

from 10 to 25 days. To indicate potency of test virus two animals that had recovered from previous experimental infection and which presented residual paralyses succumbed as readily as the normal controls to the intracerebral injection of only three times the dose used to test the treated animals. Animals that have recovered from experimental infections have been found to be highly resistant to reinfection.

The latter method requires only a short time; the material is easily produced and gives a considerable degree of immunity. The test method is far more severe than that to which persons are subjected in the natural infection inasmuch as in this artificial test the defensive forces in the blood stream are circumvented, whereas in the natural infection the infective material would first come in contact with the neutralizing substances present in the blood stream before it could gain entrance to the central nervous system. The natural infection is far less severe than the experimental disease in which we may have a mortality of about 99 per cent.

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Persistence of immunity following toxin-antitoxin injections.

By **WILLIAM H. PARK.**

[From the Bureau of Laboratories Dept. of Health, N. Y. C.]

During the past years, we have immunized a series of guinea pigs and a series of horses and a series of children with diphtheria toxin-antitoxin mixtures. The duration of the immunity presents certain points of great interest. So far as our observation goes, guinea pigs are never naturally immune; horses in the very great majority of cases are immune; adults and infants under 6 months are immune to 80 per cent., while very young children are non-immune to about 60 per cent. We find, in the guinea pig, that active immunity lasts for about nine months. In horses, we find the increased immunity, due to the injections, lasts from nine months to twelve months, at which time the horses return to their original amounts of natural antitoxic immunity.

In testing human beings from month to month, it was a matter of great interest to find whether the infants and children who be-

come immune, due to the injections, would, like the guinea pigs, lose their immunity in about nine months or whether the active immunity would be replaced by natural immunity just as in the majority of infants the stage of lack of immunity is followed by antitoxic immunity. We have found, in infants, two years after successful immunization that the great majority have remained immune, not over 6 per cent. losing their immunity. We have a right, therefore, to hope that the stimulated immunity has been replaced in the very great majority by a natural immunity and that this will hold for life. The facts that the protection lasts and that the injections are harmless make the active immunization of infants appear to be a practical measure of eliminating diphtheria.

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The composition of dried vegetables with special reference to their nitrogen and calcium content.

By MAURICE H. GIVENS.¹

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Some of the common vegetables have been dried on steam-heated radiators at 65° C. to 70° C. The loss of water by this method of drying has been found to correspond to the water content of these materials as determined by Atwater and Bryant. Detailed analyses of these will soon be published.

Such dried green vegetables as swiss chard, beet tops, and celery have a high content of inorganic constituents, particularly calcium. Their content in mineral components decidedly preponderates over that of such plant products as carrots, cabbage, sweet potatoes, and potatoes. Attention is called to the possible loss of mineral constituents in preparing vegetables for drying when they are first cooked in water which is discarded.

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