With the previous approximation to s_9 the angle obtained is $32° \, 43' \, 32''\cdot5$. The true angle is $32° \, 43' \, 38''\cdot1$.

The equation $\frac{1}{2}\sin\theta = \tan\psi$ gives :

$\theta = 40°$; $\psi = 18° \, 50' \, 58''\cdot5$, thus approximating to s_{19}.
With $\theta = 20°$; $\phi = 18° \, 52' \, 54''\cdot1$, again approximating to s_{19},

where the angle is $18° \, 56' \, 41''$.

With $\theta = \dfrac{360°}{19}$; $\phi = 17° \, 59' \, 19''$. From which s_{19} gives s_{20}.

As s_{20} can be found exactly, this construction can be reversed.

With $\theta = 18°$; $\phi = 17° \, 10' \, 19''\cdot3$. From which s_{20} gives s_{21} the correct angle for s_{21} being $17° \, 8' \, 34''$.

§ 4. In fig. 22, AB, CD are two diameters of a circle perpendicular to each other ; AE, BF, tangents at A, B, are equal to four times the radius and the radius respectively. Join EF cutting the circle at M, N ; and join AM, AN, cutting CD at m, n. Through m, n draw parallels to AB, namely GH, IK. The pentagon CIHGK is regular. M. Henri Barral, in *Nouvelles Annales*, XI. 388-390 (1852).

The construction above is given by Herr Staudt without proof in Crelle XXIV. (1842).

Terquem in a note says, "The construction of Herr Staudt is remarkable because it indicates an analogous construction for the division of the circumference into 17 equal parts." See also *Nouvelles Annales*, XVI. 310 (1857).

Among the calculations made for this paper the following occurred :—

$$61\cdot5 - 10\sqrt{5} = 39\cdot139320225,$$

a near approximation to the length 39·13929 ... inches of the seconds pendulum in London.

On Electrolysis.

By Professor MORRISON.