FOWL CHOLERA.

The Department of Agriculture has lately issued an important circular concerning the poultry disease known as cholera, which contains explicit information concerning the character of the malady and its treatment. The suggestions may also be of value in the handling of some other poultry diseases which are liable to spread through the flocks by contagion. Dr. D. E. Salmon, one of the U. S. Commissioners on animal diseases, is the author of the circular from which we quote as follows:

Although the cholera of fowls is an exceedingly virulent and fatal disease, destroying vast numbers of birds of different species, and remaining on premises for years after being once introduced, we are satisfied, after a long series of experiments, that there are points in its natural history which enable us to control it with comparative ease and with a considerable degree of certainty. These points are:

1. The Virus is not Diffusible.—That is, the disease germs are seldom if ever taken up by the air and carried any considerable distance to produce the malady. The virus remains in the fixed form, and is generally, if not always, taken into the body with the food; it is distributed over the grounds, feeding places, etc., in the excrement of affected birds, and the food, drink and gravel are thus contaminated. Healthy birds may be kept in coops within a few feet of the sick ones for months without contracting the disease; but if the former are now placed in the same inclosure with the latter they sicken in a few days.

2. The Virus Must be Carried upon the Grounds Frequented by Fowls before They Contract the Disease.—It is not probable that this disease originates, in any considerable number of cases, in any other way than by contagion. There is a possibility that it may originate in occasional instances by filthy surroundings if closely confined, or by feeding on decomposing substances; but there are few facts to support such a conclusion, and it appears certain that in the vast majority of cases the disease is imported and kept up by contagion alone.

It is thus brought upon farms either (1) with sick or infected fowls newly acquired; (2), with the blood or parts of the bodies of dead birds, carried on the feet of people or brought by dogs or other animals; (3), with infected manure or feathers; or (4) possibly by wild birds, animals (rabbits), or even insects that have contracted the disease or have eaten the blood or bodies of affected birds recently dead. The origin of the disease can generally be traced in country districts, where houses are a considerable distance apart, to recently acquired poultry. It is only in districts more thickly peopled, and then in exceptional instances, that the germs are carried by wild birds or animals or by insects.

PREVENTIVE MEASURES FOR INFECTED GROUNDS.

1. Is the Disease Cholera?—Fowls frequently die in considerable numbers from diseases that are not contagious, and hence it is a matter of primary importance to decide as to the nature of the affection when cholera is suspected. In my own experience I have found that this might be done with comparative certainty by inspection of the excrements. With fowls the excretions of the kidneys are joined in the cloaca with the undigested parts of the food, and both solid and liquid excrement are consequently voided together. They are not mixed to any great extent, however; the part excreted by the kidneys is easily distinguished, as during health it is of a pure white color, while the bowel discharges are of various hues. The kidney excretion will be hereafter referred to as *the urates*, and it is the only part which claims our attention.

After a fowl takes the contagion into its body the first and only reliable symptom is a coloration of the urates. At first these have only a faint yellow tint, which rapidly changes, however, into a deep yellow color; up to this time the bird shows no other signs of the disease, its temperature is unchanged and its excrement of a normal consistency. In one or more days after this yellow color appears the urates are greatly increased in quantity and constitute the whole or a greater part of the discharges and an obstinate diarrhœa sets in; in a few cases the urates now become greenish, and exceptionally they are of a deep green color.

The only lesion seen in post-mortem examinations that is likely to attract the attention of non-professional observers is the enlarged liver, which is nearly constant—it may be of various shades of color. Besides this the presence of yellow urates in the cloaca and ureters is a valuable sign and is generally present.

2. Sick Birds Must be Destroyed.—The excrements of sick birds are the principal means of spreading the contagion, and the first step in stamping out the disease is, consequently, to destroy all which are voiding yellow urates. Care should be had to make the distinction between the urates and the bowel dejections, for the latter are frequently of a yellow color in health; but a little observation will preclude any mistake of this kind. The killing should not be by any method which allows the escape of blood, as this fluid is even more virulent than the excrement; wringing the neck is a quick and easy method of destroying the life. Once killed the bodies are to be taken beyond the limits of the poultry run and deeply buried.

If it is decided to keep the sick birds till they die or recover, they should be placed in an inclosure by themselves, as far as possible from the healthy ones, where they may be cared for without entering, so that there will be no danger of carrying particles of the excrement on the boots and spreading the infection.

3. Healthy Birds Must be Placed on Disinfected Grounds.—If a piece of land is at hand to which the sick birds have not had access and which is consequently free from the contagion, the healthy birds should be penned upon it; but if all of the land is infected, then a piece is to be selected and thoroughly disinfected with the solution mentioned further on in this paper. The fowls are to be restricted to this disinfected ground for several months, or even a year or more, if practicable. The drinking vessels and feeding troughs are to be new, or if used before they must be soaked for 12 hours with the same solution before being placed in the new inclosure.

4. Observations to be Continued to Note the First Re-appearance of the Disease.—Some of the fowls, though well at the time of removal to disinfected quarters, may be infected with the disease, and after the period of incubation, which varies from 3 to 20 days, will sicken. It is necessary, therefore, to make a careful inspection of the excrement each morning for at least three weeks after the separation of the sick fowls. If yellow urates are discovered, the birds must be watched until the sick one is detected. To facilitate the early discovery of such sick fowls and prevent infection of the healthy ones it is advisable, where practicable, to separate the birds into lots of two or three each at the start; and this separation may always be practiced as a last resort where the disease successfully defies our efforts for a considerable time; but where this is impossible a little patience will generally enable one to pick out the sick before any harm has resulted. As soon as the sick bird is removed the excrement must be scraped up and burned, and the run must be again sprinkled with the disinfectant; or, the well birds may be changed to fresh ground as before. This method of management is to be continued as long as new cases of the disease occur.

By a careful observance of these rules one can frequently check the disease with a loss of but one or two fowls out of a large flock.

5. Disinfection.—For this disease we have a very cheap and most effective disinfectant. It is a solution made by adding three pounds of sulphuric acid to 40 gallons of water (or ¼ lb. of acid to 3½ gallons of water) and mixing evenly by agitation or stirring. This may be applied to small surfaces with a common watering pot, or to larger grounds with a barrel mounted on wheels and arranged like a street sprinkler. In disinfecting poultry houses the manure must be first thoroughly scraped up and removed beyond the reach of the fowls; a slight sprinkling is not sufficient, but the floors, roosts and grounds must be thoroughly saturated with the solution, so that no particle of dust, however small, escapes being wet. It is impossible to thoroughly disinfect if the manure is not removed from the roosting places.

Sulphuric acid is very cheap, costing at retail not more than 25 cents a pound, and at wholesale but five or six cents; the barrel of disinfecting solution can, therefore, be made for less than a dollar and should be thoroughly applied. It must be remembered, too, that sulphuric acid is a dangerous drug to handle, as when undiluted it destroys clothing and cauterizes the flesh wherever it touches. The safest way is, therefore, to take a five-gallon keg nearly full of water to the druggist, and have him place the strong acid in this; the contents of the keg may then be safely transported and added to the barrel of water.

6. Fumigation.—In those cases where the disease has been raging for a considerable time the feathers become saturated with the contagion, and it is necessary, before placing the fowls on the disinfected run, to put them in a close building and thoroughly fumigate them with sulphur. For this purpose a pan of burning coals is taken and flowers of sulphur thrown upon them as long as the air can be breathed without danger of suffocation. When the disease is recognized at the outset this is not necessary.

The experiments on which the above regulations are founded will be detailed in future reports of the Agricultural Department; they are sufficiently numerous to be worthy of the fullest confidence.

The value of the method of preventive inoculation or vaccination discovered by Pasteur has not yet been decided, but in view of the comparative ease with which the affection may be controlled by the measures detailed above, we doubt if it can ever be advantageously adopted as a means of preventing this particular disease.

WOOL EXTRACTING.—For separating wool from cotton from mixed goods (wool extracting), M. Paul Poulin, of Paris, has patented the employment of the two following solutions in which the goods are immersed: First, chloride of calcium at 20° Be., 4 volumes; water, 3 volumes. The chloride of calcium at 20° Be. is itself prepared by dissolving in a mixture of 1 volume of muriatic acid at 22° Be., and 2 volumes of water, enough chalk to saturate it; or, second, solution of 1 lb. of salt and 1 lb. muriatic acid in ½ gal. of water. The solution is kept boiling by means of steam for 30 or 40 minutes; then cooled and poured on the goods under pressure. The rags are washed and dried, the residue is pure wool.

STEWED LIVER.—Brown two pieces of bacon in a saucepan, add a finely cut onion, peppercorns and mace; simmer for a quarter of an hour; add liver cut in slices, washed and dried; simmer again for 20 minutes or half an hour till done. Make bread dumplings with it. Take bread-crumbs, with a little flour mixed with an egg and a very little baking powder, first flavoring with nutmeg, a handful of finely chopped parsely, a little chopped lemon and some suet; amalgamate with water or milk as you like. Now brown the dumplings in butter or lard, and then just let them steam through for ten minutes with the gravy. When served, this makes an inexpensive tasty dish.

CABBAGE.—Chop fine one good-sized solid head. To four well-beaten eggs add four tablespoons sweet cream, one of celery seed, nearly one of salt and ground mustard, one-half teaspoonful black pepper, one-half cup good vinegar; put on the stove and stir till it just boils; if it cooks too long the egg will become lumpy; pour over the cabbage and mix thoroughly.