

EPIDEMIC DIARRHŒA, MUNICIPAL SCAVENGING, RAINFALL, AND TEMPERATURE.*

By ARTHUR NEWSHOLME, M.D., F.R.C.P.,

Medical Officer of Health for Brighton.

MUCH of our relative immunity from diarrhœa in 1902 was doubtless caused by the fact that each week throughout the summer there was more or less fall of rain, the lowest amount in any one week being .08 inch (week ending September 27th), and the highest amount 1.61 inch (week ending August 23rd). Whatever be its mode of operation, a frequent fall of rain during the summer weeks, even though its total amount be not great, is one of the most effectual means of keeping down the diarrhœa death-rate. The practical lesson from this is obvious. When the natural scavenging of rain fails, it should be replaced by

Deviation from Average Rainfall (28.60 Inches) of Twenty-six Years, 1877-1902.

| Year. | Deficiency. | Excess. | Accumulated Deficiency. |
|-------------|-------------|---------|----------------------------|
| 1887 | 6.50 | — | 65.0 |
| 1888 | 0.44 | — | 6.94 |
| 1889 | 1.15 | — | 8.09 |
| 1890 | 4.99 | — | 13.08 |
| 1891 | — | 5.78 | 7.30 |
| 1892 | 2.13 | — | 9.43 |
| 1893 | 4.47 | — | 13.90 |
| 1894 | — | 3.35 | 10.65 |
| 1895 | 3.41 | — | 14.06 |
| 1896 | 0.76 | — | 14.82 |
| 1897 | — | 0.52 | 14.30 |
| 1898 | 8.19 | — | 22.49 |
| 1899 | 5.13 | — | 27.62 |
| 1900 | 0.77 | — | 28.39 |
| 1901 | 5.99 | — | 34.38 |
| 1902 | 6.86 | — | 41.24 |

municipal scavenging. The weekly swilling of our streets, especially of the gutters in narrow streets occupied by the poor, would go far towards reducing our diarrhœal death-rate. The question arises whether the large amount of water daily used in sprinkling the roads is at present used to the best advantage. It converts dust into mud, but it does nothing towards removing this mud. Probably half the amount of water used twice a day along each side of the road, the cart being followed by a man who would sweep the mud into heaps for removal, would secure a more efficient removal of dust than can be obtained in connection with our present system of sprinkling water, which merely "lays" it. This practical problem has become simplified by the extent of road surfaces now covered by wood and asphalt. These represent

* Annual Report.

an enormous sanitary improvement. The wood pavement is already washed daily. The asphalt pavements in back streets are not so treated, and the channels in narrow streets, paved with macadam, are left in a very undesirable condition.

Although the rainfall of last summer was instrumental in keeping down the amount of epidemic diarrhoea, the total rainfall for the year was only 21.74 inches, being 6.86 inches below the average for twenty-six years.

The table above shows to what extent the annual rainfall deviated from that of the average for the twenty-six years for which observations have been taken at the Brighton Meteorological Station, and brings out the fact that, with three exceptions, there has been a continued deficiency of rain from 1887 onwards.

Temperature and Diarrhoea.—Earth temperatures at a depth of 4 feet are regarded as an important index of the possibility of prevalence of epidemic diarrhoea, and it has been accepted almost as an axiom that we must expect diarrhoea to prevail when the 4 feet earth thermometer has reached Ballard's critical point of 56° F. The experience of last summer shows the fallaciousness of this indication. In Brighton the 4 feet earth thermometer reached 56° on June 24th. On June 30th it was 58.4°. During the second half of July it remained between 60° and 61°. In August it reached 61.8°. It reached its maximum of 62.6° on September 10th, then slowly falling, but keeping above 56° until October 19th, when it was 55.8°. But no deaths from diarrhoea occurred, and, contrary to Ballard's rule, the highest number of deaths from diarrhoea in any one week did not occur in the week in which the 4 feet earth thermometer attained its mean weekly maximum, but three weeks later.

The key to the anomaly is found in the fact that in each week of the third quarter of 1902 more or less rainfall occurred. The temperature conditions were favourable to diarrhoea, the rainfall prevented it. The facts for the present year justify the conclusion that rainfall is more important than temperature in relation to epidemic diarrhoea.

EPIDEMIC DIARRHŒA AND THE NUMBER OF SHOWERY DAYS.*

By HERBERT PECK, M.D., D.P.H.,

Medical Officer of Health for Chesterfield.

THE smallness of the number of deaths from diarrhoea in 1902 must be ascribed in great part to the showery summer, the laying of dust and the cooling of the soil by rain being one of the most important agencies in the prevention of bowel disorders in children, though doubtless improved sanitary conditions played a part in its production.

The amount of rain does not appear to be of so much importance as the number of showery days, as may be seen by the following table, in which the number of rainy days signifies the number of days on which rain fell at Chesterfield Gasworks, which is about the centre of the district :

* Annual Report.