contrast to the highly elastic state in which the relaxation time is less than the time of an experiment. Consequently, the difference in the coefficients of thermal expansion in the vitreous and highly elastic states can be considered as a characteristic of the degree of absence of equilibrium of the polymer at temperatures below the glass point. The dependence of $\Delta\beta$ on log P shown in Fig. 6 is clear from the experimental material considered above.

CONCLUSIONS

(1) The specific volume of PMMA plasticized with DBP has been studied as a function of the temperature and pressure.

(2) It has been shown that when a plasticizer is added the pressure above which an increase in T_g begins is lowered. This fact is explained by a diminution in the free volume in the polymer on plasticization.

(3) At pressures above 2000 kg/cm^2, T_g rises very slightly because of the disappearance of the free volume in the polymer to such an extent that the intermolecular interaction increases little with the pressure.

Translated by B. J. HAZZARD

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HETEROCHAIN POLYMERS WITH PHOSPHORUS AND OXYGEN ATOMS IN THE MAIN CHAIN. POLYPHOSPHONOPHOSPHATES AND POLYPHOSPHONATES*

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THE most intensely studied representatives of linear heterochain polymers containing phosphorus and oxygen in the main chain are the polyphosphates of composition $Me_{n+2}[P_nO_{3n+1}]$ or $Me_n[H_2P_nO_{3n+1}]$, where Me represents potassium or sodium and n is from 1 to 10^6 [1]. At a polymerization coefficient $n \geqslant 10$, these are solid water-soluble glass-like polymers.

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