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## **SUMMER DIARRHEA AND HORSE-DRAWN VEHICLES**

Public health is sometimes promoted by trends or measures in which that objective was not considered. A striking instance is the reduction of malaria in Missouri, Arkansas, and other states, where huge drainage ditches have been put down to reclaim land for agricultural purposes. It is said that in southern Illinois, where somewhat the same process has been going on, the quinine bottle was once put on the table as regularly as the sugar dish, yet even for teaching purposes one cannot count on material in some districts in which malaria was formerly prevalent.

Graham-Smith has been studying the relation of horse-drawn vehicles to summer diarrhea in England. In 1929, he drew attention to the decrease in deaths from summer diarrhea of infants and attributed this to the increased use of automobiles

and accompanying decline in horse-drawn vehicles. He supplements his former findings in a report so extensive and exact as to leave little question of the relation of the decline in summer diarrheas to the falling off in the number of horse-drawn vehicles, and the consequent accumulations of horse manure as breeding places for flies.

The observations cover 37 years, at the beginning of which horse manure was stored even for weeks near urban stables, while at the end owners were compelled to remove it and other refuse promptly. A chart shows for 1901-1937 the departures of the mean air temperature in the third quarter of each year from the average for 50 years (1861-1910), which are correlated with the number of horse-drawn vehicles licensed 1929-1939, and the death rate from diarrhea of children under 1 year of age per 1,000 live births for England and Wales from 1901 to 1905, and from 1929 to 1939. While there was great fluctuation in the death rate during the period 1901-1922, except for 4 years, both the rises and the falls corresponded with the mean air temperatures of the third quarters of the year, but from that time on the decline in the death rate corresponded closely to the decline in the number of horse-drawn vehicles. From 1906 to 1937 the number of horse-drawn vehicles licensed fell from 411,334 to 14,195, the fall being even more rapid than the death rate. During the same time the motor vehicles increased from 67,115 to 2,706,555.

At the beginning of the period under observation (1901-1905) the death rate from summer diarrhea in children under 1 year of age per 1,000 live births was 25.4, and for the last five years (1933-1937) 5.3. In 7 of the last 16 years conditions were very favorable for fly breeding, yet there was little evidence of any effect on the spread of summer diarrhea.

The prevalent opinion practically all over the world was that high temperatures were responsible for intestinal troubles, and Mellanby, in 1916, as the result

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of an experimental investigation of the subject, felt that the high temperature in itself might be the cause of the disease.

In commenting on the situation, Graham-Smith says that previous to the outbreak of the World War in 1914, little attention had been paid to the possibility of the dissemination of disease through flies, and attributes the recognition of their agency to observations made where large numbers of horses were gathered for army purposes. This is somewhat surprising since the agency of flies as vectors of intestinal diseases, notably typhoid fever, was recognized in 1898, during the Spanish-American War, and the name " typhoid fly " was given. A commission consisting of Walter Reed, Victor C. Vaughan, and W. O. Shakespeare, with Reed as Chairman, was appointed to investigate the origin and spread of typhoid fever in the military camps. The report, drafted largely by Victor C. Vaughan, consisting of two volumes, was published in 1904, and sent to the War Department of every country in the world. Further, Dr. Christopher Childs came from England, studied the material, and Vaughan acknowledged his valuable advice and assistance in preparing the report.<sup>4</sup> While all camps in which typhoid fever appeared were studied, the greatest amount of evidence was gained from the epidemic at Chickamauga.

#### REFERENCES

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4. Vaughan, V. C. *A Doctor's Memories*. Bobbs-Merrill, 1926.