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HOUSES IN THE 230 CLASS THAT DID NOT LOWER THEIR RECORDS.

VACCINATION—ITS DANGER AND MODE OF ACTION.

As small-pox is still with uninterrupted severity raging in this State, it may be of interest to some to hear once more a discussion about the value of the protective measure employed to guard against this dangerous malady.

Vaccination as practiced at present among all cultivated nations of the globe was introduced in consequence of some important observations and observations of an English physician, Dr. Jenner, at the close of the last and beginning of this century.

Dr. Jenner observed that at times of prevailing small-pox epidemics the attendants were affected with an eruption similar in appearance and character to that of small-pox in men.

Further, that this eruption was sometimes communicated from the animals, milkers, stablemen and others that had occasion to come in contact with them; and lastly, that all such persons who once had been inoculated by cattle always remained free from small-pox while nearly all others in severe epidemics were attacked.

These observations led Dr. Jenner to investigate the matter more closely, and as the result of numerous experiments he established the following facts: 1. That small-pox can be propagated from men to animals, especially to neat and swine.

2. That the virus of small-pox in animals is always much milder than in men.

3. That the cow-pox, when again transmitted by inoculation from animals to men, will thereby produce a mild, modified and dangerous form of the disease, which, however, will give immunity against the real small-pox as well as against a second infection with cow-pox.

The scientific process of vaccination is based upon this last fact: the human system is artificially inoculated with an infectious principle of small-pox, which, by a process of adaptation through the animal organism, is so weakened and modified that it is only able to produce a mild and dangerous form of the disease, in which the system receives the sensation protection as it otherwise would from an attack of the real small-pox.

It will be observed that there exist great resemblances between small-pox and other infectious diseases, such as scarlet fever, measles, etc., which, by invading the system once, give protection against a second infection, with the only difference, that in case of small-pox the protection can also be obtained by vaccination.

Of historical interest may be mentioned, that prior to Jenner's time, before the introduction of vaccination with cow-pox, different nations, and especially Asiatic half-civilized nations, used to inoculate their children with small-pox virus as a protection against this disease, for it was well known that inoculated pox never became as serious as those contracted by infection.

The practice of inoculation by fastening small-pox virus on the face of children, and saturating with Ganges water, on a previously scarified arm. At the beginning of last century, this mode of inoculation was so popular among the Greeks and foreigners of Constantinople that even Lady Montague, the wife of the British representative, had her two children and the age of 10 years inoculated with small-pox virus. In European countries—Sweden, Denmark, England, Scotland—the practice of inoculation was practiced up to the end of the last century.

The question, if vaccination is really of such great value, so frequently advanced of late, can be confidently answered in the affirmative, for it has been ascertained by statistics that before this century one-tenth of all people died of small-pox in Europe yearly (about 400,000), and that many were disabled by the same disease. Since the introduction of vaccination the total mortality has greatly decreased, and the mortality of small-pox has been reduced to a minimum. It can further be observed that in every epidemic, also in the one at present raging on this coast, that principally the non-vaccinated are severely attacked, and also among them the mortality is greatest, while such that have been vaccinated, if at all infected, will only receive a mild form, which seldom proves fatal.

As under certain circumstances vaccination itself can become dangerous to health, parents have been advised to have their children vaccinated, and in some instances even positively objected to. This danger, however, is by no means so great that there is any reason to be alarmed, for the benefit obtained thereby, it would even come in consideration, especially as the principal danger by care and conscientiousness of the physician can be fully avoided. The danger of vaccination lies in the possibility, that by vaccinating from arm to arm, or by the use of contaminated needles, the virus of small-pox may be transmitted to the vaccinated child from whom the lymph was taken as syphilitic. The result was, that all children vaccinated with the same received large quantities of syphilis, and many of them were soon after affected with all other symptoms of syphilis. But fortunately this danger can be avoided, and cases of the above description are very rare. It is therefore to be recommended that the physicians do not vaccinate at all from arm to arm, but only use animal lymph (bovine vaccine). The latter is obtained as follows: In calves of the species Bos taurus, which are found in the East as well as in all European countries, healthy calves are inoculated with small-pox virus, and the fluid lymph, a certain number of days after inoculation, is applied to ivory points; these are dried and then sent to agents in all parts of the world. The calves can obtain the same with ease, according to under. Vaccine prepared in this way will, under the most favorable circumstances, only retain its vitality for 10 to 15 days. The agents are supplied by those establishments at regular intervals. Other unpleasant complications of vaccination, such as erysipelas, tuberculosis, gangrene, etc., at the site of inoculation, need not be feared, as they appear very seldom, and then can easily be controlled by proper treatment. It is undesirable of great interest to know the mode of action of vaccination—how it is possible that by one successful vaccination or a primary attack of small-pox the system acquires immunity against a second infection. Statistics and experience prove the fact that immunity is obtained, and that the system is not again attacked. The different explanations; either by the first invasion a substance important to the admission, growth, propagation and nutrition of the infectious germs, or by the system from the system—or by the same process something new, a protective substance, is communicated to the system, which interferes with a second invasion and resists the same. Both theories—the first "interaction theory," the other "protection theory"—have their defenders. By both theories small-pox is regarded as a parasitic disease, i. e. the infectious principle, which causes the disease—the small-pox virus—is considered to be a parasitic disease, because as that of miasmatic diseases. As the question theory is the most probable and has the most adherents, I will, so not to become tedious, only speak of the latter.

According to this theory the small-pox virus, considered as minute microscopic vegetable particles, needs for its nutrition, distribution and propagation certain nutritive principle, which it finds by its invasion in the human system; but if, by a previous invasion, or by vaccination, this principle is exhausted or removed, then the system will remain protected against a second invasion so long, until after many years this substance gradually accumulates in the system, and a healthy restoration of the above, is therefore to be understood, that the vaccine virus, though degenerated and weakened by the action of the system, still contains a nutritive principle as the original, unaltered small-pox virus. By invading the system by vaccination, vaccine virus withdraws this nutritive principle and thereby gives protection against small-pox.

Before closing I will mention that the example of preventive inoculation by small-pox is not the only one in history, but that recently some French philosophers have succeeded in modifying also the infectious principle of some parasitic affections of animals, for instance cholera, of chickens and murrain of sheep (the parasitic nature of both can microscopically be ascertained), to such a degree that animals vaccinated with the same remained afterwards protected against the original disease.

DR. A. E. BRUCE.

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