

He has studied the Japanese both from the anthropometric and the linguistic side. He points out that they present many and positive physical differences from the Chinese type, and can not be classed as a Sinitic people. On the other hand, the measurements bring them into close parallelism with the northern Ural-Altaic peoples, to that group which includes the Samoyeds, the Finns, the Magyars and, in a less degree, the Tungoose. This affiliation is strikingly supported by a careful comparison of languages. There is not a marked morphological trait of the Japanese tongue which is not also found in this Sibiric group. Dr. Winkler rehearses them with brevity and force. What is more, in the opinion of some, the material portion of the language, its vocabulary and radicals, present so many identities with this Ural-Altaic group that their primitive oneness must be conceded.

This, however, is not to be understood as if the Japanese was the Altaic *Ursprache*; but only as one of the children of a common mother, each of which has pursued independent lines of development, though always retaining the family characteristics.

D. G. BRINTON.

UNIVERSITY OF PENNSYLVANIA

HYGIENE.

THE NEW SERUM TREATMENT FOR DIPHTHERIA.

By cultivating the specific bacillus of diphtheria in broth, there is developed in the liquid a peculiar product, which is known as the toxine of this bacillus. When an extensive growth of the bacillus has occurred, so that a considerable quantity of this toxine is developed, the fluid is filtered through a porcelain filter, which permits the soluble toxine to pass through, but retains the bacilli.

If this filtered fluid is sufficiently strong, $\frac{1}{10}$ of a cubic centimeter of it will kill a

guinea pig weighing 500 grammes, in from 48 to 60 hours. The effect produced is in proportion to the quantity injected, just as for any chemical poison, differing in this respect from the action of a fluid containing the bacilli themselves, which might multiply in the body. The bacilli in the fluid might be killed by heating, but this would also decompose the toxine; hence the separation is effected by simple filtration, or by the addition of some substance like tricresol which will kill the bacilli without affecting the toxine.

If small quantities of this toxine be injected under the skin of an animal, commencing with a dose which is not fatal and gradually increasing it, the animal gradually becomes immune to the effects of the poison and after several successive injections can receive a very strong dose without injury. The blood serum of an animal thus rendered immune against diphtheria has the power to confer a similar immunity on other animals if given in sufficient quantity in one dose, thus doing away with the need for the repeated and carefully graduated injections required to produce immunity in the first animal.

To obtain such an anti-diphtheritic serum to be used on man, a horse is injected with the solution of toxine, commencing with from 2 to 5 cubic centimeters and increasing the dose at intervals until within three months as much as 250 cubic centimeters may be injected without producing any serious effect. The horse is more resistant than many other animals to the action of the diphtheritic poison, being naturally somewhat immune. The blood serum of the horse produces no harmful effects on man, if injected in small doses, and it can readily be obtained in considerable quantities without killing the animal.

This serum, taken from a horse which has thus been rendered immune, will not only produce a temporary immunity in man

against the diphtheritic poison, but will antagonize the effects of the diphtheritic poison after this has been already introduced into the system, in other words, it may be employed as a curative agent in cases of diphtheria. The immunity which it produces is a temporary one only, lasting from ten days to three weeks. Its curative effect in cases of the disease depends, to a considerable extent, upon its use in the early stages before the system has been saturated with the poison.

We have not yet sufficient data to speak positively of the value of this anti-diphtheritic serum as a means of treatment of the disease as compared with certain other methods of treatment, especially in the early stages, but the evidence thus far collected seems to indicate that such serum obtained in the proper manner, and used with proper precautions in the hands of experts, is a valuable addition to our means of combatting this terrible malady. The serum can only be properly prepared and tested by a skilled bacteriologist. It must be sufficiently strong in its immunizing power, and at the same time must contain no living pathogenetic germs of any kind. It must also have been comparatively recently obtained from the living animal, for it gradually loses its specific anti-diphtheritic powers. Special antiseptic precautions are also necessary in injecting the serum under the skin in the human subject to prevent the entrance of noxious germs.

One of the most useful points in applying the anti-diphtheritic serum to practical use is to have the cases diagnosed at the earliest possible date, and this can only be done by a skilled bacteriologist. In New York, Boston, and some other cities, means are now provided by which practicing physicians can have such diagnoses promptly made; and if the case of diphtheria can be seen by a physician in its earlier stages, it is possible

to treat it with great hope of success by means of local applications to the throat of certain substances which will quickly destroy the bacillus, and prevent the further production of its peculiar toxine; for example, a solution of tri-cresol of the strength of one per cent. will usually effect this without producing undue irritation or causing any injury to the patient. Those who advocate the use of the immunizing serum say little about the local treatment, but this last is if anything the more important of the two, for the serum does not kill the bacilli which are on the surface of the mucous membrane of the throat, and therefore does not prevent a person rendered immune by it from being the means of spreading contagion.

OYSTERS AS A MEANS OF TRANSMITTING TYPHOID FEVER.

THE *Medical Record* of December 15, 1894, contains a paper by Professor H. W. Conn upon an outbreak of typhoid at Wesleyan University in October and November last, which included about twenty-six cases. When the serious character of the outbreak was recognized, an investigation as to causes was begun. The water supply was tested, and the house plumbing was examined without result. It was found that the disease was almost entirely limited to the members of three fraternities. The period of incubation of typhoid—that is, the time which elapses between the taking of typhoid bacillus into the body and the definite manifestation of the disease—is usually from ten to fourteen days, but may range from seven to twenty-eight days. The first cases of the fever among the students appeared October 20th, and suspicion soon fell upon the fraternity suppers of October 12th. Careful examination of the food supplied at these suppers showed that raw oysters, obtained by each of the three fraternities from the same oyster dealer, were the only things