

attended to, particularly in girls. The size of the issue I have used was commonly about that of an oval penny; and in children, as these cases most generally are, very slight rubbing of the caustic is needed; as the bone may be injured if it be overdone. Speaking generally of the cases, no relief follows till the slough begins to separate, and discharge is created. Hence the necessity for keeping up some counter-irritation till this occur. But I have seen exceptions to this, and in one very remarkable case, the issue was scarcely inserted till relief was obtained; yet the patient—a girl of 11—had for two days previously suffered severe pain, and was constantly crying out “My head, my head”; exhibiting besides the signs of the second stage of the disease well marked. I observed that, as the issue was being put in the scalp, all round it exhibited a marked degree of redness. In another instance, a boy of 9 years of age, the patient quite recovered from the head symptoms, under the use of an issue; but signs of mischief in the chest shortly developed themselves; and ultimately the child died, after several months, with all the symptoms of phthisis. With my present experience, then, I look upon an issue as the very best means of combating this most obstinate disease; and I repeat that it seems to me to be too little known; if indeed at all. In a very valuable paper, recently published in the *Bartholomew's Hospital Reports of London*, by Dr. Church, many cases of acute cerebral disease are given. Several of these might, I believe, have been treated with advantage, by means of an issue. But nothing is said about treatment at all.

As to the fine-spun theories recently advanced against counterirritation as a means of treating and curing disease, I cannot entertain them for a moment. Experience points directly the opposite way, and I prefer it to any theory. Whilst I place an issue in the foremost place for the treatment of hydrocephalus, I do not omit other measures; and I now very generally give wine, and from an early period of the attack. In the present instance the child got it, and for more than a fortnight was taking eight ounces daily. It certainly helps to lessen the wasting which is so constant a symptom of the disease; and went on here to an extreme degree. In fact, the child at one period was a skeleton, and did not retain anything whatever on the stomach. It was then that recourse was had to nutritive injections, and with very marked benefit. It should be stated there was no albumen in the urine. The child is now, after two months, fat and well.

## COMPARATIVE PATHOLOGY.

### THE TEXAS CATTLE-FEVER.

DURING the summer and autumn of 1868, the epidemic disease of horned cattle known as the *Texas cattle-disease* raged with unusual severity in the United States. Early in August last year, the disease suddenly appeared near New York; and such was its virulence, that immediate steps were taken by the sanitary authorities for checking its spread, preventing the sale of diseased meat, and for investigating the phenomena of the malady. The results of the scientific inquiries are published in the *Third Annual Report of the Metropolitan Board of Health of the State of New York* (1868); and from this Report the following remarks have been compiled.

It seems that there were, when this Report was framed, no reliable published accounts of the disease sufficiently detailed for medical purposes, although various persons (chiefly drovers and agriculturalists) had been familiar with it for some seventeen years in the south-western States bordering on the Gulf of Mexico, where its causes appear to be constantly in operation to some extent.

The Texas cattle-disease is a *fever*, infectious, having a somewhat long period of incubation, followed by the sudden occurrence of very serious and definite symptoms, which end fatally in a large percentage of cases. It occurs only during warm weather, and never survives frost. The pathological lesions are constant and definite. We find no evidence in the Report as to the protective power of a first attack.

*Symptoms.*—It is probable that a rigor ushers in the obvious symptoms; but this was observed only in a few cases. The animal is generally found standing with his back arched, head bowed against some support, and hind legs crouched under him, as if hardly able to stand. If he move, his gait is staggering, from partial paraplegia. The animals at first are often delirious and frantic; but the frenzy soon gives place to torpor and paralysis. There is a rapid and feeble pulse, and quick respiration. The temperature rises in a day or two from the normal to 107° or even 110° Fahr. Constipation is usually marked, notwithstanding the abundant secretion of bile; and the fæces are streaked with bloody mucus. The urine is abundant, brown or black from blood-colouring matter, and highly albuminous. If these symp-

toms continue and increase in violence, the animals usually die in from three to seven days. A few cattle recover slowly; and in these the temperature sinks to about 103° Fahr. at the end of the first week or so, and the urine loses its blood. Jaundice not unfrequently comes on during convalescence; and the patients often suffer for months from anæmia, emaciation, and dropsical effusions. In fatal cases, the temperature often sinks slightly at the time of death.

*After Death.*—The rigor mortis sets in very early, and lasts but a short time. Decomposition comes on within a few hours of death (quite irrespective of excessively high external temperature), and gas is sometimes found in the tissues and in the capillaries even before death. The red blood-corpuscles are almost entirely destroyed within a few hours after death, and many of the tissues undergo an equally rapid change; so that it is quite necessary to examine instantly after death, in order to ascertain the changes wrought only by the disease. The nervous system, heart, respiratory organs, and upper part of the alimentary canal, are either healthy or show no characteristic lesions. The stomach, intestines, spleen, kidneys, and liver, show the changes characteristic of the disease. The more vascular parts of the alimentary canal undergo intense congestion, with more or less extravasation. Erosions and sloughing of mucous membrane are found in the abomasum. The kidneys are much congested, and often softened and fatty. The bladder is usually full of dark coloured albuminous urine. The spleen is always (with one or two exceptions) very much larger than in health, intensely gorged with blood, and generally quite pulpy. The liver is also very much larger and heavier than in health (on an average, the increase amounts to about 30 per cent. of its normal weight); it shows extreme portal congestion, distension of the minute bile-ducts, and fatty degeneration at the surfaces of the lobules. The gall-bladder is full of bile, and this fluid is found abundantly in the small intestines. Large extravasations of blood are found in the cellular tissue of various parts, and crystals of hæmatoidine are abundant in these situations. The blood in the urine never exists in the form of corpuscles, but as a solution of the colouring matter and albumen. The muscular and adipose tissues are dark and brownish or yellowish brown in colour. The blood is very watery; and the red corpuscles are especially diminished in quantity, and are often shrivelled and crenated. Special stress is laid upon two *microscopical peculiarities of the blood and the bile*. A number of small granular yellow masses are found in the blood and bile, and also in the spleen and some other situations; these masses are supposed to be composed of partially coagulated fibrin, which has absorbed the bile-colouring matter that exists in the blood in this disease. The second point is the constant presence of a minute fungus (micrococcus) is not very easy to detect immediately after death, but that in a short time it increases and develops so as to form a very prominent feature in these fluids. We find no reference to any examination of the intestinal contents with reference to this fungus. The bile and blood of healthy cattle did not yield a similar result. Several examinations were made of animals in various stages of convalescence, up to about three weeks from the cessation of violent symptoms. The liver was found of nearly normal weight, but fatty, and sometimes waxy, and of a pale colour. The spleen was always somewhat enlarged and soft in convalescents. The lesions in the abomasum were seen to undergo rather rapid repair. The fungus disappeared “quite early” in several cattle which recovered while taking carbolic acid internally.

*Pathology.*—The commissioners withhold their judgment on the relation between the microscopic fungus and the disease. Experiments were in progress, both in America and in the hands of Professor Hallier of Jena, for the purpose of learning the natural history of the parasite. Meanwhile, its constant presence in the bile is noted as a well ascertained fact; and, in connexion with this fact, we are asked to note the abundance of the biliary secretion in the small intestines. It is believed that the primary changes occur in the liver and blood. There are congestion of the liver, increased secretion of bile, and absorption of bile into the blood. The consequences of the cholæmia are—1. Rapid dissolution of the red corpuscles (such dissolution has been found to occur experimentally, when red corpuscles are acted on by bile); 2. Extravasation of blood-colouring matter and other constituents into various parts; 3. The formation of the “yellow flocculi”, upon whose presence so much stress is laid. As secondary results of the liver-congestion, we have engorgement of the more vascular parts of the alimentary canal and of the spleen.

*Method of Communication.*—We have mentioned that the disease is infectious; but there is more to be said regarding this remarkable bovine malady than that it spreads by infection. It seems not to have been known in the northern States until the introduction of large numbers of Texan cattle every summer became a common occurrence; and all observers agree that, during the four years of the late war (when the

transit of Texan cattle to northern States ceased entirely), there were no cases of the malady in the northern parts of the Union. It appears that large herds of cattle are taken slowly over many hundred miles of country from their native districts to the north-eastern States. They start in spring, and are conveyed partly by river and rail, but in great part are driven along the roads, and allowed to pasture on common land or on the road-sides. Some weeks are thus occupied before they arrive at their northern destinations. It is found that the native cattle which come into direct contact with these *Texans* while on their route, or which pasture on the same land, drink of the same stagnant pools, or travel on the same roads as the Texan cattle, are liable to be struck down with the disease; and further, it is nearly certain that, with a few exceptions, no native cattle take the disease unless they have been directly or indirectly exposed to the excrements of the Texan animals. Another curious and important point is, that the Texan cattle can communicate the disease to the natives of the districts through which they pass, without being obviously diseased themselves at the time. It seems probable, however, that the Texan cattle sometimes suffer from a mild and non-fatal form of the disease; for a number of *Texans*, some of which were weak and emaciated, showed, on *post mortem* examination, all the lesions found in cattle known to be convalescent from the Texan disease.

The opinion of farmers and drovers is all in favour of the doctrine that "native cattle" (*i.e.*, cattle born in the northern States), when infected, cannot give the disease to others: but there are several well-authenticated cases recorded in which the fallacy of this assertion was clearly proved; it still, however, remains true that, in the vast majority of cases, native cattle do not propagate the disease. In connection with this point, it is interesting to note the opinion of a non-medical writer, that Texan cattle seem to lose the power of communicating the disease after living in a more northern state for some months. A somewhat high temperature is necessary for the development of the disease; and in Missouri we are told that "the disease has never wintered over here"—cold "destroys the germ." The great heat of the summer of 1868 is supposed to account for the increased virulence of the disease last year.

**Period of Incubation.**—This is never less than *ten days*, and may extend to *three months*; in many cases, from four to six weeks was about the average time. The time elapsing between exposure and manifestation of symptoms will probably vary a good deal, according to the state of the infecting material at the time when first an animal is exposed to it. All the evidence seems to point to the conclusion that, whatever the infecting matter may be, it requires to remain a certain time *out of the body* before it is capable of producing the disease—that a period of "ground-incubation" is necessary for the perfecting of the infecting material. The following striking example will serve to illustrate this point. Some "natives" were herded with freshly arrived Texan cattle; after twenty days, a part of them was removed from the pasture; these native cattle did not take the disease; but the remainder stayed for a month longer with the *Texans*, and subsequently they nearly all died of the disease. That lengthened exposure is not always necessary is shown by the fact, that in one case fourteen out of twenty-one died after being exposed for *only an hour and a half* to a pasture over which some *Texans* had been driven. The first death occurred forty-seven days after the exposure.

Opinions differ as to the proportion of those infected to the total number exposed to infection. One authority gives two in five, another fifty per cent.

**Mortality; Influence of Age, etc.**—The mortality is very large in the northern cattle which show obvious signs of the disease—said to amount to eighty per cent. Milch cows and fat oxen are more liable to the disease than any others. All agree that *sucking calves* enjoy complete immunity; and this, again, is negative evidence in favour of the source of infection being in the food or water. The milk is generally suppressed rapidly when the disease declares itself.

The disease is said to be communicable to horses. In some experiments with rabbits, these animals died after feeding on the bile of diseased cattle, with "many of the phenomena of Texas cattle disease", but the fungus found in the cattle was not discovered in these rabbits. Similar experiments on dogs gave negative results. No experiments were performed for the purpose of trying whether the disease is communicable by means of the blood during life—not, we are assured, from want of appreciating their value, but from absence of time and opportunity, amongst the pressure of work connected with the immediate necessities of *post mortem* examinations, etc.

**Pathological Affinities of the Texas Cattle Disease.**—On this point it is perhaps enough at present to say, that there seem to be several points of resemblance between this disease and the yellow fever of man, especially in the method of propagation, and in the pathological changes found after death.

## REVIEWS AND NOTICES.

DES RESECTIONS DU GENOU. Par LUCIEN PENIÈRES, Docteur en Médecine, interne des hôpitaux. Paris: Andrien Delahaye. 1869.

IT cannot be considered as a matter of much astonishment that our French *confrères* were slow in adopting the operation of excision of the knee-joint, seeing that, for a long time, even in this country, it was a matter of doubt as to whether it would be recognised as a justifiable proceeding. Now, however, that the controversy regarding the merits of the operation has almost ceased, we are pleased to find that it is being adopted by the surgeons of France.

In the work before us, we are presented with a *résumé* of all that has been done both in this and other countries. The author has evidently bestowed the greatest attention in getting all the information possible on the subject. He has furnished us with a table, which represents the number of 431 operations for disease of this articulation, besides a list of those cases where an operation was performed for ankylosis and for traumatic cases.

Of the 431 cases operated on for disease, it appears that 300 recovered, and 131 died, thus making the mortality, as nearly as possible, 30 per 100. This percentage may appear, at first sight, somewhat large; but it must be borne in mind that this enumeration includes the very early cases operated on at a time when little was known about the operation, when less care was taken in selecting the cases, and when the after-treatment was most imperfect, and, consequently, the mortality was very great—in fact, so great was it that the operation, as is well known, excited the greatest opposition, notwithstanding the high character of those surgeons who were doing their utmost to advance it. Thus the author shows that, in the first two epochs of this proceeding, the mortality was over fifty per cent., whereas in the last two periods the mortality was little more than one-half. Dr. Penières contrasts this with the mortality after amputation of the thigh for disease by cases which he has collected together from various sources—French, American, and English—and he finds that it ranges from 32 to 62 per 100; and he comes to the conclusion that the mortality is about equal after both operations, although, with truth, he might have affirmed that his figures show that amputation of the thigh is considerably more fatal. The author has considered at length and with care the indications for the operations, and has described the various methods which are employed, as well as the consecutive treatment, on the importance of which we are glad to find he lays so much stress. If Dr. Penières had had much personal experience of this operation, we think he would not speak quite so lightly as he does about the bleeding which accompanies or follows excision of the knee, at page 32. Deaths have occurred from bleeding coming on a few hours after operation; and, in other instances, patients have been greatly endangered by loss of blood. In no operation is it more important to tie every single bleeding vessel before removal to bed.

A separate chapter is devoted to the consideration of the operation for the treatment of ankylosis of the knee, consisting, as is well known, in removing a wedge-shaped portion of bone, and straightening the limb. A table is appended, by which it appears that this operation has been practised thirty-two times by various American, English, and continental surgeons, with the very pleasing result of twenty-eight recoveries. Not one case underwent amputation; and re-excision, with a favourable issue, was practised on one patient only. The favourable results after this operation are due, doubtless, to the fact that the patient is, for the most part, entirely free from any concomitant disease.

At the end of the treatise a table is given, wherein the results of excision of the knee for traumatic cases are shown. These results are, as may be expected, not very favourable; but still, in certain instances of gun-shot injuries, the operation is doubtless justifiable. Partial resections at the knee also claim a little attention. The author shows that the results are "bien plus mauvais que la résection totale".

We strongly recommend the study of this work to all those who are interested in the question before us. Dr. Penières writes fairly, and without prejudice; he speaks in high and handsome terms of those British surgeons who have contributed, by their example and writings, to establish excision of the knee-joint as a legitimate proceeding; and we doubt not that his observations will be the means of more directly drawing the attention of French surgeons to the practice. The author states that twenty cases have already occurred in France; and this fact proves that the prejudices which existed against the operation are being gradually conquered.