

like ordinary iron salts, incapable of absorption. Hence the deficiency of hæmoglobin.

Now when ordinary iron preparations are given the alkaline sulphides attack these, thereby leaving the others free to be absorbed. In favour of this view is the fact that such enormous doses of iron require to be given to cure a case of chlorosis—small doses being of no value. In two or three days more iron may be given than is present in the whole body. Secondly, good hygienic measures and attention to diet frequently cure chlorosis without iron.

Thirdly, in a healthy subject continued administration of iron does not raise the red corpuscles and hæmoglobin above the normal standard.

In all forms of anæmia which have their origin outside the alimentary canal iron must therefore be powerless.

Bunge's explanation of the action of iron in chlorosis has no bearing, of course, on its ætiology, which has been stated by Virchow to depend on a deficiency of the arterial system. One symptom of this deficiency, however, is a form of dyspepsia which interferes with the assimilation of iron, secondary to which we have all the clinical symptoms of anæmia. Iron, given in large doses by the mouth, counteracts the effects of the dyspepsia, and thus cures the most distressing symptoms of the disease. The vascular deficiency, however, it can never remedy.

PLANTAR NEUROTOMY.

By W. REEKIE, M.R.C.V.S., London.

I HAVE thought that a few practical remarks on the operation of plantar neurotomy, with some statistics which I am able to give, might be of interest to the veterinary profession; the more so as I am in the fortunate position of being able to trace the horses operated upon for some time afterwards, when they have been put to work, which is not, as a rule, easily done in ordinary practice. Besides, the operation is not looked upon with much favour in country districts; and should the veterinary surgeon happen, unfortunately, to be unsuccessful in his first one or two cases, he gets disheartened, and generally advises his client to sell, rather than try again.

With regard to the operation itself, it is too well known to require more than a few remarks from me. I never use chloroform, although I do not doubt it would be of great benefit to the horse in obviating the pain at the moment the nerve is divided. I dispense with it because its application would take up much time; and seeing that I generally operate on two or three cases the same afternoon, it would be necessary to have a casting place for each horse. In my experience, if the horse has been prepared for casting, *i.e.* has had a short allowance of food the previous day and none on the day of operation, I generally find that when he gets back into his box his head goes into the manger, and he seems quite comfortable.

The time occupied for each horse, casting and operating on both fore legs, never exceeds three-quarters of an hour.

On two different occasions I tried a strong solution of cocaine locally, but as I did not observe any marked benefit I discontinued its use. I may say, however, I went into the infirmary of a brother professional the other day, and found him performing neurotomy with his patient under chloroform, and he said he would not like to operate without it.

I never omit to have a strong tourniquet placed just above the knee—a stirrup leather answers the purpose if nothing better is at hand, but a thinner and broader belt acts better. This makes the operation almost bloodless—a great consideration—and to a certain extent also anæsthetises the limb. To this action of the tourniquet I attribute the failure of the cocaine.

The incision, which should be as small as possible, is made about two inches above the fetlock, and a little higher on the inside; and if the incision is oblique only a slight mark will remain. A very material point is to take care to excise a considerable length of nerve. This is best done, after dividing the nerve, by seizing the lower end with a pair of strong forceps—those I use were specially made by Arnold & Sons—and then, by using sufficient force, one can easily get a piece of nerve quite an inch long to cut off. Some practitioners put a stitch in the wound, but after trying both ways I never found the slightest difference either in the healing or the resulting cicatrix.

On the horse getting up I have him trotted for a few yards, and often I do not find that he goes quite sound, but the fact of his going lame does not at all indicate that the operation may not after all be successful. The after treatment is very simple, a little iodoform dusted on the wound every day and the application of a dry bandage being all that is necessary. The legs frequently swell to a considerable extent for a few days immediately after the operation, but that need cause no alarm.

Some difference of opinion exists as to the length of time that should elapse before the horse is put to work. My experience is that the time occupied in the healing of the wound and the disappearance of the swelling of the legs varies from ten days to three weeks, depending upon the condition of the horse. At the end of that time he should have walking exercise every day for a week before being put into harness again.

It is very disheartening when one's patient still remains lame, even after the swelling has disappeared and the wounds have healed. This naturally raises doubts in one's mind as to whether the proper disease has been treated; but if a careful examination is made at the seat of the wound, there is frequently found in such cases a small nodule attached to the end of the nerve, and the slightest pressure on this causes the animal great pain. In such cases the application of a blister of equal parts of iodine and biniodide of mercury ointments generally has the desired effect of rendering the horse sound. Sometimes, however, when the case is not purely navicular, there is continued lameness. In such instances I always have the horses walked about in harness for an hour every day, and sometimes I find that the lameness gradually disappears.

As I understand, neurotomy was originally performed for navicular disease only, but the operation has now extended to other diseases of the feet, and with a good deal of success. From a veterinary point of

view the horse must have good strong heels and feet, and at the same time no windgalls or other enlargements in the neighbourhood of the fetlock joint. Under such circumstances one may operate with every chance of success. There are, however, a great number of horses, with all these qualifications, which from a pecuniary point of view are still not worth operating upon. In many cases the conditions are not quite so satisfactory, the feet may be contracted, the heels low and weak, and the legs very much the worse for wear; but the horse being a good one in harness, one may still be induced to operate.

I have performed the operation now for a number of years, but have never kept any written memoranda of the cases or the after results until the summer and autumn of 1887. During this period I operated on 37 horses (35 harness horses and 2 hunters), the operation being performed on both legs, except in the case of one harness horse and one hunter.

At the end of a year the following were the results: Eight were failures, *i.e.*, never did any work afterwards, and had to be sold; five were unsatisfactory, *i.e.*, worked for some time and became lame again; and twenty-two were successful, the animals having been sound and in regular work ever since. The following analysis will show the diseases for which the operations were performed, with the result in each case:—

	<i>Operated on.</i>	<i>Failures.</i>	<i>Unsatisfactory.</i>	<i>Successful.</i>
Chronic Laminitis . . .	8	2	1	5
Side-bones	1		1	
Navicular Disease . . .	26	6	3	17
Total	35	8	5	22

Of the hunters one suffered from chronic laminitis and the other from navicular disease. The latter case was quite successful, but the former must be classed as a failure, although the mare was decidedly sounder than before the operation.

In considering the above analysis, it must be borne in mind that in some cases the failures were in no way connected with the operation. The question whether they ought to be classed under one or other of the above headings depended upon whether, after recovering from the operation, they were capable of doing ordinary carriage work, and in some cases the result was complicated by the appearance of other disease, operating against the usefulness of the animal. Two of them developed spavins, and were very lame behind; the one with the side-bones contracted a bad corn with coronary suppuration, from which he entirely recovered, but often afterwards was slightly lame. The application to the coronet I found most beneficial in this case was a paste made of sanitas oil or creosote and common whiting. Only two of the thirty-five had to be destroyed, one from giving way of the flexor tendons in the pit of the heel, and the other on account of a large sandcrack with extensive suppuration involving the coronary band.

Now I come to a very important point, *viz.*, the results of the operation from a pecuniary point of view. This, I think, will prove interesting to the profession, as the question of expense enters largely into calculation in connection with the treatment of our patients.

It is rather difficult to say what price to put on the 35 horses, suppos-

ing they had been sold instead of being unnerved, but on this point I have the very best estimate, viz., that of the owners, who, judging from the prices realised by their cast horses sold at auction, have valued them at £18 each, in all £630. A more difficult problem was the valuation of the 22 successful cases, but here again I had the same excellent estimate. The owners said that they considered they would be worth, marketably, £40 apiece, in all £880, though they considered that this would not represent anything like their value to them as carriage horses, as part of the stock of a going concern, on account of their being seasoned to their work, and being good examples of their class, without which the operation would not have been attempted.

Of the eight failures, one was destroyed, and the other seven, sold at public auction, realised £117. Four of the unsatisfactory number were disposed of in the same way for £54, one having been destroyed—total, £1051. Besides this there was the cost of the keep of the horses after the operation and until they went to work; and taking this at an average of five weeks, calculating the keep at say 10s. per week each horse, we arrive at the sum of £87, 10s., which must be deducted from the £1051. This gives £963, 10s. against £630, showing a balance of £333, 10s. in favour of the operation at the end of the first year. Of course the benefit of the operations remains to be taken account of as long as the horses remain in stock, but allowance must be made for their natural deterioration in value as they get older.

I am sorry I cannot say anything very definite about the duration of a horse's life after he has been unnerved. The majority of the successful cases work for two or three years before being cast, and very often their removal then from the stock is in no way connected with the operation. When their courage and action have lasted I have seen a number work five or six years.

In conclusion, I must say the horses operated on were all high-class carriage horses with action—some had grand action—and as this class of animal is extremely difficult to obtain, it behoves us to do all we can to enable them to perform the duties for which they are bought.

METHODS OF SECURING HORSES FOR OPERATIONS ON THE INGUINAL REGION.

By JOSEPH DONALD, F.R.C.V.S., Wigton.

THE apparatus consists simply of an ordinary casting rope or a good cart rope, of sufficient length, and doubled so that one end shall be from two to three yards longer than its fellow of the opposite side. In the first method the longer end administers to the greater part of the tying process, while in the second it is exclusively used.

1. Method for Ordinary Castration.—The ropes are adjusted as in the ordinary way of throwing for castration; the longer end being placed on the left side, the colt is pulled down on his near side, the legs being pulled well up to the body in the usual way. To secure the animal the operator stands at the back of the horse, and, taking the