3. *(a)* $\sin 7^\circ + \sin 11^\circ = 2 \sin \frac{11+7}{2} \cos \frac{11-7}{2}$

$\cos 3\beta + \cos 5\beta = 2 \cos \frac{3\beta+5\beta}{2} \cos \frac{5\beta-3\beta}{2}$

$= 2 \cos 4\beta \cos \beta$

$= -2 \sin n\alpha \sin 3\alpha$

$\cos\phi - \sin\delta = \cos\phi - \cos\left(\frac{\pi}{2} - \delta\right)$

$= 2 \sin \frac{\frac{\pi}{2} - \delta + \phi}{2} \sin \frac{\frac{\pi}{2} - \delta - \phi}{2}$

3. *(b)* $\sin 10^\circ . \cos 50^\circ = \left\{\frac{1}{2} \sin (50+10) - \sin (50-10)\right\}$

$= \frac{1}{2} (\sin 60^\circ - \sin 40^\circ)$

$\cos \frac{5}{2}\delta . \sin \frac{3}{4}\phi = \frac{1}{2}\left\{\sin \left(\frac{5}{2}\delta + \frac{3}{4}\phi\right) - \sin \left(\frac{5}{2}\delta - \frac{3}{4}\phi\right)\right\}$

$\sin 7\alpha . \sin 5\alpha = \frac{1}{2}\left\{\cos (7\alpha - 5\alpha) - \cos (7\alpha + 5\alpha)\right\}$

$= \frac{1}{2}(\cos 2\alpha - \cos 12\alpha)$

$\sin (\alpha+\beta) \cos (\alpha-\beta) = \frac{1}{2}\left\{\sin 2\alpha + \sin 2\beta\right\}$

$\cos \left(\frac{\pi}{2} + \alpha\right) \sin (\pi - \alpha)\ \frac{1}{2}\ \left\{\sin \left(\frac{\pi}{2} + \pi\right) - \sin \left(\frac{\pi}{2} - \pi + 2\alpha\right)\right\}$

$= \frac{1}{2}\left(\sin \frac{3\pi}{2} - \sin 2\alpha - \frac{\pi}{2}\right)$

4. *(a)* Bookwork.

(b) $\cos \alpha = \cos \beta . \cos \gamma + \sin \beta . \sin \gamma . \cos A$

$\cos \alpha = \cos \beta . \cos \gamma + \sin \beta . \sin \gamma (1 - 2 \sin^2 \frac{A}{2})$

$\because$ $2 \sin \beta . \sin \gamma . \sin^2 \frac{A}{2} = \cos \beta . \cos \gamma + \sin \beta . \sin - \gamma \cos \alpha$.

$\because$ $2 \sin \beta . \sin \gamma . \sin^2 \frac{A}{2} = \cos(\beta - \gamma) - \cos \alpha$

$\because$ $2 \sin \beta . \sin \gamma . \sin^2 \frac{A}{2} = 2 \sin \frac{\alpha - \beta + \gamma}{2} \sin \frac{\alpha + \beta - \gamma}{2}$

$\because$ $\sin \beta . \sin \gamma . \sin^2 \frac{A}{2} = \sin \frac{\alpha - \beta + \gamma}{2} . \sin \frac{\alpha + \beta - \gamma}{2}$

$\cos \alpha = \cos \beta \cos \gamma + \sin \beta . \sin \gamma . \cos A$.

$\cos \alpha = \cos \beta . \cos \gamma + \sin \beta . \sin \gamma . (2 \cos^2 \frac{A}{2} - 1)$.

$\because$ $2 \sin \beta . \sin \gamma . \cos^2 \frac{A}{2} = \cos \alpha - \cos (\beta + \alpha) . \gamma$

$\because$ $2 \sin \beta . \sin \gamma . \cos^2 \frac{A}{2} = 2 \sin \frac{\alpha + \beta + \gamma}{2} \sin \frac{\beta + \gamma - \alpha}{2}$

$\because$ $\sin \beta . \sin \gamma . \cos^2 \frac{A}{2} = \sin \frac{\alpha + \beta + \gamma}{2} . \sin \frac{\beta + \gamma - \alpha}{2}$.

CONTEMPORARY LITERATURE.

Mrs. Catherwood's delightful story of "Old Kaskaskia" is all too short, being concluded in the April number of the *Atlantic Monthly*. Two collections of hitherto unpublished letters appear in this issue, those of William Hazlitt and those written by Henry Pelham, dealing with Boston affairs from 1770—1775. A plaintive and somewhat odd short story is "Miss Tom and Peepsie" by A. M. Etwell. "Betwixt a Smile and a Tear" is a graceful prose paper by Edith M. Thomas.

Admirers of Phillips Brooks will be grateful to the *New England Magazine* which in its April number publishes "The late Bishop's Dedicatory Sermon in Trinity Church." "Some Historical Aspects of Domestic Service" is an interesting paper by Lucy M. Salmon. Lynn R. Meekins is the writer of a clever short story, "On Municipal Politics." Buffalo is the city dealt with in this number. The article is by F. J. Shipard and is fully illustrated.

Littell's Living Age of April 22nd is as usual a collection of the best from many magazines. The conclusion of the interest-