surface. The relatively low content of heavy minerals in the A horizon of soils belonging to the above zonal groups reflects the intensity of weathering to which they have been exposed.

Previous work by the writer[1] demonstrated that the content of heavy minerals in the upper part of forest soil bodies disturbed by the uprooting of trees was significantly higher than in adjacent undisturbed soil. This difference resulted from the translocation of material from the B or C horizons to the surface. The possibility that cultivation might similarly influence the vertical distribution of heavy minerals in soil profiles was considered.

During the summer of 1940 samples from unquestionably virgin soils and immediately adjacent cultivated soils were collected in Michigan and New Hampshire for laboratory examination. In all instances the sets of paired samples were collected from soils which seemingly differed only with respect to the cultivation factor. Miami, Colton and Hermon soil series were represented.

It has been found that the cultivated soils contain a consistently higher percentage of heavy minerals in the A horizon than do the comparable virgin soils. The results indicate that the vertical distribution of heavy minerals in the upper horizons of soil profiles may serve as an index of past agricultural use of land. This criterion may prove useful in studies concerned with the past history of land utilization. Work on the vertical distribution of heavy minerals in soil profiles is being continued and more detailed results will be published in the near future.

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REPORTING DATA ON ELECTRIC MOBILITY

Recent interest in the electrophoresis of proteins has led to the publication of a large number of papers giving data on the speed with which proteins migrate in an electric field. Because the serum proteins near their isoelectric points move rather slowly, certain investigators expressed the electric mobilities in units of 1×10^{-5} cm/sec/volt/cm. However, other investigators studying ionic mobilities and the electric mobilities of microscopically visible particles have for many years expressed the electric mobilities in units of 1×10^{-4} cm/sec/volt/cm or its equivalent in μ/sec/volt/cm. There does not seem to be any justification for the use of the exceptionally low mobilities of proteins near their isoelectric points as convenient reference mobilities. In view of confusion which has arisen, it would be well for the conventional unit of 1×10^{-4} cm or μ/sec to be generally adopted by those in the field of electrophoresis. This will serve to eliminate a good deal of future error of the type which has already arisen.

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ANTIDOTING TOXIN OF PHYTOPHTHORA CACTORUM AS A MEANS OF PLANT DISEASE CONTROL[1]

Over forty years ago phytopathologists realized that certain fungi formed toxins which were lethal to plant protoplasm and which paved the way for the advance of the pathogenic organism through the plant tissues. *Phytophthora cactorum,* which causes a wilt disease of many plants and the bleeding canker of hardwood trees, produces such a toxin when grown on various media. Foliated, succulent excised maple and tomato shoots wilt when placed in filtrates of liquid media upon which the fungus has grown.

This toxic effect can be antidoted, that is, made inactive by the addition to the filtrate of 0.5 per cent. aqueous solution of the di-hydro-chloride salt of di-amino-azo-benzene plus a solvent and penetrant ("Helione orange"). Healthy maple trees injected with the toxic filtrate have been killed, while the same toxic filtrate to which 0.5 per cent. of the di-amino-azo-benzene salt was added failed to injure the trees.

In excess of 350 confirmed trees, naturally infected by the bleeding canker fungus, have been injected with the antidoting chemical, and have subsequently exhibited stoppage of "bleeding" and marked improvement in vegetative growth. Whether the trees have been "cured" in any absolute sense remains to be seen, but the results indicate some possibilities to be explored in the practical control of plant disease.

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THE FIRST MATHEMATICS SECTION OF THE NATIONAL ACADEMY OF SCIENCES

Mathematical research in the United States was started at about the time that the National Academy of Sciences was incorporated (1863) and the first important mathematical research paper published in our country was written by Benjamin Peirce who was one of the earliest members of this academy and took an active part in its early meetings. It is therefore of interest to consider briefly the qualifications of the members of the first mathematics section of this academy. Their names are J. G. Barnard, William Chauvenet, H. A. Newton, Benjamin Peirce, Theo-

[1] Harold J. Lutz, *Yale University: School of Forestry, Bulletin 45.* 1940.

[1] Contribution No. 599 of the Rhode Island Agricultural Experiment Station.