

inches whose area = 10,609, we think we have advanced in the right direction and shown that the builder here places for our instruction and guidance another practical illustration of the importance and use of π , its former application being lineal, and this superficial. And here we stay to point out how these curious proportions, coincidences, and symbols become legible when read by the units of length and volume supplied by the architect of the pyramid himself, and extant (let us hope) to this day in the very spot where their use first becomes imperative.

For though the proportions remain the same whether expressed in inches, feet, or metres, they only become vocal as it were when read by the units there prepared and hung up near them.

What should be the next step in the process of inductive argument?

The sides and perimeter of this square (of 103·0 P.I.) are so obviously connected with the length and breadth of the King's Chamber, as exactly $\frac{1}{4}$, and $\frac{1}{2}$ thereof, that a consideration of the area of *its* floor would perhaps be the next step, guided too by the admonition we fancy we have received on passing through the antechamber, that cubical and not simply linear or superficial measures should occupy us in the chamber ultimately attained.

With what results this has been done over the area of *that* floor, we already know, from Taylor, Smyth, Petrie, and Day, results too so overwhelmingly important, that though the tables of the Law, written by the hand of the Omniscient, have been lost to man, we have here inscribed by the great architect of the pyramid the very essence of all legislation, so exact and so scientific in all its branches, as far as we can penetrate, that it is indeed “ennobling to the mind of man to contemplate.”

2. Experiments and Observations on Binocular Vision.

By Edward Sang, Esq.

(*Abstract.*)

This communication was chiefly directed to the question whether the idea of distance be obtained from the adjustment of the eyes to distinct vision, or from the convergence of their axes. The case of the chameleon was cited as one in point, since that lizard

directs its eyes each to a separate object, but habitually, when about to strike its prey, brings both eyes to bear upon it. Several experiments, mostly suggested by Wheatsone's inquiries, were cited, and the conclusion was arrived at, that, although the adjustment for direct vision concur in the formation of the estimate of distance, the convergence of the eyes plays the principal part.

3. On the Fall of Rain at Carlisle and the neighbourhood.

By Thomas Barnes, M.D.

In this communication, the author offers remarks on journals kept by Dr Carlyle, in the city of Carlisle, from 1757 to 1783 inclusive; by the Rev. Joseph Golding, at Aikbank, near Wigton, Cumberland, from 1792 to 1810 inclusive; and by himself at Bunkers Hill, two and a half miles west of Carlisle, which is situate 184 feet above the sea-level. The author gave tables showing the quantity of rain of each month and year included in these periods. From the averages, it appears that about twice as much rain falls in each of the latter months of the table as in the month of April; and about one-third less rain falls in the first six months of the year than in the last six months, and that April is the driest month of the year.

4. Mathematical Notes. By Professor Tait.

1. On a Quaternion Integration.

A problem proposed to me lately by my friend T. Stevenson, C.E., for constructing what he calls a *Differential Mirror*, when attacked directly led to the equation

$$S. d\rho \left(\frac{\beta + \alpha V a \rho}{\rho} \right)^{\frac{1}{2}} \rho = 0,$$

where α is a *unit*-vector, perpendicular to β .

By another mode of solution it was easy to see that the integral must be of the form

$$T\rho - T(\beta + \alpha V a \rho) = \text{constant}.$$

It may be instructive to consider this question somewhat closely, as the form of the unintegrated expression is certainly (to say the least) at first sight unpromising.