enemy of his kind." This glossary is to a certain extent based upon Loewinson-Lessing's Petrographisches Lexikon and the index of Zirkel's Lehrbuch der Petrographie, but contains many additional names of American origin. As an index of rock names it is very full and correct, although a few unimportant slips were observed. The name Anarthosite, for instance, was proposed by Hunt as far back as 1863 (See Geology of Canada, p. 22), six years before the publication of the paper in the *American Journal of Science*, to which reference is made. Perthite again was not named by Hunt, but by Dr. Thompson, of Perth, while composite dykes are not in all cases formed by two intrusions of different age occupying the same fissure, but in some cases result from magmatic differentiation in a single injection.

The book is clearly written, and the fact that it deals chiefly with American rocks and American localities gives it for American students a distinct advantage over many of the text-books which are published abroad.

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Prantl's Lehrbuch der Botanik, herausgegeben and neu arbeitet von DR. FERDINAND PAX, ord. Professor der Botanik und Direktor des botanischen Gartens in Breslau. Mit 397 figuren in Holzschnitt. Zehnte, verbesserte und vermehrte Auflage. 8vo., pp. x+406. Leipzig, Wilhelm Engelmann. 1896. Brosch. M. 4; gebund. M 5. 30.

A text-book of botany which has passed into its tenth edition has demonstrated its fitness to meet existing conditions in its native country. Whether those conditions are good or bad is quite another question. They certainly seem to demand in Germany a book largely devoted to an account of the various groups of plants. Indeed courses upon *Systematik* are much commoner in German universities and *Hochschulen* than in this country, given over as its elementary instruction has been to 'analysis.' It would almost appear that classification there takes the place of 'analysis' here, with little advantage, if any, in favor of the German student.

The tenth edition, the reviser tells us, has been augmented both in text and illustrations, and many of the older figures replaced by better ones. This appears chiefly in the systematic part, for which the treasurers of the *Pflanzenfamilien* have been drawn upon; but no striking novelties appear in the other parts, where the good old 'stand-bys' are much in evidence still.

The 'tief greifende Veränderungen in der Anordnung des Stoffes,' which Dr. Pax did not think it wise to make, because the present arrangement had been approved by use, seem to us the very changes which were most called for in order to make the tenth edition as valuable to this generation as the first was twenty-two years ago. For according to modern ideas a text-book which devotes 100 pages to morphology, 47 to physiology and 237 to classification, is badly balanced; it is overdoing system at the expense of life. This is all the more striking when two-thirds of the classification is of the 'dry bones' order. Of the 237 pages of 'systematische Uebersicht des Pflanzenreiches,' 164 are devoted to the phanerogams, and in them one finds the same dreary iteration of the details of flower structure that has been our portion these many years. In the 73 pages on cryptogams comparative special morphology is given chief attention, but the parts shift as soon as the phanerogams are reached. Though Dr. Pax naturally wished to keep as close to Prantl's plan as possible, who would have found fault had he shown the courage to maintain the same plan for the phanerogams as for the cryptogams? Possibly the publisher; hardly the readers.

Part II., on physiology, is much too short for a satisfactory account of plant functions, and it might have been further revised to advantage in many particulars which we cannot specify. The account of molecular structure (if it is to be given at all) and the section on water movement are two notable examples. Sex terms and the sexual and non-sexual phases are properly explained in the very brief chapter on reproduction, but when the unsuspecting reader reaches the angiosperms he will be bewildered by the application of the same terms to the flowers and even to the sporophyte!

In anatomy the Gaul-like division of all tis-

sues into three systems is maintained against the much more satisfactory stelar classification of Van Tieghem. In morphology the root, stem, leaf and trichome are still recognized as equivalent members, in spite of the clearer presentation possible when root and shoot are regarded as primary members.

On the whole we must conclude that Prantl's book needed a thorough rewriting to modernize it and to make it a fit presentation of the botanical science of the close of the century. It has, of course, an immense amount of material that is good enough to commend it to many teachers who prefer to 'inquire after the old paths and walk therein.' But to this extent it contributes to stagnation instead of to progress.

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SCIENTIFIC JOURNALS.

AMERICAN CHEMICAL JOURNAL, NOVEMBER.

Diffusion of Sulphides through Steel: By E. D. Campbell. These experiments lead to some very interesting results. The method used was to drill holes in the steel bars, fill the holes with sulphide and, after filling the opening with a steel plug, heat the bars in a furnace. It was found that neither ferrous oxide nor a suboxide would diffuse through the bars; but that oxysulphides would diffuse throughout the bar and the sulphur become oxidized at the surface. Cuprous sulphide when mixed with iron-oxysulphide was found to diffuse in an unchanged state. Evidently the substances pass through the pores of the steel in a liquid and not a gaseous form, and are influenced by gravity as they accumulate at the lowest part of the bars.

Effect of Heat Treatment and Carbon upon the Solubility of Phosphorus in Steel: By E. D. Campbell and S. C. Babcock. The soluble and insoluble phosphorus was determined by treating the iron with mercuric chloride solution, when it was found that part of the phosphorus was soluble in this reagent and part not. If the amount of carbon is small the effect of heat treatment upon the solubility of phosphorus is slight; but if the amount of carbon is increased, the solubility of the phosphorus is diminished. It is probable that at high temperatures a difficultly soluble compound of iron with carbon and phosphorus is formed, which by slow cooling is converted into an easily soluble one.

Malonic Nitrile and some of its derivatives: By B. C. Hesse. The object of this investigation was to ascertain, if possible, whether in the salts of malonic nitrile, the metal is bound to nitrogen or carbon. The bromine and silver salts were prepared and studied. When the silver salts are treated with alkyl iodides, dialkyl malonic nitriles and alkyl isocyanides are formed. These facts can best be explained on the assumption that the metal is in combination with nitrogen. The action of chlorformic esters and of alkyl iodides on an alcoholic solution of malonic nitrile and sodium alcoholate was also studied. It is probable that a sodium malonic nitrile is formed, which is then acted on by the alkyl iodides. The final product of the reaction is a monimido ether, whose formation can be explained in several ways.

On the 'Beckmann Rearrangement:' By J. Stieglitz. Acid bromamides when treated with a methyl alcohol solution of sodium methylate undergo a rearrangement and give urethanes and other derivatives of the isocyanates. This rearrangement is only effected by alkaline solutions. He considers it possible that this is due to the loss of hydrobromic acid and the formation of a body $(RCO)N<$, which would cause the separation of the alkyl R from the carbon atom holding the nitrogen.

$$\begin{array}{ccccc} R-C=O & & -C=O & & C=O \\ | & \longrightarrow & | & \longrightarrow & \| \\ >N & & -NR & & NR. \end{array}$$

Other facts point to the same conclusion and investigations are being carried out on other classes of compounds to see whether any similar rearrangements take place.

Menthene Nitrosochloride and some of its derivatives: By W. O. Richtmann and Edward Kremers. The statements as to the melting-point of this compound are so conflicting that this investigation was undertaken to settle, if possible, this question. It was found that at least two, and possibly three, nitrosochlorides exist. A ketone was also obtained by the action of hydrochloric acid on nitrosomenthane