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### 4-( $\alpha,\beta$ -DIBROMOETHYL)PHENYLPHOSPHONIC ACID

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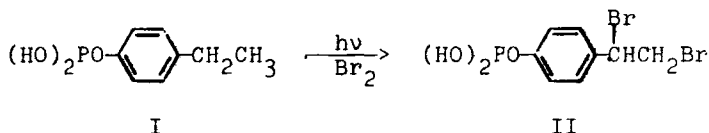
JAMES A. MOORE

4-( $\alpha,\beta$ -DIBROMOETHYL)PHENYLPHOSPHONIC ACID

Submitted by M. A. Rea,<sup>1a</sup> T. L. Slapar<sup>1b</sup> and W. A. Trinler\*  
(8/23/73)

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The title compound (II) has been prepared by the free radical bromination of 4-ethylphenylphosphonic acid (I).<sup>2</sup>



EXPERIMENTAL

4-( $\alpha,\beta$ -Dibromoethyl)phenylphosphonic (II). - A solution of 16 g. (5.5 ml., 0.10 mole) of bromine in 20 ml. of acetic acid was added dropwise over a period of 2 hrs. to a solution of 9.3 g. (0.050 mole) of I (prepared in 38% yield from ethylbenzene and  $\text{PCl}_3$ , mp. 172-173°)<sup>3</sup> in 50 ml. of acetic acid in a 250 ml. three-neck flask fitted with a reflux condenser and a dropping funnel. The reaction flask was irradiated with a 275 watt G. E. sunlamp placed about 1-2 inches below the flask. The reaction solution was then transferred to a beaker and reduced to one-half its original volume by evaporation to yield 14 g. (82%) of crude II, mp. 179-190°. Recrystallization from dilute hydrochloric acid yielded needles, mp.

189-191°. NMR [(CD<sub>3</sub>)<sub>2</sub>SO] δ 7.58-7.95 (m, 4, aromatic), δ 5.57 (pair of d, 1, CHBr) δ 4.17-4.57 (m, 2, CH<sub>2</sub>Br) δ variable with concentration and amount of water contamination (s, 2, OH).

Anal. Calcd. for C<sub>8</sub>H<sub>9</sub>Br<sub>2</sub>O<sub>3</sub>P: C, 27.94; H, 2.64; P, 9.01.

Found: C, 27.69; H, 2.65; P, 8.68.

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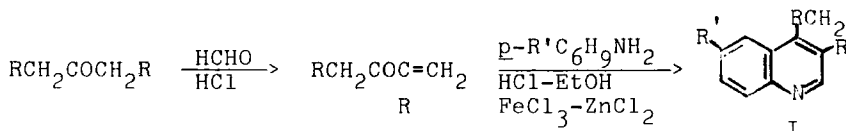
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## 3,4-DIALKYLQUINOLINES BY AN EXTENSION OF THE BEYER SYNTHESIS

Submitted by Paul A. Claret and A. G. Osborne\*  
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An extension of the Beyer synthesis<sup>1,2</sup> has been developed into a simple one-step procedure, useful for the preparation of 3,4-dialkylquinolines (I), starting from any simple ketone. Prior to this work, only methyl ketones had been used.<sup>1,3-5</sup>



a) R=CH<sub>3</sub>, R'=H; b) R=R'=CH<sub>3</sub>; c) R=C<sub>2</sub>H<sub>5</sub>, R'=H