

(No. 43.)



1869.

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T A S M A N I A.

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ROYAL COMMISSION ON FLUKE IN SHEEP.

REPORT.

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Laid upon the Table by the Colonial Treasurer, and ordered by the House to be printed, August 24, 1869.

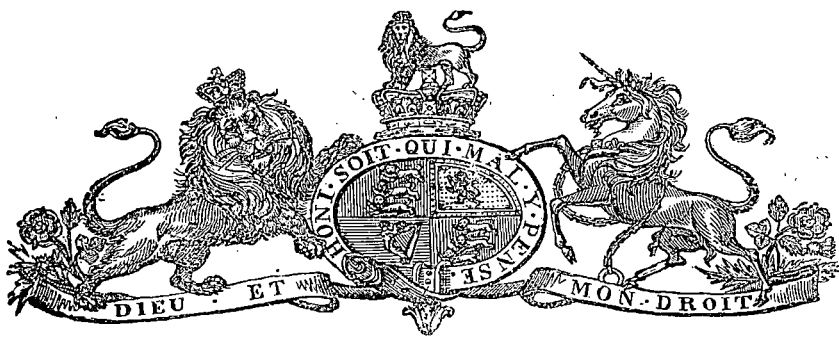
ROYAL COMMISSION  
ON  
FLUKE IN SHEEP.

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REPORT

OF  
THE COMMISSIONERS;

TOGETHER WITH THE MINUTES OF THE PROCEEDINGS OF THE COMMISSION,  
AND EVIDENCE TAKEN.



Tasmania:

JAMES BARNARD, GOVERNMENT PRINTER, HOBART TOWN.

1869.



## COMMISSION ON FLUKE IN SHEEP.

(Seal.) VICTORIA by the Grace of GOD of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To Our trusty and well-beloved JAMES WILSON AGNEW, Esquire, Doctor of Medicine, HENRY BUTLER, Esquire, Member of the House of Assembly, RONALD CAMPBELL GUNN, Esquire, the Honorable FREDERICK MAITLAND INNES, Esquire, Member of the Legislative Council, and the Honorable ROBERT OFFICER, Esquire, Member of the House of Assembly.

### GREETING:

WHEREAS We have thought it expedient, for divers good causes and considerations Us thereunto moving, that a Commission should be appointed to enquire into and report upon the Disease called "The Fluke" in Sheep, and upon the best method of arresting its progress: Now know ye that We, reposing great trust and confidence in your fidelity, discretion, and integrity, do, by these Presents, authorise and appoint you the said JAMES WILSON AGNEW, HENRY BUTLER, RONALD CAMPBELL GUNN, FREDERICK MAITLAND INNES, and ROBERT OFFICER, or any three or more of you, to make diligent enquiry into the said Disease called "The Fluke" in Sheep, and upon the best method of arresting its progress: And for the better discovery of the truth in the premises We do, by these Presents, give and grant unto you or any three or more of you full power and authority to call before you all such persons as you shall judge necessary by whom you shall obtain information in the premises: And Our further will and pleasure is, that you or any three or more of you shall reduce into writing under your hands what you shall discover in the premises, and do and shall, on or before the Thirtieth day of April, One thousand eight hundred and sixty-nine, certify to Us in Our Executive Council in Tasmania, by writing under your hands respectively, your several proceedings by force of these Presents, together with what you shall find touching or concerning the premises upon such enquiry as aforesaid: And We further will and command, and by these Presents ordain, that this Our Commission shall continue in full force and virtue, and that you Our said Commissioners or any three or more of you shall and may, from time to time, proceed in the execution hereof, and of every matter or thing herein contained, although the same be not continued from time to time by adjournment: And We do hereby command all and singular Our loving subjects whomsoever within Our said Colony of Tasmania that they be assistant to you and each of you in the execution of these Presents.

In testimony whereof We have caused these Our Letters to be made Patent, and the Public Seal of Our Colony of Tasmania to be hereunto affixed.

Witness Our trusty and well-beloved Colonel THOMAS GORE BROWNE, Companion of the Most Honorable Order of the Bath, Captain-General and Governor-in-Chief of Tasmania and its Dependencies, at Hobart Town, in Tasmania aforesaid, this Twenty-fourth day of December, One thousand eight hundred and sixty-eight.

T. GORE BROWNE.

By His Excellency's Command,

RICHARD DRY, *Colonial Secretary.*

### GOVERNMENT NOTICE.

No. 38.

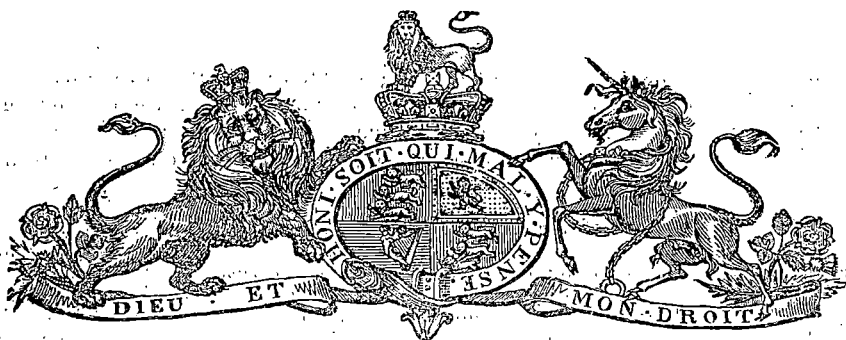
*Colonial Secretary's Office, 1st March, 1869.*

THE Administrator of the Government in Council has been pleased to appoint the under-mentioned gentlemen to be Members of the Commission appointed to enquire into and report upon the disease called "The Fluke" in Sheep, and upon the best methods of arresting its progress:—

MORTON ALLPORT, Esquire.  
THOMAS STEPHENS, Esquire.

By His Excellency's Command,

RICHARD DRY.



## REPORT.

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To His Excellency CHARLES DU CANE, Esquire, Governor and Commander-in-Chief  
in and over the Island of Tasmania and its Dependencies.

MAY IT PLEASE YOUR EXCELLENCY.

WE, the Commissioners appointed by Your Excellency "to enquire into and report upon the disease called 'the Fluke' in Sheep, and upon the best methods of arresting its progress," have the honor to present our Report, with the evidence which has been obtained.

We may, however, state that the subject of our enquiries is far from being exhausted; and we hope that further information of a valuable character will yet be laid before you, that will tend to clear up various points which are still obscure in the history of the disease, and assist in determining the exact value of some of the means proposed for its removal.

We commenced our proceedings by drawing up a series of questions calculated to elicit information of a practical character bearing on the disease.

Printed copies of these queries were transmitted to nearly four hundred persons, who, we thought, were likely to answer them from their own experience, and we also sent a few to New South Wales and Victoria. To these queries 190 answers have been received, of which number we have only found 159 available for the purposes of the Commission, 15 having been sent without any signature, and 16 persons having stated that they could give no information on the subject. Lest any omissions should have been made in sending the series of questions to any one qualified to give information, a request was added, soliciting the names of persons known to possess any knowledge or information about the Fluke; and to every person thus suggested a Circular was sent. From so many sources we hoped to obtain a mass of information, diffuse certainly, but capable of being compressed into a concrete and intelligible form; and we also expected that the mistakes and faulty observations of some would be so corrected or explained by the experience of others, that we should more nearly arrive at the truth than by trusting to the views of a more limited number of observers. In this we have not been altogether disappointed; and, although it is not to be expected that in so short a time much new light could be thrown on so difficult a subject, we hope that the mere publication of the recorded observations and opinions of so many practical men will not be without some value, at least as a starting point for further investigations.

The natural history of the *Trematoda*, to which order the Fluke belongs, has been so fully investigated by many scientific observers during the past few years, that we have found no difficulty in arriving at a definite conclusion upon the general question of their origin and development. Among those who have written upon that branch of the subject to which our attention has been specially directed, we know no higher authority than Dr. Spencer Cobbold, who has diligently collated the results arrived at by previous investigators, and has added to these the conclusions deduced from his own extensive and elaborate researches. From his latest work on the *Entozoa* we shall extract such remarks as appear to us to be pertinent to the character of our Report, prefacing these extracts by a brief description of the Fluke itself.

The *Fasciola hepatica* or Sheep Fluke; formerly known as the *Distoma hepaticum*, is generically classed under the *Distomida*, a sub-division or family of the order *Trematoda*.\* Its body is of an oval form and very flat, with ventral and dorsal surfaces clearly defined. It is usually about three-quarters of an inch; but sometimes nearly an inch and a quarter in length, and from half to three-quarters of an inch in breadth at the widest part. It is furnished with two suckers—one at the

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\* Microscopic preparations of the Fluke and its *ova*, mounted by Mr. Harrap of Launceston, may be seen in the Royal Society's Museum.

extremity of the so-called head, and serving as a mouth by which the food of the parasite is imbibed,—the other, known as the *acetabulum*, being situated on the ventral surface and having no connection with the internal organs. In sex it is hermaphrodite, and the organs of reproduction occupy the greater part of its body, their orifice being placed a little above the ventral sucker, in the middle line. Respecting its distribution, and injurious effects on animals, Cobbold says :—

“The *Fasciola hepatica* is not only of frequent occurrence in all varieties of grazing cattle, but has likewise been found in the horse and ass by Daubenton; also in the hare and rabbit by the writer himself and others; in the squirrel by Tozzetti as previously mentioned; in the great kangaroo (*Macropus giganteus*) by Bremser and Diesing; in various antelopes and deer by Pluskall, &c., and also in the beaver (*Castor fiber*) by Czermack. Its occurrence in man has been recorded by Pallas, Bidloo, etc.; doubtful instances being also given by Mehlis and Duval. More recently Professor Partridge, of King’s College, detected it in the human gall-bladder, particulars of the case being described in the second edition of Dr. Budd’s well-known treatise on ‘Diseases of the Liver.’

“It is well known that the liver Fluke is extremely destructive, carrying off in England alone some tens and even hundreds of thousands of sheep annually, besides affecting in a less degree our larger cattle. A writer in the *Edinburgh Veterinary Review* for 1861 says, this ‘scourge of the ovine race has occasionally reduced the number of sheep so much as to materially enhance the price of healthy animals.’ For instance, in the season of 1830–31, the estimated deaths of sheep from Rot was between 1,000,000 and 2,000,000. By supplying turnips, oleaginous cakes, and grain, sheep partially affected can be fattened; and those not affected can be kept sound by a limited daily allowance of one or other of these foods. ‘Supposing the number to have been 1,500,000, this would represent a sum of something like £4,000,000 sterling; consequently, as I have before remarked, the disease cannot fail to prove highly prejudicial to our social interests. Every year a large number of sheep perish, but the endemic is much more strongly pronounced in some years than in others.’

“Intelligent cattle-breeders and agriculturists have all along observed that the Rot was particularly virulent after long-continued wet weather, and more especially so when there had been a succession of wet seasons. Co-ordinating with these facts, they likewise noticed that the flocks grazing in low pastures and marshy districts were much more liable to invasion than those sheep which pastured on higher and drier grounds, but a noteworthy exception occurred in the case of those flocks feeding on the salt-water marshes of our eastern shores. The latter circumstance has suggested the common practice of mixing salt with the food of sheep and cattle, both as a preventive and curative agent; and there can be little doubt that this remedy has been attended with more or less satisfactory results. The intelligible explanation of the good effected by this mode of treatment we shall find to be intimately associated with a correct understanding of the genetic relations of the entozoon in question; for it is tolerably certain that the larvæ of *Fasciola hepatica* exist only in the bodies of fresh-water snails and small aquatic animalcules.”

It seems to be ascertained that the Fluke parasite *may* be matured in a sheep without producing the other symptoms usually accompanying the disease to which it gives the name. The terms “Fluke” and “Rot” are commonly used synonymously to signify the disease itself; but some believe that it is the existence of incipient functional derangement of the liver that attracts the *larvæ*, after the accidental reception of the parasite into the digestive organs, or encourages their development in sufficient numbers to lead to fatal consequences. It is doubtful at what stage of the disease the external symptoms of its existence may be first detected. Among the earliest may be noted the moist and watery appearance presented by the eye, the vessels of the conjunctiva being often filled with pale-coloured blood, which soon assumes a yellowish appearance especially about the caruncle in the inner corner. The surface of the skin is pallid and dry, the wool harsh to the touch, and showing a tendency to separate easily from the follicles. In a very early stage of the disease the sheep often exhibits a tendency to fatten rapidly, attributable probably to the stimulation of digestion through the increased secretion of bile. Soon after the appearance of the first-mentioned symptoms the sheep becomes dull, lags behind, and is very difficult to drive. At a later stage there is often a dropsical swelling under the jaws and the belly, and a general emaciation of the body. If over driven or excited by dogs the sheep is noticed to pant and appear distressed, and, in bad cases, if not driven with care, to drop dead from sheer exhaustion. The *post mortem* appearances in the last stage of the disease are thus described by Cobbold :—

“On cutting up a thoroughly rotten sheep the appearances which present themselves to the scientific pathologist are, perhaps, fully as striking as they are to the butcher himself. One instantly notices the wasted, flabby, watery condition of all the tissues, and a total absence of that fresh, firm, carneous look which so distinctly characterises the flesh in a state of health. Not only is the rigidity and firm consistency of the muscles altogether wanting, but these structures have lost that deep reddish colour which normally exists. When the abdominal cavity is opened a more or less abundant, clear, limpid, or yellowish fluid will make its escape, and the entire visceral contents will, at the same time, display a remarkably blanched aspect. These pathological changes are also shared by the important organ especially affected, namely, the liver. This gland has lost its general plumpness, smoothness, and rich reddish brown colour, and has become irregularly knotted and uneven, both at the surface and the margins; its colouring being either a dirty chocolate brown, more or less strongly pronounced at different parts, or it has a peculiar yellowish tint, which in places is very pale and conspicuous, to the feel it is hard and brawny, and when incised by the scalpel yields a tough, and in places a very gritty sensation. On opening the gall-ducts a dark thick grumous biliary secretion oozes slowly out, together with several distomes, which, if not dead, slowly curve upon themselves and roll up like a slip of heated parchment. On further slitting open the biliary passages they are found distended irregularly at various points, and in certain situations many flukes are massed together, having caused the ducts to form large sacs, in which the parasites are snugly esconced. The walls of the ducts are also much thickened in places, and hardened by a deposit of coarse calcareous grains on their inner surface. Mr. Simonds says that “the coats of the *ductus hepaticus*, as also of the *ductus communis choleidicus*, are not unfrequently so thick as to be upwards of ten times their normal substance, and likewise as hard as to approach the nature of cartilage.” Respecting their numbers the greatest variation exists. The presence of a few flukes in the liver is totally insufficient to cause death; consequently when a sheep dies from Rot, or is killed at a time when the disease has seriously impoverished the animal, then we are sure to find the organ occupied by many dozen, many score, or even several hundred flukes. Thus from a single liver Bidloo obtained 800, Leuwenhoeck about 900, and Dupuy upwards of 1000 specimens. Even the occurrence of large numbers only destroys the animal

by slow degrees, and possibly without producing much physical suffering, excepting perhaps in the later stages. Associated with the above described appearances, one also not unfrequently finds a few Flukes in the intestinal canal, whilst a still more interesting pathological feature is seen in the fact that the bile contained in the liver ducts is loaded with Flukes' eggs. In some cases there cannot be less than tens or even hundreds of thousands. Not a few may also be found in the intestinal canal, and in the excreta about to be voided. Occasionally dead specimens become surrounded by inspissated bile and gritty particles deposited in the liver ducts, thus forming the nuclei of gall-stones. Mr. Simonds mentions a remarkable instance, "where the concretion was as large as an ordinary hen's egg; and when broken up was found to contain about a dozen dead Flukes. It was lying in a pouch-like cavity of one of the biliary ducts." Lastly, it need scarcely be added, that it is by no means unfrequent to find one or even several other kinds of entozoa co-existing with the *Fasciola* in the same sheep, the most common form being that of the larval *Echinococcus*."

We extract, without comment, the following summary of Cobbold's conclusions respecting the origin and development of the Fluke:—

"Correlating all the known data afforded by the experience of our best Veterinary authorities, by observant naturalists generally, by my own researches, and by the recent experimental investigations of Continental helminthologists, I may here state in a tentative manner the conclusions to which a due consideration of all these facts inevitably lead. The deductions here recorded may eventually require modification in respect to their minor details, but in the main they will be found substantially correct, and therefore be likely to convey that kind of information which can scarcely fail to interest those more immediately concerned in the preservation of cattle, as well as those also who regard the subject from a wider social point of view. It is even now encouraging to think that when a little more light shall have unveiled all the missing links now wanting to complete the chain of evidence, the promoters of science will more hopefully seek to enlighten those who, in so far as natural history knowledge is concerned, are unwisely clinging to the idle 'tales of a grandfather.' Surely an enlightened public will no longer esteem the vague opinions of a bygone age to be more worthy of credit than the clearly enunciated facts of recent scientific discovery.

"1. The *Fasciola hepatica*, or sexually-mature Liver Fluke, is especially prevalent in sheep during the spring of the year, at which time it constantly escapes from the alimentary canal of the host, and is thus transferred to open pasture grounds.

"2. It has been shown by dissections that the liver of a single sheep may, at any given time, harbour several hundred specimens of the Fluke, and it is certain that every mature entozoon will contain many thousands of minute eggs.

"3. The escaped Flukes do not exhibit powers of locomotion sufficient to prove them capable of undertaking an extended migration, but their movements may subserve the purpose of concealing them within the grass or soft soil where they have fallen. Their habit of coiling upon themselves probably facilitates the expulsion of their eggs.

"4. The eggs can only escape from the oviduct of the entozoon one at a time, but there is no doubt whatever that prodigiously large numbers of loose ova are expelled the infested sheep in the same manner as the Flukes themselves.

"5. By the dispersing agency of winds, rains, insects, feet of cattle, dogs, rabbits, and other animals, and even by man himself, the eggs are carried in various directions, not a few of them ultimately finding their way into pools, ponds, ditches, canals, and running streams.

"6. The freed eggs at the time of their maturity contain ciliated embryos, capable of active progression when brought in contact with dew on the blades of grass, rain drops, pools of water, ponds, and lakes. The prolonged action of moisture without, aided by vigorous movements of the perfected embryo within, serves to loosen the lid-like end of the egg shell, by the opening of which the animalcule is set free.

"7. The ciliated embryo which is furnished with a solitary X-shaped eye, after a longer or shorter period of activity, loses its ciliated covering and becomes comparatively inert. It alters its form, and probably soon afterwards gains access to the body of a fresh-water mollusc, or possibly into the tissues of a land snail.

"8. Once within the viscera, or substance of its so called intermediate host, the nonciliated larva probably becomes transformed into a large sac, and develops new larvæ within its interior. These sac-like larvæ are called 'nurses' or 'sporocysts,' or when rather highly organised 'redia.'

"9. The contained nurse progeny, or higher trematode larvæ, are probably furnished with tails as in other Flukes. When fully developed they constitute the well-known *Cercaria*.

"10. The *Cercaria* have a tendency to migrate from the bodies of their molluscan hosts, and they are quite capable of an independent existence. During these wanderings in the water they are occasionally brought in contact with the human body, and in a few instances appear to have succeeded in penetrating the skin.

"11. It is not certain whether the *Cercaria* are taken into the bodies of quadrupeds when the latter are drinking water or eating solid food, but it is probable that they are passively transferred in either way. It is not unlikely that they are often swallowed while still resident with the bodies of their molluscan hosts.

"12. From the digestive organs of sheep or cattle, the *Cercaria* make their way into the liver, in which new situation they probably part with their tails and become encysted. This constitutes the so called *Pupa* stage.

"13. The *Pupa* thus encysted, for many weeks or even months, attains a higher organization, at last becoming converted into the sexually-mature *Fasciola hepatica*. It gains access to the liver ducts, then passes into the common biliary outlet, and from thence is transferred into the intestinal canal, being finally expelled its vertebrate host in the manner previously described."

We proceed to the examination of the evidence furnished by the witnesses who have replied to our Circular of inquiries.

One witness states that he observed the disease as far back as the year 1827, in the neighbour-

hood of Swanport, on the East Coast. Some thirty years ago it was noticed in sheep imported from Twofold Bay, New South Wales, and about the same time it had made its appearance in various parts of Tasmania, but had not then been developed to any serious extent. Several witnesses observed the disease from twenty to twenty-five years ago in sheep which had been depastured on the marshy lands of the Lake Country, the New Country to the westward of Hamilton, and in irrigated paddocks in the settled districts. The majority had not seen it until from six to ten years ago. Many sheep-runs are said to be still entirely exempt from the disease; and these, almost without an exception, consist of dry upland, rocky hills, or salt marshes. Among those which have enjoyed an immunity from the spread of the Fluke,—even when introduced from other parts,—we may cite the instance of Bruni Island, which presents in its physical configuration and character the conditions under which the disease could not, according to universal experience, be developed to any serious extent.

Several of the witnesses have been acquainted with the Fluke or Rot in England, and in all cases under circumstances precisely similar to those which have attended its manifestation in this Colony.

The Fluke has in many instances been detected in lambs at a very early age, even when, according to one witness, they were less than a month old. Here it must be remembered that diseased ewes in low condition are wholly unable to afford sufficient nourishment to their lambs, which are thus driven to seek it from external sources within a very few weeks after birth, thus becoming liable to the risk of infection in all localities infested by the parasite. Many of the witnesses positively assert, from their own experience, that lambs bred from fluky ewes will always remain perfectly free from the disease so long as they are kept on sound land.

As to the period of the year at which the earliest symptoms begin to show themselves there is considerable discrepancy in the evidence, which may be accounted for by the circumstance that while some witnesses refer to the symptoms of infection, others have confined their attention to its fatal consequences.

The time of the appearance of the former seems to point to December, January, February, and March as the months in which the disease is ordinarily contracted, the dangerous period varying in different years and different districts according to the dryness or wetness of the season, and the time at which the marshy spots begin to dry up.

Very many instances are given to show the rapidity with which the disease spreads when the favourite nurseries of the parasite—swampy or irrigated lands—have become thoroughly infected. Thousands of sheep believed to be sound when sent to the Lake Country in summer, have proved to be diseased on returning in the autumn. Sound sheep placed on land partially irrigated have shown symptoms of Fluke within six weeks. Many similar cases might be quoted. The disease has been observed to proceed to a fatal result as early as April in sheep known to be sound four months previously, and is always worst in old ewes and lambs especially when feed has been scarce.

Several of the witnesses quote instances of flocks in which the Fluke has never yet made its appearance. The runs of such sheep consist of rocky hills, dry undulating ground, sand hills, salt marshes, or lands with a frontage on salt water. Some low-lying lands are stated to have become safe after being thoroughly drained. One or two instances are given of imperfectly drained lands still free from the disease, apparently through the isolation of the flock and the non-introduction of infected sheep.

There is a general concurrence of opinion as to the causes of the presence of Fluke in infected runs; viz.—wet summers, stagnant water drying up, rank vegetation springing in marshy spots under the influence of the summer sun. Overstocking is believed by some witnesses to have done much harm in two ways,—by shortening the feed in marshy spots, and also by driving the sheep from the bared hills to feed on a rank and unwholesome vegetation in the swamps.

It is clearly proved by the evidence that numbers of runs now unquestionably fluky, and upon which sheep would inevitably contract disease, were at one time sound.

Of the few who profess to know of cases in which infected runs have been left vacant for a given time, and afterwards have caused fluke, no one adduces evidence to prove that such runs were not trespassed upon by the sheep or cattle of neighbouring owners; and, without such proof, the cases are not reliable. About four-fifths of the replies to the enquiries on this head are in the negative.

The answers show that various remedies have been tried with the view of their being directly curative. Of such remedies sulphate of iron and salt, tobacco, soot, sulphur, fumigations, dandelion, mercury, nitre, and others are mentioned, but all seem to have proved equally inefficient. Several witnesses, however, have tried the effect of rock salt distributed about the runs, and have found its action to be decidedly beneficial.

The evidence of all those who have tried draining is strongly in its favour as the only trustworthy preventive.

We may sum up the results of our inquiries by stating that all the ascertained facts which we have collected in connection with the subject tend to prove that the manifestation and spread of the Fluke among sheep in Tasmania have taken place under conditions precisely similar to those which have attended its ravages in other countries. That the parasite was originally introduced, in one or other of its various phases, by some of the earlier importations of sheep appears to be tolerably certain. While the country was understocked, and the sheep were only in exceptional cases depastured on unsuitable runs, the disease met with just sufficient encouragement to prevent it from dying out, but made no appreciable progress. After a time, however, the practice of sending sheep to the Lake Country and similar localities, and the introduction of a rude and imperfect system of irrigation, caused the establishment of permanent nurseries for the propagation of the disease, which by the travelling and interchange of stock was slowly but surely disseminated through a large extent of the pastoral districts. The uncertainty which still exists respecting the history of the phases intermediate between the liberation of the embryo from the egg and its development into the perfect Fluke, though presenting matter of great interest for the scientific enquirer, has practically very little to do with the question of the means to be adopted for the cure or removal of the disease. Thus much is certain—that while the conditions remain under which the infection has spread, so long will the ravages of the disease continue unabated.

The remedial measures are of two kinds,—those which aim at the cure of infected sheep, and those which are directed towards removing the risk of infection by rendering the land unfit for the propagation of the earlier forms of the Fluke.

With reference to the first of these heads, we have no hesitation in saying that the transfer of an infected flock to a dry and healthy run, especially where free access can be given to saline herbage, or even to rock salt distributed about the bedding-places and other spots much frequented by the sheep, will generally be efficacious in arresting the progress of the disease except in its latest stages. Instances have come to our knowledge of the recovery of sheep by such means in which the disease had even reached the dropsical stage, which is described in another part of this Report, and which is commonly considered to be a fatal symptom. One of these occurred in New South Wales. A large number of sheep which had become infected by trespassing upon unsound ground were sent into the salt-bush country as a last chance, the disease being then so far advanced that their removal was attended with great difficulty. Upon being examined a few months afterwards they were found to be thriving and apparently sound; and in those which were subsequently killed, the liver, though considerably reduced in size, presented a perfectly healthy appearance, the Fluke having entirely disappeared. We understand that arrangements are being made in Hobart Town for the manufacture of a compound of sea salt and sulphate of iron as a substitute for rock salt, and such a remedy is likely to prove useful if prepared so as to prove attractive to the sheep, and supplied at a cheap rate. Any mode of treatment which is not made, so to speak, self-acting, may at once be ignored as wholly impracticable.

As to the second head,—the initiation of preventive measures,—it is scarcely necessary to say that we unanimously adopt the axiom which has been established by the experience of all other countries which have suffered from the ravages of the Fluke; viz.—that the drying up of low-lying and marshy lands by a system of thorough drainage is the only plan which can be permanently successful. How far this may be practicable in different localities is a question that must be left to the judgment of those directly interested, who alone are competent to form an opinion as to the relative bearing of expenses and results in each case. It may, however, be laid down as a general rule, that if the system of drainage be not based on sound principles, and carried out in an effective manner, it will be useless to look for satisfactory consequences. Where the estimated cost of thorough drainage is obviously greater than would be warranted by the value of the land, it will often be found possible to guard against infection by fencing off the suspected spots. The periodical burning of runs has sometimes been recommended, but would be utterly useless so far as the extirpation of the Fluke is concerned: for in such of the swampy lands as are ever dry enough to allow a fire to run, there will always be found spots which, being permanently moist, are almost certain to continue the propagation of the disease; and hilly ground, even if grazed over by diseased sheep, will never become infested by the parasite to any dangerous extent.

While we would caution all those who have suffered from the ravages of the Fluke against the adoption of measures of doubtful expediency, or those which can only afford a temporary relief, we cannot dwell too strongly upon the importance of vigilantly guarding against the risk of fresh infection. One small marshy spot of ground in the midst of a large extent of perfectly healthy country, if it has once been visited by a fluky sheep, may gradually infect a whole flock; and a wetter season than usual may speedily develop the fatal consequences which are commonly confined to runs of a different character. Permanent nurseries of the Fluke may also be established wherever suitable spots exist along the course of thoroughfares which are traversed by fat sheep



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from irrigated paddocks on their way to market, and may thus keep up a constant risk of chance infection.

We are glad to know that many experienced and intelligent sheep-owners are adopting remedial measures, which can scarcely fail to be effectual; and we venture to hope that energetic action will generally be taken in a matter which has so important a connection with one of the chief sources of our national wealth and prosperity.

We respectfully submit this Report to Your Excellency's consideration.

*Hobart Town, 27th July, 1869.*

J. W. AGNEW, *M.D.* (L.S.)  
HENRY BUTLER. (L.S.)  
RONALD C. GUNN. (L.S.)  
FRED. M. INNES. (L.S.)  
MORTON ALLPORT. (L.S.)  
T. STEPHENS. (L.S.)

JOSH. PENNY, *Secretary.*

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*PROCEEDINGS of the ROYAL COMMISSION appointed to enquire into and report upon the Disease called the FLUKE in Sheep, and upon the best Methods of arresting its Progress.*

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DAYS OF MEETING.

PRESENT.

1. December 30th, 1868. Dr. Agnew, Mr. Innes, Mr. Butler.
2. February, 24th, 1869. Mr. Butler, Mr. Innes, Mr. Gunn.
3. April 9th, 1869. \*Dr. Agnew, Mr. Innes, Mr. Butler, Mr. Gunn, Mr. Allport.
4. June 25th, 1869. Dr. Agnew, Mr. Gunn, Mr. Allport, Mr. Butler.
5. June 30th, 1869. Dr. Agnew, Mr. Gunn, Mr. Stephens, Mr. Allport, Mr. Butler.
6. July 5th, 1869. Dr. Agnew, Mr. Allport, Mr. Stephens.
7. July 9th, 1869. Dr. Agnew, Mr. Allport, Mr. Stephens, Mr. Butler.

\*Morton Allport, Esq., and Thos. Stephens, Esq., were added to the Commission prior to this date.

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MINUTES OF THE MEETINGS OF THE COMMISSION.

No. 1. WEDNESDAY, DECEMBER 30, 1868.

*Present*—J. W. AGNEW, Esq., Hon. F. M. INNES, Esq., H. BUTLER, Esq.

The Royal Commission was read appointing J. W. Agnew, Esq., M.D., H. Butler, Esq., M.H.A., R. C. Gunn, Esq., F.R.S., the Hon. F. M. Innes, Esq., M.L.C., the Hon. R. Officer, Esq., M.H.A., to be Commissioners.

On the Motion of Mr. Innes, J. W. Agnew, Esq., M.D., was elected Chairman.

*Resolved*, That the name of Mr. Penny be submitted to the Executive Government as Secretary to the Royal Commission.

*Resolved*, That application be made to the Government to place the sum of One hundred Pounds at the disposal of the Commission to defray expenses connected therewith.

*Resolved*, That the Chairman convene a Meeting of the Commissioners at an early date, for the purpose of deciding upon Questions, for circulation throughout the Colony, necessary for eliciting the information required by the Commission.

J. W. AGNEW, M.D., *Chairman*.

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No. 2. WEDNESDAY, FEBRUARY 24, 1869.

*Present*—H. BUTLER, Esq., in the Chair ; the Hon. F. M. INNES, Esq., R. C. GUNN, Esq.

The Minutes of the previous Meeting were read.

Questions which had been suggested and prepared for circulation throughout the Colony, for the purpose of eliciting the information required by the Commissioners, were then taken into consideration and decided upon.

*Resolved*, That the questions as now arranged be printed forthwith, and that the Secretary be instructed to forward them to all such persons in the several Districts of the Colony as may appear to be in a position to afford the necessary information.

HENRY BUTLER, *Chairman*.

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No. 3. FRIDAY, APRIL 9, 1869.

*Present*—J. W. AGNEW, Esq., Chairman ; the Hon. F. M. INNES, Esq., H. BUTLER, Esq., R. C. GUNN, Esq., MORTON ALLPORT, Esq.

The Minutes of the previous Meeting were read.

The Secretary reported that the Governor in Council had been pleased to add the names of Thomas Stephens, Esq., M.A., and Morton Allport, Esq., F.Z.S., to the Royal Commission.

The Secretary having reported that the time fixed for bringing up the Report of the Commission was the 30th April ;

*Resolved*, That application be made to the Government to extend the time for bringing up the Report for three months longer.

The Secretary having reported that the questions prepared for circulation throughout the Colony, for the purpose of eliciting the information required by the Commissioners, were printed in accordance with the Resolution passed at the previous Meeting, and that Circulars were sent with the questions annexed to 353 persons, and that answers to these questions had been received from 171 persons ;

*Resolved*, That the Secretary be instructed to cause a fair copy of the several answers to be made, and that they be printed forthwith : copies to be sent to the Members of the Commission as soon as completed.

J. W. AGNEW, *Chairman*.

No. 4. FRIDAY, JUNE 25, 1869.

*Present*—J. W. AGNEW, Esq., Chairman ; R. C. GUNN, Esq., M. ALLPORT, Esq., H. BUTLER, Esq.

The Minutes of the last Meeting were read.

The Secretary reported that the total number of answers received to the questions circulated was now 190 ; of which number 159 have been only available for the purposes of the Commission ; 15 having been received without any signature, and 16 persons having stated that they could give no information on the subject.

The Secretary reported that, in accordance with the Resolution passed at the last Meeting, a person had been employed to make a fair copy of the answers received at an expense of £7 : that the answers had been printed and circulated among the Members of the Commission.

The Chairman reported that specimens of Fluke from the Wallaby had been received from Mr. W. A. B. Gellibrand, and forwarded to Mr. E. D. Harrop of Launceston for examination. An answer had been received from Mr. Harrop, which was read.

The Chairman laid before the Commission a draft Report, which was ordered to be printed, and a copy forwarded to each Member of the Commission.

The Commission adjourned to Wednesday, the 30th instant.

J. W. AGNEW, *Chairman*.

No. 5. WEDNESDAY, JUNE 30, 1869.

*Present*—J. W. AGNEW, Esq., Chairman ; R. C. GUNN, Esq., T. STEPHENS, Esq., M. ALLPORT, Esq., H. BUTLER, Esq.

The Minutes of the previous Meeting were read.

The draft Report which was laid before the Commission at the previous Meeting was taken into consideration ; and after some discussion ;

The Commission adjourned to Monday, the 5th July.

J. W. AGNEW, *Chairman*.

No. 6. MONDAY, JULY 5, 1869.

*Present*—J. W. AGNEW, Esq., Chairman ; M. ALLPORT, Esq., T. STEPHENS, Esq.

The Minutes of the previous Meeting were read.

The draft Report was further considered ; and

The Commission adjourned to Friday, 9th July.

J. W. AGNEW, *Chairman*.

No. 7. FRIDAY, JULY 9, 1869.

*Present*—J. W. AGNEW, Esq., Chairman ; M. ALLPORT, Esq., T. STEPHENS, Esq., H. BUTLER, Esq.

The Minutes of the previous Meeting were read.

The draft Report was further considered ; and

The Commission adjourned to Tuesday, 20th July.

J. W. AGNEW, *Chairman*.

*QUESTIONS circulated throughout the Colony for the purpose of eliciting Information required by the Commission.*

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1. When and where did you first observe Sheep to be affected by the disease called "the Fluke" in this Colony; and do you consider the disease called "the Fluke" to be identical with, or similar to, "the Rot" in Great Britain?

2. Have you had any experience of a similar disease in Sheep in Great Britain or elsewhere?

3. Have you ever observed the disease in Lambs at any stage under one year old, or that it is continued in the offspring of diseased Ewes?

4. At what period of the year have you found the earliest symptoms of "Fluke" in Sheep, or have you found these symptoms more frequent at any particular season than at another?

5. Can you state an instance of Sheep, known to you to be perfectly sound at a particular time, being subsequently attacked by "Fluke"? If so, under what circumstances?

6. Do you know at this time any flock of Sheep perfectly free from "Fluke"? If so, state the character of the run, or the circumstances to which you attribute the healthy condition of the Sheep.

7. Does your experience suggest to you any probable cause of "Fluke" in the runs where you know it to be prevalent; and do you consider "the Fluke" to be a cause or a consequence of disease in the Sheep?

8. Have you observed "the Fluke" to exist in any other animals than Sheep?

9. Have you observed "the Fluke" to exist in any other part of the Sheep except the liver,—for instance, in the stomach, smaller or larger intestines?

10. Have you observed any long round worm (*Lumbricus*) in the substance of the liver, or in the stomach and intestines of Sheep or other animals?

11. Have you ever known a run, healthy up to a certain recognised time, become so tainted as to cause disease in healthy Sheep?

12. Have you known of any case in which a run infested by "Fluke" has been left vacant for one, two, or more years, and has afterwards given "Fluke" to healthy Sheep placed upon it?

13. Have you tried any remedies for the disease? If so, state them, and with what success.

14. Have you known a change from a wet run to a dry one, or any specific change of food, to check or diminish the disease?

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*ANSWERS have been received from the following Persons :—*

1. Mr. Adam Amos, Glamorgan.
2. The Hon. J. Archer, Esq., Panshanger.
3. James Amos, Esq., J.P., Glamorgan.
4. Mr. C. Alford, Avoca.
5. R. M. Ayre, Esq., J.P., Quamby.
6. Mr. E. Blyth, Oyster Cove.
7. Mr. N. J. Browne, Hamilton.
8. Mr. J. F. Boulton, St. Paul's River.
9. Mr. H. J. Brock, Cross Marsh.
10. M. J. Browne, Esq., J.P., Ross.
11. Mr. Joseph Bayles, Auburn.
12. John Brent, Esq., J.P., Roseneath.
13. T. B. Blyth, Esq., J.P., Ross.
14. Mr. W. Blyth, New Norfolk.
15. Mr. W. Burbury, Eastern Marshes.
16. Mr. James Brock, Green Ponds.
17. Mr. R. H. Bayles, Vacluse.
18. Mr. E. Chancellor, Runnymede.
19. Mr. W. P. Coulson, East Tamar.
20. Mr. J. Chipman, Clarence Plains.
21. Mr. H. Cotton, Great Swanport.
22. T. Cruttenden, Esq., J.P., Prosser's Plains.
23. A. Clerke, Esq., J.P., Longford.
24. R. Clerke, Esq., J.P., Malahide.
25. Mr. John Cotton, Spring Bay.
26. Mr. George Collins, West Tamar.
27. Mr. J. Dunbabin, Cambridge.
28. Mr. George Denholm, Jun., Ross.
29. Mr. A. Dowling, Ellenthorpe.
30. Mr. W. Dean, Macquarie Plains.
31. Mr. G. Eyles, Ouse.
32. Messrs. K. and O. Flexmore, Green Ponds.
33. F. W. Ford, Esq., J.P., Circular Head.
34. G. H. G. Fletcher, Esq., J.P., Truelands.
35. Mr. John Gatenby, Lake River.
36. W. H. Gibson, Esq., J.P., Cleveland.
37. James Gibson, Esq., J.P., Belle Vue.
38. Mr. C. Gatenby, Bicton.
39. Mr. C. F. Gorrings, Green Ponds.
40. Mr. John Gatehouse, Buckland.
41. W. Gibson, Esq., J.P., Perth.
42. S. H. Grueber, Esq., J.P., Hobart Town.
43. James Hepburn, Esq., J.P., Avoca.
44. Mr. Charles Hall, Hamilton.
45. C. Hazell, Esq., J.P., Upper Carlton.
46. Mr. C. Hollinsdale, Campania.
47. Mr. John Hayes, Bagdad.
48. W. Hodgson, Esq., J.P., Sorell.
49. Mr. T. J. Harrison, Rookwood.
50. W. Harrison, Esq., J.P., Woodbury.
51. Mr. R. Harrison, Jericho.
52. Mr. H. M. Howells, Bothwell.
53. George Hull, Esq., J.P., Tolosa.
54. Mr. James Hadden, Green Ponds.
55. C. Headlam, Esq., J.P., Macquarie River.
56. Mr. G. Ibbott, Jerusalem.
57. Mr. H. W. G. Innes, Evandale.
58. Mr. Robert Jones, Hamilton.
59. Mr. C. Jacobs, Lymington.
60. Mr. R. Jones, Lower Marshes.
61. Mr. James Keane, Longford.
62. W. Lawrence, Esq., J.P., Bruni Island.
63. J. E. Lawrence, Esq., J.P., George Town.
64. Mr. W. Lawton, George Town.
65. H. Lyne, Esq., J.P., Swansea.
66. S. Lord, Esq., J.P., Hobart Town.
67. James Lord, Esq., J.P., ditto.
68. Mr. T. Littlechild, Oatlands.
69. The Hon. W. Langdon, Esq., Montacute.
70. Mr. G. W. Lindley, Jericho.
71. R. V. Legge, Esq., J.P., Cullenswood.
72. Mr. B. Maddock, Bothwell.
73. G. Marshall, Jun., Esq., J.P., Sorell.
74. J. Mitchell, Esq., J.P., Lisdillon.
75. Mr. C. M'Rorie, Cambridge.
76. A. Morrison, Esq., J.P., Hobart Town.
77. Mr. S. Morey, Swanport.
78. The Hon. J. MacLachlan, Esq., Tunbridge.
79. The Hon. C. Meredith, Esq., Prosser's Plains.
80. A. M'Dowall, Esq., J.P., Bothwell.
81. John Millar, Esq., J.P., Carrick.
82. H. Nicholas, Esq., J.P., Cawood.
83. H. F. Neill, Esq., J.P., Tamar.
84. E. Nicholas, Esq., J.P., Bothwell.
85. Mr. T. Parramore, Ross.
86. Messrs. H. and G. Propsting, Hobart Town.
87. C. A. Parker, Esq., J.P., Avoca.
88. Mr. A. Parker, Lake River.
89. Mr. C. Parsons, Hamilton.
90. Mr. Thomas Pitt, Clifton Vale.
91. Mr. E. Pennefather, Cressy.
92. Mr. S. Page, Hobart Town.
93. R. Pitt, Esq., J.P., Mona Vale.
94. T. Ransom, Esq., J.P., Fingal.
95. James Robertson, Esq., J.P., New Town.
96. Mr. W. Rumney, Jerusalem.
97. A. Reid, Esq., J.P., Ratho.
98. M. G. Robotham, Sen., Lymington.
99. J. R. Roe, Esq., J.P., Jericho.
100. Mr. James Ross, Liffy.
101. A. Rose, Esq., J.P., Corra Linn.
102. R. C. Read, Esq., J.P., New Norfolk.
103. Mr. Thomas Riggall, Ross.
104. Mr. H. T. Savage, Bothwell.
105. James Scott, Esq., J.P., Launceston.
106. Mr. James Staples, Bruni Island.
107. Mr. John Story, Jun., Avoca.
108. J. P. Sherwin, Esq., J.P., Bothwell.
109. J. L. Smith, Esq., J.P., Woolmers.
110. F. W. Stieglitz, Esq., J.P., Avoca.
111. John Steel, Esq., J.P., Falmouth.
112. E. C. Shaw, Esq., J.P., Swanport.
113. H. L. Stieglitz, Esq., J.P., Swansea.
114. Mr. G. Stokell, Clarence Plains.
115. Mr. James Stormont, Trefusis.
116. W. S. Sharland, Esq., J.P., New Norfolk.
117. F. Synnott, Esq., J.P., Shannon.
118. W. Sibley, Esq., M.H.A., Hamilton.
119. Mr. H. Stevenson, Illaroo.
120. Mr. J. L. B. Tabart, Eastern Marshes.
121. George Taylor, Esq., J.P., Patterdale.
122. B. W. Thomas, Esq., J.P., Port Frederick.
123. J. D. Toosey, Esq., J.P., Cressy.
124. Mr. R. Viney, Fern Hill.
125. Mr. Thomas Viney, Evandale.
126. Mr. John Watson, Muddy Plains.
127. Mr. John Woodbury, Falmouth.
128. Mr. John Whitehead, Lymington.
129. The Hon. James Whyte, Esq., New Town.
130. Mr. W. Webb, Brighton.
131. Mr. B. O'N. Wilson, Hobart Town.
132. J. H. Wedge, Esq., J.P., Perth.
133. Mr. James Wilson, Lake District.
134. Mr. George Wilson, Mount Seymour.
135. Mr. John Youl, Cleveland.
136. Mr. E. Archer, Levington.
137. Mr. W. B. Baker, Port Sorell.
138. J. J. Butler, Esq., J.P., Brighton.
139. Mr. P. J. De Bomford, Launceston.
140. T. L. Gellibrand, Esq., J.P., Ouse.
141. Mr. J. P. King, Glamorgan.
142. Mr. E. R. Lord, Richmond.
143. James Mercer, Esq., J.P., Macquarie River.
144. Mr. Thomas Meadows, Kelso Bay.
145. J. R. Pillinger, Esq., J.P., Millbrook.
146. Mr. Jonas Cherry, Scottsdale.
147. Mr. W. A. B. Gellibrand, Cleveland, Ouse.
148. Mr. G. H. Pink, Hobart Town.
149. John Swan, Esq., J.P., Campbell Town.
150. Mr. E. Boulton, New Town.
151. Mr. A. M'Kenzie, Fingal.
152. W. Gunn, Esq., J.P., Broadmarsh.

[The figures indicate the Parties whose Answers are given to the several Questions as they correspond with those in the List annexed.]

Question 1. *When and where did you first observe Sheep to be affected by the disease called "the Fluke" in this Colony; and do you consider the disease called "the Fluke" to be identical with, or similar to, "the Rot" in Great Britain.*

1. Ten years ago, on marshy land.
2. I am of opinion that the Fluke of Tasmania and Rot of Great Britain are one and the same thing.
3. About eight years ago. I have had no experience in Great Britain.
4. About five years since I first observed what is called Fluke in sheep at various parts of this Island. Forty years ago, in Great Britain, I have known sheep's liver to rot on wet land and on quick grass, after grass from harvest called Heir Grass, similar to the Silver Grass in Tasmania.
5. Since 1856 I have observed symptoms of Fluke in the Colony; then I commenced attending public sales here, when Rot was, in my opinion, easily detected: where the one is, the other is close at hand.
6. I knew sheep to die from Fluke in 1854.
7. In sheep purchased from Mr. Clarke from his run called Bronté, near Marlborough, about the year 1863. I believe the Fluke to be identical with the Rot.
8. On my property at Rock House many years since, at least twenty years ago, but only in a very slight degree. I should consider the disease similar to the Rot in Great Britain.
- 9.
10. I have occasionally met with Fluke in sheep for upwards of twenty years past, when they have been depastured on what are called Summer Runs. It is always to be found in sheep fed on irrigated land. I believe Fluke and Rot identical.
11. At Arthur's Lakes, but so long ago I cannot remember when I first observed it. Cannot say whether the Fluke is identical with the Rot in Great Britain.
12. It is some eighteen years ago that I first observed sheep to be affected with Fluke in this Colony, and I have no doubt whatever that this disease is identical with the Rot in Great Britain.
13. I believe the two diseases to be identical.
14. About fifteen years ago I purchased from Mr. Jabez Parker, High Plains, Hamilton, some wethers that were very bad with Fluke. I believe it to be identical with the disease known as Rot in Great Britain.
15. Have seen Flukeworms in sheep here for six years past, but never lost any sheep until last autumn. I believe my sheep died from the disease known in Great Britain as Rot.
16. Twenty-five years ago I knew sheep brought from Bronté, near Marlborough, sold at Cross Marsh, taken to Oatlands, found dying ten to fifteen in one night, removed, sold off the run: the run continued healthy for twenty-three years afterwards. I have no knowledge of Fluke or Rot in Great Britain.
17. I first heard of the disease taking place in the Lake Opening, or Den, about thirty years ago. I believe it to be the same disease as that called Rot in England.
18. About four years ago, some sheep I bought of Mr. Barwick, of Eastern Marshes, at Melton Mowbray, which, showing signs of Fluke in travelling, I did not bring home.
19. The first time I observed Fluke in sheep—1863.
20. I think it is now over twenty years since I first heard of the Fluke in this Colony, but I have had no experience off my own farm.
21. Have had no experience in Fluke in sheep in this Colony.
22. About fifteen years since I first noticed Fluke in a flock belonging to the late Mr. Orr that were kept on some marsh land in this neighbourhood. I consider the disease similar to the Rot in England, but not so rapid in its results.
23. About six years since I found an old ewe which was evidently thrown over my fence by some persons driving a flock from Cleveland to the westward. I killed this animal, and found the liver one mass of Fluke.
24. I first noticed Fluke at Malahide amongst the old ewes, during the process of slaughtering them for consumption in the year 1858: these sheep were bred on Malahide. I am not prepared to say whether the English Rot and the Fluke are the same.
25. About fifteen years ago, some sheep were purchased from these runs that I now occupy, and they were slightly diseased: this is the earliest instance of Fluke within my knowledge. The Rot in sheep in Great Britain seems to be very similar to our Fluke; but, as described by Youatt, appears to be far more rapid in its progress, and more fatal in its results, than is the Fluke in this Colony. My own experience is, that as a general rule sheep do not die from the effects of Fluke until the constitution becomes impaired by age; but they seem to age very fast.
- 26.
27. I first observed Fluke in sheep about ten years ago at Bream Creek, East Coast, Tasmania.
28. In the year 1860, I observed Fluke in sheep that I bought at the *Royal Oak* Sale Yards. I believe them to be the same as the Fluke in Great Britain.
29. I first observed sheep affected by Fluke in a place known as the "Den," a property belonging to the late Mr. Wood of Dennistoun, in the year 1860. I was informed by the Shepherd that there was no sign of disease until the property was irrigated. At the time I speak of, the irrigation was stopped; still the Fluke was there, though much milder.
30. I first observed the Fluke at Bronté, while occupied by T. G. Gellibrand, Esq. I consider it similar to, but not identical with, the Rot in England, inasmuch as I am not aware of any means of keeping sheep over the season if once fluked in England, and one night in unsound land is sufficient,—while here, if not too far gone, they may by removal to dry sound land be kept for two years, I know.
31. May, 1852, at Bronté, Marlborough, when I first discovered the Fluke in sheep, in G. Gellibrand's, Esq., flock. Yes; I consider the disease identical with the Rot in Great Britain.
32. About ten years ago, I purchased some sheep at a sale which had the Fluke; they came from New Norfolk District. No; cannot say if the Fluke is identical with the Rot in Great Britain, not having had any experience.
33. I never saw any sheep in this part of the Colony affected by Fluke; it is unknown in the North West Coast of Tasmania.
34. About the year 1858, at the Den, Upper Lake River. From what I have heard, I should think it similar to the Rot in Great Britain.
35. About ten years ago, at Formosa, Lake River. I do not know whether it is identical with, or similar to, the Rot in Great Britain.
36. I cannot remember. From what I have read, I believe it to be the same as the Rot in Great Britain.
37. I have no remembrance of when or where I first observed sheep to be affected by the disease called Fluke, and am not aware from experience whether it is similar to the Rot in Great Britain or not, but have always understood that it is.
38. About twenty years ago, on my Estate of Bicton, River Isis. Yes, the same.
39. I think it is about seven or eight years ago since I first saw Fluke in the liver of sheep, that I bought at Melton Mowbray. I do not know anything about the disease called Rot in Great Britain.

40. I do not consider the Fluke to be identical with the Rot in Great Britain.
41. I first observed Fluke in a small lot of sheep I purchased at Longford, ten years back; they came from Formosa Estate, had been running on low-flooded land. My head Shepherd came from England eleven years back to my service, has been accustomed to sheep all his life, and tells me the Fluke is similar to the Rot in Great Britain.
42. At the Sandspits, on the East Coast, in the year 1859. I believe it to be identical with the Rot in Great Britain, being exactly similar in all its stages.
43. About nine years ago, I observed sheep to be affected with Fluke on the St. Paul's. I consider the disease the same as the Rot in Great Britain.
44. In the Lake Country, north of Hamilton.
45. In 1863, at home. Have seen the foot Rot in Great Britain—not the Rot.
46. At Campania in 1863, being a lot bought of B. Dickson, Esq., which came from the Lakes: of 300, all died but 20. No.
47. I do not know.
48. About three years ago, on my run at the Cutting Grass Marshes. I am not acquainted with the Rot in England.
49. I believe my sheep were free from Fluke up to 1865. I lost in 1867 upwards of 2000, entirely attributable to grazing on land in the Lake country. I have had no experience of the Rot in Great Britain.
50. I have noticed it from time to time since the year 1862. I have had no experience of the Rot in Great Britain.
51. In 1856 I bought a lot of ewes from H. Nicholas, Esq., Cawood, which I found to be flukey. I have never been in Great Britain.
52. In answer to the first question, I beg to say that I have not had much experience in the disease called Fluke in sheep, either here or in England, but sufficient to satisfy me that Fluke here and Rot in England are identical. Not having been a sufferer by Fluke I cannot speak as to the date of its first appearance. About twenty years ago I rented a run of about eighteen hundred acres private property with a considerable quantity of crown land adjoining it: it was considered a first-rate run. I stocked it heavily with sheep and cattle, neither of which ever were diseased: for seven years I occupied it. I beg to observe that I never wintered my sheep on this land;—they were brought home to dry land for the winter. A few years after this land went out of my hands it became one of the most disastrous runs in the Colony for Fluke. Three flocks one after the other died on it. On this run there is a good deal of soft spongy land; so much so, that I have with a companion shot thirty couple of snipe in a day on it. Now you may walk the whole season and not see three couple. It may be asked what has snipe to do with Fluke. Well, that may be taken for what it is worth; but if the land was now in my possession I would take the snipe for an indication, and would fence out the land that they frequented, and should feel sanguine of success. I know of several other parts where the snipe were very numerous all become unsound for sheep,—one in particular, now in the occupation of Mr. Macleanachan, has proved to be very fatal: over this I have had splendid shooting. There is one other circumstance I will mention. About thirty years ago, as I was travelling with a friend over some land near the Big Lake, I called his attention to a grass that reminded me of a grass that grew on the meadows on the banks of the River Lug (a tributary of the Wye), in Herefordshire. The farmers in that neighbourhood believe wherever that grass grows sheep will rot, and many assert that the grass is the cause of it. It is a nice-looking grass, provincially called "the carnation grass." It is very like the leaf of the garden pink. This land is now unsound for sheep. At the time I made the remark on this grass I had never heard of Fluke in the Colony. As I have said that I have not suffered from Fluke, I will state how I manage my flock, which is a small one, never much exceeding five thousand. I send them to a summer run in January, and have them back to winter in the latter end of April or beginning of May, on land I know to be sound. The summer run is some of the highest table land in the Colony, some of it very doubtful looking, and the climate very severe.
53. I have not kept a flock of sheep for the last twelve or fourteen years. Prior to that period, and from the year 1820, I was a sheepowner; but my flock never exceeded 600 head. I do not think that the Fluke, or what is known as the Rot in England, was ever experienced in Tasmania till within these few years past. The only disease to which my sheep were subject was the foot Rot and Scab, caused probably by my system of folding them in my cultivated paddocks; but an early attention to its first appearance speedily removed those complaints. With respect to the last part of Question No. 1, I beg to submit to the Committee the remarks of Bannister, an experienced farmer, who published a work on Rural Economy in 1799. He says:—"Various have been the methods proposed for the cure of rotten sheep; but if I may be allowed to give my own opinion on the nature of this disease, I should not hesitate to declare it to be analogous to a consumption in the human frame, and, like that, incurable, unless taken at the very beginning of the disorder, and then, perhaps, a removal to the salt marshes may work a cure."
54. In 1852 I purchased some wethers that came from Kemp's Lakes, one of which died in the sale yards; two days afterwards another died. I was shown the Fluke in the dead sheep. I am of opinion the Fluke is not identical with the Rot. About six years ago my sheep were affected with a disease. I lost about 500 at shearing time. I believe they were inoculated by a sheep that had knocked up on the road, and was thrown among some I was going to wash next day: it was the first sheep that died. In three days afterwards I saw mine affected in a similar manner. The first symptoms—a discharge from the eyes, the breath of a strong noxious smell; head swollen, inside of the thighs and shoulders a white rash, a discharge of blood and froth from the nose. I opened three or four, and found a black blood like tar in the lungs. Some took the staggers; I found they would live a day or two longer; found no water on the brain, but a little black blood. If you saw a sheep walking a little stiff in the morning, it would be dead by night. I had about 3000 in the paddocks: they were dying at the rate of 30 a day. I removed them to Eastern Marshes, and lost two afterwards. I have seen the liver of a sheep so rotten that it would not bear its own weight, and no sign of Fluke, but large and of a dark colour. I have seen a sheep's liver bronze colour. I account for this from over exertion or excitement, and no Fluke.
55. I first saw sheep affected with Fluke on the North East Coast, near Great Forester's River, about ten years ago. I do believe the disease called Fluke is identical with the Rot in Great Britain.
56. The first place I heard of it was at an estate called Bronté, above Hamilton. I have never had any experience with sheep in England.
57. About nine years ago, in sheep from the upper part of the St. Paul's River. I consider the disease to be similar to the Rot in Great Britain.
58. I first observed Fluke in sheep in 1852 at the Woolpack Sale Yards. They were sold by Mr. T. Y. Lowes, and subsequently nearly all died. Of my own knowledge I don't know if the disease known here as Fluke is identical with, or similar to, the Rot in England.
59. At Evandale sale, about seven years ago. To the best of my opinion I do.
60. About twelve years ago, at my residence at the Lower Marshes, in sheep purchased from Wood's Estate, at Dennistoun. Twelve years ago the liver with that sort of Fluke was its natural colour; now, with the present Fluke, the liver is a cream colour, with a hard substance with water in the inside, but not entrails or stomach, with great bladders of water under the chin. I consider it identical with the Rot in Great Britain.
61. The first I saw or heard of Fluke in this Colony was in sheep from the Lakes. I do not consider it the same as the Rot in Great Britain.
62. I have not any knowledge of the disease called Fluke here or elsewhere. The disease has not been on Bruny Island.

63. I am unable from personal experience to answer the questions asked, having never had the disease called Fluke in my own flock, and never having purchased diseased sheep.

64. I have never observed Fluke in this or any other country.

65. I first observed sheep to be affected by Fluke about ten years since: they were sheep that had been running on the St. Paul's. I am not acquainted with the Rot in Great Britain.

66. I have had no experience of Fluke during the period of thirty-two years that I kept sheep, namely, from 1828 to 1860. Up to November, 1860, I never saw or heard of the disease in my flocks or in those of other parties, and all I know since is entirely from hearsay. I believe the Fluke to be the same disease as Rot in Great Britain.

67. At Kearney's Bogs, in 1864. Yes, it does resemble Rot.

68. About three years ago on my own property at Hilly Park, I first observed it very slightly. About twelve months ago it first became fatal. I have had no experience in Great Britain; cannot say whether it is identical.

69. I have heard of the Fluke disease in this Colony the last five years, but have never seen it.

70. In 1861 at Jericho. I believe the Fluke to be the same as the Rot in Great Britain.

71. On my return from England in 1864 I purchased my tenant's sheep, and that year I lost about a thousand sheep from Fluke. I then commenced draining my sheep land: I cut about two miles of new drains, and cleaned out the old drains, and I have not to my knowledge lost any sheep from Fluke since; but I still find the sheep I kill occasionally slightly diseased. I cannot say if it is the same as Rot.

72. In Hobart Town more than thirty years since, imported from Twofold Bay.

73. About eight years since in sheep purchased in the Oatlands District. Not conversant with the Rot in Great Britain.

74. In 1849, at Prosser's Plains. The Fluke is identical with the disease called Rot in Great Britain.

75. Some sheep I bought at Melton Mowbray in May, 1863. I had never seen the disease called Fluke before. I do not know what the Rot in sheep in England is.

76. Not sufficient experience.

77. I first observed the Fluke about nine or ten years ago in the District of Morven, and I consider the disease to be similar to the Rot in Great Britain.

78. In 1856 at the Den, Regent Plains, Lake River. It is identical with the Rot in Great Britain.

79. In the year 1827, on the run now called the Grange, and belonging to Mr. Cotton. It is situate on the East side of Swan River, Swanport. From all that I have read I am induced to believe Fluke here and in Great Britain to be identical.

80. The first sheep I ever saw affected was one killed at Mr. Wood's run, at the Den, Regent's Plains, about seven years since. I have always believed the two diseases named to be identical.

81. During the year 1861, about the month of March, I purchased 1000 wethers at Cleveland sale, from the Avoca District, apparently healthy. I put them on a dry run, and the best of feed for fattening. After having them for two months I found they made no improvement. I then, accidentally found out that their livers were rotten with Fluke, which was the first time I had seen it.

82. About sixteen years past, at the Ouse, Marlboro', and on the other side the Island. I never saw Rot in England.

83. About six years ago, in some fat sheep I purchased from Mr. J. B. Thomas, Evandale. From the description it is exactly similar.

84. In 1861 I first noticed sheep to be affected with Fluke on wet ground under irrigation. I believe it is similar to the Rot; but I have had no personal experience of this in Great Britain.

85. I do not think the Fluke and Rot are identical, though there is not the least doubt that both exist in the same animal at the same time. I have known sheep (two-toothed wethers) die of Fluke when the liver, with the exception of the ducts, appeared quite healthy, but the passages—and especially the main duct—were crammed to distention with Fluke. Sheep in this state show the watery swelling under the jaws, and the skin is quite pale. When sheep are rotten, there are always Flukes in the liver, though not in numbers; the liver will break, or rather crush, with slight pressure; and I fancy the skin has more of a yellowish tinge.

86. About twenty-six years since; the sheep came from Hamilton District, and had been depastured in the New Country.

87. Eight years ago, on the Isis River. As I am a native of Tasmania, I am not able to say whether it is the Rot, but I have heard old and experienced hands say that it is the English Rot.

88. About twelve years ago, at a place called the Den, generally known as Job's Den. I believe the disease to be similar to the Rot in Great Britain.

89. About the year 1852, in sheep from the East Coast.

90.

91. About ten years ago I first discovered the disease in sheep called Fluke: it was in the Campbell Town District. I believe it to be identical with the disease in England known as the Rot.

92. I first observed Fluke in a flock of my sheep at Lake Sorell, eight years ago. I believe it to be identical with, or similar to, the Rot in Great Britain.

93. About fifteen years ago, in sheep which had been running in the Marlboro' District.

94. I first observed it in this neighbourhood about five years ago. I cannot say if the Fluke is identical with the Rot in Great Britain.

95. The first sheep that I saw affected with Fluke were at Green Ponds. They were being killed for their skins, and the carcasses boiled for the pigs, which did not weigh 20lbs. each: they were in the last stage.

96. About nine years ago. I had no experience amongst sheep in England.

97. I first observed the Fluke at the Den, a station of Mr. J. D. Wood's, about thirty miles from Bothwell, in the year 1857. I know nothing of the disease called Rot in Great Britain.

98. About five years ago, in young sheep purchased from the late Mr. A. J. Horne, of Palmerston.

99. I consider the Fluke identical with the Rot in Great Britain.

100. In this Colony. Yes, the same as the Rot.

101. During an experience of forty-five years in this Colony I never observed the disease in sheep called Fluke until about ten years ago, when I purchased sheep brought from the Big Lakes which were infected. The change of pasturage effected a considerable change in the Fluke, from which I infer that change of pasturage would be the most successful remedy for the disease.

102. About twenty years, at Bronté. I do not know the Rot.

103. I first saw Fluke in sheep that had been fattened upon the irrigated paddocks at Somercotes, in the year 1856. I believe it to be identical with the Rot in Great Britain.

104. The first time I ever saw Fluke was in 1862, in purchased sheep at Woodsprings. I do not consider the Fluke similar to the Rot.

105. About 1860; on the North Coast. Similar to the Rot (or Braxie, in Scotland).

106. On Bruni Island, in some sheep I took there from Richmond. I have had no experience in sheep farming in Great Britain.

107. I first observed flukeworms in sheep in December, 1857, at the Red Rock, St. Paul's.

108. The first place where I knew sheep to be affected with the Fluke disease was at Bronté, in the Marlboro' district. I have always understood that the Fluke was identical with the Rot in Great Britain.



109. About ten years ago ; but I am not aware from what part of the Colony they came. I am not conversant with the Rot in Great Britain.

110. In the latter part of the year 1864, in sheep that had been bought at Cleveland Sale Yards. Yes, it is the Rot.

111.

112. In Glamorgan. I cannot say.

113. In 1860 I observed Fluke in my flock for the first time on the Apsley River, and don't think it identical with Rot in Great Britain.

114. I have known the disease called Fluke in this Colony for many years, and it is similar to the Rot in England.

115. In 1857, on the run of Mr. Wood, which I consider the same as the Rot in Great Britain.

116. The disease called the Fluke in this Colony is identical with the Rot in England. My first experience in the Fluke was about four years ago, when I lost by death about 6000, produced by feeding on wet crown land in the Marlborough Country.

117. I first observed sheep to be affected with the Fluke about seventeen years back, on a run I then rented from the Crown, at the Den, in the Marlborough District. Some of the marshes had been burnt out that summer, when the grass sprung up very rapidly, and all the sheep kept on that portion of the run became affected with the Fluke, so much so that great numbers of them perished. I had occupied this run for the previous five years without any appearance of Fluke having been observed in the flock. This disease made its appearance at the same time in a neighbouring flock at Bronté, I understand from the same cause.

118. The land near Marlborough has been known to be flukey for more than twenty years.

119. At a sale at Cleveland, some years ago. I believe the Fluke to be similar to the Rot in Great Britain.

120. The first time I saw Fluke was about five years ago. I cannot say if it is the same as the Rot in Great Britain.

121. I first saw Fluke on a run called Thomson's Marsh, part of the Valleyfield Estate, Macquarie River, owned by the late Robert Taylor. I believe it to be similar to the Rot in Great Britain.

122. I first heard of it at the Eastern Marshes, near Ross, upwards of twenty years ago. I cannot say, having had no experience in Great Britain.

123. I have observed the Fluke in sheep for some years in the Colony, and consider it a mild form (in consequence of the favourableness of the climate) of what is called the Rot in Great Britain.

124. About nine or ten years ago at Fingal. I cannot say.

125. Similar to the Rot in Great Britain.

126.

127. It is six and twenty years ago, when I was in England. I used then to follow butchering, and I found Fluke very bad in some of the sheep at that time, but it was scarcely ever mentioned ; and about eighteen years since I was butcher in Campbell Town. I saw them again, but not so plentiful as they are now ; and I believe they came by wet marshes.

128. I first observed Fluke in April, 1856, in some very fat ewes purchased from Captain Horton, of Ross : they were fattened on irrigated land. I know nothing of the Rot in Great Britain. I believe Fluke might have been found, more or less, many years before had it been looked for.

129. At the Den, about 1856 ; but I believe it existed at Marlboro' some years prior to that date. In 1840 I purchased sheep at Portland Bay, brought from the South Esk, in Tasmania. They had Fluke, and out of the flock of 2000 ewes about 150 died ; the remainder never afterwards showed any symptoms of disease. Fluke and Rot I believe are identical.

130. About ten years ago, in the sheep I purchased off the Dennistoun Estate from a place called the Den. The disease very similar, but not quite so fatal, was in Great Britain.

131. I cannot say. Certainly more than fifteen or sixteen years since. The Rot and Fluke appear to be perfectly identical.

132. I first observed it in flocks belonging to W. J. T. Clarke, Esq., near Marlborough, River Ouse, and on crown land occupied by that gentleman between that township and King William's Mount ; and I understood at that time that most of the flocks in that part of the country were affected with the disease. From what I observed in England I consider the disease called the Fluke to be identical with the Rot in Great Britain.

133. Ten years ago I first observed sheep affected with the disease called the Fluke in this Colony at the Den, a station in this district belonging to the Dennistoun Estate. At that time the surrounding tiers were rented and occupied by other settlers, so that the Den was then pretty much confined to the plains and low lying lands on each side of the Lake River ; the loss from Fluke was consequently then very heavy, until the surrounding tiers were given up by other settlers and added to the Den, since which it has become thoroughly sound. Consider Fluke in this Colony and the Rot in Great Britain identical.

134. It started slightly five years ago, after a very wet summer. Observed it to the end of May. Sheep ran on marsh land. Could not say whether it is the same as the Fluke in Great Britain, having never seen it.

135. In a small lot of sheep purchased at Cleveland sale, say 6 years ago. In reply to the latter part of the question, my personal experience is too limited to admit of my giving a decided opinion.

136. At a public sale at Cleveland, about fifteen years ago, some sheep from the Eastern Marshes.

137. In the year 1864, at Perth. I am not aware that the Fluke is identical with the Rot in Great Britain.

138. The first time I saw Fluke was at Bronté, near Marlborough, about fifteen years ago. I do believe Fluke and Rot to be the same disease.

139. About eight years ago, at Woodville, Snake Banks, in a few fat sheep bought by Mr. L. Wood. From the information which I have received I consider it to be the same as the Rot in Great Britain.

140. In 1852, at Bronté, Marlboro'. It is what is known as the Rot.

141. About three years ago had some rams from a neighbour, which upon killing I found to have the Fluke ; and I consider it to be identical with, or similar to, the Rot in Great Britain.

142. About ten years past, at Anglewood, some sheep that I bought by auction had the Fluke when they were killed. I have not had the experience to know what Rot is like in Great Britain.

143. I first observed Fluke in sheep at Mona Vale, in 1855, and I consider it identical with the disease called Rot in Great Britain.

144. The first flukey sheep I saw in this Colony I purchased at Longford, 500 lambs from a Mr. Corney, at the Lakes. They were about eleven months old. I purchased them in April, 1863. The Fluke in this Colony is the same as in Great Britain.

145. I cannot say particularly when I saw Fluke in sheep, but I believe it is not further back than seven or eight years ago, and then it was in the flocks of the Midland Districts. I believe, from what I have read of Rot in sheep in England, the Fluke to be identical with or similar to it. It has in all its last stages all the appearance of the Rot.

146. At Mr. Weston's, Hythe, near Longford : not his own sheep, but sheep bought at Cleveland sale. The Fluke is not identical with, or similar to the Rot in Scotland.

147. Eighteen years ago, at Bronté. Yes.

148. In 1851, in Hobart Town; the sheep were fed in the Marlborough District. The disease is the same.  
 149. About six years since, in the District of Fingal. I consider the disease identical with the Rot.  
 150. About the autumn of 1861. The Rot I do not know. Where I first observed the Fluke was on the St. Paul's River, on one of the estates of the late Dr. Brock, which I then occupied.  
 151. I first observed Fluke in sheep in this Colony in 1862. I consider the disease called Fluke to be distinct from the Rot, but a sheep with the Rot is subject to catch the Fluke. I first observed Fluke in Fingal District.  
 152. The first affected sheep which came under my own observation was as far back as 1854. They came, I believe, from the Den.

Question 2. *Have you had any experience of a similar Disease in Sheep in Great Britain or elsewhere?*

1. Have had no experience in Great Britain.
2. I have not.
3. I have not.
4. Only as stated above.
5. In Scotland have passed many through my hands.
- 6.
7. No.
8. I have not had any experience in sheep out of Tasmania.
- 9.
10. No.
11. No, I have not.
12. Only from hearing cases of action in the Courts of Assize, and the evidence given thereon.
- 13.
14. In 1834 I had slight knowledge of the disease in England. My knowledge was confined to one flock of bought sheep.
15. No.
16. None.
17. I have not, but have heard others who have spoken of it.
18. No.
19. No experience.
20. No.
21. I have had nothing to do with sheep in Great Britain.
22. I have had experience many years since in England when, after a wet summer, half the flock died in the winter; none recovered when once affected, that is, in England.
23. None.
24. No.
25. I have not any such experience.
- 26.
27. Have had no experience with sheep in any Colony except Tasmania.
28. I am a native of this Colony. I have had experience in the disease called Fluke in this Colony.
29. Have had no experience in any other country.
30. I have not had practical experience of the disease in England. The land in my neighbourhood was sound.
31. I have had no experience in any other country, only what I have gathered from other parties.
32. No, we have not.
33. Yes, in Great Britain.
34. None.
35. I have not.
36. I cannot say that I have.
37. I have not.
38. I have seen it in Great Britain, and believe it to be similar to that in this Colony.
39. I have not.
40. No.
- 41.
42. I have known sheep affected with a similar disease in Great Britain, but have only known it confined to certain pastures in different countries. Have never known it to spread over dry uplands as it has done here.
43. No.
44. No.
45. No.
46. No.
47. No.
48. None.
49. None.
50. None.
51. None.
52. I have not.
- 53.
54. Not any.
55. No.
56. I have not.
57. No.
58. I have had no experience of Fluke in sheep in any other place than Tasmania, being a native of the Colony; but have had large experience here, having had the management of stock from my youth up to the present time.
59. None.
60. No.
61. Yes. In Ireland I have had two farms: one, wet, cold, and swampy, the sheep on which always had the Fluke, and bred it. On the dry farm the sheep were always healthy.
- 62.
- 63.
64. None.
65. No.
66. I have not.
67. No.
68. No.

69. A similar disease was common in my native country, Somerset, some years since, but is now scarcely known, since the low lands have been drained. The disease, I believe, was caused by sheep feeding on herbage growing on wet, marshy land.

70. None.

71. I have not any experience in Great Britain or elsewhere.

72. No.

73. No.

74. As a boy, I owned a ewe which died of Fluke one frosty morning.

75. Only in this Colony.

76. I have not.

77. I have not had much experience of the disease, but know it is generally considered in England to be caused from foggy weather and swampy land, chiefly in the autumn.

78. I have in Scotland, where from the severity of the winter it runs its course in much shorter time than it does in this Colony.

79. I have not.

80. No.

81. Not in Great Britain or elsewhere.

82. No.

83. I have not.

84. No.

85.

86. No.

87.

88. No.

89. No experience.

90. None elsewhere than in Tasmania.

91. I have not had any.

92. None.

93. None.

94. No.

95. I have not.

96. No.

97. I have not.

98. No, except in this Colony.

99. No.

100. No.

101.

102. No.

103. No. The fens in Lincolnshire (from whence I came) were drained when I was young, and that affected a cure in that part.

104. No.

105. No.

106. None.

107. No.

108. No.

109. None.

110. No personal experience, but have only lately heard that Fluke or Rot has shown itself in Ireland.

111.

112. No.

113. Not any.

114. Yes, and effected a cure.

115. I have experienced the same disease in sheep in Scotland. There, its appearance is somewhat different, not generally many live animals to be seen in the ducts of the liver, the liver swelling to a large rotten mass, hence the more common name of Rot; whilst in Tasmania all the ducts and apertures are crowded with live animals forcing their way into the gall itself.

116. I have had no personal experience of this disease in England, but I am aware that it prevails there to a considerable extent.

117. I have never had any experience of a similar disease elsewhere.

118. The disease arises from the same cause here as in England, viz., stagnant waters; with this difference:—In England all hands agree that the Fluke is the effect of Rot; here it is evidently the cause, as sometimes a very small number is found in the small lobe, and the whole liver sound and healthy. My correspondents in England inform me that a liver affected with Rot will, if boiled, fall to pieces, or crumble up, when not a single fluke could have been seen.

119. I have in Cleveland: observed in England.

120. No.

121. I have had no experience of a similar disease in any country except Tasmania.

122. No.

123. Never in England, and very little experience here.

124. No.

125.

126. No.

127. Yes.

128. No.

129.

130. My experience in Great Britain very limited.

131. A very extensive one in Ireland; a limited one in France; a tolerable, actual, and more extensive one from the information of others in this Colony.

132. Yes, in England, on a farm of upwards of 1000 acres occupied by my late brother, Mr. E. D. Wedge, in Lincolnshire, in the village of Beelsby, about midway between the market town of Caistor and Grimsby on Humber.

133. Have had some little experience of the Rot in sheep in the south west of Scotland, and consider Fluke the same disease. In both cases the eye has a white watery appearance, with a swelling under the jaw. Have observed the gall and liver affected the same as in the case of Fluke. Have remarked the loss to be heaviest on the low lying lands or land which had been brought under the plough and laid down to English grasses, although perfectly dry.

134. No experience in sheep till I came to this Colony.

135. None whatever.
136. No.
137. No.
138. No.
139. No.
140. No.
141. No.
142. In 1840, in Pembroke, South Wales, Dr. T. Mansel took me to see a sheep that had just been killed, with Fluke in the liver, the first I ever saw.
143. I have had experience in Great Britain, and nowhere else except in this Colony.
144. I have had a great deal of experience among flukey sheep in the county of Worcestershire, England.
145. I have had no experience of diseases in sheep in Great Britain.
146. I was a shepherd in Ayrshire, Scotland, in 1825 and 1826, and observed the Fluke, or "beasties" as called there, in a flock of breeding ewes.
147. No.
148. In England and the Colony of Victoria.
149. None beyond Tasmania.
150. I have not.
151. I have seen Fluke in sheep in the north of Scotland 50 years ago. The run was a marshy, boggy one.
- 152.

Question 3. *Have you observed the disease in Lambs at any stage under one year old, or that it is continued in the offspring of diseased Ewes?*

1. I have not seen the Fluke in lambs.
2. I have not.
3. I have seen it in lambs nine months old, but do not consider the disease hereditary.
4. I have known lambs to be flukey about eight months old, but whether from the disease of the ewes or the land on which they feed, I cannot say.
5. I am of opinion I have seen it in lambs, but cannot trace such as an hereditary disease.
6. I have opened the liver of hundreds of offspring of diseased ewes, but never saw a fluke in a suckling lamb.
7. Lambs under one year old are frequently affected by the disease, though none so affected ever came under my actual observation. I cannot say that the disease is continued in the offspring of diseased ewes, though I have heard such an assertion made by reliable persons.
8. Yes, in lambs six months old. I am not aware of its being continued in the offspring of diseased ewes.
9. I have known lambs die from Fluke under one year old, but I cannot positively assert that the Fluke is not an hereditary disease.
10. I have observed it in lambs eight or nine months old. I have heard of it in lambs only a few months or even weeks old, but can scarcely believe it, or that it is transmitted from the dam.
11. I have observed the Fluke in lambs under one year old, but I cannot say whether it is continued from diseased ewes.
12. No, and I do not think the disease is hereditary.
13. I have been told so, but think it is impossible.
14. I have not.
15. My lambs were, to all appearance, sound when six months old, and at seven and a half months began to die from Rot, some of them very full of Flukes, others with very few, and some few without Flukes.
16. I have found lambs flukey at eight months old. I have bred lambs from ewes having from five to twenty Flukes in the liver for the last three years. The whole time the lambs are perfectly free from flukes, the ewes continuing in exactly the same state of Fluke.
17. I have not observed it in lambs, but they would take it on a flukey run. I do not think it is continued in the offspring of flukey ewes.
18. No.
19. Lambs I bought six months old, warranted sound, I killed two both very bad with Fluke. Returned the remainder to the party I purchased from.
20. I have bred lambs from flukey ewes upon my own farm, which I have slaughtered, from three months to three years old, and they have been perfectly free from Fluke.
21. I have had no lambs diseased with Fluke.
22. I have not observed the disease in lambs under one year old, but have heard of some being affected.
23. I have not.
24. Yes, as I have before stated. I first noticed Fluke in 1858, but never lost any sheep attributable to this disease until the year 1863, when in April my lambs commenced dying by hundreds; they were about eight months old, and weaned in January. 1400 out of 2700 died in about four months. I do not consider the disease is continued in the offspring of diseased ewes.
25. I think not. It is my custom to see that the ewes are kept on a sound run during the lambing season, and am careful to keep the lambs after weaning in sound paddocks. As I do not find any of my two-tooths exhibit the external indications of Fluke, I incline to the belief that the disease is acquired, not hereditary.
26. It has never fallen under my notice that lambs under one year old have had the Fluke.
27. I have frequently observed the disease in lambs under one year old,—in fact, have always found them take the disease more fatally than older sheep. But I have never known it continued in the offspring of diseased ewes when bred on a sound run.
28. I have never observed Fluke in lambs. I believe that the offspring is not affected with Fluke from flukey ewes.
29. Have observed Fluke in lambs ten months old. I have frequently had droppings of lambs from badly diseased ewes; and the lambs being kept on a dry run have been perfectly sound.
30. I have never observed any such disease in lambs, and do not believe it to exist.
31. Yes, I have observed the disease in lambs when they have been running on flukey land. It is not continued in the offspring of diseased ewes.
32. We have never observed the disease in lambs under one year old, nor ever observed that it is continued in the offspring of diseased ewes.
33. No experience.
34. I have seen lambs flukey at eight months old, but when removed earlier to sound pasture have remained sound, although bred from flukey ewes.
35. The disease is frequent in lambs under one year old. I do not think that it is continued in the offspring of diseased ewes.
36. I have heard of lambs dying under one year old with Fluke. I do not believe the disease hereditary.
37. I have observed the disease in sheep under one year old, but not before weaned from the mother. Neither do I believe it is continued in the offspring of diseased ewes.

38. Yes, at about five months old. I do not think that it is continued in the offspring of diseased ewes.
39. I have not. The lambs from the flukey ewes are entirely free from it.
40. No.
41. I have never observed the disease in lambs at any stage under one year; still, above that age, very frequently. Neither do I consider the offspring of diseased ewes likely to have it if kept on dry ground.
42. I have had lambs die from the disease at eight months old, but have every reason to believe they got it from feeding in flukey pasture. I have no reason to believe it to be hereditary.
43. In 1864 my lambs, when six to eight months old, were affected between the months of April and August. I lost upwards of one-half, all ages. I have had no proof of the lamb receiving the disease from the ewe.
44. I have observed the disease in lambs of three months old. It is not continued in the offspring of diseased ewes.
45. Yes.
46. Lambs have been affected at twelve months old on the marsh lands, and I can scarcely ever rear lambs from flukey ewes.
47. No. I have always found the offspring of diseased ewes to be perfectly sound on a dry run.
48. None.
49. From my experience I believe the disease is not continued in the offspring of diseased ewes.
50. I have not observed the disease in lambs under one year old, although I have examined lambs from the time they were born until they were a fortnight old, with the view of detecting the possible existence of the disease, the mothers being diseased.
51. I have seen Fluke in lambs nine months old, but I do not believe it to be continued from the ewe. Last year I had a ewe which I knew to be very flukey; she lambed, and the lamb did well for six weeks, and then began to fall away. I killed it on purpose to see if there was any Fluke, but found the liver perfectly sound.
52. Gifford White, an intelligent man, shepherd to Mr. Kermode, says he has proved that a flukey ewe will produce a flukey lamb. Mr. N. P. Allison, of Hunterston, had a ewe killed on the point of lambing in the last stage of Fluke (bottled under the jaws), the lamb perfectly healthy.
- 53.
54. Not any.
55. I have seen the disease in lambs under twelve months old, and have known them to have died from the said disease. I do believe diseased ewes will leave diseased lambs in many cases affected with the Fluke.
56. I have had diseased ewes, but found none in their lambs. They were ewes that I had bought.
57. No.
58. Lambs under twelve months old are susceptible of Fluke, and will become flukey from feeding on wet pastures at certain seasons, whether suckling or not. I have never known lambs to die of the disease while suckling, but after separation from the mothers have known whole flocks to be destroyed under twelve months old. I can positively assert that the disease is not continued in the offspring of diseased ewes, although such ewes may produce lambs with weak constitutions.
59. None.
60. I have had my lambs die at seven months old with Fluke. I have bred from diseased ewes with the old kind of Fluke, but never knew the lambs to be diseased; but now they never live long enough to rear their lambs.
61. I have never seen Fluke but in full grown sheep in this Colony.
- 62.
- 63.
64. No.
65. I have killed a lamb six months old, the offspring of a diseased ewe, perfectly free from Fluke.
66. No.
67. Yes. But cannot say that it is continued in the offspring.
68. I have seen the Fluke in lambs eight months old, and in some cases fatal. But cannot say whether it is continued in the offspring of diseased ewes.
69. I have never seen the disease in sheep or lambs.
70. I have found lambs of seven months old decidedly rotten; and, on careful examination, seen the well-developed Fluke in the liver within four weeks after their first appearing affected. I do not believe it is conveyed from the mother to the offspring; or that the lambs of rotten ewes, if put on sound land, are more liable to the disease than others.
71. I have not; and I do not think the disease is continued in the offspring of diseased ewes.
72. No.
73. I have found Fluke in lambs ten months old, bred in the Jericho District. The offspring of diseased ewes bred in the District of Sorell have not the Fluke.
74. No. I do not think the disease is hereditary.
75. Never in any that I have killed. I have reared lambs from diseased ewes, but I never found them when grown up to be affected on my land.
76. I have not sufficient experience to answer the question.
77. No.
78. I have. Lambs are much more susceptible to the disease than older sheep, and die from it much sooner. I may give a case in point in my own experience:—In January, 1867, I had 170 old rams and 264 ram lambs in a paddock together, at the Lakes. In less than two months the lambs got the Rot, and the old rams escaped; every lamb died in a few months. Last year I put about 300 diseased ewes in a paddock by themselves; any of their lambs that died from cold I had opened, and not one found to be diseased,—not even in its first stage.
79. I have not.
80. I have not observed it, but am apprehensive that the disease may be hereditary. I may, however, mention a circumstance:—Two years ago I purchased a flock of lambs, the produce of diseased ewes. At the end of one year I drafted the females, and sold them; they were put on flukey land, and soon died. The wethers I have still, and they appear healthy; they are kept on hilly land. The buyer of the ewes asserts that they were either diseased or predisposed to contract the disorder.
81. During the year 1864 I purchased lambs weaned from the ewes perfectly sound; put them on a run where there happened to be a lagoon; in a few months found they were diseased with Fluke. I do not believe it is continued in the offspring of diseased ewes.
82. Yes, at nine months old, and die with it. Not in the offspring of diseased ewes.
83. I have not.
84. I have never observed the disease in lambs under one year old, nor that they inherit it from their parents.
85. I have known flukes, but not more than two or three in number, in the liver of a lamb under one year old. But I am perfectly certain that it is not continued in the offspring of diseased ewes; yet I think it probable that the lamb from a diseased ewe would be more liable to take the Fluke when exposed to conditions favourable to its development than one from a sound ewe.
86. I have seen it in sheep at one year old. I have bred from flukey ewes on sound land. The lambs had no Fluke, nor do they inherit it.

87. Never.
88. Not having had experience with regard to the disease, have never observed it in lambs of that age.
89. I have never seen Fluke in lambs, but believe they will take it almost as soon as they are born.
90. I have not observed the disease in lambs under one year old; and as the result of continued experience, I believe the disease is not hereditary.
91. I have observed the disease in lambs under a year old, but do not believe it to be continued in the offspring of diseased ewes.
92. I have not observed the disease in lambs under one year old. I do not think it is continued in the offspring of diseased ewes. Diseased ewes do not rear many lambs.
93. Yes. I have known a whole flock of lambs go off at a little over six months old. I do not think the offspring of diseased ewes will necessarily be flukey; but they are almost certain to prove so, as they commence to nibble the short grass at a month old.
94. Never.
95. I can state upon good authority that lambs do not inherit the disease from the ewes, but do so after weaning if the run is flukey.
96. Never.
97. Yes. I have known lambs under one year old to have the Fluke; but I have never observed, nor do I believe, that a diseased ewe will transmit the disease to her offspring.
98. I have known lambs after being weaned to be infected with Fluke.
99. Yes. No.
100. No.
101. No.
102. I have known lambs to be flukey where they have been on wet flukey runs. I certainly do not think the lambs of diseased ewes will become flukey unless depastured on flukey runs.
103. I have at ten months old, and in one case at seven or eight months old. I think it is not continued in offspring of diseased ewes. There is at present at Somercotes a mob of 800 whose mothers were seriously affected with Fluke, but I have not been able to find any symptoms of it in the offspring. They will be two years old next June.
104. I have never observed the Fluke in lambs, neither do I consider the offspring of diseased ewes to be affected.
105. Not sufficient experience.
106. No; and I believe the increase of the above diseased sheep are sound and free from Fluke at the present time.
107. I have seen Fluke in lambs seven months old. I do not think it is continued in the offspring of diseased ewes.
108. I have never seen Fluke in lambs until they were six months old, and able to eat grass. Do not believe that the offspring of diseased ewes will be born with the disease.
109. Yes; but I believe they took the disease in the same way in which the ewes did, as they were running on the same land.
110. No, but I have heard of it.
- 111.
112. Yes. I sent to a marshy run 800 ewes and 550 sucking lambs. The whole flock became fluked. They were removed to a dry run. Nearly all the lambs died the first year, and the ewes lived over a period of two or three years, and then died. I cannot say whether it is continued in the offspring of diseased ewes, but I am strongly of opinion it is not, as I have reared from diseased ewes lambs which have not shown symptoms of Fluke.
113. I have known it to be in lambs under one year old, but think a diseased ewe is likely to have a diseased offspring.
114. Cannot say.
115. I have seen Fluke in lambs at six months old, but do not believe diseased ewes will transmit Fluke to their offspring. I have never seen and do not think that Fluke will make its appearance so long as the mother's milk preponderates in the stomach. As the milk decreases, and grass takes its place, Fluke will make its appearance if put on an unsound run.
116. No.
117. I have no reason for supposing that this disease is transmitted by the ewe to her offspring, though I have known lambs under one year old to be so affected, but it was on a run notoriously flukey.
118. Yes. I know an instance of a ewe having lambed on irrigated land, and remained there till the lamb was old enough to kill (four months), when it was as full of Fluke as any sheep could be: indeed it was a mass of Fluke, but only the liver was noticed at the time. I have had lambs killed not affected when I knew the mothers were. I am confident the disease is not hereditary.
119. I have known the Fluke in lambs in England immediately after weaning. I cannot give you an answer with reference to the offspring of diseased ewes.
120. I have not.
121. I have seen the disease in lambs under one year old, both slightly and very badly affected. I do not think it is continued in the offspring of diseased ewes.
122. I have not noticed Fluke in sucking lambs. I have had flukey ewes breeding here for two years and longer, the lambs always free from Fluke, and the ewes becoming very fat; the diseased liver in many instances throwing out healthy leaves; but I cannot say I have ever known a perfect cure effected. I at one time attributed the improvement to the sheep eating saline productions on the beach of the Port Frederick. That commonly called pigs' face they are fond of; but then that abounds on the east and north-east coast, where not only sheep, but cattle and wild horses die of Fluke. I attribute that to the terrible prevalence of Fluke on the flats, or pans, which are partially covered with water in winter and spring, and a want of any dry bedding ground.
123. I have never observed it in lambs. I am not aware that the disease is hereditary.
124. Yes. I killed a lamb this last summer not more than six months old, and it had Fluke. I consider not. I attribute it to the land upon which they graze.
125. Not if the ewe is on sound land when the lambs are dropped.
126. No.
127. I do not recollect ever seeing any in lambs.
128. No.
129. I have been informed that lambs have been dropped having the disease, but I never saw such a thing myself. Mr. T. W. Field can give information on this point.
130. I have killed lambs with Fluke at the Black Marsh under one year old. I am now killing lambs perfectly healthy from very badly diseased ewes.
131. If placed on a flukey run—yes, but not otherwise. I have never known it to be hereditary.
132. I have not observed the disease in lambs at any stage under one year old. I do not feel competent to say authoritatively whether the disease is continued in the offspring of diseased ewes, but I incline to believe that it

is not, provided that ewes with their lambs are not depastured on unsound land; but if so depastured, I believe the lambs would take the disease from grazing on the swampy ground, and not from the ewes. This is a question, however, as it appears to me, that can only be satisfactorily decided by actual experience.

133. I have seen lambs from eight to ten months old die from Fluke. I have examined many lambs two months old and under, but never saw any appearance of Fluke in the liver. I do not believe it is continued in the offspring of diseased ewes. I have seen a mixed flock of two-tooth and full-mouthed wethers running together on the same run; the young sheep were dying rapidly, while the old ones were thoroughly sound and in good condition. I have observed ewes and young sheep to be more susceptible of the disease than any other class of sheep.

134. Last year I had a lot of lambs bred from flukey sheep, which were quite sound in the beginning of February, having had some killed for trial. In two months after that, lambs about seven months old; they commenced dying, completely rotted—scarcely a fluke visible. In October last I put some rotted ewes on a marsh where previously I had lost nearly all my flock, and their increase were quite sound. In the early part of February in this year I had some killed for trial.

135. Cannot say from actual observation.

136. I have seen Fluke in lambs under a month old, but think it impossible at birth, as there is no communication except by blood.

137. No.

138. No.

139. In some lambs about five months old, which I bought in the sale yards at Cleveland, and sold again when four years old, and did not breed from the ewes.

140. I sent ewes and lambs to Marlboro' on the 8th of February, 1853: they remained there eight weeks. Out of 600 lambs only 30 lived to be shorn the following season, viz., December, '54. I do not believe the lambs of flukey ewes are unsound.

141. I have not.

142. I have not seen the Fluke in lambs that I have had killed; neither do I think the offspring would take the disease unless on runs infected.

143. I have observed the disease in lambs after having been weaned, and the ewes were not diseased.

144. I have seen plenty of lambs flukey at eight or nine months old. Lambs are subjected to Fluke as soon as they eat grass.

145. I have observed the disease in lambs under one year old, but I cannot say that it is continued in the offspring of diseased ewes; although I am strongly of an opinion that sheep bred from diseased ewes will take the disease quicker than others.

146. I have not observed the disease in lambs.

147. Yes; at five months old, not under.

148. Never; certainly not. I believe it to arise from local circumstances.

149. I have seen the disease in lambs. I have also bred perfectly sound lambs from flukey ewes. But if the ewes are permitted to lamb on unsound land the produce will naturally pick up the disease when they begin to graze. Hence, I believe, arises the popular delusion that a flukey ewe breeds a flukey lamb.

150. I have not seen the Fluke in lambs. That lambs are born with Fluke, I should question; but I think it more probable that they take up the parasite in its embryo state when they begin to nibble the grass, which they do very early.

151. I have known lambs three months old to die from the effects of Fluke. I believe a lamb until twelve months old is more liable to Fluke than an aged sheep. The disease is not continued in the offspring of diseased ewes.

152. I have frequently seen the disease in lambs a few months old. I have often examined lambs the offspring of diseased ewes, but have never found Fluke in any up to a certain age,—that is, before they began to feed on grass.

Question 4. *At what period of the year have you found the earliest symptoms of Fluke in sheep, or have you found these symptoms more frequent at any particular season than at another?*

1.

2. I have no personal experience.

3. I consider the autumn season to be the worst for Fluke.

4. About 1st September, at which time sheep are liable to die off in hundreds. I believe August and September to be the two worst months in the year for any kind of stock: all stock scours greatly at that time of the year.

5. After a full flush of grass in early spring, or a wet or cold autumn, the latter tells heavily in diseased flocks where shelter is wanting.

6. Generally worse about August and September.

7. In the autumn and early winter.

8. In the autumn.

9. I believe that this disease is liable to be taken up by sheep at any time from January to July; the remaining portion of the year I consider they are perfectly safe.

10. Sheep suffer most from Fluke in winter as they are usually weaker at that season, so have less strength to resist the disease. Cold and poverty aid the Fluke to do its work. First symptoms I have found usually appear towards the end of June or beginning of Autumn.

11. In most cases the first symptoms show in the end of summer and autumn. I believe the autumn to be the worst time, particularly after wet summers.

12. As far as I am personally interested and my experience goes, the earliest symptoms of Fluke appear soon after the commencement of the winter months, and the disease is decidedly more active during the winter and early spring.

13.

14. I have not observed.

15. I have known ewes flukey for several years and yet live, do well, and bear good lambs; but I am of an opinion that the disease, Rot, is taken up by sheep here in February, and on through the autumn months.

16. In January, February, March, and April; dying badly in May, June, and July. I believe from 1st June till 1st of January Fluke does not attack sheep.

17. I am not aware of any particular time or season.

18. Autumn.

19. I cannot say.

20. My opinion is that the greater number of sheep infected with Fluke die in the spring of the year, but a great deal depends upon the length of time they have been infected or otherwise.

21. No experience.

22. I have not been troubled with Fluke upon my run, therefore am unable to answer the question.

23. I believe I never had as yet any fluke in sheep of my own breeding, and am unable to answer the question.

24. I have found the earliest symptoms of Fluke in sheep generally to show themselves in April or May, according to the season.

25. I have not been able to devote such attention to the matter as would justify me in returning a positive answer to this question, but I believe that the Autumn is the season when sheep are most liable to acquire the disease, and I find that the aged and flukey sheep die in great numbers in the winter and early spring months.

26.

27. I have always found the symptoms most apparent in the winter.

28. The first symptoms I have found in January.

29. I have observed the earliest symptoms of Fluke in May, and at the end of Autumn more frequently than at any other season of the year.

30. This question I cannot answer as the sheep are generally sent on to the ground about Christmas, and in my first year's occupancy they did very well; the second year they began to show the disease badly, and the third year the whole of the flock suffered—the young sheep that had never been on the ground before as well as the old ones—to such an extent that I have lost 1500 out of 2000; and I believe the whole are fluked so much that they will die during the next winter.

31. The most frequent months are February, March, and April: at these months the marsh land is drying up, and then it allows the sheep to go on the marshy land, and then and there they obtain the Fluke.

32. At no particular period; nor have we found the symptoms more frequent at one period than another.

33. No experience.

34. Having a sound run I cannot say.

35. In the autumn, and during the winter and spring months.

36. I should say sheep are most apt to take the disease in wet summers.

37. I have not had experience enough to answer this question.

38. In lambs born in August of the preceding year, I have observed it in January of the next year; and the probability is that numbers of them would not live till November. At one season it is a great deal worse than at another.

39. I have only noticed more deaths among flukey sheep in the winter.

40. I cannot say.

41. I believe in spring time: still I have had very little experience, I am happy to say. My shepherd tells me in England they always consider it worst in spring.

42. I have not found Fluke in its first observable stages more frequently at one period than another, but have observed the disease to make its most rapid progress just after shearing.

43. In the month of March, but most frequently in winter.

44. About the month of March and April sheep appear to be more affected with Fluke than at any other time of the year.

45. More frequent in Autumn.

46. March and April, when the grass gets short, and in the wet cold seasons.

47. I have not observed.

48. In the Autumn.

49. I lost more sheep in the months of April and May, than at any other period of the year, but since my discovery of Fluke I have observed it in every month of the year.

50. As far as my observation has gone, the disease has appeared to me more developed about the months of February and March.

51. I believe the most mischief is done in the months February, March, April, May; and I have known sheep take Fluke between July and October.

52. I have had no opportunity of judging.

53.

54. I purchased a lot of young sheep of Mr. B. Jones; had never seen the sign of Fluke at his own place. They were sent to the Lakes from January to March, and in that short period a great many died.

55. Generally in the autumn.

56. I have not experienced any particular time, as my land is not flukey.

57. I have always observed that after a wet summer Fluke is most prevalent.

58. Much depends on the season. In very dry seasons I believe sheep will become flukey as early as September: in ordinary seasons December, January, and February are the months in which sheep usually become diseased; and in some seasons sheep will become diseased from September up to April.

59. At the fall of the season.

60. I have sent sheep to my run at the Soldier's Marshes in December, and in March they began to die. That is about as early a period as they would begin to die at, if they were all perfectly sound when sent there.

61. I have never had flukey sheep here, only a few I bought, and found them to be worst with it in October.

62.

63.

64.

65.

66. No experience.

67. In January, at the Bogs.

68. As far as I can judge, the Fluke makes its appearance in February, and increases till June, after which it abates.

69. Answered in the last question.

70. In sheep supposed to be previously healthy I have found them affected as early as February, and in some cases not until May. I believe the general rule is, that after the grass begins to dry on the hills, and the sheep resort to the marshes for green grass, it begins to show itself. In seasons of abundant moisture it has been worse than in ordinary seasons.

71. The sheep I have alluded to in No. 1 answer commenced dying in May.

72.

73. All flukey sheep in the District of Sorell have been purchased from the Midland Districts. No knowledge of the earliest symptoms. The spring of the year is most fatal to sheep affected with Fluke.

74. I believe the disease becomes fatal in severe weather.

75. I am happy to say that I have no Fluke on my land; consequently, cannot answer the question.

76. The winter.

77. I generally find the first symptoms in this Colony in the latter part of the spring; and I believe it is caused by the stagnant water lying on the ground, by the heat of the sun, and from that breed the insects.

78. In summer the sheep get affected when swamps and wet marshes are drying up, and rapid vegetation throwing up an immense quantity of somewhat unhealthy food.

79. When Fluke made its appearance in my flocks, it steadily increased at all periods of the year.

80. My slight experience does not enable me to reply. The autumn, I am informed, is the most dangerous season for contracting the disease, and that most deaths occur in the spring months.

81. Winter and spring. A great deal depends on the season. After a very wet season, sheep are worse.



82. Summer months the worst; but they are liable all the year round to take Fluke.
83. In the latter part of the spring it appears most vigorous.
84. In the autumn, just before winter.
- 85.
86. At any part of the year sheep coming from marshy land exhibit Fluke; most so during winter.
- 87.
- 88.
89. I believe that sheep will take the Fluke at any season of the year, but more especially in the spring.
90. We (T. and G. Pitt) have often sent sheep from our run at Clifton Vale, known to be sound, to Mount Penny, near Arthur's Lakes, in December, and on their return in March have found them much diseased. On one occasion some sent in April, returning in November, were found to be still free from disease, apparently.
91. I have not observed a difference in any period of the year, but have found sheep equally diseased at all seasons.
92. In the winter months.
93. In the autumn. If the early part of the summer has been wet, sheep will show symptoms about April; if a wet autumn, they go off in the spring. The former is the more deadly, as the severe weather and poor feed of winter is all against them.
94. When the sheep are low in condition—about July—the diseased sheep suffer most from the disease.
95. I am unable to say.
96. Flukey sheep that have come under my notice have been much the same all the year round.
97. I cannot say at what period of the year I have seen the earliest symptoms of Fluke in sheep, but I believe they are liable to the disease at any time.
98. In the winter.
99. The symptoms are more frequent in the autumn.
100. Autumn.
101. No.
102. I have not noticed any particular time.
103. About April I have found it first show itself; afterwards, the symptoms vary according to the weather. When very cold and wet, great numbers die.
104. I cannot say at what season of the year the Fluke is most frequent.
105. Not sufficient experience.
106. The above sheep were flukey when I took them to Bruni Island. I saw no Fluke in the other portion of the flock before they were taken down, nor after, only in them.
107. I consider Fluke most prevalent in sheep in March and April. I have also known them to take it in December.
108. I have always found sheep become diseased much more rapidly during the autumn months than at any other period of the year.
109. I believe the end of summer or beginning of autumn is the season the sheep take the Fluke, and I think there are some seasons worse than others; but from what cause I do not know.
110. June, July, and August.
- 111.
112. In the winter season I consider the earliest symptoms of Fluke are observed in sheep, which I attribute to the low condition of the sheep, and the want of nourishing food. I have observed that Fluke is most fatal in lambs, next in breeding ewes, and that strong middle-aged sheep withstand it best, particularly rams.
113. In the winter time.
114. Generally after floods of rain.
115. I have been sending sound sheep to a run at Lake Sorell for the last ten years, going up the beginning of December; they have shown symptoms very soon after. December, January, and February I consider the most dangerous; although it will, in most instances, be several months later in the autumn before its effect will be seen by death.
116. It is difficult to say when the earliest symptoms of the disease may be found, but with ewes in lamb it is generally fatal in the month of July.
117. Sheep are principally affected by the Fluke during the spring and summer months, and more in a wet than a dry season.
118. My experience is, that I sent a quantity of ewe sheep sound, to prepare them for breeding, in January till May; they were worst affected in May: I sent wethers which remained till October, only a few of which were affected at all; consequently I conclude that hot and humid weather assist the disease.
119. In the autumn the Fluke made its appearance worst in England, as also in Tasmania. I should expect this year to be very bad for Fluke in consequence of so much rain having fallen.
120. Have not had any sheep of my own flukey, so I cannot say.
121. I have seen symptoms of Fluke in sheep more frequently in the winter and early spring than at any other season, but have seen symptoms of it at all seasons.
122. I should say at the commencement of summer, when heat and moisture prevail.
123. I am quite unable to give any information upon this question.
124. No.
125. In the winter, on account of the condition.
126. I have had no experience in Fluke.
- 127.
128. I have not found the symptoms more at any particular season than another.
129. My experience of Fluke has been too limited to enable me to afford any information on this head.
130. From November to February I believe to be the most fatal part of the year.
131. In Ireland, commencing in rare instances about May, common in July, worst about August, September, and October.
132. I am not aware that the earliest symptoms of the Fluke in sheep are confined to any particular period of the year. I believe that if sound sheep are put upon unsound land at any period of the year in this Colony, they will speedily take the disease. It may perhaps, be worth while to mention, that it was known in Lincolnshire that sheep will not take the Fluke or Rot during the continuance of frosty weather, but they will take the disease immediately on the breaking up of the frost, and that ewes will not take the disease while they are suckling their lambs. These facts are proved by evidence at a trial at Lincoln.
133. I believe sheep in this district catch the Fluke in the months of January and February, and die more rapidly in the months of May and June, than at any other period during the season.
134. Last year I received ten half-bred lambs from Mr. Brock, of Green Ponds, quite sound; on the 27th June I had them put on a piece of my wettest land, where Rot had been very bad. I had one killed every month, the first had taken the Rot, and since then they got better, till they were nearly well up to the middle of January, when it commenced again, and by the middle of February the remaining ones had got very bad; there was one left, and

I had it killed to day, the Rot had stopped in it, showing by this that rotted land may be safely used from the middle of July to the middle of January.

135. I believe Fluke to be imbibed early in the summer season, but that it requires winter to perfect the disease sufficiently to cause death.

136. As a rule I found that the autumn rains affected the sheep more than any other time, and that the disease kills more rapidly than at any other time of the year.

137. In the month of May.

138. The symptoms appear more frequent during the latter part of the winter and beginning of spring.

139. I have never had any experience upon the subject.

140. Sheep take the disease more in spring and summer, there is no danger in winter.

141. I have never observed the Fluke.

142. Allow me to state that I have not been a flockowner for the last ten years, having only kept about 60 sheep at a time for farm use. I have not bred the Fluke.

143. I have generally found symptoms of Fluke in sheep in autumn.

144. The early part of autumn I have found the earliest symptoms of Fluke in lambs.

145. March is the period at which sheep generally begin to take the disease, sometimes a little earlier. The dangerous time for the propagation of the disease I believe to be past before the beginning of June; all other months of the year believe sheep can run on flukey ground with perfect safety. Sheep die in the winter months from Fluke picked up within the period I have named.

146. I never took notice of this.

147.

148. Not at any particular time of the year: it depends more upon the age of the sheep, and the time it has been on the run infected; cold weather is most disastrous to the sheep in its last stages.

149. I think sheep usually take the Fluke at the end of the summer. When grass becomes dry and scarce they are induced to seek the rank vegetation of the marshes or any undrained spots to which they have access. The effects of disease are frequently not apparent until winter sets in, when severe weather and insufficient food weaken the constitution and render the sheep unable to withstand the attacks of the parasite.

150. I think about September and onwards, when the rains have been abundant, and the sun putting forth its full heat.

151. About the month of April or May is the time that a newly diseased sheep will show the first symptoms.

152.

*Question 5. Can you state any instance of Sheep known to you to be perfectly sound at a particular time, being subsequently attacked by Fluke? If so, under what circumstances?*

1.

2. I know of no such case.

3. I cannot.

4. Sheep that have always been bred and kept on dry land are always sound and free from Fluke, but if put on wet land afterwards to feed, I believe they will take the Fluke. I strongly recommend a change of runs for sheep, say from cold wet runs to dry warm ones.

5. I could not particularize any instance, although I am aware of such.

6. I have not for certain.

7. No.

8. I cannot.

9. My father sent some sheep from Belgrave, Green Ponds, known to be sound, to a diseased run in July last, and they remained healthy till the beginning of January, when they contracted the disease called Rot, as well as Fluke.

10. I have known thousands of sheep, sound beyond a doubt, before going to the Summer runs at the Lakes and Bogs and such places, return in the autumn flukey, and if the winter were severe, large numbers die.

11. I have known sound sheep removed from a sound run to a wet marshy run in the beginning of winter, to become diseased in a month.

12. Many such instances have come to my knowledge, where sheep bred on the property and perfectly sound have all of a sudden become flukey, but from what especial cause I cannot say, and only imagine it to be atmospheric.

13. I have known sound sheep to become flukey after being placed on an infected run, or being mixed with diseased sheep.

14. Four years ago I sold 600 lambs perfectly sound; last year I purchased them back again, and they proved to be flukey.

15. My father had a small flock of ewes running on dry land near Oatlands last year; they were sound and reared 85 per cent. of good lambs; came here to be shorn, and were placed on a marsh to fatten about the middle of February (1868); they improved rapidly, and again fell away, and began to die early in June last.

16. I have put sheep perfectly healthy on to land known to be flukey in June; they remained healthy till January, when they were found to have got the disease at that time, the Fluke very small and perfectly white.

17. Certainly; when taken from a clean run, and placed upon one that is flukey.

18. I should say the sheep on this estate were perfectly sound four years ago, and now we occasionally find cases when killing them.

19.

20. I have never had any experience off my own run, where Fluke was never known to exist, except when sheep that were previously infected with the disease were put upon it.

21.

22. I cannot.

23. I can state no instance.

24. Yes. Up to 1863 I had every reason to believe that my wether flocks had been perfectly sound. I had never seen the slightest sign of disease, and had sold numbers, and never heard any complaints of their being flukey; but the year 1863, the same in which my lambs began to die, the wethers became affected, the youngest more particularly. I may say this year the disease was most virulent throughout the Colony. I have never heard a cause assigned for the same, unless that we had experienced very moist summers two or three years previously.

25. Yes; I have received here numbers of sheep that I know to be perfectly sound, and have found them afterwards to be very much diseased. I attribute this to the sheep having had access to my flat low lands, where the natural drainage is very deficient.

26. No.

27. Have known lambs taken from Cambridge in March, 1866, perfectly sound at the time, and died from the effects of Fluke in less than six months.

28. I turned 900 sheep, sound, in about 100 acres of marsh land in January, 1866; from that time up to March the same year, I found that nearly every one was affected.

29. A flock of lambs (2000) was turned on to a run about 12th April, at the time they were sound. About the

middle of May, seeing some dead, I examined them, and found the liver rotten, but the Fluke did not appear fully developed. About four weeks after they became very large, and the sheep, although removed to a dry run, fell off in condition, but did not die in any number until the following Winter (twelve months after). The remainder were then sold. These sheep were fluked by being turned into a marsh that had been nearly drained. Thousands of sheep have since run there without being fluked.

30. Yes. On my first occupying the Government land at the Clarence, my sheep were perfectly sound, and I would not purchase any for fear of getting flukey ones.

31. No.

32. We have known sheep, which we thought were sound, to have the Fluke afterwards, and attribute the cause to drinking stagnant water; but we cannot tell when the sheep are first attacked, it is not until it is in an advanced stage that we know they have the disease.

33. No experience.

34. Yes; sheep sold by me perfectly sound have had Fluke within six months: they were put upon a marsh known to be flukey.

35. I can. I have been a resident in this Colony upwards of forty-five years, and until within the last ten years, never heard of such a disease in this neighbourhood, except at the Den near the Lakes.

36. I cannot, as mine is not a flukey district. I have had no opportunity of trying any experiments.

37. I cannot.

38. No.

39. I do not know an instance of sound sheep being attacked by Fluke. We never had a sheep bred on our run at Green Ponds attacked by Fluke.

40. No.

41. Yes; about five years back I turned the water on a small portion of rich land at my estate called Creekton, put a small lot of fat ewes on, knew them to be quite sound, and in less than six weeks they were diseased.

42. I have known sheep, perfectly sound to all appearance, at all ages, attacked with Fluke from being placed on rich bottom land.

43. No.

44. I have known sheep to be perfectly sound, and after having been placed on marshy land to have become flukey in a few weeks.

45. Sound in 1862; flukey in 1863.

46. Have had sheep perfectly sound, and put them on marshy ground, when they began to die after three months' grazing.

47. If the same sheep are sent to a low or wet run they are likely to be affected with Fluke.

48. I cannot say.

49. I believe that the whole of my sheep were sound in 1864, and I attribute the attack by Fluke to have been caused by the sheep running on wet marshes in the Lake Country, although I believe the said marshes to have been sound up to that period.

50. I cannot.

51. In the beginning of January last year I sent a lot of half-bred wethers to the Eastern Marshes, which I am positive were perfectly sound, and they commenced to die with Fluke in April. There is a wet marsh where these sheep were fattening; but I have always fattened sheep there before, and never found Fluke till 1868.

52. I cannot say.

53.

54. I purchased a lot of young sheep of Mr. B. Jones. He had never seen the sign of Fluke at his own place. They were sent to the Lakes from January to March, and in that short period a great many had died.

55. I cannot state a case.

56. I have not.

57. No.

58. I know an instance of a flock of sheep over 4000 belonging to Mr. Thomas Jones of Pool's Marsh, Jericho, that were sound up to January, about which time he changed them off their usual run on to crown land situated at the Table Mountain, in a very short time the whole flock were badly diseased, and were subsequently destroyed by the disease.

59. I do not.

60. I have sent seventeen hundred sheep to the Soldier's Marshes perfectly sound and free from Fluke, and they began to die in March, and in the course of three months I lost them all.

61. I cannot.

62.

63. No.

64.

65.

66. I cannot.

67. Yes, in 1864; in travelling to the Bogs with 2700 wethers perfectly sound, they became affected, and in three months from date of arrival they began to die.

68. I have known sheep to be quite sound in December, and in February following to be badly diseased, running on the same ground all the time.

69. Answered in No. 3 and 4.

70. I have known lambs believed to be perfectly sound in January attacked in February, and within a month almost every one was affected; they had been on a dry run, and were removed to a low green marsh, well grassed, and nearly all these lambs died during the ensuing winter; some of them died as early as in May.

71. I cannot state any instance.

72.

73. I cannot.

74. When I resided at Prosser's Plains all the sheep which I selected for fattening were put in a marsh, where they invariably, I believe, became flukey.

75. No.

76. Not residing on the sheep-runs I cannot answer the question.

77. My runs, with the exception of one, are free from Fluke, but when we bring the sheep home to a pasture-paddock that is inclined to be wet they then have the Fluke all the year round. When I bring them from the runs I find them perfectly free till put there.

78. I can in two of my own flocks (and others) by being put on wet land in the Lake Country.

79. All my sheep were sound and free from Fluke up to a certain date, about 1860, from which time the Fluke prevailed.

80. Yes, my runs I believe to be perfectly sound. I have a marsh partially irrigated; all sheep pastured in this land become affected, one was killed a few days since in the liver of which one small Fluke was discovered, it had been in the marsh six weeks.

81. I have known sheep sound from a dry run, afterwards put on a run where there was a lagoon, in a few months they were diseased with Fluke.

82. A very few recover if once bad; removing from wet land to dry hills, some do recover provided they are not too far gone.

83. I cannot.

84. I have known sheep, in number about 200, believed to be perfectly sound become decidedly flukey within two or three months after being placed on irrigated ground.

85.

86. Only by hearsay.

87.

88.

89. I have known several instances of sound sheep becoming flukey after being put on wet land.

90. See preceding question No. 4.

91. I cannot state an instance.

92. I have known sheep perfectly sound on a dry run removed to a wet run, and attacked by Fluke at once.

93. I could state several; the land has in every case been wet, and has been previously depastured by flukey sheep.

94. No.

95.

96. Never knew an instance of the kind.

97. I cannot.

98. No.

99.

100. Shifted from high pastures into marshy land.

101. No.

102. I have known a flock perfectly free from Fluke sent to a clean run in the Marlborough District, where some of the sheep got flukey through being dropped on Bronté in passing through.

103. I knew a flock of wethers which were, I believe, perfectly sound up to near the end of the year 1866, but during the winter of 1867 one-fourth of them died of Fluke, which I attribute to their being turned on a run where the water was slightly flowing over the marsh during the months of December, 1866, and January, 1867.

104. I moved perfectly sound sheep in March from a dry run to a wet marsh; the following summer they had the Fluke.

105. Sheep sent from the run at Mount Morriston, near Ross, to Wood's Lake, after shearing them, believed to be sound, after being there all winter, more or less diseased by next spring.

106. I cannot.

107.

108. Yes. I know of a flock of sheep which were perfectly sound sent up to a run in the Marlborough District for about eleven weeks; when brought down the country they were all badly diseased, and some of them died a few weeks afterwards. The run they were put on was mostly marsh land.

109. Not of my own experience.

110. No.

111. I purchased a number of sheep affected by Fluke, and placed some of my sound sheep with them, and they also in a few months became affected by Fluke, but it extended no further than that lot I placed with them.

112. When I sent the 800 ewes and 550 lambs to the marsh run, I sent 1000 other sheep to a hilly dry run, all of which sheep were, I believe, perfectly sound when I sent them to the separate runs; not one of the 1000 sheep sent to a dry run became fluked, all the others became so, and eventually died.

113. I consider that sound sheep put on a flukey run will become diseased in one month or two.

114. Cannot say.

115. I could state many instances of sheep being sound a year ago, that are unsound at the present time; but in no instance where the pasture was without swamps or damp bottoms.

116. A few years since (2), I had 1200 wethers for sale which I was prepared to warrant as perfectly sound; failing to sell, I was compelled to send them to the Marlborough Country in February. They were sold on the 1st of May following, without any guarantee of soundness. I subsequently heard that those sheep proved to be diseased: between February and May.

117. The soundest sheep may become flukey by putting them on irrigated or wet land.

118. This question in a measure is answered in the preceding one. Experience certainly tells that the Fluke is caused by wet and marshy ground; although, strange to say, some such land did not formerly produce the Fluke.

119. I remember some sheep once being taken to a sale, and only stayed in a paddock one night, and returned home not sold. The sheep of the same flock remained perfectly sound, while the former became flukey. This was in England.

120. I do not know.

121. I can name several instances of sheep known to myself to be perfectly sound on one run being attacked by Fluke after being removed to another. A neighbour of mine (Mr. M. Ralston) sold a lot of sheep about December, which I knew to be sound. These sheep were put on a run joining Thomson's Marsh, said to be flukey, and were badly affected in three months.

122. No.

123. Nor am I able to answer this question in any satisfactory manner.

124. No.

125. No.

126. No.

127. I can say that I bought 500 ewes, and most of them were flukey, and the same year I had 400 lambs from them; and now I am killing some of their offspring, and they are perfectly free from Fluke; and that is six years since I bought the ewes.

128. I have known sheep of my own perfectly sound at eighteen months old, being changed from one paddock to another, and killed a year after, or at two and a half years old, have from two to six Flukes in the duct of the liver. The change was from pretty dry land to some not so dry, but within an area of 1000 acres. This happens every year.

129. Cannot afford any information.

130. Never.

131. Very many, I may say thousands, invariably when placed on a flukey run.

132. On the farm alluded to in my answer to Question No. 2, of which my brother had just previously taken possession, and not being aware that any of the fields were subject to the Rot, he stocked the several pasture fields on the farm, rateably according to acreage, with sound sheep. In two or three of these fields which had swampy places in them the sheep became diseased, whilst those in the fields free from swamps showed no symptoms of disease, and remained perfectly sound.

133.  
 134. My sheep were quite sound till the wet summer a year ago; and Fluke could not have been introduced, as I never purchased any sheep.  
 135. No.  
 136. I have taken sheep from Levrington, high dry sand banks never been flukey, and put them on low marsh land, and in a few months have been obliged to move them, or they would die.  
 137. No.  
 138.  
 139. No.  
 140. Any sound sheep put upon irrigated land or upon flat land in the New Country will have become flukey in six weeks.  
 141. I cannot.  
 142. Not of late years.  
 143. I have known sheep perfectly sound at shearing time and affected by Fluke in the following autumn; the sheep being depastured on dry undulating land, and turned on wet marshy low lands afterwards.  
 144. I have known sheep in England quite free from Fluke, and after feeding on land that has been fluked by a fresh water river or brook, had all become flukey.  
 145. I have known sheep perfectly sound to be attacked by Fluke. For the first year or so the disease did no great damage, and was only observed when the sheep were killed, but during the last season it has developed itself to that extent that the sheep have died in hundreds.  
 146. In Ayrshire, Scotland, in 1825 and 1826, the sheep I before alluded to were perfectly free from Fluke until being put on swampy ground, but after the land was drained the Fluke disappeared.  
 147. I have known sound sheep left in a diseased paddock; the Fluke first appeared as a small but perfect Fluke in from three to four weeks.  
 148. All sheep are free from Fluke when born. As I before stated, it entirely arises from local circumstances, by want of cultivation, drainage, &c.  
 149. I have known many instances arising simply from putting the sound sheep upon infected land.  
 150. I think this was the case with many flocks before the years 1861 and 1862, when we had abundant rains in the summer accompanied with great heat, after which losses by Fluke became very numerous.  
 151. I knew a flock of sheep to be perfectly sound in November, and afterwards caught Fluke between that month and April: between these months the run had been flooded several times. There were some sheep added to the flock in March, and they remained sound that season.  
 152. I have sent sheep at Christmas to the Lakes perfectly sound, and in May on their return have found Fluke in abundance. Young sheep, say two-tooth, are much more susceptible of the disease than full-mouthed ones.

Question 6. *Do you know at this time any flock of sheep perfectly free from Fluke? If so, state the character of the run, or the circumstances to which you attribute the healthy condition of the sheep.*

- 1.
2. I do not know of any flock perfectly free from Fluke, but believe few are more so than my own, having only found it in a few instances. I am confident that I have never lost a sheep from Fluke, my loss from deaths in a flock of 8000 sheep is not one per cent. per annum.
3. I do not.
4. Cannot state one flock.
5. I am aware of several runs not affected by the Fluke: a dry run, warm bedding, and not overstocked, I consider the cause.
6. No.
7. I know of no flock perfectly free from Fluke, but several comparatively free from that disease, and in every case I attribute the greater freedom from disease to the scarcity or absence of marsh land or shallow lagoons on the run.
8. I do not know any flock perfectly sound or free from Fluke.
9. I know of several flocks free from Fluke, and I attribute the healthy condition of the sheep to an absence of water and the salty nature of the soil.
10. Yes, sheep on dry runs free from swamps or springy places.
11. I believe that Park Nook, the property of Charles Parker, Esquire, Lake River, is free from Fluke. The character of the run is dry,—ironstone hills with she-oak.
12. This is a difficult question to answer, and I would rather not do so.
13. My own runs (property of the Hon. John Foster) are quite sound, as are many others in this neighbourhood. The character of the ground is warm and dry.
14. I do; the ground is partly good bush pasture and partly dry rocky hills, on which there is no standing water, but intersected by several running creeks, but which are after long drought little better than water holes.
15. I cannot say positively, but believe that many flocks are still sound. I think the dry she-oak hills in the midland districts the safest runs to put sheep on.
16. My own flock at Green Ponds is perfectly free from Fluke: the run is dry open land, and most of the places where water lies is salty dry sand. I find it perfectly safe up to this time.
17. I think that instances of Fluke might be found in any large flock if carefully examined. Fluke is seldom found upon dry runs that have no swamps upon them.
18. No; I do not think there is one.
19. My sheep are perfectly free from Fluke. The runs are very hilly, although the wet lies a great deal on them in the winter.
20. I do not.
21. Our sheep, numbering about 3000 in three flocks, I believe to be free from Fluke. The runs are principally dry ironstone hills, poor feed, and little water, consequently no marshes. When our neighbours' sheep die of Fluke ours die of starvation.
22. I do. The run is high hills, dry and stony, with a northern aspect and running stream of water.
23. I believe my own flock to be so. The run is small and dry. The disease appears to have commenced midland and has not yet done much mischief in this neighbourhood, but I fear it will not have this to boast of much longer.
24. I believe that I have several flocks on Malahide free from disease, but from my experience of Fluke should be sorry to warrant them. I attribute the apparent healthy condition of these flocks to be the result of my having ever since 1864, placed rock-salt on the camping ground, and other places on every sheep-run. The runs are composed of river marsh lands subject to floods, with rough ranges in the back ground.
25. Yes, several; and in all cases the runs are peculiarly exempt from fresh water lagoons, fresh marshes, and large extents of flat land; and as on these runs there are extensive salt marshes, that may be perhaps considered as a preventing circumstance, especially so as the sheep very much resort to these salt marshes.
26. I have a sheep-run at the Piper which has had sheep on it for six years, and have never known the Fluke to make its appearance among those sheep: the land is high, that is, hilly.

27. I have at the present time a flock of about a thousand from two-toothed to full-mouthed, perfectly sound: a large portion of them are the offspring of diseased ewes. This I attribute to the character of the run, which consists of dry sandy land and salt marshes.

28. I have a flock of sheep that has been running on dry hills five years, and never found a single Fluke in them.

29. The Ellenthorpe flock are now free from Fluke. They have been flukey, but the marsh land has been drained; the runs are now dry.

30. Yes, the portion of my flock that has not been off Belmont is perfectly sound: the land is dry hills.

31. All land in this district that I reside in is free from Fluke where the land is dry.

32. We do not.

33. Yes; a dozen farmers here on rich pastures are free from Fluke; all dry land within four miles of the sea coast, at Robbin's Island, also at Woolnorth,—both dry runs, where the sheep feed on sand banks on the sea coast.

34. Yes, my own; dry rising ground, with no marsh land, to which I attribute the healthy condition of the sheep.

35. I do. My own flock is perfectly free from Fluke. The character of the run is a white loamy soil, and gravelly forest.

36. Many flocks. I consider all high and dry lands that are free from swamps and marshy places free from Fluke; and I consider thorough drainage to be the only preventive.

37. I can only speak positively so to my own flocks at Belle Vue, on South Esk River, and particularly on Macquarie River. I believe them to be perfectly free from Fluke, and have no doubt many of the surrounding flocks are the same. The land is of a sandy description, except some small marshes near the river. These marshes are well drained.

38. Cannot say.

39. I believe my own sheep are entirely free from Fluke, as I kill about forty a year, and no Fluke has been found in any of them. The run is a dry one, and the sheep eat a good deal of the scrub after it is burnt and shoots again.

40. I am not certain of a whole flock being free from Fluke.

41. I know many runs free from Fluke. The nature of the runs is hilly and dry. Of course, the poorer the land the healthier for sheep.

42. I know several flocks apparently perfectly free from Fluke: some on dry warm runs, and one flock in particular in a run of 24,000 acres, in which is to be found any description of land,—high and dry, low and wet, and abounding in lagoons, some of which are salt, but others—and the larger portion—fresh, and exactly of a character to produce Fluke. I can only attribute the healthiness of the flock to its isolated situation. I believe if flukey sheep were once introduced, it would rapidly spread.

43. No.

44. Yes. The sheep are on dry hilly ground, or on land where there are no marshes.

45. Cannot say. I know of a flock perfectly sound. At the same time must add, that the per-centages from death are comparatively small.

46. My own flocks are perfectly sound on the dry lands.

47. I never knew sheep bred and pastured in Brighton or New Norfolk Districts that were affected with the Fluke.

48. I do not.

49. At the present time I cannot mention a single flock which I know to be perfectly free from Fluke.

50. I have a small pure flock, full grown, entirely free from Fluke, as I believe; and I attribute it to their running on a dry, undulating country.

51. I do not; neither do I believe there is a flock of 1000 in the Colony perfectly free from Fluke.

52. Yes, several. All hilly runs that have no marsh land on them, and the flock never sent to a summer run, are as sound as ever they were.

53.

54. I consider all the sheep I breed myself to be perfectly sound. Good dry land, plenty of wattle, and no stagnant water; my Lake Run is rough and dry.

55. I believe I have a sound flock of sheep on the Macquarie River. The run is all dry stony land, and perfectly free from marsh ground. The absence of marshy ground and stagnant water is the cause, in my opinion, of the healthy condition of the sheep.

56. I can state my own run is perfectly free from Fluke; and I attribute it to the dry situation of the land—being hilly land.

57. Yes; and I believe the reason to be that the runs consist of dry hills, with no lagoons or stagnant water upon them.

58. I know at this time many flocks perfectly free from Fluke, the runs being hilly or perfectly dry.

59. My flocks are perfectly free from Fluke; my run is high, dry and clear; my marsh is also comparatively dry.

60. I have never had any Rot on my home lands; there are small marshes and dry rises.

61. My own sheep are perfectly free from Fluke. The run is dry, warm, and well grassed. The health of the sheep I attribute to the absence of swamps.

62. The sheep on Bruni Island are free from Fluke; the run is hilly and stony, affording dry bedding places, to which I attribute the healthy condition of the sheep.

63. My own flock never had the disease. The run my sheep have been on consists of chiefly high land, she-oak hills, well grassed, and the low land between the hills never flooded,—a dry run in all seasons.

64. My flock is perfectly free from Fluke at this time. The run is poor sandy soil, situated on the Pacific Ocean, Bass's Straits, to east of Lighthouse at Low Heads. A large portion of the run is covered with water during the winter and spring months. I am unable to account for the healthy condition of the sheep.

65. That portion of my flock which were bred on my land are free from Fluke. My land is hilly and dry.

66. I do not. I have seen very little of the interior of the country for the last eight years.

67. Yes. Richmond Park is a dry run.

68. I cannot say that I know of any flock altogether free from Fluke; but I believe dry she-oak or wattle hills without marshes are sound.

69. I know of no flocks free from Fluke but my own. The runs are clear and dry without wet marshes; and I attribute this to be the cause of the healthy state of the sheep.

70. I should hesitate to pronounce any flock of sheep perfectly sound; but on dry runs where no marsh exists, I consider them comparatively safe from the disorder.

71. I do not know any.

72. Yes; hilly, dry, principally poor land.

73. Mr. Pain's, manager for Mr. Gunn, Forcett; the sheep have all been bred on the Estate, which adjoins the Salt Water Bay. The run is dry, to which I attribute the healthy condition of the sheep.

74. My own flock, with the exception of a few purchased sheep, are perfectly free from Fluke. The run is generally hilly and dry.

75. I can with confidence state that I have no Fluke in my sheep. Part of my land is very hilly and dry, the other part low, but dry and sandy.

76. My own at St. Peter's Pass, from the run being dry and healthy, and not being overstocked.

77. As above my runs are free from Fluke, and I attribute the cause from the dryness of the land, and I believe if the stagnant water could be kept off the runs we should get free from Fluke.

78. I do know of sound flocks, speaking generally, although a diseased sheep may be found in any flock grazing over a run with a river frontage, and low lands occasionally flooded, as in Great Britain, but so few it is scarcely noticed. The character of the runs—dry and sheltered, healthy feed, and not overstocked.

79. I do not.

80. My own, those on the marshes excepted, which are never again allowed to rejoin the flock; the character of the run is hilly: one run of 500 has a marsh which is well drained.

81. Sheep are free from Fluke on all hilly runs which are free from lagoons or stagnant water: as an instance, I would mention my run, which is hilly. I have no Fluke.

82. No.

83. Yes, my flock of 2500 are perfectly sound with the exception of some few I have purchased. The character of the run is very rough, with rocks, high she-oak hills, with flats which are very wet in winter, but burnt off every two years, the sheep seldom feeding upon them more than the first year after the fire, because they grow up so thick; and more, I have bought flukey sheep and kept them for years and they never got worse, and I know of no instance of their spreading the disease on my run.

84. Yes, several perfectly free from Fluke. The ground is dry and hilly, and free from marsh land, and to these characteristics I attribute the immunity of the sheep.

85. I know several flocks at this time perfectly free from Fluke. Their runs are perfectly dry and healthy, with no stagnant water drying up on them.

86. Yes, Dunrobin, a very large run, dry, with a large portion of poor land.

87. I do. The character of the run consists in she-oak hills, steep gullies, no marsh land nor lagoons.

88. Yes; the flock consisting of 11,000 (eleven thousand) sheep, of which I have had charge, have never shown any symptoms of Fluke; and I attribute the healthy condition of the sheep to the character of the land, which is hilly and dry, not having any lagoons or stagnant water upon it.

89. It is impossible to say that a flock of sheep is perfectly sound, but I know of several in which Fluke has never been found; in every such case the sheep are grazed on dry hilly ground.

90. I believe our flock bred at Clifton Vale to be quite free from Fluke. The run consists of dry hills separated by deep ravines and creeks, generally dry in summer time. I attribute the healthy condition of the sheep to the absence of marshy land on the run.

91. I do not know any flocks that I could say were perfectly free from Fluke.

92. I have flocks of sheep at this time perfectly free from Fluke: the runs are hilly and dry.

93.

94. No.

95. The majority of sheep bred in the District of Richmond are perfectly free from Fluke, the runs being high and dry, the bottom lands well drained and dry.

96. The sheep on my farms at Jerusalem and Cambridge are perfectly free from Fluke. The land in both cases is perfectly dry, the marsh at Jerusalem being thoroughly drained.

97. I do not.

98. Yes; the hilly or high and dry character of the run.

99. No.

100. High runs where stagnant water is not to be found.

101. I do not know of any sheep in the neighbourhood of Corra Linn infected with Fluke.

102. Yes, Mr. J. T. Read's, of Kinvarra, and several others where they do not buy sheep, where the runs are dry and hilly.

103. I cannot vouch for any except the young sheep I have named. I know several whose owners say they are sound, and all their runs without exception are free from wet marshes.

104. My flocks at Fordell and Woodsprings are perfectly sound, the runs being dry high land, the sheep only having clear water to drink, the runs not being at all marshy.

105. I have 150 sheep quite free on the Ringarooma River at Legerwood, and they have been so for fourteen months. The soil is of a dry chocolate colour, and rather porous.

106. I believe the sheep generally on Bruni to be free from Fluke, as I never recollect any one speaking of Fluke during the five years I was there.

107. No.

108. Yes. The runs consist of high and dry land, with no wet marshes on them.

109. Yes, many. The runs are dry, and free from swamps and marshy places.

110. No.

111. My flock of sheep—about 1000—are perfectly free from Fluke, which I attribute to the run having a number of salt water lagoons on it, and all the dry lands being impregnated by the salt water.

112. I do not.

113. I know of two or three runs in Swanport that they have not got Fluke on: they are hilly.

114. I have never known any sheep to be flukey that have always grazed on hilly dry land.

115. I have on this place several flocks of sheep perfectly free from Fluke, owing entirely to the dry nature of the pasture,—namely, she-oak hills,—the beds and borders of the creek being gravelly.

116. The sheep upon my own land at the Clyde and over the Ouse are quite free from the disease, the land being sound,—that is, no land where the water lies in winter or at any other time.

117. I scarcely know a flock that I could warrant as perfectly free from Fluke, though I am of opinion that there are many flocks in this part of the country which, if never removed from their own runs, would remain perfectly sound.

118. Yes, many, where the new country runs have been abandoned a sufficient time for the working off of the affected sheep. No dry open runs have ever produced the Fluke in Tasmania yet, although it may be there by exchange of stock.

119. My own sheep are perfectly free from Fluke. My run is hilly and dry, also well drained by nature.

120. I have no doubt some of the flocks in the Midland Districts are still sound where the sheep are on dry runs.

121. I know several flocks of sheep free from Fluke. I believe the flocks in this District (Morven), with one or two exceptions, are perfectly sound: the runs are very different in character, but all generally very dry in summer and autumn.

122. No. I only keep a few for killing; my young sheep are perfectly free. The land is hilly, red soil, and trap rock, with a frontage on the salt water.

123. My own flocks I consider if not perfectly, almost entirely, free from Fluke. I attribute this to the nature of the runs, which are free from stagnant water, and in a great measure rocky or sound.

124. Yes, the flock I have at Fern Hill. The run is well grassed, lightly timbered, and bogs very dry, principally sandy rises.



125. If the runs are dry, with constant streams, I consider them healthy.
126. Yes; my own flock is perfectly free. The run is a dry healthy country and bounded by the sea coast.
127. No. I can say that my flock is perfectly clean from Fluke, excepting a few old ones that are not cleared out, and my land is perfectly dry, and no marsh land at all where my sheep run, and the old ewes are not so bad as when I bought them.
128. I don't believe there is a flock in the Colony perfectly free from Fluke if over three years old.
129. Refer to evidence taken before a Committee of the Legislative Council last Session, and you will find information on this point.
130. I believe my own flock of sheep running at Norwood, and joining the Dennistoun estate near Bothwell are sound, having never seen Fluke or signs of Fluke. The run consists of dry wattle hills, intersected with plains, and fronting on the river Clyde, at Nant.
- 131.
132. I can only speak with certainty in regard to the sheep kept on my own property, near Perth, now rented by Mr. Pyke. During the period of thirty years that I had sheep upon it I have never known a sheep to have the Fluke, and I believe that I may say that Mr. Pyke's sheep have been equally free from the disease since the land has been in his occupation. I attribute the healthy condition of the sheep to the character of the land, being a light dry sandy loam.
133. I know many runs where there has never been any loss from Fluke, but could not say positively that they are sound. Consider the healthy condition of the sheep owing to the dry hilly character of the runs.
134. I have some flocks sound. There is no marsh land on the runs they are on; all hilly, and no scab.
135. Yes, many flocks within a radius of twenty miles; the soundness of the sheep I attribute to the nature of the country, viz. dry, hilly, and lightly timbered.
136. At this time the whole of the Levrington Estate is sound; and I have never seen Fluke here, that is to say, bred upon the place. The land is open country, with patches of ferns and brackish water impregnated with alum.
137. My sheep are free from Fluke, and I attribute the cause to the run being dry and the water brackish.
- 138.
139. Yes, my own upon Glen Morrison and Barrowville, where the runs are dry and hilly; and also never having bred from diseased sheep.
140. All sheep in this part of the Hamilton District that have not been in the New Country are sound.
141. My flock is perfectly free from Fluke, and always has been. The run is of a rocky and mountainous nature, with the absence of any flat land, and to that I attribute the healthy condition of the sheep.
142. No, not of my own experience.
143. I know a number of flocks perfectly free from Fluke on the Macquarie River, the lands being of a dry sandy soil, also high rocky land, where the underwood and long grass has been carefully burnt out, also where stagnant water has been drained.
144. I have had no experience of flukey land in this Colony. I have 3000 sheep quite free from Fluke. They were bred by myself. My run is both wet and dry at all seasons of the year, but not flooded by rivers or creeks. I have bred sheep on my run for 25 years, and never had a sheep attacked by Fluke.
145. I should not like to state that there is any flock of sheep free from Fluke at the present time. There are some flocks nearly so. Generally speaking, there are flukey sheep to be found in most of the flocks of the Colony. Many flocks on dry hilly grounds not too heavily timbered are almost entirely free from Fluke. The Fluke, I believe, is attributable to the introduction of flukey sheep by buying.
- 146.
147. I have every reason to think that all the runs in the south of this District are sound.
148. Impossible for any man to do so, unless the sheep are bred on the run. If so, I know of many, and I attribute it to the same cause as above,—a run not requiring drainage, &c.
149. Several runs in this District have the reputation of being free from Fluke: the owners in most cases have never bought sheep, nor sent their own to the Lakes. Some of these runs contain much marsh land.
150. There are several flocks of sheep free from Fluke on the north side of Prosser's River. The lands are sandy and hilly, very little swamp or marsh: the sheep can at all times lie dry and have good shelter.
151. I have at present a flock of sound sheep: the run they feed on is low ironstone hills with flats between the hills, but not subject to be flooded; part of the run is a dry healthy flat.
152. I can only from my own knowledge instance one flock free from Fluke. The run is dry and well grassed, free from moist spots, and skirted for a considerable distance by salt water.

Question 7.—*Does your experience suggest to you any probable cause of Fluke in the runs where you know it to be prevalent, and do you consider the Fluke to be the cause or consequence of disease in the sheep?*

- 1.
2. From all I have seen and heard I think Fluke is caused by badly drained runs, having stagnant swamps and lagoons on them. As far as I understand the question, I believe Fluke to be a cause of disease.
3. I have always found the disease more prevalent after a wet summer.
4. Cannot say.
5. Such runs, the opposite to the foregoing answer, which in my opinion makes it more a cause than a consequence.
6. I never saw a run on which there were flats where the water laid part of the year, or where there was boggy oozy ground, without the sheep being flukey. I am inclined to think the Fluke makes its appearance in the liver some time after the liver is really diseased.
7. Want of drainage, the water lying on the ground in shallow pools, not deep enough to cover the herbage. I consider Fluke to be a cause of disease.
8. I do not know any probable cause of Fluke except it is occasioned by wet marshy land or stagnant pools after they become dry. I consider Fluke to be a cause of the disease.
9. I have observed in wet marshes a slimy matter covering the grass two or three inches above the water-mark. My opinion is, that sheep when grazing take into the stomach minute eggs deposited on the grass, and that these find their way to the liver (probably with the blood) and are there propagated and developed into Flukes. I consider the Fluke a cause of disease.
10. Wet, no doubt, in some form; cannot say whether cause or consequence.
11. I believe the cause to be too much stagnant water lying on the ground. I believe the Fluke to be the cause of disease in sheep.
12. I consider that the Fluke in sheep is generated by their feeding on undrained swampy marshy land, and that this is the cause of the disease.
13. The cause of Fluke in runs is undoubtedly its introduction by placing diseased sheep upon them, the runs themselves being cold and wet, and thereby favourable to the development of Fluke. The Fluke come to life in the liver and cause disease in the liver and gall duct.
14. I believe the Fluke to be solely caused by the animals being depastured on marshy ground where there are stagnant pools of water.



15. I believe as a rule that all undrained, low-lying, wet lands will disease sheep. I cannot say that Flukes are or are not a cause of Rot. I rather incline to think that they are the consequence of the disease, and that they are worms accompanying rotten sheep. This idea will in some measure account for rotten livers without Flukes, the sheep die from the disease before the insect is perfect or developed.

16. I am clearly of opinion that stagnant water in summer is the cause of Fluke. I consider Fluke a cause not a consequence. In considering stagnant water as the cause of Fluke, I mean when the summer sun comes on it, and grass growing.

17. I believe the Fluke to be caused by the sheep feeding upon swampy ground. Some think it the cause of disease; others think that it is generated in the sheep by their unhealthy condition.

18. No.

19.

20. I do not venture an opinion.

21.

22. I believe that Fluke is caused by feeding upon unwholesome grass in spongy marsh land; hills sheltering it from the morning sun, when at mid-day the powerful rays of the sun causing an unnatural growth of grass; which, with stagnant water, causes Fluke.

23. I believe it originated in the Lake Country, which is wet and cold; and I attribute the commencement of the disease to this unsuitable climate. I consider it to be a cause of disease in sheep.

24. I partly attribute the disease to the stagnant water on the low lands. At the same time, flocks had run on the same land for thirty or forty years previous to 1863 without ever showing Fluke. I consider it a cause of disease.

25. It appears to me that the germ, or whatever may be the parent of Fluke, exists only in low-lying marsh land, and any very flat land where the surface water is only removed by evaporation. Such lands obtain to a large extent here, and I find that all my sheep become infected after running on those lands; but those that persist in keeping to the hills—invertebrate stragglers—are generally if not wholly sound. As I understand the latter part of this question, I consider Fluke to be a cause of disease, and not a consequence.

26. I cannot suggest any real cause, any more than that it arises from the damp marsh land. My reasons for thinking this are, because the runs which are within three miles of the above-named run are low and marshy, and are never free from Fluke.

27. I have always found Fluke on land where water lies stagnant a portion of the year; and consider it to be the cause of disease.

28. What I have seen on flukey runs, there is a very small fly flies about; and on very wet marshy land, or round pools of stagnant water, the fly deposits its eggs on the grass: the sheep swallow the eggs with the grass. I don't say that every egg will hatch; for every one that does there will be a Fluke in the animal.

29. I have always observed Fluke the most prevalent on runs where there are swamps covered with herbage decomposing. I believe Fluke to be a cause, and not a consequence of disease.

30. The Fluke is produced on land where water, accumulated in winter and spring, is allowed to evaporate during the warm weather. The Fluke in excess is a consequence of disease. Poverty and an uncongenial season make the disease more deadly. The Fluke, I believe, is natural to sheep.

31. It's my belief that if the land were properly drained it would eradicate the disease entirely.

32. As far as our experience goes, as we have observed before, through drinking stagnant water. And we consider the Fluke to be a disease itself.

33. No experience.

34. I have always observed that runs where I knew sheep to take the Fluke have been marshy, or had stagnant water either in creeks or lagoons. The latter part of your question is very difficult to answer after what has been written upon this subject; but I am inclined to think that Fluke is the consequence of disease. That perhaps overstocking on low-lying land and wet seasons produce vegetation, which diseases the blood and causes the germ of the parasites to be developed.

35. It does not.

36. I believe water lying in stagnant holes through the hot weather to be the cause of the Fluke, more particularly when caused by summer floods.

37. I believe want of proper draining is the cause of the Fluke. I have never known Fluke to exist on any run without finding, either from enquiry or observation, that some portion of the same much required draining. I consider Fluke a disease of itself.

38. Wet swampy ground is the general supposition, if it is correct. There are a great many exceptions to this rule.

39. I believe the Fluke to be taken up by the sheep when feeding on wet marshy ground. I consider it to be a cause of disease in sheep.

40. Low wet runs I consider to be the cause of Fluke. I do not consider Fluke to be a consequence of disease in the sheep.

41. The cause of Fluke is want of draining, on rich land especially.

42. I believe Fluke to have been introduced from the wet parts of the colony, such as the Lake Country, and other similar localities, and I believe the over stocking of those lands, and consequent shortening of the pasture, has mainly tended to its propagation and dispersion. I have two reasons for this, first—when the grass on these pastures was abundant we had no Fluke, but of late years the food has been cropped short, and Fluke has prevailed. Secondly—pastures exist in England on which sheep can be depastured with impunity whilst the grass is fresh and long, but when close eaten dare not be stocked. I believe Fluke to be the cause of disease, not the consequence.

43. I consider the cause of Fluke owing to the land being too wet, especially in summer floods. I consider dry pasturage the only safeguard against the disease.

44. Wet and marshy land: land on which water remains until it becomes stagnant. I believe that Fluke is occasioned by the peculiar kind of food which sheep obtain on marsh land, and I think there must be some kind of insect or its eggs in the grass.

45. I consider the cause of Fluke to arise from marsh land, where stagnant and back water abound, and the Fluke to be a cause of disease in sheep.

46. The shortness of the grass, and going in the lagoons in the dry weather.

47. Only from wet runs.

48. Yes, wet marshy lands. I believe the fluke to be the cause of disease in sheep.

49. I think the sheep take the Fluke entirely on wet land, and it is evidently the cause of disease.

50. My belief is that all lands on which water remains stagnant for any length of time will cause Fluke.

51. I have never been able to solve this question, and whether cause or consequence I cannot say.

52. I have not had sufficient experience to answer this question.

53.

54. Wet marshy land I consider the cause of Fluke. Fluke a cause.

55. My experience is, that if sound sheep are fed on low marshy rich soil, with water lying on it, they will become diseased, which I consider is the cause of Fluke in sheep.

56. My idea is that it is some insect they take in with their food on wet marsh land.
57. I consider that any run where the water has not sufficient fall, but is allowed to remain, is always unhealthy. I believe Fluke to be a cause of disease in sheep.
58. Feeding on wet or moist pastures in the warm seasons will cause Fluke: my experience suggests that this can be the only cause. Fluke therefore, in my opinion, is the cause, and not the consequence, of disease.
59. My belief is wet marsh land to be the cause.
60. I believe the cause of Fluke to be the wet runs, as all the irrigated land in the colony are flukey, and will kill sound sheep when put upon them.
61. I believe the cause of Fluke is from keeping sheep the year round on cold swampy land: being overstocked, the sheep are obliged to eat noxious herbs of the swamps they would otherwise avoid.
62. None.
63. Having never seen a run where sheep have been affected with Fluke, I am quite unable to suggest any cause of Fluke. From want of knowledge of the disease, I am quite unable to judge whether Fluke be a cause or consequence of disease in sheep.
64. I have had no experience as to the probable cause of Fluke.
65. The most Fluke that I have observed has been on low marshy runs.
66. I entertain the popular belief that Fluke is engendered upon wet low-lying pastures, and I consider it a cause of disease in sheep.
67. Yes, wet and moist runs, stagnant water, and rotten grass. It is a cause, not a consequence.
68. I thoroughly believe that continuous summer rains, keeping the marshes constantly wet during the summer and autumn rains, to be the cause of Fluke. The winter rains have no bad effect. I consider Fluke to be a cause of disease.
69. The evidence given before a Committee of the Legislative Council by men of experience, in which all agreed that the probable cause was want of skilful drainage.
70. I believe the cause of Fluke to be eating unwholesome food. In my opinion the system becomes disordered, functional derangement follows; and I decidedly believe Fluke to be a consequence, and not a cause of disease, having in all cases on *post mortem* examinations, found the liver extensively diseased before the fully developed Fluke appeared. I have often seen the grown Fluke in sheep with very slight organic disease, but this was in cases where, I believe, the animal had survived the disease in its first stages, and the Fluke remained in the liver long after the worst condition was past. These sheep appeared as apt to fatten as any others.
71. I believe undrained lands, and wet springs to be the cause of Fluke. I therefore believe it to be the cause of the disease that kills the sheep.
72. No.
73. No knowledge of the Fluke in its earlier stages. I consider that sheep feeding in wet and undrained marshes the cause of the disease.
74. I believe marshy land is the cause of the Fluke.
75. I have not had sufficient experience to answer the question.
76. I consider Fluke arises from swampy lands, and being overstocked.
77. I have observed in the vicinity of the South Esk River, when the river overflows in the spring, and the stagnant water lies in the low places or swamps, the Fluke is more prevalent than when the river does not overflow; and I think in spring we have more deaths.
78. My own experience convinces me that all wet lands will cause Fluke, and everything having a tendency to weaken the sheep are predisposing causes, and will accelerate the disease. Fluke in sheep is a consequence of Rot, certainly not the cause.
79. The cause of the increase of Fluke is the accumulation of rotting grass not being burnt off as in former years. If all the old brush fences were burnt I believe Fluke would diminish, if not disappear, as it did before in 1827.
80. I believe the Fluke to be the cause of disease, not the consequence. The cause of the Fluke I have little doubt to be the action of the sun's rays on stagnant water.
81. I believe Fluke proceeds from the low marshy land and stagnant water. I believe it to be a cause, not a consequence of disease in the sheep.
82. Wet land. Fluke, and nothing else. They never get Fluke on dry land.
83. The runs upon the N.E. Coast where it is so prevalent, (Stevenson's, Brewer's, and others), that sheep can not be kept upon them. There are high sand hills along the coast, behind which are large fresh water lagoons which partially dry up in summer; then are beautifully green, but never dry enough to fire.
84. I believe the cause is to be found in the wet condition of undrained marshy land, of which there is a large quantity surrounding the Lakes. I believe the Fluke to be a cause of disease in sheep, and that they get it from the land.
85. I have no doubt that sheep take the Fluke from being depastured on marshy lands at the time the stagnant water is drying up. How the ova or germs of the Fluke get there I cannot say: they must be somehow or other conveyed there, for our sheep had been depastured for twenty-five years or more in the vicinity of Kearney's Bogs without Fluke, on the same land and under the same conditions on and in which they afterwards took the disease. I think the Fluke to be a cause of disease in the sheep, though not the cause of a rotten liver.
86. I only know of Fluke in connection with irrigated or marshy land. I believe Fluke to be a cause of disease in sheep.
- 87.
88. Fluke generally arises on land which is flat and without sufficient fall to carry off the water before the summer heat sets in. Wet summers also, in my opinion, cause the disease to be prevalent. I consider Fluke to be a cause not a consequence.
89. I believe the rapid spread of Fluke to be caused by diseased sheep being depastured on wet land, which was formerly healthy. I consider the Fluke to be a cause of disease in sheep.
90. I have constantly observed the difference between flukey and sound land to be, that the flukey is either wholly or in part low and marshy; and I have from this concluded that the Fluke is derived either from the shallow and stagnant water, or from spawn or other substance left upon the grass by the receding water in summer. I believe the Fluke to be the cause of the disease.
91. My experience suggests that the disease is caused by sheep being depastured on, or having access to, low marshy ground.
92. From my experience I should say the cause of Fluke is from stagnant pools of water. I have not known it on any other runs.
93. The cause of Fluke on any land is undoubtedly the depasturing upon it of diseased sheep or other stock; and I believe the Fluke to be a cause of disease in the sheep.
94. I cannot answer this question.
95. I have three farms, of 900 acres each, situated in Jerusalem, District of Richmond. They each comprise 300 acres under the plough, the remainder in pasture carrying 450 sheep, and there never has appeared a symptom of Fluke in sheep bred upon the land.
96. I believe the Fluke to be in a great measure caused by the land not being drained. My next neighbour occupies land similar to my own—but it is not drained and—he has always got the Fluke.

97. My experience convinces me that Fluke is caused by sheep being allowed to feed on wet marshy land.
98. Yes; the low or wet state of the runs, and the want of sufficient drainage.
99. I think the cause of Fluke is the grass which grows immediately after summer rains. I consider Fluke to be a consequence of disease.
100. Drinking from stagnant ponds, or eating the herbage of undrained pastures.
101. I think the Fluke originates from damp runs.
102. Yes; marshy land where the water is stagnant, with plenty of half dead and rotten grass for the sheep to feed on. It certainly is the cause of destroying the sheep.
103. My experience convinces me that wet alone is the cause of Fluke; and that it is the cause, and not the consequence of disease in sheep.
104. My experience leads me to believe that wet, marshy, springy land is the cause of Fluke in sheep. In such land I know sheep to be very flukey.
105. Wet marshes near Wood's Lake, or similar spots; and in consequence I have sent no sheep there this season.
106. I have not sufficient experience to give an answer.
107. I believe it is the extreme wet seasons that brings the Fluke, or the disease which produces it.
108. The only runs I know to be affected with the Fluke-disease contain wet and marshy pastures to a greater or less extent.
109. I believe the Fluke originated in the Lake country, and has been carried and deposited by sheep in other marsh lands throughout the country, where it has continued to breed.
110. Probably over-stocking has much to do with it. A cause.
111. I have only seen sheep affected by Fluke where there has been low swampy ground on the runs.
112. Yes. My experience suggests that it is in marshy lands where the water lies stagnant in summer after heavy rains. I consider it to be a cause of disease.
113. I cannot say what is the cause of the Fluke; but believe they are more prevalent on wet marshes.
114. Flooded and undrained marsh land will produce the Fluke.
115. Stagnant water and a favorable climate for the vitality of the *larvæ* of the species to be the cause, and winters too genial.
116. There is no doubt that the cause of Fluke is where the land is not properly drained, and the water lies on the grass for a considerable period; and thus engenders the disease in the food taken by the sheep.
117. I have no doubt that this disease is engendered from their feeding on the young water grass. If this grass were allowed to remain until it became withered, either by the sun or frost, I do not think that it would cause the disease.
118. This question is answered in No. 1.
119. I believe the Fluke is caused in a great measure by overstocking, and that when the young grass shoots, the sheep have to eat so near the ground that they in marshy ground inhale or swallow the disease.
120. I have not had sufficient experience to say.
121. I cannot account for the presence of Fluke in sheep, but believe it is taken up in the form of eggs from marshy land in the summer or autumn. I believe Fluke is the cause of disease in sheep.
122. I believe the Fluke is in the land, and is increased by imperfect drainage. Cause, most decidedly.
123. I believe Fluke in sheep to arise from their pasturing upon low undrained lands. I consider the Fluke to be the consequence of disease in sheep caused by such pastures.
124. I have known sheep to be perfectly free from Fluke, and then to be shut upon damp marsh land for two or three months, and then be flukey. I consider wet land to be a great deal the cause of Fluke.
125. In standing water, or after the water has left it. A consequence.
126. My opinion is that wet marshy runs, particularly when the runs are badly drained, are conducive to Fluke.
127. I believe it comes from wet land. My run is by the sea. I believe that salt is a great help to sheep.
128. I know of no cause for Fluke. I believe it to be the cause, and not a consequence, of disease in the sheep.
129. The common idea is that Fluke is produced only on wet and undrained lands, but it is within my own knowledge that lands at the Lakes now useless on account of Fluke were healthy runs for twelve or fifteen years, when they were quite as wet as they are now. At that time, however, I may mention that the runs were most of them unfenced, and were burnt out every second year if the season proved sufficiently dry.
130. Low wet lands, with stagnant water, caused from the want of drainage and proper attention.
131. When pastures are sodden, when water remains stagnant and dries up in summer, if the Fluke is once introduced it invariably becomes prevalent. Fluke is both a cause and a consequence: it acts and reacts.
132. I consider the cause of Fluke to be in consequence of sheep being grazed on land that continues permanently swampy or boggy for a length of time. I consider the Fluke to be the cause of the disease, from the effect they have upon the liver.
133. I believe overstocking the land tends greatly to produce the Fluke in sheep. Have observed that the disease is more prevalent in a wet than a dry season, which I attribute to the more profusion of rich, soft, luxuriant grass, which I believe also tends to produce Fluke in sheep. Have also observed that all irrigated land is likely to generate Fluke. I do not believe that it is picked up in the shape of spawn or ova.
134. I find it on rich wet land. I believe the Fluke to be a consequence, and not a cause. Although Fluke after a while will follow the Rot, yet many sheep may have Fluke and no Rot, as I have seen Fluke in my sheep for six years without any appearance of Rot, and during this time seldom lost a sheep; whereas last year I lost over 3000, and many died with hardly a Fluke in them, while the liver was completely rotten.
135. Can give no decided information.
136. I think that if flukey sheep are put upon rich pasture for six months, they would deposit Fluke, which enters in another form, sheep feeding upon land of a rich, moist character.
137. I believe the cause of Fluke in sheep to originate from depasturing upon low lands and spring water.
138. All the runs where I know Fluke to exist are wet and marshy, with the water standing a greater part of the year on the marshes. Fluke I believe to be the cause of disease.
139. I consider Fluke to prevail where the land is marshy, and lagoons abound. I do not think it a disease in the sheep, but produced by grazing in the above-named localities.
140. Putting diseased sheep on sound runs where there is any marsh land is one cause, and killing the trees on flat land with a clay sub-soil I believe to be another; so convinced am I of this, that I would not put diseased sheep on my land for any consideration, nor would I send sheep to Marlboro', and put them on my run after. I cannot answer the latter part of this question.
141. My experience does not suggest to me any probable cause of Fluke.
142. Not able to give an opinion.
143. My experience in regard to Fluke is, that it will be prevalent on all low lands where not drained. Diseased sheep will not affect sheep that are free from Fluke on dry sandy or rocky ground.
144. Low wet lands are subjected most to Fluke—such as are flooded by rivers or creeks.
145. The cause I believe to be in the first instance, the introduction of flukey sheep, the land being such as favoured the disease—of a wet marshy nature, with abundance of green luxuriant grass in the months of February,

March, and April. I believe Fluke to be the cause of disease, and flukey sheep in some way or other to taint sound sheep running with them, but I cannot say they do on all lands.

146. I consider the cause of Fluke is from the sheep eating a small plant which grows on the edge of lagoons, or stagnant water, I have observed sheep get the Fluke after eating this plant that were perfectly clean before. The Fluke is no cause or consequence of any disease subject to sheep.

147. No, I consider Fluke to be cause of disease in sheep.

148. My experience positively tells me the disease solely arises from a superabundance of moisture or stagnant water, producing the Fluke. It is taken into the system of the animal with its food.

149. I consider superabundance of moisture to be the cause of Fluke on all unsound land; and a few undrained places, on a run otherwise healthy, would in time cause all the sheep to become affected. I think Fluke a primary cause of disease in sheep.

150. The Fluke is now nearly always found in sheep that pasture on low and wet-lying ground, and where the water cannot escape freely. Strong healthy sheep feeding on such land will become flukey: weakly sheep and unhealthy would most likely die quickly of Fluke on such land.

151. The cause of Fluke is a mystery to me, but I believe it to be most prevalent on flat marshy land, where even there is not sufficient drainage to take away the water. I believe Fluke to be a cause of disease in sheep.

152.

Question 8. *Have you observed the Fluke to exist in any other animals than Sheep?*

1. Cattle; kangaroo.

2. I have not.

3. Yes; in cattle, kangaroo, wallaby, and rabbits.

4. Yes; both sheep, cattle, and kangaroo. All I believe to be caused by wet land.

5. My attention has been called to inspect both hares and rabbits at home, but generally on the low land, where such existed. Have looked for such in animals from high land, but cannot call to mind any one instance.

6. Cattle and Kangaroo.

7. In Kangaroo.

8. I have not myself, but have heard of kangaroo, rabbits, cattle, and pigs having the Fluke. I may say my informers are persons on whom I can rely.

9. Pigs, kangaroo, cattle, and all herbivorous animals, except horses, I consider liable to take the Fluke.

10. Cattle and pigs.

11. I have known the Fluke to exist in cattle running on marshy land.

12. Yes; in cattle, kangaroo, rabbits, &c. I know of some persons who assert that the disease exists in men.

13. Pigs become flukey on some farms; and I am told that large numbers of kangaroo have died of the disease on the North East Coast.

14. About ten years ago I killed a calf three months old. It was very bad with Fluke. It was very fat, and had been running with its mother on a pasture on which there was a stagnant pool of water.

15. I have seen Flukes in cattle, kangaroo, wallaby, and in rabbits. A neighbour of mine shot a wild duck last week, and found two Flukes in its liver.

16. I have seen Fluke in cattle, kangaroo, and also in pigs, where they were feeding about a spring on the grass growing from the waste water.

17. In cattle, kangaroo, and other animals, I have heard that it is frequently seen.

18. No. My neighbour says he killed a pig diseased with Fluke.

19. No.

20. I have not.

21. I have killed two or three cows that have had Fluke: they were bought from a neighbour of mine who has marshy land. I have heard the shepherd say he has caught a wallaby occasionally with Fluke in it.

22. I have not; but have seen diseased liver in pigs and cattle, but no analogy with Fluke.

23. I had a steer two years off, in excellent order; reared close on the river. My son and others informed me a number of Fluke were found in the liver. I have no doubt horned cattle are occasionally infected.

24. Yes; in cattle, and also in wallaby and kangaroo.

25. Yes; both oxen and pigs are liable to be attacked,—the former in my experience very slightly, the latter to a greater extent; but in neither case seeming to very much affect the constitution of the animal. The disease is quite common, also, with kangaroo and wallaby.

26. I have known the Fluke to exist in both cattle and kangaroo.

27. Have found Fluke in cattle.

28. I have seen Fluke in sheep, cattle, and kangaroo.

29. I have observed the Fluke in kangaroo, wombat, and cattle.

30. I believe horned cattle are subject to Fluke.

31. Yes; cattle, pigs, kangaroo, wallaby, and opossums.

32. Yes; we have observed them in cattle.

33. No.

34. I have never observed it myself, but I have heard of many other animals having it,—even kangaroo, and that not far distant from here.

35. I have in cattle.

36. I have seen it in cattle.

37. I have observed Fluke to exist in cattle.

38. Yes; in cattle, kangaroo, and wallaby.

39. I have not.

40. In kangaroo.

41. I have known it in cattle.

42. I have found Flukes in considerable numbers in the livers of cattle, pigs, and kangaroo; but have never known the two former to die of Fluke, or appear much, if at all, affected in constitution.

43. Also in cattle, pigs, and kangaroo.

44. Cattle and kangaroo.

45. Yes; in kangaroo and wallaby. A young friend of mine, here on a visit, says he shot a number of rabbits recently at Green Ponds all flukey.

46. No.

47. No.

48. Yes; cattle.

49. In most animals, horses excepted.

50. Yes; in cattle, kangaroo, and wallaby.

51. Cattle and kangaroo.

52. Yes, in kangaroo.

53.

54. Horned cattle and kangaroo.
55. Yes, I have seen it in cattle, and believe it has been found in rabbits, pigs, kangaroo, and wallaby.
56. I have heard of it in cattle and kangaroos.
57. No.
58. I have observed Fluke in pigs, cattle, kangaroo, wallaby, opossums, and rabbits.
59. No.
60. Yes: in wet lands it flukes the cattle, and kills the kangaroos.
61. I have never seen Fluke but in sheep.
62. No.
63. I have never seen Fluke in any other animals.
64. No.
65. I believe the Fluke exists in all, or nearly all, animals except the horse.
66. Yes: I saw Fluke in the livers of kangaroo, killed on the banks of the Nile Rivulet, in the year 1828.
67. Yes; in all animals except horses.
68. I have observed the Fluke to exist in horned cattle, kangaroo, wallaby, and rabbits, in considerable quantities. I believe it also exists in pigs and ducks, but have not seen it.
69. I have not seen any.
70. I have found Fluke in cattle, kangaroo, wallaby, and rabbits. Only once in a rabbit; often in the others.
71. I have observed Fluke in fat cattle I have killed.
72. No.
73. No.
74. No.
75. I have never found it.
76. I have heard of it being found in many other animals than sheep.
77. Yes; in cattle, but not very frequent. It has been observed in kangaroo.
78. I have observed the Fluke in cattle and kangaroo, and believe they have been found in swine and rabbits.
79. Yes; it is as common in cattle as it is in sheep.
80. In neat cattle; and I have heard of it in swine and kangaroo.
81. I have not observed Fluke to exist in any other animal than sheep. I believe it does exist in cattle and kangaroo. I have heard of pigs when they have been known to feed on marshy land.
82. Cattle, pigs, kangaroo, wallaby, and rabbits: very fatal to the last four animals.
83. I believe that at Brewer's the cattle have it; also the kangaroo and wallaby: so much so that it kills them.
84. Yes, in horned cattle, and the different species of kangaroo. I have also heard of it being found in pigs.
85. I have not myself seen the Fluke in other animals; but I know from authority on which I can rely that they are found in kangaroo and rabbits.
86. No.
87. Cattle.
88. No.
89. Yes; in cattle and kangaroo.
90. I have seen Fluke in horned cattle, kangaroo, and wallaby; and I believe all ruminating animals to be subject to it.
91. I have known the Fluke to exist in cattle 18 months old and upwards. The said cattle were depastured on wet, marshy land.
92. I have known Fluke to exist in kangaroo.
93. Yes; in horned cattle, kangaroo, and rabbits.
94. Cattle, pigs, and kangaroo.
95. Horned cattle and kangaroo are greatly affected with the disease.
96. I never saw any myself.
97. Yes; in cattle and kangaroo.
98. Yes; in horned cattle frequently.
99. Yes; in cattle.
100. Yes; a bullock.
101. No.
102. Yes; in cattle: and I have heard of it in kangaroo.
103. Yes; in cattle, kangaroo, and rabbits.
104. I know Fluke to exist in cattle, kangaroo, and wallaby.
105. Not experienced to say.
106. Never.
107. In cattle, kangaroo, and rabbits.
108. In horned cattle and kangaroo, and I believe in pigs. I have never seen any that had it, though I have often heard of it.
109. Yes; in cattle.
110. Yes; in kangaroo and rabbits, &c.
111. I have seen a bullock affected with Fluke that had been feeding on the Cullenswood Marshes.
112. Yes, in rabbits, kangaroo, cattle, &c.
113. I have known the Fluke to exist in cattle, pigs, and kangaroo, as well as sheep.
114. Yes; in cattle, from the same cause.
115. In cattle, kangaroo, wallaby, &c.
116. I believe that the Fluke may be taken by cattle, but is not so injurious. It is known to be in the livers of kangaroos also.
117. I have observed the Fluke in cattle, kangaroo, and wombats. Any animal having a gall bladder and feeding on grass will get affected.
118. Yes; two years ago I sent a cow that had never before been on flukey land with a calf at her feet: at five months old killed the calf: eleven large Fluke were found in the liver—a sucking calf. For several years the whole of the kangaroo family have been found to be affected with Fluke.
119. I have observed the Fluke to exist in rabbits that were fed on clover that was grown on marshy land, and had not sufficient dry food given to them: this was in England.
120. I have seen the Fluke in cattle, rabbit; and about three weeks ago I shot a wild duck that had two Flukes in its liver.
121. I have seen the Fluke in cattle, kangaroo, &c. I have heard of horses dying of it. I know runs that a few years ago were alive with kangaroo, and now hardly any are to be seen, nearly all having died from Fluke.
122. In cattle, at the flats of Port Sorell. I have not had experience of it myself in horses.
123. No, I never have.
124. Yes; in cattle and pigs.
125. No.
126. No.

127. I have killed bullocks in this country with Fluke : they were running on marsh land.  
 128. Yes ; frequently in cattle.  
 129.  
 130. Yes ; in bullocks slaughtered for my own shop, Elizabeth-street, fed by Mr. Headlam, Lemont, Eastern Marshes. Also in kangaroo, wallaby, and opossums killed by myself.  
 131. No : I have frequently heard of it in kangaroo, and occasionally in cattle.  
 132. I cannot reply to this question with any degree of certainty ; but it may not be out of place to mention that about 30 years ago, my brother drafted 800 of the pick of his flocks, and sent them to some land of mine at St. Helen's Point, George's Bay, on the East Coast. I think they were sent in the spring. For the first two or three months they did remarkably well, and got into fine condition. They afterwards, when the warm dry weather set in, took some disease and gradually pined away, and my brother lost the greater part of them, I believe to within about 150. Either the next or the following year I sent 40 or 50 head of cattle to the same land. The same fate befel the cattle ; most of them died. This was before the Fluke was known to exist, at least before it was publicly talked about. It was a narrow slip of land bounded on the west side by a lagoon which was partially dry in summer, and on the east by the sea. There were a few isolated low swampy patches about the land. I believe the sheep and cattle were affected by the same disease, and I am now inclined to think it was the Fluke ; but the Commissioners will be able to draw their own conclusions from the facts I have mentioned.  
 133. I have observed Fluke to exist in cattle, kangaroo, wallaby, and rabbits.  
 134. In cattle slightly, but never to hurt ; also in kangaroo, wallaby, rabbits, &c., when feeding about wet places. I saw a gentleman who shot a wild duck, and on having it opened found two Flukes in its liver.  
 135. I have heard of it in cattle and kangaroo : never saw it hereabouts.  
 136. Kangaroo, rabbits, cattle.  
 137. Yes ; in cattle.  
 138. Yes ; cattle.  
 139. From my own experience cannot say. Mr. Adam Amos, of Swanport, told me that he had observed Fluke in cattle thirty years ago.  
 140. I have seen Fluke in sheep, cattle, and calves three months old, and in kangaroo, wallaby, wombats, and pigs in the New Country.  
 141. I once purchased three bullocks from a person in the District: the liver of one of them was almost eaten up with Fluke.  
 142. I had a five years old cow that I bought, killed last year : she had some in her liver. I have heard of kangaroo being very badly infested with Fluke.  
 143. I have found Fluke in pigs, also in kangaroo.  
 144. I have never seen Fluke in any animal but sheep, but I have been told that cattle are subjected to Fluke at times.  
 145. Fluke exists in cattle, kangaroo, and rabbits, and I believe most animals living on grass, except horses.  
 146.  
 147. Yes ; wallaby, wombats, and pigs.  
 148. Yes ; in bullocks, but very rarely, not more than three or four times during my experience.  
 149. It is very common in cattle, but they resist it much better than sheep.  
 150. I have not observed Fluke in other animals, though the kangaroo frequently die of Fluke.  
 151. I have observed Fluke in cattle and kangaroo.  
 152. In cattle and kangaroo.

Question 9. *Have you observed the Fluke to exist in any other part of the sheep except the liver,—for instance, in the stomach, smaller or larger intestines?*

- 1.
2. I have not.
3. Yes ; in the small intestines.
4. I have never examined, nor have I ever seen the Fluke in any other part of the sheep, only the liver.
5. I cannot remember.
- 6.
7. No.
8. In no part except the liver.
9. No ; I have not.
10. No.
11. I cannot say that I have.
12. Never.
13. Only in the liver or gall duct.
14. I have not.
15. I have found Fluke in the smaller intestines of sheep, and have easily caused them to pass from the liver into the intestines after taking the whole inside from the sheep. The opening is large enough for them to pass out through the gall duct.
16. I have never seen Fluke in any part of sheep except the liver.
17. I have not seen it in any other part than the liver, but have heard that it has been noticed in the stomach.
18. Yes ; in the larger intestines.
19. No.
20. I have not.
- 21.
22. I have not.
23. No.
24. Only in the gall bladder, and liver.
25. A perfectly developed Fluke's paradise seems to be in the bile ducts, and I have not as yet found it to exist in any other part of the sheep. Since writing the above I have observed quite a number in the intestines and close to the outlets of the stomach.
26. No.
27. I have not.
28. I have seen the small gut of a sheep full of Fluke—I may say hundreds.
29. No.
30. No ; but I have heard that they are seen occasionally in the stomach.
31. No ; but I have known them to pass through the intestines, and also in cattle.
32. We have never observed them either in the stomach or intestines, but have seen them in the gall and in the passages leading from the intestines to the liver.
33. I never saw the Fluke except in the liver.
34. I have never seen it in any other part than the liver.

35. I have not.
36. No.
37. I have not observed the Fluke to exist in any other part of the sheep except the liver.
38. Not in any other part than in the liver.
39. I have not.
40. No.
41. No.
42. I have not found Fluke in the stomach, but have found it in the smaller and larger intestines.
43. I have found the Fluke in the intestines below the duct that leads from the liver to the intestines.
44. None except the liver.
45. I have not observed.
46. No; nowhere but the liver; and when the Fluke reaches the gall vein it is death.
47. No.
48. Yes; in the smaller intestines.
49. I have not.
50. I have not, but I have not made inspection with a view to such discoveries.
51. Never elsewhere than the liver.
52. I never saw but one diseased sheep examined.
- 53.
54. I think I once noticed the intestines leading from the stomach to the liver very much inflamed and flukey.
55. Only in the liver.
56. No; I have not.
57. No.
58. I believe Fluke exists only in the liver, where it originates, and never leaves. It is very generally asserted that Fluke does exist in other parts than the liver. I, however, have been a very close observer for a number of years, but up to the present time have failed to detect it in any other part.
59. No.
60. Yes; in the stomach and intestines.
61. I have never observed Fluke in any other part of sheep but the liver.
- 62.
- 63.
- 64.
- 65.
66. I have not.
67. No.
68. I have frequently observed the Fluke to exist in the smaller intestines of the sheep, that is, in that part where the gall duct communicates with the small gut; the gall duct being so much enlarged as to allow the Fluke to have free access from the gall bladder to the smaller gut.
69. Previously answered.
70. I have never, on *post mortem* examinations, seen the Fluke in any other part but the liver, although on one occasion I saw a sheep void a living Fluke with the faeces.
71. I have not examined, my attention not having ever been called to the examination of any part but the liver.
72. No.
73. In no other part except the liver, and always about the size of, say, finger nail.
74. No.
75. No.
76. I have not sufficient experience to answer the question.
77. No.
78. I never saw the Fluke in any part of the sheep but the liver and gall bladder, and I do not believe it has been found in the stomach, larger or smaller intestines.
79. No.
80. I have not, not having searched.
81. I have not observed Fluke in any other part of the sheep except the liver: all other parts seemed healthy.
- 82.
83. I have not.
84. When sheep are very flukey, I have known them to pass living Flukes with the dung; but these die as soon as exposed to the air.
85. I have not observed the Fluke except in the liver.
86. Never.
87. Only in the liver.
88. No.
89. I have never seen the Fluke in any part of the sheep except in the liver and gall pipe.
90. I have not observed the Fluke in any part of the animal but the liver.
91. I never observed the Fluke to exist in any other part except the liver.
92. I have not known Fluke to exist in any other part of the sheep except the liver.
93. In sheep that have not been examined till some hours dead, I have found them both in and outside the intestines.
94. No.
95. I have seen the gall full of the Fluke.
96. I have only observed it in the liver.
97. I cannot speak positively as to having observed the Fluke in any other part of the sheep except the liver and gall.
98. I have seen single ones on the outside of the liver.
99. No.
100. In the stomach.
101. No.
102. No; I have not.
103. I have not.
104. I cannot say that I have observed in any other part except the liver.
105. Not experienced to say.
106. No.
107. No.
108. No.
109. I have only observed it in the liver.
110. No.
- 111.
112. I have not.

113. I have not known the Fluke to exist in any other part of the sheep than the liver.  
 114. I have observed the Fluke in the liver of sheep.  
 115. I have seen Fluke floating outside the liver and on side of breasts; but exertion or the spasms of death will cause the bursting of something about the liver in animals that are very much diseased. They will not live in the intestines.  
 116. No.  
 117. I have heard that the Fluke has been found on other portions of the intestines, but I have never myself seen it.  
 118. I have never examined any portion but the liver and its ducts.  
 119. I have never observed that.  
 120. No.  
 121. No.  
 122. I cannot positively say.  
 123. I have always observed it to be confined entirely to the liver.  
 124. No.  
 125. No.  
 126. No.  
 127. I have not; but I have seen the liver quite decayed,—nothing but pipes and Fluke.  
 128. I never saw Fluke in any part of the sheep but the liver.  
 129. No information to give.  
 130. Yes; in the whole of the intestines; even traced them to the abdomen.  
 131. Never.  
 132. No.  
 133. I have seen large quantities of dead Fluke in the smaller intestines, appearing to be passing out from the liver, as the pipes were quite empty. I have seen a large quantity of sand in the stomach, but never any Fluke.  
 134. In flukey sheep they are sometimes found in the intestines, but they are never found there except the sheep be very flukey. In these, can they have passed from the liver?  
 135. Opportunities of observation too limited.  
 136. If a sheep is kept in confinement till the belly is quite empty and then killed, the Fluke will be seen at the extremity of the ducts, leading from the liver to intestines, and I am of an opinion that they are expelled in the manure.  
 137. No.  
 138. No.  
 139. No.  
 140. No.  
 141. I have not.  
 142. I have seen instances of the smaller intestines becoming attached to the liver, and on separation, Fluke and a dark-coloured liquid to flow therefrom.  
 143. I have never seen it exist in any other part but the liver.  
 144. I have killed hundreds of flukey sheep, but never found the Fluke, only in the liver of the sheep.  
 145. I have never observed Fluke in any other part except the liver, although I have frequently conversed with practical men, who have declared they have found them in most parts of the inside.  
 146. I have never observed the Fluke in any part but the liver.  
 147. Yes; in the small intestines.  
 148. I have not.  
 149. I have heard of its existence, but have never seen it.  
 150. The stomach and intestines do not seem liable to the Fluke, but the pipe that runs up inside the back bone is sometimes charged with Fluke in very bad sheep. I do not mean the pith of the back bone. The Fluke must, I think, have passed from the liver up the pipe.  
 151. I have not observed the Fluke in any part of the sheep except the liver.  
 152. Only in the liver.

Question 10. *Have you observed any long round worm (Lumbricus) in the substance of the liver, or in the stomach or intestines of sheep or other animals?*

- 1.
2. I have not.
3. I have not.
4. I have only seen a great number of similar worms in pigs, in their intestines.
5. I have seen such, both in stomach and intestines.
6. The only worm I have ever seen in lambs is a long flat white worm, all in little joints about  $\frac{1}{2}$  inch in length, in the smaller intestines, and the same worm in the kangaroo and wallaby.
7. No.
8. Only in the stomach of kangaroo.
9. No.
10. Never examined very particularly.
11. I have not observed any such thing.
12. No.
- 13.
14. I have not.
15. No.
16. I have never seen the worm alluded to, except in horses.
17. I have not noticed or heard of such a worm.
18. No.
19. No.
20. I have observed a worm in the stomach and intestines of a sheep, but not in the liver; and also in pigs.
- 21.
22. I have not.
23. No.
24. No.
25. I do not recollect having seen any such.
- 26.
- 27.
28. I have not observed anything of the sort.
29. In the stomach of sheep and kangaroo, but nothing else.
30. In the intestines of sheep and pigs, and voided by horses.



31. No.
32. We have not seen any worms in sheep, but have seen them in other animals.
33. No.
34. I have not.
35. In horses.
36. No.
37. I have not.
38. Yes; in horses and kangaroos in great numbers, grazing on wet marshes.
39. I have not.
40. In the intestines of other animals.
41. No.
42. I have found the long round worm in the stomach of sheep, cattle, and pigs, and large numbers in the stomach of kangaroo, but have never known animals to suffer much from their presence.
43. No.
44. I have found the worm in the stomach of sheep and kangaroo.
45. No.
46. I have known them to pass them, but never examined them, as I never suffered any loss by them.
47. No.
48. None.
49. No.
50. I have not.
51. I have never seen worms in the liver of any animals, but have seen long worms in horses, and great quantities of long fine worms in kangaroo.
52. I have on two occasions seen tapeworms taken out of the intestines of sheep, one of which was eighteen feet long. I have never seen any other description of worm.
- 53.
54. Yes. About seven years ago I put 600 sheep, which I believed were flukey, into a stubble paddock. They passed a great many worms of a white colour, from four to six inches long, and something like an egg,  $\frac{1}{16}$  in. long. Strange to say, I have not been able to get a crop from the paddock since, for they take all. This last season, when I was summer fallowing it, I found a similar egg that passes through the sheep, along with a white fungous substance, and close to it a white worm with a red vein running the whole length of the back. I found another worm that had destroyed the grass resembling a leech. It adhered to the ground by one end, being a very dark colour. I also found the wireworm, all within the space of three or four inches: vegetation entirely destroyed.
55. I have observed large long worms in great numbers in kangaroo thirty years ago in the stomach, but never in sheep.
56. I have observed them in pigs.
57. Yes; in kangaroo, horses, and pigs, I have noticed long round worms.
58. I have never observed such worms as described, either in the liver or any other part of the sheep.
59. No.
60. No.
61. I have frequently seen worms in the stomach of aged and declined sheep.
62. No.
63. No.
64. No.
65. No.
66. I have no recollection of ever observing such.
67. Yes; in both cattle and sheep.
68. No.
69. No.
70. Yes; often in the stomach and small intestines, never in the liver; and have found the tapeworm thirteen feet long in the intestines of sheep. I hardly ever opened a wallaby without finding it full of small round worms resembling the *ascarides* in the human body.
71. I have not.
72. No.
73. No.
74. No.
75. No.
76. Cannot answer the question.
77. Not in sheep, but in swine.
78. I have in cattle and horses, but never in sheep.
79. I have not.
80. Not in sheep; but frequently horses pass worms of this description. The stomach of kangaroo is frequently—nearly always—full of longish worms.
81. I have not observed any long round worm in the substance of the liver, or in the stomach and intestines of sheep, or other animals.
82. In kangaroo, small worms very numerous.
83. Not in sheep, but cattle and kangaroo.
84. I have found them in the stomach of kangaroo, and I have known horses to pass them with the dung. I have never found them in sheep.
- 85.
86. In the maw and intestines of pigs only.
87. No.
88. Yes; in the intestines of kangaroo and horses.
89. I have in other animals, but not in sheep.
90. I have never observed the worm.
91. I have not.
92. I have not.
93. No.
94. Never.
- 95.
96. I have seen worms in the intestines of sheep and horses. I mean the long round worm.
97. I have not.
98. No.
99. No.
100. No.

101. No.
102. I have observed worms frequently in the stomach of kangaroo.
103. No.
104. I have not.
105. Not experienced to say.
106. Yes, frequently.
107. No.
108. Yes, in the intestines.
109. No.
110. The long round worm is to be found in the stomach of kangaroo.
- 111.
112. No, I have not examined.
113. None.
114. I have seen worms, similar to small leeches with broad flat mouths, attached to the stomach of cattle in great quantities.
115. I have seen what is called tapeworm in the grouse on the Scottish mountains, killing them by thousands, but never in sheep or cattle.
116. No.
117. I have never seen the *lumbricus* in the liver of a sheep or any other animal.
118. No.
119. I have observed white worms about two inches long in the stomach of sheep and kangaroo.
120. No.
121. No.
122. Very commonly; especially in native animals,—kangaroo, wallaby,—and also in pigs which they will kill.
123. I have not observed any such worm.
124. No.
125. No.
126. No.
127. I have not.
128. No.
129. No.
130. I never observed them in sheep, but they abound in kangaroo.
131. Never in the liver. I have known them voided frequently by horses.
132. Not the long round worm (*lumbricus*); but I have seen tapeworm in rabbits, and I think also in sheep.
- 133.
134. Not in sheep; sometimes in kangaroo or wallaby.
- 135.
136. In kangaroo; never in sheep.
137. In cattle, but not in sheep.
138. I have noticed a long round worm, of about six inches in length, in the stomach of horses and kangaroo.
139. No.
140. No.
141. I have not.
142. I have not seen the worm in sheep, but often in the stomach of kangaroo.
143. I have observed a long round worm (*lumbricus*) in the stomach and intestines of sheep and other animals.
144. I have never found worms in sheep; only in horses.
145. I have never observed any worm in the liver of a sheep; and I think they do not frequently occur in the stomach and intestines of a sheep.
146. I never observed long round worms in sheep, but I have seen them in the wallaby.
147. Not in sheep.
148. Not in the liver. I have seen them in the intestines of animals that were perfectly free from Fluke.
149. Not in sheep; but a long round worm is almost always, if not invariably, present in the stomach of kangaroo and wallaby.
150. I have not.
151. I have not observed the worm described in any animal.
152. Never in the liver or stomach, but frequently in the intestines of pigs.

Question 11. *Have you ever known a Run, healthy up to a certain recognised time, become so tainted as to cause disease in healthy sheep?*

- 1.
2. I have not.
3. Up to the year 1860, my run was perfectly free from Fluke.
4. I have never known Fluke in sheep or any other animals until about five years ago, either on wet or dry land.
5. No.
6. No.
7. No.
8. We have kept sheep for many years without knowing what the Fluke was. I cannot state the exact time it made its appearance. It is within the last five or six years we have suffered by the disease.
9. Yes; several.
10. I have known sheep on runs for years and never show signs of Fluke: of late years sheep have become flukey on them.
11. I have known runs to be quite diseased for (say) two or three years, and afterwards to become nearly sound. I have also known runs perfectly sound to become tainted. The cause I attribute to the change of seasons.
12. Yes.
13. I never had any flukey sheep except on one occasion; but in that instance the circumstances were so peculiar, that I think them worth stating. In January, 1861, I bought 200 old ewes from the Riccarton estate, which I afterwards discovered to be flukey. I placed them on low land near the river, with some sound sheep of my own, to fatten. The singular part of the affair is, that my own sheep soon became as flukey as the strangers they were placed with, and remained so during the winter. But in the next summer, sold and killed most of the Riccarton sheep and some of my own, and the Fluke gradually became fewer and fewer as I added sound sheep and killed flukey ones, until at the end of two years it had quite disappeared. From this remarkable case it may be deduced that if flukey sheep be mixed with sound ones, the latter will become infected; but if the run be not favorable to the development of the Fluke the infection will gradually disappear.

14. Only by report. Many years back I depastured sheep on land near Mount Hobhouse. They afterwards were proved to be perfectly sound. Last year I was informed that the sheep from that run proved flukey. My informant was not the owner of the sheep.

15. My experience is, that the runs on which sheep have died here have not been thoroughly sound for some two or more years; that the disease has been very gradually working its way; and that last year must have been a season highly favorable to the spread of the disease: hence the heavy losses. I cannot say how lately the runs here were sound, but we lost no sheep before June of last year.

16. I have been a sheepholder in this Colony for 35 years. All runs in the low country were healthy for many years, and it is only within three or four years that it has reached the District of Oatlands to cause the death of sheep.

17. My runs at the Lakes were healthy until about 1859,—at least but little damage was done by the Fluke. Within the last three or four years we have lost a great many sheep upon those runs.

18. No. I don't know how the sheep take the disease. I find it worse in cultivated ground.

19. No.

20. I know no such run.

21.

22. I have not; but I think it likely after a dry summer, with a wet warm autumn, that sheep may be affected, particularly if the land is of a rich stiff nature.

23. No.

24. Yes, Malahide runs; more especially where the wether flocks ran up to 1863, and in that year they became tainted, and the sheep became tainted.

25. No. On the contrary, I have frequently disposed of very flukey old ewes, to be fattened on sound paddocks and among sound sheep; yet I have never found that sheep or grounds have suffered from the association.

26.

27. Not since the Fluke became prevalent.

28. I occupied a run that was free from Fluke up to the year 1866, and then fluked sheep that were sound.

29. Yes.

30. The land about the Marlboro' District, New Country, was not considered fluked for years after it was first occupied.

31. Yes; Bronté was up to the year 1852, for I was at Bronté in 1837, and remained there until 1852.

32. No; we have not.

33. No.

34. Yes; I have. This run was perfectly sound until 1853. I know land which for years fluked all sheep put upon it. But strange to say, within the last two years some have not taken the Fluke, and are quite sound when killed, although nothing has been done in the way of draining.

35. Answered in Question No. 5.

36. I have not.

37. I have not.

38. Scarcely known in this part until the last ten years: now sheep die in great numbers.

39. I have not.

40. Yes.

41. No; but I believe very wet seasons often make the runs unhealthy.

42. I have known a run fully stocked for years, perfectly healthy up to the year 1859, become so tainted in certain places as to cause disease and death in sheep previously healthy, and from no apparent cause, unless it be atmospheric. The season was wet and warm, and the pasture was closer fed at that period than it had previously been.

43. Yes, until the sheep were sent to a wet summer run.

44. I have often observed this. The Tasmanian sheep-runs till very recently were entirely free from Fluke.

45. Cannot say positively.

46. Have had no experience.

47. No.

48. Yes; my own, to within the last three years.

49. My own runs were healthy up to 1865; but since that time the disease has annually increased.

50. My own runs were healthy up to 1862, and from that time became more or less subject to the prevalent disease; but within the last year or two I believe the diseased lands to be much decreased from drainage.

51. The run (answer to Question No. 5) on which these sheep were fattening I had never seen or dreamed of there being Fluke before. I cannot say the land was sound up to January, 1868; but I had not the slightest idea that it was unsound till the sheep commenced to die in April.

52.

53.

54.

55.

56. I have known runs to be perfectly free from Fluke, and I am informed they are very flukey now.

57. No.

58. I know many runs that have been sound up to a certain time, and then, without change of sheep or other known cause, produce Fluke.

59. I have not.

60. I have known Mr. Wilson's run at the Blue Hills.

61. I have not.

62.

63. No.

64.

65. No doubt the whole Colony was healthy for sheep for many years after sheep were introduced.

66. I have not.

67. Yes.

68. I have lived here since 1843, and I did not know what Fluke was, never having seen it till 1866. It first became fatal here in 1868, in March, and in three months I lost 1500 sheep. My sheep have always run on the same ground, never having been off the place.

69. All the runs in this district were free from Fluke, until the disease first attacked sheep in the Marlborough district, and now every flock-master who has depastured sheep in the Lake Country has lost many from Fluke.

70. One run occupied by me was healthy up to 1867, and then the sheep became affected, but not seriously. My experience has been gained chiefly by observation of sheep on land not occupied by me.

71. I have not.

72. I rented land at Brady's Marsh near Marlboro', nearly twenty years ago. The sheep did not get the Fluke. I hear they all get the Fluke there now.

73. Not of my own personal knowledge ; have repeatedly by report.
74. No.
75. No.
76. I have known runs healthy for 30 years and then become flukey.
77. No.
78. I have never known a healthy run become tainted ; but I do know runs where disease has been so slight that it has escaped notice for some years, and heavy losses in the end. If the question means, whether sheep diseased with Rot will so taint a healthy run as to cause disease in healthy sheep put on it, my experience is opposed to any such doctrine.
79. I believe all or nearly all the runs in the Island were healthy up to the non-burning from fear of losing the brush fences.
80. I have not actually known it, but this must be the case from the great spread in the disease.
81. I have known runs where sheep used to thrive and do well : the same runs are now diseased with Fluke.
82. Yes ; seven years past, I had 1000 acres of my own, not such a thing as Fluke known, now nothing else.
83. I have one upon the North-east Coast occupied by H. Hills : suddenly the Fluke broke out, and nearly all his sheep died ; but lately he has been buying to stock again. He says his sheep have not suffered for about two years.
84. Yes ; I have.
85. See latter part of answer to Question No. 7.
86. Yes ; in the neighbourhood of water.
- 87.
88. Yes.
89. I know several runs on which Fluke was never found till the years 1866 and 1867. I attribute the cause in these cases to an extraordinary rainfall in the summer preventing the land from drying thoroughly, and flukey sheep being kept on it at the same time.
90. I cannot give an opinion the result of my own observation.
91. I have not.
92. I have known a run, perfectly healthy up to 1865, become so tainted as to cause disease in healthy sheep, and the whole of the flocks bred on the run.
93. Yes.
94. The sheep on this run were quite free from Fluke until about five years ago, when it appeared to attack a great number of ewes that were in lamb. No other sheep at that time on the run were affected.
- 95.
96. Never.
97. Yes.
98. No.
99. Yes.
100. Become tainted by being overstocked, on account of being kept on one pasture without a change.
101. No.
102. I have heard of runs considered sound prove to be flukey afterwards.
103. Yes ; the run spoken of in answer No. 5.
104. I have not.
105. The run at Wood's Lake was considered healthy whilst the sheep were kept there,—in summer only, but not during winter.
106. No.
107. I never saw Fluke till 1857 ; since then the sheep have all been more or less flukey, I believe, in this part of the country.
108. Yes ; many.
109. Yes ; from having flukey sheep placed on it.
110. No.
- 111.
112. Yes ; the run to which I sent the 800 ewes and 550 lambs.
113. I cannot say that I have.
114. Yes ; a very wet season may cause the Fluke to appear.
115. See No. 5.
116. The Marlborough Country was not diseased for fully 25 years previous to 1864, so far as I can speak of my own land and sheep ; but the whole country was then annually burnt by the shepherds in the summer, to afford food for the following year, and less sheep were sent there, so that they had no need to get into the boggy and marshy part of the land : but subsequently the runs were fenced, and the grass was not long enough to burn, which, had it been, could not be done on account of the fencing. Burning is an antidote to Fluke.
117. Most of the runs in this district were healthy until within a comparatively recent period. A considerable tract of fine grazing land, which a few years back carried sixty thousand sheep, is now totally abandoned.
118. No.
119. I have never had a run subject to Fluke, so that I am not in a position to give you an answer on this subject.
120. Until the last year the Fonthill Estate at the Eastern Marshes was quite sound, and this year it has been very bad.
121. Yes, Tomson's Marsh. This run was perfectly sound ten years ago.
122. Cannot say. But I believe that atmospheric influence has much to say in Fluke, as in rust, blight, &c., in the vegetable kingdom.
123. I have not had sufficient experience to observe this.
124. No.
125. No.
126. No.
127. I have not.
128. No ; but my experience in this matter is not great.
129. Yes. I occupied a run at the Lakes that was perfectly free from Fluke from 1836 to 1857. I am informed that this run is now worthless, every one of the sheep on it last year having died of Fluke.
130. Yes ; up to within the last two years, Jenks' Look-out, owned by Benjamin Jones ; the Forest Marshes, owned by John Jones, and which are now certain death. Also the Black Marsh, then occupied by myself.
131. I think I can safely say that there was scarcely a single run tainted twenty-five years ago. Certainly, very many which were not so then, are now very badly tainted.
132. I presume the mention of disease in healthy sheep in this question refers only to the Fluke. If so, I have never known an instance of the kind.
- 133.
134. Yes ; my runs were quite healthy till five years ago.
- 135.

136. No.  
 137. No.  
 138. Yes; after flukey cattle had been placed on the run. It is a wet run, with one or two marshes in it, but perfectly healthy before the cattle were placed on it.  
 139. Yes; many in the Oatlands and Campbell Town Districts.  
 140. The sheep in the Marlboro' Country were sound up to 1851, and since that time any sheep sent there have become unsound.  
 141. No.  
 142. Not personally; but such I imagine to be the case.  
 143. I have known a run healthy up to April last season, when all the sheep running there got infected by the disease, and the sheep were perfectly sound when put on the run after shearing. A number of same description of sheep being kept on Macquarie River were, and are, perfectly sound.  
 144. I never knew a healthy run to give Fluke at any time.  
 145. I have known runs which have carried thousands of sheep without any loss by Fluke become so affected that they are now left entirely unstocked.  
 146.  
 147. Yes.  
 148. I have not. My opinion is, that on all flukey lands you have only to give a healthy sheep a moderate time on it, and it will become diseased.  
 149. Yes, several.  
 150. I think this characteristic of many runs previous to the years 1861 and 1862.  
 151. No.  
 152. The greater portion of the New Country and Lake runs were, up to about 1860, healthy. Healthy sheep put on now, nearly every one of them will become diseased more or less in a season.

*Question 12. Have you known of any case in which a run infected by Fluke has been left vacant for one, two, or more years, and has afterwards given Fluke to healthy sheep placed upon it?*

- 1.
2. I have not.
3. No.
4. No.
5. No.
6. No.
7. I know, by report, a run formerly flukey, left vacant for two years and drained, and sheep placed in it six months ago remained sound up to the present time.
8. I do not.
- 9.
10. I know no case in which it has been tried; but if any Member of Commission is disposed to try the experiment, there are lots of crown lands open to them.
11. I have known runs infected with Fluke to be left vacant for more than two years, and then to fluke healthy sheep. I have a paddock which has been thoroughly burnt all over, but as soon as the water came on it, it became flukey. Charles Clarke, Esq., of Ellenthorpe, has land adjoining me, and of precisely the same kind, which was flukey until it was thoroughly drained, but it is now quite sound; mine that is only half-drained is still flukey. You may ask why I do not drain, I answer that my neighbour below me will not carry on the drain, so I cannot get the water away.
12. No; because I do not know of any run being so left vacant and then stocked.
13. My remedy for a tainted run would be thorough drainage, a rest for one year, to let the grass grow long, and then a thorough burning out in the middle of summer. I believe that would be a complete cure.
14. I have not observed any such run; I consider, as a matter of course, a flukey run will give Fluke to healthy sheep.
15. Never had an opportunity of testing the matter; but I may here state that I don't think the losses would be so heavy on any runs where the grass was plentiful.
16. I have known a run at the Lakes left unstocked for three years; 1700 young healthy sheep put on it in February, and in six months or less all died.
17. I think that if the runs were kept without stock for two or three years they would become healthy. The reason, perhaps, that there would be plenty of feed upon the upper and healthy portion of the run, and that the sheep would not be forced into the marshes by scarcity of food.
18. No.
19. I have often purchased flukey sheep and mixed them with sheep I bred, and never found any of the latter infected.
20. No.
- 21.
22. I do not believe the Fluke to be infectious, but arises solely from very succulent grass which causes the blood to be in an unhealthy state, and thus the disease is conveyed to the liver, and by no other means.
23. No.
24. No.
25. No such instance has come under my experience; but I have heard of a case somewhat in point,—that is, of a marsh where cattle and sheep were accustomed to run together, it was found that the cattle became flukey, but after the sheep were removed, and kept entirely away, the cattle ceased to become infected. I think it probable that some other unnoticed causes may have been in operation to produce the difference.
- 26.
27. Never knew the experiment tried.
28. I have known a flukey run to be left vacant one year, and then fluke sound sheep.
29. I don't know of such a case.
30. The land I now occupy at the Clarence.
31. Yes; any marshy land in the New Country will.
32. No; never.
33. No.
34. I never saw it tried.
35. I do not.
36. I have not.
37. I have not.
38. I have not had any experience in such a case.
39. I have not.
40. No.

41. No.
42. I know of no case where a run has been left vacant for any length of time, and afterwards given Fluke to healthy sheep; but believe it quite possible, unless drained and burnt.
43. No.
44. No.
45. I do not know of any run left vacant for one or more years.
46. No.
47. No.
48. Never.
49. No.
50. No such instance has fallen under my observation.
51. Mr. Robert Jones has a run at the Soldier's Marshes which has been unstocked for three years, and is believed to be as bad as ever.
52. I have not known a run left vacant for one year, but have often recommended the experiment.
- 53.
- 54.
55. I have known a case; but believe in a continuation of dry seasons the Fluke will disappear, particularly if the run is drained and well burnt.
56. I have not.
57. No.
58. I have known runs that have caused Fluke in sheep to remain unstocked for several years, and when again stocked has produced Fluke; and in one instance (that of Mr. T. Jones) more fatal than hitherto.
59. No; I have not. But I believe a run being left one or more years idle, and burnt, would clear it of Fluke.
60. Yes; a run of my own, at the Lakes.
61. I have not.
- 62.
63. No.
64. No.
65. No.
66. No.
67. Yes; the bogs.
68. I believe a run infested with Fluke will still fluke healthy sheep after having been left vacant for two or more years; but dry summers would tend to check it.
69. I have not.
70. Yes, in several instances.
71. I have not.
72. No.
73. No.
74. No.
75. I have not, for I reside in a dry district.
76. I cannot answer the question.
77. No.
78. I never knew the experiment tried. I do not believe that a rest of itself for any term of years will cure an unhealthy run.
79. No such case has come under my observation.
80. I cannot say that such has come under my own observation; but have been informed that sheep died in a run, after having been left vacant for a time. Whether the sheep were healthy when placed upon the land would be a difficult question to answer with certainty. In any experiments of that kind suspected individuals should be killed and examined.
81. I have not known of any run left vacant which has afterwards given Fluke to healthy sheep placed upon it. I believe it would do so.
82. No; the wild animals would keep them going, without it was drained, and thoroughly done.
83. A coast run vacant for some years, but still fluked to that extent that sheep cannot live there.
84. I have no experience of such a case.
- 85.
86. No.
- 87.
- 88.
89. I am not aware of a case of the kind.
90. I have never known an instance of this kind.
91. I have not.
92. I have not.
93. I have found that runs which had killed great numbers of sheep, upon being left unstocked a year, have since carried sheep through the year without loss. They will probably become as bad as before if stocked with diseased sheep.
94. No.
- 95.
96. Never.
97. I have not.
98. No.
99. No.
100. No.
101. No.
102. I have not seen it tried.
103. I know a run where nearly all the sheep upon it died from Fluke, left vacant for two or three years, when it was again stocked with sheep, and the same result followed.
104. I have not.
105. No.
106. Yes, from hearsay, but not from my own knowledge.
107. No.
108. I have never seen it tried.
109. I have not known an instance of the kind.
110. No.
- 111.
112. No; I have not tried the experiment.

113. I cannot say.  
 114. No; but burning and draining all old grass would be the best preventive against the Fluke.  
 115. I have never tried the experiment.  
 116. Yes. I still retain some portion of the Marlborough Contry,—5000 acres,—which had not been depastured by sheep for two years. On sending sheep there for the winter they have become diseased. I may here say that I had purchased several thousands of acres of this country at £1 and 10s. per acre; and forfeited the sum of £1600 rather than complete the purchase, on losing so many sheep.  
 117. I am of opinion that over-stocking is one great cause of the spread of Fluke. It is quite possible that if a run were left unoccupied for a year or two it would greatly diminish the danger of stock becoming diseased upon it. But I presume that there is not any other effectual preventive but draining.  
 118. Yes, after remaining three years; and the sheep were very bad after four months' pasturage.  
 119. I have never had any experience in a case of this kind.  
 120. No.  
 121. No.  
 122. I have not; but am inclined to think fire will purify land, if dry and sound naturally.  
 123. I have not known any such instances.  
 124. No.  
 125. Never known it tried.  
 126. No.  
 127. I have not.  
 128. I have never known a case of the kind.  
 129.  
 130. Yes; at the Soldier's Marshes, owned and occupied by Robert Jones, of the Lower Marshes, which was vacant about two years on account of the Fluke. I knew the sheep to be sound when put on, and the greater part of them (twelve hundred) were dead within four months.  
 131. No; I have had no opportunity of observing such a case.  
 132. No; but I have no doubt if healthy sheep were placed upon such land, they would become tainted with the disease if the land remained unimproved by drainage.  
 133. On the contrary, I have seen the number of deaths in a diseased flock diminished by being placed upon land which had been left vacant for a time, until the grass became harder and went to seed. I believe this dry season has done a great deal towards the extermination of Fluke.  
 134. No experience.  
 135.  
 136. I believe that a run infested with Fluke would never be sound again till the timber and grass have been burnt several times, and the land thoroughly drained.  
 137. No.  
 138. No.  
 139. No.  
 140. My run at Marlborough had no sheep on it for three years, and the person who bought it and the cattle from me put 900 sheep on it, and lost nearly all in six months: these sheep were sound when sent there.  
 141. No.  
 142. I have not known an instance, but take it for granted that it would be so.  
 143. I have not.  
 144.  
 145. I have not known such a case. Flukey runs are left unstocked for a while, and then if there happens to be any sheep seriously affected on the station which cannot be got rid of, they are generally placed on the land to take their chance: so that I know of no fair trial having been given in this way.  
 146.  
 147. Yes; I think if all animals could be kept off for two years the land would be sound.  
 148. I do not. I have known lands in England freed entirely from Fluke by means of drainage and cultivation.  
 149. I have not seen the experiment tried.  
 150. I do not know an instance of the kind.  
 151. I have known a run left vacant for two years, and afterwards give the Fluke to healthy sheep.  
 152. Mr. Robert Jones, of Jericho, could—if he has not already—answer this question.

Question 13. *Have you tried any remedies for the disease? If so, state them, and with what success.*

1. I have not tried any remedies.
2. I have not.
3. I have not.
4. I have had a man who boiled herbs, and mixed turpentine, saltpetre, and horehound. I believe the rams thrived afterwards which were rotten at the time. If it did no good, it did no harm.
5. I would put salt as a preventative.
6. I have known flukey sheep (very bad) put into a salt marsh over which the tide comes, become very strong.
7. I have tried none.
8. I have not tried any remedies.
- 9.
10. My remedy is getting rid of the sheep at any sacrifice; but flukey sheep will recover if put upon any good sound pasture, where they can get plenty of nutritious food.
11. I believe the best remedy to be thoroughly draining the land.
12. I have not tried any remedies.
- 13.
14. I have tried remedies in England. They were quack medicines. I do not know of what they were composed. They were useless.
15. I have not tried any yet except drainage, and have not had enough experience to warrant me in giving an opinion.
16. I have not tried any remedy.
17. I have not tried any remedies, but understand that sulphate of iron and salt is a cure.
18. No.
19. No.
20. No.
- 21.
22. I have not.
23. No.
24. Salt, as previously stated, and attribute the present healthy condition of the sheep chiefly to this cause. At all events, since using salt my losses by death of sheep has been insignificant, and only amongst old ewes;

another aiding cause being, perhaps, having plenty of grass, the runs having been much understocked, consequent of losses by Fluke in 1863 and early in 1864, when about 5000 died.

25. I have not tried any remedy further than endeavouring to keep the sheep as much as possible off the suspected land.

26.

27. Never tried anything except change of run.

28. I have burnt a flukey run out, and found that it checked it a great deal.

29. The only cure I know of is to drain the land. This I know from experience will completely remove the disease.

30. No.

31. I have brought them on dry land, and it has been the cause of saving them for some months.

32. No; we have not.

33. No.

34. I have never tried anything.

35. I have not.

36. I have not.

37. I have not.

38. I have tried draining, but cannot say with what success.

39. I have not.

40. I have not.

41. I have not tried any, but believe proper drainage the only cure.

42. I believe rock-salt and sulphate of iron to be the best remedy, removing the sheep to a dry warm run, and burning out all rough coarse vegetation.

43. I tried a remedy in a work called the Cattle Doctor, of 1817, the receipt is by a Doctor Harrison,—nitre in powder, 6 oz.; ginger 4 oz.; colcothar of vitriol, 2 oz.; common salt, 3½ lbs.; boiling water, 3 gallons; and when milk-warm, add to every quart of the mixture 3 ozs. of spirits of turpentine; but I have found no benefit from the above. I have found a wineglass full of tobacco liquor, about the strength to cure scab, restore sheep reduced by the disease so that they were fit for use. They were kept in a dry field, and the dose given once a fortnight.

44. I am at present draining my own land, but cannot say what the precise effect will be, but believe that draining will lessen the disease very much. I believe that if a run were drained, left vacant for a year or two, and then burned, that the Fluke would be almost eradicated.

45. Yes; a full teaspoonfull of coarse salt passed into the thorax of each ram, say once a month; the said ram when not with ewes kept in a flukey marsh the last four years, cut and killed recently, very slightly diseased, and liver free from discoloration or knots.

46. Rock-salt with tolerable success. I purchased 500 wethers from "Jones," who had to give up his run on account of the Fluke, when he sold 2000 in Richmond. I was more fortunate with mine than any other purchaser by using the rock-salt.

47. No.

48. Yes; fencing off the marsh land, and burning.

49. I have tried sulphate of iron and salt, which I believe slightly checked the disease.

50. I have tried sulphate of iron and salt upon a small lot, and the application effected, as I believe, a partial abatement of the disease, that is, sufficiently to enable them to improve in condition.

51. I had some lambs last year pulled out of the flock, which I believed to be flukey. The shepherd gave two of them a teaspoonful of salt each; many of the others died, but we remarked that these two, which were ruddled, lived and seemed to get so much better that I intend to try on others the same remedy. I also got rock-salt and put about the run, and I have every reason to believe the sheep were benefited by taking it.

52. I am happy to say I never had any occasion.

53. The same authority I have quoted under Question No. 1 thinks salt is a powerful cleanser of the blood; and though I cannot be brought to think that any medicine will be competent to cure this disease when it has established a firm hold on the constitution, yet so far may be acknowledged, that sheep which have been accustomed to feed on a moist pasture may be enabled to throw off the latent poison (if a fresh infection only) by removal to a dry healthy spot. Speaking of salt as a remedy for disease in sheep, I am reminded that I observed while in service in Spain, that it was very generally applied both to sheep and goats, with very great advantage. We had goats which accompanied the baggage animals on the march, and also while in winter quarters; and I had frequent opportunities of seeing the Muleteers give salt to the goats whenever there was an appearance of disease or falling off in their milk. I particularly remember the case of my own goat in the winter of 1812: she was, I thought, nearly dying. I requested a Spanish Capataz to see her, and advise me what to do. He gave her salt, which she ate out of his hand, and by a daily application of it for a week she recovered.

54. When I purchased the sheep mentioned in Question No. 4, I was told they would be all dead within a month, as he had only driven them about eight miles, and left twenty on the road: I kept them about three months, and lost six. I account for this through having plenty of young wattle for them to eat. I am informed most of this lot died afterwards by being put on a cold wet run. About four years ago I purchased about 1000 young ewes. During this period they have been going with the sheep I breed. I am now killing some, and they are all more or less affected with the Fluke. My own are sound.

55. I have, by draining and burning the land; but cannot state with what success, as I only had the work done last year.

56. I have not.

57. I have not.

58. My experience suggests that there is no cure for Fluke but thorough draining, without which our wet pastures are valueless. I know a case in point, and may here take the liberty of quoting it. The Messrs. Wilson Brothers of the Five-mile Marsh, Eastern Marshes, had a portion of moist marsh land in 1867, upon which their flock of sheep were in the habit of grazing; the effect of which was they became flukey, and subsequently they all died. They afterwards cultivated the marsh land, and run underground drains. They have since purchased sound sheep which have been running upon the marsh in question, and, notwithstanding, have remained perfectly free from Fluke up to the present time.

59. Having no Fluke, I have not tried any.

60. No; it would be useless.

61. I never had occasion to try any remedy.

62.

63. Never having had the disease in my flock, I never had any remedies tried.

64. No.

65. I have not tried any remedies.

66. I have not.

67. I have tried rock salt, but not successfully.

68. I firmly believe draining the land thoroughly to be the best remedy for the disease. I do not know of any



other that could be applied. I know a run formerly flukey to be now comparatively sound, the effect of well draining the land.

69. I have not.

70. I have tried salt, sulphate of iron, mercury, extract of dandelion, infusion of leaves of the gum, tan from the wattle, common purgatives. I believe iron the most certain check; but if the sheep remain on the run on which access to the low marshy land is easy, and may eat the same unwholesome food again, all remedies are useless. The only thing that can be done is to remove them from the exciting cause to a dry and fresh pasture.

71. I tried salt and sulphate of iron mixed. I had the sheep caught, and a teaspoonful put down the throat of each sheep to create a taste, and then left troughs about filled with it, but without any success.

72. No.

73. No.

74. No.

75. I never had occasion.

76. I have not.

77. No.

78. I never tried to cure the disease, believing it to be incurable when fairly established.

79. Iron and salt. I picked out six flukey sheep, gave them a dose of iron and salt, put them in an enclosed place, killed one at the end of the first week, one every week, and found the Fluke just as healthy in the last as in those not dosed with iron and salt.

80. On the irrigated land before mentioned I have a small number of Leicesters. They are all flukey. One ewe a few days after lambing neglected her lamb, and apparently *proposed to die*. Not knowing what remedy to adopt I drenched her with brine from the harness cask,—she got a pint of brine: next morning she appeared lively. I repeated the dose, she recovered, reared her lamb, I afterwards sold her fat. This is a fact, I cannot say what it is worth.

81. I have not tried any. I believe rock salt to be beneficial; but I believe the best of all cures to be prevention by drainage, ringing the trees, and burning when the country is in a rough state.

82. Salt and iron, and salt by itself. No good.

83. I have not.

84. I have found from experience that flukey sheep in irrigated ground usually die within three months, but that the same sheep fairly supplied with rock salt thrive and fatten well, the disease apparently making no progress, and not destroying them. I have no knowledge of any other remedy.

85. I have tried sulphate of iron and salt administered as a strong brine, but did not find that it had any beneficial effect. The only real remedy is thorough drainage of the land: this I have tried with complete success. I do not think any land will be made so wet as to cause Fluke by the amount of rain falling on it, but it is chiefly the soakage from adjacent hills, keeping the land wet far into the summer, that does the mischief. The plan I have adopted has been; instead of making a ditch down the middle of a wet marsh, which would only wash into a large watercourse and destroy the land, to tap the creek (which you will find flowing in at the upper end of most marshes and swamping the ground) at the top of the marsh, taking it in a drain, at least eighteen inches deep, down one side and along the foot of the rising ground, so cutting off the soakage from the hills as well, and another drain same depth along the opposite side of the marsh, at the foot of the hills, taking the soakage from that side. This I have found to answer admirably, laying the land between the drains perfectly dry, even in winter. Any one with a common spirit level can lay out the drains so as to give a regular fall all the way. I have treated in this way land near Kearney's Bogs, that formerly gave sheep the Fluke, and can now use it in summer with safety: in fact, the last two seasons 2800 weaners have been put on the run and kept there for the summer, and have proved sound. In the book on sheep, their breeds, management, and diseases, published by the Useful Knowledge Society, is an intelligent and interesting portion on the Rot or Fluke, to which please refer.

86. No.

87.

88. No.

89. The only remedy I have tried was properly draining and thoroughly drying for one year a piece of irrigated land, which was entirely successful till diseased sheep were again put upon it.

90.

91. The only remedy I have ever tried was change of pasture to drier ground, which proved a partial success.

92. I have not tried any remedy.

93. I have tried sulphate of iron and soda and salt, in the proportion of 1lb. sulphate to 10lbs. of salt. The small lots to which I have given it are often running on irrigated land, and are, to all appearance, healthy. They eat the mixture readily from small troughs. In addition to these replies, I hope I shall not be considered presumptuous in making a few further remarks. Among other remedies it has been proposed to send parties to burn the infected lands, and also throw down the fences, and allow the sheep to roam where they please. The former of these proposals cannot be carried out to any extent, as it is well known that the real nurseries of Fluke,—I mean oozy lands along the bottom of hills,—never will burn, as they are nearly always wet, and the grass is always very short. The latter plan is open to very grave objections, as it would be the means of making all the lands alike, as great bodies of sheep would be able to congregate on the most flukey land, which they would be sure to do. I feel quite certain, from the experience of some years, that the division of the lands so as to leave infected portions unstocked for a year or over during the winter is of material benefit. This, with a proper system of drainage, and the free use of sulphate of iron and salt when practicable, and perhaps a strong sulphur dip after the shearing, is, I believe, all that can possibly be done.

94. I drained some marsh land with good effect.

95.

96. I have not.

97. I have not.

98. No.

99. No.

100. Sulphur and calomel.

101. No.

102. I have not; but believe if the marshes were drained, and the grass kept burnt, so as not to allow the grass to decay, that it would tend to keep a run sound.

103. Only draining the land. I have found that successful as far as it has been carried out.

104. I have never tried any.

105. Draining last year about six miles of surface drains, 18 x 9 inches, at 3½d. per rod, and some 24 x 9 inches, at 4d. per rod; but not sufficient time to judge of the result yet.

106. No. When the before-mentioned sheep died out, I was not troubled with Fluke.

107. No.

108. Only by placing rock salt in places where sheep could obtain access to it. I do not think it was any check to the disease. I think the only thorough remedy would be effectually draining all the wet lands where the sheep become diseased.

109. I have tried rock salt, and found it improved the condition of the sheep; but I cannot say whether it destroyed the Fluke in the animals.

110. I have tried rock salt, which is very good, but will not prevent nor cure the disease.

111.

112. I once administered salt and water to sheep, but it had no effect.

113. I have dressed sheep with coal tar for Fluke, but without success.

114. I have cured the Fluke or Rot in sheep when in its worst stage by administering twice every day for five or six days one tablespoon full of pure cold drawn linseed oil, mixed with a third part of common salt. The animal should be kept on dry food.

115. I have tried no chemical remedies.

116. I am draining the land I have purchased, which is the only remedy in my opinion; but that is necessarily confined to my private property, as the Government does not offer any inducement to drain the crown land.

117. I have not tried any of the remedies for this disease further than a change of pasture, which I have always found beneficial.

118. Only in change of pasture.

119. I have never had occasion to try any experiments in this Colony, but when a boy remember assisting my father to drench sheep that were flukey, but cannot remember all the ingredients that were used; but three of them were salt, water, and spirits of turpentine.

120. I have not tried any.

121. I have never tried a remedy for the disease, but I believe if sheep not very badly affected are removed to a sound run they will not be much the worse.

122. I have not. I am informed that half a pint of fresh milk and salt is a common remedy among the farmers of Ireland.

123. I have been too little acquainted with the disease to adopt any remedy.

124. No.

125. No.

126.

127. As my run is free from breeding Fluke, I have not had any call to do so.

128. No.

129. Salt and water has been recommended: tried it once only. The result was not satisfactory.

130. Yes; I have expended vast amounts in drainage on my run situated at Lake Echo, called the Three Mile Marsh, this being the first season; but we have no symptoms of Fluke as yet.

131. Fencing off the tainted portion of the pastures, draining: both effectual. I have known sheep cured, or apparently so—certainly rendered healthy—by being pastured on salt marshes in the south of France, where I was told that immense numbers had been swept away. The sheep when I saw them were healthy, and this was attributed to their being supplied constantly with a continuation of sea salt and iron.

132. The fields referred to in my answer to question No. 5 were thoroughly drained by my brother, which proved to be a perfect remedy against the Fluke in future. These fields were afterwards stocked with sheep in common with the rest of the farm. No danger was anticipated, and no Fluke ensued.

133. Have seen rock salt tried on the marshes for the prevention of the Fluke, but without any favourable result. I have also seen draining the wet marsh land, and fencing off the lagoons, tried; and although sufficient time has not yet elapsed to thoroughly test its efficacy, still there is even now a perceptible diminution in the number of deaths occurring amongst the diseased flocks running thereon; and I believe if sound sheep were placed upon land thoroughly drained, that they would be perfectly safe from any attack from Fluke.

134. I have drained part of my land, and to appearance it seems to have effected a cure, but could not state with certainty.

135. I have heard of rock salt as a remedy; think draining and burning the only effectual check.

136.

137.

138. I have this year drained as a preventive, but cannot yet state whether successful.

139. No.

140. If sheep are taken to a dry hilly run all that live for three or four months will recover, the Fluke will gradually die, and the places where they have been in the liver will become hard, and when cut with a knife there will be a gritty substance found, but a few Fluke will be found for a year or two. I do not think it possible to make any part of the Marlboro' country sound except by an outlay which would exceed the value of the land if sound, as it is only fit for sheep in the summer. The most boggy part of the country I know is the valley of the Gordon. There the kangaroo are sound; but if that country was stocked with sheep the Fluke and the animals on the land would perpetuate the disease.

141. No.

142. My remedy is to kill them off as fast as they get fat. I have not tried anything else.

143. I have tried no remedies in the Colony for the disease. In Great Britain I used to change them on to land lately limed; but I found the best plan was to fatten them, and so get rid of them.

144. The 500 lambs I purchased at Longford in 1863 I removed on to my run about sixty miles distant, and after having them there for about six weeks I found them all flukey. I considered they would die through the winter; but to my great surprise I only had four die out of the lot, and I kept most of them for four, five, and six years. What died were within six weeks after the removal.

145. I have tried no remedies for the disease. From the nature of the disease I have always looked upon it as useless.

146. I gave the sheep in Scotland dissolved sulphur with success, because I killed the sheep after and found the Fluke dead. I would recommend salt rock here.

147. No.

148. Yes; by removing diseased sheep from wet or marsh land to dry, high land. I give an instance:—Some time since I purchased some sheep that had been feeding at Kearney's Bogs: they proved to be badly diseased. I sent them on to Tasman's Peninsula on She-oak Hills, and in twelve months the Fluke had almost disappeared; but the effects of the disease still remained in the ducts of the liver.

149. I have tried no remedy but the sale yard, and did not find that very successful.

150. I have tried no remedies; but find that sheep feeding on land where the herb dandelion (do not know the botanical name) abounds are remarkably clear and healthy in the liver and in all respects.

151. I have tried fumigation with sulphur in a close room, but it had no effect. I believe draining the land, and keeping the rough grass either eaten down with cattle or burnt, and changing the sheep, to be the only beneficial remedy.

152. The late Mr. Allwright and myself tried sulphate of iron and rock salt; the proportions I now forget. The success,—so far as killing the Fluke,—was complete; but the sheep did no good afterwards,—in fact, the remedy was even more fatal than the disease: the liver became enlarged, and full of mattery growths.

Question 14. *Have you known a change from a wet run to a dry one, or any specific change of food, to check or diminish the disease?*

- 1.
2. I know a flock of sheep taken from a wet run and put upon a very dry one, when the sheep died rapidly. Of course, they had the disease before they were moved.
3. No.
4. I believe if sheep are very flukey on wet cold runs, and are changed to dry warm runs, they will improve, and are not so likely to die. If the Fluke does not die away, I believe it will get no worse.
5. I have seen a change benefit, but cannot call to memory of its being a thorough cure.
6. Flukey sheep (but what kind of runs they came off I do not know) put on a dry run well sheltered, I have noticed fewer died every succeeding year, and the ewes reared lambs for several years (four or five). The lambs when killed were healthy, and free from Fluke; but in nine out of ten cases the ewes would die from Fluke after all, generally towards the end of winter or the beginning of a wet spring.
7. No.
8. I have not.
9. Yes.
10. Yes; change from flukey runs to dry. Warm understocked runs tend to check the disease.
11. If you change sheep from a wet to a dry run when in the first stage of the disease, it will check it, and the sheep will improve.
12. I have purchased sheep affected with the Fluke and placed them at Lowes' Park, where the disease was checked (but not eradicated), and the sheep fattened; and I attribute this to the dry nature of the soil, and the saline properties it contains.
- 13.
14. I have not. The sheep appeared to remain in the same state or thereabouts as when removed to a dry run; but I have observed a greater proportion of deaths when rotten sheep were removed from grass land to turnips.
15. If a sheep had once shown symptoms of wasting from Rot, I am of opinion that no human aid could save it; but I would recommend all sheep being removed to dry runs in February, and not again to be placed on wet ones until July.
16. I find if sheep are removed on to a dry run the disease at once stops, and if sheep are not in the very last stage of the disease they will live, and even fatten. When I say the disease at once stops, I mean the Fluke does not increase nor diminish.
17. If the sheep are removed from the wet run to one that is perfectly dry they certainly improve. It will diminish, but will not cure, the disease.
18. No.
19. I purchased 300 ewes, being the last of a flock containing 2500 which had nearly all died with Fluke. Those sheep were placed on a dry run adjoining the Tamar, and did well, having reared a good per centage of lambs for two seasons following.
20. A change from a wet to a dry run will, in my opinion, check the disease.
- 21.
22. I have known the disease checked by removal to a dry, sound, open run.
23. I have frequently heard that a change of run, as stated, diminishes the disease, I am not myself aware that such is the case; but I believe that it will arrest its progress, if it be not of too long standing.
24. When my lambs were dying in such numbers in 1863, I turned them out on the almost barren ranges,—scarcely any vegetation but the native hop. In a short time the violence of the disease seemed to abate; but whether from the change of pasture it is impossible to say, but I consider that it was so.
25. I do not find that any benefit results from a change to dry runs—I mean nothing that can be considered as curative. When the Fluke has once established itself in the liver, the sheep appear doomed to a premature and miserable old age: such at least is my experience; and I do not think there is anything to be hoped for in a mere change of run.
- 26.
27. I have known a change from a wet run to a dry one check, but not diminish or cure the disease.
28. I have turned flukey sheep, not very bad, on a dry run, and found the Fluke leave them altogether.
29. I have known sheep only slightly fluked removed to a dry pasture thrive, and live to a great age,—the Fluke dying, and the liver becoming a hard white mass, and the tubes being full of yellow fluid.
30. I know for certain, if sheep are not too far gone with Fluke, they may be safely kept on dry sound land.
31. I have had breeding ewes seven years with the matter of five or ten Fluke in them, by placing them on dry land.
32. We have known instances where flukey sheep have been shifted from a wet run to a dry one, but, contrary to our expectations, they died in a very short time; but they had the disease very badly. And those which were kept on the wet run lived.
33. No experience.
34. I have not.
35. I have known sheep removed from a flukey run to a dry sound run with decided benefit.
36. I have not.
37. I have not.
38. I have not had any experience in this question.
39. I bought 74 flukey ewes heavy in lamb down here about four years since, and I have killed them all within the last two years, and there has been no Fluke in any of them. They have been cured of Fluke on this run.
40. I have known sorrel to check it.
41. I have no doubt a change from a wet run to a dry one would check it for a time, but never cure.
42. A change from a wet to a dry warm run will certainly check the disease; but I have never known a change of run or food effect a cure.
43. I should recommend a dry run with plenty of food.
44. Sheep, unless very far gone, on being removed from a wet run to a dry one will keep in life for a much longer period, but will not get altogether free from the disease.
45. No personal knowledge.
46. A change from a wet run to a dry one will check the disease, but not cure it.
47. I believe a dry run to be a great benefit to flukey sheep.
48. No.
49. If sheep are not too far gone with Fluke, changing them to a dry run will check the disease.
50. My opinion is that the removal of sheep from a wet run to a dry run would be the best means of checking the disease, but I have no experiments to cite in support of my opinion.
51. The sheep mentioned in Question No. 1, I put on to a dry hilly run, and kept them two or three years, and I scarcely lost a sheep, for all they were flukey when I got them. No doubt a change from wet to dry runs will do good, provided the sheep are not too far gone with the disease.

- 52.
- 53.
54. I put some flukey sheep into my stock-yard. Under their jaw there was a deal of water and swelling; in two days that had entirely disappeared; nothing but hay and oats to eat out of the stack.
55. I have known a flock of diseased sheep moved from a wet run to a dry one check the disease. In fact I have seen some of the sheep killed, and examined the livers, and found after six months depasturing on the dry ground most of the Fluke dead, and in a dying state. I firmly believe if the disease has not gone too far when the sheep are removed, they will live the usual time and fatten.
56. I have bought flukey sheep and have had them for two and three years, and found them get no worse.
57. I have known weaners affected with Fluke to be taken on to dry hilly runs, and live and thrive well: in fact it would be almost impossible for any one to tell that they were diseased, without killing one.
58. I have known a change from wet to dry pastures to check the disease, and when taken in time sheep may so far recover as to become to all appearance healthy; nevertheless, the Fluke always remains in the liver.
59. I once bought a flock of flukey sheep, put them on my clean run, but did not succeed in curing them, and had to get rid of them.
60. I removed my flock to high dry lands and they died the faster.
61. I believe changing the sheep to warm well-pastured runs will improve them; they will become good mutton; still the Fluke remains.
- 62.
63. The only case I know was a case where Mr. Thos. Meadows, of Kelso, bought some sheep with Fluke and brought them on his run where the disease seemed checked, but not eradicated, which Mr. Meadows attributed to brackish water and the salt herbs eaten by his flock on the sea coast.
- 64.
65. I believe a change to a dry run will check the disease, but not cure it.
66. Not from experience, but have heard from reliable persons that a change from wet to dry pasture has checked for a time but not cured the disease.
67. Yes, but they generally die in great numbers for the first eight or ten days, afterwards they improve for a time but never get sound.
68. I have known a change from a wet to a dry run to diminish the disease, if not too far advanced: when that is the case, nothing will save them.
69. I have not.
70. Yes, I have known sheep taken from a wet run and put on a dry one to recover in a measure, and have seen them opened when first removed, with the liver largely diseased; within three months some of the same sheep were opened, and the liver presented quite a different appearance. It had been changed in shape from the extent of the disease, and had become very small; tubercles were present, but the disease was evidently subdued. The full-grown Fluke were present in small numbers, but the substance of the liver did not contain them as in the earlier and more fatal stages: they seemed confined to the biliary ducts.
71. I have not had any experience.
72. I kept three or four old sheep to try if they would live, knowing them to be bad with Flukes,—so bad that they were purged; the purging continued nearly twelve months upon one. I killed it two years after, apparently quite well; but upon examining the liver found three cavities containing about twelve Flukes, with a hard skin around them, seemingly at a standstill.
73. Have removed sheep from enclosed paddocks producing young feed to bush land with a beneficial effect in winter or early spring.
74. About three years since I purchased a lot of flukey sheep from Mr. Jillett's sale at the Eastern Marshes. These sheep were two-toothed. I kept them and fattened them. They did not appear to get worse, although I had them about eighteen months on my land. The run they were kept on adjoined the sea.
75. I have known flukey sheep if put on a dry hilly run live for some few years, if they were not too far gone with disease when put on.
76. I think a change from a wet run to a dry one would help to check the disease.
77. Some few years ago I bought some diseased sheep at the Eastern Marshes, and they were dying very fast; and I sold them again as soon as I could. But one of them was too weak to take away, and was left on the run; and now he appears to be perfectly sound and doing well.
78. No. I think in its first stage such a change might check it for a time.
79. I have not; nor do I believe any change of run or food would check Fluke once in a sheep's liver.
80. I have not tried.
81. I have known sheep diseased with Fluke changed from a wet run to a dry one; it has not had any effect to check or diminish the disease.
82. If moved in time, will save the sheep: not without. I have saved flocks more than once.
83. I have, as I stated before, bought sheep and put them on my run, and kept them for a few years. They never got worse, nor did it appear to make the slightest difference. I would not be afraid to put sheep on my runs in the first stage.
84. I have known a change from a wet to a dry run both check and diminish the disease; the sheep then living to old age.
85. I have known sheep, when not very badly diseased, to recover by being put upon a dry run. When this is the case the Fluke disappears entirely from the liver, which is left knotty, and portions of it turned into gristle.
86. We have had many sheep but slightly affected which, when put on sound land, have held their own. We attribute it to their having access to the salt water.
- 87.
88. I believe sheep infected with Fluke require much more nourishment than those in a healthy state. Consequently moving them on to better pasture invariably improves their condition sufficiently to render them fit for the butcher. I also beg to state that I think after once being infected with Fluke they never become properly sound.
89. No experience.
90. I believe the disease if not far advanced to be checked by the removal from diseased to sound pasture.
91. I have known a change from a wet run to a dry one to check the disease; but in no instance have I known a cure effected.
92. I have known sheep removed from a wet run to a dry one live for years after. The change of food seems to check the disease.
93. The change is beneficial, so that the dry run be not too dry, and the disease not too far gone. It is certain that a few Fluke is not very hurtful to a sheep, and if removed to sound land in time the disease may be checked, but not diminished.
94. When the disease is far advanced, no change,—however good the feed may be,—seems to be of much advantage.
95. Sheep affected with Fluke at a certain stage changed from a wet run to a dry one, with the use of the sulphate of iron and the rock salt, will check, or even cure the disease.

96. I have known sheep taken to neighbourhood of salt water, the Fluke to be checked, but not cured.
97. I cannot say.
98. I have known a change to have a good effect.
99. No.
100. From low wet land to high dry land.
101. No.
102. I know, from having bought flukey sheep, that they will live for two or three years on a dry run, but do not know if the Fluke can be cured by change of run.
103. When the sheep have not been too far gone I have found removing them to a dry run effectually check the disease.
104. I remember purchasing flukey sheep from Mr. Alford, and keeping one of them as an experiment for twelve months on sound dry land to see if it would cure it, which it did not.
105. Not experienced this.
106. No.
107. No.
108. At an early stage of the disease I think if sheep are changed from a wet to a dry run it will check the disease greatly, and sheep might live for several years; but when badly affected, I never knew it of any benefit, and have often known them die much more rapidly after such a change.
109. Yes; I have known a small flock of diseased ewes, lambs and wethers moved from marsh swampy land to high and dry ground, and twelve months after there was very little Fluke in them.
110. In my opinion the food of the sheep has nothing to do with the disease, but a change of run does good. When the veterinary surgeons of England have failed to discover the cause and cure of Fluke, no one that I could name would be of any service. My opinion is that the disease is epidemic, like influenza, &c., and that a generous diet is the best remedy; therefore overstocking should be avoided.
- 111.
112. Yes; in the case of removing the ewes to a dry run it had the effect of checking the disease, inasmuch as the sheep could take in no more Fluke, and consequently live longer, but I don't think it destroys the Fluke. Much depends upon the quantity of Fluke taken in by the animal: sometimes the liver of a sheep is found full of Fluke after death. Those that live, and are afterwards killed fat, are found with a few Fluke in the liver, which, I think, accounts for their being enabled to withstand the disease.
113. I believe a change from a wet run to a dry one will check the disease.
114. Yes; sheep moved to a dry or salt run would greatly diminish the disease.
115. Change to a thoroughly dry run is the best remedy, but in this Colony it is mostly left until the animal succumbs to the fatigue of removal. Removal to fresh pastures is the remedy adopted by all experienced shepherds in Scotland, when an unusually wet season covers the marshes with stagnant water, which they consider to be the cause and origin of Fluke. The tribes that roam the deserts of Arabia with their flocks, much better skilled in the natural treatment of animals than their more civilized brothers, act on the same principle. After the overflowing of the rivers they bring their flocks to feed on the banks and swamps, and remove them back to the arid pastures the moment their skill tells them it is necessary.
116. No change from a wet run to a dry one will cure the Fluke, but I have known it to be suspended, so that the sheep have subsequently become fat, having previously been very thin and emaciated.
117. I have not tried any of the remedies for this disease, further than a change of pasture, which I have always found beneficial.
118. I believe a sheep slightly affected, kept on a dry sound run, will live two or three years and get no worse; but I have no experience as to change of food.
119. I have never had any experience of this in the Colony, but in England we changed them from wet to dry as soon as we saw any symptoms of Fluke: the change was beneficial.
120. I have bought sheep that have had the Fluke, and put them on a dry run, and they have done well; and after rearing a lamb have fattened them on English grasses, and, from killing some, I am quite sure the Fluke was not so bad as when I bought them: and some of the same sheep I had three years.
121. I have known cases of sheep moved from a flukey run to a sound one and the disease has been checked, but not cured.
122. As I have observed, saline food and a dry back run here has prevented deaths, and the sheep have bred healthy lambs for two or more years, and died fat.
123. I have not; nor have I ever resorted to any experiments in consequence as aforesaid of being very little acquainted with such a ruinous visitation.
124. No.
125. No.
126. I have heard that a change from a wet run to a dry run has arrested the Fluke.
127. I believe sheep will get better by changing them from a wet run to a dry one that is not troubled with Fluke.
128. I knew Donald Cameron, Esq., to purchase a lot of flukey wethers off a wet run, and put them on a dry one, where they remained some months and got fat. They were sold to a butcher who reported all Fluke had disappeared, but I did not see any of them killed. I know none of those sheep died from Fluke, but improved rapidly. I also know they were very flukey when purchased.
129. Not from my own experience, I have heard that such is the case; and it may be that change of climate and change of feed cured the flocks at Portland Bay previously referred to.
130. I believe changing on to dry she-oak hills will check the disease.
131. Removal to a dry airy run, if the disease is not far gone, will check, but I think not cure it. I have known it tried, but the effect was not lasting.
132. No. It is possible, however, that it might check, but I think it would not eradicate the disease. But I beg to state that I have had no experience in the management of sheep affected by Fluke in this Colony. I trust I may be allowed to say in conclusion, without being considered presumptuous, that I entertain a strong belief that complete drainage is the only remedy that can be safely relied upon as a preventative to the baneful effects of Fluke.
133. See answer to No. 12.
134. A lot of flukey sheep I had three years ago I sent to a dry run: they were ewes. They reared eighty per cent. of lambs, and very few died. Whereas out of 900 lambs that I sent to the same run (they were rotted) not more than 100 came to the shears. Also, strong wethers died in the same proportion.
135. From hearsay. A change to dry country will greatly check its development.
136. I have moved several flocks, and found that the sheep died in numbers at first. Those that survived when killed had Fluke, but in a dormant condition.
137. Sheep removed from a wet run to a dry will check the disease.
138. I believe the removal of flukey sheep (if not far advanced in disease) to a dry run will stay the disease.
139. Yes. In the lambs which I bought at Cleveland, bred by Mr. Storey upon the Red Rock, St. Paul's River, when placed on my dry run at Glen Morrison Fluke remained stationary in them. And what has convinced

me with regard to them is having killed several each year until four years old, at which age there would be but one or two Flukes in the liver.

140.

141. I have not.

142. I have. Sheep that I have bought turned out flukey. I could not kill some of them through being in lamb. They have become poor, and got fat again next season.

143. Change from a wet run to a dry run. I have seen do good in checking the number of deaths, but not a cure, as they generally die out; and often the best conditioned of diseased sheep die before the weaker sheep.

144. Moving to a dry or a salt run will check the disease, but the Fluke will never leave the sheep. As the sheep come on to a clean run so they remain: the Fluke still is to be found in the liver, but never breed after the sheep is moved on to a run free from Fluke.

145. I have known a change of sheep badly affected with Fluke from wet to dry land; but it had been useless, as in many instances they die faster after being removed. But sheep in the first stages of Fluke may live for a long time if changed without the disease progressing, and without showing outwardly any appearance of disease.

146.

147. Yes.

148.

149. I have seen sheep recover when removed to dry ground. I have examined the liver and found positive evidence of the sheep having been affected previously, but the Fluke had disappeared.

150. I have not known. This I am told, that a decoction made from the root of the same herb (Dandelion) is of great benefit to the liver of the animal man. May it not, therefore, be probable that sheep feeding on the leaves of this herb may also be rendered sound in their livers?

151. If not too far advanced a change from a wet run to a dry one will preserve the sheep for a time.

152. I believe some benefit might be derived from the above if assisted by something to relieve the liver. The sheep took the mixture which was in a wooden trough without difficulty, and after the first day or two appeared to like it.

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*ADDITIONAL Answers have been received from the following Persons:—*

153. Mr. E. O. Cotton, Swansea.

154. Mr. R. Harrex, Ouse.

155. { Mr. G. Stancombe, } Snake Banks.  
      { Mr. Louis Wood, }

156. Mr. A. W. Brewer, Cape Portland.

157. John Meredith, Esq., J.P., Cambria.

158. Mr. Hunter Young, Ouse.

159. { Mr. George C. Meredith, }  
      { Mr. Samuel Salmon, } Spring Bay.  
      { Mr. George Rudd, }

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*Question 1. When and where did you first observe sheep to be affected by the disease called "the Fluke" in this Colony; and do you consider the disease called "the Fluke" to be identical with, or similar to, "the Rot" in Great Britain?*

153. I first saw Fluke in 1854 or 1855, they were in some fat wethers purchased at Sandspit (40 miles south), killed them myself, only a few Flukes were present in the livers. That run became the property of my father in 1858, it then contained and still contains ground that flukes sheep. I know nothing of Fluke in England. From my readings it appears that sheep there allowed to graze in flukey pasture in the autumn inevitably die in the ensuing spring. My experience teaches me that here they succumb to the disease in bad seasons when the flock is poor; the old and the weakly constitutioned die first; that flukey ewes in such seasons cannot bear through the winter the drain on their system necessary to the production of a lamb; and that wethers may live to extreme old age though very flukey.

154. At Victoria Valley I first observed Fluke in sheep. I do not know whether Fluke is identical with, or similar to, the Rot in Great Britain.

155. The first actual case of Fluke came under my notice in 1858, but in 1852 I lost numbers of sheep on a run near the source of the Elizabeth River, and from my after experience, I am convinced died of Fluke.

156. I first heard of Fluke at Marlborough, near Bothwell, but first saw it at the Great Forrester River, and all along the N.E. Coast to Cape Portland. I consider Fluke to be a similar disease to the Rot in Great Britain.

157. I first observed Fluke in this colony in the year 1861, in sheep I purchased from the Hamilton and Campbell Town Districts. I have no experience of Rot in Great Britain.

158. Cannot say.

159. To the best of my belief, Fluke first made its appearance in this colony in the Lake Country. According to White's work on Sheep, the Fluke is identical with the Rot of Great Britain.

*Question 2. Have you had any experience of a similar disease in sheep in Great Britain or elsewhere?*

153. My experience has all been on a run the greater part of which is high and healthy land bordered by the sea and an inlet, ending in a Tea Tree shaly swamp.

154. I have had twelve years experience of the disease called Fluke in Tasmania.

155. Not any.

156. I have not.

157. I have had experience of the same disease (the Fluke) in South Australia, County Grey, during the years 1850, 1851, 1852, and 1853.

158. Never.

159. No.

*Question 3. Have you ever observed the disease in Lambs at any stage under one year old, or that it is continued in the offspring of diseased Ewes?*

153. I remember to have killed but one lamb at the Sandspit, from five to six months old, fat and perfectly sound, (the mother most probably flukey, say thirty to one). I never, that I know, saw a lamb that died of the

Fluke, and but one yearling. About the year 1861, or 1862, very many sheep died of Fluke with us, they were nearly all ewes frequently in lambing; but our neighbour across the river lost many of his yearlings. They were run on a paddock mostly a cleared shaky Tea Tree, and known as the "Cow Marsh." I did not use the one chance I have had to determine whether the disease is continued in the offspring of flukey ewes when the lambs are born on healthy ground; but there was one set of rams to this (Kelvedon) flock, which came, lived, and died flukey: none of their progeny were or are flukey, nor has it appeared in others of the flock.

154. I have known lambs to be flukey at a fortnight old, and I am certain that if the ram and ewe are flukey, that the offspring will be flukey also.

155. I have known lambs of six weeks old to have two or three half-sized Flukes in the liver.

156. I have known the disease in lambs of six months old, and have been told of an instance of a lamb at Cape Portland which had Fluke at three weeks old, it was the offspring of a diseased ewe.

157. I have never observed the disease in any lamb while sucking, but have known them to die after weaning, under one year old, from Fluke, during wet cold weather, when all sheep diseased with Fluke suffer most, and there is the greatest mortality. I have known flukey ewes to rear sound lambs; and do not believe the lambs have Fluke because their mothers are diseased.

158. Lambs six months old have been found flukey.

159. I have observed Fluke in lambs six months old, but believe the lamb is sound when born.

Question 4. *At what period of the year have you found the earliest symptoms of "Fluke" in Sheep, or have you found these symptoms more frequent at any particular season than at another?*

153. I cannot answer first clause. The time of year when deaths are frequent is towards the end of winter and the commencement of spring.

154. I have observed the Fluke to take more effect in young sheep when the land is over stocked. Yes; in July, August, and September,—particularly in September, when the grass is springing.

155. I am not aware of any symptoms of Fluke in the liver, besides that of the parasite itself, which vary in size and colour. From December to March they seem to possess more life and motion, when exposed to the air, than at any other time, although the winter is the most fatal to the sheep.

156. I have invariably found the disease most fatal during the autumn months, and am of opinion that sheep are most likely to take the disease in the spring, when the water is drying off the marshes.

157. Whenever the autumn rains set in the weakest and most diseased show symptoms, more or less, according to condition, temperature, moisture, and feed. The greatest number of symptoms and deaths occur during the winter and early spring months, particularly in wet cold weather.

158. Sheep are affected with Fluke most in the Autumn.

159. The greatest number of deaths from Fluke occurs during the winter.

Question 5. *Can you state an instance of sheep, known to you to be perfectly sound at a particular time, being subsequently attacked by "Fluke?" If so, under what circumstances?*

153. During the past ten years have sent to the run at Sandspit three to four thousand sound sheep. These became more or less flukey, the same as those bred there: and there are instances in both of perfectly sound livers. This run is for about a mile bordered by a swampy edged rivulet, losing itself in a large shaky tea tree bordered swamp, which is completely dry in summer. This is the suspected ground.

154. I have sent two thousand lambs from Tor Hill, considered to be healthy; to Lake Echo, and they have died from Fluke in eight months, say September following.

155. Could not state any positive instance, but feel assured that some runs will fluke the soundest sheep.

156. I knew a flock of sheep, of which I had the management, to become flukey within six months; but cannot tell the cause, as the run had sheep on it for twenty years previous, and were in my charge for six years of that time, and I never saw a case of Fluke.

157. While in South Australia, between the years 1850 and 1854, I knew an instance of 800 out of 2000 full-mouthed sheep dying in less than two years: the sheep when purchased were perfectly sound. The country upon which the sheep were placed (in the month of December) was undulating like the swells upon the ocean; soil very light and sandy, intermixed with limestone, with limestone ranges running through in several places, here and there ranges covered with stringy bark trees and the native hop plants. Up to 1848 the country was looked upon as valueless, owing to the absence of any known water. At length a native well was found, and sheep placed upon the run; and they became very fat, but never saw water. The grass was chiefly the kangaroo grass, which grew at least three feet high, and was trailed down upon the ground to the thickness of two or three inches by the sheep going out from and into the folds. The rainfall was considerable, and the dews very heavy; so that owing to the country alluded to being thickly covered with prickly box, honey-suckle, gum sapling, &c., the grass for about eight months in the year was never dry thoroughly, and the sheep fed upon wet under grass. Upon this run I know of upwards of ten thousand sheep having died from Fluke; but in the worst cases never found the Fluke in a lamb the mother of which had died from Fluke: here I allude to lambs of a few weeks old; only in such cases the lambs had to be destroyed. I know another tract of country near Rivoli Bay, South Australia, upon which, at various times, upwards of twenty thousand sheep (I have been told upwards of forty thousand sheep) died from Fluke, being sound when taken there. This country was also limestone and sandy, with salt marshes, and on the sea. In winter a considerable extent of country was under water, varying in depth from one to thirty inches, over which the sheep grazed in the summer when the water had evaporated. I have also been credibly informed that upon this run calves, foals, pigs, and even geese died from Fluke. Indeed, I know that in 1854 all the coast country extending from Rivoli Bay to the Glenelg, and a limestone country too, was condemned as unsound for sheep, which were removed and replaced by cattle where stocked at all.

158. They will get flukey on wet marshes.

159. Yes; a perfectly sound lot of ewes were put on a piece of land, originally flukey, but supposed through drainage to have become sound, and within three months deaths occurred from Fluke.

Question 6. *Do you know at this time any flock of Sheep perfectly free from "Fluke?" If so, state the character of the run, or the circumstances to which you attribute the healthy condition of the Sheep.*

153. Yes, several: Kelvedon to wit. The runs front the sea coast, ironbound, points dry, and grassy; runs hilly, ironstone; trees, eucalypti, she-oak, and black wattle; the rocky gullies containing water, all of which becomes hard in dry weather. Springs all very alummy.

154. I do not know.

155. Several that I believe to be free from Fluke. The runs in general she-oak and wattle, and in one case with extensive low lands subject to water ponding, but the subsoil is near the surface, and of a white clay.

156. I do not; although I have a run, and have never seen Fluke in the sheep which have always been on it: and I believe if healthy sheep were put on it they would continue so. It is a billy run, with little or no marsh.

157. I cannot vouch for the soundness of any person's flock except my own.

158. Cannot say.

159. Yes; healthy sandbanks, and dry she-oak hills.



Question 7. *Does your experience suggest to you any probable cause of "Fluke" in the runs where you know it to be prevalent; and do you consider "the Fluke" to be a cause or a consequence of disease in the Sheep?*

153. Stagnant marshes; but believe flukey sheep were first put on those marshes, and thus all ground naturally adapted to the fostering of Fluke has, or will, become flukey; that such ground is to the egg of a Fluke as carrion to that of a blowfly. We must go a long way back for the original cause of Fluke. There was, when I first knew Sandspit, a mob of wild wethers, "the mountain rangers;" these were perfectly sound. I am not competent to answer the latter part, not knowing how much of the deadliness is attributable to the debility that would be caused by flukey ground, though there were no Fluke. Believe the disease to be caused by the sheep taking with its food the Fluke in its stage answerable to the chrysalis of the moth, &c. I believe that the weakly constitutioned and aged succumb to it where strong ones, having also healthy ground to stay on, live to advanced age in spite of it.

I hold the opinion that Fluke came to this Colony in sheep: that it is spread by the sheep leaving the eggs on the ground with the dung. If the egg falls on dry pasture it perishes; but if it is deposited on ground marshy and stagnant it will (like others of the lower orders of creation) pass through various phases of existence, till it arrives at the one immediately preceding the change into its perfect state,—that of the parent Fluke. That it cannot assume this shape elsewhere than in the liver of some animal, and that down the host's throat is the nearest way and a long step towards his liver. That a ruminant animal gives the intruder time to consider his next step; therefore, a ruminant animal is especially liable to Fluke. That the warmth, &c. of the stomach affording the requisite conditions for the final development of the Fluke, any of those changes which are competent to take place in the cold and damp and exposure of a marsh would "come to grief" here. Therefore, a sheep may swallow with impunity the Fluke in any but the last stage.

Query—Have Fluke larvæ a season to be hatched, as the locust, grasshopper, barley grub, &c.?

It is the opinion of very many persons that flukey sheep cannot sow Fluke; yet they believe that the sheep take in with their food that which becomes Fluke in the liver. And further, that when a pair of fluke (are they pairs) are located in the liver they there produce young in their own likeness (gracing these low characters with the attributes of their betters), till their host dies of it. Where, then, is the relation between the perfect insect and its germ, which is spreading throughout the Colony wherever flukey sheep come on all ground liable to Fluke, and number of sound sheep grazing thereon? whence comes the supply of Fluke? I confess my ignorance: I have neither time nor means for the observations requisite to determine this point; but arguing by analogy (silkworm, potato moth, blowfly, &c. to wit), I believe that the liver fluke is the parent of that which taken in with the grass becomes Fluke in sheep,—in its turn to be parent,—and thus it is spread by all animals subject to the disease.

I lately heard a theory propounded that the Fluke did not go direct to the liver, but (if I understood the gentleman) it stands the digestive process, is taken up by myriads in the chyle, passed into the blood, is therefore disseminated throughout the system; but the liver being the only organ in which it is adapted to thrive, all the others perish, and are borne out of the system by the processes which dispose of the effete matter. Those which reach the liver enter it from the outside and work inwards (as is proper to the liver). This is thought to be borne out to an extent by the result of an experiment where sound sheep were located on a flukey pasture, were killed consecutively, and examined carefully. A discoloration (paleness, I think, was stated, and the limit of advance defined) which gradually extended from the edge inward over the whole liver, and it was not till an advanced stage of disease that Fluke appeared in the ducts. I would suggest it might be the malaria of the swamp brought on debility of the system,—that the liver became affected, and predisposed to Fluke. (Parasites can't make headway on animals till they get low in condition: when very low, it is all but impossible to clean them. This applies to "Scab" also.) My own observation is, that when only a few Fluke are present they are always in the main duct in the centre of the liver. As they increase in numbers they occupy and distend the branch ducts till they (the ducts) show on the surface of the liver, and when there is no more room they are crowded into the top of the gall bladder, and in the canal to and into the intestine. If fluke germ can overlive the digestive process as above stated beware water cress.

Remarking in favour of the debility question, seasons—i.e., good or bad seasons—do greatly affect the number of deaths on the same run. The sheep which die are old or in lamb, or weakly ones. I examined many of the ewes which died at lambing in 1861-2: they were "bottle-jawed;" much jelly below the neck, round the brisket, inside the legs and flanks and at the tail, very little blood in the animals, and a general paleness of every part. Yet the average of flukes present in the liver was not greater than in what flukey sheep I have killed for mutton, whose health and spirits seemed in nowise affected. My experience has all been on a run almost all of which is high, healthy ground and sea-bordered. Flukey livers are thick, bluff-edged. I believe I have sufficient evidence that Fluke will live six years. Don't know how much older they were.

154. I consider the Fluke to be first caused by overstocking the land; and I also consider that flukey sheep will fluke land.

155. This is a subject that I have given my attention to, and have arrived at the conclusion that I can at once distinguish a run that will fluke sheep by the presence of a plant common to most marshes, but which in many instances is very plentiful. How or in which manner the plant affects the sheep I have had no means of testing; but long and careful observation has shown one that wherever you see the plant plentiful, so surely may you calculate on finding the sheep diseased. I should add that my attention in the first instance was directed to the plant by a gentleman lately arrived from England, and now more than twenty years since, by his saying, "I see you have the plant in this country that in England gives sheep the Rot."

156. I think that sheep become flukey by feeding on marshy or wet lands at the time the water is drying off. All the runs which have come under my notice as being particularly unhealthy for sheep are wet, and a great part of them marshy.

157. My experience suggests, as a probable cause, old dead grass devoid of nourishment, grass grown rank in the shade, or water grass when the water is stagnant or has evaporated. I believe the Fluke to be the consequence of bad unwholesome pasture, and the absence of such antidotes as once existed through the confinement of sheep in fenced runs and heavy and continued stocking, thus destroying all sulphur-bearing plants, &c., which instinct directs animals—particularly sheep—to prefer to other food; and which, in my opinion, is, under any circumstances, essential to secure a good constitution and preserve the health of sheep. We all know sickly or weakly animals or plants are most liable to attack, and do in fact suffer while others in health, though similarly exposed, escape.

158. Wet marshes.

159. The primary cause of Fluke I believe to be decomposed grass on wet ground. Land once having carried a flock of flukey sheep I consider unsound.

Question 8. *Have you observed the Fluke to exist in any other animals than sheep?*

153. I have examined the livers of wallaby which inhabited the above-mentioned Tea Tree, and failed to discover Fluke. I am credibly informed they do possess kangaroo and wallaby in some localities. Have heard and can believe two instances of pigs possessing Fluke. I found at both places the pigs had been wont to attend the sheep killing, and eat the contents of the paunches. They were loose pigs, and could run on the supposed flukey ground. Horned cattle become flukey.

154. I have frequently observed them in cattle, kangaroo, &c.

155. In cattle, precisely the same as sheep; but from my observation, the Flukes have been fewer in number.



156. I have seen Fluke in Brush and Forest Kangaroo, wallaby, and cattle. I have heard that pigs get it; but I know a lot of pigs which run on a thoroughly flukey marsh, and all that have been killed are quite healthy.

157. I have seen the Fluke very bad in cattle, kangaroo, and rabbits; and know of pigs being equally diseased running at large in Tasmania.

158. In cattle.

159. Yes; in cattle both young and old (calves not more than six months old), and in two instances in pigs. Kangaroo in numbers,—when the kangaroo are sound the stock on that country are sound also.

Question 9. *Have you observed the Fluke to exist in any other part of the sheep except the liver,—for instance, in the stomach, smaller or larger intestines?*

153. When the ducts of the liver are thoroughly stuffed with Fluke they will be found in the small intestines for some inches beyond where it is joined by the greatly distended canal from the liver. To remove the intestines it is necessary to cut this canal; and to prevent cutting the gall or any gut the cut is made upwards (sheep hanging by hind legs), the finger is passed under first: a considerable pressure is thus put on the crowded inhabitants of the duct. May this pressure force a few into the small intestines? Do they go down to spawn?

154. I have observed the Fluke to be dead in the small intestines leading from the liver in great quantities,—that is when as on the last stage before death.

155. Never; nor do I think it likely it would be, unless under the microscope, and then in the form of egg or spawn.

156. I have not.

157. The worst cases I ever knew were in South Australia, where I have seen Fluke in thousands in at least a bucket of water between the intestines and the covering of the abdomen. When sheep died under this dropsical aspect the emaciation was greater than when unaccompanied by dropsy.

158. I have found a Fluke in the pancreas.

159. Yes; I have killed a sheep with Fluke in the caul fat, and in one bullock found Fluke in the stomach.

Question 10. *Have you observed any long round worm (Lumbricus) in the substance of the liver, or in the stomach and intestines of sheep or other animals?*

153. Have seen an ivory-looking sharp-ended affair in great numbers in the paunches of kangaroo and wallaby.

154. I have not.

155. Several extreme cases in pigs that had been fed on raw mangolds.

156. I have observed worms in the intestines of sheep, cattle, and kangaroo, but not in the liver.

157. Never in sheep, but thousands upon thousands in stomach, intestines, and also in every joint of the kangaroo to the tip of the tail, but not of late years.

158. No.

159. I have seen a long crimped kind of worm about three feet long, in the intestines of sheep.

Question 11. *Have you ever known a run, healthy up to a certain recognised time, become so tainted as to cause disease in healthy sheep?*

153. All Swanport was considered healthy until, say, 1855, or thereabouts. A small adjoining run has been hitherto (forty years) sound. The present owner last year stocked it with flukey old ewes. A large percentage died from Fluke at lambing; the remainder reared fine lambs (from sound rams). The run is mostly ironstone, hilly, but contains a marsh with stagnant patches. Some of my sheep trespass on this run, and I fear the consequences.

154. I have. For instance, Lake Echo was never known to be flukey in Mr. Cook's time, when he ran about 3500 in winter and 7000 in the summer. When Mr. Nicholas put 10,000 on the run they got flukey the first year, and ever since.

155. Yes; as in a case where a run used to supply healthy wethers of 60 or 70 lbs., and now abandoned on account of the Fluke.

156. I have known several runs which have been healthy up to about 1857 or 1858, which would fluke any cattle or sheep which have since been put upon them.

157. I have; several.

158. Cannot answer.

159. Yes; the greater part of the colony has been so.

Question 12. *Have you known of any case in which a run infested by Fluke has been left vacant for one, two, or more years, and has afterwards given Fluke to healthy sheep placed upon it?*

153. I have not.

154. I believe runs to be flukey and not stocked for a year afterwards will not fluke sheep to any extent, if not over-stocked afterwards.

155. I do not know of any case.

156. I have not, but know a run which flukes cattle, although sheep have not been regularly on it for some four or five years.

157. I have.

158. Cannot answer.

159. Yes.

Question 13. *Have you tried any remedies for the disease? If so, state them, and with what success.*

153. Only eating the victims. Taraxacum is held of such value in liver diseases, that it has been proposed to introduce the Dandelion as a preventive. I suggest that if you have all marshes drained it will pay better than the railroad.

154. I have tried remedies, but killed most of the sheep and cured none.

155. But one, and that in an imperfect and unsatisfactory manner. Selected three sheep as near to what I termed the second stage of Fluke as I could,—that is, with the veins of the eye absorbed. Killed one to see its state; of the other two I gave one 4 grains calomel every day for 6 days, when it refused its food, and looked ill. Left off the calomel for four days, and then repeated the four grains per day for four days longer, and then I killed it. The other sheep I gave every morning for the fourteen days ½ oz. of common salt as a drench, and killed the same time as the one dosed with calomel. The appearance of the Fluke in the latter was decidedly weak and unhealthy, being of a pale colour, almost motionless, and nearly transparent. The sheep that had the salt presented in the liver a more healthy colour than usual; at the same time the Fluke was lively, fat, and of a dark colour. My opinion at the time was that calomel might kill Fluke, but was just as likely to destroy the sheep, and that salt agreed with the sheep, and at the same time agreed with the Fluke; and I voted the experiment unsatisfactory.

156. I have only known salt tried, but without success. I think that after the disease had lasted for a few months it is seldom or never cured.

157. I tried a table-spoonful of sulphur, and fancied good results. This experiment was upon some sheep I had purchased, and I feared the disease might extend. I gave them a second dose. There were not many of them,

but I know I disposed of them as soon as I could; and have not tried any experiments since, as I do not produce flukey sheep, and am very careful in my purchases.

158. No.

159. Yes; sulphate of iron and salt; a strong dose given to a sheep badly affected with Fluke will kill him in from a quarter to half an hour. Twice the quantity given to a sound sheep will not hurt him.

14. *Have you known a change from a wet run to a dry one, or any specific change of food, to check or diminish the disease?*

153. I have had from the run at Sandspit since 1860 four lots of flukey old ewes, and fattened them here on stubble along with sound old ewes of my own. Some of these sheep had formerly been sent to the Sandspit sound; others were bred there. The stubble fields were dry, and all the water approachable is either a hard water creek or a salt lagoon skirted by samphire and other saline plants. They were mostly killed by midwinter; two or three that would not get fat died of Fluke by next spring. One wether, old when sent down, came back without any front teeth left, and was for a long time so feeble as to rebel, and not try to come in whenever the others were brought in. He became pretty good meat in the following summer, and I killed him exceedingly flukey. Ten younger ewes I put in a cleared paddock, and let them have lambs to sound rams; six lambs died at or a few days after birth; the other four became strong, thriving, wild-dispositioned sheep,—now four-tooth. I had sent them away before seeing this paper. The mothers I fattened and killed after the lambs were weaned, quite average flukey. My own colts running with them did not become affected, nor the fields poisoned. One field of fifty acres, dry and bordering on the salt lagoon, has remained unploughed; and some of these sheep still running therein are killed for use, and continue to show perfectly sound livers.

154. A change from a wet to a dry run will cause sheep to live a year or more longer.

155. Could not speak from experience.

156. I have known sheep much benefited by a change to a dry run; and I think if the disease is not too much advanced that many may be cured by it.

157. I have no experience with reference to this question.

158. Placing flukey cattle on a dry run will kill the Fluke.

159. Flukey sheep if put on good dry and high ground, or on a run bounded by the sea where there are no marshes, will live for a considerable time longer than if left on marsh runs.

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N.B.—Several other answers have been received, to which no signatures are attached; the Commission, consequently, are unable to avail themselves of the information contained in them.