Angular centring error $= \frac{4r \cdot AC}{3\pi\, AB \cdot BC}$. Applying this to each station gives the following:—

Square of centring error (using rounded-off values)—

$$(1) = \left(\frac{4 \times \cdot015}{3 \times 3\cdot1416}\right)\left(\frac{490}{390 \times 430}\right)^2 = \frac{3\cdot46}{10^{10}}$$

$$(2) = \frac{4\cdot05}{10^5}\left(\frac{870}{390 \times 530}\right)^2 = \frac{7\cdot18}{10^{10}}$$

$$(3) = \frac{4\cdot05}{10^5}\left(\frac{710}{530 \times 250}\right)^2 = \frac{11\cdot63}{10^{10}}$$

$$(4) = \frac{4\cdot05}{10^5}\left(\frac{360}{250 \times 140}\right)^2 = \frac{42\cdot85}{10^{10}}$$

$$(5) = \frac{4\cdot05}{10^5}\left(\frac{180}{140 \times 100}\right) = \frac{66\cdot95}{10^{10}}$$

$$(6) = \frac{4\cdot05}{10^5}\left(\frac{300}{100 \times 230}\right)^2 = \frac{68\cdot90}{10^{10}}$$

$$(7) = \frac{4\cdot05}{10^5}\left(\frac{1020}{230 \times 880}\right)^2 = \frac{10\cdot29}{10^{10}}$$

$$(8) = \frac{4\cdot05}{10^5}\left(\frac{990}{880 \times 430}\right)^2 = \frac{2\cdot77}{10^{10}}.$$

The second step is to determine the mean error in the traverse angles due to the sighting and reading error of 10″. This gives $v = \pm 10'' = 10^{-5}\, 4\cdot848$ in circular measure, $\therefore v^2 = 10^{-10} \times 23\cdot50$ for each angle.

The error in the bearing of each line is shown in the following table:—

1.	2.	3.	4.	5.
a^2.	v^2.	1 + 2.	Mean (error)² in Bearing.	Line.
$10^{-10} \times 3\cdot46$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 26\cdot96$	$10^{-10} \times 26\cdot96$	2–3
$10^{-10} \times 7\cdot18$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 30\cdot68$	$10^{-10} \times 57\cdot64$	3–4
$10^{-10} \times 11\cdot63$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 35\cdot13$	$10^{-10} \times 92\cdot77$	4–5
$10^{-10} \times 42\cdot85$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 66\cdot35$	$10^{-10} \times 159\cdot12$	5–6
$10^{-10} \times 66\cdot95$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 90\cdot45$	$10^{-10} \times 249\cdot57$	6–7
$10^{-10} \times 68\cdot90$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 92\cdot40$	$10^{-10} \times 341\cdot97$	7–8
$10^{-10} \times 10\cdot29$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 33\cdot79$	$10^{-10} \times 375\cdot76$	8–1
$10^{-10} \times 2\cdot77$	$10^{-10} \times 23\cdot50$	$10^{-10} \times 26\cdot27$	$10^{-10} \times 402\cdot03$	1–2
$10^{-10} \times 214\cdot03$	$10^{-10} \times 188\cdot00$	$10^{-10} \times 402\cdot03$	...	...

The closing error in the bearing is therefore $10^{-4}\sqrt{4\cdot0203}$ in circular measure or 0′ 42″ in arc.

The last step consists in computing the error in the total length of the traverse due to the coefficient of the chain and the errors in the traverse due to the angular errors in each line.

$$c = \cdot0015,\ \Sigma d = 2956 \text{ links},\ \therefore c^2\Sigma d = \cdot006651.$$

The square of the mean error for each line is as follows:—

$$\begin{aligned}
(2\text{–}3)\ & 10^{-10} \times 26\cdot96 \times 530^2 = \cdot000757 \\
(3\text{–}4)\ & 10^{-10} \times 57\cdot64 \times 250^2 = \cdot000360 \\
(4\text{–}5)\ & 10^{-10} \times 92\cdot77 \times 140^2 = \cdot000182 \\
(5\text{–}6)\ & 10^{-10} \times 159\cdot12 \times 100^2 = \cdot000159 \\
(6\text{–}7)\ & 10^{-10} \times 249\cdot57 \times 230^2 = \cdot001320 \\
(7\text{–}8)\ & 10^{-10} \times 341\cdot97 \times 880^2 = \cdot026482 \\
(8\text{–}1)\ & 10^{-10} \times 375\cdot76 \times 430^2 = \cdot006948 \\
& \text{Sum} = \cdot036208
\end{aligned}$$

$$\begin{aligned}
\text{Mean error of closure} &= \pm\sqrt{(\cdot006651 + \cdot036208)} \\
&= \pm \cdot207.
\end{aligned}$$

Expressed in terms of a mile it is ·56, or 0·395 in latitude and departure.

The errors in the bearing in the above example due to imperfect centring are a little greater than those caused by the error of sighting and reading. This is accounted for by the three short