lation. Dilution of the sol with pure distilled water gradually decreased the coagulation up to a definite concentration beyond which no amount of agitation or inoculation gave any precipitate. The effect of dilution, however, is not the same sort of straight line function as one finds in dealing with supersaturation in true solutions.

Immaculate cleanliness was observed throughout. All tests were carried out in sealed Pyrex tubes, thereby minimizing glass solubility effects and eliminating the influence of contact with cork or rubber stoppers. Since contact with Pyrex alone, without agitation, gave no coagulation even after several weeks, the possibility of adsorption or surface catalysis exerting any influence seems out of the question.

The results cited are merely preliminary. A thorough study of the observed phenomena is now under way in this laboratory.

C. H. SORUM

THE RESEARCH LABORATORY OF GENERAL CHEMISTRY, UNIVERSITY OF WISCONSIN

"FINGER PRINTS" OF MINERALS

RECENT developments in our knowledge of X-rays have made it possible to use them in the study of all sorts of solid matter. Truly solid matter consists exclusively of crystals each of which is composed of atoms having a perfectly definite and regular arrangement. These atoms form parallel planes in various positions through the crystal just as the hills of corn planted by machine on a level field form parallel straight lines in several positions across the field. The distance between any two adjacent planes determines the angle at which X-rays are reflected (in phase) by these planes. By exposing a finely powdered crystal to a beam of X-rays reflections can be obtained simultaneously from all the parallel planes in the crystal. These reflections make angles with the incident beam of X-rays which depend directly upon the distances between the planes of atoms. All crystals of the same kind produce reflections which are identical in intensity and positions, while two crystals which are not alike produce reflections which are unlike.[1] Accordingly, every kind of crystal can be made to produce its own characteristic X-ray pattern or autograph.

Scientists in this country and in Europe have obtained such autographs or "finger prints" and studied them in various ways. So far as known to the writer, no scientist nor institution has attempted to establish a reference collection of standard autographs, and the Department of Geology of the University of Wisconsin has undertaken this task.

It is evident that such autographs are most valuable as reference standards when they are obtained from substances whose nature and composition are fully known. Therefore, analyzed samples of all kinds of minerals are needed for the establishment of such standards. A very small portion of the material is sufficient—in some cases an autograph can be made from fifty milligrams of mineral.

In order to make it possible to identify X-ray patterns from unknown material it is important to make the collection of autographs from known material as complete as possible. At the present time about 550 autographs have been made, which include only 170 standards, the others being for purposes of identifying unknown minerals, for special problems relating to crystal structure, etc. The Department of Geology of the University of Wisconsin is anxious to obtain analyzed mineral samples to enlarge its collection of standard autographs as rapidly as possible. For this reason an X-ray pattern of such material will be supplied free of charge to any one supplying a sample together with an accurate chemical analysis.

A. N. WINCHELL

UNIVERSITY OF WISCONSIN

[1] A few exceptions to this rule have been discovered; most of these are easily understood.

CORRELATION OF MEXICAN BEAN BEETLE POPULATION WITH ORIGINAL FOREST TYPE

THE Mexican bean beetle (*Epilachna corrupta* Muls.) was first discovered in Ohio in 1923, having spread from northern Alabama in three years. Through the cooperation of the Ohio Experiment Station, the Ohio State University and the Bureau of Entomology, records of distribution were obtained which showed that it was present in about ten counties in the south central portion of the State of Ohio.

The distribution of the beetle in Ohio in 1924 presented an interesting problem. It was easily found, and in many cases was abundant in the southern third of the state and very scarce in the remainder. Mr. M. P. Jones, assistant to Dr. D. M. DeLong, who was engaged by the Bureau of Entomology during the summer on the bean beetle project, consulted with Dr. E. N. Transeau, of Ohio State University, regarding the explanation of this distribution. Dr. Transeau had just returned from a trip over the eastern part of the state and noted immediately that the map showing the area of greater population coincided quite closely with what was then known of the distribution of the original mixed mesophytic type of forest.