similar species of birds were observed feeding upon the seed, but here no specimens were collected.

It is to be remarked that close examination of the intestines of the Jutiapa birds showed that digestion of the seed was complete in every instance and that therefore it is unlikely that these birds are a factor in the distribution of teosinte.

RAYMOND STADELMAN
TODOS SANTOS CUCHUMATÁN,
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MULL SOIL UNDER SPRUCE

THE development of the mull type of soil in spruce (-fir) woodlands has always been regarded as an unusual phenomenon. As earthworms are regarded as predominant formers of mull soil, and as earthworms prefer a limy soil, the logical place to look for mull soil under spruce would be over limestone deposits. As these occur extensively in Vermont, spruce tracts over limestones were examined in northeastern Vermont, using the *State Geologist Reports* to locate the limestone beds. A handy indicator of such deposits is the white cedar (*Thuya*). In glaciated country the mineral soil of limestone areas is so impregnated with ground limestone that the original deposits do not have to be close to the surface to influence the fauna and flora dependent on or partial to limy soil.

Throughout the region investigated, many spruce stands occur on former pastures, meadows and fields which have been subsequently abandoned and overgrown with spruce. Such agricultural land over limestone usually harbors earthworms, and these may persist in the soil for at least twenty to thirty years after the spruces have occupied the site. Such stands were not included in the investigation, which was limited to such sites as were so extreme as to have been impossible for agriculture. The following two types of sites fall under this head: (1) land too wet for plowing or pasturage, as swamps and seepage areas, (2) land too steep, as ravine sides. Such sites were invariably found to have mull soil (over limestone) except that the mull soil of the swamps was confined to a narrow strip about the edge of the swamp where the land rises from the dead level characteristic of muck swamps formed by lake filling, etc. Earthworm castings and middens were not always visible on the spruce litter, though perforations usually occurred.

The most favorable areas in Vermont were in the counties of Orleans, Caledonia, Washington and Orange. An area in northern New Hampshire (Coos County) was also found to have mull soil in similar favorable sites. Some of these sites were under large spruces and there were large tree stumps about, showing the land had been under woodland for a long period of time.

Thus it is evident that mull soil under spruce stands is not rare if sought for in situations favorable to earthworms.

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GRAPTOLITES FROM HIGHGATE, VERMONT

To one who has some acquaintance with the area lying east of Lake Champlain and comprising the northwestern corner of Vermont and adjacent parts of Canada, it is not surprising to note the interest shown in this region by various geologists and advanced students. Welcome progress has been made in the interpretation of the difficult geology involved.

In view of announcements within the last three or four years of the occurrence of graptolites in certain rocks in Highgate Township, Vermont, it seems pertinent, for purpose of record, to call attention to the previous discovery and report of such fossils in Highgate.

In the summer of 1921 the writer found definite graptolite remains in slate beds in the north wall of the gorge of the Missisquoi River at Highgate Falls. Although graptolites are not infrequent in the Ordovician slates along the lake shore in Highgate, such fossils had not been reported prior to 1921 from the belt of dislocated rocks which makes up most of Highgate Township and which lies between the overthrusted younger Trenton and associated beds near the lake, and older rocks at the east in Franklin Township.

Two of the graptolites found at Highgate Falls were tentatively identified by the writer as *Dictyonema,* probably *flabelliforme,* and *Staurograptus dichotomus,* Emmons. These specimens with others were submitted to Dr. R. Ruedemann without reference to the locality at which they were found. Dr. Ruedemann thought that the specimen referred by the writer to *Dictyonema* probably belonged to that genus; but regarded the one compared with *Staurograptus* as probably a young *Dictyonema,* "flattened out in a vertical instead of a lateral direction."[1] At the time these graptolites were reported their probable significance was not appreciated.

Several years later graptolite fragments were found in the same general belt of rocks in Highgate, "about one mile northwest of Highgate Center, Vt." These fragments were referred to Dr. Ruedemann, who described them as belonging to a new species of *Dictyonema,* which he called *Dictyonema schucherti.*[2] A

[1] Dr. Jacot died on March 24.

[1] Vermont State Geologist, Thirteenth Report, 1921–22, p. 188.

[2] "The Cambrian of the Upper Mississippi Valley," Part 3, *Bull. Pub. Mus. Milwaukee,* Vol. 12, 1933.

reexamination of the material collected by the writer in 1921 at Highgate Falls has revealed a specimen (plesiotype) conforming to *D. schucherti,* but with the outlines of the thecae in general somewhat better preserved than in the holotype.

Although somewhat delayed, the recognition of this new species among the graptolite specimens found in 1921 at Highgate Falls will be of interest in correlating the slates in which it was found with other rocks of the immediate region, as well as of service in interpreting the age and structural relations among the rocks in the river gorge at the Falls.

C. E. GORDON

MASSACHUSETTS STATE COLLEGE

SOCIETIES AND MEETINGS

JOINT SYMPOSIUM OF THE AMERICAN CHEMICAL SOCIETY, THE UNIVERSITY OF WISCONSIN AND THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

A SYMPOSIUM on the Kinetics of Homogeneous Gas Reactions will be held at Madison, Wis., from June 20 to 22, under the sponsorship of the Division of Physical and Inorganic Chemistry of the American Chemical Society and the University of Wisconsin, with the cooperation of Section C of the American Association for the Advancement of Science.

PROGRAM

TUESDAY, JUNE 20

9:00 A.M. to 12:00 M.

GEORGE SCATCHARD, *Presiding*

Everett Gorin, Walter Kauzmann, John Walter and Henry Eyring. "Reactions Involving Hydrogen and the Hydrocarbons."

Eugene P. Wigner. "Some Remarks on the Theory of Reaction Rates."

J. A. Christiansen. "On an Elementary Theory of Intramolecular Reactions."

General Discussion. "Calculation of Activation Energies and Absolute Rates."

2:00 to 5:00 P.M.

FARRINGTON DANIELS, *Presiding*

George Scatchard. "The Nature of the Critical Complex and the Effect of Changing Medium on the Rate of Reaction."

K. F. Bonhoeffer, K. H. Geib and O. Reitz. "On the Rate of Ionization in Aqueous Solution of the Carbon-Hydrogen Bond in Aliphatic Compounds."

F. O. Rice and K. F. Herzfeld. "Heats of Activation and the Theory of Free Radicals."

H. A. Taylor and M. Burton. "The Reactions between Methyl Radicals."

General Discussion. "Free Radicals." "Bond Energies."

WEDNESDAY, JUNE 21

9:00 A.M. to 12:00 M.

HAROLD C. UREY, *Presiding*

O. K. Rice and Hallock C. Campbell. "The Explosion of Ethyl Azide in the Presence of Diethyl Ether."

Guenther von Elbe and Bernard Lewis. "Mechanisms of Complex Reactions and the Association of H and O_2."

R. H. Crist and J. E. Wertz. "Kinetics of the Oxidation of Hydrogen Sensitized by Nitrogen Dioxide."

General Discussion. "Explosions."

2:00 to 5:00 P.M.

S. C. LIND, *Presiding*

G. B. Kistiakowsky and W. W. Ransom. "The Polymerization of Gaseous Butadiene."

Richard A. Ogg, Jr., and W. J. Priest. "Kinetics of the Vapor Phase Reaction of Cyclopropane with Iodine."

Robert N. Pease. "The Experimental Basis for the Theory of Quasi-Unimolecular Reactions."

Farrington Daniels and Preston L. Veltman. "The Decomposition of Ethyl Bromide and the Collision Theory of First Order Reactions."

General Discussion. "Collision Theory of Unimolecular Reactions."

THURSDAY, JUNE 22

9:00 A.M. to 12:00 M.

PHILIP A. LEIGHTON, *Presiding*

W. Albert Noyes, Jr., and F. C. Henriques, Jr. "Fluorescence and Photochemical Kinetics of Polyatomic Molecules in the Gas Phase."

G. K. Rollefson and D. C. Grahame. "The Effect of Temperature on the Predissociation of Photoactivated Acetaldehyde Molecules."

E. W. R. Steacie and Roger Potvin. "The Cadmium Photosensitized Reactions of Ethane."

S. C. Lind. "Chemical Activation by Gaseous Ionization."

General Discussion. "Photochemical and Ionic Reactions in Gases."

2:00 to 5:00 P.M.

GEORGE SCATCHARD, *Presiding*

On Thursday afternoon the University of Wisconsin will hold a general session devoted to 10-minute papers. Although technical reasons prevent the Division of Physical and Inorganic Chemistry from sharing in sponsoring this session, all those attending the symposium are invited.

This session is planned to accommodate brief reports on work completed too late for inclusion in the preprints. Any one desiring to present a short paper in this field