The Optical Properties of Coniine Hydrochloride.—The purpose of this note is to call the attention of chemists again to the value of optical identification of crystalline compounds. The outstanding appeal of the optical method to the chemist rests in the fact that it may be used as a means of identification of a compound, not only when the compound is isolated, but in many cases also when it is associated with other substances. Once the indices of refraction of a pure crystalline material are determined they stand for all time a positive, characteristic, physical constant for that compound, just as much as its optical rotation, its melting and its boiling points.

Prof. E. C. C. Baly, in an address upon the subject of photosynthesis before the Washington Section of the American Chemical Society, mentioned the difficulty of directly identifying coniine as one of the end products of photochemical reaction. The method he finally adopted included a somewhat involved melting-point determination on hydrochlorides.

In order to obtain an additional means of identification, we have studied the optical properties of coniine hydrochloride. The melting point of the substance we used agrees with that given in the literature [namely, 207°, Engler and Bauer, *Ber.*, **27**, 1775 (1894)]. Upon treatment with alkali it gave an oil which gave addition compounds with mercuric chloride and chloroplatinic acid. Only the first was analyzed and it corresponded in nitrogen content to a substance $C_8H_{17}N.2HgCl_2$. Its refractive indices

Anal. (Kjeldahl-Gunning Arnold method.) Calcd. for $C_8H_{18}NCl$: N, 8.56. Found: 8.63.

were determined by the successive suspension of small quantities of the material in liquids having known refractive indices until the boundary between crystal and liquid disappeared when examined in plane-polarized light.[1]

The values obtained were $\alpha = 1.535$ and $\gamma = 1.540$, both ± 0.002. The extinction is parallel and the sign of elongation is negative. In convergent polarized light, biaxial interference figures are common, and the optic axial angle was found to be 30–35°. Dispersion is very marked, red being greater than violet. In parallel-polarized light many of the fragments show yellow interference colors (first order), but some show peculiar and characteristic blues or purples, of the type known to petrologists as anomalous interference colors. Perhaps the simplest plan for identification is to immerse the fragments in a liquid, the refractive index of which is equal to one of their indices. Methyl salicylate (oil of wintergreen) is such a liquid, its index being 1.535. In it the grains practically disappear, although their outlines can be faintly seen as blue

[1] Wherry, *U. S. Dept. Agric. Bull.*, **679** (1918). Keenan, *J. Biol. Chem.*, **62**, 163 (1924).

and orange lines because of the difference in dispersion of the crystal and the liquid.

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NEW BOOKS

Walthère Spring, Oeuvres complètes de. (Complete Works of Walthère Spring.) Published by the Chemical Society of Belgium. Hayez, Brussels, 1914 and 1923. Vol. I, iv + 900 pp. Frontispiece. Vol. II, iv + 960 pp. Frontispiece. 16.5 × 25 cm. Price 40 francs.

These volumes, published under the auspices of the Chemical Society of Belgium, were edited by a Committee composed of G. Chavanne, L. Crismer and J. Wauters. The first volume appeared three years after the death of Spring; the second, delayed by the World War, has but recently been issued.

The numerous publications of Spring have been assembled under ten heads, as follows: The Effect of High Pressure on Solids, and the Diffusion of Solids; Physico-chemical Dynamics; Color and Transparency of Fluids; Inorganic Chemistry; Colloids; Geology and Meteorology; Miscellaneous Reviews, etc. The separate articles number 131. These titles and this large number are eloquent in showing the versatility of Spring and the scope of his work, the excellence and originality of which are well recognized.

There is also a biography of Spring by Crismer, giving a careful summary of his scientific achievements and an appreciative depiction of his personality. The Editors acknowledge the generous assistance of E. Solvay in the publication of the first volume, and of the University Foundation in the publication of the second.

This collection of the many scattered and inaccessible papers of Spring will surely be valuable and is a fitting memorial to a great investigator.

ARTHUR B. LAMB

Cinq Questions d'Actualité. (Five Questions of the Day.) Reports and Discussions of the First Council of Chemistry, held at Brussels on April 21–27 1922, under the auspices of the Solvay International Institute of Chemistry. Gauthier-Villars and Company, 55, Quai des Grands-Augustins, Paris, 1925. xvi + 336 pp. Illustrated. 25.5 × 16.5 cm. Price, unbound, 30 francs.

This volume contains eight addresses on important current problems of chemistry, as follows:

Isotopes, a General Introduction to the Discussion on Atomic Structure, by Frederick Soddy.

The Determination of Atomic Weights by the Method of Positive Rays, by F. W. Aston.