

Numerous attempts have been made of late years to obtain protective "vaccines" for the protections of the lower animals; and the first important step in this direction was taken by Pasteur, when he produced a modified virus of fowl cholera by exposing his cultivation of the microbe to the influence of the atmosphere for certain periods.

Cultivated virus has long been used in France to inoculate sheep to protect them from natural disease.

A new departure in securing immunity was made when it was discovered that the serum of blood, or fresh blood, has a power to destroy various microbes. One authority has succeeded in separating from the blood a person refractory to the contagion of any specific disease arose out of the common observations that persons who had recovered from an attack were so protected. It will only be necessary then to produce the disease in a mild form by artificial means to obtain the required safety.

Inoculation from a mild case of small pox was probably the earliest experiment in the direction of securing the condition of system which should enable an individual to resist contagion for the rest of his life.

A very large proportion of cases were successful, and the system of inoculation of children became customary, and flourished until it transpired that some malignant and fatal cases did occur as the result of inoculation, and that the disease spread from inoculated persons and assumed a serious form.

The operation gradually ceased to be used, and was altogether abandoned in favor of Jenner's discovery of vaccination.

It is not well known what relationship exists between the cow-pox of the udder of the cow and human small pox. It may be affirmed even dogs are killed quickly by eating the flesh or lapping the blood of an animal dead of the disease. On the other hand, rats enjoy a remarkable immunity from the malady.

Natural immunity from disease appears to be related in some way to the acquired immunity which follows an attack of a contagious malady. It has been long known as a fact that persons or animals which had recovered from small pox, for example, were generally protected from another attack during their lives; and so well established was this fact, that people who were marked with

smallpox were looked upon as so secure that no hesitation was felt in employing them to attend patients suffering from the disease, and the persons themselves did not object to be so employed. Exceptions to the rule occurred from time to time, but not to a sufficient extent to disturb public confidence in the protective efficacy of a prior attack of the affection. Dr. Hamilton, of Aberdeen University, gave a lecture, a few years since, mainly devoted to immunity, and the attempts which had been made to secure it at remote periods. Doubtless, the idea was of rendering a substance, which he describes as a "defensive proteid," in the presence of which, the refractory power of the rat to anthrax virus presumably depends.

It would be satisfactory to know that the animals from which we draw our supplies of meat can be protected from attacks of disease by inoculating with the products of healthy structure, instead of morbid materials, which however carefully they may be modified by ingenious processes of cultivation, as a matter of fact, do not always succeed in destroying the virulence of the poison.

W. R. GILBERT.

### ARTICHOKES FOR COWS.

Mr. J. H. E., Nashville, Tenn., asks for information concerning artichokes as feed for cows. Unfortunately, there is very little information that can be given with full confidence in its reliability. The Experiment Stations do not appear to have given them much attention, and elsewhere they have been grown almost exclusively for swine. In former years, there have been inquiries, and answers quite favorable in their character have been received, but they were deficient in specific information, and in some cases were from parties who had seed for sale. In the two or three cases which have come under our personal observations, the parties were not enthusiastic in their favor. Swine do their own harvesting, and in this way save a good deal of labor. When once established, the ground does not require re-seeding for years.

NOTE.—Artichokes do not need boiling, as their starch is in a peculiar state: *inuline*. Ed.

