divergence of the absorption spectra, p. 7, to make it possible to distinguish between the two dyes.

On p. 16 the author gives an interesting circular diagram to show the relation between the color of a solution and its absorption spectrum. On p. 20 there is a discussion of Kundt's rule as to the effect of the solvent on the absorption spectrum. In 910 cases examined by the author only 485, or 53 per cent, conformed to Kundt's rule. In certain cases the change from water as solvent to ethyl alcohol displaces the absorption bands in one direction while the change is in the opposite direction when amyl alcohol is substituted for water.

The author points out, p. 25, that a thin layer of a concentrated solution will not give the same absorption spectrum as a thick layer of a dilute solution if any hydrolysis takes place. He records several cases in which the absorption spectrum of a freshly-prepared solution varies progressively with the time for a short while. It seems as though this might be studied as a case of reaction velocity.

On p. 31 the author records a most extraordinary statement in regard to the behavior of methylene blue and methyl violet.

"If we mix dilute solutions of methylene blue and of methyl violet 6 B and determine the position of the main absorption bands of the two dyes, we find that the absorption band of methyl violet is no longer in its original position at λ 593.5 but has been moved somewhat to the left by the influence of the absorption band of methylene blue and is now at about γ 595.0. The greater the amount of methylene blue and the less the amount of methyl violet, the more is the absorption band of the methyl violet moved from its original place and *vice-versa*. This displacement has definite limits, those for methyl violet being λ 500.5 and λ 590.7.

"The same phenomenon takes place if the two solutions of methyl violet and of methylene blue are placed one behind the other in separate vessels and are then examined with a spectroscope."

It is a pity that the author did not go into this matter more in detail, because the reviewer has no hesitation in saying that the facts are impossible as stated.

On p. 97 there is the interesting statement that all dyes, which fluoresce in other solvents, lose their fluorescence when dissolved in aniline.

The author presents his subject under the headings: introduction; the spectroscope; general relations between color, absorption, fluorescence, and constitution of dyes and colored compounds; relations between constitution and absorption spectrum for some groups of dyes; di- and tri-phenylmethane dyes; quinone imide dyes; fluorindine and triphendioxazine; acridine dyes; anthraquinone dyes.

Wilder D. Bancroft

Traité complet d'Analyse chimique, appliquée aux Essais Industriels. Par J. Post et B. Neumann. Avec la collaboration de nombreux chimistes et spécialistes. Deuxième édition française entièrement refondue. Traduite d'après la troisième édition allemande et augmentée de nombreuses additions. Par le L. Gautier. Tome second; premier fascicule. 16 X 25 cm; pp. 199. Paris: A. Hermann, 1908. Price: paper, 6 francs.—This volume contains a chapter on lime, mortar,

cement and plaster; one on ceramic products; and one on glasses and glazes. The subject of glazes is a fascinating one which will certainly be taken up by the physical chemist some day and then he will find the information in this book of great value to him. It is well known that the high price of artistic potteries is due in part to the uncertainty of the process, the number of successful pieces being relatively small. This is merely the result of doing things in a haphazard way without paying careful attention to the temperature and to the composition of the gases in contact with the ware. Some day these things will be run as they should be and then we shall hear much less about the impossibility of controlling conditions.

Wilder D. Bancroft

Tables and Diagrams of the Thermal Properties of Saturated and Superheated Steam. By Lionel S. Marks and Harvey N. Davis. 16 X 23 cm; pp. 105. New York: Longmans, Green & Co., 1909. Price: bound, \$1.00 net.—“The tables of the properties of saturated steam which have appeared up to the present time have all been based upon the classic investigations of Regnault, carried out more than sixty years ago. It has been apparent for some time that the total heats of dry and saturated steam, as determined by those admirable researches, are below the correct values. The great difficulty in obtaining steam which is exactly dry and saturated has not been appreciated until very recently; and it is undoubtedly true that Regnault was investigating steam containing a small amount of moisture when he thought that he was dealing with dry steam. Fortunately, the recent investigations of Dieterici, Smith Griffiths, Henning and Joly give a trustworthy body of new values of the total heat of dry steam at pressures below atmospheric pressure, while the method recently elaborated by Davis, when applied to the throttling experiments of Grindley, of Peake, and of Griessmann, gives remarkably accordant determinations at pressures above atmospheric pressure. The table which we have prepared is based entirely upon these new values, and is probably correct to one-tenth of 1 percent within the range of steam pressures usual in engineering practice. Regnault's formula gives results which are too high by 18 B. t. u. at 32° F, too low by 6 B. t. u. at 275° F, and again too high at 380° F, the error increasing rapidly at higher temperatures.

“The investigations of Knoblauch, of Thomas and of Henning are the necessary basis for any determinations of the properties of superheated steam. These investigations have been subjected to a careful analysis, both as to the probable errors resulting from the methods of experimentation, and also as to the relation of the experimental results to the values deduced from thermodynamic theory, so far as this latter throws any light on the matter. Where the results of the separate investigations are not closely accordant, a critical estimate has been made of the relative values to be given to each, in the region under consideration. The properties of superheated steam are tabulated for every pound pressure, and for every ten degrees of superheat, within a range which exceeds present practice. All the information relating to superheated steam of any pressure is given on one double-page, an arrangement which permits the immediate finding of any desired quantity. Supplementary tables extend the superheated steam table to very high temperatures and give the properties of water, metric conversion factors, Napierian logarithms and other quantities.