TABLE 2. STABILITY CONSTANTS OF COBALT(II) BROMIDE COMPLEXES
VALID FOR 20°C AND 0.691 M PERCHLORIC ACID

<table>
<thead>
<tr>
<th>β₁</th>
<th>0.74 ± 0.1 M⁻¹</th>
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<tr>
<td>β₂</td>
<td>0.38 ± 0.1 M⁻²</td>
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introduced by Fronaeus,¹ with the resin, Amberlite IR-120 (30–80 mesh), in the hydrogen form. The experimental procedure, which involved the use of ⁶⁰Co as a tracer, was generally similar to that described in a previous communication.²

The distribution ratios measured at 20°C and the functions necessary for the derivation of stability constants are given in Table 1. The notation and method of calculation have been described by Morris and Short.² The results obtained for the stability constants, β_j = [CoBr^(2-j)+][Co^2+][Br^-]^j, are presented in Table 2. Our study provides no evidence for the existence of complexes with j > 2 in solution in the range [Br⁻] < 0.58 M, though anionic species are known to be formed at higher bromide concentrations.³

In the case of cobalt(II) it appears that chloride complexes are stronger than corresponding bromide complexes.

REFERENCES
The anodic reaction is represented by

\[ \text{NO}_2^- = \text{NO}_2 + e^- \]  

(1)

\( \text{NO}_2 \) was identified as the product yielded by the anodic reaction.

When the electrolysis current was switched off, a reversible cell was formed between the working electrodes of the cell. The potential of the anode measure against the reference electrode was \(-0.300\) V at \(306^\circ\text{C}\). This formation of a reversible electrode at the platinum anode has also been demonstrated by measuring its potential against a sodium/sodium-ion reversible electrode in pure molten sodium nitrate. The emf of the \(\text{Na}/\text{NaNO}_2/\text{NO}_2, \text{Pt}\) cell is \(2.72\) V at \(306^\circ\text{C}\). The potential of the residual cell formed after the interruption of the electrolysis current was independent of the current intensity that previously flowed through the cell and showed typical reversible behaviour. Considering the reported value for the standard reversible potential of nitrate electrode referred to the standard sodium electrode, the difference between the standard reversible potential of nitrate and nitrite \(\text{NO}_2\) electrodes at \(306^\circ\text{C}\) is \(0.825\) V.

The current/voltage curves indicate the existence of an overpotential. The Tafel slope is \(109 \pm 5\) mV at \(277^\circ\text{C}\). This value is quite close to \(2.303\frac{RT}{F}\), and it indicates that the transfer coefficient \(\alpha\) is unity. The Tafel slope was also determined by measuring the rate of decay of the anodic overpotential at current interruption. The overpotential decayed logarithmically with time and the average slope obtained from overpotential vs log \(t\) plots was \(109 \pm 5\) mV, in good agreement with the figure resulting from current/voltage curves as mentioned above.

A detailed discussion of the foregoing effects will be published shortly.

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REFERENCES