strongly condemns the professor's wild statements. The committee from the National Academy of Sciences, sent down by President Wilson about the end of 1915, also believed such assertions were not warranted by facts. Now the zephyrs of time have completely cleared away the foundations of fog on which the professor's off-hand, sweeping, and calamitous prophecy was based. One might pardon a professor of poetry for indulging in such dire and generalized prophecy regarding the canal, but that a professor of science should ascend so far into the rarified realms of imagination is surely an anomaly.

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A COUNTRY WITHOUT A NAME

TO THE EDITOR OF SCIENCE: A statement made by one of your correspondents in SCIENCE, June 21, "Canada, which is no part of America," is barely saved by the context, "Canada, which is no part of America, as we wish it to be known, the U. S. A."

Wishes will hardly avail to rule that Canada is no part of America. The united states south of the Rio Grande bear the name Mexico; similarly the united states (provinces) north of the St. Lawrence and the Great Lakes bear the name Canada. Mexico and Canada are both good names, because they are single words and readily afford corresponding adjectives. The geographically intermediate group of states suffers the misfortune of having no name, and a much needed adjective is consequently lacking. All three groups are, of course, "of America"—Mexico being, however, rather more American than the other two.

The awkwardness due to lack of a name has been especially exhibited during the past year or more in such glaring inaccuracies as "American troops," "American supplies," etc., when "United States" is meant. That particular federation of American states which begins with Maine and ends with Washington needs a name more than it needs a national flower.

ELLEN HAYES

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SCIENTIFIC BOOKS

An Introduction to the Chemistry of Plant Products. By PAUL HAAS, D.Sc., Ph.D., Lecturer on Chemistry, Royal Gardens, Kew, and in the Medical School of St. Mary's Hospital, London; and T. G. Hill, A.R.C.S., F.L.S., Reader in Vegetable Physiology in the University of London, University College. With diagrams. Second edition. London, New York, Bombay, Calcutta and Madras, Longmans, Green and Company. 1917. $3.50 net.

The subject of paramount importance in biology is the study of the cell and its constituents. A great deal is known concerning the physical properties and occurrence of nearly all those bodies that possess definite forms under normal conditions. Independent of the biologist a large number of constituents have been isolated and these have been studied as to their chemical properties and in some instances their constitution has been ascertained. The work of the biologist and phytochemist has been usually conducted more or less independently. Up until now this was inevitable on account of the special training required in both these sciences. The time has come, however, when the results of the biologist should be understood by the chemist and the discoveries of the latter interpreted and applied to the study of the constituents of the cell. This work of Haas and Hill aims to supply this deficiency and is likely to be an incentive to the publication of other books covering these subjects.

This work deals essentially with the important plant constituents and includes: (1) Fats, oils and waxes; phosphatides; (2) carbohydrates; (3) glucosides; (4) tannins; (5) pigments; (6) nitrogens bases; (7) colloids; (8) proteins; (9) enzymes. These various substances are considered as to their occurrence in nature, their physical and chemical properties, microchemical reactions, method of extraction, quantitative estimation and physiological significance. The chemical methods of isolation of the plant products and their chemical reaction are very fully considered and for this rea-

son the work will be of special interest to the plant physiologist. The abstracts used in the preparation of the several monographs have been accurately prepared and the numerous citations to the original literature enhance the value of the work very much. If in courses of plant physiology it were required of the student to isolate all of these plant products it would add very much to the student's competence to deal with the nature of physiological processes and make this subject of greater fundamental value in its application to other phases of botanical work.

The second edition has been improved by re-writing the section dealing with the chemistry of plant pigments. This subject during the past few years has been the field of most interesting study by Willstätter and Miss Wheldale.

The value of the work would be much enhanced by a somewhat different arrangement of the subjects, particularly if they could be connected in their biological relations. To begin with "fats, oils and waxes," substances which are seldom studied in courses in either plant morphology or plant physiology, tend to discourage the use of the book by those for whom it would be a source of greatest benefit. On the other hand if a subject like the carbohydrates or pigments were first considered, both of which are under constant observation by the student of botany, it is quite likely that the chemical methods contained in the work would be applied in laboratory instructions. Furthermore the microchemistry of all of the plant products considered should be considerably improved upon. Many of the statements are only partly true; in others more pronounced reactions could be utilized while in still others a large amount of work should be included. To-day the interest in microchemistry or chemical microscopy is very great and with the appearance of such excellent works as those of Chamot, Molisch and Tunnmann there is an excellent basis in a work of this kind to connect the morphology of plants with the chemistry of the constituent and to follow physiological processes with microchemical reactions.

Henry Kraemer

June 1, 1918

SCALARIFORM PITTING A PRIMITIVE FEATURE IN ANGIOSPERMOUS SECONDARY WOOD

Professor Jeffrey, in his recent stimulating book, "The Anatomy of Woody Plants," Ch. VII., derives the vessel with the simple or porous type of perforation from the fusion of horizontal rows of circular pits in the end-wall, the scalariform pit and perforation being merely an intermediate stage in the process. Perhaps such a reversible evolution has gone on in certain groups, although it is here attempted to show that the available evidence is capable of the opposite interpretation.

Multiperforate and even uniperforate end-walls in gymnospermous vessels may arise from the fusion of circular pits with the dissolution of the closing membrane as Professor Jeffrey describes for *Ephedra;* but this fact seems inadequate to explain either the presence of scalariform pitting or the wide prevalence of scalariform perforations in the vascular elements of the less specialized angiosperms. It does not appear that all of the facts germane to the subject have been fully considered. In tracing out the development of vascular elements with uniperforated end-walls in accordance with Jeffrey's hypothesis, serious difficulty is met.

The scalariform pits in conservative regions of the secondary wood of *Liriodendron, Drimys, Asimina,* and other forms with prevailing circular pits in the less conservative regions, suggest antecedence of the scalariform condition, while a further illustration is afforded by the monocotyledonous *Dracœna.* Thus, in *Dracœna aurea,* typical secondary xylem without vessels is formed, the fibro-tracheids of which have circular pits in their lateral walls, but typical scalariform pits in the walls of the overlapping tracheid ends. There is no indication that such scalariform pits have arisen from the fusion of rows of circular pits. They are evidently a primitive feature of the tracheid and closely resemble the scalariform pits of the secondary wood tracheids of *Drimys* found in the vicinity of the pith; yet only a slight modification of the tracheids, with dissolution of the closing membranes and borders of the scalariform pits, would com-