and the existence within the soils themselves of the evidence of migration in such widely differing soils as Durham, Iredell, Georgeville, Lockhart, Davidson and Wilkes demonstrate that these soils are not everywhere residual, and suggest that some of the distinguishing characteristics of the individual soil types may be due to migration. Similarly, variations within individual soil types may be attributed to the partial assortment of materials during soil migration.

Furthermore, the tremendous thickening of the soil mantle above the organic matter on the concave slopes indicates that local relief has been diminished and surface landforms softened. The upland surface has been reduced in elevation, the valleys have been aggraded and the connecting slopes have been reduced in grade.

In the Piedmont, at least, lateral migration of soils and soil materials ranks with vertical movement of material within the soil profile as an agent of soil genesis and as a factor in determining soil characteristics and the distribution of soil types. The physiographic processes of mass-movement which are important in soil formation are also responsible for the minor landforms of the region. Thus, it would seem desirable to emphasize physiography and landforms in the mapping and interpretation of soil types; and conversely, to consider the influence of soil in the development of surface configuration.

D. HOYE EARGLE

SOIL CONSERVATION SERVICE,
WASHINGTON, D. C.

BORON DEFICIENCIES IN CONNECTICUT

IN the July 14, 1939, number of SCIENCE, W. L. Powers, of Oregon, reported striking results in the control of alfalfa "yellows" by an application of 30 pounds per acre of boric acid. Yields during dry weather were trebled and the quality of the hay greatly improved by the use of boron. Beneficial effects were noted also on other crops.

For several years, the Storrs (Connecticut) Agricultural Experiment Station has been exploring the possible needs of field crops for minor elements, including boron. No responses were obtained until, during the dry summer of 1939, the top leaves of alfalfa yellowed and buds failed to develop into blossoms on all the experimental plots that had not received borax. This was true of a variety of treatments, including stable manure. Where borax at 20 pounds per acre (2.3 pounds or 1.15 p.p.m. of boron) had been added the previous August, these symptoms of boron deficiency were almost entirely absent. The second cutting yields were increased 16 per cent. by the borax, and chemical analyses of the alfalfa gave the following data: Boron in dry matter (p.p.m.): with borax, leaves 62, stems 22; without borax, leaves 21, stems 16.

These results occurred on one of the best agricultural soils in Connecticut. Alfalfa "yellows" was also observed on several farms in August, 1939. Reports indicate a wide-spread occurrence of "internal cork" of apples (a symptom of boron deficiency) in Connecticut the past season. Thus, it appears likely that under certain soil and weather conditions, other crops might be benefited by additions of boron.

B. A. BROWN

STORRS (CONN.) AGRICULTURAL
EXPERIMENT STATION

RECEIPT OF EUROPEAN JOURNALS DURING THE WAR

SHORTLY after the war began in Europe the American Documentation Institute, with the approval of the Division of Cultural Relations of the Department of State, circulated notices, which were published in various scientific and scholarly journals, stating that it would attempt to secure information about whether or not scientific journals were being delayed in delivery in this country due to war conditions. A considerable number of communications have been received and handled in response to these notices. In almost all cases it is evident that non-receipt of journals by libraries and other subscribers is due to action on the part of agents in Germany holding journals for transmittal when, in their opinion, shipment to this country will be safer. On the other hand, journals that have been ordered direct from and sent directly by the publishers have in practically all cases been arriving safely and relatively on time.

The non-receipt of journals that are held by agents does present a serious problem. This situation is well expressed in a letter from an ADI member, Dr. E. J. Crane, editor of *Chemical Abstracts,* Columbus, Ohio (Feb. 27, 1940):

> As you no doubt know, some libraries and individuals are getting German and other European periodicals regularly now, or almost regularly, whereas others are not getting any copies. The difference seems to be that those who are getting copies deal directly with the publishers or obtain their copies through agents who are attempting to make deliveries. Those who are not getting their copies deal with agents who are accumulating copies overseas with the idea of holding these until deliveries may be made more safely, which probably means until the war is over. We deal directly with German and other publishers and we are getting our journals regularly for the most part. We do not obtain all of the journals which are abstracted, however, and many of our abstractors are dependent on libraries whose periodicals are not being delivered.
>
> No doubt our problem is merely one of many encountered by scientists under these conditions. The lack of complete files of current journals is a serious handicap to research in this country, I believe.
>
> I wonder if anything can be done to persuade librarians

to attempt having deliveries made now if their copies are being impounded at the source. It may be that they are trying and on the other hand I think it possible that some of them consider it more important to insure complete files for the future than to run risks in delivery now. It is this particular point which has prompted this letter to you. One of the very new efforts of the American Documentation Institute has been to copy whole journals either on microfilm or by photoprinting. If some way could be found to reassure librarians that occasional missing numbers for the war period which they could not obtain from the publishers after the war could be replaced by photoprinting at reasonable costs, this might influence their present practice in the direction of taking care of present needs of scientists and others.

The situation with regard to German journals as to editions published is given in the following letter from G. E. Stechert and Company, New York City (March 6, 1940):

German publishers usually print a considerable number of copies in excess of their actual need for subscribers but this has changed during the last two years. We have only recently been advised that due to some paper shortage only copies for the exact number of subscribers will be printed.

At the annual meeting of ADI, the suggestion was made that activities of ADI in the field being discussed should be coordinated with those of the Librarian of Congress and the American Library Association. Contact has been made with Archibald MacLeish, Librarian of Congress, and any necessary communications with regard to the general policy of handling of journals from abroad will be channeled through him. It is understood that negotiations are underway whereby arrangements for clearance of scholarly and scientific journals from Germany may be made. However, the fact that such journals are coming through with regularity when shipped by the publishers seems to take care of the immediate situation, except in those cases where agents are holding copies for future delivery.

From the information gathered, the following recommendation can be made:

That libraries and individuals who have ordered through agents and who are not receiving journals from abroad should instruct those agents to dispatch currently the journals in order that they may be received promptly and be available for readers when they are current. In the event that losses are incurred through this procedure, it would be possible for libraries and individuals to obtain missing numbers through microfilm or photographic enlargement, which makes unnecessary the precaution of holding journals at source until the end of the war or some other future time.

WATSON DAVIS
AMERICAN DOCUMENTATION INSTITUTE,
WASHINGTON, D. C.

SCIENTIFIC BOOKS

SEDIMENTATION

Principles of Sedimentation. By W. H. TWENHOFEL. 511 pp. 44 figs. New York: McGraw-Hill Book Company. 1939. $5.00.

GRABAU, Barrell and Twenhofel will long be remembered as leaders in the twentieth century revival of interest in the origin and history of sedimentary rocks. Twenhofel's books have been immeasurably valuable in summarizing the constantly increasing volume of information; they are indispensable aids to every student of the subject. The latest, the "Principles of Sedimentation," traces the history of the sedimentary rocks from the places of origin of their components to their deposition and consolidation.

The first three chapters, on environments, present the physical and climatic background without which the history of sedimentation can not be properly understood. Chapters IV to VI give an excellent treatment of the origin and transportation of the inorganic sediments and the relationships of organisms to them. Chapter VII, on the classification of sediments, sedimentary rocks and minerals, is far too brief. Chapter VIII treats of the accumulated clastic sediments, both newly deposited and indurated. It seems unfortunate that limestone was not included here, for most marine limestones are just as much clastic sediments as are sandstones. Chapters IX to XIII, with the general heading "Sediments of Chemical Deposition," discuss the origin of limestone, dolomite, evaporites, sedimentary iron ores, a host of lesser chemically-formed mineral deposits and, curiously, the carbonaceous sediments. Much of the material in some of these chapters is of little importance to the stratigrapher. Chapter XIV, on structural features of sedimentary origin, is most useful. The final chapter, on textures and colors of sediments, is mostly repetition of what has been said earlier in the book.

The story is a highly complex one, and some parts of it are so obscure that about all that can be done is to set forth the lines of research that should be followed to furnish information. On the whole, Twenhofel has done a good job. The chief criticism of the book is merely that there is too much of it. Another edition of the "Principles" might well begin with Chapter IV. The first three chapters are covered by any good introductory course in geology, and much that they contain is repeated in later parts of the present volume. Chapters IV to VI could be followed