Subs., 0.5001, 0.5034. 18.32 cc., 18.36 cc. 0.0699 *N* HCl.

Calc. $C_{16}H_{12}O_6NAs$: C, 51.47; As, 20.10; N, 3.75. Found C, 51.54, 51.20. As 19.97, 19.77; N, 3.58, 3.57.

URBANA, ILLINOIS.

## NOTE.

**Bromo-quinaldines.**—6-Bromo-quinaldine has been prepared by Barton and MacCollum[1] by the condensation of *p*-bromo-aniline and acetaldehyde, but, this method not proving satisfactory or our purposes, the following method was used.

Ten g. of *p*-bromo-aniline was mixed with 13 g. of conc. hydrochloric acid. The mixture was cooled and 6 g. of paraldehyde was added. Condensation was brought about by heating the mixture on a boiling-water bath during 3 hours. Five hundred g. of water was added, and the aldehyde resin coagulated by heating on the water-bath. The clear liquid was then poured off, made alkaline and distilled with steam.

The crude mixture thus obtained was heated with an equal bulk of acetic anhydride at 100° for 15 minutes, the excess of acetic anhydride removed by boiling with alcohol and subsequently evaporating the ester, and the solid extracted with chloroform in the cold and crystallized from light petroleum ether.

**6-Bromo-quinaldine Methiodide.**—A mixture of 10 g. of 6-bromo-quinaldine and 6.4 g. of methyl iodide was heated for 24 hours in a sealed tube at 79–80°. A yellow crystalline solid was obtained which, when crystallized from alcohol, gave 12 g. of greenish-yellow needles melting at 237° (decomp.).

*Analysis.* Subs., 0.3110: AgI, 0.1995. Calc. for $C_{11}H_{11}BrNI$: I, 34.9. Found: 34.7.

**6-Bromo-quinaldine Ethiodide.**—A mixture of 16.1 g. of 6-bromo-quinaldine and 11.7 g. of ethyl iodide was heated in a boiling-water bath for 36 hours. The product was purified as above. M. p. 218°.

*Analysis.* Subs., 0.3000: AgI, 0.1860. Calc. for $C_{12}H_{13}BrNI$: I, 33.6. Found: 33.5.

*m*-Bromo-aniline was condensed with paraldehyde in the same way and the crude oily product diazotized and distilled with steam to get rid of the unchanged primary amine. A yellow solid was obtained (11 g.) which was heated with 3.5 cc. of nitric acid, sp. gr. 1.42, in 20 cc. of water. Yellow crystals of bromo-quinaldine nitrate were obtained and the base precipitated from an aqueous solution with ammonia. It was recrystallized from petroleum ether (60–80°), when white leaflets melting at 77° were obtained.

*Analyses.* Subs., 0.1735: $CO_2$, 0.3470; $H_2O$, 0.636. Calc. for $C_{10}H_8BrN$: C, 54.3; H, 3.7. Found: C, 53.97; H, 3.99.

Subs., 0.2393: AgBr, 0.2015. Calc. for $C_{10}H_8BrN$: Br, 35.98. Found: 35.83.

When condensations are made with paraldehyde and *m*-bromo-aniline, it is evident that two bromo-quinaldines may be obtained, the bromine atom in the *meta* position with respect to the amino group in the primary base occupying the 5-, or 7-, position in the bromo-quinaldine. Only one of these two possible isomers has been isolated. The position of the bromine atom has been left undetermined for the present.

The ethiodide was prepared in the same way as the ethiodide of 6-bromo-quinaldine, m. p. 217°. The nitrate melts at 102°. The salts of the other two common mineral acids are very soluble in water. The double salts with zinc chloride, mercuric chloride and stannic chloride have been prepared by boiling together solutions in hydrochloric acid

[1] Barton and MacCollum, THIS JOURNAL, **26**, 704 (1904).

of the base and the respective salts: (*a*) *bromo-quinaldine zinc chloride*, colorless needles, soluble in water, m. p. 268°; (*b*) *bromo-quinaldine stannic chloride*, colorless leaflets, insoluble in water; (*c*) *bromo-quinaldine mercuric chloride*, colorless needles, soluble in water, m. p. 245°; (*d*) *bromo-quinaldine picrate*, yellow leaflets insoluble in alcohol, crystallized from acetone, m. p. 207°.

The above preparations were carried out during the course of an investigation on the modifications in photographic sensitiveness brought about by the introduction of bromine in the benzene ring of the quinaldine nucleus of pinaverdol and pinacyanol.

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## NEW BOOKS.

**Tables of Physical and Chemical Constants and Some Mathematical Functions.** Fourth edition. By G. W. C. KAYE, O. B. E., M. A., D. Sc., The National Physical Laboratory, and T. H. LABY, M. A., Professor of Natural Philosophy, The University of Melbourne. Longmans, Green and Company, 39 Paternoster Row, London; Fourth Avenue and 30th Street, New York; Bombay, Calcutta and Madras. 1921. iii + 161 pp. 16.5 × 25 cm. Price $4.00.

The selection of data to be included in a small handbook of convenient size and moderate price to be used both by physicists and chemists is a difficult problem. The fact that a fourth edition of these Tables, first published in 1911, has now appeared is evidence that the selection there made was a wise one. Nevertheless, the Tables are much more complete from a physical than from a chemical standpoint. For instance, information as to chemical equilibria, electromotive forces, the vapor pressures of solutions, and reaction velocities is almost wholly lacking. We are sure that a still wider usefulness for the book could be secured by a revision and extension of its chemical data.

A number of alterations and additions have been made in this issue. Matter relating to the figure of the earth, the absolute determination of the acceleration of gravity, and more extended tables of the relative value of that constant have been added. The chemical data have been recalculated, using the international atomic weights. Some 700 additions and alterations in the physical constants of chemical compounds have been made. The authors state that the published values of these constants have been critically examined, and what appear to be the more accurate values for the chemical compounds included in these pages, have been used. Many of the heat tables have also been revised and amplified. The modernity of the book is demonstrated by the addition of tables of atomic