

Observations

ON

TYPHOID (INTESTINAL) FEVER IN THE PIG.*

BY

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THE very remarkable disease of which I propose to show you some of the results to-night was first brought to my knowledge by Professor John Gamgee, of the New Veterinary College, Edinburgh. On the 27th of August last, I received a letter from that gentleman, stating—1. That an outbreak of typhoid fever, attended by ulcerations of the intestine, had occurred among pigs in the neighbourhood of Edinburgh; 2. That the disease had been imported by stock from Wolverhampton; and 3. That he had succeeded in stopping its spread by measures—as I inferred from his note—directed against contagion. Professor Gamgee concluded his letter with the kind offer to send me specimens, or a whole pig, should I desire it.

I immediately telegraphed for a whole pig; and, in the afternoon of the same day, I received from the professor the following message: "Pig sent off, packed in ice; dead thirty-six hours." On the 29th, late at night, the box containing this interesting relic was delivered at my house. As the weather was extremely hot at the time, the carcase, when I opened the box next morning, stank so badly as to put my pathological zeal to a test of no common severity. The *post mortem* examination did not the less disclose some results of high interest.

The intestinal follicles presented, in fact, alterations which, although limited in extent and differing somewhat in the order of their distribution, bore a close resemblance to the well known ulcers of the typhoid fever of man.

In following the course of the ileum downwards, the last six or eight patches were somewhat more conspicuous than common; but the only really characteristic changes were confined to the large follicular patch, which in the pig, as in man, is seated immediately above the ileo-cæcal valve; and to a cluster of the smaller follicles which beset the cæcum.

The Peyerian patch immediately above the valve was very vascular and much thickened, standing out in strong relief on the surface of the gut. This patch was the seat of three ulcers, of irregular oval shape, varying from a third to half an inch in diameter, and having their edges sharply cut. These ulcers had destroyed the mucous membrane through its whole depth. Their base—and the same observation applies to the ulcers found in the cæcum also—was formed by an adventitious deposit, presenting, as far as I could judge from the state of the parts, the general characteristics of the yellow deposit which occurs in the typhoid fever of man. In the cæcum I counted six other ulcers, for the most part of smaller size, but presenting precisely the same appearances.

The diseased patch in the ileum was too rotten to preserve; but by inspecting the cæcum, which is now

before you, you may satisfy yourselves of the correctness of the description I have just given.

I ought to add, that the mesenteric glands corresponding to the ulcerated follicles were much enlarged and highly vascular. The rest of the intestinal canal presented nothing abnormal.

My knowledge of this porcine malady was limited to these few data,* when, about three weeks ago, I received a note from my friend Mr. H. Grace of Kingswood, to say that some pigs at the Clifton Union Workhouse had died of intestinal fever, and that others were still labouring under the disorder. Early next morning I visited the survivors, and learnt from the master of the workhouse the particulars of the outbreak.

The subjects of the disease were a lot of ten young pigs recently bought in Bristol Market. When first brought to the workhouse, they all appeared quite well; but, about a week afterwards, more or less, two or three of their number began to show signs of illness. The disorder did not, however, attract much attention until, at feeding time one morning, one of the pigs was found lying dead in the sty. On minute examination, it was discovered that five or six of the remaining nine were already in various stages of the same complaint. Two days afterwards, another pig died; and, before a week had passed, five more had perished. The disease followed in all an exactly similar course.

I cannot give a better general idea of the malady than to say that, as far as outward signs go, it is the exact counterpart of typhoid fever in man; more rapid, indeed, and more deadly; but in all essentials singularly like to the human fever.

Thirst, loss of appetite, sudden loss of strength, great dulness, and an indisposition to move, were the first symptoms to challenge attention. From the peculiar fixed way in which the sick animals held their heads, the master of the workhouse had come to the conclusion that, in the first stage of the malady, they suffered severely from headache. I may add, that the aspect of one of the pigs, which I myself saw in this stage, left the same impression on my mind. These first symptoms were either attended, or soon followed, by profuse diarrhoea; the liquid ochre-coloured stools presenting a striking resemblance to those which occur in the human fever. As death drew nigh, the bright yellow hue of the evacuations generally gave place to a dark olive, or to various shades of chocolate; this last tinge being due to a greater or less admixture of blood.

In some pigs, repeated and violent vomiting showed that the functions of the stomach also were much disturbed. In the worst cases, the prostration early became extreme, and was attended either by stupor or by delirium more or less active.

In the early stage, there was in all great heat of skin; and the pulse continued to be frequent throughout. As the malady advanced, the tongue became dry; sordes collected about the nostrils; and the belly was more or less tympanitic. In some, a special loss of power, almost amounting to paralysis, befel the hinder extremities in the later stages of the complaint.

I had almost forgotten to say that, at the onset, the whole skin was said to be the seat of a bright red exanthem—a characteristic which appears to have been long familiar to pork-butchers, and which, from the resemblance of the colour to the military red,

* Decomposition had advanced so far in the specimen I received from Professor Gamgee, that I cannot speak with the same certainty of its pathological interpretation, as if I had seen the parts in a fresh state. Taking the appearances in connection with the Professor's brief account of the outbreak, I am probably, however, not wrong in assuming that the disease was identical with that which killed the Clifton pigs.

* Read before the Bath and Bristol Branch, on March 2nd and April 13th, 1865.

has earned for the malady the slang name of the "soldier".*

In the most rapid case, death occurred as early as the fourth day after the first discovery of marked illness. Other subjects held on to the eighth, twelfth, sixteenth, and one to the twenty-sixth day. The total duration of the outbreak, counting from the seizure of the first to the death of the last pig, was rather over six weeks

Through the kindness of the owner, I was enabled to make a more or less complete *post mortem* examination in six of the cases; and it is on the results thus obtained that the following observations are based.

The only strikingly characteristic morbid changes were seated in the intestinal canal. These were in every sense remarkable. Described in general terms they may be said to consist in a series of ulcerations

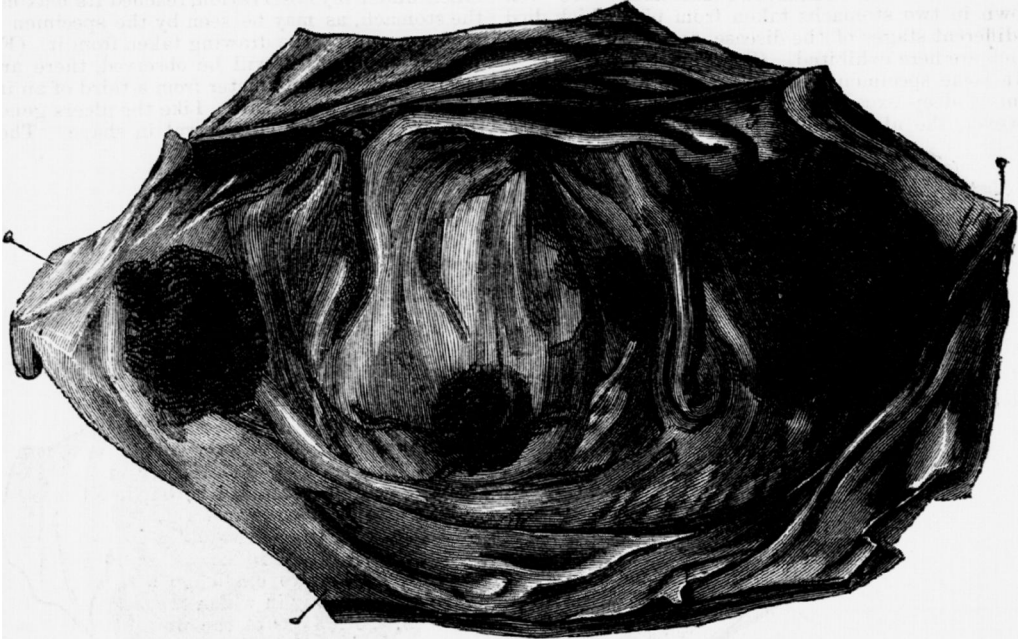


Fig. 1 a.—Stomach of Pig, shewing first stage of disease.

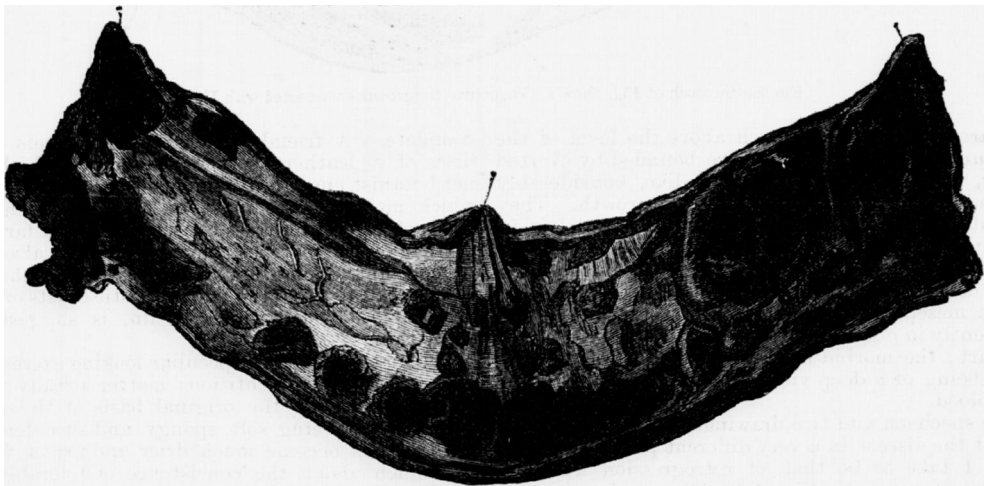


Fig. 1 b.—Portion of Intestine, shewing first stage of disease.

of peculiar character, variously distributed over the intestinal tract, from the stomach to the rectum inclusive.

The first stage of the local affection appears to be marked by the development (amid all the phenomena of acute inflammatory disturbance), in the

* It is this same "rash", I fancy, which has led to the statement recently made that pigs are subject to scarlet fever.

substance of the mucous membrane, and in the sub-mucous tissue, of an adventitious deposit (or cell-growth, rather), resembling, in many of its characters, the well-known yellow matter of human typhoid fever.

The seat of this new formation is marked by circular or oval patches, varying in diameter from a quarter of an inch to two inches, which attract the

eye by their striking contrast in colour to the surrounding membrane, and by their standing in relief upon it. (Figs. 1 *a* and 1 *b*.)

The tinge of these patches varies from brownish yellow, through chocolate, to deep violet.

In a more advanced stage, the corresponding mucous membrane is found fretted with numerous small ulcers, or has entirely disappeared over the whole extent of the morbid deposit, which then forms the base of the sore. These two extremes were well shown in two stomachs taken from pigs which died at different stages of the disease, and drawings from which are here exhibited. (See Figs. 1 *a* and 2.)

In some specimens, the ulcers now appear in the form of deep excavations. In the greater number, however, the ulcerative process is concurrent with

an exuberant outgrowth of the new formation already described, and in such wise that the ulcerations present a series of more or less fungoid elevations on the surface of the mucous membrane. A similar tendency, but in slighter degree, is exhibited in certain cases of typhoid fever in man. The resulting changes, in fact, form the subject of one of Cruveilhier's most effective plates. In the pig, this tendency to exuberant vegetative outgrowth, in the cases which have fallen under my observation, reached its maximum in the stomach, as may be seen by the specimen I now produce, and by the drawing taken from it. (Fig. 2.) In this stomach, it will be observed, there are five ulcers, varying in diameter from a third of an inch to about an inch and a half. Like the ulcers generally, they are either circular or oval in shape. These ul-

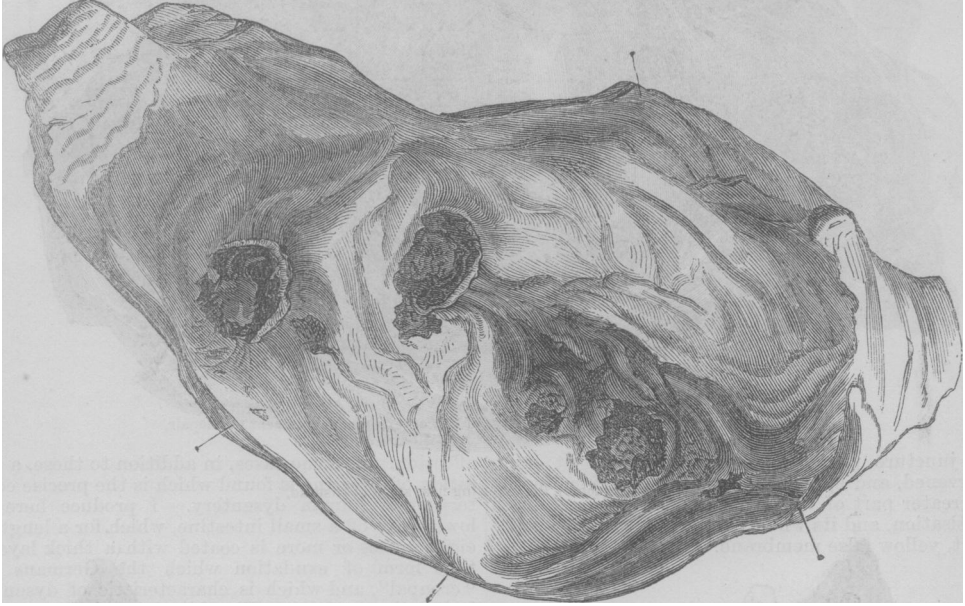


Fig. 2.—Stomach of Pig, shewing Vegetative Outgrowths connected with Ulcers.

cers are not only raised much above the level of the surrounding membrane, but are bounded by everted edges, which project, mushroom-like, considerably beyond the base or pedicle of the outgrowth. They resemble nothing so much—and the parallel is in more than one way deeply suggestive—as a series of cancerous ulcerations which I once saw in the colon of a woman who had died of cancer of that gut and of the mesentery. The surface of these ulcers was apparently in organic connexion with the vessels of the part; the morbid matter by which it was constituted being of a deep violet colour, from infiltration with blood.

The specimen and two drawings which I now show exhibit the disease in a very different phase—a phase which I take to be that of retrogression and beginning of repair. (Fig. 3.) The specimen comprises the large intestine and lower end of the ileum of a pig which died on the twenty-sixth day of illness. The drawings are taken from it. The appearance of the diseased parts is in the highest degree peculiar. Viewed at a little distance, the gut looks exactly as if a number of thin discs of calumba-root had been stuck on to it. In colour, in the concentric circles by which they are marked, in the defined border, and in the strictly circular shape of the greater number, the resemblance between these two objects is

complete. A friend prefers to liken them to the discs of a leathery sort of lichen, of which I am not botanist enough to remember the name, but with which most persons must be familiar, as infesting the bark of certain trees. As applied to a large proportion of the patches, this comparison also is extremely apt. Some few among them, on the other hand, recall to mind the characteristic crusts of syphilitic rupia—a fact which, again, is suggestive of many things.

The material of these peculiar looking excrescences is formed by the adventitious matter already spoken of as constituting the original basis of the ulcerations. From being soft, spongy, and succulent, this material has become much drier and firmer, having now much about the consistence of tolerably firm cheese. Under the microscope, its original cellular character is seen still to exist; the whole mass being, in fact, made up of well-defined microscopic cells. (Fig. 4.)

On using a little gentle traction, the individual disc may be easily detached from the underlying membrane, leaving a surface which, although wanting in the polish and velvety appearance of the surrounding area, is exactly on a level with it.

I have suggested that these patches probably exhibited the disease in a retrogressive stage—the stage

preliminary to repair. I infer this partly from the history of the case from which the specimen was taken, and partly from the morbid appearances themselves.

The pig to which this intestine belonged lived to

the twenty-sixth day; and, a week before its death, gave every sign of approaching convalescence. Appetite had returned; diarrhoea had nearly ceased; the animal had become more lively; and nearly every symptom of the fever, proper, had disappeared. At

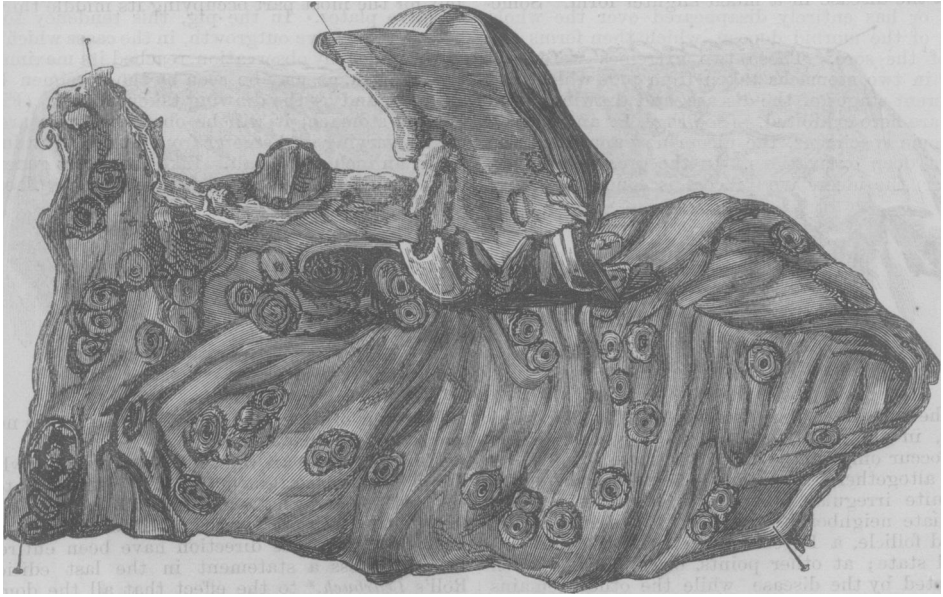


Fig. 3.—Portion of Large Intestine. Stage of Ret:gression and commencing Repair.

this juncture pleuropneumonia of the right lung supervened, and speedily proved fatal. After death, the greater part of this lung was found in a state of hepatisation, and its whole surface covered by a soft, recent, yellow false membrane.



Fig. 4.—Cells from Deposit in Intestine.

The condition of the patches themselves was still more indicative of a reparative tendency. In the early and middle stages of the disease, these patches were highly vascular; their surface was an open ulcer; and the surrounding membrane, where the morbid changes were severe, was often much thickened and deeply injected. In the stage before us, the patches were no longer in the condition of open sores, but had become hardened into *crusts*; and the surrounding vascularity had for the most part entirely faded away. When torn off by gentle traction, the underlying membrane seemed only to require a new epithelium to be restored to a sound condition.

The various appearances which I have here attempted to describe represent the different phases of what may be called the typical form of the local

affection. In some cases, in addition to these, a condition of intestine is found which is the precise counterpart of human dysentery. I produce here the lower part of a small intestine, which for a length of eight inches or more is coated with a thick layer of that form of exudation which the Germans call "croupal", and which is characteristic of dysentery in its severest form. (Fig. 5.) One of the large intestines exhibits appearances of the same character, associated with extensive sloughing and ulceration of the mucous membrane. These dysenteric alterations are, as far as I have seen, always attended by that great thickening of the gut, from submucous infiltration, with which those who are practically acquainted with the morbid anatomy of dysentery are so familiar.

Having described the different forms and stages of the local disease, so far as they have hitherto come under my notice, I must now speak of its distribution. In regard to this, the leading fact is, that it is on the large intestine chiefly that the disease spends its violence. In some cases, this intestine is almost its exclusive seat. In the case, for instance, from which the drawing I now show was taken, and to which I have before referred as an example of the affection in its retrogressive stage, the three small ulcers in the lower part of the ileum represented in the drawing, and three small chocolate-coloured circular spots, without breach of surface, in the stomach, were the only discernible morbid changes above the ileo-cæcal valve. (Fig. 3.) The colon, on the contrary, in the same pig, was so extensively diseased that, from this valve to the anus, there was scarcely a square inch of membrane that was not beset by the characteristic patches.

If we put aside the cases in which the lower end of the ileum is in a dysenteric condition, the stomach is

the part which, next to the colon, suffers most. The alterations which this organ presents in some cases are, as we have seen, as severe as they are remarkable.

The ulcerated patches which occur in the small intestines are few in number, and for the most part exhibit the disease in a much slighter form. Some-

times there are only two or three altogether, which in that case are generally seated in the large Peyer's patch, which in the pig, as in man, lies immediately above the ileo-cæcal valve. Sometimes, in addition to these, some fifteen or twenty more may be counted, variously distributed through the length of the gut, but for the most part occupying its middle third.

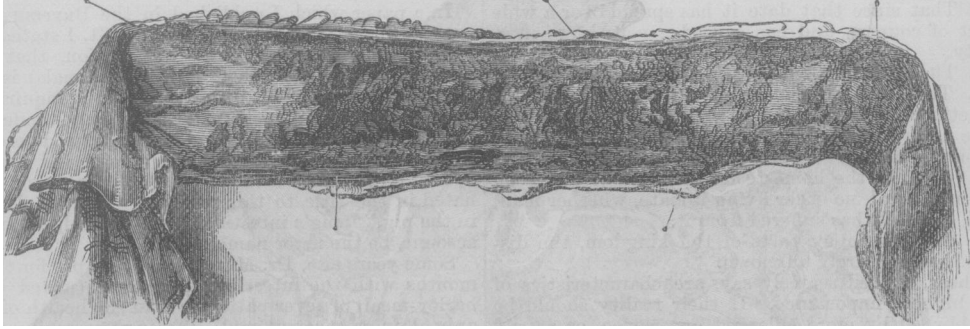


Fig. 5.—Intestine, with Croupal Exudation.

In the intestine, the disease seems to originate, chiefly, in the isolated follicles. Peyer's patches, which occur only in the small intestine, often either escape altogether, or are only affected in a partial and quite irregular manner. Sometimes, in the immediate neighbourhood of an ulcer seated on an isolated follicle, a Peyer's patch may be seen in the normal state; at other points, one end of a patch is affected by the disease, while the other remains entirely free from it.

The condition of the œsophagus I have not investigated. Judging from what occurs in human typhoid fever, it is more than probable that this tube participates in the disorder.

I have remarked, that the only perfectly characteristic morbid appearances attaching to this malady are found in the intestinal canal. It is worth noting, that the spleen, which in some stages of human typhoid fever undergoes such a marked modification, presents here no perceptible deviation from its normal state. The same may be said of the liver, with this exception, that in one or two instances I have seen a thin layer of adventitious deposit occurring in irregular patches immediately under the peritoneal coat of the organ. More than once I have observed a similar deposit under the pleura also. I have not had time to subject this deposit to a minute examination; but its colour and general appearance would suggest the idea of its being identical with the adventitious deposit which precedes the stage of ulceration in the intestine.

Various degrees of passive congestion and of pleuropneumonia are the only other morbid changes I have found in the lung. I must confess, however, that I have not examined this organ with quite the same care which I have bestowed on the intestinal canal.

In one case, there were several ounces of limpid serum in the pericardium; but, with this exception, the heart presented nothing abnormal.

The kidneys exhibited appearances worthy of note. In all the cases which I have examined, these organs were a good deal congested—more variegated in colour than in the healthy state; and, in some instances, their surface was thickly beset by ecchymoses. These alterations must be familiar to most as a frequent attendant on malignant fevers, and as generally associated with acute albuminuria in the living subject.

For want of time, the nervous centres were not examined in any instance.

Thus much I can relate of my own knowledge. These facts ascertained, my first step was to see whether any and what account had been given of this disorder in veterinary works. Hitherto the inquiries I have made in this direction have been entirely in vain. Unless a statement in the last edition of Röll's *Lehrbuch*,* to the effect that all the domestic animals are subject to a fever attended by ulceration of the intestine, be supposed to include this malady, I have met with no mention of it any where. "*Magen-seuche der Schweinen*," the name by which this fever in the pig seems to be known, is very nearly a synonym of "gastric fever", the popular name for human typhoid fever. Röll's book contains, however, no special description of this disease in the pig; and I am informed by one of the highest authorities on veterinary medicine in this country, that no description of it exists.

Under these circumstances, I was naturally anxious to know whether others, as well as Professor Gamgee and myself, had also met with it. Accordingly, on March 17th, I showed my drawings to Professors Spooner and Varnell, of the Royal Veterinary College, London. These gentlemen at once recognised in them illustrations of a disease with which they were familiar, and of which, especially within the last two years, specimens had frequently come before them. The account which I gave them of the symptoms during life corresponded strictly to what they had observed.†

In what remains to be said, founded as it is for the most part on the testimony of unscientific persons, I cannot speak with the same assured confidence. Hitherto, it will be remembered, I have myself seen this disease in a single homestead only; and my acquaintance with it is not only too limited, but too recent also, to enable me to speak of it without some

* *Lehrbuch der Pathologie und Therapie der Hausthiere*. Article, "Gastrischer Fieber". This is one of the most recent as well as most comprehensive of the works on the Diseases of Domestic Animals.

† On the 14th June ult., I had the honour of bringing this subject before the Council of the Royal Agricultural Society. Professor Simonds, who was present on the occasion, confirmed in a general way all that is here advanced; and further illustrated the subject by observations of his own, of great interest to pathology as well as to agriculture. His remarks, of which a report is given in *Bell's Weekly Messenger* for June 19th ult., are well worth referring to by all who are interested in this class of subjects.

reserve. The following points, however, seem to be pretty sure.

1. That in single instances, occurring chiefly, as it would seem, in Irish pigs, the disease has been well known to pig-factors here for twenty years or more.

2. That, until within the last year or eighteen months, it has never been known to be epidemic in this neighbourhood.

3. That since that date it has spread over a wide tract of country, and has caused a very large mortality.

4. That it is in the highest degree contagious.

5. That, like all the other contagious fevers, it sometimes springs up, nevertheless, in subjects that have never been in direct communication with others labouring under the disorder.

6. That, in the homesteads in which it has been the most fatal, no other living inmate, whether man, bird, or beast, has suffered from it.

7. That, in many parts of the kingdom, the disease is still entirely unknown.

These, I need scarcely say, are characteristics of the highest importance. If their reality should be established by more enlarged experience, or should receive, where susceptible of it, the stamp of experimental proof, this disease will at once take its place among the most important, in a scientific point of view, of the whole family of contagious fevers. Our interest with it is, I need scarcely add, a purely human interest. The nature and high character of this will be best understood by a question which has been addressed to me by nearly every one who has seen the morbid specimens; *i. e.*, as to whether this disease in the pig be *identical* with the typhoid fever which afflicts our own race. Rightly interpreted, I believe that neither the natural history of the disease nor its morbid anatomy at all warrants such a surmise. To establish identity in a case like this, it is necessary not to show pathological resemblance merely, but that the germ of the one species of fever is capable of producing the other. Now, not only is there no proof of this in the case before us, but the whole evidence, as far as we yet know it, points the other way. On the other hand, although the alterations in the intestinal canal in these two fevers agree in all their fundamental points, and may be regarded, in fact, in relation to the diseases which they severally characterise, as exact pathological equivalents, the differences between them, more especially as touching the order of their distribution, are too serious to allow us to suppose that they are the common effect of a single specific poison.

But, although not identical, there seems to be every reason to believe that the one malady is the strict analogue of the other; and that the porcine fever—to make my meaning plain by an illustration—bears the same sort of relation to the human fever which sheep's small-pox, for instance, bears to human small-pox. And, as the laws of variola ovina correspond with those of human variola in the most perfect way, so it will probably be found that the laws which govern the propagation of this typhoid fever in the pig correspond as perfectly with those of its human antitype. It is in this, in fact, that the scientific interest of this pigs' fever culminates.

The problem which, in man, is only to be resolved by the casual data which common observation slowly throws up, seems to recur here under conditions which admit of its immediate solution by the precise and decisive results of experiment. If things should turn out to be so, this will be great gain. For, although the law of propagation of human typhoid has already been completely made out, its universal recognition would, no doubt, be greatly forwarded if the conclusions drawn from facts occurring in the common

course of nature, received the additional confirmation of experimental proof.

One other remark I would desire to make. It is probably the occurrence of this disease in the pig which has led certain pathologists both here and abroad to say that swine are subject to typhoid fever—meaning by this the typhoid fever from which we ourselves suffer.

In a paper which I published in the *BRITISH MEDICAL JOURNAL* in the autumn of 1861, I stated my belief, founded on very wide observation, that the pig (as well as our other domestic animals) is entirely exempt from this disorder. All the inquiries I have since been able to make have only tended to confirm this conclusion. And although, in deference to the two gentlemen to whose kindness I am indebted for my knowledge of this disorder, it is designated in the title to this paper as "intestinal fever in the pig," "pig's intestinal fever" would, on every account, be the fitter name for it.

Some years ago, Dr. Murchison fed a pig for three months with the intestinal discharges (mixed with barley-meal) of fever patients; and the health of the animal in nowise suffered. Through assuming that pigs are subject to the typhoid fever of man, the author altogether fails to apprehend, as it appears to me, what, under present evidence, the experiment clearly suggests. A single case is, of course, far too narrow a basis for a general inference in such a matter, and more especially where the object is to prove a negative. But, until reliable evidence to the contrary shall appear, the whole importance of Dr. Murchison's case obviously lies in this, that it tends to show by experiment what common observation had already led us to believe—that pigs, namely, are not subject to the typhoid fever of man.

The relations which these facts touching the pig have brought to light have this additional importance, that in them the pythogenic theory—I had almost said the pythogenic delusion—finds a *reductio ad absurdum*. Stunned into incoherence by the heavy blows it has lately received from so many quarters, and driven to the saddest shifts to maintain its ground at all, this theory still drags on a painful existence, in order, as it would seem, to receive its *coup de grace* from the pig. Either way, the facts appear to leave no escape for it. For, if the pig be not susceptible of the typhoid fever of man, the facts related in this paper leave little doubt that this animal is liable to a disease which in all things, causation included, is its precise counterpart. To argue that the pig's fever is caused by emanations from the common fecal matter of healthy swine—which is the pythogenic theory applied to pigs—would be too preposterous. If, on the other hand, it were proved that pigs really are susceptible of the human disease, the fact would at once be fatal to the pythogenic argument.

From the day when swine were first denounced in Leviticus to the present hour, these animals have justly been looked upon as the very type of uncleanness. "The sow that walloweth in her own mire" is of all creatures the last one would have expected to see brought into court as a witness in favour of the pythogenic theory. For, in spite of the conditions amid which swine almost universally live, not even the most rampant pythogenist, I presume, is prepared to contend that typhoid fever is common among them. Of the powerlessness of their own excreta to produce this fever, the experience of a friend of my own who formerly lived in the neighbourhood of Bristol, and who for more than twenty years was a large breeder of pigs, would alone be sufficient proof. The periodical visits which, in compliment to the owner, I used to pay to his populous piggery, when,

as frequently happened, I passed an hour or two at his country seat, were among the severest trials to which my own nostrils were ever exposed. For, although this gentleman was very proud of his stock, I blush to say that the styes and the yard in which the animals passed the greater part of their lives, were kept in the most flagrant defiance of all sanitary laws. The sight of the black ooze—to say nothing of the penetrating stink—was enough to make any one stand aghast who had been brought up in sound pythogenic principles. From the newborn litter to the ancient sow, pigs of every age might be seen there, whose only bed was dung in every conceivable stage of fermentation. And yet, in spite of all this, not only did the successive generations of twenty years pass away into pork without any epidemic of pythogenic fever, but not a single instance of that disorder, or of anything resembling it, ever occurred among them. By every pythogenic law, they ought to have perished a hundred times over; but all they really did was to grunt and grow fat, and die under the hands of the butcher. Indeed, with the exception of two Irish pigs, which, under strong temptation in early life, were supposed to have indulged habitually in human excrement, and had become infested with cysticercus in consequence, my friend was unable to trace any single ill effect to the incessant commerce of his pigs with faecal matter.*

The experience of this homestead is the experience of a thousand others scattered through the land. All the early part of my professional life I passed in country practice; and, although I was constantly being consulted by farmers and by the poor respecting the maladies of their pigs and other live stock, and constantly heard the pigstye unhesitatingly indicated as the cause of typhoid fever in the family of the owner, I never saw or heard of a single case of this disorder among pigs themselves.

The dilemma into which the pythogenist has been betrayed by this infelicitous appeal to swine may be put in another form.

The chief source of the poison which causes typhoid fever is, according to the pythogenic theory, human faecal matter in a state of fermentation.

As identity of nature implies identity of cause, the poison derived from this same source must be capable of exciting typhoid fever in the pig.

As, further, pigs and men, by the very terms of the case, are, in respect of this fever, on the same footing, it would, I presume, naturally follow that the faecal matter of the pig must be capable of exciting typhoid fever in man. The pigstye and the attendant dungheap figure largely, in fact, as a cause of typhoid fever, in the writings of the pythogenic school.

As—once more—in all these points the relations, if they exist at all, must, from their very nature, be strictly mutual, it should equally follow that pigs, also, must be liable to contract typhoid fever from their own faeces in a state of fermentation. But not only does the whole life of pigs bear evidence against this, but their habits render it equally sure that, as far as typhoid fever is concerned, the faecal matter of man is innocuous to them.

This, as it appears to me, is a very serious dilemma. It is for those who, in the teeth of every sort of evidence, still hold to this theory, to help us out of it as they best can. Meanwhile, if the facts

* This case is not recommended as an example to follow. By great care as to food, and as to the sources from which he renewed his stock, this gentleman kept his pigs free from disease, notwithstanding the dirty condition of his piggery. But pigs, like men, are, *ceteris paribus*, the more healthy the cleaner they are kept. The filth amid which they are so often kept, leads to their being infested by parasites to an extreme degree, and also to the rapid extension of infectious diseases among them when once introduced into the sty.

be as, according to this theory, they would seem to be; if it be true that typhoid fever is caused in man by his own faeces and by the faeces of the pig, while the latter is proof against both,—I can only say that the fact betrays a dispensation of Providence in favour of Porcus of which Homo has just reason to complain.

Transactions of Branches.

SOUTH-WESTERN BRANCH.

PRESIDENT'S ADDRESS.

By THOMAS L. PRIDHAM, Esq., Bideford.

[Delivered June 22, 1865.]

GENTLEMEN,—My first duty is to thank you for the honour you have done me by electing me the President of the South-Western Branch for the present year. Having said this much, my pleasure is, to welcome you to this interesting and beautiful part of our county; famed as it is, not only for its rocky coast and woodland scenery, but also for the historical events which in connection with the southern part of our county have conduced to make England what she is, the emporium of the world.

I can assure you, that I am quite aware of the responsibility I have undertaken in presiding over this meeting; feeling, as I do, how far short my best efforts must be, when compared with the eloquent and learned addresses which have been delivered by members of the Association in this division.

Before I begin to speak on medical subjects, it may not be uninteresting to those who now visit North Devon for the first time, to dwell for a few minutes on subjects which may perhaps be considered foreign to the intentions of the present meeting.

History tells us that, about the ninth century, the Danes made a descent upon this coast, with a powerful army, and landed on our burrows. Under the command of Odon, Earl of Devon, they were met by the stout hearts and trusty hands of the men of these parts, who were entrenched at Kenwith Castle, about a mile hence, and, after a bloody battle, were defeated and driven into the sea near Appledore. On the shore is to be seen a huge stone, which marks the spot where Hubba, the Danish king, was slain, and is called Hubba Stone to this day.

We cannot boast of having produced such great and learned men, as Milton, Shakespeare, Locke, or Newton; but we can boast of the good old men of Devon who lived in the days of "Good Queen Bess"—men who were remarkable for their acts of valour and wisdom. It was from this port that Raleigh and Drake sailed on their voyages of discovery and adventure. In the small village church of Landcross, just a mile hence, may be seen the baptismal register of George Monk, afterwards Duke of Albemarle, who first trained the Coldstream Guards to deeds of arms; and subsequently was the means of establishing Charles II on the throne of England. It was here that the Grenvilles (kinsmen of William of Normandy) lived, from the time of the Conquest to the close of the sixteenth century; men renowned in the history of our country as statesmen, and as warriors both by sea and by land. It was from this port that the brave Sir Richard Grenville sailed to meet the Spanish Armada. History records that this said Sir Richard Grenville on one occasion engaged the whole Spanish fleet single-handed, in his ship called the *Lion*, which was manned by men of North Devon; nor did he surrender until all his powder was consumed, and his crew reduced to but a few. After