the change in the heats of formation cannot be accounted for by the values reported in the literature for the molecular configuration of the paraffin chain. This leads to the conclusion that there is an interaction between the iso-alkyl group and the fluoronitramine group. The difference between the heats of formation of the normal and *sec*-butyl-*N*-fluoronitramines is in the range of differences reported for many other isomeric compounds (Table III). However, there is a "jump" in the heat of formation from the *sec*- to the *tert*-butyl-*N*-fluoronitramine. The difference between these isomers is unusually high, but is supported by decomposition rate studies. The *n*- and *sec*-butyl-*N*-fluoronitramines show approximately the same decomposition rate ($0.8.10^{-4}$ sec.$^{-1}$); the tertiary compound has a twenty times higher decomposition rate (24.10^{-4} sec^{-1}) (*6*).

It is assumed that branching of the butyl chain introduces strain into the molecule by steric hindrance and electronic configuration.

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Alkyl Ethers

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A SERIES of ethers was obtained by the reaction of phenylmagnesium bromide, prepared commercially by the Arapahoe Chemical Co. as a 3*M* solution, with acetals above 100° C. in xylene according to a procedure of Kaye and Kogon (*1*). Table I summarizes the yield, boiling point, refractive index, and elemental analysis of the compounds prepared. The infrared spectra were consistent in each instance with the desired structure.

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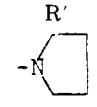
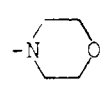
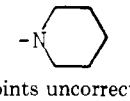
Table I. C_6H_5—$CHCH_2$—R′ (OR)

R	R′	B.P.[a] °C.	B.P.[a] Mm.	Yield, %	n_D^{25}	Formula	Analysis: Carbon Calcd.	Carbon Found	Hydrogen Calcd.	Hydrogen Found	Nitrogen Calcd.	Nitrogen Found
C_2H_5—		70–72	0.14	47	1.5125[25]	$C_{14}H_{21}NO$	77.0	77.5	9.7	9.4	6.3	6.4
C_2H_5—	—$N(C_2H_5)_2$	77–79	8.0	68	1.4872[25]	$C_{14}H_{23}NO$	75.9	75.9	10.5	10.5	6.3	6.5
C_2H_5—	—OC_6H_5	106	0.04	40	1.5457[25]	$C_{16}H_{18}O_2$	79.3	79.5	7.5	7.6	...	...
C_2H_5—		82–86	0.05[b]	50	1.5112[20]	$C_{15}H_{23}NO$	77.2	77.0	9.9	10.0	6.0	5.9
C_2H_5—		143–45	10.3[c]	50	1.5070[25]	$C_{14}H_{21}NO_2$	71.4	71.3	9.0	8.8	6.0	5.9

[a] Boiling points uncorrected. [b] Kaye and Kogon reported b.p. 135–47 ° C./9 mm.; yield, 62%. [c] Kaye and Kogon reported b.p. 134–36 ° C./10 mm.; yield, 23%.