CONCLUSIONS

1. Ethylene telomerization by methyl acetoxyacetate proceeds at all the C—H bonds of the telogen and is accompanied by rearrangement of the $\dot{C}H_2(CH_2)_3CH(OCOCH_3)CO_2CH_3$ and $\dot{C}H_2(CH_2)_4CO_2CH_2CO_2CH_3$ radicals with 1,5 migration of a hydrogen atom, which leads to five types of reaction products.

2. The breakage of the methyl group C—H bonds of methyl acetoxyacetate indicates the relatively low efficiency of this telogen as a chain transfer agent due to breakage of the α-C—H bond.

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NEW METHOD FOR THE SYNTHESIS OF FUNCTIONALLY-SUBSTITUTED BIS(SILYLMETHYL)MERCURY COMPOUNDS AND BENZOYLGERMANES

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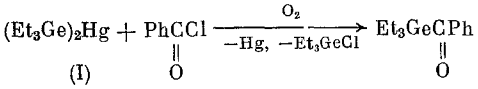
Diphenylmercury and triethylbromogermane are formed upon the oxidation of bis(triethylgermyl)mercury (I) in bromobenzene [1]. We have established that the oxidation of (I) in the presence of benzoyl chloride or chloromethylmethylchlorosilanes leads to the formation of products obtained in our previous work by the photochemical reactions of (I) with these compounds [2, 3]. Thus, the oxidation of (I) in the presence of benzoyl chloride gives Et_3GeCl and benzoylgermane in addition to the oxidation products, triethylgermanium oxide and metallic mercury. The yield of benzoylgermane was 70%, while the yield of metallic mercury was 100%.



$$\underset{(I)}{(Et_3Ge)_2Hg} + \underset{\displaystyle O}{\overset{}{PhC\underset{\|}{}Cl}} \xrightarrow[-Hg,\ -Et_3GeCl]{O_2} Et_3GeCPh \quad (C{=}O)$$

The oxidation of (I) in chloromethylmethylchlorosilanes leads to Et_3GeCl and a bis(chlorosilylmethyl)mercury compound in addition to triethylgermanium oxide and mercury. The yield of the bis(chlorosilylmethyl)mercury compound was 68%

$$(I) + 2ClCH_2SiMe_{3-n}Cl_n \xrightarrow[-Et_3GeCl]{O_2} (Cl_nMe_{3-n}SiCH_2)_2Hg \quad n = 1\text{—}3.$$

These results may be explained assuming that the oxidation of (I) is accompanied by the formation of triethylgermyl radicals as in the oxidation of bis(triisopropylgermyl)mercury [4]

$$\begin{gathered}(R_3Ge)_2Hg + O_2 \rightarrow R_3GeHgOOGeR_3,\\ R_3GeHgOOGeR_3 \rightarrow R_3GeHg^{\bullet} + R_3GeOO^{\bullet}\\ R_3GeHg^{\bullet} \rightarrow R_3Ge^{\bullet} + Hg\end{gathered}$$

The radicals formed may then react with halogen-containing derivatives according to the previously proposed schemes [2, 3].

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EXPERIMENTAL

All the reactions were carried out in glass ampuls. After the reagents were mixed in vacuum, the ampules were opened to the air and maintained until either no further metallic mercury separated or the reaction mixture was decolorized.

Oxidation of Bis(triethylgermyl)mercury (I) by Benzoyl Chloride. An ampul containing 4.1 g (I) and 4.4 g benzoyl chloride in 10 ml benzene was opened to the air and occasionally shaken. After 24 h, the yield of mercury was 1.6 g (100%). Et_3GeCl, $(Et_3Ge)_2O$, and benzoyltriethylgermane were identified by gas–liquid chromatography. Vacuum distillation gave 1.6 g (70%) benzoyltriethylgermane.

Oxidation of Bis(triethylgermyl)mercury by Chloromethylmethyldichlorosilane. An ampul containing a solution of 6.0 g (I) and 5.7 g chloromethyldichlorosilane in 10 ml benzene was opened to the air. The reaction mixture was left for 12 h until it was decolorized with occasional shaking. Et_3GeCl and $(Et_3Ge)_2O$ were identified by gas–liquid chromatography. Vacuum distillation gave 3.6 g (68%) bis(methyldichlorosilylmethyl) mercury. The yield of mercury was 0.4 g (17%).

Bis(dimethylchlorosilylmethyl)mercury and bis(trichlorosilylmethyl)mercury were obtained by analogous procedures in 65% and 60% yield, respectively.

CONCLUSIONS

A new method has been developed for the synthesis of substituted bis(silylmethyl)mercury compounds and benzoylgermanes based on the reaction of bis(triethylgermyl)mercury with the corresponding chloromethylsilanes and benzoyl chloride in the presence of atmospheric oxygen.

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CHEMICAL IONIZATION MASS SPECTROMETRIC STUDY OF ALIPHATIC NITRAMINES

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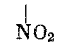
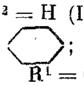
In our previous communication [1], we examined the electron impact (EI) mass spectra of aliphatic nitramines (I)-(VIII)



$$R^1{-}\underset{\displaystyle NO_2}{\underset{|}{N}}{-}R^2$$

$R^1 = CH_2CH_2CH_3$, $R^2 = H$ (I); $R^1 = CH_2(CH_2)_4CH_3$, $R^2 = H$ (II); $R^1 = CH(CH_3)_2$, $R^2 = H$ (III); $R^1 = CH(CH_3)CH_2CH_3$; $R^2 = H$ (IV); $R^1 =$ ; $R^2 = H$ (V); $R^1 = R^2 = C_2H_5$ (VI); $R^1 = R^2 = CH_2(CH_2)_2CH_3$ (VII); $R^1 = CH_2CH_2CH_3$, $R^2 = CH_2(CH_2)_4CH_3$ (VIII).

In the present work, we examined the chemical ionization (CI) mass spectra of (I)-(VIII). The information available in the literature [2-5] would indicate that the CI mass spectra of

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