It is not possible to reverse the order of these steps; yet in the discussion of calcite given in this book the steps are reversed.

The third section of this chapter deals with the determination of the structure of tricalcium aluminate from powder data, based on original work by the author. The photographs showed only eight lines. These are not correctly interpreted at their face value; they lead to a unit with $a_0 = 5.4$ Å, a fact which is overlooked. Instead, a_0 is taken to be 7.62 Å, and the possible atomic arrangements are discussed at length, one finally being accepted as satisfactory, despite very pronounced disagreement between observed and calculated intensities of the lines. (This structure is described elsewhere (p. 553) as representing a new class of chemical combination, of which it is the sole representative.) As could be expected, the results are all wrong; a better powder photograph leads to the value $a_0 = 10.8$ Å and a completely different atomic arrangement.

Although this book can hardly provide the student with a sound basis for independent work on the determination of the structure of crystals, certain portions of it may be found useful. Some of the sections, such as Chapter VII, on the rotating-crystal method, are brief and clear and provide good presentations of their topics. The book contains many excellent drawings.

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TIMBERS OF NORTH AMERICA

Identification of Commercial Timbers of the United States. By H. P. BROWN and A. J. PANSHIN. McGraw-Hill Book Co., Inc., New York. Pp. 223, illus. 1934. $3.00.

THIS is the first of the books to be published as the American Forestry Series, of which Professor Walter Mulford, head of the division of forestry of the University of California, is consulting editor. It is fitting that such a series, which eventually is to deal with all phases of forestry, should be introduced by a book on the identification of wood, the chief product of the forest. It is stated in the preface that the primary objective of the book is to give information for the accurate identification of our commercial timbers and that a second text covering the general field of wood technology is planned.

The first part of the book deals with wood structure, which is the chief basis for wood identification. The text begins with a description of the coarser structural features, such as the annual rings, sapwood and heartwood, and proceeds toward the finer elements.

The structural characteristics are supplemented by such physical characteristics as color, odor, taste, weight and hardness, which in general are less specific or more difficult to describe than structural features.

The portion of the text dealing with the minute structure of wood is of necessity couched in technical language, but, like everything else, when once mastered it no longer seems so formidable.

Two keys by means of which a piece of wood may be traced down and identified are given. One is based on gross characteristics visible with the unaided eye or hand lens; the other is based on microscopic characteristics. The authors are of the opinion that for teaching purposes at least it is better to keep the two separate.

The keys are followed by detailed supplemental descriptions of each wood, which are an aid in identification.

An outstanding feature of the book is the numerous excellent reproductions of photomicrographs which it contains. There are plate figures of cross sections of 90 species of wood magnified 5 times, and of cross and tangential sections of 84 species magnified 75 times. In addition the book contains illustrations of special structural features magnified 250 times for the most part, and some text figures.

Identification of the Timbers of Temperate North America. By SAMUEL J. RECORD, John Wiley and Sons, New York. 196 illus., 1934. $3.00.

THIS is a revision of the author's "Identification of the Economic Woods of the United States," first published in 1912 with Part I, which deals with the discussion of wood structure, enlarged so as to cover the anatomical features found in tropical woods as well as in those of temperate climates. The anatomical terms and definitions used are in conformity with those recently adopted by the International Association of Wood Anatomists ("Tropical Woods," December 1, 1933) after protracted work by the Committee on Nomenclature, of which Professor Record is the chairman.

Several pages are devoted to the origin and development of the primary and secondary tissues, which makes the book considerably better adapted for class work than the previous editions. A brief description of the formation of the secondary wall with its numerous modifications is given. A tertiary layer of the cell wall is no longer recognized by the author; spiral thickenings, gelatinous layers, etc., are considered a part of the secondary wall. The confusion which has prevailed among botanists as to the precise meaning of such terms as middle lamella, primary wall, secondary wall and tertiary wall is pointed out.

A new conception of a pit is brought out, namely,

that a pit is an entity of an individual cell, and two opposite pits of adjacent cells, hitherto referred to as a single pit, are called a "pit-pair."

Thirteen tables are given showing the occurrence or absence of certain structural characteristics in large numbers of families or genera. Thus one can see at a glance which families have scalariform perforations in the vessels, which genera have tyloses or gum deposits in the vessels or which dicotyledonous genera contain intercellular canals, etc.

Brief mention is made of some woods with anomalous structure, particularly those having phloem included within the xylem.

Only such physical properties as bear on identification are discussed, particularly color, scent, taste and density.

Part II is concerned primarily with the identification of the economic woods of the United States and Canada covering some 80 different kinds of woods. A comprehensive artificial key is presented in which the gross structure, as visible with the naked eye or hand lens, is given in text type, while the histological features visible only with a microscope are given in smaller type. The specific gravity is given for each species, which is a guide as to the relative weight and hardness of the wood.

In addition to the rather detailed or "descriptive" key there are supplementary notes on each species, containing short accounts of the size, distribution and relationships of the trees, and the properties, principal uses and commercial importance of the wood. References to further information are supplied for many of the species, and a general bibliography on wood is given. The text is supplemented by a map of the United States, showing the principal forest regions, and 30 photomicrographs, showing types of wood structure, and 47 text figures.

The reviewer wishes to dissent from the author's use of the terms "early wood" and "late wood" for the inner and outer parts of the annual ring, respectively. To the uninitiated it may not be clear that "early" and "late" refer to the growing season, and he may wonder why some wood should have been formed prematurely while some was tardy. That difficulty is largely removed when the terms spring wood and summer wood are used.

Very little is said about variations that occur in each species of wood, largely because the information does not exist. Wood technologists are recognizing more and more the need of study along that line, since, without knowledge of variation within a species, specific identification is risky or impossible in many cases.

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REPORTS

THE NEW ENGLAND INTERCOLLEGIATE GEOLOGICAL EXCURSION

THE New England Intercollegiate Geological Excursion was held on October 12, 13 and 14, at Bates College, in Lewiston, Maine. Dr. Lloyd W. Fisher, head of the department of geology at Bates College, had charge of the trips illustrating minerals, rocks and structures, and was assisted by Dr. Edward H. Perkins, of Colby College, Waterville, Maine, who conducted all the glacial trips. Despite occasional rain, snow and hail and chilling winds, all the trips were run on scheduled time and all localities visited. At the evening meeting held in Carnegie Science Hall, on the Bates Campus, there were 72 people, representing 19 colleges, in attendance. Drs. Perkins and Fisher conducted the discussions relative to the points of interest visited on the trips, and an open forum was held following these discussions. The members of the association sent a telegram of greeting to Dr. Wilbur G. Foye, of Wesleyan University, who was unable to attend the meeting because of illness.

GLACIAL TRIPS

On Friday afternoon Dr. Perkins led his group over the plain of the Little Androscoggin River, and topographic features of the plain and wind-drifted sands were studied. Several underfit streams were examined. It was suggested that the flat floor of the valleys represented the clay level and the valley walls represented the sand, which was more easily eroded. In one case clay was found in the walls. Gravel terraces of Bog Brook were believed to be formed by a rapidly flowing stream between valley walls and ice walls. Disturbed strata in the outer portion of the deposit indicate some movement of the ice. West of Welchville, Dr. Ernst Antevs pointed out till rising from the sand plain. The contact between the sand and the till is believed to represent the upper marine level at an elevation of about 350 feet, corresponding with delta surfaces east of Lewiston. A gravel ridge south of Poland village, near Lower Range Pond, represents either a true esker, or crevasse filling. No definite conclusion was reached.

The party continued southward to the village of Gray, where kame topography was crossed. Gravel and till terraces occur to the north of the village. The feature of greatest interest was the great kettle-hole to the east of Gray. This kettle stands in a broad sand and gravel plain that extends several miles to the south. The plain is formed of stratified materials