

## PHENYL URETHAN ANESTHETICS

Sir:

In a recent paper<sup>1</sup> the writer described several phenyl urethan derivatives of dialkyl amino alcohols, and called attention to their great local anesthetic activity. While other compounds of these amino alcohols have not been reported, the activity of the phenyl urethans immediately suggested a study of similar compounds derived from the amino alcohols which are the bases of the popular local anesthetics butyn and novocaine. These compounds were accordingly prepared by the action of phenyl isocyanate on the proper amino alcohol in ether solution. The hydrochlorides were precipitated with gaseous hydrogen chloride and recrystallized from a mixture of acetone and ethyl acetate. The  $\gamma$ -di-*n*-butylaminopropanol phenyl urethan hydrochloride (I) melts at 123–124° (Calcd. for  $C_{13}H_{31}O_2N_2Cl$ : Cl, 10.4. Found: Cl, 10.1, 10.5), and the  $\beta$ -diethylaminoethanol phenyl urethan hydrochloride (II) melts at 138–139° (Calcd. for  $C_{13}H_{21}O_2N_2Cl$ : Cl, 13.0. Found: Cl, 12.9). One per cent. aqueous solutions of butyn and novocaine and the corresponding molecular concentrations of the two homologous phenyl urethan hydrochlorides were applied to the cornea of the rabbit for one minute and the durations of the resulting anesthetics were timed. The results are as follows.

Compound	Percentage concentration	Duration of anesthesia of rabbit's cornea, minutes
Butyn	1	25
I	0.96	36
Novocaine	1	Incomplete
II	1	9

Thus both phenyl urethan derivatives produce anesthetics of decidedly longer duration than similar molecular concentrations of their *p*-amino-benzoate homologs. This material although not yet complete demonstrates most convincingly the value of a study of phenyl carbamic acid esters as local anesthetics. A further study is being made of other properties of these compounds and of the general field of phenyl urethan local anesthetics.

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