

THE "FIRE-BRICK AND CLAY SERIES" IS THE EQUIVALENT OF BERNOULLI'S COLUMN No. III.

(It will be remembered that the name "Fire-brick and Clay" Series is derived from the substitution of 11,184 dollars' worth of "Fire-bricks and Clay" for "Fish," in the rendering of the Canadian Trade Tables of 1867.)

See TABLE II, STATEMENT I, for the Origin of this Remarkable Series.

It is shown in Table II, Statement IV, that the "Fire-brick and Clay Series" consists of the sums of the quantities 9, 10, 22, 26, 42 and 56, being its six lowest terms. These quantities are the equivalents of the grouped sums of the first ten terms of Bernoulli's Column No. III. The terms are 0, 0, 1, 3, 6, 10, 15, 21, 28 and 36, which are themselves the successive sums of the natural numbers 1, 2, 3, 4, 5, 6, 7, &c., as may be seen by examining Bernoulli's Table.

$$9 = \begin{Bmatrix} 0 \\ 3 \\ 6 \end{Bmatrix} \quad 10 = \begin{Bmatrix} 1 \\ 3 \\ 6 \end{Bmatrix} \quad 22 = \begin{Bmatrix} 1 \\ 6 \\ 15 \end{Bmatrix} \quad 26 = \begin{Bmatrix} 1 \\ 6 \\ 15 \end{Bmatrix} \quad 42 = \begin{Bmatrix} 6 \\ 15 \\ 21 \end{Bmatrix} \quad 56 = \begin{Bmatrix} 1 \\ 10 \\ 15 \end{Bmatrix}$$

By substituting these values or their equivalents in Statement IV, Table II, the "Fire-brick and Clay Series" can be put in terms of the quantities 1, 3, 6, 10, 15, 21, 28, 36, &c., &c., or column III of Bernoulli's Table.

But this form would be purposeless. The property of the Bernoulli Series is that each term of any series is the sum of two preceding terms of the same and next adjoining column to the left. The "Fire-brick and Clay Series" can therefore be put in small groups of Column III and IV, of which the following is one of a vast number of equivalent forms. The endless variety of these forms of the larger terms is a notable feature.

THE "FIRE-BRICK AND CLAY SERIES" IN THE TERMS OF BERNOULLI'S COLUMNS III AND IV.

3	1	1	1	6	6	1	28
6	3	6	10	15	10	10	45
—	6	15	15	21	36	45	—
9	10	22	26	42	52	56	73
10	6	28	3	10	1	3	1
78	28	36	6	55	6	21	3
—	91	78	153	120	351	528	561
88	125	142	162	185	358	552	565
1	4	1	6	6	3	1	4
28	10	1275	20	1326	6	10	220
561	78	—	1275	—	45	66	1378
—	—	—	—	—	1378	1378	—
590	794	1276	1301	1332	1432	1455	1602
4	703	28	6	120	3	1128	1
66	1176	325	55	1081	190	1275	6
400	—	1540	1176	1432	2600	1326	300
1326	—	—	1225	—	—	—	3654
1696	1879	1893	2462	2633	2793	3729	3961
3	1	3	28	3	3	3	—
6	36	15	496	325	6	595	—
45	190	45	10660	11480	120	19600	—
4060	4060	9880	—	—	17296	—	—
4114	4287	9943	11,184	11,808	17,125	20,198	—

It must be borne in mind that in order to appreciate the full value of the artificial construction of the "Fire-brick and Clay Series" this remarkable series is not only the equivalent of the sums of groups of its first six terms, but it is also the equivalent of the foregoing sums of the terms of the Bernoulli's Columns III and IV, each term of which is itself the sum of a prior series either vertical or sloping in Bernoulli's Table.

Further, the "Fire-brick and Clay Series" has been shown in Table II to possess certain properties; in Table III it represents the terms of Young's United States Export Fish Trade figures; in Table IV, Young's United States Import Fish Trade figures; also, in Table IV, Young's United States Fish Trade Export figures for 1874, jointly with the Canadian Fish Trade Import figures for 1874; also, it embraces the Cotton and Woollen Series of Differences for the years 1873, 1883 and 1885; and it assumes the form of an indefinite Arithmetical Progression. All these figures specified are interchangeable, and have been proved to be so, together with equivalency to Bernoulli's Columns III or III and IV.

Hence the figures or quantities specified are nothing more than the equivalents of the sums of the selected Coefficients of the Expansion of the Binomial $(1 + i)$ to the power of n .

Now let the reader look at the origin, and subsequent use to which this series has been applied, and then consider the object of its presence in United States and Canadian Records of Government, and dwell for a few minutes on its appearance and application in the Canadian Trade Tables for 1855, as shown on page 32. Let the reader then ask himself, whether it is not time for those who care for the privileges of freedom, and are conscious of having duties as freemen to fulfil, to bestir themselves in a matter which threatens to strike at the root of freedom, and to destroy the equality of all men before the law.