very soluble in water, which, however, hydrolyzes the combination to some extent, since urea crystals form before the salt itself separates out.

Calc.: N, 13.67; found, 13.60.

Basic Iron and Chromium Compounds.—No definite compounds were obtained by treating ferric and chromic hydroxides with water solutions of chloroacetic acid. The normal ferric salt appears to hydrolyze very easily, since even in cold solutions the iron is practically all removed by precipitating as a mixture of the basic salts. A solution containing the chromic salt was strongly dichromatic, green and purple; upon evaporation crystals of pure monochloroacetic acid were deposited. Later a pale green crystalline substance separated out and appeared to be a hydrate of $Cr(CH_2ClCO)_2OH$ mixed with a small amount of some salt more basic.

All of these salts, when treated in solution with silver nitrate, in no case gave more than a very slight opalescence.

None of the above salts are found mentioned in available literature.

A number of other compounds have been prepared and work is in progress upon still others.

MISSOULA, MONT.

[CONTRIBUTION FROM THE ESSENTIAL OILS LABORATORY, BUREAU OF CHEMISTRY, U. S. DEPARTMENT OF AGRICULTURE.]

THE RESOLUTION OF ASCARIDOLIC ACID.

BY E. K. NELSON.

Received October 13, 1914.

Ascaridolic acid,[1] possessing the structure of a 1,4-cineolic acid, should, like ordinary $d + l$ cineolic acid, be a racemic compound.

Attempts to effect its resolution by means of its brucine or strychnine salt resulted in failure. With the cinchonidine salt, however, little difficulty was experienced.

Twenty grams of ascaridolic acid were dissolved in 2500 cc. of hot water and 27 g. of powdered cinchonidine were gradually added while boiling and stirring. On cooling, a salt separated in the form of fine, silky needles, which, filtered, washed with a little water and dried, weighed 19 g., corresponding to 8 g. of the original acid. The mother liquors and washings were concentrated at a low temperature (not over 40°) and the salt separated was fractionally crystallized until it was fairly free from the difficultly soluble salt.

The cinchonidine salt of the acid was thus separated into a slightly soluble and a readily soluble salt. These salts, dissolved in warm water and decomposed with an excess of dilute hydrochloric acid, yielded the corresponding acids, both of which, after purifying by repeated crystallization, were obtained in well formed prisms.

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[1] E. K. Nelson, THIS JOURNAL, **33**, 1410 (1911), **35**, 89 (1913).

The less soluble salt yielded *d*-ascaridolic acid. 2.0545 g. made up to 25 cc. solution in chloroform at 24° in 200 mm. tube = 2.29° to the right. $[\alpha]_D = + 13.93°$, melting point 129–130°.

The more readily soluble salt yielded the *l*-ascaridolic acid, which also melts at 129–130°.

2.0431 g. made up to 25 cc. solution in chloroform at 24° in 200 mm. tube = 2.25° to the left.

$[\alpha]_D = -13.77°$.

WASHINGTON, D. C.

OPTICAL ROTATORY POWER AND CHEMICAL CONSTITUTION.

BY L. G. WESSON.

Received October 19, 1914.

Pickard and Kenyon, in a series of valuable investigations on the "Dependence of Rotatory Power on Chemical Constitution,"[1] have determined the molecular rotatory power of over 100 closely related compounds. The list includes methyl ethyl carbinol and its homologs up to the ethyl tridecyl member, isopropyl methyl carbinol and its homologs up to the isopropyl decyl member, and the esters of the methyl carbinol series with the homologous *n*-aliphatic acids from acetic up to dodecoic, myristic, palmitic and stearic acids.

From these experimental results, which are to be made the basis of the present paper, Pickard and Kenyon derive an hypothesis[2] which is "based merely on a consideration of the space occupied by the four groups attached to the asymmetric carbon atom" and "appears to explain the results obtained for the three series of carbinols, as well as those obtained for eight series of simple esters derived from the 'methyl' series of carbinols."

"In a homologous series of optically active compounds represented by *Cabcd*, the usual effect of increasing the size of *d* (representing the growing chain) is to alter in a regular manner (usually to increase) the molecular rotary power of the compounds."

"When the groups (or atoms) represented by *a*, *b*, and *c* occupy a relatively small space, as, for example, in the 'methyl' series of carbinols, $CH_3.CH(OH).R$, the values of the molecular rotary powers of the homogeneous compounds increase regularly with the increasing size of the chain, and only in solution are affected by the peculiar configuration of the chain, when this returns upon itself."

"When, however, the space occupied by the groups (or atoms) *a*, *b*

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[1] Part I, *J. Chem. Soc.*, **99**, 45 (1911); Part II, *Ibid.*, **101**, 620 (1912); Part III, *Ibid.*, **101**, 1427 (1912); Part IV, *Ibid.*, **103**, 1923 (1913); Part V, *Ibid.*, **105**, 830 (1914); also, *Ber.*, **45**, 1892 (1912); *Chem. News*, **108**, 163 (1913); and *Trans. Faraday Soc.*, **1914** (*C. A.*, **8**, 2339).

[2] Part IV, *J. Chem. Soc.*, **103**, 1930 (1913).