### Table 2. Characteristics of the Substances Obtained

<table>
<thead>
<tr>
<th>Compound</th>
<th>mp, °C</th>
<th>Found, %</th>
<th>Empirical formula</th>
<th>Calc., %</th>
</tr>
</thead>
<tbody>
<tr>
<td>IX</td>
<td>108–110</td>
<td>86.2 8.4 6.4</td>
<td>C₁₈H₂₁N</td>
<td>86.1 8.4 6.6</td>
</tr>
<tr>
<td>X</td>
<td>89–89.5</td>
<td>86.9 8.3 4.8</td>
<td>C₂₂H₂₇N</td>
<td>86.5 8.8 4.6</td>
</tr>
<tr>
<td>XI</td>
<td>118–119</td>
<td>88.4 7.6 3.7</td>
<td>C₂₅H₂₃N</td>
<td>88.4 7.7 3.9</td>
</tr>
<tr>
<td>XII</td>
<td>140–141</td>
<td>81.6 7.6 3.7</td>
<td>C₂₈H₃₅NO₂</td>
<td>81.3 7.6 3.4</td>
</tr>
<tr>
<td>XV</td>
<td>70–70.5</td>
<td>79.4 8.1 3.8</td>
<td>C₁₇H₁₉O₂</td>
<td>79.7 7.9 3.6</td>
</tr>
<tr>
<td>XXV</td>
<td>145–146</td>
<td>82.7 6.1 3.8</td>
<td>C₂₁H₂₃NO₂</td>
<td>82.5 6.9 3.6</td>
</tr>
</tbody>
</table>

of the corresponding hydrogenated mixtures. 1,5-Diphenylpentane-1,5-diol (XV) crystallized on standing.

### Literature Cited


### 2,3,3-Trimethyl-3H-Pyrrolo[3,2-c]quinolines and Polymethine Dyes

**Based on them**

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2,3,3-Trimethyl-3H-pyrrolo[3,2-c]quinoline and its 8-methoxy derivative were obtained from methyl isopropyl ketone 4-quinolylhydrazones. These bases form quaternary salts at the azine nitrogen atom, from which polymethine dyes were obtained. The changes in the absorption spectra of the dyes in solutions with various acidities were examined.

Luminescence and the generation of deeply colored form IA have been achieved in the case of dye I, which is a 3H-pyrrolo[2,3-b]pyridine derivative, by excitation of the more highly colored protic salt (IB) in connection with the loss by the latter of a proton in the excited state [1]. Such systems should be of promise as active laser media [2].

In order to investigate similarly constructed compounds we accomplished the synthesis of trimethylpyrroloquinolines II\textsubscript{a,b}, the quaternary salts (III\textsubscript{a,b}) of which were used to obtain polymethine dyes.

Bases II\textsubscript{a,b} were obtained by Fischer indolization of methyl isopropyl ketone 4-quinolylhydrazones (VI\textsubscript{a,b}). As in the case of the similarly constructed pyrrolo[2,3-b]- and -[3,2-c]pyridines [3-5] and 1H-pyrrolo[3,2-c]quinolines [6], cyclization in acidic media was unlikely because of passivation of the quinoline ring. The conversion of quinolylhydrazone VI\textsubscript{a} to base II\textsubscript{a} was therefore carried out by heating with a catalytic amount of zinc chloride, and its 6-methoxy derivative (VI\textsubscript{b}) was converted to base II\textsubscript{b} in refluxing ethylene glycol.

Structures II\textsubscript{a,b} for the bases obtained were confirmed by the PMR spectra.

Although pyrroloquinolines II have two basic centers, monoquaternary salts (III\textsubscript{a,b}) are formed in the case of quaternization with dimethyl sulfate or methyl iodide. In this case alkylation takes place at the azine nitrogen atom; this was determined unambiguously from the absorption spectra of the polymethine dyes obtained from these salts.

Salts III\textsubscript{a,b} react readily with 1,3,3-trimethyl-2-formylmethyleneindole in refluxing acetic anhydride to give unsymmetrical carbocyanines (IVA\textsubscript{a,b}), but they are virtually inert under the standard conditions of the synthesis of symmetrical carbocyanines with ethyl orthoformate. Dyes VA\textsubscript{a,b}, were obtained only when the orthoester was replaced by the more active diethoxymethyl acetate.

The rather deep color of neutral methanol solutions of symmetrical dyes VA (Fig. 1, curves 1 and 4), which are formed without the admixture of other dyes, provides a basis to assume the presence in their molecules of a long conjugation chain, which is possible only in the case of quaternization of the pyridine ring nitrogen atom. If this were not so, a shorter conjugation chain should be formed in the case of alkylation of the pyrrolene nitrogen atom, and one might have expected absorption maxima at 550-600 nm, as in the case of substituted indocarbocyanines [7].

The correctness of the determination of the site of alkylation is also confirmed by the change in the color of dyes V and IV in solutions with various acidities. The presence in their molecules of two (symmetrical dyes V) or one (unsymmetrical dyes IV) nitrogen atom with free electron pairs that do not participate in conjugation suggests the possibility of the