

no doubt partly due to the slight solubility of the double salt preventing it from being washed out of the deeper parts of the gauze. But I attribute it also to another circumstance. I invariably washed a substantial mass of the gauze which was to be applied next the wound in 1 to 20 carbolic lotion, in order to get rid of the irritating bichloride which it contained. I thus—though unintentionally—effectually sterilised, not only this portion of the gauze, but also neighbouring parts into which the redundant carbolic liquid soaked. And this mode of procedure, though not so perfect as the systematic moistening of the entire mass, is a rough-and-ready way of attaining much the same result.

In changing the dressings we make it an invariable rule to cover the wound with something reliably antiseptic before we wash surrounding impure parts, so as to avoid the chance of defiling the wound with them. For these washings we use the 1 to 40 carbolic lotion. As to the times for changing the dressings, it is no doubt true that that which is applied immediately after the operation might in most cases be left untouched for several days. Nevertheless, when discharge is free, I prefer, as a rule, to remove the first dressing when the first twenty-four hours have passed. We thus get rid of the serum and corpuscles, which, while they constitute the largest amount of discharge which occurs in the case, test, as we have seen, our antiseptic dressings the most severely. The discharge being still moist near the wound at this period, the gauze is lifted from it without disturbing it in the slightest degree; and I never knew a patient fail to express himself as feeling more comfortable when the first dressing had been changed. There are, however, special cases, like a stump after amputation of the thigh, where an exception may be made on account of the disturbance of the wound that the changing of the dressing would involve.

In conclusion, I may remark that it pleases me, as the years pass, to see the hope which I expressed at the International Congress in London eleven years ago in course of fulfilment, namely, that the use of the antiseptic system would gradually spread by leavening action throughout the world. At the same time I am sorry sometimes to observe that unnecessary trouble is often taken in some directions, while essential points are disregarded in others; so that, with the best intentions, the best results are not always obtained. I venture to hope that this address may be of some use to you in directing your attention to the essential conditions of success.

SOME CLINICAL NOTES ON GLANDERS.

By W. HUNTING, F.R.C.V.S., London.

OLD writers described glanders as a disease of the head of the horse. Of course no one would do so to-day. It is beyond dispute that the disease is due to a definite organism, and that the greatest lesions are to be found in the lungs. Unfortunately, we can seldom diagnose the lung-lesions until they are accompanied by constitutional disturbance or by appearances on the surface of the body. Glanderous invasion of the lung may proceed to a considerable extent without inducing any external sign suggestive of its presence. This is usually seen in

aged and otherwise healthy horses, that are well fed and cared for, and that escape all serious accidents. Young horses are much more likely to exhibit constitutional disturbance and external signs as the result of the disease in their lungs. When the glanders bacillus has effected a lodgment in the lungs it seems to go on quietly increasing there until some exciting cause produces a state of the system favourable to other changes which, from their position or action, are readily noticed. I will give two examples of what I mean. A horse which has been in contact with glandered horses, but which shows no sign of any disease, receives an injury to the foot. In a few days he has a swollen leg, on which shortly "buds" and "cords" of farcy appear. A *post-mortem* shows glanderous lesions in the lung which from their appearance we know must have existed for some weeks.

Another horse, apparently quite healthy but which has been exposed to infection, is attacked with some febrile affection, or he may simply get an ordinary chill, or it may be he is over driven. To the ordinary symptoms resulting from any of these causes we soon find others added—enlarged glands, nasal discharge, or even ulceration. A *post-mortem* examination shows glanderous lesions in the lung of some standing.

These external signs of glanders are not in proportion to the extent of the lung lesions. We frequently find very slight external signs of disease in conjunction with very extensive lung changes, and we often see violent and pronounced symptoms during life, with an extremely slight amount of mischief in the lungs shown by *post-mortem* examination. It is the province of pathology to interpret this, and I have no right to intrude in that domain, but I cannot resist a little theoretical suggestion. It seems to me that the bacillus of glanders may find its way to the lungs without causing any constitutional disturbance, and that it may there quietly increase. So long as the colony of bacilli is not firmly encapsuled, some of the organisms constantly escape into the blood stream, but do no harm in the healthy horse, and are destroyed. When, however, a febrile condition exists and the temperature rises a few degrees we have circumstances in which either the bacilli are not destroyed, or in which they have the power to increase at such a rate as to overcome the normal obstacle to their existence in the blood. Again, in the case of local inflammations occurring in infected horses, I believe the local glander symptoms which arise are due to the bacillus there finding favourable conditions for a rapid increase and lodgment.

As the result of direct inoculation we usually have acute glanders and often death in a few days. Such cases are very rare; but we occasionally meet with attacks of farcy in which a *post-mortem* examination reveals no sign of glanders. Such attacks, I take it, result from direct inoculation, but I cannot quite understand why they show only local signs of disease—why we do not have the serious constitutional disturbance which follows direct experimental inoculation. Is it possible that they result from the entry of the bacillus not into the blood stream but only into the lymphatics?

The Period of Incubation.—I incline to think that this is really very short. I am aware that many cases show no sign of glanderous disease for months after the time of infection, but the lungs of such horses always exhibit lesions of some standing. If we are to count the

period of incubation from the time of infection to the development of external signs of disease, the period is quite indefinite. If we are to count from the day of infection to the time when lesions appear in the lung I believe it is only a matter of days, but it is practically an undeterminable period, giving no evidence whatever of its duration to the clinical observer.

The usual course of a case of glanders is for the lungs to become infected, for the disease to progress there quietly, and for external signs only to arise as the result of some local or constitutional disturbance. These symptoms may all disappear and the horse to all appearance be perfectly healthy. Again, external signs may appear and again disappear. A horse with glandered lungs may live for years and only occasionally show signs of the mischief within him. Every symptom of glanders may be shown once, twice, or thrice by such an animal and subside again and again.

Nasal Ulceration.—Perhaps the most conspicuous positive sign of glanders is ulceration of the nasal membrane. I have heard it said that ulceration of this membrane is seen in other diseases. I cannot contradict this assertion, but I have never seen it. It may perhaps occur in horse-pox; it does occur in common catarrh and in influenza, but only when those diseases affect a horse with glanders in his system. The extent of the ulceration has no relation to the amount or quality of the nasal discharge; the position of the ulceration has. When ulceration exists only at the visible extremity of the membrane discharge is slight, and in cases where constitutional disturbance is absent there may be no purulent discharge. When ulceration exists high up in the head discharge is generally copious. The pus is not produced only from the ulcerating spot but also from the surface of the diseased membrane.

The description of a glanderous ulcer as always depressed is not true. They frequently heal up, and in the stage of healing are covered by granulations which then give them a raised appearance.

Significance of the Temperature.—The thermometer is undoubtedly a valuable aid to diagnosis. When any other conditions exist to warrant suspicion as to a horse being infected with glanders, a temperature varying from 101° to 103° is very significant. Horses in infected stables often work for a long time with no sign of disease, except perhaps some extra indications of fatigue, which if examined with a thermometer show a temperature of 102° . Such animals should always be isolated. Unfortunately rest and good feeding, with or without tonics, will cause the temperature to fall to normal and remain there. Some may then resume work, and some may be sold as healthy, but the probability is that they remain with glanders lesions in the lung and will soon again "break up."

A rise of temperature does not, however, always exist with glandered lungs. In a number of cases I have known horses with a regular temperature of 99.5° to 100° working daily with no sign of disease. A *post-mortem* examination showed glandered lungs, and a verified history disclosed a previous attack of glanders which had been "cured." A temperature of one or two degrees above the normal is very suspicious, but the maintenance of a normal temperature is not incompatible with old standing lesions of glanders in the lungs.

Curability.—To say that glanders is incurable is not correct. It is,

however, so extremely rare that a distinct case of glanders recovers that we may practically accept it as an incurable disease. There are well established cases in which years after distinct signs of glanders have been noticed and a cure been made, a *post-mortem* examination has been carefully conducted. All that has then been revealed has been two or three isolated calcareous tubercles. I believe a similar thing has been found in tuberculosis of man, and there is no reason to doubt that if spontaneous recovery is possible in one disease or one animal it may also obtain in the other. The form of glanderous disease known as farcy undoubtedly does show some cases of recovery. Distinct attacks of farcy have recovered and worked for years in apparent health, whilst a *post-mortem* examination has revealed no lung lesions whatever. Now that no distinction is made by our sanitary laws between glanders and farcy it is necessary to impress the fact that some cases do recover. It is true that they are few—very few—but if they exist at all, and it is impossible to say of each case whether it may or may not recover, there can be no argument for compelling a man to slaughter his horse at his own cost. If the argument for slaughter be based upon the notion that every infected animal is incurable and therefore its destruction is no injury to the owner, it is false. If the argument for slaughter be based upon the fact that every diseased horse is a source of danger to others than the owner, it is a sound argument, but then it is only fair that others should share the cost.

PARTURIENT ECLAMPSIA IN COWS.

By JAMES CLARK, F.R.C.V.S., Coupar-Angus.

IN the following article I propose to give an account of personal experiences regarding a most interesting disease in cattle practice, which does not appear to have gained as much attention in this country as the subject deserves. So far as I know, the only work really treating of this disease is the *Veterinary Obstetrics* by Dr George Fleming, and even that work distinctly shows that we are largely indebted to our continental neighbours for a record of cases. It is true two cases have been recorded in this country, viz.: by Mr Rolls (*Veterinary Journal*, vol. ii., page 17), and Mr Storrar of Chester (same journal, vol. iv., page 53). Rolls ascribes the attack in both instances to the fact of the animal having been deprived of its calf. This I think must have been a coincidence, as I have never found it to be an exciting cause. I have noticed records of curious cases in cows, which to my mind clearly pointed to eclampsia. It thus appears quite evident from the scarcity of cases reported, that it does not occur often in the experience of veterinary surgeons. In medical practice considerable attention has been given to the disease, and it is calculated that one case of eclampsia occurs in every 350 cases of labour. It is held in great dread, especially the ante-partum form, looked on as a very grave complication of the pregnant state, and is attended by serious consequences, as may be seen by statistics on the subject. Fortunately, owing to better knowledge of the etiology and pathology of the disease, the death-rate has been considerably reduced. From