross inoculable and are very similar, if not identical in size, shape, structure and habits of growth on media with the organism from the daisy gall. Pure cultures of these organisms are

now under investigation. The abnormal growths produced by inoculation with the organisms obtained from the galls of the plants mentioned are similar in many cases to those produced by the daisy organism upon those plants.

These investigations have left no doubt regarding the cause of the crown gall of the peach and at least some of the gall formations upon the apple and other economic plants.

Variation of Fungi Due to Environment: Professor F. L. STEVENS and Mr. J. G. HALL, North Carolina College of Agriculture and Mechanic Arts.

The effect of different densities of colonies on a plate is reported for five species of fungi, some of which show an entire elimination of pycnidial formation and the production of spores without covering when plates are thickly sown.

The effects of different densities of mycelium upon zone formation are illustrated from *Ascochyta* and *Sclerotinia*.

The effects of chemicals as influencing the color, growth and character of several species of fungi are reported. The changes produced are often sufficient to shift the fungus from one order to another.

The effect of light upon growth, spore formation and zonation of colonies, of several species of fungi is reported.

Under the heading of "unknown factors" several changes of character which could not be attributed to environment are mentioned.

DUNCAN S. JOHNSON,
Secretary

JOHNS HOPKINS UNIVERSITY

THE ASSOCIATION OF AMERICAN GEOGRAPHERS

THE fifth annual meeting was held in Baltimore, December 31, 1908, to January 2, 1909, under the presidency of Mr. G. K. Gilbert. Professor Albrecht Penck gave a lecture before the association at its opening session on Thursday evening, on "Man, Soil and Climate." Other features of the meeting were: the president's address by Mr. Gilbert, on the subject "Earthquake Forecasts," and a round table conference on "Geography for Secondary Schools," conducted by Professor R. E. Dodge. The conference was held informally in connection with a smoker at the Johns Hopkins Club on Friday evening. About thirty papers were read by members, representing meteorology and various phases of physiographic, biological, human and educational geography.

The important subject of cartography was also well represented. The officers for the ensuing year are:

President—W. M. Davis.

First Vice-president—L. A. Bauer.

Second Vice-president—E. R. Johnson.

Secretary—A. P. Brigham.

Treasurer—N. M. Fenneman.

Councilors—Cyrus C. Adams, R. S. Tarr and R. E. Dodge.

The place of the next meeting will be fixed by the council.

The following is a list of papers presented:

"Man, Soil and Climate" (public lecture), by Albrecht Penck.

"Earthquake Forecasts" (president's address), by G. K. Gilbert.

"Round Table Conference on Secondary Geography," by R. E. Dodge.

"Accumulation of Inherited Features in Shorelines of Evolution," by J. W. Goldthwaite.

"On the Elements of the Surface Sculptured by Glaciers," by W. H. Hobbs.

"Existing Glaciers of the Northern Hemisphere," by O. D. Von Engel.

"The Topographic A B C of Land Form," by F. E. Matthes.

"How May the Teaching of Geography in Elementary Schools be Improved?" by C. T. McFarlane.

"Apparatus for Instruction in the Interpretation of Maps," by W. H. Hobbs.

"Some Practical Results of the Ninth International Geographical Congress," by H. G. Bryant.

"Three Gatherings of Geographic Interest," by A. P. Brigham.

"Status of the Magnetic Survey of the Earth," by L. A. Bauer.

"A Reconnaissance in the Arctic Slope of Alaska," by E. D. Leffingwell.

"The Climate of Cuba," by H. Gannett.

"The Temperature at Great Heights above the American Continent," by A. L. Rotch.

"The Climate of the Historic Past," by E. Huntington.

"Origin of Civilization through Intermittency of Climatic Factors," by J. R. Smith.

"The National Forest Policy," by H. A. Smith.

"Some Results of the Recent Census in Cuba," by H. Gannett.

"The Anthropography of Some Great Cities," by Mark Jefferson.

"The Capacity of the United States for Population," by A. P. Brigham.

"Geographical and other Influences affecting

the Pottery Industry of Trenton, N. J.," by R. H. Whitbeck.

"Geographical Influences in the Development of Ohio," by F. Carney.

"Trade Routes in the Economic Geography of Bolivia," by I. Bowman.

"The Influence of the Precious Metals on American Exploration, Discovery, Conquest and Possession," by G. D. Hubbard.

"The Stream Robbery on which the Bell Fourche Reclamation Project is Based," by N. H. Darton.

"A Remarkable Glacial River and its Modern Representative," by F. Taylor.

"Delta Form and Structure of the Thames River Terraces, Connecticut," by F. P. Gulliver.

"The Requisites of a School Wall Map," by J. P. Goode.

A. P. BRIGHAM,
Secretary

THE SOCIETY FOR HORTICULTURAL SCIENCE

At a business meeting of the society held in Baltimore, December 31, 1908, several important questions were discussed. The committee appointed at the Jamestown meeting to interview the Secretary of Agriculture with reference to having the annual reports of the society published by the Department of Agriculture reported that they had interviewed Dr. B. T. Galloway, who represented the Secretary of Agriculture in this matter, and that it was almost certain that the department would publish the reports, provided the following amendments were adopted by the society:

"That the association shall be known as the American Association of Official Horticulturists, the object of which is to promote the science of horticulture, and that any person connected with a state or federal experiment station or with the U. S. Department of Agriculture or its territorial stations, or with any other institution in the United States or Canada, who is engaged in the teaching of horticulture, or in experiments bearing upon it, may become a member of the association and shall be entitled to vote on the conditions which are embodied in the present constitution. Furthermore, that all horticulturists in the United States and in Canada, or in any other country engaged in the teaching or investigation of horticulture, may become associate members of the association under the same conditions that govern the admission of members and shall have all the privileges of members except the right to vote and hold office."