

Eighth Million.

	Number of $4n+1$ primes.	Number of $4n+3$ primes.	Difference.	Total number of primes.
7,000,000—7,010,000....	320	309	+ 11	629
7,010,000—7,020,000....	306	324	— 18	630
7,020,000—7,030,000....	330	324	+ 6	654
7,030,000—7,040,000....	312	336	— 24	648
7,040,000—7,050,000....	327	330	— 3	657
7,050,000—7,060,000....	320	308	+ 12	628
7,060,000—7,070,000....	305	289	+ 16	594
7,070,000—7,080,000....	333	327	+ 6	660
7,080,000—7,090,000....	324	316	+ 8	640
7,090,000—7,100,000....	305	324	— 19	629
7,000,000—7,100,000....	3,182	3,187	— 5	6,369

Ninth Million.

	Number of $4n+1$ primes.	Number of $4n+3$ primes.	Difference.	Total number of primes.
8,000,000—8,010,000....	304	333	— 29	637
8,010,000—8,020,000....	295	314	— 19	609
8,020,000—8,030,000....	323	308	+ 15	631
8,030,000—8,040,000....	307	298	+ 9	605
8,040,000—8,050,000....	328	311	+ 17	639
8,050,000—8,060,000....	331	321	+ 10	652
8,060,000—8,070,000....	316	312	+ 4	628
8,070,000—8,080,000....	308	315	— 7	623
8,080,000—8,090,000....	323	296	+ 27	619
8,090,000—8,100,000....	291	316	— 25	607
8,000,000—8,100,000....	3,126	3,124	+ 2	6,250

XIV. "On the Effects of Chloroform and Ether on the Radial Tracing." By C. HANDFIELD JONES, M.B. Cantab, F.R.S.
Received June 11, 1879.

(Abstract.)

The effects of chloroform and ether on the pulse, when employed to produce anæsthesia in surgical operations, vary considerably. Sometimes the heart's force, estimated by the lowering of the primary rise, with due attention to the spring pressure, is greatly diminished, sometimes it is increased. The rate of the pulse is generally increased. The rhythm is often deranged, sometimes very much, and so-called

VOL. XXIX.

P

respiratory curves appear in the tracing. The tops of the individual beats in the tracing are sometimes flattened, sometimes rendered more pointed; this latter change is scarcely seen when ether is employed. No very marked difference exists between the two agents as regards their effects, but chloroform seems to have the more depressing effect on the heart. The uncertainty of the results from both agents is remarkable.

The opinion is expressed that the curves apparent in many of the tracings are not by any means solely the result of respiratory movements, but more often of deranged cardiac or arterial action. Experimental tracings are given, showing the effects of forced inspiration and expiration, and of the former when the subject had been previously in a state of semi-suffocation, and the blood, therefore, detained in the right cavities of the heart. It is pointed out that the occurrence of waves of contraction in the arteries, such as are seen in the bat's wing, would account for the production of some of the curves, especially those which exhibit the curious phenomenon of diastolic ascent. The view is maintained that the occurrence of curves in the tracing is a morbid sign.

The tendency of narcosis to produce flattening of the tops of the several beats is pointed out, and it is particularly observed that the same change is marked in cases of fatigue of the heart. The heart's force, and the arterial contractility are no doubt weakened in both states—narcosis and fatigue—and this weakening is regarded as accounting, together with the engorgement of the right auricle and veins, for the flattened summit of the beat.

XV. "Preliminary Note on a new Tide-Predicter." By E. ROBERTS, F.R.A.S. Communicated by G. G. STOKES, M.A., D.C.L., Sec.R.S., Lucasian Professor of Mathematics in the University of Cambridge. Received June 12, 1879.

The Indian Survey Department having undertaken the superintendence of tide-registration around the whole sea-board of India and at the port of Aden, and also the reduction of the observations by the method of harmonic analysis, with the view to the prediction of the tides for the whole of the ports, it became a matter of necessity, in order to save the large outlay which the numerical operation of their prediction would have involved, that an instrument should be constructed to delineate the predictions.

Accordingly, on the recommendation of the Surveyor-General of India, Mr. Roberts was desired to design, and to undertake the construction of, an instrument to include such a number of tide-com-