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Epidemiology of Poliomyelitis (Infantile Paralysis) with Special Reference to Its Occurrence in Iowa

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State Department of Health

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FACTORS INFLUENCING THE THERMAL DEATH TIME OF MICROÖRGANISMS

C. H. WERKMAN

While it has been shown that the time required to destroy a bacterial suspension lengthens with increase in the number of organisms present no detailed study of the relationship has been made. The present paper details the results of such a study made on *Staphylococcus aureus* with methyl mercuric nitrate.

If organisms subjected to unfavorable conditions die off in conformity to the logarithmic concept (where k_1 , the velocity coefficient of death, = $\frac{1}{T} \ln \frac{B}{b}$ T, time; B, bacteria when T = 0; b, bacteria after t.) if the number be increased by x-fold the time required to kill (T_2) should show the following relationship:

$$T_2 = T_1 \frac{(1 + \ln x)}{\frac{\ln B_1}{\ln b_1}}$$

The experimental results do not consistently fit this equation, particularly when the numbers of bacteria become great. With small numbers of bacteria agreement is reasonably good.

The effect of concentration of methyl mercuric nitrate may be expressed within limits by the power function:

$T = AC^{-n}$ when A and n are constants and C is the concentration.

IOWA STATE COLLEGE
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EPIDEMIOLOGY OF POLIOMYELITIS (INFANTILE PARALYSIS) WITH SPECIAL REFERENCE TO ITS OCCURRENCE IN IOWA

HENRY ALBERT

The study of the epidemiology of infantile paralysis must take into consideration three types of the disease, namely:

1. The mild abortive type representing a systematic infection.
2. The non-paralytic meningic type representing invasion of the central nervous system by the virus.
3. The paralytic type indicating destruction of the cells in the anterior horn of the spinal cord.

The mild abortive cases and healthy carriers are chiefly responsible for transmitting the disease. Transmission is usually at close range — the result of inhaling droplets sprayed into the air by acts of coughing and sneezing.

The unusual distribution is explained by many non-susceptible carriers of the infection. Eighty-five per cent of the cases occur in children under ten years of age. It is most prevalent in rather late summer and early fall. Rather unusual prevalence is expected this year. Control measures consist of isolation of patients and others exposed and avoiding crowds or places where the disease is especially prevalent. Special attention should be given to milk supply and personal cleanliness. Schools should be closed only in rural communities.

STATE DEPARTMENT OF HEALTH
DES MOINES

SWIMMING POOL SANITATION AT THE UNIVERSITY OF IOWA

JACK J. HINMAN, JR.

The University of Iowa has operated two swimming pools since January, 1916, and a third pool since February, 1927. The operation of these pools has been under the direction of the writer, and close supervision by laboratory examination has been regularly applied by means of samples collected daily. The experience at the University of Iowa shows that the quality of swimming pool waters is liable to very rapid fluctuation and that if the pools are to be maintained in sanitary condition close watch must be kept upon the quality of the water and the treatment applied must be based upon such results.

It has been found best to depend upon filters for the clarification of the pool water. Gravity filters have been more satisfactory than pressure type filters on account of the cementing action of the calcium salts upon the sand grains. It has been found that a residual chlorine dosage of $2/10$ parts per million is essential to proper germicidal treatment. An effort is made to hold the chlorine dosage between $2/10$ and $5/10$ parts per million at all times. The usual test for free chlorine by means of orthotolodine has been used.

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