

well as in the earlier publication /1/) it was pointed out that demethylation of toluene is significantly accelerated with increasing hydrogen pressure. In our paper /2/ we proposed a chain-reaction mechanism for this process. Basic to this scheme is the reaction of radical^s, formed in the thermal degradation of tolueneⁿ, with hydrogen (and with molecules of toluene and with reaction products). The reaction with H₂ molecules generates atomic hydrogen. The latter, in turn, attacks toluene molecules /3,4/ with the formation of methane and phenyl radicals, or benzene and methyl radicals (or possibly, also tolyl radicals) and the chain reaction continues in the same manner. It is precisely this reaction of atomic hydrogen with alkylbenzene molecules, which is apparently responsible for the change in composition of the products of the homogeneous destructive hydrogenation with increased hydrogen pressure. Thus, for ethylbenzene, one might expect the following reaction *

*(Footnote R.p. 949) We have noted only the chain-initiation reaction and some chain-propagation reactions involving hydrogen.

.....R. p. 949

Reaction (1) appears to be the first step in the thermal degradation of ethylbenzenes (see /5/).

.....R. p. 949

.....R. p. 950

The molecules of toluene formed in this process undergo further transformation into benzene and methane /2/.