If the nitrite is to be used for a purpose where a little water will do no harm, no further purification is required and the yield is 93 to 95% on the basis of the sulfuric acid used. After standing for a day or two with anhydrous sodium sulfate, the yield is about 90%. The nitrite retains a very small amount of the alcohol used. This is very rarely objectionable but it may be removed by careful distillation with a good column, under diminished pressure. Distillation under atmospheric pressure causes some decomposition.

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Aliphatic Hydrocarbons in "Lorol"[1]

BY JOHN R. RUHOFF[2]

Since "Lorol" has recently become available in large quantities, it is one of the best sources of higher aliphatic alcohols. In the course of the distillation of fifty pounds of this material, certain small intermediate fractions were obtained whose presence could not be immediately accounted for. Investigation showed them to be azeotropic mixtures of a paraffin hydrocarbon and an alcohol in the ratio of about 1 to 2.

One of the fractions, boiling at 187–188° (wt. 185 g.), was shaken with benzoyl chloride and sodium hydroxide solution and distilled. Octyl benzoate and a liquid insoluble in concentrated sulfuric acid were recovered. A fraction, boiling at 157–158° (100 mm.) (wt. 105 g.), when treated in a similar manner, yielded decyl benzoate and again an oil insoluble in sulfuric acid. The properties of these two substances, as given in Table I, indicate definitely that they were *n*-undecane and *n*-tridecane.

It seems very probable that, during the high-pressure reduction of the coconut oil, these hydrocarbons were also formed, by the hydrogenolysis

TABLE I

PHYSICAL CONSTANTS OF HYDROCARBONS ISOLATED FROM "LOROL"

	From fraction boiling at 187–188°	*n*-Undecane	From fraction boiling at 157–158° at 100 mm.	*n*-Tridecane
M. p., °C.	−28[a]	−25.65[b]	−6	−6.2[c]
B. p., °C.	195–198	195.84[b]	161–165 (100 mm.)	162.5[c] (100 mm.)
d_4^{20}	0.7457	0.73667[b]	0.7543	0.7534[d]
$n_D^{25°}$	1.4200	1.41727[b]	1.4250	1.4250[e]

[a] The melting point was not depressed by the admixture of some authentic *n*-undecane. [b] Shepard, Henne and Midgley, THIS JOURNAL, **53**, 1948 (1931). [c] Krafft, *Ber.*, **15**, 1699 (1882). [d] Calculated from the data of Krafft. [e] Estimated from the data of Shepard, Henne and Midgley.

(1) Trade name of a commercial product consisting of a mixture of aliphatic alcohols formed by the high-pressure hydrogenation of coconut oil.

(2) Kewaunee Manufacturing Company Fellow in Chemistry.

of an alcohol containing one more carbon atom, as described by Wojcik and Adkins.[3] No other hydrocarbon was isolated in quantity sufficient for identification, although there was some evidence that a fraction boiling at 130–50° contained *n*-nonane. However, inasmuch as dodecyl and tetradecyl alcohols are the principal constituents of "Lorol," the amount of hydrocarbon formed from any of the other alcohols present should be small.

(3) Wojcik and Adkins, THIS JOURNAL, **55**, 1293 (1933).

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COMMUNICATIONS TO THE EDITOR

PHOSPHOROUS FLUOROCHLORIDES

Sir:

We have found that the fluorination of PCl_3 by SbF_3 in the presence of $SbCl_5$[1] yields three gases, PF_3 in large amounts and two new gases, PF_2Cl boiling at approximately $-48°$ and melting at approximately $-166°$, and small amounts of a $PFCl_2$ boiling a little below room temperature. These new substances are colorless both as gas and liquid, and fume in moist air. Variations of the experimental conditions indicate that the best yields are obtained when 450 parts of PCl_3 and 10 parts of $SbCl_5$ are vigorously stirred while sublimed SbF_3 is slowly added at room temperature.

The low yields by the above method caused us to try converting the PF_3 to the fluorochlorides. It was found that by passing an equimolecular gaseous mixture of PCl_3 and PF_3 through a glass tube filled with broken porcelain heated by an electric furnace so that the temperature of the exit gases was 200°, 50% of the mixture was converted to PF_2Cl and $PFCl_2$ in one pass. We are trying this same general method on mixtures of other non-polar chlorides and fluorides. The complete results of these investigations will be reported later.

(1) Booth and Swinehart, THIS JOURNAL, **54**, 4751 (1932).

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AN ATTEMPT TO PREPARE A CHLORIDE OR FLUORIDE OF XENON

Sir:

Frequent attempts have been made to prepare compounds of the noble gases with more electronegative elements, but the results have not been