

**Appendix to Fifth report of the Commissioners : minutes of evidence,
March 1908, with appendices and index.**

Contributors

Great Britain. Royal Commission on Vivisection (1906)

Publication/Creation

London : printed for H.M.S.O. by Wyman & Sons, 1908.

Persistent URL

<https://wellcomecollection.org/works/rvucvunw>

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

ROYAL COMMISSION ON VIVISECTION.

APPENDIX

TO

FIFTH REPORT
OF
THE COMMISSIONERS.

MINUTES OF EVIDENCE,

March, 1908,

WITH

APPENDICES AND INDEX.

Presented to both Houses of Parliament by Command of His Majesty.



LONDON

PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,
By WYMAN AND SONS, LIMITED, 109, FETTER LANE, E.C.

And to be purchased, either directly or through any Bookseller, from
WYMAN AND SONS, LIMITED, 109, FETTER LANE, FLEET STREET, E.C.; and
32, ABINGDON STREET, WESTMINSTER, S.W.; or
OLIVER AND BOYD, TWEEDDALE COURT, EDINBURGH; or
E. PONSONBY, 116, GRAFTON STREET, DUBLIN.

1908.

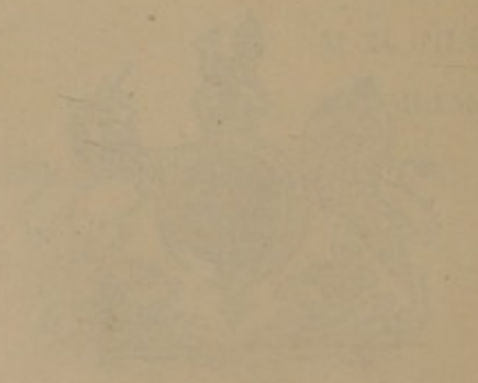
72747363

THE COMMISSIONERS
FIFTH REPORT

MINUTES OF EVIDENCE

March 1898

APPENDICES AND INDEX



Printed by the Government Printer, London.
1898.

ROYAL COMMISSION ON VIVISECTION.

TABLE OF CONTENTS.

LIST OF WITNESSES in the order in which they appeared before the Royal Commission	iv
MINUTES OF EVIDENCE	1
APPENDICES	21
INDEX	49

ROYAL COMMISSION ON VIVISECTION.

LIST OF WITNESSES.

In the order in which they appeared before the Royal Commission.

Date.	Name of Witness.	Profession, Occupation or Residence.	Representing.	Number of first Question.	Page.
1908. 46th Day - Mar. 25th	<i>Lieut.-Col. Lawrie, M.B., I.M.S., (Retd.)</i> (recalled)	- - - - -	- - - - -	20,966	1
	<i>Mr. L. E. Shore, M.D.</i> (re-called).	Lecturer on Physiology, University of Cambridge.	- - - - -	21,373	9
	Mr. WILLIAM HALL.	Laboratory Assistant, Cam- bridge.	- - - - -	21,581	14
	Mr. H. K. ANDERSON, M.D., F.R.S.	Lecturer on Physiology, Cam- bridge.	- - - - -	21,636	15
	Mr. W. H. GASKELL, M.D., F.R.S.	A member of the Commission	- - - - -	21,705	17

MINUTES OF EVIDENCE

TAKEN BEFORE THE

ROYAL COMMISSION ON VIVISECTION.

Wednesday, 25th March 1908.

FORTY-SIXTH DAY.

PRESENT :

The Right Hon. The Viscount SELBY (*Chairman*).

Colonel The Right Hon. A. M. LOCKWOOD, C.V.O., M.P.

Sir W. S. CHURCH, Bart., K.C.B., M.D.

Sir W. J. COLLINS, M.P., M.D., F.R.C.S.

Sir J. McFADYEAN, M.B.

Sir M. D. CHALMERS, K.C.B., C.S.I.

Mr. A. J. RAM, K.C.

Mr. W. H. GASKELL, M.D., F.R.S.

Mr. J. TOMKINSON, M.P.

Mr. G. WILSON, M.D., LL.D.

Captain C. BIGHAM, C.M.G. (*Secretary*).

Lieut.-Colonel E. LAWRIE, M.B., I.M.S., recalled; and further Examined.

20966. (*Chairman*.) You have sent us a printed statement?—Yes.

20967. There is only one page in it on which we desire to hear you, and that is page 10A, in which you speak of an operation on two dogs, and give some details, those details involving a charge of a distinct breach of the law, and, in the language you use, a wilful breach of the law on the part of Dr. Gaskell and of those who were assisting him; therefore we think it is material that we should examine you upon it. The rest of your statement is matter of comment, and on matter not very material to our inquiry; but this is distinctly and directly material to our inquiry, and therefore we shall confine ourselves to the one matter about which we wish to ask you, which, as I have already said, deals with what was done and said with reference to anaesthetics on the 7th of July, 1894?—Yes.

20968. You visited Dr. Gaskell's laboratory at Cambridge on that day?—Yes.

20969. That was for the purpose, I understand, of watching some experiments upon two dogs?—Yes.

20970. They were experiments in cross circulation?—Yes.

20971. Involving opening the throat of each dog and placing a tube in it and connecting it with the other dog?—Connecting the vessels in the two dogs' necks.

20972. You say that you arrived there before luncheon?—Yes.

20973. You saw two dogs on the table in the laboratory?—Yes.

20974. Were those the same two dogs that you watched the experiments on after luncheon?—Yes.

20975. How long were you in the laboratory before luncheon?—That I cannot recollect. I was not there very long.

20976. Was any work done then?—No, not that I remember.

20977. Did all of you examine the dogs, or did you merely see that they were there?—I was just taken in to see them.

20978. You did not stop to examine them or watch them?—No, there was nothing doing then. They were ready for the experiment.

20979. Then you did not, in fact, do anything before luncheon?—No.

20980. Were their throats open at that time?—Yes.

20981. Were the tubes in their throats?—Yes, so far as I recollect the tubes were in both dogs' throats.

20982. Are you quite sure?—That is the best of my recollection.

20983. I must ask you when you do not remember a thing distinctly to say so?—I have stated in the statement which I sent to you exactly what I recollect.

20984. I do not want you to read it from the paper, because there are other gentlemen who were present at this experiment, and there will be a good deal of dispute probably about it. I do not know what they are going to say, but they are here at any rate, and there may be considerable dispute, so I will ask you to speak from your memory, and when you feel that your memory does not establish a fact, to let us know?—Yes. I have stated exactly what I recollect in my statement.

20985. I want you to give it orally, please, *à voce*, and not to read it from the paper, because I want to have your recollection?—I have stated all that I recollect there. I have nothing to add to it.

20986. You will follow what I tell you, please, is the proper method of giving evidence—that is, to answer questions. There are some matters that we have allowed to be read when they are matters of opinion and criticism, but when it is a simple matter of fact that is being spoken of, I would rather that you spoke from your memory if we are to have other witnesses who are to speak from their memories. Was anything said about anaesthetics?—Dr. Gaskell told me that the dogs had had no anaesthetic except morphin.

20987. What was it that he said?—He said they had had no anaesthetic; but they had had some morphin; and he led me to understand that they had had it so as to be able to report that the dogs had had an anaesthetic so as to hoodwink the Inspector.

20988. I want to know what he said?—That they had had no anaesthetic at all except a small dose of morphin.

20989. And at that time you say their throats had been opened?—Yes.

*Lt.-Col.
E. Lawrie,
M.B., I.M.S.*

25 Mar. 1908.

*Lt. Col.
E. Lawrie,
M.R., I.M.S.*
25 Mar. 1908.

20990. Did he say that they had had none at all—no anæsthetic at all?—He said that they had had nothing but the morphin solution.

20991. Did he say how much morphin he had had?—He said ten drops of morphin solution.

20992. Would that in your opinion have produced anæsthesia?—No anæsthesia at all.

20993. Would three grains of morphin produce anæsthesia?—No, three grains does not anæsthetise a dog.

20994. Have you experimented on dogs yourself?—Yes, I have.

20995. With anæsthetics?—With anæsthetics and with morphin.

20996. And that is the result of your experiments?—That is the result of the experiments of the Hyderabad Commission on 600 animals.

20997. You mean as to how much anæsthetic should be given?—They were principally as regards the effect of chloroform; and the effects of certain other anæsthetics were inquired into incidentally.

20998. What I asked you was, have you experimented with morphin on dogs?—Yes, we have.

20999. You did?—Yes, repeatedly.

21000. Did Dr. Gaskell say anything as to why they had not had anæsthetics?—He said they were going to experiment with the chloroform afterwards, and that they did not give them any chloroform before the experiment began because they wanted to have the primary effects of the chloroform in the experiment.

21001. And that was the reason they used morphin?—He did not say that was the reason they had used morphin. He led me to suppose that they used morphin simply to comply with the Act, and to be able to say that they had used an anæsthetic.

21002. Can you remember Dr. Gaskell's words?—No, I cannot remember the words; but that is their exact meaning.

21003. You have sent me in a statement here that uses certain language. You do not say now that Dr. Gaskell said it was done to hoodwink the Inspector. Did he use any such words?—He used words that had that precise meaning.

21004. Did he use any such words?—I cannot remember the exact words, but that is the precise meaning of what he said to me.

21005. You must see that it is material to try and remember it. You have printed this document and circulated it among us with the word "hoodwink"?—That is the precise meaning of what he said to me.

21006. I think you must really know enough about evidence to understand why we want to know the exact words that Dr. Gaskell used?—I cannot remember the precise words that he used.

21007. Then you will not undertake to say that he did use the words "hoodwink the Inspector"?—No, I will not undertake to say he did use those words; but what he said had that precise meaning.

21008. It is rather odd that you should have circulated that if you are not sure that he said it, "and satisfy the Act"; he did say that apparently?—Those were the precise words he used so far as I recollect; but the meaning he gave me was that he meant to evade the Act. That was the impression he gave me.

21009. To satisfy the Act?—Yes.

21010. That was the first account you gave me just now when I asked you the question, that what he said was that it was to satisfy the Act?—Exactly.

21011. He would not have satisfied the Act without producing anæsthesia, would he?—What I understood was that if he was able to say that he had used an anæsthetic (and he called morphin, I suppose, an anæsthetic for that purpose) that would satisfy the Act.

21012. That is an inference you can draw from what he said?—That is what I understood from what he said.

21013. Did Dr. Shore say anything?—I do not remember his saying anything.

21014. Who was present at the time that these words were said?—There was no one present but myself.

21015. I suppose Dr. Gaskell was present?—Of course; he said it to me.

21016. Who else was present?—I do not think anybody else was present besides Dr. Gaskell.

21017. Are you sure that nobody else was present?—I do not think anybody was.

21018. Did you then go in to luncheon?—Yes, we went in to luncheon then.

21019. Were these words said in the laboratory?—They were said in the laboratory.

21020. Then you went in to luncheon?—Yes.

21021. How long were you there?—I cannot tell you. We were there 20 minutes or half an hour.

21022. And you came back into the laboratory?—Yes, and then the experiment was done.

21023. Was chloroform used then?—Chloroform was used for the experiment.

21024. Was chloroform used in such a quantity as to produce anæsthesia?—Well, it killed the animal.

21025. (Mr. Tomkinson.) Was it given to both dogs?—No, it was given to one.

21026. (Chairman.) Was anæsthesia produced?—Apart from that there was no anæsthesia. It was given until the animal died, for the purpose of testing its effect upon the heart.

21027. I should have thought it was a simple question to answer. Were the animals anæsthetised when you came back from luncheon?—No, they were not.

21028. Were they operated on, or only watched?—Nothing was done except the administration of chloroform for the purpose of testing its action in the experiment, that is all.

21029. Did the dogs make any sign or sound?—They only appeared to be in pain.

21030. How did they show that?—By shivering.

21031. But they made no sound?—They had tubes in their throats.

21032. That would prevent it?—That would prevent it. Still, dogs do not always make sounds when they are in very severe pain if they are terribly frightened.

21033. I do not say that they did. I only wanted to know whether the dogs did. Was anything said as to the time the dogs had been under operation?—I was told that they had been under operation for four or five hours.

21034. By whom?—By Dr. Gaskell.

21035. It was before luncheon that you were told that?—Yes.

21036. (Sir Mackenzie Chalmers.) What time of the day would it be when you were told that?—It was between one and two o'clock in the day.

21037. (Chairman.) I think that is all I want to ask you.

21038. (Sir William Collins.) You have seen the evidence given by Dr. Shore as to the strength of the solution of morphia that was used?—Yes.

21039. Are you prepared to accept that statement?—Well, no, I am not; I prefer to believe what Dr. Gaskell told me at the time.

21040. But at the time had you reason to believe that the solution of morphia was of the pharmacopœial strength or not?—I understand it was the pharmacopœial strength; because when a medical man tells you that solution of morphia is used you understand that.

21041. I see Dr. Shore stated in answer to Question 19458: "Of the two dogs, one dog received ten cubic centimetres of a 2 per cent. solution of hydrochloride of morphia, and the other dog six cubic centimetres of the same solution." You think that is not correct?—If that is correct, then of course what Dr. Gaskell told me misled me; it may be from the way I took it.

21042. If what Dr. Shore says is correct, would the dogs then have been in a condition free from pain?—No, certainly not.

21043. Do you say that a dose of 3 grains of morphia will not render a dog anæsthetised?—No, I do not think it would have any anæsthetising effect.

21044. Did you see the bottle out of which the morphia that was used was taken?—No, I did not.

21045. (Sir John McFadyen.) Did you make any notes of the facts that you have just been telling the Commission at the time?—No, I did not. I did of the second experiment.

21046. Did it strike you at the time that whoever was responsible for the experiment was guilty not only of breaking the Act, but of absolute brutality?—I

thought at the time it was excessively cruel—the cruellest thing I had ever seen.

21047. Did you make any observation to that effect?—I said that we had given all our dogs chloroform for the cross-circulation experiments.

21048. Did you say anything by way of protest against the brutality of the operation?—No.

21049. Between that date and the time you appeared as a witness here have you ever given expression to the feelings of revolt that you must have felt?—I have repeatedly said it was cruel.

21050. To whom?—To various people.

21051. You did not formulate a charge like that when you gave evidence here before?—No, I tried to avoid saying anything about it.

21052. Then why are you so anxious to convince the Commission of it now?—Because of my evidence being contradicted by Dr. Shore. I am given the lie direct about several things that I said.

21053. Therefore you want —?—I want to vindicate myself. Besides, I want to see the truth established about chloroform.

21054. This has hardly anything to do with the truth about chloroform, has it?—Yes, it has a great deal, because it is on these experiments that the present anomalous position of chloroform largely rests.

21055. With regard to this question of hoodwinking the Inspector; what Inspector was it?—I do not know; I cannot tell you anything about that.

21056. But you have admitted that you cannot vouch for the absolute words that Dr. Gaskell used, and one may therefore test the reliability of your memory by finding out whether there was any probability of there being an Inspector to hoodwink at the time?—You see, I knew nothing about the Vivisection Act. I had been in India many years then, and everything about this was new to me.

21057. You know something about the Act now?—I do not know very much about it now; I have never seen the Act.

21058. Are you aware that no Inspector under the Act has ever resided in Cambridge?—I am not aware of that fact.

21059. You will take it as a fact?—Yes.

21060. Does it not seem extraordinary that Dr. Gaskell should have said that he did this to hoodwink the Inspector when there was not one chance in a hundred, let us say, that the Inspector would turn up at that moment? It seems peculiar, does it not, that he should have used that expression?—I do not say that the word was "Inspector."

21061. No, but that he should have held the opinion that it was necessary to hoodwink the Inspector. If he said that he desired to hoodwink the Inspector he must have thought it necessary to hoodwink the Inspector?—I can only tell you what he told me.

21062. You are equally clear that he said that he desired to satisfy the Act?—Yes.

21063. To satisfy the Act he was bound to have the dogs free from pain?—No, I did not understand that at all.

21064. You did not understand it. But why do you refuse to accept that interpretation of his words. Assuming that he did use those words, why are you anxious to have the Commission believe that it was merely satisfying the letter and not the spirit of the Act?—Because he had used morphin.

21065. (Chairman.) You knew enough of the Act, did you not, to know that it was necessary to anaesthetise a dog before operating upon it?—No. I understood that if you said you had used morphin as an anaesthetic that would satisfy the Act.

21066. You had been in the medical service for some years before 1894, had you not?—Yes.

21067. How many years?—From 1872.

21068. And from 1872 onwards were you in England at all?—I was at home on leave in 1886.

21069. Your speciality was examining into the operation of anaesthetics, was it not?—No; I had to use anaesthetics a great deal in surgery, and in a great many experiments for the Hyderabad Commission.

21070. (Sir Mackenzie Chalmers.) On animals?—On animals.

21071. (Chairman.) Do you mean that you really did not know in 1894 that the Act of 1876 required that an operation of this sort on an animal should be under anaesthetics?—Well, morphia was mentioned to me as an anaesthetic.

21072. No. I am speaking about what satisfies the Act. Did you know in 1894 that in order to satisfy the Act you must anaesthetise a dog under an operation of that sort?—No, I did not.

21073. You really did not know that in 1894, after having had twenty-two years of medical service?—The Act did not apply to India at all.

21074. (Sir John McFadyen.) It seems to me that your view as to a legal obligation is rather remarkable, because I understand it to be with regard to any requirement of the law, that when an individual says he has satisfied a requirement of the law, that requirement is thereby fulfilled. Is that your position?—I know nothing about the law or your interpretation of it. I am simply telling you what Dr. Gaskell told me, and led me to understand.

21075. But the point is that the language that he used may be capable of two interpretations?—I am only giving you mine; I cannot give you any other.

21076. But I want to know why you refuse to accept the other interpretation?—Because I have always held to the first. I formed that opinion at the time, and still have it, and I cannot alter it.

21077. You think it absolutely incredible that Dr. Gaskell, when he said that he desired to satisfy the Act, may have intended to say that he desired to have the dogs free from pain?—I am sure that he had not that meaning.

21078. Why?—From the way he said it to me.

21079. That is a new item of evidence; it is not on what he said, but the manner in which he said it?—Exactly.

21080. Was it said scoffingly?—No, it was said intentionally to lead me to suppose that he should report the administration of morphin, and meant whoever was responsible, the Inspector or whoever it was, to understand that it was an anaesthetic.

21081. (Chairman.) That he should report it?—That is the opinion I formed.

21082. (Sir John McFadyen.) You say that it was done with the intention to lead you to suppose that?—Yes.

21083. But then that is a mere interpretation placed upon the manner in which the thing was said, is it not?—It is the way he said it, and the words he used which had the meaning I have given here.

21084. You would not admit the slightest possibility of your having misunderstood him?—Not about that, most surely.

21085. Then with regard to the state of the dogs, you wish us to believe that they were subjected to dissection for four hours before you saw them?—That is what I was told.

21086. You believe it?—I believe it, certainly.

21087. And you say that the dogs were "in frightful agony"; those are your own words?—Yes, they appeared to be in frightful agony.

21088. You were asked a minute ago as to what was the evidence of that, and you said shivering?—Shivering and appearing to be in pain.

21089. Let us hear what the other symptoms were?—As I have given you—they were shivering, and appeared to be in pain.

21090. But when you say that they appeared to be in pain, that is not sufficient evidence for the members of the Commission?—They were tightly tied down; they could not do anything.

21091. In case you may have misinterpreted the signs you saw exhibited by the dogs, I want you to be good enough to tell the Commission all the evidence on which you found this statement that the dogs were in frightful agony?—The dogs were both tied down, and could not show any other signs of pain except what I have told you.

21092. I may say that I am a person practically acquainted with the tying down of dogs. Can you tell me how you tie a dog down so that it cannot show evidence of pain?—They had their fore feet and hind feet tied down and their heads tied down.

LL.-Col.
E. Lawrie,
M.B., L.M.S.
25 Mar. 1908.

*Lt. Col.
E. Laurie,
M.B., I.M.S.*
25 Mar. 1908.

21093. Have you ever seen dogs struggle when so tied down?—Yes, I have seen them attempt to struggle very often indeed.

21094. You have seen them attempt to struggle?—Yes, I have seen them.

21095. I want to put it to you in this way and see whether you agree with me or not: that however firmly you tie a dog down by its fore and hind paws, and by its head, if you proceed to cause it pain it will succeed in executing quite extensive movements with its body. I ask you to agree to that as being what I have myself observed?—Yes, they sometimes do.

21096. No—as a rule. I want you to assent to that statement, as a rule?—I cannot say more than that they sometimes do, and, of course, generally they would.

21097. What I should regard as signs of frightful agony in a dog would be violent contortions of the body and great disturbance of the respiration in an attempt to howl. Was anything of that sort exhibited by these dogs?—When dogs are in the last extremity of pain, they are in such a fright of getting something more that they lie generally as quiet as they can; and the shivering I saw that day was a sign to me of terrific pain.

21098. But still they were lying quiet?—I could not say actually they were lying quietly. They were shaking with fright.

21099. It is hardly right in answer to my question, which is directed to finding out whether they were suffering agony or not, to say that they were shivering with agony. All it seems to me that you are entitled to say is that they were shivering?—Not at all. I am entitled to say what I saw—that they were shivering with agony; which they certainly were.

21100. (*Chairman.*) Shivering was the only outward symptom that you saw?—Shivering, and the general state of the dogs.

21101. Was there any other outward symptom—leave out the question of what you infer. What was the outward symptom? You told me shivering, and you did not mention any other when I asked you?—Shivering, and the way in which they breathed through the tubes.

21102. (*Sir John McFadyean.*) Did the behaviour become markedly different when the anæsthetic was administered?—The anæsthetic was administered to one dog and that dog died.

21103. Did the behaviour of that dog become markedly different?—I was watching the fall of blood pressure during the time the experiment was being done.

21104. You cannot say anything about it?—I cannot give any further evidence about what they suffered after that, because my time was taken up in looking after the fall of the blood pressure on the drum.

21105. How was the chloroform administered?—I do not remember how it was administered—whether it was administered through a bottle or with a motor—I do not know; it was administered through the tracheal tubes. I do not know how it was given on the other side.

21106. How were the tubes secured in the throat?—I cannot tell you.

21107. Do not you think that if these dogs had been left quite unanæsthetised they would have been very likely to have torn and disturbed the apparatus?—I do not see how they could have done that.

21108. You do not assent to the view that a dog, although it is tied down by the extremities and by its head, can execute very extensive wriggling movements?—I did not see them do anything of that sort.

21109. To that extent then that, as a symptom of agony, was not present?—No.

21110. (*Sir Mackenzie Chalmers.*) I want to ask you one or two questions. You have experimented a good deal with anæsthetics on animals?—Yes.

21111. Can you tell us at all how many animal experiments you have made or been present at?—I was present at the 600 experiments done by the Hyderabad Commission.

21112. They were done under your supervision?—Well, I was present at them.

21113. You have experimented yourself?—Yes.

21114. On animals?—Yes.

21115. How many; can you give us roughly the number?—I cannot tell you. I have done a great many, and, of course, I took part in a good many experiments at the Commission. I was President of the Commission.

21116. Have you yourself experimented with morphia on animals?—There were many experiments made by the Hyderabad Commission with morphia.

21117. What in your opinion, as an expert, is a sufficient dose of morphia to produce anæsthesia in a dog of this size?—I cannot tell you the amount that would be necessary, but it must be a lethal dose. I do not know what the lethal dose for a dog is.

21118. If Dr. Shore was correct in saying that, owing to some misapprehension as to the strength of the mixture, he gave 36 times as much morphia as you thought, would that be a lethal dose or not?—No, it certainly was not a lethal dose.

21119. In your opinion nothing short of a lethal dose can produce anæsthesia in a dog?—I should think not, that is my opinion.

21120. Have you made any experiments for the purpose of testing it at all?—No, I have not.

21121. If a sufficient dose of morphia is given to a dog to produce anæsthesia, how long would the dog remain alive under it?—I do not know.

21122. Does the effect of morphia in your experience last for any considerable time?—Are you talking about animals now?

21123. Yes?—I cannot give you an opinion about that, because I have not had sufficient experience of the effects of morphia on animals. I can tell you about the human subject.

21124. A human subject must not have what you call a lethal dose?—No, a dose to relieve ordinary pain.

21125. May I take it that in your opinion morphia, even in a non-lethal dose, deadens pain, and in a lethal dose abolishes pain. Is that what you say?—It would deaden certain kinds of pain.

21126. Only certain kinds?—Yes, it would not deaden the pain of a cutting operation—an ordinary medicinal dose.

21127. With a larger dose?—I should not like to give any patient more than a medicinal dose.

21128. Now, I want to understand a little more about this particular experiment. You went into the laboratory before luncheon?—Yes.

21129. And there you saw the two dogs which had already been operated on?—Yes. They were prepared for the experiment.

21130. Will you tell us exactly what had been done to those dogs?—I cannot tell you precisely, any more than that their vessels had been cross connected, and that they had got tracheotomy tubes in their throats. I cannot tell you what had been done precisely, because I was not even told that. They had been prepared for the cross circulation experiments, and complete dissection of the neck had been done in both dogs.

21131. The operative procedure consisted in putting in a tracheotomy tube, and what else?—Cross connecting the vessels.

21132. At the time when you saw the animals there was common circulation then, was there?—That I cannot tell you—whether the clamps had been opened or not.

21133. Who went into the laboratory with you, do you remember?—Dr. Gaskell.

21134. Was Dr. Shore there?—I do not remember. I remember seeing him about. I do not remember that he was there at that moment.

21135. Was Sir Clifford Allbutt there?—No, he was not.

21136. Was anyone else there?—At the first experiment I do not recollect anybody else being there at all except assistants.

21137. I do not quite understand. Were there two experiments on that day?—There were two experiments, one on the 7th of July and the other on the 11th. At the first experiment there was nobody present except the laboratory people, so far as I recollect. On the second occasion Sir Clifford Allbutt and Dr. Langley

and somebody else were there; there were three or four people present on the second occasion.

21138. (Chairman.) This is the 7th of July that you are speaking of?—On the 7th of July I do not think that anyone was there except the laboratory assistants.

21139. That is the occasion you are speaking about?—Yes.

21140. (Sir Mackenzie Chalmers.) You saw one experiment on the 7th of July and another on the 11th?—Yes.

21141. Were both those experiments of the same kind?—Yes.

21142. On both occasions you say that the animals had been prepared before the experiment?—Yes, before I got there both animals were prepared, on both occasions.

21143. Then you spoke about going to luncheon after that?—That is on the first occasion.

21144. Who was at luncheon on that occasion then?—I do not recollect anybody except Dr. Gaskell and Dr. Shore. There may have been somebody else, but I do not remember.

21145. It was on the second occasion that Sir Clifford Allbutt and Dr. Langley were present.

21146. At the laboratory? When you went into the laboratory and you saw the dogs prepared for the experiment, was the laboratory attendant there?—I cannot recollect; I fancy he was, but I cannot recollect anybody specifically.

21147. Was Dr. Shore there?—Dr. Shore was about the laboratory.

21148. You said nothing at the time, may I take it, of the inhumanity which you witnessed, or thought you witnessed going on at the time?—I thought it was frightfully cruel.

21149. And yet you said nothing?—What was I to say? I could not possibly say anything in another man's laboratory.

21150. But surely! is that so?—It is so certainly. I could not go into Dr. Gaskell's laboratory and criticise his way of doing his experiments. I should never dream of doing such a thing, and I cannot imagine that any other man could either.

21151. I should not have thought so myself. When did you first mention to anybody that you had seen what you call a cruel experiment?—I have always mentioned it, and I talked about it on that day. I told Dr. Gaskell that we had given all our animals chloroform, and I could not understand why he would not give chloroform to his. We never dreamt of doing any operation like this without chloroform.

21152. Would giving chloroform in the initial stage (that is for the purpose of putting in the tracheotomy tube and connecting the arteries) have in any way vitiated the experiment?—In my opinion not in the least.

21153. Chloroform could have been given as well as morphia?—Certainly.

21154. There was absolutely no object in giving morphia instead of chloroform?—Not that I know of.

21155. Was there any scientific object to be attained by not giving a sufficient anaesthetic?—I am quite prepared to believe that Dr. Gaskell thought that if he gave the chloroform it might vitiate the experiment. But that is not my opinion, of course.

21156. But he did not say so?—He said as much as that, that they did not want to give chloroform before it was given for the experiment.

21157. Was there any object in preparing those dogs as you say, three or four hours before, and leaving them?—It takes a long time to cross-connect the circulation; it takes a very long time to dissect the vessels out and connect them one with another.

21158. Have you seen it done yourself?—I have seen it done very often.

21159. It was done in your own laboratory?—In my own school.

21160. As a demonstration?—No; we were obliged to repeat these experiments when they gave us results diametrically opposed to the results we had obtained; we were, therefore, obliged to repeat the cross-circulation experiments that we had made them do.

21161. Did you do those under anaesthetics?—We did them under chloroform always so far as it was possible.

21162. When is it not possible?—Just before the experiment is begun, you must let the animals out of the chloroform so as to see what the effect of the chloroform is from the beginning, from the time that the blood pressure first begins to fall under the influence of the anaesthetic.

21163. It would vitiate the experiment, you mean, otherwise?—You cannot mix up the experiment with what you were doing before; you must begin the experiment, as it were, afresh.

21164. Then, assuming morphia to be a sufficient anaesthetic, that would be a good reason for giving it?—If morphia was an anaesthetic.

21165. In fact, you do not believe in morphia as an anaesthetic?—I know that it is not.

21166. (Chairman.) Except in a lethal dose, you mean?—Precisely.

21167. (Sir Mackenzie Chalmers.) By a lethal dose you do not mean a dose that kills at once, but kills in some hours, ultimately?—Yes.

21168. In your experiments, when you had to introduce the chloroform, did you give any anaesthetic?—No.

21169. The animals for that short period were without anaesthetics?—They were out of the anaesthetic.

21170. Did they show any signs of pain in an operation of this kind?—They did for a time, very often, not always.

21171. After tracheotomy in the human subject is there usually much pain?—Pain where?

21172. Anywhere?—Do you mean to say after the operation?

21173. Yes?—No, I should not think there is any pain at all, except the mere smarting of the wound—nothing else.

21174. You mean that the pain consists in the making of the cut, and the smart, and that soon passes away?—Yes.

21175. Then in the case of these dogs, which you told us were suffering pain, what were they suffering from exactly?—The whole of their necks were dissected, and opened up; all their vessels were exposed.

21176. That is to say, there was a large wound?—An enormous wound, the whole of the necks were dissected in both dogs, so as to cross-connect the vessels.

21177. Would there be many sensitive nerves there?—Yes.

21178. There would be considerably more pain than that following upon ordinary tracheotomy?—After tracheotomy there is no pain at all to speak of—nothing that would require any medicine.

21179. But after cross-connection dissection there would be?—There would be a great deal of pain, of course, but not as much pain as during the cutting.

21180. You told us that dogs in very great pain often do not growl, or make any sign?—Yes.

21181. What sort of experiments would you judge that from?—I am speaking generally. I cannot recollect any specific ones without the reports of the cases.

21182. Some of those were experiments you have made yourself?—Yes.

21183. In what kind of experiment have you had to cause a dog such pain?—In experiments on the action of chloroform, when we are obliged to let them out before we begin giving them chloroform in any particular observation.

21184. You have had yourself to perform very painful operations on animals?—No cutting operations.

21185. I want to know what operations you were referring to when you told us that dogs under great pain show very little sign except shivering?—Yes. I do not say that they always do.

21186. I want to know what operations you are referring to?—In the experiments of the Hyderabad Commission an enormous number of experiments were done to try and produce shock, by Sir Lauder Brunton, and those are the operations that I refer to. Sometimes they tried to produce shock in every stage of anaesthesia—in every stage of chloroform.

Lt.-Col.
E. Laverie,
M.B., F.R.S.
25 Mar. 1908

*Lt.-Col.
E. Lawrie,
M.D., I.M.S.*
25 Mar. 1908.

21187. Those are experiments under anaesthesia?—Yes, but by that time they were allowed to come round again before the cross-connection.

21188. (*Mr. Ram.*) By Sir Lauder Brunton?—Yes, and the Hyderabad Commission; they were done by the whole Commission.

21189. (*Sir Mackenzie Chalmers.*) Who else?—The man who is now Surgeon-General of the Government of India, Dr. Bomford, and Dr. Rustomji.

21190. And yourself?—And myself.

21191. When did you first publish any account showing that these animals were, as you think, put to unnecessary suffering?—I have never published any account of it.

21192. When did you first put it in writing?—Here, for this Commission.

21193. Before you had given evidence here?—Yes.

21194. That is after fourteen years?—Yes.

21195. You did not think it your duty to inform any public authority about it?—No, certainly not.

21196. And you thought that, as it was in somebody else's laboratory, you were not even entitled to remonstrate with the people in charge of the laboratory?—No, I never should have dreamed of doing such a thing.

21197. Had you formed any opinion at the time whether the law was being broken or complied with?—I did not know.

21198. (*Mr. Tomkinson.*) In what capacity were you there, do you consider?—I was there as a mere spectator.

21199. As a guest?—As a guest.

21200. As an invited guest?—Yes.

21201. Not as a professional coadjutor?—Well, it hardly amounted to that. They wanted to show me what the results of their experiments were.

21202. You were there by invitation to see the effect of certain experiments?—Yes, they said they would produce certain effects by experiments which were the exact counterpart of those which formed the subject of report to the Nizam's Government.

21203. I think you say that you consider that your position there rather debarred you from making any protest against anything you saw that you might disapprove of?—Yes.

21204. You felt debarred from entering a protest against what you thought an act of cruelty?—Yes; it never would have entered into my head to do so at all.

21205. You say that Dr. Gaskell told you that the preparation for that experiment that you were to see had taken four hours?—Yes, about that.

21206. And you found these dogs so prepared, strapped down very firmly?—Yes.

21207. Without the possibility of more than shivering.

(*Chairman.*) He did not say that.

(*Witness.*) No, I did say that.

21208. (*Mr. Tomkinson.*) But you said I think that they showed no movement except that of shivering?—They could not do anything very much in the way of movement.

21209. Did you examine their eyes?—No.

21210. But you are tolerably satisfied that they were not unconscious?—I am sure they were not unconscious. They were not getting any anaesthetic.

21211. But, of course, there is a conflict about the quantity of the anaesthetic, at least the morphia?—I am only giving my own view, of course.

21212. Had that morphia been administered through the mouth?—I cannot tell. I understood it was administered subcutaneously.

21213. We have had it stated to this Commission that it is only when morphia is administered subcutaneously, that it is claimed to be an anaesthetic?—I see.

21214. The tubes in their throats would make the dogs voiceless, would they?—I should think so.

21215. You are not quite sure about it?—That is my opinion, that it would practically make them voiceless.

21216. If the dogs had been in that condition for some hours would not the struggling or demonstration of pain naturally die down rather; you would not expect them to show such active signs of pain as they would at the beginning of the operation, naturally?—No, certainly not.

21217. Then you do not think that being there and disapproving, as you did, of what you saw, you ought to have made a protest?—I could not have made a protest to a man in that position.

21218. You do not think that you in any way made yourself a party to the approval of the operation?—Not in the least, in no way certainly.

21219. You considered yourself bound by professional etiquette or by your position as an invited guest from making any protest?—These were two great physiologists, and it was not my business to speak to them about their own work and the way in which they did it.

21220. (*Mr. Ram.*) Will you tell me, please, is the operation of putting a tube into a dog's throat, as you describe it, a delicate one?—Do you mean difficult?

21221. Yes?—If you have had a little practice at it it is not difficult at all.

21222. Do you not require the dog to be immovable, or nearly so?—Well, you would have to have it fairly quiet.

21223. Do I rightly gather that in your opinion these dogs had been prepared for hours before, as you expressed it, for fully four hours before, and that the dogs were not under anaesthetics when their throats were being dissected and these tubes inserted?—Do you mean to say that during the whole time they were dissected from the commencement of the dissection until the time I saw them they had had no anaesthetics?

21224. That is what you say?—That is what I say.

21225. In your opinion would it be a possible thing to get the tubes into those dogs' throats in the way you saw them if dogs had been under no anaesthetics at all?—Certainly it would.

21226. Would it have been a difficult operation?—No, not particularly.

21227. Would it have been more difficult than if they had had chloroform?—Yes, I should think it might be a little more difficult.

21228. More difficult than if they had had a full dose of morphia?—I do not think morphia would make any difference one way or the other.

21229. (*Chairman.*) Does that apply not only to the operation of inserting the tube, but to the preparing of the arteries?—Does what apply?

21230. What you said about its making no difficulty or very little difficulty in performing the operation?—In many ways it adds to the difficulty to have to give chloroform to two dogs which are being prepared for a cross-connection experiment; it is extremely difficult to give a dose of chloroform so as to keep them anaesthetised without having accidental death.

21231. I did not say chloroform; I said an anaesthetic, or anything that would quieten them?—I am talking about chloroform, of course.

21232. (*Mr. Ram.*) Only chloroform?—Yes, or any anaesthetics of that kind that is given by inhalation.

21233. Does your opinion of the state of these dogs as to whether they suffered or not depend upon whether in fact morphia had been given to them to a sufficient extent to make them insensible?—No, it did not depend upon that at all.

21234. Do you then, in forming your opinion as to the state of those dogs, disregard whether they had been given morphia or had not?—I disregard it entirely.

21235. When you saw this operation performed, you saw the animals before you went to luncheon?—Yes.

21236. You were of opinion that they were in great pain?—Yes, I was of opinion that they were in great pain.

21237. Did the statement that you have just made as to the suffering of the dogs and as to your belief that they were prepared for the operation without any anaesthetics, apply to the operations both on the 7th July and on the 11th July?—That was only spoken about on the first occasion, on the 7th July.

21238. But as to the state of suffering of the dogs, does it, in your opinion, apply to the feelings of the dogs on both occasions?—Yes, I should think it would.

21239. Now just revert to the occasion on which you went to luncheon; who were present at luncheon besides yourself?—I only remember Dr. Gaskell and Dr. Shore.

21240. Are you aware that both of those gentlemen have told us that in their opinion the dogs were under no suffering whatever?—Well, that may be their opinion.

21241. On the occasion of the luncheon, there were you three gentlemen there, so far as you recollect?—Yes.

21242. Those two gentlemen, as they told you, believed that the dogs were wholly free from suffering?—They have told you that.

21243. You, on the other hand, tell us you were sure the dogs were in a state of suffering?—I say so.

21244. How long did lunch last?—I cannot tell you precisely; it lasted probably 20 minutes or half an hour, but I do not recollect how long it lasted.

21245. In your last answer to Sir Mackenzie Chalmers, you stated that you did not know whether a breach of the law was being committed or not?—No.

21246. You did not know then?—No.

21247. Do you know now?—I have been told so.

21248. When did you first learn that a breach of the law had been committed?—I was told quite recently that a breach of the law had been committed.

21249. Have you read the Act?—No.

21250. All the evidence you have given us here without ever having read the Act under which we are proceeding; is that so?—Yes.

21251. When did you first learn that there had been a breach of the Act—when you were here the other day?—No, I cannot remember when it was. It was before that.

21252. I understand that, not knowing whether a breach of the Act was committed or not, and believing that those dogs were suffering torture the whole time of the lunch, you made no protest?—Yes.

21253. If you now became acquainted with a distinct breach of the law in any laboratory, should you consider it your duty to report it to the Home Secretary or not?—Certainly not.

21254. You say that in the operations that you performed yourself you have frequently allowed dogs to come out from under the influence from chloroform, and that they have suffered very much in consequence of your doing so?—They have suffered to a certain extent, yes.

21255. Where were those operations performed?—At Hyderabad. So far as possible, the animals were always kept under the influence of the anæsthetics.

21256. When you gave your evidence before, you made no reference before us to many of these important statements that have appeared in your comments here to-day?—No.

21257. Why did you not, if those facts were present to your mind then, bring them before our notice at that time?—Well, I did not wish to say anything about Dr. Gaskell, at that time especially.

21258. What caused you to change?—I did not wish to mention anybody by name.

21259. What caused you to change?—The fact that my evidence was contradicted.

21260. Had you between this date, fourteen years ago, and your giving evidence here, made no memorandum of what occurred on those occasions?—We have got the notes of the second experiment—our own notes.

21261. (Chairman.) Of the 11th you mean?—Yes, on the 11th.

21262. (Mr. Ram.) Nothing with regard to what took place on the 7th?—We did not take any notes on the 7th.

21263. If you did not know that there had been any breach of the law, or did not know (as I understand you to say) what the law was, what meaning do you attach to what you say that Dr. Gaskell stated "in order to hoodwink the Inspector and satisfy the Act"?

—I did not attach any more meaning than what I state.

21264. What do you state?—I state that he told me that he gave the morphin in order to comply with the Act; that he was obliged to give some anæsthetic, and he gave the morphin and called it an anæsthetic.

21265. Then it was present to your mind that there was an Act?—Yes.

21266. And an Act that had been complied with?—Yes.

21267. And an Act that specified that you must have anæsthetics?—That I did not think of.

21268. What do you mean, then, by his giving morphin and calling it an anæsthetic in order to satisfy the Act?—I understood only what he himself said, that is all; that that was why he had given it.

21269. Have you ever in the fourteen years till a month ago repeated that statement of his to anybody?—Repeatedly.

21270. Can you name anybody to whom you have repeated it?—I have mentioned it to hundreds of people in India, Dr. Bomford, Sir Lauder Brunton, and everybody, of course.

21271. To Sir Lauder Brunton?—Yes.

21272. Did you name it as indicating that Dr. Gaskell had disregarded the Act?—I do not remember.

21273. What was your motive? How came you to mention it?—I just mentioned it as a matter of interest. It was in comparing it with our own experiments.

21274. Was it a matter that filled you with horror?—I cannot say that it filled me with horror. I thought it was horribly cruel.

21275. (Chairman.) I understand from what you said last that what you mentioned to those gentlemen was not the cruelty, but the fact of the experiments having been a failure in your view?—That has been mentioned also.

21276. I thought you said that was what you spoke about to Sir Lauder Brunton?—I have spoken about the whole of the reports.

21277. (Colonel Lockwood.) About its being cruel, as well as the other thing?—Yes.

21278. (Mr. Ram.) About the intention of hoodwinking the Inspector?—I do not remember saying anything special about that to Sir Lauder Brunton.

21279. (Dr. Wilson.) Do I correctly understand that all your cross-circulation experiments out in Hyderabad were painful experiments necessarily?—In parts they were, just before the experiment was begun.

21280. That is to say, the animal had always to come out of chloroform for the second part?—Before the experiment was begun.

21281. And were those experiments to which you referred as regards shock also painful experiments?—Well, I should think there was in some experiments a certain amount of pain, but they were always done more or less under the influence of an anæsthetic. One of the members of the Commission wanted to repeat the whole of the experiments as regards shock without any anæsthetic at all, but that the Nizam's Government would not allow.

21282. Was that request formally made in writing?—No, it was not made in writing.

21283. May I ask who made it?—I would rather not mention his name.

21284. You did not satisfy yourself at the time that those animals were suffering pain; it was merely an impression?—Merely what I saw.

21285. It was merely an impression?—It was rather more than an impression; in my own mind it was a certainty.

21286. But supposing, for example, that they did receive a large dose, what is called a lethal dose, of morphia, as Dr. Shore stated, do not you think it is possible that your impression might have been wrong?—But they had not had a lethal dose.

21287. How do you know?—Because they would have died of it.

21288. I think you admitted in answer to a question of mine, that they might have survived four or five

Lt.-Col.
F. Laurie,
M.B., I.M.S.
25 Mar. 1908.

*Lt.-Col.
E. Laerie,
M.B., I.M.S.*

25 Mar. 1908.

hours with a lethal dose?—Yes, then they would have shown signs of having had a lethal dose if they had had a lethal dose.

21289. (Sir William Church.) In answer to Sir Mackenzie Chalmers's question you said that your dogs did show evidence of pain when they came out of the chloroform, when you waited for a short time before giving it again. What were the symptoms of their being in pain then?—Merely struggling and whining.

21290. Then how was it that these dogs at Cambridge, if they were in such agony, did not struggle too?—They did not struggle. They were fastened down.

21291. I suppose your dogs were fastened down?—Our dogs were not fastened down in the same way that those were.

21292. And therefore the dogs that have received chloroform and are allowed to come out struggled, and the other dogs did not?—I do not say that. I do not remember very much about our dogs' struggles; it was not very much; but they were not fastened down as these dogs were.

21293. Do you mean that they were not fastened down at all?—They were fastened down just sufficiently to enable us to do what we wanted.

21294. But I am speaking of dogs which you subsequently used for your cross-circulation experiments?—Yes.

21295. They were fastened down I suppose in the same way?—They were not fastened down in the same way as these were.

21296. Do you mean that they were not fastened down so tightly?—No, not nearly so tightly; and most of our operations were done with students holding them to a certain extent.

21297. Students holding them when the connections were made between the vessels?—While the chloroform was given, while they were in the struggling stages of the chloroform.

21298. I am not speaking of while the chloroform was given; I am speaking of after the chloroform had been given and when you were waiting to give it again to see the effect of the chloroform on the blood-pressure?—We did not wait more than was absolutely necessary; there was no unnecessary waiting at all. The blood-pressure was allowed to get up to its normal level and then the experiment commenced.

21299. But I presume that you chloroformed your dogs first and then you connected the vessels?—While under chloroform.

21300. And whilst you were connecting the vessels were the dogs only held by two students?—They were held by whatever number was necessary—two, or three, or four; it did not matter how many there were. I never said only two.

21301. Do you mean that this delicate operation of uniting the vessels was done with the dogs loosely held by students and not fastened in any way?—They were fastened, but not fastened particularly tightly; and of course they only struggled when they were out of the chloroform.

21302. But they did struggle when they were out of the chloroform?—When they were partially out. They were unconscious, but they were very often partially out of the chloroform.

21303. In the case of the dogs at Cambridge, the only indication of pain they gave was shivering?—That was the only indication that I noticed particularly.

21304. Is there any difference between the narcosis of morphia and that of opium?—Not that I know of.

21305. Have you ever seen a person poisoned with opium?—Yes.

21306. A lethal dose?—Yes.

21307. Have you ever seen cases in which people have taken opium or morphia and have recovered?—In what dose do you mean?

21308. Apparently in a fatal dose, or nearly so, so that great difficulty has been found in recovering them?—Yes.

21309. Have you ever asked those persons any questions afterwards?—What about?

21310. I ask you whether you had ever asked those persons any questions at all afterwards?—Not that I recollect.

21311. You have never asked them whether they have been conscious at all of what has happened to them during their period of narcosis?—No.

21312. Do you know what happens to a person who is narcotised with morphia or opium?—Is this part of the proceedings of the Commission—to ask me my opinion about opium poisoning.

21313. Yes, it bears upon the question in this way: that you have said most distinctly that morphia is not a narcotic for dogs.

21314. (Chairman.) You said that you were told by Dr. Gaskell that a certain amount of morphia had been given, and there seems to be some dispute as to what effect three grains of morphia on a dog may be. It is material to ask you what your experience is about the effects of morphia?—In my opinion a three-grain dose of morphia to a dog is not an anæsthetic dose.

21315. (Sir William Church.) But I ask you first of all, if you would not mind giving me an answer, whether you know the condition of a man who has been narcotised by morphia or opium to a severe degree?—You mean poisoned?

21316. Not to die?—Yes, I understand—poisoned and recovering.

21317. Yes?—Yes, certainly I have.

21318. What is his condition?—His condition is a condition of coma, as everybody knows.

21319. Is he conscious of what is done to him?—Not when he is comatose, he certainly is not.

21320. Therefore you would not deny that probably another animal than man can be in the same unconscious condition?—Quite so.

21321. I only wanted to get at what you meant when you say that a three-grain dose of morphia it is impossible should in any given degree narcotise a dog?—Yes, that is my opinion, from the experiments that we did in Hyderabad.

21322. (Chairman.) What is a lethal dose for a dog?—I could not tell you; I do not know.

21323. You have never tested up to that?—No.

21324. (Sir William Collins.) Were these dogs at Cambridge not comatose?—I should not think they were.

21325. (Sir John McFadyen.) Are you sure that were not?—I should not think they were. I never thought about it.

21326. (Sir William Church.) The fact that they did not struggle like the dogs you experimented with might be due to the fact that they were narcotised?—I should not think so.

21327. Do you know whether morphia or opium administered at the same time as chloroform has greater or less effects upon the animal to which it is given?—You mean, does it deepen the anæsthesia?

21328. Yes?—I do not believe it does, unless it is given in such a dose as to produce its own effects. It would not influence the anæsthesia.

21329. And the anæsthetic would not in any way influence the action of the morphia?—The anæsthesia might be a little bit deepened, but not much.

21330. (Sir John McFadyen.) I think in answer to a previous question you said that you did not think four hours was an unreasonable time to be expended in preparing a laboratory dissection?—Did I say that?

21331. You were asked as to why there should have been a period of four hours during which the dogs were not under anæsthetics? You will correct me if I am wrong; perhaps you have not stated that?—I do not quite understand what you mean.

21332. I will put it in this way: How long do you think it would take to prepare the dogs for the cross-circulation experiment by a person who had done it two or three times before?—I cannot give an opinion about that.

21333. Please let me have it as near as you can?—I should not be surprised if it took four hours.

21334. That is not owing to the great extent of the cutting that has to be done, because, after all, it is only a small slit in the dog's neck, is it not? Is it owing to the delicacy of the operation?—It is extremely extensive and difficult.

*Lt.-Col.
E. Lawrie,
M.B., F.M.S.*

25 Mar. 1908.

21335. It is an extremely difficult operation?—I should think so.

21336. That is what I should have thought; but unless I misunderstood, you said, in answer to Mr. Ramsay, that the difficulty would not be very greatly increased owing to the fact that the animal was conscious?—No; I should think it would be much more.

21337. Do you desire to correct that answer?—I said that I should think it would be much more difficult to prepare two animals for cross-circulation experiments under chloroform than if they were not under chloroform.

21338. I thought you said a minute ago that it was a very difficult operation?—Yes. I am talking of the dissection.

21339. I am talking of dissection even under an anæsthetic. Is that so?—Yes.

21340. Do you really ask the Commission to believe that anyone, even an experienced surgeon, would be able to perform such a delicate dissection as this insertion of these tubes in dogs that were not under an anæsthetic?—Certainly they could.

21341. Have you ever seen it done?—No, I have not.

21342. You would not admit that it would add enormously to the difficulty of the operation if the dog were conscious?—I do not see that it would add enormously to it; it would make it more difficult, that is all, so far as the actual dissection is concerned.

21343. So that you do not think it would have been a great advantage to have the dogs unconscious?—As regards the mere dissection, I do not think it would.

21344. (*Sir William Collins.*) How did the condition of the Cambridge dogs differ from the condition of dogs in a state of coma from morphia poisoning?—I cannot tell you.

21345. Was there any difference?—I cannot give you an opinion of my own as to dogs in a state of coma, because I do not think I have ever seen one.

21346. Then you are not prepared to say that the condition of the dogs at Cambridge was not that of coma from the morphia?—I should not think it was, most decidedly.

21347. But the dose, if Dr. Shore is right, was a much larger one than you previously apprehended?—Yes.

21348. (*Chairman.*) There are one or two questions I ought to ask you as there may be some evidence about it. You said that the animals were tightly secured?—Yes.

21349. So as not to allow of much movement, is that so?—Yes.

21350. I must ask you: would it be right to say that the bands were not used to prevent movements of the animals, and that considerable voluntary movement of the limbs would have been possible if the animals had been conscious?—No.

21351. That would not be true?—No.

21352. Supposing that either chloroform or a narcotising dose of morphia had been used, it would not have been necessary to bind them together?—While they were in a state of anæsthesia they would be quite still, of course.

Mr. L. E. SHORE, M.D., recalled; and further Examined.

21373. (*Chairman.*) You have given evidence before us, as you will remember?—Yes.

21374. And to a certain extent upon this question of what happened on the 7th July, 1894?—Yes.

21375. You have been shown, I believe, a statement which has been made by Colonel Lawrie with reference to what took place on the 7th July?—Yes, Dr. Gaskell read to me a statement which is a criticism of my evidence.

21376. It is with reference to what took place on that 7th July with respect to these two dogs that I want to ask you some questions. Do you remember Colonel Lawrie arriving at Cambridge on that day?—Yes.

21353. It would not be necessary to bind them together in that case?—No.

21354. Then did you examine the binding particularly?—No, not at all.

21355. It is your impression about their being tightly bound?—Yes.

21356. Then as regards the administration of chloroform, do you say that at no time whilst you were there did you see any chloroform administered except the concentrated dose that killed the dog?—Yes.

21357. And that was how long before the end of the experiment; how long did it take the dog to die under it?—I cannot tell you; I have not got the notes; it was only a few minutes.

21358. And up to those few minutes before the matter ended in the dog's death, there was no chloroform administered in your presence?—No.

21359. And your belief that there was no chloroform administered is derived entirely, I understand, from what Dr. Gaskell told you?—Certainly.

21360. If he had not told you so, you would not have undertaken to say that there was no chloroform administered?—I should have assumed that chloroform had been given if he had not told me so.

21361. (*Mr. Tomkinson.*) You say on page 11A that "when the two animals are ready for the experiment to begin, chloroform can only be given to the feeder"?—Yes.

21362. "As it is useless to give it to the fed"?—Yes.

21363. Do you mean that only one of the dogs had chloroform administered to it?—Yes, only the fed had chloroform given to it.

21364. Would it not affect the other?—No, not at all. The fed is the second dog.

21365. Then as regards the anæsthetic, for the latter part of the operation, the experiment, only one dog was being anæsthetised?—Yes, and that dog would not be anæsthetised if the experiment is properly done; it would not have any effect upon it.

21366. I say that only one of the two was being anæsthetised?—But I say that would not produce any anæsthesia in the fed dog if the experiment was properly done.

21367. In neither dog?—In neither dog if you give it to the fed; that is to say, it does not get to its brain if the experiment is properly performed.

21368. Then in your opinion was one of those two dogs absolutely without anæsthetics during the whole of the operation?—Yes, except the morphia.

21369. (*Sir Mackenzie Chalmers.*) How was that dog killed then?—So far as I recollect its artery was cut, I suppose; it is generally done in that way.

21370. Then after luncheon, when the experiment began, how long did it last in your presence?—It lasted a few minutes. I can tell you about the second experiment, because I have the notes; but I cannot tell you about the first, because I have not the notes.

21371. In either case the experiment that you yourself actually saw done only lasted a few minutes?—Yes.

21372. And that consisted in giving chloroform to one of the dogs?—To the fed.

21377. When did you see him first?—I do not remember the time.

21378. I will begin in another way. Perhaps you remember the dogs being prepared to be operated upon?—Yes.

21379. Did you take part in that preparation?—I prepared them myself.

21380. And who else was there whilst they were being prepared?—One laboratory assistant was there certainly all the time.

21381. Is he here today?—Yes, he is here; and generally another assistant was helping.

21382. And was there any other skilled person, any

*Mr.
L. E. Shore,
M.D.*

Mr.
L. E. Shore,
M.D.
25 Mar. 1908.

other physiologist?—Not until Dr. Gaskell himself arrived.

21383. When did he arrive—before luncheon?—Oh, certainly before luncheon. I do not remember the hour.

21384. Did he arrive before the preparation was over?—Certainly.

21385. Was the preparation over before Colonel Lawrie arrived, do you remember?—I do not remember the hour at which he arrived.

21386. Now will you just tell us exactly what happened. You had these two dogs in the laboratory; what did you first do with them?—They were first given an injection hypodermically of hydrochlorate of morphia; that was between half-past eight and nine o'clock in the morning.

21387. What strength was that?—One dog was given 10 cubic centimetres of a 2 per cent. solution, and the other dog was given 6 cubic centimetres of the same solution.

21388. Why was there that difference?—One dog was somewhat smaller than the other.

21389. Was it proportionate to their size?—Not quite proportionate; there was rather less given to the smaller dog than was proportionate to its size.

21390. It was given less than its full proportion?—Rather less compared with the dose given to the bigger one.

21391. Were the dogs put on the table when you gave them that injection?—They were standing on the floor.

21392. How was it administered?—A dog is just patted and the syringe is put under its skin, and it is injected without any difficulty at all.

21393. And when that had been administered, did you put them on the table at once, or did you leave them for a time?—They were left for half an hour until they became drowsy and laid down.

21394. And then what happened?—Chloroform was then applied to the nostril.

21395. Were they then put on the table?—No, they were on the floor. The chloroform was put to the nostril of the animals until they were unconscious; they were then lifted on to the table.

21396. Was that done on this 7th July, when they had the chloroform after they became drowsy?—Certainly.

21397. Are you quite sure of that?—Perfectly certain.

21398. Did you watch the effect of the chloroform on them?—Certainly.

21399. Did it render them insensible?—Absolutely.

21400. You say that then they were put on the table; and what was done to them then? Were they bound in any way?—Their limbs were gently restricted by bands to the table and their heads fixed by a holder.

21401. What was the nature of the binding; was it tight or loose?—Just one narrow band to each limb, just sufficient to keep them in the required position for the operation, but not enough to prevent the dog from moving its limbs quite freely if it had wished to do so—that is to say, if it had been conscious.

21402. Were these dogs laid on their backs?—Yes, on their backs.

21403. You mean they were just sufficiently fastened to prevent their rolling over and to keep them on their backs?—Quite so.

21404. But not to prevent a good deal of motion?—No.

21405. Is that the usual way in the case of such an experiment?—Yes.

21406. Then did you proceed to operate upon them?—A tube was then put into the trachea.

21407. You opened the trachea first?—Yes.

21408. And then you put a tube in?—Yes.

21409. Did you perform any other cutting operation or any other operation?—After the tube was put in the tracheal tube was then connected to the bottle containing the A.C.E. mixture before any further cutting operation was done.

21410. When you had done that did you go on with the rest of the operation?—I went straight on with the preparation of the arteries and veins necessary for the experiment.

21411. And how long did the whole thing take you?—About two hours, I think—perhaps rather more.

21412. Were these dogs kept under chloroform all the time?—They were kept under A.C.E. all the time.

21413. The first thing that you administered after the morphia was chloroform?—Yes.

21414. And by inhaling, I suppose?—Yes.

21415. And the A.C.E.?—The A.C.E. through the tracheal tube.

21416. Is that the usual way in which you would deal with an operation of this kind?—Yes, that is the usual way.

21417. And you are quite sure that you followed it?—Certainly.

21418. Was there any reason whatever for departing from that process?—None whatever.

21419. Do you remember Dr. Gaskell coming in?—I do not remember the exact hour at which he appeared.

21420. You are speaking about a long time ago, but you remember that he did come in?—Yes, he came.

21421. Before you had finished?—Oh, yes.

21422. Was he there part of the time while you were keeping the dogs under chloroform?—He was there during the latter part of the preparation of the animal when the animal was still under the A.C.E. mixture.

21423. You cannot speak more definitely than that?—No, I cannot.

21424. Then was the laboratory attendant administering the A.C.E. under your supervision or did you do it?—The tracheal tube was in the bottle of the A.C.E. practically all the time, and it was being looked after both by me and the laboratory attendant.

21425. You were both there?—Yes.

21426. Did the dog struggle or show any sign of pain?—None whatever.

21427. Are you quite sure of that?—Quite sure.

21428. And the animals were kept unconscious throughout?—Yes, they were kept quiet.

21429. Do you remember Colonel Lawrie coming into the laboratory?—Yes, I remember him coming, but I cannot say at what hour he arrived.

21430. He says it was a little before luncheon, and that it was after you had finished the preparatory operations?—Yes.

21431. Did any conversation take place about what had been done to the dogs?—We doubtless told him what preparations we had made in the animals, but I do not remember the conversation.

21432. At any rate, I can ask you this: Did Dr. Gaskell say to him that they had not had any anesthetic?—I heard him say no such thing.

21433. As it might interfere with or spoil the subsequent experiment with chloroform?—I am certain that he would say no such thing.

21434. Did he say that each dog had been given a 10-drop dose of morphin solution?—It is absurd to suppose that he would say any such thing.

21435. He did not say that he gave a 10-drop dose?—I did not hear him say any such thing.

21436. It would not have been true, I understand you to say, if he had said it?—No.

21437. He had given a much stronger dose?—A much stronger dose was given.

21438. But the dog had been given a much stronger dose than a 10-drop dose?—Yes, much stronger.

21439. Did Dr. Gaskell say he had given them a dose of morphin not to prevent pain, but in order to hoodwink the Inspector and satisfy the Act?—He certainly said no such thing.

21440. Or anything to that effect?—Certainly not.

21441. While Colonel Lawrie was there did the dogs show any sign of pain?—They gave no sign of pain whatever.

21442. Do you remember Colonel Lawrie and Dr. Gaskell going to luncheon?—Yes, I remember the luncheon.

21443. And after luncheon they came back into the laboratory, I understand?—Yes.

(Dr. Gaskell.) The luncheon was in the laboratory.

(Chairman.) I did not know that the luncheon took place in the laboratory in the presence of these dogs.

(Dr. Gaskell.) No, we have a private room at the laboratory—the professors' room.

21444. (Chairman.) That is what I supposed. The laboratory being the operating room, they had left the operating room to go into another room in the laboratory for luncheon?—Yes.

21445. And you lunched there, too, I suppose?—Yes.

21446. Then did you all come back into the room?—We all came back, having been absent, I think, about a quarter of an hour.

21447. When you came back just tell us what the condition of the dogs was and what was done?—While we were at luncheon the laboratory attendant never left the room, having had instructions to see that the animals were kept quiet and, if necessary, given further A.C.E. mixture. When I came back they were still perfectly quiet, and no A.C.E. mixture had been necessary. They were quite unconscious, and there was absolutely no movement.

21448. Was anything said by Colonel Lawrie either then or before or at any time to the effect that these dogs had not been anaesthetised and that they were in agony or anything of that kind?—I do not remember his making any such remark.

21449. Surely you would remember it if he had said it?—Yes, I think I should.

21450. According to your account it would not have been true?—It would have been quite untrue.

21451. After you came back what was done?—Strong chloroform was given to one of the dogs in order to perform the object of the experiment, namely, to see the effect of chloroform upon the heart, and when the object of the experiment was reached both dogs were then killed by concentrated chloroform.

21452. The object being to watch by what process and method the dogs died under the chloroform?—No. The object of the experiment was to show that chloroform depresses the heart's action and ultimately makes it stop.

21453. Is not that the same thing?—No, my Lord, it is not the same thing. In this case, although the animal's heart stopped, the animal remained breathing and had to be killed by an administration of chloroform to its brain.

21454. I am not going into the merits of the experiment, or whether it was successful or unsuccessful, but at any rate the experiment was completed—it came to its end?—The crucial experiment was completed, and then the dogs were killed by chloroform, both of them.

21455. Did they ever come back from anaesthesia?—They never regained consciousness.

21456. They suffered no pain?—They suffered no pain.

21457. (Colonel Lockwood.) You were present the whole time during this operation and you must have heard any conversation which ensued between Dr. Gaskell and Colonel Lawrie, and you have no hesitation in saying that the whole of Colonel Lawrie's story as to Dr. Gaskell stating that he had operated with this solution only to hoodwink the inspector is a fabrication from beginning to end?—That is so.

21458. (Sir William Church.) Could you tell the Commission what is a fatal dose of morphia in a dog?—No, I cannot answer that question. I have never attempted to kill a dog by morphia alone.

21459. Could you give the Commission any idea as to what is the usual dose to cause complete narcosis in a dog?—That, of course, varies with the size of the dog.

21460-1. Exactly, but could you tell us at all?—The doses that were given in these experiments were just the ordinary doses which it has been the habit in the laboratory for many years to give in all similar cases. There was no special exception made in this case.

21462. But would three grains, in your opinion, be sufficient to produce unconsciousness in a dog of a

given weight?—Three grains is a large dose for a dog, except a very large dog. Much less is sufficient.

21463. For a dog of nine pounds would three grains be a dose,—or perhaps you do not wish to say?—

(Chairman.) That really is not very material, is it now, because we understand that the morphia was not relied upon as the anaesthetic. Chloroform was given.

(Sir William Church.) But it was relied upon to keep the dog unconscious, which is really the same thing as being in a state of anaesthesia, during the time that they were remaining on the table.

(Chairman.) I thought that chloroform and A.C.E. mixture were given.

(Sir William Church.) The A.C.E. mixture was not given continuously.

(Witness.) May I answer that point? The A.C.E. mixture was given until the defibrination of the blood was complete. As that went on it was wanted less and less, so that it was given more and more diluted; and so far as I remember the administration of the A.C.E. was discontinued altogether just before the cross-circulation was established.

21464. Then it was continued during the time you were at luncheon?—No, it was discontinued just before we went to luncheon, and in spite of that the animals remained perfectly unconscious.

21465. That unconsciousness was due to the influence of morphia?—It was due to the profound influence of the large dose of morphia that they had had, and no doubt also to the fact that they had not yet recovered from the chloroform and the A.C.E. which had been given to them for some three or four hours.

21466. Is not the effect of giving morphia at the time that you give or just before you give either chloroform or the A.C.E. mixture to intensify the action of the anaesthetic?—Very much indeed; only a very small amount of A.C.E. is required if there has been a large dose of morphia already. But I think that in these experiments it must not be forgotten that a long administration of A.C.E. induces an unconscious condition for a considerable time after the administration of A.C.E. is discontinued; for we know, from operations on man, that very often unconsciousness in a patient continues it may be for two or three hours after the administration of the anaesthetic is stopped.

21467. What I wanted to get, and I think I have got it, is that during the time when you were at luncheon and until you began the actual experiment no A.C.E. mixture was being used?—Certainly; it had then been discontinued.

21468. (Sir William Collins.) On the occasion of the experiment on July 7th I understand that you were present and Dr. Gaskell, Colonel Lawrie, and a laboratory assistant?—Yes, those were certainly present.

21469. Was anyone else present on the 7th?—I do not remember that anyone else was present except perhaps another laboratory assistant.

21470. And on July 11th who were present?—On July 11th at the latter end of the experiment Dr. Anderson and Sir Clifford Allbutt were also present besides ourselves. I believe there were two of Colonel Lawrie's students. I think I may call them, present on the 7th; I had forgotten them.

21471. Was there any time on July 7th when Dr. Gaskell and Colonel Lawrie were present in the laboratory and you were not present?—No.

21472. Are you quite clear about that?—I am quite certain. They might not have been in the same room, of course.

21473. Would it have been possible for a conversation to have taken place between Dr. Gaskell and Colonel Lawrie without your hearing it?—They might have gone into another room.

21474. Then it would have been possible for a conversation to have taken place between Dr. Gaskell and Colonel Lawrie without your hearing it?—In another room, but not in the same room.

21475. I do not know the relationship of the rooms; therefore it is for you to tell me whether it would have been possible for a conversation to have taken place between Dr. Gaskell and Colonel Lawrie on the 7th July and you not to hear it?—If they had left the

Mr.
I. E. Shore,
M.D.
25 Mar. 1908.

Mr.
L. E. Shore,
M.D.
25 Mar. 1908.

room they might have carried on a conversation which I did not hear.

21476. Was the A.C.E. mixture being given during the whole time that Colonel Lawrie was present?—No, not during the latter part of the experiment.

21477. Was the A.C.E. mixture or chloroform being given prior to the experiment with the chloroform, during any of the time when Colonel Lawrie was present?—I cannot remember, as I have forgotten the exact moment when Colonel Lawrie arrived on the scene?

21478. Would it have been possible prior to the crucial experiment with chloroform during the period when Colonel Lawrie was present, for the dogs not to have been receiving either chloroform or A.C.E. mixture?—May I ask you to repeat the question?

21479. Would it have been possible on the 7th July prior to the crucial experiment with chloroform during the period when Colonel Lawrie was present, for the two dogs to be without the obvious administration of any other anæsthetic than the morphia?—Yes, it would have been possible.

21480. (Dr. Gaskell.) If perchance Colonel Lawrie came into the laboratory just before lunchtime, it would have been possible then?—Yes, if he came just after the defibrination was completed and before the crucial experiment was made, in which there was an interval of first of all a quarter of an hour while we had luncheon, and perhaps another ten minutes or a quarter of an hour while we were getting ready the cross-circulation experiment. During that period there may not have been any A.C.E. administered, and Colonel Lawrie may have noticed that.

21481. (Sir William Collins.) Can you say from memory whether during the time when Colonel Lawrie was present A.C.E. was administered or not?—I cannot say positively that it was administered while he was there; and I can say certainly that there was a considerable period when it was not administered.

21482. What was the total length of time from start to finish of this experiment with these dogs?—On July 7th we began giving chloroform about half-past eight to nine o'clock in the morning, and we finished about 2.30 in the afternoon.

21483. That would be about from five to six hours?—Yes.

21484. During how many of those hours do you think that the A.C.E. mixture was being administered?—Right up until lunch time, which was about half-past one.

21485. Was it necessary for the purposes of the crucial experiment with chloroform to secure that the blood of the dogs was relatively free from chloroform or A.C.E. mixture before the experiment began?—It was necessary that they should not be deeply under a large dose of chloroform at the time, and that was the reason why a large dose of morphia was given to the dogs; but a very small quantity only of A.C.E. mixture would be necessary to supplement the action of the morphia, if it was required at all, and such a little would not have vitiated the crucial experiment that we had in view.

21486. You say if the morphia was required at all?—If the A.C.E. mixture was required at all to supplement the morphia.

21487. I wanted to ask you whether the morphia was required at all. Would these dogs have been in a painless condition from start to finish if morphia had not been administered at all?—No. It is true that one could have performed the experiment so far as the defibrination under chloroform or A.C.E.; but after that, after that had to be discontinued, it would not have been safe, I think, unless the animals had received a large dose of morphia.

21488. Then after the cessation of administration of the A.C.E. mixture until the time of the commencement of the crucial experiment, to what do you attribute the anæsthesia of the dogs?—To the morphia that they had received, and also, as I have just explained, perhaps partly to the lasting effect of the unconsciousness after a long administration of the A.C.E.

21489. Would it be more advantageous for the experiment that the anæsthesia should be due in the main to the morphia, or to the A.C.E.?—It would be better that the anæsthesia should be due to the morphia.

21490. Was that partly the reason why morphia was administered?—No, the morphia was administered in the ordinary routine way in which experiments on dogs are made.

21491. If nothing but the morphia had been administered up to the time of the crucial experiment, would the dogs have been free from pain?—No. In the early part of the day the cutting operations could not have been done under morphia alone without the animals feeling pain.

21492. Was that because the morphia had not reached the maximum of its influence?—Yes, morphia does not reach the maximum of its influence until later. It is often not until after two or three hours after it is administered that it is at its maximum.

21493. At what time on July 7th would you say that the dogs would have been free from pain from the morphia only?—The earliest moment, you mean?

21494. Yes?—I do not like to answer that question. I did not test it. They were under A.C.E. at the time, and I should not like to say when unconsciousness would have come on under morphia alone; perhaps in about two hours; but I only suggest that. I cannot say; it was not tested.

21495. But if you are using morphia and chloroform conjointly as an anæsthetic for the purpose of an experiment, can you say when it would be safe to abandon the chloroform and rely upon the morphia exclusively for the purpose of securing freedom from pain?—Of course it would depend upon the dose of morphia that was given; but I should think, as I have just said, that after two hours or so you might abandon the chloroform administration and rely on the morphia alone provided that one was not doing any severe operation. Of course, whether you could do a severe operation or not would depend upon the dose of morphia that you had given.

21496. With any dose of morphia would it be possible to do a severe operation with perfect satisfaction as to freedom from pain?—I think with a large dose of morphia it would be possible.

21497. With such a dose as you gave to those dogs?—With that dose I do not think it would be possible to do a severe operation within the first two hours, and that is why the A.C.E. mixture was given.

21498. What would you regard as the minimum dose of morphia that should be given to such a dog as that which was experimented with on July the 7th, in order to be able to perform a considerable operation with complete satisfaction that there would be no pain?—Under morphia alone?

21499. Yes?—I cannot answer that question. I have never done such an experiment. I have never experimented on a dog under morphia alone.

21500. Do you think it possible to predicate what dose could be employed if morphia alone was administered to secure complete anæsthesia during a considerable operation?—I have no doubt that a large dose of morphia would in a dog produce it, provided that you waited a sufficient time for that dose to produce its full effect.

21501. Would it only be near the period of death that that condition would be achieved?—Oh, no; long before the period of death.

21502. Is three grains of morphia a lethal dose for a dog?—I have never watched a dog die under morphia. I cannot say whether it would kill it or not.

21503. (Sir John McFadyen.) What was about the size of the dogs operated on. There was a large one and a smaller one; do you remember what breed they were, or comparable with what breed in point of size?—I do not remember very accurately. I think the larger dog was a greyhound. I do not remember what the smaller one was.

21504. With regard to the way in which they were fixed down, I suppose there was nothing special with regard to the method of fixing these two particular dogs?—No; they were just kept on their backs on the table.

21505. How many pieces of apparatus or cords or bandages were applied to each limb?—One to each; one narrow cord to each limb.

21506. Where is it fastened? Is it above or below the carpus, the knee?—It is generally at the foot with

the hind leg, and with the front leg it is generally round the upper part of the elbow.

21507. I want now to ask you whether you know of any method of rigidly fixing a dog, using only one strap or bandage to each limb?—No; it would be quite impossible to fix a dog rigidly with only one band.

21508. If you allow an animal sufficient freedom for its respiratory movements, then there must be room for it to exhibit signs of pain by struggling?—Certainly; in the method that I use they could quite freely move their limbs and bodies.

21509. Then I wanted to get your opinion as to what you think about the feasibility of performing the dissection that you did on these dogs on an animal that is fully conscious?—It would have been totally impossible to perform so delicate operations as I have performed on animals conscious.

21510. (Sir Mackenzie Chalmers.) If I have understood you aright, at the time when Colonel Lawrie came it was just before luncheon probably?—Yes.

21511. At that time you had disconnected the A.C.E. tube from the tracheotomy tube?—Yes.

21512. So far as you remember, did Colonel Lawrie make any inquiry as to the anæsthetic that was being used or otherwise?—I do not remember his asking me that point.

21513. And you heard no conversation between him and Dr. Gaskell with reference to the use of anæsthetics?—No, I did not hear any conversation.

21514. Had you been operating for any time in that laboratory when you made these experiments? Had you worked with Dr. Gaskell for any time?—I had been experimenting in physiology for several years, from 1887.

21515. In that laboratory?—In that laboratory.

21516. Have you ever known in that laboratory a cutting experiment of any sort performed on any dog or other animal with morphia alone?—No, I have not seen it done in that laboratory under morphia alone.

21517. If it had been the practice in that laboratory to experiment with morphia alone without any other anæsthetic, would you have known about it?—Oh, yes, I should have known all about it.

21518. Would it be incorrect to say that ever in that laboratory, so far as you know, an illusory dose of morphia has been given for the sake of a nominal compliance with the Act?—No such thing is ever done in that laboratory.

21519. From anything you know, could there be any possible reason for Dr. Gaskell, as the head of the laboratory, making such a statement?—It is quite impossible that Dr. Gaskell could have ever made such a statement.

21520. If he had made it, may I take it that, from your own personal knowledge, that statement would have been absolutely incorrect?—Absolutely.

21521. In this case do I correctly understand that you performed the necessary operations before the crucial experiment both on the 7th and on the 11th?—Yes.

21522. Were the conditions in both cases the same?—Yes.

21523. Was morphia first administered, and was it followed by the A.C.E. in both cases?—Precisely the same.

21524. If a dose of morphia has been given, and that is followed up with the A.C.E. mixture for a considerable time, how long does it take after the discontinuance of the A.C.E. before its effects would wear off? When would you expect the animal to again become conscious to pain?—Of course, it depends upon the dose of morphia that one has given and the length of time.

21525. In these two operations, I mean, with the doses that you gave them?—If those animals had been left alone they would never have regained consciousness, in my opinion, but I have never left them until death. But I believe that they would never have regained consciousness.

21526. You believe that if you had never come back after luncheon on those occasions those animals would never have recovered consciousness?—I do not like to answer that question positively, because I have never

left animals under those conditions; but I should think that very likely they would not.

21527. Did you from time to time after the discontinuance of the A.C.E. examine the dogs yourself to see whether there were any signs of consciousness or returning consciousness?—We were examining them continuously.

21528. With that object?—Certainly; we had got our eye on it the whole time. It was most important for the experiment that no consciousness should come back to the animals. If it had, and they had moved the least bit, all our labour would have been in vain, and the whole experiment would have been wrecked.

21529. I want to ask you about the statement of Colonel Lawrie, whether you agree with it. Colonel Lawrie says: "From personal observation I can state positively that before lunch on the 7th of July the two dogs had been lying with unconnected tracheotomy tubes in their throats" (that means unconnected, I suppose, with the A.C.E. mixture), "which in itself is presumptive evidence that they had not up to that time had chloroform or A.C.E. mixture." Do you agree with that statement?—No; I should have thought it was evident that one had got the tracheotomy tube ready for the very purpose of giving the A.C.E. mixture, which was the fact.

21530. For what purpose in this experiment did you perform tracheotomy?—For the easy administration of the A.C.E.

21531. That was the reason the animals were tracheotomised and why you put in the tracheotomy tube?—Yes.

21532. That was wholly independent of connecting the veins for cross-circulation?—Certainly.

21533. You said that you did it for the purpose of facilitating the long-continued administration of the A.C.E. mixture?—Certainly, that is its object.

21534. If you had intended to rely on morphia alone, without the A.C.E., would tracheotomy have been necessary?—It would not have been necessary.

21535. It would have been merely superfluous trouble?—Yes.

21536. Colonel Lawrie is correct in this when he goes on to say, "During the whole of that time the animals had no anæsthetic"; he is correct in that?—I was not present in the room at that moment, but so far as I remember the A.C.E. mixture had by that time been discontinued as unnecessary.

21537. Then you came back from luncheon. Are you perfectly positive that the animals, when you came back, were unconscious and free from pain?—Yes, absolutely.

21538. Colonel Lawrie says: "When I saw the dogs they appeared to be in a condition of frightful agony, and I believe that they were fastened on the dog boards, which must in itself be most exquisite torture, for five hours, and that their necks were dissected, without any anæsthetic." Is that an absolute misapprehension?—Yes.

21539. We asked him what signs of agony he saw, and he told us that he saw shivering in the dogs. Did you notice anything of that sort yourself?—No, I did not notice any shivering, but there may have been some.

21540. Would it be possible that there should be shivering without consciousness under the anæsthetics which you administered?—There might have been movement without consciousness.

21541. With anything like convulsive movements?—No, not with convulsive movements.

21542. Would there be shivering movement?—I suppose it is possible that some movement of that sort might have occurred in an unconscious state, but it is very easy to see the difference between a conscious movement, a voluntary movement, and an unconscious movement.

21543. By a voluntary movement you mean a movement caused by conscious pain?—Yes.

21544. Were the dogs so fastened that any conscious movement of pain must have been observed?—It could have been observed at once.

21545. When you are operating upon a dog under those conditions do you apply any test of conscious-

Mr.
L. L. Shore,
M.D.
25 Mar. 1908.

*Mr.
L. E. Shore
M.D.*

25 Mar. 1908.

ness, such as touching the eye?—We are watching carefully the breathing of the animal, and we are watching carefully to see that there is no voluntary movement, and we occasionally test the conjunctival reflex.

21546. Do you remember whether you tested it in this case?—Yes, we tested it.

21547. At what periods?—Off and on throughout the whole experiment; from time to time throughout the whole experiment.

21548. By the whole experiment you mean beginning in the morning, not merely the actual administration of the chloroform, but the whole time from the first tracheotomy?—Yes.

21549. The first thing you did, of course, was tracheotomy?—Yes.

21550. That was the first cutting incision that you made, I suppose?—Yes.

21551. And then after that you applied the A.C.E. tube and then the necessary incisions for the purpose of cross-circulation were made under the A.C.E., plus morphia?—Yes.

21552. (*Mr. Tomkinson.*) Do I correctly understand that the tracheotomy had nothing to do with the main experiment?—Tracheotomy was necessary to give the anæsthetic.

21553. The anæsthetic could not have been administered through the nostrils?—It could, but it could not be controlled so readily.

21554. Then the tracheotomy had nothing to do with the experiment of cross-circulation?—No, it was simply to facilitate the means of giving the A.C.E. mixture to keep the animals unconscious.

21555. Then I suppose that the long time occupied was the preparation for the great experiment?—Yes, quite so.

21556. The tracheotomy, I suppose, took but a short time?—It is done in a few moments.

21557. Then the two things are quite separate?—Yes.

21558. I did not understand that. During the whole time that Colonel Lawrie was there, did you or did you not gather from him any expression whatever of disapproval?—I did not hear him make any remark of disapproval of what was being done.

21559. He certainly made no protest to you?—None whatever.

21560. And he did not call attention to the fact that in his opinion the dogs were suffering?—No, he did not.

21561. Nor make any allusion to it?—I heard him make no allusion to anything of the kind.

21562. And no impression of a feeling of that kind on his part was conveyed to your mind?—None whatever.

21563. Therefore I suppose you were very much surprised to hear what he said about it afterwards?—Naturally, I was very much surprised.

21564. You spoke of the continuing effects of the anæsthesia after the operation. Is that more than the somnolency caused by anæsthesia. To illustrate what I mean, my experience is that a person after an operation, on the anæsthetic being removed and recovery of consciousness, says something: "I have not felt it;

I am told it is all over," and then goes to sleep for a couple of hours or three hours. Did you mean more than that?—Of course you often get that condition of continued unconsciousness, whether we call it sleep or not.

21565. You would not call it insensibility to pain, would you?—During the time that the patient is asleep the pain of the operation is not felt certainly.

21566. But if the operation were continued, the patient would wake up—like operating on a person in a sound sleep. I think your contention in this case is that the effect of a subcutaneous infusion of morphia had a long continuing effect?—Yes, the dose of morphia was producing its narcotic effect for many hours.

21567. And was sufficient to continue the anæsthesia after the A.C.E. had been discontinued?—Yes, that is my opinion.

21568. (*Dr. Wilson.*) Did Dr. Gaskell give you any instructions as to the amount of morphia that should be administered to these dogs?—No, I decided it myself.

21569. So that he could not even say what was the dose that was given?—No, he left it to me.

21570. And he was not present when the dose was given?—No.

21571. So that he could not have made that statement from actual knowledge which Colonel Lawrie stated that he made?—No, it was impossible, but I doubtless told Dr. Gaskell the dose I had given.

21572. I think you also said that the assistant was in the room during the time when you were at luncheon?—Yes.

21573. And that he had received instructions if there were any signs that the dog was suffering pain to give another dose of the A.C.E. mixture?—Yes.

21574. (*Sir Mackenzie Chalmers.*) Were exactly the same conditions repeated on the 11th that took place on the 7th?—Yes, the conditions used for anæsthetising the animals were precisely the same, and were carried out in precisely the same way.

21575. Was Colonel Lawrie present only at the final experiment on both occasions?—On the second day Colonel Lawrie appeared in the afternoon, if I remember rightly, and saw only the termination of the experiment. I do not remember exactly when he came.

21576. When did you first hear that Colonel Lawrie thought that he had seen a cruel experiment?—It was when Dr. Gaskell read to me this document that has been circulated.

21577. The other day?—Yes.

21578. But during these fourteen years you never heard a word to the effect that Colonel Lawrie thought he had seen a cruel experiment?—There was some letter, I believe, that passed between Colonel Lawrie and Dr. Gaskell which Dr. Gaskell mentioned to me, which seemed to imply that Colonel Lawrie had thought our experiments cruel.

21579. When was that?—I do not remember how many years ago that was.

21580. (*Dr. Gaskell.*) Was there the slightest difference, so far as you remember, of course, between the conditions of the animals on July 7th and July 11th?—No, there was no difference between the conditions on the two days.

Mr. WILLIAM HALL, called in; and Examined.

Mr. W. Hall 21581. (*Chairman.*) You were assisting in the laboratory, were you not, on the 7th July, 1894?—Yes. I could not be sure of the date.

21582. But you remember those cross-circulation experiments which took place in July, 1894?—Yes, quite well.

21583. There was one on one day and another four days afterwards?—Yes.

21584. I am taking you to the first day?—I recollect more about the day when Professor Allbutt was there.

21585. That is the second day?—Yes, I remember more about that date.

21586. I will ask you first in a general way, were the operations done in the same way as regards preparing the dogs on both occasions?—Exactly.

21587. You assisted at both?—Yes.

21588. Will you just describe the way in which the dogs were treated. There were two dogs on the first day and there were two other dogs on the next day?—Yes.

21589. Take the case of each pair of dogs. Were they treated in the same way?—Exactly.

21590. What was done?—In the morning with the help of another laboratory assistant, and Dr. Shore being about, I injected the dogs with morphia—both dogs with a 2 per cent. solution under the skin on the back.

21591. You injected them both with morphia?—Yes, I did.

21592. Do you remember what quantity you injected?—Yes, the first dog was a medium sized dog, that would be with 6 to 8 cubic centimetres. I was not particular to a cubic centimetre.

21593. And the larger dog?—The larger dog I injected with nine or ten; I could not say to a cubic centimetre.

21594. Proportionately?—Yes, in proportion.

21595. Then after they had been injected with morphia, were they left for a time?—Quite half an hour.

21596. And then?—Then, with some help, I laid the dog on its side, with Dr. Shore present, and I held a cloth over the nose of the dog with chloroform upon it, and the dog did struggle a little, but nothing to speak of.

21597. When you put the chloroform over its nose?—Yes.

21598. And then?—Being pretty well under morphia, it did not struggle much, but it did a little till it got really under the influence of the chloroform.

21599. Did it get thoroughly under the influence of chloroform?—Yes, on the floor, quite.

21600. Then what did you do?—I lifted it up with some help on to the operating table.

21601. Did you fasten it?—The legs were fixed with string, just round each leg. The head was fixed in a sort of clamp.

21602. Was it laid on its back?—Yes.

21603. Was that all the fastening it had—what you have described?—Yes.

21604. Do you remember Dr. Shore cutting the trachea?—Yes, quite well.

21605. And putting in the tube in the trachea?—Yes.

21606. That I understand was for the A.C.E. to be administered?—Yes, it is much easier that way than any other way to be done.

21607. When that was done did you give it any A.C.E.?—Immediately the tube was in, yes, the A.C.E. was put in. As a rule, it is always done.

21608. At that time was the dog insensible when you began to administer the A.C.E.?—Quite; it kept well under the chloroform all the time the duster was kept round the nose.

21609. Did you put the chloroform over its nose at intervals, or was it there all the time?—I kept it on until the trachea tube was in.

21610. Then did Dr. Shore proceed to operate on the dog?—Yes.

21611. That would be making fresh incisions altogether in the dog for the purpose of laying open the arteries?—Yes.

21612. And he made those?—Yes.

21613. The tracheotomy tube remaining in the slit in the trachea?—Yes, all the time.

21614. Did you keep on administering the A.C.E.?—*Mr. W. Hall,* I took the tube in and out of the bottle very likely, but when I did that I should say to Dr. Shore, "I have taken the tube out, sir," or, "I have put it in again, sir," so as to give warning. *25 Mar. 1908.*

21615. But it was continually applied?—Yes, put in and out of the bottle in case of necessity.

21616. Then was the cross-circulation established in the glass tube?—Yes, when it was ready to be done.

21617. You mean after luncheon, just before the end of the operation, that was the last thing?—Yes, getting towards the last thing to be done.

21618. You do not remember, I suppose, about the luncheon, the times and the hours particularly?—I know I should not have gone at all, because it would be over at about three or half-past. I often stay until the thing is over, and then go to lunch afterwards. I could not be relieved in those particular cases.

21619. You never left the room then?—No.

21620. During the whole time, from the time that you administered the injection of morphia until the dogs were dead, you were in the operating room the whole time?—Yes.

21621. At any time during that period after you had administered the chloroform for the first time up to the death were the dogs sensible; had they any consciousness of pain?—I did not see anything of consciousness.

21622. Were they under the influence of these narcotics or anæsthetics?—Yes, one or other of them.

21623. Did you see any struggling?—No, I did not.

21624. And did you hear, or do you remember, at any rate, any conversation between Dr. Gaskell and Colonel Lawrie?—I cannot say I did. I should not take any notice. I should be too busy.

21625. You have no recollection after this lapse of time?—No.

21626. But you are quite sure that that was the process of treatment of the dogs that you have described to us?—Yes, I am quite sure.

21627. And that applies also to the 11th, I understand?—Yes, it was all the same.

21628. (*Mr. Tomkinson.*) Then the dogs were under your special eye the whole time, were they?—I and Dr. Shore, yes. I stopped all the time; I stayed in the room all the time.

21629. Was the anæsthetic connected with them from another room?—In the same room. A Woulff's bottle stood beside them against the head.

21630. It did not come from another room?—No; there was no need.

21631. Was it under your superintendence as well?—Yes. I had to help anyhow.

21632. (*Dr. Gaskell.*) Just one word, William. Dr. Shore and myself had done a number of other experiments previous to those two?—Yes.

21633. Of exactly the same character?—Yes.

21634. And you had assisted in those?—In every one, I think.

21635. They were precisely the same character in every case?—Exactly the same.

Mr. H. K. ANDERSON, M.D., F.R.S., called in; and Examined.

21636. (*Chairman.*) You were present, I believe, at the cross-circulation operation which took place on the 11th July, 1894, in the Cambridge Laboratory?—Yes.

21637. Are you yourself experienced as a physiologist and experimenter?—I have had seventeen years' experience, because I was a medical man to begin with. In 1894 I had had three years' experience as an experimenter. I became a Demonstrator of Physiology in 1891, and since that time have been experimenting with Professor Langley.

21638. Did you go to the laboratory at Dr. Gaskell's request?—Yes.

21639. To watch the operation?—Distinctly; that was why I was there.

21640. As to its success?—And to answer for what exactly happened.

21641. You mean with a view to seeing what was ascertained by the experiment?—Yes.

21642. I am not going at all into the success or want of success or anything of that kind—it is merely on a very small point that I want to ask you, and I should not have asked it you if Colonel Lawrie had not said that what took place on the 7th and 11th was precisely the same, and that he observed the

Mr. H. K. Anderson, M.D., F.R.S.

Mr. H K Anderson, M.D., F.R.S.
 25 Mar. 1908.

same things. You saw the experiment on the 11th?—Yes.

21643. And you did not see that on the 7th?—No.

21644. Were you there when the dogs were prepared?—No.

21645. You were only there on the 11th after the trachea had been cut and the chest laid open for the experiment?—Yes, I went in and out of the room; my recollection is that I went in and out while Dr. Shore was whipping the blood, but I was not in the room continuously till the real experiment began.

21646. But do you remember enough of what you saw to say whether the dogs were under chloroform or not?—Clearly.

21647. Or under an anæsthetic, I should say, because the A.C.E. was used as well as chloroform?—Yes.

21648. But during the period when Dr. Shore was operating, were the animals under anæsthetics?—Certainly, I should say they were anæsthetised.

21649. Have you any doubt about it?—None.

21650. Then you watched the experiment afterwards?—Yes, closely.

21651. How long would that watching period of the experiment take?—My recollection is that I had luncheon with Dr. Gaskell and Colonel Lawrie's two assistants, and that the experiment lasted, I should say, three hours—from two to three hours.

21652. After luncheon?—Yes.

21653. Watching the process?—Yes.

21654. Watching the action of the blood vessels?—Watching the effect on the heart and the respiration.

21655. During that time were the animals under anæsthetics or not?—Yes, they were under morphia.

21656. Were they conscious of pain?—I should say distinctly not.

21657. If there had been any struggling, would it have interfered with the observation?—As an experimenter myself I cannot imagine the experiment being performed in that case. I should expect that either the small glass tubes would break or the blood-vessels, especially the veins, would give way. I had never seen a cross-circulation before, and I was quite surprised at the delicacy of the operation.

21658. Stillness on the part of the dogs was essential to its success?—Yes.

21659. Is it an operation that you would think of performing unless the absence from pain was secured first?—No.

21660. (*Colonel Lockwood.*) You say that you did not closely observe the dogs when you went into the room. What reason have you, then, for stating that you believe the dogs to have been thoroughly anæsthetised?—I did not mean that. I meant that I was working in the laboratory and went in and out of the room to begin with but when I came in to watch the actual experiment, I observed the dogs most closely.

21661. Anyhow, you noticed that the dogs took sufficient of the anæsthetic to be absolutely certain that they were totally unconscious of pain?—I am quite convinced of that.

21662. (*Sir Mackenzie Chalmers.*) I do not think we have your scientific qualifications. You are a Fellow of the Royal Society?—Yes, and Doctor of Medicine and Fellow of Gonville and Caius College.

21663. And what is your appointment?—I am now Lecturer in Physiology. I was then Demonstrator.

21664. We may take it, then, that you are continually seeing experiments on animals and are familiar with all the procedure?—I have performed a very great number of experiments with Dr. Langley and by myself since I went to Cambridge in 1891. I was then performing experiments almost daily.

21665. This was in 1894?—Yes.

21666. At that time you were an experienced physiologist?—Yes.

21667. You were able to form an opinion, and a skilled opinion, as to whether the animals were suffering or not?—I think so, quite.

21668. Do you know anything whatever about the experiment on the 7th of July; were you in the laboratory then?—No, I had nothing to do with that experiment; I heard of it.

21669. Were you in the laboratory—in and out?—I was usually there daily. It is most probable that I was there.

21670. Do you think that if the animals under experiment then had been in great pain you would have noticed it and perceived it?—Well, I was not in the room.

21671. You were not in the room in which the experiment on the 7th was performed?—No, not on the 7th; I do not think I was in the room on the 7th at any time.

21672. Can you give us any opinion on this point? Colonel Lawrie said that he observed shivering in these animals; would that be a sign of pain or not?—No, I think not. When an animal is under anæsthetics, unless great care is taken to keep it warm, the animal may shiver. Mere cold may excite slight twitching of the skin in a dog.

21673. But any skilled person observing that animal and operating upon that animal, would know whether or not the animal was suffering from pain?—Certainly.

21674. When an animal has been originally under an anæsthetic, and is tied down, when the anæsthetic passes off is there any difficulty in knowing when consciousness of pain begins?—I do not think I have ever seen consciousness of pain in an animal during an experiment under the licence alone. I have experimented also on animals as I would on human beings. In such cases the animals as they come round from the anæsthesia, like human beings, exhibit uneasiness; but I do not think I have ever witnessed anything that I could call consciousness of pain, except the discomfort of a surgical wound after an operation.

21675. I take it that as soon as you observe any uneasiness the anæsthetic is again applied?—Yes, as soon as the animal began to move—and any movement at once calls attention to the anæsthesia—I should try the corneal reflex. In most experiments if the animal moved it would destroy the success of the experiment, and I should notice that the anæsthesia was passing off by the change in the respiration even before the animal moved.

21676. You have seen several cross-circulation experiments?—No.

21677. Only one?—Only one.

21678. Can you tell us what is the object of performing tracheotomy on the animal in connection with these cross-circulation experiments?—The greater ease of giving the anæsthetic. By means of the slit in the tracheal tube the amount of anæsthetic necessary to keep the animal evenly under anæsthetics can be adjusted to a nicety. That is my object in inserting a tracheal tube.

21679. That is the reason why tracheotomy would be performed in addition to the necessary incisions for the cross-circulation?—Yes.

21680. (*Mr. Ram.*) Do you think it is possible that the dogs could have been prepared for this operation, and have tracheotomy tubes inserted, without having an anæsthetic when they were so inserted?—It would be quite impossible except by using sheer force.

21681. You told us that the operation is an exceedingly delicate one?—Most delicate.

21682. In your opinion, would it be, in the first place, reasonably feasible to insert these tubes at all unless the animal were insensible under an anæsthetic?—I should say it would be impossible.

21683. You said, in answer to Lord Selby, that you would not think of doing such an operation as this without the animal being thoroughly under anæsthetics?—Yes.

21684. That is the reason why you would not do it; do you mean either on humanitarian grounds or on the ground of getting a successful operation, or both?—For both reasons.

21685. But, quite apart from humanitarian desire, would it be possible, in your opinion, to hope for a successful operation unless the animal were properly anæsthetised during the whole time?—It would be impossible unless it was curarised.

21686. (*Colonel Lockwood.*) Made immovable?—Yes. Made immovable.

21687. (*Dr. Gaskell.*) Would this operation be pos-

sible under curare?—No, because the whole point of the experiment depended on watching the respiration.

21688. (*Mr. Ram.*) Apart from that, this particular operation, I understand, could not have been done under curare?—No.

21689. It would have neutralised the effect that you desired to secure?—Yes.

21690. (*Mr. Tomkinson.*) Could these dogs, if they had been in great pain, have evinced it to you?—Yes.

21691. If they had been suffering the agonies which they have been represented to have been suffering, what signs could they have shown to you?—In the first place, it is quite a misrepresentation to say that the dogs were tied tightly to the stand. The stand used in the laboratory allows quite free movement of the dog. Any dog would begin to move its body and wriggle its head if it was in pain.

21692. And there were no such signs?—None whatever.

21693. Would the tracheotomy prevent the emission of a cry on the part of the dog?—Certainly.

21694. Then the dog could not cry?—No.

21695. Does tracheotomy stop the voice?—It must.

21696. Then you could not depend upon a sound from a dog upon which tracheotomy had been performed as an indication of pain?—No, of course not.

21697. But other signs they could have given in the way of movement or restlessness if they had been suffering?—Yes.

21698. And you did not see any?—No.

21699. You are quite satisfied of that?—Yes, quite satisfied.

21700. (*Dr. Wilson.*) As regards the shivering to which reference has been made, I think you said that there might be some possibility of that having been witnessed?—Yes.

21701. From cold?—Yes, and also if the muscles are bared in the neck there may be twitching of the muscles. The mere exposure of the muscles may excite twitching.

21702. But shivering from cold would not be because the dog felt the cold; it would be reflex action?—Yes, and be due to the depressing effect of the morphia and the anæsthetic on the dog's temperature.

21703. Not because any cold was felt, of course?—No.

21704. May I ask whether at all times in the Cambridge Laboratory every possible care is taken to carry out the intentions of the Act—that is to say, that all experiments shall be carried out painlessly?—Every attention.

Mr. W. H. GASKELL, M.D., F.R.S., a member of the Commission, Examined.

21705. (*Chairman.*) You were not examined on this particular point, I think. Your name was not mentioned by Colonel Lawrie when he gave his evidence, although you were rather pointed to as the physiologist who had performed certain experiments?—No, in the original evidence certainly my name was not mentioned, and I was wondering in my own mind when he said it whom he meant when he spoke of one-twelfth of a grain of morphia. I did not conceive for a single moment that he could mean me.

21706. Colonel Lawrie came down by appointment to Cambridge, I believe?—Yes, he came down at his own suggestion, not by any suggestion of mine, but because he desired to show us that his experiments in cross-circulation were right and that ours were wrong. We said, We will show both if you like; so he brought two Indians over with him for that purpose.

21707. He suggested that he came as your guest. He was not coming merely as your guest, but as a business matter in physiology?—He was coming there on a business matter for that purpose. The reason why he did not show us anything was because I had written over to India to explain to him that he must get a licence first before he could make those experiments in Cambridge, and he did not get that licence.

21708. He came over on the 7th of July. You have heard the evidence of Dr. Shore as to what I will call the preparation of the dogs for the final experiment that you were to make—the experiment of observation?—Yes.

21709. What did you see of that part of the business?—I have endeavoured to carry back my memory to remember when I came into the laboratory, but I cannot tell you. All I know is that I did come before luncheon in order to receive Colonel Lawrie. You must understand that we had made many of these experiments before; the research was finished, the whole thing was done, and there were simply two extra ones to please Colonel Lawrie.

21710. You had made this very experiment frequently before at the request of Colonel Lawrie?—At the request of the Nizam's Government; and we had sent our report over, and it was all finished and done with. That was two years before or more.

21711. Then I want to know this. This was not the first time that you had had this experiment in your laboratory by any means?—No, not by any means; but what I want to point out in respect of that is that I was not in hardly any case or very seldom present right through, because I was not doing the experiment myself. It was Dr. Shore, with the assistance of the laboratory boy, who was doing it,

and could do it much better than if I tried to put my ear in.

21712. In all these experiments that you have had, have you gone in and seen what was going on from time to time?—Yes. The experiments were of my devising.

21713. What was the regular course as regards morphia and anæsthetics?—The course was exactly what Dr. Shore and William Hall have described to you.

21714. And that had been followed in all previous experiments?—Yes.

21715. Was there any reason on earth why it should not have been followed in this one experiment?—Absolutely none. There is every reason against it.

21716. I suppose you find it difficult to recall your exact observation on that particular morning?—I have not the very faintest conception what I talked to Colonel Lawrie about. I only know what happened, but as to what the conversation was when he first came and I received him, and Dr. Shore was in the operating theatre, I have not the slightest notion.

21717. Can you tell me this? Can you say whether you told him that you had given a 10 drop dose of morphin solution not to prevent pain, but in order to hoodwink the Inspector and satisfy the Act?—I can only say with respect to the first statement that he probably did ask me what dose was given, and I told him the dose, for the simple reason that the actual dose that was given is on the record or the protocol written in my own handwriting, and that was written on that very day. I looked it up the other day in Dr. Shore's rooms; it was covered with dust, old and shabby, but there it was, the exact amount given. That was done, I know, on that very day. It was 10 cubic centimetres of a 2 per cent. solution, that is what I wrote, and that is what I told Colonel Lawrie. If Colonel Lawrie manufactures it into 10 drops of morphin, that has nothing to do with me.

21718. If it was only that memories might be mistaken about whether you said 10 drops or 10 grains, that would be a very different matter; but he goes on to say what is more important. Did you say to him that the morphia had been given not to prevent pain, but in order to hoodwink the Inspector?—I have told you I have not the faintest remembrance of what I did say, but I am absolutely certain that I never said that. I should never have dreamed of saying it; and it is such a silly thing to say.

21719. How often does the Inspector come and visit your laboratory?—There are no regular times; he turns up at odd times.

Mr. H. K.
Anderson,
M.B., F.R.S.

25 Mar. 1908.

Mr. W. H.
Gaskell,
M.D., F.R.S.

Mr. W. H.
Gaskell,
M.D., F.R.S.
25 Mar. 1908.

21720. I do not quite see what the suggestion is how it could have hoodwinked him?—Not in the least; it could not have been done.

21721. You did not say it?—I am certain. I never could have said it.

21722. Do you remember watching the experiment after luncheon?—I remember perfectly well watching the experiment, and I remember also perfectly well watching the second experiment, and asking Sir Thomas Clifford Allbutt and Dr. Anderson to come in because I was dissatisfied. I wanted the evidence of witnesses, I mean to say, after the first experiment.

21723. I will ask you this: Did Colonel Lawrie say anything to you about the dogs being not sufficiently anaesthetised or in pain or anything of the kind?—I am absolutely certain that he never mentioned that, for that is a sort of remark that I should have remembered. When I came in—I cannot say whether it was just before Colonel Lawrie came in or not—the dogs all the time I saw them were absolutely quiescent. There was not a movement or a sign of movement, and in addition to that the record shows that the blood-pressure tracing was perfectly steady, and the respiration was perfectly steady, too. So that those two things which would have shown any indication of pain in the dog as well as movement were absolutely absent. I am as convinced as I am of anything in my life that those two dogs were fast asleep.

21724. If dogs when undergoing an experiment of that sort were without anaesthetics and in a condition of frightful agony—which is the phrase Colonel Lawrie used—would the operation have been possible?—As a member of this Commission, and also as a person of a certain amount of common sense, I say it stands to reason that it is utterly impossible. You have got here two dogs fastened together simply by stitches in the skin. Upon that flap of skin you have those delicate tubes connecting their two jugulars and delicate tubes connecting their arteries. If those dogs were not anaesthetised—as Colonel Lawrie tries to make out from what I said to him—those dogs were not under anaesthetics at all. There was, according to him, only 1-12th of a grain of morphia given, and that was nothing, and there were no anaesthetics of any kind.

21725. And his statement is that you said so?—I say that is the evidence he has put in. I absolutely defy any person whatever of any kind to make that experiment under those conditions. It is absolutely and utterly impossible. The very smallest amount of struggling must break through that connection and must damage the experiment. There is one essential condition of success—that is, absolute quiescence of these animals, and that is why I say that the charge brought against me—at least, the reminiscence of what I said to Colonel Lawrie—is silly.

21726. If there had been any struggling you could hardly have forgotten it—it would have affected the success of the experiment immediately, and the thing would have failed?—The thing is in my memory perfectly well, seeing the animals absolutely quiescent. There was not a movement, and as I ventured to suggest, Sir Thomas Clifford Allbutt would tell you the same. He was a person, mind you, not accustomed to laboratory experiments, and who would, therefore, naturally notice anything of the kind rapidly.

21727. Thank you. I only wished to put to you the exact statement Colonel Lawrie put into your mouth?—Quite so.

21728. (Sir William Church.) Have you got any tracing or record of the circulation or respiration of these dogs that you could put in?—I have got it absolutely.

21729. (Sir Mackenzie Chalmers.) On the 7th as well as the 11th?—Yes, both of them, perfect from beginning to end.

21730. (Sir William Church.) Would you wish to put in a tracing recording the pulse and circulation of these dogs?—I should like it very much.

21731. (Sir Mackenzie Chalmers.) It is quite possible that you had some conversation with Colonel Lawrie about the administration of morphia?—I think it is very likely.

21732. But, as a fact, in these experiments, you did not rely on morphia alone, but A.C.E. was given in addition?—Absolutely.

21733. (Chairman.) And chloroform to start with?—Chloroform to start with.

21734. (Sir Mackenzie Chalmers.) Chloroform followed by A.C.E.?—Yes.

21735. In your opinion, would the morphia alone given in this case have been sufficient to produce complete anaesthesia?—I have no experience of morphia, you must understand, but from all I have ever read or heard I should have said that 3 grains of morphia would have produced complete unconsciousness to pain after an interval of time. That is what I should have said, without the slightest doubt.

21736. You are certain that these dogs throughout the whole time you saw them were absolutely free from pain?—The whole time I saw them they were lying absolutely quiet. There was no movement, and they were breathing regularly and quietly. That was, to my mind, conclusive evidence that they were not suffering pain.

21737. I want to get this clear. You saw them during the whole time that Colonel Lawrie saw them?—I saw them during the whole time that Colonel Lawrie saw them.

21738. Is it absolutely incorrect to say that in the laboratory either on this experiment or any other morphia has been given by itself to hoodwink the Inspector or for any similar purpose?—It is absolutely ridiculous.

21739. If Colonel Lawrie understood you to say that it is an absolute misapprehension?—An absolute misapprehension.

21740. If he had asked you how these animals were anaesthetised you must have told him it was not only morphia, but A.C.E. mixture as well?—Most certainly.

21741. The A.C.E. mixture, I suppose, always gives a smell, does it not; it must have been perfectly obvious coming into the room where these dogs were that A.C.E. had been used?—I think that would be a little difficult to say, because a physiological laboratory rather smells of different smells, you see, among which you distantly have A.C.E. and chloroform, and that kind of thing. I mean that I do not think my nose would detect that it was freshly used.

21742. (Mr. Ram.) There are one or two statements that I want to put to you, if I may, other than those which Lord Selby put to you. The first is this. Colonel Lawrie said: "The two dogs were lying ready for the commencement of the experiment with unconnected tracheotomy tubes in their throats. Dr. Gaskell said they had not had any anaesthetic because it might interfere with or spoil the subsequent experiment with chloroform." We have been told to-day by the laboratory assistant that he gave them morphia, but, after leaving them for half an hour, he then gave them chloroform, and that before the throats were opened at all. Is it a fact that any anaesthetic might interfere or spoil the subsequent experiment with chloroform?—Only, as Dr. Shore and Colonel Lawrie himself have pointed out, at the stage when you desire to test the action of chloroform. At the preliminary stage, of course not.

21743. Following that up is a second statement that he made that "the two dogs had been lying with unconnected tracheotomy tubes in their throats, which in itself is presumptive evidence that they had not up to that time had chloroform or A.C.E. mixture." What is your comment upon that?—That sentence conveys no meaning to me whatever—absolutely none. I do not know what he means by unconnected tracheotomy tubes; what he expected them to be connected with. I asked someone to ask him that question to see whether he knew how chloroform was given in the laboratory, and he clearly did not know how it was given. He had no conception that all that was required was to dip the end of the tube into the Woulff's bottle containing the A.C.E. mixture. The tube itself, the metal tube, with that little piece of india-rubber at the end of it, you put in and out of the bottle as you like. He had no conception apparently of that. He talks about the absence of any evidence of chloroform being taken when the bottle was on the table all the while.

21744. (Chairman.) That bottle did not contain chloroform?—A.C.E. There were two bottles, one with chloroform and one with A.C.E.

21745. (Mr. Ram.) May I take it, therefore, that what Colonel Lawrie says he saw here is not presum-

tive evidence or any other evidence that the animals had not had at that time chloroform or A.C.E. mixture?—Absolutely.

21746. Did you, in fact, say that the dogs had not had any anæsthetic?—As I have already said before, I have not the faintest notion what I said or did not say, but I am absolutely certain that I could not have said that.

21747. The fact is that they had to your knowledge had it?—Yes.

21748. I have only one other matter to trouble you with. Colonel Lawrie says, and he has elaborated it to-day: "A certain amount of cruelty is inseparable from any cross-circulation experiment"—and he stated that in his own experiments he allowed the animal at a certain moment to recover from the chloroform, and that it suffered?—That it struggled.

21749. And in his opinion suffered?—Yes.

21750. In your opinion is that a necessary accompaniment of any cross-circulation experiment?—No, if he had given a sufficient dose of morphia, as we did, that would not have been the case. It would not have interfered with the experiment.

21751. At the moment the chloroform was removed the morphia would have prevented the animal suffering any pain?—Absolutely. I am sure the animal was fast asleep. His animals distinctly show pain by struggling. In our case not even he was able to say that there was any movement.

21752. (*Dr. Wilson.*) During the crucial experiment, of course, only one dog was under the influence of chloroform?—It was not a question of the influence of chloroform. It was a question of proving the action

of chloroform; that was all. The chloroform was not given as an anæsthetic then; it was given to test the action of chloroform.

21753. And, of course, complete narcosis was induced in both animals during the crucial operation by the amount of morphia that had been given?—And, as Dr. Shore has explained to you also, by the previous administration of A.C.E. and chloroform.

21754. And these two experiments on the 7th and 11th were really only repeat experiments of a considerable number that had been performed previously?—I will not say a considerable number, because it is a long, laborious, and difficult operation, and it was not necessary to make many.

21755. The same course was pursued?—Yes; the number is published. I do not remember now how many.

21756. And the same amount of morphia given?—The same procedure absolutely.

21757. (*Sir Mackenzie Chalmers.*) Did I rightly understand you to say that the very object of the tracheotomy was to enable a respirable anæsthetic to be administered and regulated?—Yes.

21758. (*Mr. Ram.*) Accurately?—Accurately.

21759. (*Chairman.*) I will just ask you this. Sir Thomas Clifford Allbutt was present on the 11th, but not on the 7th?—Yes.

21760. He is ill, and not able to be here?—Yes.

21761. He has sent a letter and a certificate?—Yes.

(*Chairman.*) I think we had better not have the letter read in the absence of the writer.

Mr. W. H. Gaskell,
M.D., F.R.S.

25 Mar. 1908.

APPENDICES.

TABLE OF CONTENTS.

	PAGE.
APPENDIX I.—HOME OFFICE FORMS IN USE UNDER THE VIVISECTION ACT, 1876 -	23
II.—SUMMARY OF REPORTS ON THE LAWS RESTRICTING THE PRACTICE OF VIVISECTION IN BRITISH INDIA, BRITISH COLONIES, AND FOREIGN COUNTRIES - - - - -	47
„ III.—MEMORANDUM BY MR. G. D. THANE ON:—	
(a) THE INSPECTION OF UNREGISTERED PLACES - - - -	48
(b) CERTIFICATE A. THE “PAIN” OR “INOCULATION” CONDITION	48
(c) CERTIFICATE B. - - - - -	48

APPENDIX

TABLE OF CONTENTS

I. General Introduction to the Study of the History of the United States	1
II. Summary of Results of the Last Decade of the History of the United States	1
III. Summary of Results of the Last Decade of the History of the United States	1
IV. Summary of Results of the Last Decade of the History of the United States	1
V. Summary of Results of the Last Decade of the History of the United States	1
VI. Summary of Results of the Last Decade of the History of the United States	1
VII. Summary of Results of the Last Decade of the History of the United States	1
VIII. Summary of Results of the Last Decade of the History of the United States	1
IX. Summary of Results of the Last Decade of the History of the United States	1
X. Summary of Results of the Last Decade of the History of the United States	1

APPENDIX I

HOME OFFICE FORMS

IN USE UNDER THE

VIVISECTION ACT, 1876.

(Put in by Home Office.)

APPLICATION FOR LICENCE.

39 & 40 Vict., c. 77.

Address _____

Date _____

To the Right Honourable the Secretary of State for the Home Department.

* Here insert
name and profes-
sion (see Sec. 11 of
Act) of Applicant.

SIR,

I*

beg to apply under the above-mentioned Act for a Licence for the performance of experiments on animals.

† Here state for
what purpose the
Applicant desires
to obtain a licence
to perform experi-
ments on living
animals.

The object which I have in view in applying for a Licence is†

‡ Here indicate
the general nature
of the experiments
which it is intended
to perform; also
state, if that is the
case, the intention
of Applicant to send
in a certificate or
certificates (describ-
ing each certificate
by its appropriate
letter) with refer-
ence to the same
experiments, or any
other circumstances
that may be mate-
rial. See also Note
at the end of the
application.

The experiments which I propose to perform are‡

§ Here insert re-
gistered place. If
the place is not
registered it will
be necessary for
the person having
authority over the
building to apply to
the Secretary of
State for its regis-
tration.

The place in which it is proposed that the experiments are to be performed is§

This application is supported by the recommendations appearing below.

I am,

SIR,

Your obedient Servant.

*

* Here Applicant
to sign his name.

We recommend that the above application be granted.

1.

+ Here the person
recommending is to
sign his name.

†

† Here specify
statutory qualifica-
tion (see Sec. 11).

2.

†

†

N.B.—If the Licence is held alone without Certificate, the animal must be kept in anaesthesia throughout the whole of the experiment, and if the pain is likely to continue after the effect of the anaesthetic has ceased, or if any serious injury has been inflicted on the animal, it must be killed before the anaesthesia has passed off.

Certificate A dispenses altogether from the obligation to use an anaesthetic. It will be necessary in cases of simple inoculation calculated to give pain but not involving any surgical operation.

- „ B dispenses from the obligation to kill the animal before the anaesthesia has passed off; it is necessary therefore whenever the initial operation is to be done under anaesthetics but the animal is to be allowed to survive.
- „ C is necessary for Experiments illustrating Lectures.
- „ E is never held alone, but is necessary whenever any experiment is to be performed on a Dog or Cat under Certificate A.
- „ E E is never held alone, but it is necessary whenever any experiment is to be performed on a Dog or Cat under Certificate B.
- „ F is necessary whenever any experiment is to be performed on a Horse, Ass, or Mule.

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE A.

Official Copy.

39 & 40 Vict., c. 77.

WHEREAS*

* Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us†

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorised under the above-mentioned Act, to perform on living animals certain experiments described below: We hereby certify that, in our opinion, insensibility in the animal on which any such experiment may be performed cannot be produced by anaesthetics without necessarily frustrating the object of such experiment.

‡ This Certificate is given for _____ experiments.

§ This Certificate shall be in force until the _____ day of _____ 19____

Experiments are not to be performed under this Certificate until the Licensee has been informed that it has not been disallowed by the Secretary of State. The Certificate, even if given for a longer period, ceases to have effect on the expiration of the Licence.

Signatures of Certifiers }
to be attached here }

Date

‡ A certificate may be given for such time, OR for such series of experiments as the person signing may think expedient; and it is desirable that such limitation should be here inserted. If a Certificate is unlimited, or limited by time only, the Secretary of State usually imposes a limit on the number of experiments to be performed.

§ Description of proposed experiments

§ At the end of the Description the animals are to be named, and it is necessary to submit, in addition, if dogs or cats are used, Certificate E, or if horses, asses or mules are used, Certificate F.

|| Object of these experiments:—

Here state in what manner the experiments will be of service in advancing by new discovery physiological knowledge, or knowledge which will be useful for saving or prolonging life or alleviating suffering.

N.B.—This Certificate is subject to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorised by this Certificate or in any other way place restrictions on what may be done under this Certificate.

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE B.Official Copy.

39 & 40 Vict., c. 77.

WHEREAS*

Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us—

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorised under the above-mentioned Act, to perform on living animals certain experiments described below, such animals being, during the whole of the initial operation of such experiments under the influence of some anæsthetic of sufficient power to prevent their feeling pain. We hereby certify that, in our opinion, the killing of the animal on which any such experiment is performed before it recovers from the influence of the anæsthetic administered to it would necessarily frustrate the object of such experiment.

‡ This Certificate is given for _____ experiments.

‡ This Certificate shall be in force until the _____ day of _____ 19 _____

Experiments are not to be performed under this Certificate until the Licensee has been informed that it has not been disallowed by the Secretary of State. The Certificate, even if given for a longer period, ceases to have effect on the expiration of the Licence.

Signatures of Certifiers)
to be attached here)

‡ A Certificate may be given for such time, **OR** for such series of experiments as the person signing may think expedient; and it is desirable that such limitation should be here inserted. If a Certificate is unlimited, or limited by time only, the Secretary of State usually imposes a limit on the number of experiments to be performed.

Date _____

§ Description of proposed experiments.

§ At the end of the Description the animals are to be named, and it is necessary to submit, in addition, if dogs or cats are used, Certificate E, or if horses, asses or mules are used, Certificate F.

Object of these experiments :—

§ Here state in what manner the experiments will be of service in advancing by new discovery physiological knowledge or knowledge which will be useful for saving or prolonging life or alleviating suffering.

N.B.—This Certificate is subject to the conditions laid down by the Act and to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorized by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE C.Official Copy.

39 & 40 Vict., c. 77.

WHEREAS*

* Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us†

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorized under the above-mentioned Act, to perform at

by way of illustration of lectures to be there delivered, certain experiments described below on living animals, such experiments being performed under the provisions contained in the said Act as to the use of anaesthetics: We hereby certify that, in our opinion, the proposed experiments are absolutely necessary for the due instruction of the persons to whom such lectures are to be given, with a view to their acquiring physiological knowledge, or knowledge which will be useful to them for saving or prolonging life or alleviating suffering

This Certificate does not come into operation until one week after a copy has been forwarded to the Secretary of State, and even if given for a longer period ceases to have effect on the expiration of the Licence.

Signatures of Certifiers }
to be attached here }

‡ Description of proposed experiments.

‡ The animal must during the whole of the experiment be under the influence of some anæsthetic of sufficient power to prevent the animal feeling pain; and the animal must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic which has been administered. Sec. 3 (3) and (4).

§ Persons before whom the proposed experiments are to be performed.

Objects of the proposed experiments.

§ The class of students and the curriculum for which they are being prepared should be given here.

B.—This Certificate is subject to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorised by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

[P.T.O.]

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons; that is to say,

The President of the Royal Society;

The President of the Royal Society of Edinburgh;

The President of the Royal Irish Academy;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin;

The President of the General Medical Council;

The President of the Faculty of Physicians and Surgeons of Glasgow;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE D.

39 & 40 Vict., c. 77.

WHEREAS†

† Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us‡

‡ Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorized under the above-mentioned Act, to perform on living animals certain experiments described below, for the purpose of testing the former discoveries described below, alleged to have been made for the advancement of physiological knowledge, or knowledge which will be useful for saving or prolonging life or alleviating suffering: We hereby certify that, in our opinion, such testing is absolutely necessary for the effectual advancement of such knowledge.

§ This Certificate is given for _____ experiments.

§ This Certificate shall be in force until the _____ day of _____ 19____

Signatures of Certifiers)†
to be attached here)

Date

§ A Certificate may be given for such time or for such series of experiments as the person signing may think it expedient; and it is desirable that such limitation should be here inserted. If a Certificate is unlimited, or limited by time only, the Secretary of State usually imposes a limit on the number of experiments to be performed.

* Description of proposed experiments.

Description of former discoveries for the purpose of testing which the proposed experiments are to be made.

* This Certificate, when required, is in addition to any other Certificates that may be required for the same experiments. The experiments should be described alike in all the Certificates.

N.B.—This Certificate is subject to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorized by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

[P.T.O.]

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE E.

Official Copy.

39 & 40 Viet., c. 77.

WHEREAS*

* Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us†

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorized under the above-mentioned Act, to perform on dogs and cats the experiments described below without anaesthetics: We hereby certify that, in our opinion, for the reasons specified below, the object of any such experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a dog or cat, and that no other animal is available for any such experiment.

‡ This Certificate is given for _____ experiments.

‡ This Certificate shall be in force until the _____ day of _____ 19____.

This Certificate does not come into operation until one week after a copy has been forwarded to the Secretary of State, and even if given for a longer period ceases to have effect on the expiration of the Licence.

Signatures of Certifiers)
to be attached here)

Date

‡ A Certificate may be given for such time **OR** for such series of experiments as the person signing may think expedient, and it is desirable that such limitation should be here inserted. If a Certificate is unlimited, or limited by time only, the Secretary of State usually imposes a limit on the number of experiments to be performed.

§ Description of experiments to be performed:—

§ This Certificate never stands alone, but if it is necessary it accompanies Certificate A, and the description of the experiments in this Certificate should be identical with the description in Certificate A. This Certificate is not required when experiments are performed under the Licence alone.

Reasons why the object of any such experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a dog or cat, and why no other animal is available for any such experiment:—

N.B.—This Certificate is subject to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorized by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

[P.T.O.]

E 2

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE EE.

39 & 40 Vict., c. 77.

WHEREAS*

* Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us†

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorized under the above-mentioned Act, to perform on living animals certain experiments described below, such animals being, during the whole of the initial operation of such experiments under the influence of some anæsthetic of sufficient power to prevent their feeling pain; and that he is submitting to the Secretary of State a Certificate B, which, if not disallowed, will dispense from the statutory obligation to kill the animal on which any such experiment is performed before it recovers from the influence of the anæsthetic. We hereby certify that, in our opinion, for the reasons specified below, the object of any such experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a dog or cat, and that no other animal is available for any such experiment.

‡ This Certificate is given for _____ experiments.

‡ This Certificate shall be in force until the _____ day of _____ 19 _____

This certificate does not come into operation until one week after a copy has been forwarded to the Secretary of State, and even if given for a longer period ceases to have effect on the expiration of the Licence.

Signatures of Certifiers }
to be attached here }

Date _____

§ Description of experiments to be performed :—

§ This Certificate never stands alone, but if it is necessary it accompanies Certificate B, and the description of the experiments in this Certificate should be identical with the description in Certificate B. This Certificate is not required when experiments are performed under the Licence alone.

Reasons why the object of any such experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a dog or cat, and why no other animal is available for any such experiment :—

N.B.—This Certificate is subject to the conditions laid down by the Act and to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorized by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons ; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

CERTIFICATE F.

39 & 40 Vict., c. 77.

Official Copy.

This Certificate is always required when experiments are performed on horses, asses or mules, and, in addition, there will be required, if the experiments are to be performed without anaesthetics, Certificate A, or if the experiments are under anaesthetics, but the animals are to remain alive after anaesthesia has ceased, Certificate B. It is necessary that the description of the experiments should be the same in all the certificates.

WHEREAS *

* Here insert name, address, and profession of person to whom Certificate is to be given. (Sec. 11 of Act.)

has represented to us †

† Here insert name, address, and statutory qualification of each person certifying. (Sec. 11 of Act.)

that he proposes, if duly authorised under the above-mentioned Act, to perform on horses, asses or mules, the experiments described below: We hereby certify that, in our opinion, for the reasons specified below, the object of any such experiment will be necessarily frustrated unless it is performed on a horse, ass, or mule, and that no other animal is available for such experiment.

‡ This Certificate is given for _____ experiments.

‡ This Certificate shall be in force until the _____ day of _____ 19____

Experiments are not to be performed under this Certificate until the Licensee has been informed that it has not been disallowed by the Secretary of State. The Certificate, even if given for a longer period, ceases to have effect on the expiration of the Licence.

Signature of Certifiers }
to be attached here }

Date

‡ A Certificate may be given for such time, OR for such series of experiments as the person signing may think expedient; and it is desirable that such limitation should be here inserted. If a Certificate is unlimited, or limited by time only, the Secretary of State usually imposes a limit on the number of experiments to be performed.

§ Description and object of experiments to be performed :—

§ At the end of the Description state in what manner the experiments will be of service in advancing by new discovery physiological knowledge or knowledge which will be useful for saving or prolonging life or alleviating suffering.

Reasons why the object of any such experiment will be necessarily frustrated unless it is performed on a horse, ass, or mule, and why no other animal is available for any such experiment :—

N.B.—This Certificate is subject to any conditions that may be assigned in the Licence, and it will be the duty of the holder to refer to his Licence and ascertain whether any of the conditions attached to the Licence limit the number of Experiments authorised by this Certificate, or in any other way place restrictions on what may be done under this Certificate.

39 & 40 Vict., c. 77, Sec. 11.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons; that is to say,

The President of the Royal Society ;

The President of the Royal Society of Edinburgh ;

The President of the Royal Irish Academy ;

The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin ;

The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin ;

The President of the General Medical Council ;

The President of the Faculty of Physicians and Surgeons of Glasgow ;

The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science ;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

RETURN OF EXPERIMENTS **RECORD OF EXPERIMENTS.***

on Living Animals, performed by _____, at _____.

No.	Date.	Animals.	With or without Anaesthetics.	Under what Certificate.	Description of Operation or Dissection, if any is required.	Medicinal, Poisonous, Infectious or other agents and the mode of administration, if any are employed.	Further particulars or remarks by Holder of Licence.
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

* This Record is to be sent in to the Inspector whenever it is demanded by him.

Signature _____ Date _____

Performed in the Year 1905 by the holder of Licence No. _____

Under Licence alone.	Under Certificates.						
	A	A + E	B	B + EE	C	D	F

TABLE 2.—GENERAL PURPOSE OF EXPERIMENTS.

Number of Physiological.	Number of Pathological.	Number of Therapeutical.

Full Title of Paper.	Exact reference to Periodicals in which it appeared.	Name of Society to which it was communicated.

Date _____

41.

Home Office,

Whitehall,

15th December, 1905.

It is requested that you will state on the annexed form, 1st, the Number of Experiments on living Animals performed by you in the year 1905, under your Licence, or any Special Certificate you may have held during the year; 2nd, the general purpose of the Experiments; and 3rd, the number of those Experiments in which there was reason to believe that any appreciable pain was inflicted, specifying the kind of animal that suffered, and stating in general terms the nature of the Experiment that occasioned pain. I shall be obliged if you will also inform me whether any of the experiments were performed on behalf of any Public or Official Body.

You are also requested to furnish a complete list (on the enclosed form) of any writings, based upon experimental work, which you may have published during the year 1905, giving the full title of each paper with an exact reference to any periodical in which it may have appeared, and the name of any Society to which it may have been communicated.

You are reminded that the furnishing of copies of such papers is made a condition of your Licence, and are requested, if you have not already done so, to forward copies to the Secretary of State without delay.

G. D. Thane,

Inspector

(Pro Formâ Copy of a Licence endorsed with all "Conditions" which are in general use).

39 & 40 Vict., c. 77.

No. of Licence 100.

100,000.

LICENCE.

In pursuance of the powers vested in me by the above-mentioned Act, I, the Right Hon. *Herbert John Gladstone*, one of His Majesty's Principal Secretaries of State, hereby grant to *John Smith, Esq.*, of *1, Blank Street, London, W.*, this Licence to perform experiments subject to the restrictions and provisions contained in the said Act.

This Licence will not authorize the holder to perform any of the experiments for the performance of which a Certificate is required by the Act, unless he also holds the necessary Certificate or Certificates.

This Licence, unless earlier revoked, shall be in force up to the *28th day of February, 1907*, or for such longer period as may from time to time be hereafter authorized by a Secretary of State in writing, and is given subject to the conditions annexed hereto.

Home Office, Whitehall,

25th day of June, 1906.

CONDITIONS.

1. Attached to all licences.

2. Attached to licences granted to Students of Medicine.

3. Attached to all licences.

4. Attached to licences of all holders of Certificates A. or B. where Secretary of State does not limit the number of experiments to be performed.

5. Used in cases where a Certificate A. would permit of experiments more severe than simple inoculations, etc.

6. Used in all Certificate A. cases; and in some Certificate B. cases where antiseptics would not be applicable.

7. Used in all Certificate A. or Certificate B. cases where Secretary of State limits the number of experiments to be performed.

8. Used in Certificate B. cases where two operations may be performed in the course of the experiment.

9. Used in Certificate B. cases where there is a wound to which antiseptics could be applied.

10. Used in all Certificate C. cases.

11. Attached to all licences.

12. Attached to all licences.

1. This Licence authorises the holder to perform experiments at the following place only, viz.:—
[*The Medical and Scientific Departments, University College, London.*]

2. That all experiments carried out under this Licence shall be performed under the supervision
[*Professor A. B., F.R.S., of University College, London.*]

3. The holder must keep a written record of his experiments. Such record shall be open to examination at any time by the Inspector, and a report of all experiments performed shall be furnished to the Inspector on the 31st day of December, and at any other time when required.

4. That after the completion of the experiments detailed in Certificates (*A. No. 1, A. No. 2, E. No. 1, A. No. 3, and F. No. 1*) or on the 31st day of December, at latest, in each year in which the said Certificates are in force, and at any time when required by the Inspector, the holder of this Licence is to report to the Inspector, on the prescribed form, the number and nature of the experiments performed.

5. That no operative procedure more severe than simple inoculation or superficial venesection may be adopted in any of the experiments under Certificates (*A. No. 1, A. No. 2, E. No. 1, A. No. 3, and F. No. 1*).

6. That if an animal, after and by reason of any of the said experiments under the said Certificates (*A. No. 1, A. No. 2, E. No. 1, A. No. 3, and F. No. 1*), is found to be in pain, which is either considerable in amount or is likely to endure, and if the main result of the experiment has been attained, the animal shall be immediately killed under anaesthetics.

7. That not more than (20) of the experiments detailed in Certificate (*B. No. 1*) may be performed and of these, not more than (10) may be on cats or dogs under Certificate (*EE. No. 1*), and after the completion of the said (20) experiments, or on the 31st day of December, at latest, in each year in which the said Certificates are in force, and at any time when required by the Inspector, the holder of this Licence is to report to the Inspector, on the prescribed form, the number and nature of the experiments.

8. That all operative procedures in connection with the Certificates (*B. No. 1 and EE. No. 1*) be carried out under anaesthetics of sufficient power to prevent the animal from feeling pain.

9. That the animals experimented on under Certificates (*B. No. 1 and EE. No. 1*) be treated with strict antiseptic precautions, and if these fail and pain results, that the animals be immediately killed under anaesthetics.

10. On the completion of any experiment under Certificate (*C. No. 1*) the animal shall be killed forthwith by or in the presence of the experimenter.

11. That in the event of descriptions of any experiment performed by the said Licensee and requiring a Licence under the said Act appearing in any medical, scientific, or other journal or magazine, or in a report of any lecture delivered by the said Licensee, printed for publication or for private circulation, the said Licensee shall transmit to the Secretary of State the said journal or magazine, or the fullest of such printed publications or reports of lectures, accompanied by a letter drawing attention to the publication.

12. Such conditions as the Secretary of State may think fit to prescribe.

Whitehall, *25th June, 1906.*

Extracts from 39 and 40 Vict., c 77.

2. A person shall not perform on a living animal any experiment calculated to give pain, except subject to the restrictions imposed by this Act. * * *

2. The following restrictions are imposed by this Act with respect to the performance on any living animal of an experiment calculated to give pain; that is to say,

- (1) The experiment must be performed with a view to the advancement by new discovery of physiological knowledge or of knowledge which will be useful for saving or prolonging life or alleviating suffering; and
- (2) The experiment must be performed by a person holding such licence from one of Her Majesty's Principal Secretaries of State, in this Act referred to as the Secretary of State, as is in this Act mentioned, and in the case of a person holding such conditional licence as is hereinafter mentioned, or of experiments performed for the purpose of instruction in a registered place; and
- (3) The animal must during the whole of the experiment be under the influence of some anæsthetic of sufficient power to prevent the animal feeling pain; and
- (4) The animal must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic which has been administered; and
- (5) The experiment shall not be performed as an illustration of lectures in medical schools, hospitals, colleges, or elsewhere; and
- (6) The experiment shall not be performed for the purpose of attaining manual skill.

Provided as follows; that is to say,

- (1) Experiments may be performed under the foregoing provisions as to the use of anæsthetics by a person giving illustrations of lectures in medical schools, hospitals, or colleges, or elsewhere, on such certificate being given as in this Act mentioned, that the proposed experiments are absolutely necessary for the due instruction of the persons to whom such lectures are given with a view to their acquiring physiological knowledge or knowledge which will be useful to them for saving or prolonging life or alleviating suffering; and
- (2) Experiments may be performed without anæsthetics on such certificate being given as in this Act mentioned that insensibility cannot be produced without necessarily frustrating the object of such experiments; and
- (3) Experiments may be performed without the person who performed such experiments being under an obligation to cause the animal on which any such experiment is performed to be killed before it recovers from the influence of the anæsthetic on such certificate being given as in this Act mentioned, that the so killing the animal would necessarily frustrate the object of the experiment, and provided that the animal be killed as soon as such object has been attained; and
- (4) Experiments may be performed not directly for the advancement by new discovery of physiological knowledge, or of knowledge which will be useful for saving or prolonging life or alleviating suffering, but for the purpose of testing a particular former discovery alleged to have been made for the advancement of such knowledge as last aforesaid, on such certificate being given as is in this Act mentioned that such testing is absolutely necessary for the effectual advancement of such knowledge.

4. The substance known as urari or curare shall not for the purposes of this Act be deemed to be an anæsthetic.

5. Notwithstanding anything in this Act contained, an experiment calculated to give pain shall not be performed without anæsthetics on a dog or cat, except on such certificate being given as in this Act mentioned, stating, in addition to the statements herein-before required to be made in such certificate, that for reasons specified in the certificate the object of the experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a cat or dog, and no other animal is available for such experiment; and an experiment calculated to give pain shall not be performed on any horse, ass, or mule except on such certificate being given as in this Act mentioned that the object of the experiment will be necessarily frustrated unless it is performed on a horse, ass, or mule, and that no other animal is available for such experiment.

6. Any exhibition to the general public, whether admitted on payment of money or gratuitously, of experiments on living animals calculated to give pain shall be illegal. * * *

7. The Secretary of State may insert, as a condition of granting any licence, a provision in such licence that the place in which any experiment is to be performed by the licensee is to be registered in such manner as the Secretary of State may from time to time by any general or special order direct; provided that every place for the performance of experiments for the purpose of instruction under this Act shall be approved by the Secretary of State, and shall be registered in such manner as he may from time to time by any general or special order direct.

8. The Secretary of State may license any person whom he may think qualified to hold a licence perform experiments under this Act. A licence granted by him may be for such time as he may think fit, and may be revoked by him on his being satisfied that such licence ought to be revoked. There may be annexed to such licence any conditions which the Secretary of State may think expedient for the purpose of better carrying into effect the objects of this Act, but not inconsistent with the provisions thereof.

9. The Secretary of State may direct any person performing experiments under this Act from time to time to make such reports to him of the result of such experiments, in such form and with such details as he may require.

11. Any application for a licence under this Act and a certificate given as in this Act mentioned must be signed by one or more of the following persons; that is to say,

- The President of the Royal Society;
- The President of the Royal Society of Edinburgh;
- The President of Royal Irish Academy;
- The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin;
- The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin;
- The President of the General Medical Council;
- The President of the Faculty of Physicians and Surgeons of Glasgow;
- The President of the Royal College of Veterinary Surgeons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anaesthetics with a view to the advancement by new discovery of veterinary science;

and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by royal charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college, in Great Britain or Ireland, incorporated by royal charter.

Provided that where any person applying for a certificate under this Act is himself one of the persons authorised to sign such certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the person or persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Secretary of State, but shall not be available until one week after a copy has been so forwarded.

The Secretary of State may at any time disallow or suspend any certificate given under this section.

22. This Act shall not apply to invertebrate animals.

APPENDIX II.

*(Put in by Home Office.)*SUMMARY OF REPORTS ON THE LAWS RESTRICTING THE PRACTICE OF VIVISECTION
IN BRITISH INDIA, BRITISH COLONIES AND FOREIGN COUNTRIES

NOTE.—These reports were received in 1904 from H.M. Representatives abroad in reply to enquiries initiated by the Home Office.

(i.) BRITISH INDIA.

There is no legislation restricting vivisection in British India. A Bill drafted in 1892 was allowed to drop as unnecessary. In scientific institutions over which the Government has any control the lines of the English Act 39 and 40 Vict., c. 77, are followed.

(ii.) BRITISH COLONIES.

Apart from the general law as to cruelty to animals, there is no legislation dealing with vivisection in Canada, Cape of Good Hope, Natal, New Zealand, Jamaica, or Barbadoes. In the Australian Colonies the only enactments dealing directly with this question are those of Victoria and Queensland.

In Victoria, sections 12 and 13 of the Animals Protection Act, 1890, exempt persons practising vivisection from the penalties of that Act, and provide for the registration of practitioners and for the making of regulations.

In Queensland, section 12 of the Animals Protection Act of 1901 is in similar terms.

(iii.) FOREIGN COUNTRIES.

There are no special enactments or regulations restricting the practice of vivisection in Belgium, Bulgaria, France, Greece, Hesse, Hungary, Portugal, Roumania, Russia, Servia, Spain, Sweden, and Norway, Turkey, or the United States of America.

In two countries there is definite legislation, viz.:—Denmark and Switzerland (cantons of Geneva and Zurich).

In the following countries the practice is regulated by Government instruction issued to universities, schools, and other institutions:—Austria, Baden, Bavaria, Germany, Holland, Italy, and Saxony.

In Bavaria, Belgium, Germany, and Russia, there is, however, general legislation providing penalties for those guilty of cruelty to animals, which might presumably be applicable to those who practise vivisection; but in France the general law relating to cruelty to animals only applies to such experiments held in public as are attended with excessive cruelty, not to those conducted in private; in Holland the law as to cruelty to animals does not apply to ill-treatment with a scientific object; in Sweden the general law would not seem to affect cases of cruelty to animals occurring in a laboratory, while in Norway an Act coming into force this year (1905) as to cruelty to animals specially provides that the Sovereign or anyone to whom the Royal Authority may be delegated shall not be restricted from granting special permission to special persons for conducting experiments on animals which may entail suffering; in the United States of America, the law as to cruelty to animals specially excepts from the provisions of the Statute scientific experiments conducted under the authority of the faculty of some regularly incorporated college, university, or scientific society.

As to other foreign countries, it is not stated whether or not there is legislation as to cruelty to animals which might be applicable to those who perform experiments on living animals.

APPENDIX III.

MEMORANDUM BY MR. G. D. THANE.

(Inspector under the Act.)

(a) INSPECTION OF UNREGISTERED PLACES.

Mr. S. Coleridge stated (qu. 10262 and 10645) that by giving a licensee permission to vivisection in private places he is thereby placed beyond the possibility of legal inspection, because by Clause 10 of the Act of 1876 the inspector has no right of entry into, or inspection of, any unregistered place.

Experiments performed in unregistered places fall into two groups.

In the first the experiments are performed in order to investigate outbreaks of disease in animals, such as "braxy," "Louping ill," and "struck," in sheep. It is impossible to say where an outbreak will occur; it may affect a wide area, the place may be remote, and it is often necessary to inoculate a considerable number of animals in the open country. It is evident that registration is not practicable in these cases; but the licensee is required, when he reports the experiments to the inspector, to state the name of the place or places in which such experiments have been performed.

In the second group are included cases in which, owing to special circumstances, it is not possible to perform the experiments in a registered laboratory.

In the few instances, within my experience, in which permission has been granted to perform certain experiments in a specified place, not registered for the performance of experiments generally, it has been for a limited period, a condition has been added to the licence that the place shall be open to inspection by the inspector, and they have all been indicated in the annual reports. Thus, in the report for 1903, it is stated:—

"... two licensees, who were permitted to perform certain experiments dealing with the effects of increased atmospheric pressure, and requiring the employment of apparatus which was not available at a laboratory, at a place which was not registered; this place was open to inspection, and has been frequently visited."

During the year 1907 a similar permission was granted in one case, and the place was visited while the experiments (inoculations) were in progress.

(b) CERTIFICATE A, AND THE "PAIN" OR "INOCULATION" CONDITION.

This condition was introduced in 1887 in the following form:—

"That if severe pain has been induced in an animal after any of the said experiments has been performed under the said Certificate A, No. , and if the main result of the experiment has been attained, it is a condition of this licence that the animal be immediately killed under anaesthetics."

In 1899 it was slightly modified, thus:—

"That if an animal, after and by reason of any of the said experiments under the said Certificate A, is found to be in pain which is either considerable in amount or is likely to endure, and if the main result of the experiment has been attained, the animal shall be immediately killed under anaesthetics."

Since 1887 the condition, substantially unaltered, has been invariably used with Certificate A, except in cases when it was obvious that pain could not ensue from the procedures contemplated and that it was consequently unnecessary. I am not able to recall a case in which Certificate A has been allowed to come into operation without this condition. The suggestion that the condition has been from time to time abandoned, or materially modified (see Questions 10272-10275) is unfounded.

I may be allowed to call attention to the following extract from the first Annual Report which I made, viz., that for the year 1899:—

"No experiments requiring anything of the nature of a surgical operation, or that would cause the infliction of an appreciable amount of pain, are allowed to be performed without an anaesthetic."

A similar statement is contained in every Annual Report which I have presented, and since 1901 it has been in the following form:—

"In no case has a cutting operation more severe than a superficial venesection been allowed to be performed without anaesthetics."

It is further stated, from 1900 onwards:—

"In no instance has a certificate dispensing with the use of anaesthetics been allowed for an experiment involving a serious operation."

It will therefore be seen that, during the time as to which I can speak from personal knowledge, Certificate A, which dispenses with the use of anaesthetics, has not been allowed for any operative procedure more severe than the opening of a subcutaneous vein, for which no one would think of using an anaesthetic in man; that is, in other words, that vivisection of an animal, in the proper sense of the term, without anaesthetics, has not in any case been allowed by the Secretary of State.

In reply to Question 12918 reference is made by a witness to Certificate A2. The numeral here means that this is the second Certificate A which has been submitted by the holder. There is only one form of Certificate A, or of any other certificate; although of course when the wording of a certificate has been altered there have been for a time both the old and the new forms in operation until the former expired or was disallowed.

(c) CERTIFICATE B.

In reply to question 10560, Mr. Coleridge stated—"that that certificate admits of a very large amount of extreme pain and awful suffering, because under that certificate the animal may be kept disembowelled alive without anaesthetics as long as actual cutting operations are not being performed upon it."

The change in the wording of Certificate B from "during the whole of the experiments" to "during the whole of the initial operation of such experiments" was made in 1892 because the experiment continues during the whole of the time following the operation while the effects of the operation are being developed, and only terminates when the animal is finally killed.

The "initial operation" covers all proceedings until the wound is closed and dressed. It has never been regarded otherwise, either in the Home Office or by licensees, and in no case within my experience have procedures calculated to cause pain been carried out on an animal during or after the operation without the animal being anaesthetised. I never heard the suggestion that such a thing was permissible until it was made by Mr. Coleridge. In my report for 1906 I state that "no observations or stimulations of a character to cause pain are allowed to be made without the animals being anaesthetised."

No certificate B, which would permit of painful procedures without anaesthetics, has in my experience been allowed to come into operation by the Secretary of State.

G. D. THANE.

March 7th, 1908.

I N D E X.

ABERDEEN:

Experiments on animals meet with small opposition in, *D. J. Hamilton*, 20210-11.
Municipal laboratory at, *G. D. Thane*, 339.

University of:

Demonstration experiments at, *A. R. Cushny*, 5159.
Evidence on behalf of, see *HAMILTON, D. J.*, 19984-20378.

ABERNETHY, DR., reference *Rec. J. P. Hopps*, 8329.

ABRATH, DR., prosecution of, for abuse of Vivisection Act, Section VI., and conviction *A. G. Scott*, 19568-75, 19681-5.

ACTINOMYCOSIS, see under PARASITIC DISEASES.

ACTS OF PARLIAMENT, see under PARLIAMENT.

ADDISON, clinical observations of, as to functions of suprarenal glands, *Miss A. Kenealy*, 6637, 6642.

ADVISORY COMMITTEE ON PLAGUE IN INDIA, work of, and Commission emanating from, *C. J. Martin*, 12286-91.

AFRICAN COAST FEVER:

Failure of Koch's experiments and present accurate knowledge of cause of, *S. Stockman*, 3403-8.
Koch's preventive inoculation for, not successful in Rhodesia *S. Stockman*, 3331-50.
Transmitted by agency of blood-sucking ticks *S. Stockman*, 3410-14.

AGRAMONTE, DR., member of United States Commission to investigate cause of yellow fever in Havana, *W. Osler*, 16531.

ALCOCK, DR., assisted in experiment described in *Shambles of Science*, Chapter XI., *Miss Lind-of-Hageby*, 7448-50.

ALDENHAM, laboratory at, held by Lister Institute of Preventive Medicine *G. D. Thane*, 344.

ALEXANDRIA, plague outbreak in, and successful treatment by application of sanitary methods *Sir G. Kekewich*, 20485-90.

ALLBUTT, SIR T. CLIFFORD, present at Dr. Gaskell's cross circulation experiments *L. E. Shore*, *W. H. Gaskell*, 19465, 21470, 21726.

ALLINGHAM, WILLIAM, M.D., letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

ANÆSTHESIA:

Analgesia not necessarily coincident with, *A. R. Cushny*, *F. Gotch*, 5270-4, 13898-900.

"Complete":

Can be always obtained in experiments, *Sir R. D. Powell*, *H. Morris*, *E. A. Schäfer*, *F. Gotch*, *Sir J. F. Moulton*, 5771-3, 8020, 10047-53, 12809-11, 13586-7.
Can occur without abolition of corneal reflex *D. W. Buxton*, 12523-4.
Definition *D. W. Buxton*, 12544-56.
First movements which return after, are not indicative of consciousness *J. N. Langley*, 15274-5.
Must be capable of preventing all shock *D. W. Buxton*, 12662-6.
Narcotics can induce, *D. W. Buxton*, 12681.
No difficulty in maintaining, throughout experiments *D. W. Buxton*, 12679-80.
No difficulty in securing, for length of time *Sir J. Russell*, 695.
Present guarantees of, unsatisfactory *J. H. Levy*, 18477-83.

ANÆSTHESIA--cont.

"Complete"--cont.

Same precautions taken to ensure, in experiments on animals as in operations on human beings *D. W. Buxton*, 12461-6, 12584-7.
Secures against all pain *E. A. Schäfer*, 10069-71A.
Skilled anaesthetist has no difficulty in ascertaining, *D. W. Buxton*, 12419-20.
Symptoms indicating, vary slightly with nature of anaesthetic used *D. W. Buxton*, 12421-7.
Vivisection only justifiable if there is guarantee of, and animal is not allowed to survive *J. H. Levy*, 18477-83.

Consciousness, and reasons for supposing sharp dividing line exists between *S. F. Smith*, 13082-3.
Consciousness disappears long before movement, and power of motion returns before sensation *H. Morris*, *E. A. Schäfer*, 7937-52, 10222-4.

Deaths from:

No inquest or public inquiry held in Scotland as to, *Sir V. Horsley*, 15861-2.
Possible difficulty in differentiating between death from shock or, *Sir V. Horsley*, 15863-4.

Different degrees of, *E. H. Starling*, *D. W. Buxton*, 3889-90, 4062, 12510-22.

General, for human beings sometimes prohibited by patient's condition *H. Snow*, 2399-400.
Hypnotism an unreliable substitute for, *J. N. Langley*, 15270.

Imperfect, implied by use of curare *H. Snow*, 2357-75.

"Incomplete":

Alleged deception in letters to surgeons with regard to meaning of, unfounded *Hon. S. Coleridge*, 19930-2, 19967-74.

Correspondence with surgeons and Home Office as to use of, in human operations *Hon. S. Coleridge*, 10991-11043.

Definition *D. W. Buxton*, 12544-56.

Experiments described in *Shambles of Science* were performed under, *Miss Lind-of-Hageby*, 9130-1, 9157-97.

Explanation of term as used in connection with Dr. Crile's experiments, *Sir V. Horsley*, 15721-8.

Frequently advised in physiological text books *Miss Lind-of-Hageby*, 7223-97.

Movement of animals on operating table indicate, *Miss Lind-of-Hageby*, 9661-4.

No possibility of, during experiments *A. R. Cushny*, 5175-8.

Signifies patient is not necessarily free from pain *D. W. Buxton*, 12437-8.

Suggested use of term by Dr. Crile in reference to his experiments in different sense *D. W. Buxton*, 12578-82.

Surgeons' statements as to, *Hon. S. Coleridge*, 10305-14.

"Light":

Nature of certain experiments frequently demands, *Miss Lind-of-Hageby*, 7438-41.

Meaning of term, *Miss Lind-of-Hageby*, *D. W. Buxton*, 9545-62, 9558-61, 12431-5, 12544-56.

Movement and cries possible without sensation of pain under, *H. Morris*, 7996-8002.

Pain may be felt under, *Miss Lind-of-Hageby*, 9137-40, 9486-96.

Use of, does not indicate any degree of pain *A. D. Waller*, 18081-5.

Maintenance of, during experiments tested by inspector *Sir J. Russell*, 547-8.

ANÆSTHESIA—cont.

- Maintenance of, in surgical operations on men *H. Snow*, 2379-91.
- Maintenance of, possible for long periods *E. H. Starling*, *Sir L. Bruntton*, *J. N. Langley*, 3627-34, 7012-13, 15114-18.
- Maintained throughout all cutting experiments, and no cruelty ever witnessed, *Sir V. Horsley*, *Lorrain Smith*, 16188-98, 18280-3.
- Maintained throughout all demonstration experiments *J. N. Langley*, 15387, 15102-8.
- Marked by progressive effects divided into degrees of narcosis and definition of such degrees *D. W. Buxton*, 12389-96, 12575-6.
- Meaning of term, and use of term "slight anæsthesia" by vivisectionists *Hon. S. Coleridge*, 10385-411.
- Meaning of term varied, but usually denotes absence of pain *J. N. Langley*, 15411-16.
- Measures taken to resuscitate animal if anæsthesia is pushed too far, *E. A. Schäfer*, 10072-82.
- Narcotics initially produce sleep, and large dose produce, *A. R. Cushny*, 5181-2.
- Object of modern research on, is to know how to paralyse higher centres of brain *Sir V. Horsley*, 15900.
- Painful sensation is first to be abolished concluded from personal experience, *L. E. Shore*, 19479-81.
- Profound, condition of patient under, *E. H. Starling*, 3755-7.
- Reflex movements under:
 - Occur in all degrees and indicate no sensation of pain, *D. W. Buxton*, 12525-31.
 - Skill required to distinguish between movements due to sensation of pain and, *D. W. Buxton*, 12612-19.
 - Some, persist in third degree but no sensation of pain *D. W. Buxton*, 12400-10.
- Slight, meaning of term, *Hon. S. Coleridge*, 11548-61.
- Small doses necessary for continuation of, when once produced *W. E. Dixon*, 18668.

Tests:

- Absence of purposive movement is criterion of unconsciousness to pain *Sir V. Horsley*, 15929-35.
- Blood pressure:
 - Effective *E. H. Starling*, *W. E. Dixon* 4053-4, 18737-9.
 - Not used in operations on human being *W. B. Dixon* 18789-92.
- Conjunctival reflex is most practical, *D. W. Buxton*, *A. D. Waller*, 12414-18, 18144-9.
- Corneal reflex, *W. E. Dixon*, 18669, 18787-9.

ANÆSTHETICS:

A. C. E. mixture:

- Chloroform preferable to, for dogs *F. Hobday*, 16322-6, 16473-5, 16497-500.
- Gradual action of, *J. N. Langley*, 15311-313.
- Preferable to chloroform, for animals *Sir T. Stoker*, 1023, 1025-7.
- Use of, *D. W. Buxton*, 12451.

Action:

- Established by experiments on animals *D. W. Buxton*, *Sir V. Horsley* 12457-60, 15652-3.
- Differences in, upon different nerve centres *J. N. Langley*, 15120-9.
- Sensory cells paralysed before motor cells *W. E. Dixon*, 18672.
- Similar upon men and animals *D. W. Buxton*, 12439-46.
- Upon whole central nervous system *D. W. Buxton*, 12599-604.

Actual discovery of, not due to experiments, but knowledge of their precise nature entirely due thereto, *D. W. Buxton*, 12539-40.

Administration:

- Consistent and efficient in experiments *Sir J. Russell*, *G. D. Thane*, *E. H. Starling*, *E. A. Schäfer*, 637-9, 700-1, 1765-8, 3470, 3603-6, 3639-56, 10213-21, 4154-9, 4242-52.

ANÆSTHETICS—cont.

Administration—cont.

- Discomfort arising from, *M. S. Pembrey* 14160-1.
- Discomfort following, may be greater than slight pain involved in performing operation without, *J. N. Langley*, 15325-8.
- Discomfort and fear not caused to animals by methods employed in India *Col. E. Lawrie*, 17039-42.

to Dogs:

- Method and apparatus used *G. D. Thane*, *E. H. Starling*, *D. W. Buxton*, *W. E. Dixon* 1230-1, 3585-8, 12488-500, 18677-9.
- More difficult, than to human beings *E. H. Starling*, *S. F. Smith*, 3481-7, 13082.
- Not difficult *D. W. Buxton*, 12488-500.
- Used to be frequently attended by fatal results *F. Hobday*, 16294, 16378-80.
- Dose renewed during experiment if necessary *W. E. Dixon*, 18679-85.
- Experiments should not be performed under present system of, *Col. E. Lawrie*, 16798, 16808.
- Gradual diminution of sensitiveness to pain during, *Sir V. Horsley*, 16012-14.
- Great improvement since 1875 in, *Sir J. Russell*, 729.
- Invariable, in all experiments more extensive than simple inoculation *E. H. Starling*, 3445.
- Knowledge of, should be acquired by practice on animals *Sir V. Horsley*, 15644.
- Knowledge of, to animals would be of advantage in human practice, *J. N. Langley*, 15268.
- Methods adopted in laboratories, *E. H. Starling*, *W. E. Dixon*, 3828-35, 3878-80, 4242-52, 18677-9.
- in Midwifery cases *G. D. Thane*, *Sir V. Horsley*, 1720-22, 16015.
- Necessity of teaching, by experiments *Sir V. Horsley*, 15651-2.
- Nerve stimulating, efficient during *E. H. Starling*, 3657-8.
- Overdoses:
 - Frequent, *Sir J. Russell*, 549.
 - Occasional, *E. H. Starling*, 3601-2.
- Present system of, necessitates preliminary operation of tracheotomy *Col. E. Lawrie*, 16801-7, 16838-53.
- Regulations as to, strictly conformed with in all laboratories, *G. D. Thane*, 450, 1588-96.
- Skilled anaesthetist unnecessary, to assist during experiments *W. E. Dixon*, 18687.
- Special branch of medical practice *G. D. Thane*, 1718-9.
- Students are taught methods of, *E. H. Starling*, 3750-2.
- Students learn wrong methods of, *Col. E. Lawrie*, 16905-9.
- Students should learn, by a course of experiments on animals *Sir V. Horsley*, 16112-114.
- Tracheotomy never performed on animals previous to, and such procedure would be illegal *A. D. Waller*, *J. Lorrain Smith* 18115-19, 18460-1.
- Unreliable methods of, in vogue *Sir G. Kekewich*, 20470.
- Woulff's bottle used for, *G. D. Thane*, 1615-16.
- After effects of, on animals *Sir J. Russell*, *F. Hobday*, 731-2, 16441-6.
- All severely painful experiments should be carried out while animal is completely under, *A. G. Scott*, 19507-8.
- Alcohol, mixture of chloroform, and, used *D. W. Buxton*, 12451.
- Animals always fully under, in operation and nature of those, employed *A. R. Cushny*, 5039-57.
- Animals recover rapidly from effects of, *Sir J. Russell*, 540.
- Anti-vivisectionists' persistent misstatements regarding neglect of, *Sir V. Horsley*, 15728-9.

ANÆSTHETICS—cont.

- Castration should be performed under, *J. W. Graham*, 5928-31, 6111-13.
- Cases of second operations for testing purposes, all conducted under *G. D. Thane*, 1216-8.
- Certain experiments for pharmacological research cannot be satisfactorily performed under, *A. R. Cushing*, 4847-8.
- Certificates disallowing use of, imply torture of animals *Sir G. Kekewich*, 20736-43.
- Certificate dispensing with, never allowed for severe operations *W. P. Byrne*, *G. D. Thane*, 160, 440.
- Certificates go to release conditions as to *W. P. Byrne*, *Mrs. K. Cook*, 221-3, 2000-7.
- Certificates do not necessarily prescribe particular forms of, *H. Morris*, 7964-7.
- Certificate B requires, *Sir J. Russell*, 557.

Chloral:

- Doses of, necessary to anaesthetise rabbits and man *W. E. Dixon*, 18654-9.
- Efficiency of, *G. D. Thane*, *F. Gotch*, 1635-8, 13890-2.
- Insensibility produced by use of, *Sir L. Brunton*, 6902-6.
- Not often used, but method of administering, when employed *W. E. Dixon*, 18682.
- Overdose of, has complete narcotic effect, and experiments in connection with, *Sir T. L. Brunton* 6785-98.
- Rarely used as an anaesthetic for man, *W. E. Dixon* 18654-7.
- Used generally as an anaesthetic for animals *W. E. Dixon* 18658.

Chloroform:

- Action of, diminished blood pressure apart from any connection with respiration *A. D. Waller*, 18087A-90.

Administration:

- Can be given with perfect safety, so long as regular respiration is maintained *Col. E. Lawrie*, 16952-6.
- Clinical experience rather than laboratory experiments have been truer guide in, *Col. E. Lawrie*, 16975-86.
- Danger is at beginning of procedure *F. Hobday*, 16455-60.
- by Means of a mask *F. Hobday*, 16382.

to Dogs:

- Evidence before previous Commission as to, *Sir J. Russell*, 697.
- Series of experiments in connection with, and small percentage of deaths *F. Hobday*, 16434-5.
- Hyderabad method, is the only safe method *Col. E. Lawrie*, 16935-7.
- Inhalation a better method than through trachea *Col. E. Lawrie*, 17080-5.
- Investigations into methods of, and records of cases *F. Hobday*, 16306-16.
- Investigations into method of, chiefly carried out on dogs and cats *Sir V. Horsley*, 16301-5.
- in Midwifery cases *Sir T. Stoker*, 1629-32.
- No manner of measuring quantity respired when administered in natural way, *Col. E. Lawrie*, 16927-30.
- Nurses and hospital orderlies should be taught, *Col. E. Lawrie*, 16938-9.
- Safe, so long as regular respiration is maintained, *Col. E. Lawrie*, 16952-6.
- by Students in Edinburgh during last century without any fatal results *Col. E. Lawrie*, 16942-51.
- Symoc's method, based on clinical experience and quite satisfactory *Col. E. Lawrie*, 16963-5.
- System of introducing it through tube from another room quite satisfactory *Sir V. Horsley*, 15910-12.
- through Tracheal tube, interferes with natural respiration and vitiates experiment *Col. E. Lawrie*, 16886-93.
- through Tracheal tube, should be abandoned *Col. E. Lawrie*, 16911-22.

ANÆSTHETICS—cont.

Chloroform—cont.

Administration—cont.

- Tracheotomy, illegality of performing, before, *Col. E. Lawrie*, 17001-7, 17058-66.
- Value of giving morphia before, *W. E. Dixon*, 18672.

Alcohol, used in mixture with, *D. W. Buxton*, 12451.

All animals struggle more or less against, *Sir T. Stoker*, 837.

All experiments can be performed painlessly under correct administration of, *Col. E. Lawrie*, 17053-7.

an Absolute anaesthetic *Col. E. Lawrie*, 17000.

Atropin counteracts fatal tendency of, *E. A. Schäfer*, 10083, 10152-4.

Blood pressure just as delicate an indication of action of, as reflexes *W. E. Dixon*, 18690-3.

Blood pressure lowered as first effect of, and respiration stops from want of nutrition *Col. E. Lawrie*, 16825-30.

Cambridge experiments vitiated *Col. E. Lawrie*, 16969-74.

Continuous dose can be maintained in operations on human beings *D. W. Buxton*, 12675-7.

Cross circulation experiments on dogs with object of ascertaining effect of, on heart, methods adopted and results *L. E. Shore*, 19437-19456, 21373-21580.

Death under, occurs from failure of respiration leading to heart failure *Col. E. Lawrie*, 16860-1.

Discovered by accidental inhalation *Sir V. Horsley*, 16258.

Discovered by experiments on man, but its present position depends on animal experimentation *Sir L. Brunton*, *Col. E. Lawrie*, 7118-21, 16961-2.

Dogs:

- Can be kept for several hours under, *Sir V. Horsley*, 16318-28.
- Do not show anticipatory signs of terror *F. Hobday*, 16334-6.
- Statement as to susceptibility of, not consistent with inspector's experience *Sir J. Russell*, *G. D. Thane*, 753, 1222-8.
- Susceptible to death under, *Sir T. Stoker*, 813-14, 835, 1039.

Experiments brought into disrepute owing to physiologists' rejection of work of Hyderabad Commission *Col. E. Lawrie*, 16836.

Has no direct influence on heart, as proved by the Hyderabad Commission *Col. E. Lawrie*, 16922-4, 16834-5, 16862-6.

Margin between dose of, securing complete unconsciousness and lethal dose *F. Hobday*, 16454.

Noises made by animals under, not indicative of pain *E. A. Schäfer*, 10226-7.

Opium used before discovery of, *D. W. Buxton*, 12642-7.

Percentage to secure unconsciousness much the same in all warm-blooded animals *Sir V. Horsley*, 15645-9.

Preferable to A.C.E. mixture *F. Hobday*, 16322-6, 16473-5, 16497-500.

Progressive diminution of sensibility to pain under, *Col. E. Lawrie*, 17008-17.

Reflexes possible under, *W. E. Dixon*, 18997-19000.

Respiration affected by, and danger of using, *D. W. Buxton*, 12428-30.

Safe, if administered correctly *Miss Lindaf-Hageby*, *Col. E. Lawrie*, 7599-602, 17045-52.

Sensory nerves paralysed before motor nerves by, *W. E. Dixon*, 18897-900.

Specialists in anaesthesia called into existence by belief that fall of blood pressure under, is synonymous with heart failure *Col. E. Lawrie*, 16940-1.

Used with ether, *D. W. Buxton*, 12451.

Conflicting testimony as to efficacy of, *J. W. Graham*, 6096-110.

ANÆSTHETICS—cont.

Cross circulation experiments performed on dogs without, *Col. E. Lawrie*, 16810-21, 16992-5.
 Curare, use of, implies inefficiency of, *J. H. Levy*, 18500-1.
 Curare administered only while animal is effectively under, *G. D. Thane*, 1705.
 Distinction between nature of, employed in experiments and veterinary operations *Miss Lind-af-Hageby*, 7350-4.

Dogs :

Can be easily kept under, *Sir V. Horsley*, 15909.
 Doubts as to possibility of securely anæsthetising, for long periods *Sir T. Stoker*, 862-8, 891-2.
 Not more liable to succumb to effects of, than other animals *Sir L. Brunton*, 7179-85.
 Overdosed, and methods adopted for revival *E. H. Starling*, 3481-7.
 Unlikely to be completely unconscious during experiment on spleen *Mrs. K. Cook*, 1919.
See also under Chloroform above.
 Doubts as to efficacy of, employed in experiments and cases where Act is evaded as regards, *Sir G. Kekewich*, 20715-24.
 Drowning experiments, some conducted with, and some without, *G. D. Thane*, 1290-2.

Ether :

Experiment performed under inefficient, *Mrs. K. Cook*, 2058-2063.
 Fleeting effect of, *Mrs. K. Cook*, 1955.
 Used with chloroform *D. W. Buxton*, 12451.
 Experiments with view of discovering action of digitalis carried out under, *A. R. Cushny*, 4684-8.
 Experiments under Certificates B, B,EE or B,F all require, *G. D. Thane*, 467.
 Experiments alleged to have been conducted without, *J. W. Graham*, 5908.

Experiments performed without :

Condition enforcing painless killing of animal when main result of experiment attained *W. P. Byrne*, 10-11, 13.
 Licence revoked for contravention of Act as to, *W. P. Byrne*, 38-40.
 Necessity of certain, *F. Gotch*, *M. S. Pembrey*, 13754-60, 14067-71.
 Permitted by licence without Certificate A *G. D. Thane*, 409-10.
 Strict enforcement of antiseptic treatment in all cases *W. P. Byrne*, 12-13.
 Universal condition for, *W. P. Byrne*, 6-9, 159.

Foreign experiments rarely carried out now without, *Sir V. Horsley*, 15887.
 for Gelding horses, *S. Stockman*, 2875-9.
 Horses frequently fired without, *F. Hobday*, 16520-3.
 Impossible to remove consciousness to pain completely by, *Miss A. Kenaly*, 6426-44.
 Inoculation of rabbit for rabies requires, *S. Stockman*, 2590-7, 2912.
 Inoculation or bleeding experiments rarely require, *S. Stockman*, 2585-89.
 Insufficiency of, to nullify pain *J. W. Graham*, 5878-82.
 as to Length of time men and animals can be kept under, *A. R. Cushny*, *H. Morris*, 5255-8, 7802-4.
 Lethal dose, duration of life under, *F. Gotch*, 13641-56.
 Licensees frequently guilty of irregularities by administering, under Certificates A or A, E, *G. D. Thane*, *Sir J. Russell*, 477, 555-6.

Local :

Anæsthesia produced by injection into spinal cord *W. E. Dixon*, 18950, 18958-63.
 Brings loss of local sensation of pain without loss of consciousness, and therefore not used for animals *A. R. Cushny*, 5132-7.

Cocaine :

Administered subcutaneously and depth of anæsthesia produced *W. E. Dixon*, 19067-70.

ANÆSTHETICS—cont.

Local—cont.

Cocaine—cont.

Advisability of using, under Certificate A, but possible difficulty *Sir J. Russell*, 557, 623-4, 624-7.
 Anæsthetising powers of, first discovered by experiments on animals *A. R. Cushny*, 4751.
 Castration could be rendered painless by use of, *W. E. Dixon*, 19071-2.
 Chiefly used in eye-operations *Sir H. R. Swanzy*, 9913-18.
 Danger of using, owing to difficulty of sterilising *A. R. Cushny*, 4751-3.
 Introduction of, *A. R. Cushny*, *Sir L. Brunton*, 4867-9, 7021-7.
 Past researches into physiological action of, *A. R. Cushny*, 4869-72.
 Search for substitutes for, led to discovery of the orthoforms *A. R. Cushny*, 4759-61, 4753-9.
See also under Drugs.

Composition of, *G. D. Thane*, 1173.
 Dangers in use of certain, *W. E. Dixon*, 18964-6.
 Discovery of all, entirely by animal experimentation *A. R. Cushny*, 4761-2.
 Eucaïne, introduction of, as substitute for cocaine *A. R. Cushny*, 4753, 4758.
 Investigations into relative action of new, *W. E. Dixon*, 18948-54.
 Method of injecting, into spinal cord is quite painless *W. E. Dixon*, 19073-6.
 Mode of determining effect of, *W. E. Dixon*, 18955-6.
 Use of, always extending *A. R. Cushny*, 4980-6.
 Use of, in certain cases, *G. D. Thane*, *D. W. Buxton*, 1171-6, 12631-9.

Minor, introduced by means of experiments on animals *A. R. Cushny*, 4819.
 Narcotics, hypnotics, and, do not differ essentially *W. E. Dixon*, 18652-4.
 Narcotics and hypnotics administered in large doses are complete, *W. E. Dixon*, 18652-3.
 Narcotics administered as well as, *E. H. Starling*, 3607.
 Nature of, discovered by experiments on animals *D. W. Buxton*, 12649-50.
 Nature of, generally used *G. D. Thane*, *D. W. Buxton*, 1170, 12467-9.
 Nature of those, generally used in surgical practice, *D. W. Buxton*, 12447-56.
 Nature of, used, generally stated at commencement of paper describing experiment, *E. H. Starling*, 3635-7.
 Necessary for success of experiment, *G. D. Thane*, *J. N. Langley*, 1596-8, 15273.
 No practical difficulty in keeping animal under, without pain *Sir J. Russell*, *G. D. Thane*, 733-6, 1617-22.
 Non-existence of, would not justify prohibition of experiments, but would limit number of operators *E. H. Starling*, 4160.
 Overdose of, generally adopted for killing animal *G. D. Thane*, 1325-6.
 Pain not felt under, *A. R. Cushny*, *Sir V. Horsley*, 5194-5, 15899.
 Pain indicated by struggles under, *R. J. Cowen*, 19419-25.
 Pain, indications of, during operations on animals easily detected *F. Hobday*, 16329-31.
 Physiological text books show indifference to use of, *Miss Lind-af-Hageby*, 7223, 7299.
 Previous to discovery of, surgeons were justified in experimenting upon animals *Sir V. Horsley*, 15869-71.
 Probable use of, in experiments previous to 1875, with regard to action of digitalis *A. R. Cushny*, 4660-3.
 Spaying of bitches conducted under, *S. Stockman*, 2897.
 Testimony of competent anti-vivisection witness required before believing in universal use of, at experiments *Sir G. Kekewich*, 20452-6.
 Tracheotomy may or may not require, *F. Hobday*, 16517-18.
 Unreliability of, and drug experiments cannot be made under *Miss Lind-af-Hageby*, 9208-15.

ANÆSTHETICS—cont.

Unnecessary both in case of animals and men, pain being a beneficent and protective mechanism *M. S. Pembrey*, 14119-23.

Urethane:

Complete anæsthesia produced by, in rabbits *A. R. Cushny*, 5948-55.

Efficacious if given in large dose, *A. R. Cushny*, *F. Gotch*, 4741-2, 13890-2.

Method of administering, is by injection *W. E. Dixon*, 18681.

Use of, *G. D. Thane*, 1635-8.

Use of, implies certain deviation from normal conditions, but their effect can be allowed for in judging experiment *E. H. Starling*, 4202-10.

Vivisectionists' statements as to sufficiency of, unreliable, *Sir G. Kekewich*, 20593-8.

ANDERSON, HUGH KERR, M.A., M.D., F.R.S. 21636-21704.

Dr. Gaskell's cross circulation experiments:

Circumstances attending performance of, and completeness of anæsthesia during, vouched for 21636-704.

Present at, *L. E. Shore* 19465.

ANGINA PECTORIS:

Value of amyl nitrite as remedy for, *A. R. Cushny*, 4800-4.

ANKYLOSTOMA: See under PARASITIC DISEASES.

ANREP, PROFESSOR VON, effects of cocaine on animals first noted by, *A. R. Cushny*, *Sir L. Brunton*, 4751, 4867-91, 7021-7.

ANTHONY, The late JOHN, M.D., comparative insensibility of animals to pain maintained by, before last Royal Commission *S. F. Smith*, 13046-8.

ANTHRAX:

Anaerobic bacillus identified as cause of, by means of culture organisms *H. Morris*, 7694-7701.

Bacillus of, not always discoverable, *S. Stockman*, *H. Morris*, 3120-4, 7871-3.

Bacteriological origin of, admitted *S. F. Smith*, 13446.

Blood of animals suffering from, tested by veterinary surgeons *S. Stockman*, 3117-9.

Board of Agriculture notify local authorities of outbreaks of, *S. Stockman*, 2633.

Destruction of carcasses and careful disinfection not best method of dealing with outbreaks of, *S. Stockman*, 2743-5.

Diagnosis of, difficult without recourse to experiments *S. Stockman*, 2464-7, 2667-71, 2819-23.

Experiments in connection with investigation of, performed without necessary certificates *W. P. Byrne*, 38.

Experiments in relation to bacterial origin of, and immunising and curative influence of culture sera, *H. Morris*, 7726.

Organism besides causal one may be found, *S. Stockman*, 3067-70.

as to Pasteur's method of inoculating against, *S. Stockman*, 3140-4.

Pasteur's work demonstrated microbic cause of, and possibility of obtaining immunity from, *Sir J. F. Moulton*, 12730.

Pasteur's preventive inoculations for, generally confirmed *S. Stockman*, 2740-1.

Possible relation between braxy and, *D. J. Hamilton*, 20146.

Post-mortems in cases of, forbidden *S. Stockman*, 3110-11.

Prevalence of, and inoculation against, with consequent reduction of death rate *S. Stockman*, 2524-43.

Safe to argue from experience in animals to man in case of, *H. Morris*, 7873.

Slaughter not compulsory in cases of, *S. Stockman*, 2539-40.

Sources of, in man *S. Stockman*, 2634-41.

Testing of cases, in municipal laboratories *G. D. Thane*, 346-7.

Rival methods for prevention and cure of, *S. Stockman*, 3308-14.

ANTISEPTICS:

Care required in applying to eyes and aseptic treatment now substituted *Sir H. R. Swanzy*, 9955-61.

Certificates go to release conditions as to use of, *W. P. Byrne*, 221-3.

ANTISEPTIC SURGERY:

Anti-vivisection opposition to, shows distinct lack of moral feeling, *Sir V. Horsley*, 15672.

and Aseptic surgery, distinction between, *H. Morris*, *E. A. Schäfer*, *G. G. Bantock*, 7899, 10141-51, 14580-606, 14741-2, 15085-98.

Death rate after operations diminished owing to, *H. Morris*, 7750.

Definition *G. G. Bantock*, 15049-50.

Carbolic spray at first regarded as most important part of procedure in, but finally discarded *G. G. Bantock*, 14745-6.

Head's list of benefits derived from experimental research *Sir J. F. Moulton*, 12727-8.

Introduction of, entirely due to experiments on animals *Sir V. Horsley*, 15669-71.

Invention of, has saved incalculable degree of pain *Sir V. Horsley*, 15669-71.

Modifications of technique since 1876 *H. Morris*, 7845-7.

Pasteur's work on spontaneous generation is fundamental basis of modern, *H. Morris*, 7841-2.

Progress of, due entirely to study of bacteria by means of experiments on animals *H. Morris*, 7664-73, 7685-9, 7705-14.

Pyæmia and blood poisoning after operations have disappeared owing to, *Sir V. Horsley*, 15669-71.

ANTI-TYPHOID INOCULATION COMMITTEE, tests carried out under auspices of, *C. J. Martin*, 11803-13.

ANTI-VIVISECTION HOSPITAL:

National Anti-Vivisection Society had no active share in promoting, *Hon. S. Coleridge*, 19905-07.

Origin of name *S. F. Smith*, 13033-7.

Sera or anti-toxins not used in, *S. F. Smith*, 13473-5.

Size of staff, *S. F. Smith*, 13476-80.

APES:

Anthropoid, are only animals susceptible to yellow fever, as shown by experiments *W. Osler*, 16545, 16695-6.

Experiments on, and alleged cruelty of such *Mrs. K. Cook*, 1910.

APOPLEXY, malpractice of formerly administering digitalis in treatment of, *A. R. Cushny*, 4972-6.

ARLOING:

Preventive inoculation for blackquarter devised by, *S. Stockman*, 2544.

Reference *S. Stockman*, 2798.

ARNOLD, SIR EDWIN, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

ARTIFICIAL RESPIRATION, new method of, arrived at by experiments on dogs and its superiority to other methods *E. A. Schäfer*, 10104-10.

ARTERIAL SCLEROSIS:

Discovery that adrenalin will cause, gives means of studying development of *J. Lorrain Smith*, 18236-7, 18288-96.

Experiments on animals justifiable in order to define cause of, *J. Lorrain Smith*, *W. E. Dixon*, 18236, 18435-6, 18933-4.

Not yet known whether that induced by adrenalin in animals is similar to that found in human beings *J. Lorrain Smith*, 18436-9.

Nicotin action may produce, *W. E. Dixon*, 18935-41.

ASHER, opinion re source of post-mortem lymph *Miss A. Kenealy*, 5296.

ASCITES, severe operations may be followed by, *G. D. Thane*, 472-3.

ASEPTIC SURGERY :

- Dirt, exclusion of, is main feature *G. G. Bantock*, 14545-6, 14840-55, 14969-83.
 Listerism abandoned for, *G. G. Bantock*, 14545-6, 15051-64.
 Listerian treatment embodied in, *Sir V. Horsley*, *W. Osler*, 15666-8, 16742-6.
 Strict conformity with regulations as to use of, exists in all laboratories *G. D. Thane*, 450.
See also under ANTISEPTIC SURGERY.

ASPHYXIA, meaning of term and conditions giving rise to, *M. S. Pembrey*, 14078-82.

ASQUITH, RIGHT HON. H. H., Certificate EE substituted for E during régime of, *Sir V. Horsley*, 15762-3.

ASSES AND MULES, Certificate F required for experiments on, *G. D. Thane*, 423.

ASSOCIATION FOR ADVANCEMENT OF MEDICINE BY RESEARCH :

- Applications for licences submitted to, *W. P. Byrne*, *G. D. Thane*, 208, 281-2, 393-5.
 Constitution, aims and functions of, *W. P. Byrne*, *G. D. Thane*, *E. H. Starling*, 169-72, 1086-93, 3359-77.
 Consulted by Home Office, and doubts as to wisdom of this policy, *Sir T. Stoker*, 1066-7.
 Consulted by Home Office, and report of, is separate from inspector's *W. P. Byrne*, *Sir J. Russell*, 175-6, 525-7.
 Consulted by Home Office, before issue of licences and certificates *W. P. Byrne*, *G. D. Thane*, 24, 27-9, 131-3, 156-7, 435-8.
 Consulted by Home Office, policy initiated by *Sir W. Harecourt* *W. P. Byrne*, *G. D. Thane*, 31, 397.
 Delay in issue of licences and certificates sometimes occasioned by policy of consulting, *Sir J. Russell*, 566.
 Highly qualified to give advice as to issue of licences *W. E. Dixon*, 19153.
 Home Office has never acted contrary to advice of, *Hon. S. Coleridge*, 11049.
 Necessity of Home Secretary being advised in granting of licences by, *Sir V. Horsley*, 16100-101.
 No society in Ireland analogous to, *Sir T. Stoker*, 847.
 Objection to Home Office policy of consulting, *Hon. S. Coleridge*, 10675-91, 10909-14, 11098-109, 11615-21.
 Procedure adopted by, in considering applications for certificates *E. H. Starling*, 4184-8.
 Recommendation of, as to issue of licences and certificates not necessarily accepted by inspector, *Sir J. Russell*, 683.
 Report of, read by inspector before making his own report, *G. D. Thane*, 1094-7.
 Royal Society could not undertake consulting duty of, *Lord Rayleigh*, 5564-5.
 References *G. D. Thane*, 1483-4, 1751.

BADER, MR., reference *H. Morris*, 7944.

BAGEHOT, *The late W.*, reference *J. W. Graham*, 5887.

BAINBRIDGE, F. A., GUY'S HOSPITAL: useless nature of experiments by, in connection with flow of post-mortem lymph *Miss A. Kenealy*, 5285-301, 6699-710.

BAIN, DR., experiment on gall bladder of dog, by, *G. D. Thane*, 1650-69.

BAKER, N., Secretary of Royal Commission on Vivisection, 1875, correspondence between Dr. Klein and, re latter's evidence, *Hon. S. Coleridge*, 10858.

BALFOUR, F., reference *Sir J. F. Moulton*, 12768.

BALTIMORE :

- Johns Hopkins College, *see that title*.
 No active anti-vivisection society in, *W. Osler*, 16775-6.

BALLINAKILL, IRELAND, private laboratory at, *Sir T. Stoker*, 773.

BALHAM, municipal laboratory at, *G. D. Thane*, 342.

BAMFORD, SURGEON-GENERAL, chloroform said by, to have no direct action on the heart *Col. E. Laurie*, 17067.

BANBURY, SIR FREDERICK, BART., M.P., Royal Society for the Prevention of Cruelty to Animals 19484-851.

Bill for Prevention of Cruelty to Animals introduced by :

- Similar to Mr. Coleridge's Bill with exception of clause with regard to certificate for humanity, 19624-7.
 Reference 19554.

"Brown Dog of Battersea," particulars of case, suggest that pain was inflicted, 19522-6.

Certificate B, objection to experiments under, on ground of pain involved, 19714-20.

Inspectors :

- Insufficient number of, and necessity of their being whole time men, 19499-502.
 Present system of inspection unsatisfactory, 19621-2.
 Work of, might be facilitated by limiting number of registered places, 19508, 19618-20, 19778-82.

Pain :

- All precautions should be taken to prevent infliction of, on animals, 19498-9.
 Animals should be destroyed after experiments involving subsequent, 19612-17.
 No objection to experiments not involving, 19763-71.

BANG, PROFESSOR :

- Swine fever organism discovered by,
 Tuberculin test exploited in Denmark by, *S. Stockman*, 3204.

BANTOCK, GEORGE GRANVILLE, M.D., F.R.C.S. (Edinburgh), Parliamentary Association for the Abolition of Vivisection, 14530-15098.

Abdominal surgery :

- Not indebted to experimental methods, 14774.
 Special experience in, 14535, 14755.

Antiseptic surgery :

- Abandoned in favour of cleanliness and aseptic methods, 14571-9, 14608-12.
 Strong distinction between aseptic and, 14580-606, 14741-2, 15085-98.

Aseptic surgery :

- Dirt exclusion is main feature, 14840-55, 14969-83.
 Personal share in introduction of, 14969-83.

Bacilli :

- Concurrent with but not cause of disease, 14538-43, 14545-6, 14732-8, 14911-17, 14990-1.
 Fluid accompanying, is probably responsible for disease, 15014-28.
 Improbability of isolating, from surrounding fluid 14867-96.
 Presence of, does not necessarily imply anything specific, 14545-6.
 Tetanus, improbability of its being cause of disease, 14856-60.
 Toxins cannot be product of, 14550.

Tubercle :

- Absence of, in early stages of disease justifies conclusion that it is not actual cause, 14622-30, 14678-82, 14861-5.
 Erroneous views put forward as to entrance of into system, 14550.
 Growth of, favoured by air and light 14670-7, 15003-6.

Typhoid never discovered in water 14717-22.

Bacillus coli, presence of, necessary for the maintenance of health, 14713-16.

Bacteriological theories of disease, opposition to, founded on practical work and long experience 14755, 15048.

Bacteriology, study of, has led surgeons astray 15048.

Biology cannot be treated as a science to be investigated by experimental methods 14804-18.

Cancer research obtains no help from experimental methods 14775-7.

Diphtheria :

- Antitoxin, objection to, based solely on its inutility, 14930-4.
 Loeffler's bacillus not cause of, 14545-6, 14650-2.
 No evidence that fluid surrounding bacilli is cause of, but bacillus not found in many cases of clinical, 14644-59.
 as to sources of infection, 14545-6.

BANTOCK GEORGE GRANVILLE, M.D., F.R.C.S.

—cont.

Evidence referred to:

Antiseptic surgery, views concerning quite incorrect *Sir V. Horsley*, 15665-74.

Views with regard to non-bacteriological origin of disease contrary to universal opinion *W. Osler*, 16685-90.

Experience in surgical work, 14728-9.

Experiments on animals objected to on grounds of their inutility, 14536-7, 14730-1, 14801-3, 14929, 14947-9, 14994, 15065-9.

Klebs-Loeffler's bacillus:

Frequently present in healthy persons, and in cases of tonsillotomy, 14639-43.

May exist in healthy throat without producing clinical symptoms of diphtheria, 14767-9.

"Listerism":

Abandonment of, for aseptic methods and personal share in opposition to, 14546, 14752-4, 14837-9, 15051-64.

Basis of theory, was concerned with notion of influence of atmospheric germs 14551-5.

Carbolic spray first regarded as most important part of procedure, but finally discarded 14556-63, 14745-6, 14822-32.

Date of introduction of treatment, 14546, 14564-70.

Definition of antiseptic surgery or, 15049-50, 15083-4.

No connection between work of Semmelweis and, 14759-60.

Medicine is not and can never be a science 14903-10.

Milk consumption:

Erroneous views put forward with regard to connection between, and prevalence of *tabes mesenterica* 14547-50.

Statistics showing small, in East London 14547-9.

Modern Doctrine of Bacteriology, views upheld in, 14631-5.

Pasteur's treatment for rabies, acceptance of, discreditable to medical profession and falseness of statistics relating to, 14778-800, 15037-46.

Pharmacological research is useless and old remedies are superior to modern 14935-40.

Plague, theory that communicability of, is effected by agency of fleas ridiculous 14593-711, 14952, 15071-9.

Smallpox, specific bacillus cannot be cause of, 14545-6, 14636-8, 14897-902.

Tsetse fly does not communicate sleeping sickness, but poison of bite kills animals 15032-5.

Tuberculin fiasco, 14663-8, 14766.

Tuberculosis:

Erroneous views as regards bacteriological cause of, and attendant conditions 14547, 14550.

Not communicable from men to animals 14683-9.

Views attributing prevalence of, to consumption of milk 14547.

Vaccination, protective effect of, admitted 14925-7.

BARBER, S. F., letter to, re incomplete anaesthesia, *Hon. S. Coleridge*, 10993.

BARLOW, DR. LAZARUS, Jensen's tumour not regarded as a malignant growth by, *H. Snow*, 2172.

BARNARD, H., experiments on dogs performed by, and alleged cruelty *J. W. Graham*, 5851-71.

BARR, SIR JAMES:

Address by, to British Medical Association at Toronto, *E. H. Starling*, 4262-5.

Oxygen treatment for pneumonia advocated by, disapproved of, *Sir L. Brunton*, 6900.

BARRATT, DR. WAKELIN, experiments on dogs' gall bladders by, and alleged cruelty *Mrs. K. Cook*, 1919.

BASHFORD, E. F., M.D., author of article on transplantation of Malignant New Growths in Report of Cancer Research Fund, *H. Snow*, 2110-15.

BASTIAN, reference, *Miss A. Kencaley*, 5288.

BAUMANN, experiments resulting in introduction of hypnotic sulphonal by *A. R. Cushman*, 4730.

BAYFIELD, DR., Member of Committee of National Canine Defence League, *J. Hughes*, 1724-4.

BAYLISS, W. M., M.A., F.R.S.:

Alleged misstatement by, regarding experiment described in *Shambles of Science* *Miss Lindaf-Hageby*, 9634-50.

Alleged neglect of anaesthetics during operations performed by, untrue *E. H. Starling* 3639-56.

Apology to, on account of certain libellous allegations in *Shambles of Science* *G. D. Thane*, 1280.

Cat incompletely anaesthetised during experiment by *Miss Lindaf-Hageby*, 9157-97.

Dog illegally experimented upon twice by, *Mrs. K. Cook*, 1917.

Experiments conducted by, and evidence of animal struggling *Miss Lindaf-Hageby*, *Hon. S. Coleridge*, 7451-2, 10720-2.

Experiments on abdominal nerves of dogs by, and alleged cruelty *Mrs. K. Cook*, 1917.

Experiments on spinal cord of dog performed by, and alleged cruelty *Mrs. K. Cook*, 1914-17.

Label action brought by, see *BAYLISS v. COLERIDGE*.

Morphia said to be an anaesthetic by, *Miss Lindaf-Hageby*, 7308-9.

References *Miss Lindaf-Hageby*, 7220, 9394, 9396.

BAYLISS v. COLERIDGE:

Anaesthesia obviously complete during case disputed in, *D. W. Buxton*, 12626-8.

Misrepresentation of evidence in, as to control of animals during experiments *Sir V. Horsley*, 16010-11.

Morphia an anaesthetic stated in, *Miss Lindaf-Hageby*, 7308-9.

Proceeding in, and alleged breach of law *Hon. S. Coleridge*, 10470-6.

Sir Victor Horsley's evidence in, accurately quoted *Hon. S. Coleridge*, 19919-29.

References *Miss Lindaf-Hageby*, *Col. E. Lawrie*, *A. D. Waller*, *A. G. Scott*, 7220, 16996-8, 18077, 19775-7.

BEAUMONT, DR.:

Case of Alexis St. Martin and observations then recorded by, on digestive organs *E. H. Starling*, *Sir L. Brunton*, 3470, 7028.

Knowledge of nature and action of gastric juice derived from experiments by, *E. H. Starling*, 3442.

BEDDER, reference *Sir L. Brunton*, 7028.

BEDFORD, cat illegally procured for vivisection purposes at, *G. D. Thane*, 1437.

BEEVOR, C. E., M.D., Secretary to Association for the Advancement of Medicine by Research:

Experiments in connection with brain localisation by, *E. A. Schäfer*, 10112.

References *G. D. Thane*, *E. H. Starling*, *Hon. S. Coleridge*, 1087, 3857-77, 10676.

BEHRING, MESSRS., diphtheria anti-toxin supplied by, *W. H. Power*, 2261-2.

BEHRING, PROFESSOR, as to Phthisis, remedy of, *H. Snow*, 2261-2.

BELFAST:

Experiments for demonstrating to students in, *Sir T. Stoker*, 820.

Experiments performed under curare by Dr. Thompson in, *Mrs. K. Cook*, 2008-10.

Inspection in, conducted by medical inspector from the Local Government Board *Sir T. Stoker*, 971-5.

Inspector assisted in, by report of Local Government Board inspector *Sir T. Stoker*, 831.

Queen's College:

Experiment under Certificate C at, *Sir T. Stoker*, 935, 937.

BELFAST—*cont.*Queen's College—*cont.*

Pressure from President of, re granting of disallowed certificate *Sir T. Stoker*, 932.

Unlicensed experiment in, *Sir T. Stoker*, 913-15.

BELL, E., Publisher, York Street, Covent Garden, apology from, to Dr. Bayliss for publication of *Shambles of Science G. D. Thane*, 1280.

BELL, SIR CHARLES:

Feelings of, on subject of animal experimentation and work *H. Morris*, *Sir V. Horsley*, 7901-6, 7913-20, 15581-2.

Statement by, as to uselessness of experiments on animals, of no value *H. Head*, 17941-2.

Reference *Miss A. Kenealy*, 5467.

BELMONT, WEXFORD, Cattle Hospital of Department of Agriculture at, *Sir T. Stoker*, 765.

BENNETT, DR. A. HUGHES, cocaine, action of, and similar alkaloids discovered by experiments of, *A. R. Cushing*, *Sir L. Brunton*, 4859-72, 7021-7.

BENTHAM, JEREMY, quotation from works of, re animal rights *Rev. L. S. Lewis*, 8659.

BERDOE, DR., editor of *Zoophilist*, organ of National Anti-Vivisection Society *Hon. S. Coleridge*, 11598-600.

BERGMAN, VON, PROFESSOR, reference, *H. Snow*, 2259.

BERNARD, CLAUDE:

Biography of, *Miss Lind-af-Hageby*, 7311.

Curare:

Fallacious ideas concerning, originated with incomplete experiments *W. E. Dixon*, 18673-6.

Statements as to sufferings inflicted by use of, *Mrs. K. Cook*, *S. F. Smith*, 1801, 13079, 13295-302.

Experiments of, with regard to diabetes, and advance in knowledge of this disease *Sir L. Brunton*, 7124-6.

Morphia:

Mistranslation of statement as to action of, and word "sensitive" substituted for "reflex" *W. E. Dixon*, 18755.

Views as to action of, erroneous and based on false experiments *J. N. Langley*, 15421.

Statements as to inefficiency of, as anæsthetic *Miss Lind-af-Hageby*, 7368-16, 9472-85.

References, *Mrs. K. Cook*, 1921, 2089.

BIGELOW, The late PROFESSOR, Professor of Surgery, Harvard University, demoralisation of students at demonstration experiments asserted by, *Miss Lind-af-Hageby*, 7598.

BILLROTH, PROFESSOR, reference *Sir L. Brunton*, 6953.

BIRDS, organism of malaria discovered by experiments on, *W. Osler*, 16747-9.

BLACK, DR. CAMPBELL, reference *G. G. Bantock*, 14838.

BLACKQUARTER:

Inoculations against, and successful results *S. Stockman*, 2544.

Diagnosed frequently as braxy *D. J. Hamilton*, 20112-3.

BLACKWALL TUNNEL, cases of caisson disease in making of, *E. H. Starling*, 3907-9.

BLAKE, DR. JAMES, drug experiments by, as to connection between chemical constitution and physiological action *Sir L. Brunton*, 7019.

BLATIN, MONSIEUR, reference *Miss A. Kenealy*, 5465, 5470, 5473.

BLAXALL, F. R., M.D., reference *W. H. Power*, 4480.

BLODLOT, experiments by, reference, *Sir L. Brunton*, 7028.

BLOOD, circulation can be taught without any demonstration experiments *Sir T. Stoker*, 761, 805, 1008-9, 1011-12.

BLOOD POISONING:

Animal experimentation has enabled classification of bacilli to be made, and distinction between aerobic and anaerobic bacilli *H. Morris*, 7690-4.

Disappearance of, after surgical operations due to introduction of aseptic surgery, *Sir V. Horsley*, 15566-8.

Koch's discovery of bacteriological origin of wound infections *H. Morris*, 7685-9.

Lister's and Pasteur's work in connection with, *H. Morris*, 7664-73.

Sapremia, bacteriological origin of, proved by experiments *H. Morris*, 7685-9.

Septicæmia:

Aerobic bacillus identified as cause of, by means of culture organisms *H. Morris*, 7694-7701.

Bacteriological origin of, proved by experiments *H. Morris*, 7673-7.

Different when inoculated into field and house mice *H. Morris*, 7876-9.

BLOOD PRESSURE:

Knowledge of, has been entirely obtained by experiments on animals and its vital importance both clinically and in operations *Sir V. Horsley*, 16040-1.

Recorded during experiments and is text of action of chloroform *W. E. Dixon*, 18690-3.

and Surgical Shock:

Closely connected, and therefore essential to acquire knowledge by experiments *Sir V. Horsley*, 15612-14.

Dr. Crile's experiments demonstrating connection between, *Sir V. Horsley*, 15691-9.

BLUE TONGUE, advances made in prevention of, *S. Stockman*, 2568-70.

BLYTH, SIR J. (now Lord), farms lent by, for use of Tuberculosis Commission *G. D. Thane*, 342-4.

BLYTHWOOD FARM, laboratory at, held by Tuberculosis Commission *G. D. Thane*, 342-3.

BOARD OF AGRICULTURE AND FISHERIES:

Annual number of experiments performed on behalf of, *S. Stockman*, 2852-5.

Anthrax outbreaks notified by, to local authorities, *S. Stockman*, 2653.

Certificate B only used by, for rabies cases, *S. Stockman*, 2853-70.

Contagious diseases of animals, investigations at present conducted by, *S. Stockman*, 2572-5, 2871-2.

Departmental Committee appointed by, to investigate pleuropneumonia *S. Stockman*, 2691-8.

Diagnosis of disease, experiments for, conducted by, but use is made of work done by local authorities *S. Stockman*, 3112-16.

Evidence of Chief Veterinary Officer, see STOCKMAN, S., 2423-3429.

Experiments performed on behalf of, *W. P. Byrne*, *G. D. Thane*, 286-91, 1139-44.

Experiments with view of discovering prophylactic for tropical diseases conducted by, *S. Stockman*, 2572-5.

Contagious diseases of animals, research with respect to, under control of, *W. H. Power*, 4574-5.

Departmental Committee to inquire into Diseases of Sheep:

Appointment of, and date of issue of Report *D. J. Hamilton*, 19990-5.

Experiments on behalf of, *D. J. Hamilton*, 20114-7.

Home Office control over experiments conducted by, *W. P. Byrne*, *G. D. Thane*, 295-8, 1339-40.

Knife and anæsthetics rarely used in experiments of, *S. Stockman*, 2579-84.

Laboratory for purpose of scientific investigation owned by, disapproved of *J. Hughes*, 17507-11.

Laboratories held by, *G. D. Thane*, 342.

Muzzling Order:

Absence of rabies in England due to, *Sir V. Horsley*, 15597-8.

Compulsory over whole country *Sir V. Horsley*, 16025-30.

BOARD OF AGRICULTURE AND FISHERIES—*cont.*Muzzling Order—*cont.*

National Anti-Vivisection Society never opposed, but has been in favour of, *Hon. S. Coleridge*, 19847-51, 19901-19905.
Objected to, as being cruel and ineffective to prevent spread of rabies *J. Hughes*, 17120-7.

Rabies:

Returns inaccurate, *J. Hughes*, 17296, 17343-8.
Tests of, conducted by, *S. Stockman*, 5125-8.
Tract of heather at Frimley registered for experiments on grouse by, *G. D. Thane*, 344, 358-63.
Tuberculin and mallein, no instructions as to their use issued by, *S. Stockman*, 3248.

BOLTON ANTI-VIVISECTION SOCIETY, income of, *Hon. S. Coleridge*, 10260.

BOLTON, CHARLES, M.D., Resident Medical Officer, University College Hospital, experiments on cats by, and alleged cruelty *Mrs. K. Cook*, 1801-7.

BOMBAY:

Haffkine's experiments with plague prophylactics at, *W. H. Power*, 4366-7.
Plague in, and statistics as to use of Haffkine's antitoxin, *C. J. Martin*, 11792.

BOND, DR., Senior Surgeon, Westminster Hospital, letter from, re use of "incomplete anaesthesia" *Hon. S. Coleridge*, 10305, 10993.

BONSER, CYRIL A., charge against Mr. Gotch corroborated by, *Hon. S. Coleridge*, 11454.

BOOTH, GENERAL, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

BOECHARDT, PROF., reference, *Sir V. Horsley*, 15845.

BORDET, whooping cough organism put forward by, *C. J. Martin*, 12185.

BOREL, DR. F., statement of, as regards impossibility of completely anaesthetising dogs, *J. W. Graham*, 5878-82, 5960-70.

BOSANQUET, views of re paralytic effect of diphtheria antitoxin, *Miss A. Kenealy*, 6167.

BOUCHER, DR., reference *Miss Lind-of-Hageby*, 9682.

BOUCHIER, MISS H., reference *Miss A. Kenealy*, *Sir G. Kekewich*, 6314, 20613, 20842-4.

BOUILLAND, experiments on pigeons by, *Miss A. Kenealy*, 5288.

BOULEY, rabies statistics collected by, *C. J. Martin*, 11659.

BOWLBY, DR., St. Bartholomew's Hospital, anthrax cases referred to by, *H. Morris*, 7868.

BOYD, DR., reference *Hon. S. Coleridge*, 10381.

BRADFORD, Church Anti-Vivisection League meeting in 1898 at, and allegations concerning Dr. Hime's experiments *Miss A. L. Woodward*, 8789-910.

BRADFORD, JOHN ROSE, M.D., D.Sc., F.R.S.:

Committee of Medical and Scientific Societies 17621-800.

Certificates:

B:

Ambiguity in wording of, 17785.
Experiments requiring, performed entirely under anaesthetics 17745-6.

E:

Ambiguity in wording of, 17787-8.
Experiments on different kinds of animals might be covered by single, 17782.
Modification with regard to, and larger powers for responsible individuals, suggested 17789-95.

Demonstration experiments, essential for proper education of students and always conducted under anaesthetics 17667-76, 17708-2.

Diagnostic purposes demand recourse to experimental methods 17625, 17628-42, 17669-700, 17709-13.

BRADFORD, JOHN ROSE, M.D., D.Sc., F.R.S.—
cont.

Diphtheria:

Antitoxin, efficacy of, undoubted 17717-21.
Organism of, can be recognised by cultural method and without recourse to experiments 17714-16.

Dogs:

Experiments on, essential for study of circulation and also digestive processes 17660-5, 17703-8.

No difficulty in anaesthetising, 17775-8.

Experience of, in physiological laboratories 17671.

Experiments performed by:

on Dogs' ears:

Involving much subsequent suffering *J. W. Graham*, 5842-4.

Misrepresentation of case which did not give rise to great pain 17678-87.

on Dogs' kidneys:

Cruelty of, and subsequent suffering *Mrs. K. Cook*, 1798.

Misrepresentation of actual facts 17689-98.

Free choice of animals for experimentation important 17654-60.

Heads of laboratories ought to have further facilities for experimentation 17796.

Legal control of experiments necessary in order to allay public apprehension 17797-800.

Member of Advisory Committee concerned with sleeping sickness and plague 17749-50.

Progress of medical science due to experiments 17723.

Tuberculosis:

Diagnosis of, demands recourse to animal inoculation 17644-61, 17762-4, 17766-7.

of Urinary tract, serum treatment for, 17766-73.

BRADY AND MARTIN, MESSRS.:

Laboratory at Newcastle-on-Tyne, reference *G. D. Thane*, 344.

Private laboratory registered for, *G. D. Thane*, 356.

BRAMPTON, The late LORD, antivivisection cause supported by, *Hon. S. Coleridge*, *Rev. S. L. Lewis*, 10262, 8726.

BRAXY, see under SHEEP DISEASES.

BRETONEAU, name "diphtheria" introduced by, *C. J. Martin*, 11652.

BRISTOL AND WEST OF ENGLAND ANTI-VIVISECTION SOCIETY, income of, *Hon. S. Coleridge*, 10260.

BRISTOW, DR., reference, *C. R. J. A. Swan*, 19278.

BRITISH MEDICAL ASSOCIATION:

Address by Sir James Barr to, *E. H. Starling*, 4262-5.

Constitution and membership *Sir V. Horsley*, 15585-6.

Discussion at meeting of, in 1899 as to value of serum treatment in cases of suppuration and blood poisoning *S. F. Smith*, 13121.

Deputation sent from, to express to M. Pasteur feelings of profession as to value of his work 15603.

"Ernest Hart" Scholarship given by, *G. D. Thane*, 1459.

Evidence on behalf of, see *HORSLEY, SIR V.*, 15583.

Muzzling Order, Mr. Long thanked for imposing, by, *Sir V. Horsley*, 16026-30.

Scientific Grants Committee, gives grants to students for research purposes *Sir V. Horsley*, 15586, 15782-4.

Repetition experiments, report concerning use of, *W. P. Byrne*, 195.

Report at meeting of, as to grafting of kidney to blood vessels in neck of dog *Sir J. Russell*, 685-6.

Report of Committee of, in 1871 *W. P. Byrne*, 1A.

Views of, as to morality of vivisection *Sir V. Horsley*, 16135-41.

BRITISH ASSOCIATION, paper read before, maintaining presence of *bacillus coli* as necessary to the maintenance of health *G. G. Bantock* 14713-16.

BRITISH SOUTH AFRICA:

Pleuro-pneumonia outbreak in, and how dealt with *S. Stockman*, 2494-2506.

Rinderpest outbreaks in, successfully stamped out *S. Stockman*, 2484-90.

BRITISH UNION FOR THE ABOLITION OF VIVISECTION, income of, *Hon. S. Coleridge*, 10260.

BROCA, discovery of the speech centre by, *Miss A. Kenealy*, 5288.

BROCKWELL HALL, Messrs. Wellcome's laboratory at, reference *G. D. Thane*, 344.

BRODIE, T. G., M.D., M.R.C.S., Professor of Physiology at the London School of Medicine for Women:

Experiments performed by:

Anæsthesia incomplete in, *Miss Lind-af-Hageby*, 7448-50.

Anæsthesia incomplete during, and defence of same by Home Office, *Hon. S. Coleridge*, 10370-81.

on Dog's spleen and nerve stimulation:

Anæsthesia complete and no pain felt *E. H. Starling*, 3657-8.

Anæsthesia incomplete, *Mrs. K. Cook*, 1919.

"Pithing" of dogs improperly conducted *Miss Lind-af-Hageby*, 7415, 9730.

Preference for curare and morphia, expressed by, *Miss Lind-af-Hageby*, 4514-21.

Text book by, shows lack of humane teaching and preference for light anæsthesia *Miss Lind-af-Hageby* 7223, 7232-47.

References *A. R. Cushny*, *Hon. S. Coleridge*, 5168, 11163.

BROWN, A. CRUM, M.A., M.D.:

Experiments by, as to chemical constitution of strychnin, *Sir L. Branton*, 7019.

Experiments by, with reference to soporific action of bodies similar in chemical composition to chloral *A. R. Cushny*, 4743-5.

References, *A. R. Cushny*, 4737, 4746.

BROWN, DR. ORVILLE HARRY, St. Louis University, U.S.A.:

Dogs injected with organ extracts of cold-blooded animals by, and futility of such experiments *Miss A. Kenealy*, 5302-15.

Experiments by, re effect of injecting organ extracts of cold-blooded animals into veins of warm blooded animals *Miss A. Kenealy*, 5302-15.

BROWNE, DR. CRICHTON: reference to, *S. F. Smith*, 13049.

"BROWN DOG OF BATTERSEA":

Particulars of case, suggest that pain was inflicted *A. G. Scott*, *Sir F. Banbury*, 19513-22, 19522-6.

Subject of the Bayliss v. Coleridge libel action *A. G. Scott*, 19775-7.

BROWN INSTITUTE:

Cruelty of experiments on dogs and monkeys at, *Mrs. K. Cook*, 1798-1800.

Cruelty of feeding experiments at, *Mrs. K. Cook*, 1921.

Registered, *G. D. Thane*, 1346-7.

BROWN-SÉQUARD, PROFESSOR, observations on functions of nervous system, made by, *H. Head*, 17945-6.

BROWNING, ROBERT, anti-vivisection cause supported by, *J. W. Graham*, *Rev. L. S. Lewis*, *Hon. S. Coleridge*, 5887, 8726, 10262.

BRUCE, COL. DAVID, C.B., F.R.S., R.A.M.C., Committee of Medical and Scientific Societies, 14184-529.

Acted on Sleeping Sickness Commission of the Royal Society in 1903, 14187.

Anti-typhoid serum, investigation of, at present moment, and instance of successful immunity after recent inoculation 14528-9.

BRUCE, COL. DAVID, C.B., F.R.S., R.A.M.C.—cont.

Bacilli, fluid surrounding, is sterile and does not give rise to disease if injected into an animal 14505-12.

Chairman of the Mediterranean Fever Committee of the Royal Society 14188.

Difficulty of discovering specific germ causing a disease without recourse to experiments on animals 14221.

Enteric Fever:

Difficulty of diagnosing, from Malta fever 14395.

Milk often communicates germs of, 14395-8.

Koch's three postulates to be satisfied before identifying causal bacillus of disease 14222.

Malta Fever:

Animal experimentation essential to investigation of, 14260, 14452-3, 14495-6.

Antitoxins prepared for, without much success at present 14374-9.

Case mortality, proportion compared with typhoid 14380.

Cases of, on board S.S. Joshua Nicholson arising from goats' milk 14400-4.

Cases of, on board S.S. St. Nicholas, arising from drinking milk of goats imported from Malta 14283-7.

Cause of, in other places than Malta has not been investigated closely 14250-2.

Caused in most cases by drinking goats' milk 14518-21.

Charts showing monthly prevalence of, 14210-15.

Claims put forward as to actual discoverer of cause of, 14405-7.

Commission formed in 1904 to investigate, 14494-5.

Communicated purely by food and not by inhalation 14465-8.

Decrease in prevalence of, after adoption of preventive measures in 1906 14381-93.

Dust, no proof that infection is carried by, 14465-7, 14492-3.

Epidemiological methods of working at causation of, completely failed 14261.

Entire elimination of, from army and navy, but native population is still subject 14490-1.

Experiments in connection with investigation of, were not painful 14363-6.

Experiments proved that cause of, was not conveyed by air, effluvia, or harbour water, but by goats' milk 14216-19, 14234-45, 14291.

Goat not only susceptible to, but several species of animals 14253.

Koch's three postulates satisfied in case of, and *micrococcus melitensis* demonstrated as cause by series of experiments on monkeys 14222-35, 14267-75.

Maltese are less susceptible than foreigners to, 14255.

Manner in which *micrococcus melitensis* spreads from goat to goat not exactly known, 14504.

Micrococcus melitensis discovered to be cause of, in 1886 14483-4.

Micrococcus melitensis multiplies in mammary glands of goats 14522-5.

Nature and average duration of, 14202-210.

Necessary to inoculate monkeys with suspected *micrococcus* before identifying it as cause of, 14272.

Observational methods insufficient for investigation of, 14260-5.

One attack of, is to a certain extent protective 14256-8.

Precautions taken in Gibraltar against, 14288-90.

Preventive methods adopted against, 14369-73.

Remedies for, must be tested by animal experimentation 14473.

Results of experimental work in connection with, have been of enormous assistance in stamping out the disease 14201.

Stamped out after cause was traced to goats' milk 14245-9.

Statistics of cases after stopping supply of goats' milk 14454-64.

BRUCE, COL. DAVID, C.B., F.R.S., R.A.M.C.—*cont.*Malta Fever—*cont.*

Tables showing incidence of continued fevers including, among troops in Malta and number of cases invalided 14216-20.

Work in connection with, 14190-1.

Medical knowledge at a standstill without recourse to animal experiments 14196-8.

Member of the Advisory Board, Army Medical Service 14186.

Nagana:

Attempts to cure horses by dosing them with arsenic 14318.

Blood of animals suffering from, injected into dogs, results proving that trypanosome is causal micro-organism 14308-11.

Causal micro-organism is an animal parasite 14306.

Examination of blood of cattle suffering from, demonstrated existence of specific micro-organism 14293-8, 14299.

Experiments proving that bites of tsetse fly were responsible for, 14307-81.

Non-pathogenic in wild animals or man 14419-23.

Trypanosome is transferred from wild to domestic animals by tsetse fly 14418.

Tsetse fly disease and, discovered to be identical 14293-310.

Value of experiments in connection with, and remedy discovered thereby 14312-14.

Work in South Africa in connection with investigation of, 14192.

Wild animals are immune to, 14304, 14310.

Painful experiments, no association with, 14367.

Plague, transmission of, by agency of rat flea has been practically established by means of experiments on animals 14478-82.

Simple continued fever, decrease in prevalence of, in Malta after adoption of preventive measures 14381-93.

Sleeping Sickness:

Anatomical change in brain brought about by, 14329-35.

Atoxyl treatment for, has been useless 14442-3.

Blood and cerebro-spinal fluid of natives suffering from, found by microscopical examination to contain the suspected trypanosome 14500-1.

Blood of natives outside area of, examined and found free from trypanosomes, 14324-5.

Cerebro-spinal fluid examined in investigation of, because of its effect, on nervous system 14326-9.

Cerebro-spinal fluid of natives suffering from, injected into animals and resulting symptoms were those of, 14325-9.

Claim put forward for a streptococcus as cause of, previous to discovery of trypanosome 14424-30.

Could be prevented by removing population from tsetse fly area 14444-8.

Does not cause emaciation 14516-7.

Experiments on monkeys absolutely necessary in the investigation of, 14350-1.

Experiments proving that tsetse flies are carriers of, and as to distribution of the disease 14335.

Filaria perstans at one time asserted to be cause of 14431-5.

Investigations into, on behalf of the Royal Society 14315-14321.

Investigations into, on West Coast of Africa 14321-9.

Monkeys infected with, do not undergo pain 14514-5.

Monkeys inoculated with blood of persons suffering from, and disease thereby produced 14502-3.

Parasite in, closely related to malarial parasites and easily affected by drugs 14319-20.

Previous investigations of, especially by Portuguese 14321.

Reasons justifying conclusion that trypanosome is cause of 14329-335.

Remedies suggested for, and as to their value 14318.

BRUCE, COL. DAVID, C.B., F.R.S., R.A.M.C.—*cont.*Sleeping Sickness—*cont.*

Trypanosome found in blood as well as in cerebro-spinal fluid of natives suffering from, 14324.

Trypanosome found in cerebro-spinal fluid of 100 per cent. of natives suffering from, 14324.

Tsetse Fly:

Curious distribution of, in Uganda 14344-9.

Experiments in connection with distribution of the trypanosome by, valuable and essential 14351-6.

Manner in which trypanosome is communicated to man from, 14342-3.

Work has been chiefly concerned with investigating cause of, rather than remedies for, various tropical diseases, 14193-4, 14475-6.

BRUNTON, SIR T. LAUDER, M.D., F.R.C.P., F.R.S., Committee of Medical and Scientific Societies, 6777-7185.

Alexis St. Martin, observations on digestive organs of, were of course valuable, but subsequent experimental research has been more so 7028, 7127.

Allegations of cruelty against, *Miss Lindaf-Hageby*, 9430.

Anæsthetics:

Dogs not more liable to succumb to effects of, than other animals 7179-85.

No difficulty in keeping animals under, for lengthened periods 7012-13.

Anti-vivisectionists actuated by praiseworthy but ignorant motives 6848-50.

Blood pressure, study of by means of experiments important 6943-6.

Cardiac disease, knowledge of, increased by results of experiments 6936-9.

Chloroform discovered incidentally, but its true properties investigated by experiments 7118-21.

Cocaine, introduction of 7021-7.

Collected Papers on Circulation and Respiration, by, shows absence of humane teaching *Miss Lindaf-Hageby*, 7379.

Consideration for animals and humanity not lacking in experiments 7105-6.

Continuation of experimental methods indissolubly bound up with advance in medical science 7082.

Curare:

Would not be inclined to allow use of, as anæsthetic 7077-81.

Rarely used since 1876 owing to doubts as to its effects 6918.

as to Use of, previous to existing law 6839-43.

Diabetes, whole pathology of, not yet known, but experiments have thrown much light 7124-6.

Diphtheria antitoxin, value and use of, and contradiction of statement as to its paralysing effect 7128-35.

Distinction between observation and experimentation 7083-8.

Dogs are essential for experiments, and prohibition would hinder advance of medical science 7066-71.

Drugs:

Amyl Nitrite:

Experiments as to action of 7140.

Experiments with, upon animals led to its use and success as remedy for angina pectoris 6888-97.

Share in discovery of, as remedy for angina pectoris *A. R. Cushny*, 4800-3, 4894.

Anti-pyretics, discovery of large series, by means of experiments, *Sir L. Brunton*, 7019-20.

Calabar bean, experiments as to action of, upon nervous system 7113-4.

Chemical constitution and physiological action of 7019.

Chloral, use of, could not have been arrived at without Liebreich's experiments 7016-17.

Chloral, opium and morphia all produce insensibility 6902-6.

Chloral hydrate, action of, and share in discovery 7115, 7116.

BRUNTON, SIR T. LAUDER, M.D., F.R.C.P.,
F.R.S.—*cont.*

Drugs—*cont.*

- Digitalis, efficacy of, in pneumonia, doubted 6886-7.
- for Dropsy alleviation, discovered by means of experiments 6948-9.
- Effect of, varies in different animals, but clear deductions can nevertheless be drawn 7162-7.
- Evidence of Mr. Cushny in regard to, agreed with 6939-42.
- Increase in number of useful, due to experimentation on animals 7005-11.
- Nitroglycerine, value of, in cases of angina pectoris discovered by experiments 7142-6.
- Sulphonal, action of, discovered incidentally 7018.

Evidence referred to:

- Experience of experimental work 6779-82, 7102-4.
- Surgery, views as regards, disagreed with G. G. Bantock, 14942-5.

Experiments:

- Benefits accruing from injection of oxygen and strychnin 6898-900.
- Deductions can be drawn from, allowing for small differences 7072-6.
- Demonstration, necessary for students to have proper grasp of physiology and pharmacology 6980-2.
- on Digestive organs, practical adjuncts to digestion resulting from, 7028.
- Gastric fistula, not a condition involving pain 7029-40.
- Hypodermic medication one of the most important results of, 6970-9.
- Intestinal, were starting point of abdominal surgery 6952-7.
- Medicine has gained enormously by knowledge acquired from, 7014.

Snake Poison:

- Calmette's, 7098-02.
- Interrupted by regulations of Act of 1876 6937-9.

- Temperature fluctuations, knowledge acquired by, 7176-8.

Experiments on the influence of Digitalis on the pressure of blood in the arteries by, publication of, containing account of brutal experiments before 1876, shows want of human feeling Miss Lind-af-Hageby 7379-96.

Experiments performed by:

- "Baking" of rabbits and cats:
Alleged, J. W. Graham, 5844-9, 6131-40.
Confusion on part of Mr. Graham in referring to, 6818.
- Explanation and object of, 6785-829.
- Maximum temperature in, 6818-26, 6906A-16.
- Refutation of charge of cruelty in connection with, 6792-808, 6906A-16, 7089-97.
- as to Digitalis and its precise action, A. R. Cushny, 4652-67.
- on Pigeons, for testing action of aconite 6818-23.
- Snake poison, demonstrating therapeutic value of permanganate of potash Major L. Rogers, 8040-70, 8217-18.

Hypodermic syringe at first confined to morphia injections, but now extended 6974-9.

Hydrophobia, Pasteur's system of inoculation has completely revolutionised treatment 7147-57.

Inoculations, regulations with regard to painless, should be relaxed 6991.

Inspectors, increase of undesirable and any outside inspection should be authorised by Home Office 6845-7, 6919-23.

Licensee might be permitted to experiment in unlicensed premises 6992-5, 7046-7.

Measles epidemic in Fiji Islands 6854-60.

Myxedema and cretinism, knowledge and treatment of, resulting from experiments 6958, 7138.

BRUNTON, SIR T. LAUDER, M.D., F.R.C.P.,
F.R.S.—*cont.*

Oxygen and strychnin in pneumonia, use of, doubted 6900.

Pain, small amount of, inflicted in experiments 7122.

Powers of dealing with disease have increased enormously of late years 6925-35.

as to Sir Frederick Treves' statement concerning inutility of experiments 7110-11.

Snake Poison:

Antidotes for, efficiently tested by experiments on animals 7169-73.

Permanganate of potash a universal remedy against, 6861-5, 6868-9, 6867-70.

Reduction of mortality from, in India owing to use of remedy discovered by means of experiments on animals 6870-9.

Special licence might be more easily procurable 7050-8.

as to Suggested danger of introducing animal material into human body 6965-9.

Susceptibilities to suffering not blunted by witnessing experiments 7059-61.

Thyro-idine obtained from thyroid gland results from experiments 7041-3.

Tuberculosis, nature of, discovered by means of experiments, prospect of stamping out disease 6999-7004.

Vivisection Act, 1876, science to a certain extent impeded by, 6830-38.

Reference, *Miss Lind-af-Hageby*, 9214.

BRYANT, THOMAS, F.R.C.S., reply from, in answer to letter re use of "incomplete anaesthesia" *Hon. S. Coleridge*, 10308.

BUCHANAN, SIR GEORGE, reference *W. H. Power*, 4473.

BUDAPEST, table showing case mortality from diphtheria in, before and after employment of antitoxin treatment *C. J. Martin*, 11711.

BUDDHA, moral teaching of, *J. W. Graham*, 5890.

BUISSON BATH, successful antidote for hydrophobia, merits of, *J. Hughes*, 17235-40, 17252-63.

BUNCH, DR., experiments on submaxillary glands by, *H. Snow*, 2224, 2226.

BURFORD, G. H., M.B., World League of Opponents of Vivisection, 8899-9104.

Antitoxins, possible preparation of, by homeopathic methods, 8997-8, 9033-8.

Belladonna, investigation of, on homeopathic lines, 8922-3.

Cholera, homeopathic remedies for epidemic of, put forward by Hahnemann 9049-52.

Colchicum, investigation of, conducted on homeopathic lines and methods pursued 8913-22.

Digitalis, homeopathic method of investigating action, 8928-35.

Drugs:

Action of, can be accurately ascertained by homeopathic methods, 9085-9.

Homeopathic investigation on men has introduced more than experimental investigation on animals 8993-6.

Experiments on animals for investigation of animal diseases may be justifiable 9011-14.

Homeopathic research, equipment necessary for 9101-4.

Homeopathy:

Drug testing by methods of, on volunteer human beings, should precede experiments on animals 8961-2, 9026-32, 9044-8.

Drug testing by methods of, on volunteer patients 8909-13, 8952-6, 9002-5.

Hahnemann's fundamental principles still embodied in, 8963-9.

Methods of, preferable to experiments on animals since final tests of remedies must always be on man 8942-49.

Remedies introduced into professional use through methods of, 8924-5, 9015-24.

BURFORD, G. H., M.B.—*cont.*

Serum therapy, properties utilised in, might have been used without recourse to animal experiments as in case of tuberculin 8971-80, 9033-7.
Surgical operations, testing of new methods does not require preliminary experiments on animals 9080-4.
Utilitarian results of experiments on animals admitted, though homeopathic investigations are of equal value 9074-6, 9092-5, 9098-9.
Vaccination, its utility admitted, but homeopathic administration of vaccine equally satisfactory 9053-70.
Views expressed by, represent views of majority of homeopaths 8989.

BURNABY, COLONEL, reference *Rev. J. P. Hopps*, 8357.

BURROUGHS AND WELLCOME, MESSRS.:

Alleged illegality of experiments conducted by, *Miss A. L. Woodward*, 8820, 8881-4.
Diphtheria antitoxin now manufactured by, *W. H. Power*, 4540.
Sole manufacturers of adrenalin in England, *E. H. Starling*, 3564.

BURY, MR., reference *Rev. L. S. Lewis*, 8767.

BUSK, DR., Inspector under Act, 1876-86, biased in favour of vivisection *Hon. S. Coleridge*, 10413.

BUSK, SIR E. H., M.A., LL.B., nominated to give evidence by London University 18092.

BUSS, reference *A. R. Cushny*, 4782.

BUXTON, D. W., M.D., B.S., M.R.C.P., Consulting Anaesthetist to the National Hospital for Paralysis and Epilepsy, Anaesthetist and Lecturer on Anaesthetics in University College Hospital; Society of Anaesthetists 12363-12690.

Anaesthesia:

Animal always killed before recovery from, when required 12467-9.
Definition of different degrees of, 12510-22.
Loss of conjunctival reflex is main indication of surgical, 12414-18.
Marked by progressive effects divided into degrees of narcosis, and definition of such degrees 12389-96.
Progressive loss of sensation to pain through stages of, 12375-6.
Reflex movements occur in all stages of, and indicate no sensation of pain 12400-10, 12525-31.
Reflex movements and movements due to sensations of pain under, require skill to be distinguished 12612-19.
Surgical operations on animals carried out in similar manner to those on human beings as regards, 12684-7.

"Complete":

Can occur without abolition of corneal reflex 12523-4.
Definition of, 12544-56.
Experiments carried out carefully and under, 12573-4.
Must be capable of preventing all shock 12662-6.
Narcotics can induce, 12681.
No difficulty in maintaining, throughout experiment 12679-80.
No doubts as to, during case disputed in *Bayliss v. Coleridge* 12626-8.
Same precautions to ensure, are taken in experiments upon animals as in operations on human beings 12461-6.
Skilled anaesthetist has no difficulty in ascertaining complete, 12419-20.
Symptoms indicating, vary slightly with nature of anaesthetic used 12421-7.

"Incomplete":

Definition of, 12544-56.
Signifies patient is not necessarily free from pain 12437-8.
Suggested different use of term by Dr. Crile in reference to his experiments 12578-82.

"Light": Meaning of term, 12431-5, 12544-56.

BUXTON, D. W., M.D., B.S., M.R.C.P.—*cont.*

Anaesthetics:

Action of, similar upon men and animals, 12439-46.

Actual discovery of, not due to experiments on animals, but knowledge of precise nature of, entirely due to such 12539-40, 12649-50.

Act upon whole central nervous system 12599-604.

Chloroform:

Continuous dose of, can be maintained in operations on human beings 12675-7.
Opium used before discovery of, 12642-7.
and Volatile most affect respiration, and danger of using former 12428-30.

Dogs strapped down after administration of, to keep them in position, 12651-7.

Licence held with view to investigating action of, 12532-37.

Local, used in certain cases 12631-9.

Nature of, used in experiments on animals 12467-9.

Nature of, generally used in surgical practice 12447-56.

Personal experience shows no difficulty in administering, to animals, and ordinary method adopted 12488-500.

Use and action of, largely ascertained by experiments on animals 12457-60.

Cerebral hemispheres, loss of, removes all sensation of pain though there may be reflex actions 12606-12.

Curare, no experience of, but general consensus of opinion is that it is an anaesthetic, 12559-65, 12658-61.

"Pithing" of frogs destroys all sensation of pain 12666-74.

Morphia:

A complete anaesthetic if given in sufficient doses 12474-6.

Dose of, administered before general anaesthetic makes less amount of latter necessary 12502.

Objections to use of, as anaesthetic 12568-9.

Operation not advised on human subject under, alone 12541-2.

Shambles of Science, movements and cries of animals referred to in, probably reflex and not indicative of pain 12588-98.

Strapping of patients in position a frequent necessity in human surgery 12688-90.

Vivisection Act, 1876, animals sometimes unnecessarily killed under regulations of, but cruelty well safeguarded against 12477-87.

BYRNE, W.P., C.B., Principal Clerk, Home Office, 1-306.

Board of Agriculture, Home Office control over experiments conducted by, 295-8.

British Medical Association report as to repetition of experiments for demonstration purposes 195.

Certificates:

Applications for, for physiological and pathological experiments treated similarly 243-5.

Decision as to grant of, rests with authorities mentioned in Sect. II. of Act 241.

Go to release conditions as to anaesthetics, killing of animals and antiseptics 221-3.

May be granted nullifying usual restrictions as to experiments 260-5.

Special, granted to enable further investigation of alleged former discovery 242.

Specification of animals in application for, 250-4.

Table showing number of, granted from 1877-1905 Appendix A. I. Vol. I.

See also under Licences and Certificates below.

Evidence referred to:

Antiseptic treatment of wounds, misleading statements as to, *Mrs. K. Cook*, 1801.

Anti-vivisection movement, alleged ridicule of, *Hon. S. Coleridge*, 10449-68.

Licences, condition attached to, *G. D. Thane*, 1326.

BYRNE, W. P., C.B.—*cont.*Evidence referred to—*cont.*

Painful nature of experiments, conflicting statements made as to Home Office responsibility in deciding, *Hon. S. Coleridge* 10266-75.

Experiments:

All published descriptions of, must be sent to Home Office 95-102, 190, 233-7.
Allegations concerning performance of, by unlicensed persons generally unfounded 305-6.
Care of animals after, conditions for, 255-9.
Carried out under instructions of Board of Agriculture in unregistered places 286-91.
Classification of painful and non-painful, no longer attempted 129-30, 163-4.
Dangerous trades, investigations in connection with, authorised 293.
Home Office, indirectly makes use of, 301.
Inoculations without anaesthetics, period of observation of animal after performance of, doubtful 134-8.
Large number of, duplicated, value or otherwise of results 196-8.
Number of, on each animal 274-7.
for Radium, Röntgen and other ray treatment 118-23.

Experiments without anaesthetics:

Conditions for painless killing of animal if in pain after, and strict enforcement of antiseptic treatment in all cases 10-11, 13.
Universal conditions for, 6-9, 159.
by Unlicensed persons, no steps taken to investigate 185.

Few complaints as to interference of Home Office in legitimate research 194.

Home Secretary:

All proposed new investigations submitted to, 4, 218-220.
May direct experimenters to report in more detail 103.

Inspectors:

Number and duties of, 185-7.
Report of, separate and independent from that of Association for the Advancement of Medicine by Research 175-6.

Licences:

Complaints regarding issue of, 19-23, 140.
Granted on advice of inspector and Association for the Advancement of Medicine by Research, 131-3.
Granted freely in cases where hardly necessary but for protection of applicant 205-7.
Increase in number of, 107-13.
Issue of, to veterinary surgeons controlled by Section II. of Act 70-2.
No complaints of experiments without, 47-8.
Procedure in obtaining, 149-56.
Revoked only four times in thirty years as punitive measure 177-9.
Table showing number of, granted from 1877-1905 Appendix A. I. Vol. I.
See also under Licences and Certificates below.

Licences and Certificates:

All names of applicants for, submitted to Association for the Advancement of Medicine by Research 24, 27-29, 281-2.
Applications for, submitted to four authorities 18, 208-12.
Contravention of Act in regard to, 36-50.
Issue of, to foreign applicants 273.
No experiments without, permissible and joint experimenters must both hold, 284-5.
Protection against misuse of, 224-6.
Most investigations require both, 213-15.
Inspectors consulted before issue of, 32-33.
Inspection of, by three officials at Home Office 199-204.
Number of refusals to grant, 166-7.
Memorandum of unsuitable applicants for, 65-9.

BYRNE, W. P., C.B.—*cont.*Licences and Certificates—*cont.*

Practice of consulting Association for the Advancement of Medicine by Research before issue of, initiated by Sir William Harcourt, 31.
Suspension of, for irregularities 34-40.
Yearly renewal of, 48.

Prosecution of licensee:

Application for, and consequent proceedings 232.
Requires assent of Home Secretary 230-1.

Records of experiments:

Licensee makes his own 188 278-80.
Licensees' occasional neglect, 90-4.
Obligatory, 89.
Possibility of enlarging, 238-40.
Table showing number of experiments performed, 106-23, and App. A. I. Vol. I.
Licence of certain unregistered places permitted under Act, 79-84.
Registered places, number of, 58-62.

Registration of premises:

Inspector's recommendation required before, 54-6.
Necessary before experiments can be performed there 53-62.
No private houses registered, but occasionally private laboratories, 62, 74-7, 281-2.
For Tuberculosis Commission 88.

Royal Commission on Vivisection, 1875:

Appointment, report of, and subsequent legislation, 1, 140.
Nature of evidence before, 1.

Vivisection Act, 1876:

Breaches of, occurring without knowledge of Home Office, 288-9.
Contraventions of, 246-8.
Contraventions of, generally disclosed by licensee's return of experiments 144-7, 179-83.
Contraventions of, set out in Inspector's annual return 44.
Experiments not restricted before introduction of, and its effect on number of experiments 193, 302-3.
Procedure in regard to administration of, 1-4.
Section 8, regulation of Home Secretary under, attached to each licence, 5, 14.
Section 11, no licence or certificate allowed without signatures of authorities enumerated in, 16.
State of affairs previous to, and then existing law as to experiments on animals 1.
Substance of, 1.

BYCULLA JAIL, results of plague inoculations at, *Sir G. Kekewich*, 20640-75.

CAHN, experiments by, reference, *A. R. Cushny*, 4771.

"CAISSON" DISEASE:

Conditions giving rise to, *G. D. Thane*, 373-6.
Experiments in connection with, *G. D. Thane*, *E. H. Starling*, 383-4, 1449, 3442, 3902-10.
Experiments in connection with, permitted in unregistered places *G. D. Thane*, 372.
Registration of premises for investigation of, *G. D. Thane*, 1384.
Reference, *G. D. Thane*, 1404.

CALMETTE, anti-venins, work in connection with discovery of, *Sir R. D. Powell*, *Sir L. Brunton*, *Major L. Rogers*, 5679-83, 6866, 6870, 8034.

CALVES:

Premises for inoculation of, for vaccination purposes, not under supervision of Inspector, *G. D. Thane*, 1336.
Suggested substitution of, for dogs in some experiments, *Sir J. Russell*, 609-10.
Susceptibility of, to tuberculosis *Miss A. Kenealy*, 6401-11.

CAMBRIDGE:

Diphtheria outbreak, stamped out by careful examination of all cases in contact with disease and use of antitoxin *G. S. Woodhead*, 15528-9.
Experiments performed at, with regard to action of chloroform, vitiated *Col. E. Laverie*, 16969-74.
Hospital for study of joint diseases opened in, *J. Lorrain Smith*, 18267-74.
Pathological and physiological laboratories at, licensed as a whole *G. D. Thane*, 501-3.
Physiological laboratory, cruelty of experiment on dog at, *Mrs. K. Cook*, 1785-9.
University of:

Evidence on behalf of, see *LANGLEY, J. N.*, *WOODHEAD, G. SIMS*, 15099-15582.

CANCER:

Ample supply of living cells for research in, obtainable from human beings *H. Snow*, 2206-8.
Autistic theory the only valid theory of, *H. Snow*, 2152-6.
Causal organism, claim to have identified, not yet made *H. Snow*, 2246a.
Causal parasite, no evidence of its existence *H. Snow*, 2248-9, 2272-87, 2347-54.
Clinical experience necessary for proper investigation of, *H. Snow*, 2139, 2190, 2194-8.
Clinical characteristics of, and importance of such *H. Snow*, 2301-12.
Communicable only with great difficulty between man and animals *H. Snow*, 2176.
as to Communicability of, between animals of same species *H. Snow*, 2178-81.
Clinical diagnosis of, may be confirmed by microscopical examination *H. Snow*, 2232-5, 2416-8.
Congress suggested for investigation of, *H. Snow*, 2210-2210a.
Diagnosis of, rests on clinical symptoms *H. Snow*, 2250-4, 2403-4.
Disappearance of, in human subject, no authentic cases *H. Snow*, 2215.
Distinctions between species and genera of, almost wholly ignored in laboratories, *H. Snow*, 2139.
Error of judgment in diagnosing tumour in dog as *H. Snow*, 2127-34.
Errors in diagnosing external, should be rare *H. Snow*, 2417-22.
Examination of individual cells most important in diagnosing *H. Snow*, 2201-2202.
Exists in some domestic animals *H. Snow*, 2265-7.
Experiments in connection with investigation of, *G. D. Thane, H. Morris*, 465-6, 7726.
Experiments useless in investigation of *H. Snow, G. G. Bantock*, 2121, 2221-3, 2243-6, 14775-7.
Experiments with view of communicating, to human beings *H. Snow*, 2258-9.
Failure in research due to lack of clinical knowledge *H. Snow*, 2344-6.
as to Hereditary nature of, *Miss A. Kenealy*, 5494.
Inoculations, methods adopted *G. D. Thane*, 1688-91.
International Congress, reference *H. Snow*, 2212-14.
Main feature of, is multiplication of cells by divisions *H. Snow*, 2157.
Malignancy of, cannot be decided without separate inspection of individual cells *H. Snow*, 2127.
Many types of, and necessity for differentiating particular kinds *H. Snow*, 2127.
Marrow-infection, discovery of, *H. Snow*, 2141.
in Mice, totally different from that in human beings *H. Snow*, 2105.
Mortality from, increasing *H. Snow*, 2405-9.
Mouse-tumour, study of, does not assist in diagnosing, in human subject *H. Snow*, 2188-9.
Negative results of research *H. Snow*, 2410-12.
Neglect of "control" experiment in investigation of, *H. Snow*, 2127-8.
Not communicable between animals of different species *G. D. Thane*, 1680-3, 1687.
Not easily communicable between human beings *H. Snow*, 2247.
Proper nature of research, *H. Snow*, 2138-9.
Reproductions of various types of, no progress lately made, *H. Snow*, 2175.
Research Fund; see IMPERIAL CANCER RESEARCH FUND.
Research laboratory at Liverpool University *G. D. Thane*, 1686.
Serum treatment advocated in France *H. Snow*, 2256-7.

CANCER—cont.

Systematic tabulation of knowledge of, necessary *H. Snow*, 2413.
CARDIFF, municipal laboratory at, *G. D. Thane*, 339.
CARDWELL, LORD, Chairman of the Royal Commission on Vivisection 1875 *W. P. Byrne*, 1.
CARLYLE, THOMAS, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.
CARPENTER, DR., Vice-president of National Canine Defence League, *J. Hughes*, 17246.
CARROLL, DR.:
Member of United States Commission to investigate cause of yellow fever in Havannah, *W. Osler*, 16531.
Yellow fever contracted by, as result of submitting himself to infection by mosquitoes *G. S. Woodhead*, 15478-9.
CASH, J. THEODORE, M.D., F.R.S.:
Baking experiments on rabbits and cats said to have been performed by, *J. W. Graham, Sir L. Brunton*, 5844, 6079, 6804.
Experiments upon anti-pyretic action of aconite on pigeons by, *Sir L. Brunton*, 6818-23.
Reference, *A. R. Cushny*, 5159.
CASTELLANI, claim put forward for a streptococcus as cause of sleeping sickness by, *Col. D. Bruce*, 14424-30.
CASTRATION:
Anæsthetics sometimes administered for, *S. Stockman*, 2875-9.
Anti-tetanus serum generally injected in operation of, *S. Stockman*, 3281-2, 3287.
Brutal, *Rev. J. P. Hopps*, 8610-11.
Certificates B and F required if performed for scientific purposes, *S. Stockman*, 2884-7.
Could be rendered painless by use of cocaine *W. E. Dixon*, 19071-2.
Doubts as to desirability of, *Rev. J. P. Hopps*, 8435-46.
Health of animal not affected by operation of, *G. D. Thane*, 471.
Method of performing, *S. Stockman, M. S. Pembrey, F. Hobday*, 2873-87, 14162-9, 16401-13.
Necessity of, admitted *Hon. S. Coleridge*, 11582-6.
Objection to, if not for animals' good *Rev. L. Lewis*, 8664-84.
Pain involved in, *S. Stockman*, 3026-31.
Should be performed under anæsthetics *J. W. Graham, Miss Lind-of-Hageby, Hon. S. Coleridge*, 5928-31, 6111-13, 9281-4, 11332-50.
Reasons for not including, in same category as experiments on animals *Sir G. Kekewich*, 20791-802.
CATHODE RAYS, discovery of Röntgen Rays from, *E. H. Starling*, 3442.
CATHOLIC UNIVERSITY SCHOOL OF MEDICINE, IRELAND, experiments in connection with, *Sir T. Stoker*, 776-7.
CATTLE DISEASES, see particular names of diseases.
CATS:
"Baking" of:
Consisted merely in maintaining temperature during narcosis *Sir L. Brunton*, 6906a-16.
Explanation of experiment and maximum temperature involved *Sir L. Brunton*, 6785-829, 6818-25, 6792-808, 7089-97.
Said to have been performed *J. W. Graham*, 5844-9.
Certificates E or EE required for experiments on, *G. D. Thane*, 423.
Condition of, after experiment not seriously painful, and in cases of great pain killed *G. D. Thane*, 1209-1215.
Condition of those experimented on by *Dr. Head* *G. D. Thane*, 1256.
Curare illegally used in experiment on, *Miss Lind-of-Hageby*, 9388-97.
Difficulty in housing large animals in towns makes it necessary to use, *Sir J. Russell*, 619.

CATS—cont.

- Dogs preferable to, for experiment purposes *A. R. Cushman*, 5086-7.
- Employed in experiments for investigating action of drug on intestine and stomach *A. R. Cushman*, 4824.
- Experiments not sanctioned on, which could be done on other available animals *G. D. Thane*, 1197-1205.
- Experiments on, involving cruelty *Mrs. K. Cook*, 1790, 1801-7, 1910-11, 1919.
- Experiments upon brains of, and their value *F. Gotch*, 13569-70.
- Experiment performed on nerves of, *G. D. Thane*, 1247-59.
- Eyes of, inoculated with diphtheria bacillus and consequent suffering *Mrs. K. Cook*, 1919.
- Gastric fistula made under anaesthetics, but without necessary certificates *W. P. Byrne*, 38-40.
- Incompletely anaesthetised during experiment *Miss Lind-af-Hageby*, 9157-97.
- Ink injected into eyes of, *Mrs. K. Cook*, 1913-4.
- Inspected after experiment involving removal of portion of brain and as to painless condition *Sir J. Russell*, 649-54.
- Necessity in some cases of experimenting upon, *Sir J. Russell*, 608.
- Prevention of sale of, for laboratory purposes *G. D. Thane*, 1436-7.
- Rapid recovery of, from anaesthetics *Sir J. Russell*, 540.
- Scandal in connection with the Wellcome Research as to obtaining, for experimental purposes *Sir J. Russell*, 682.
- Snake poison injected into, caused severe pain *Sir J. Russell*, 543.
- Susceptibility of, to pain makes it desirable to minimise experiments upon, *Sir J. Russell*, 607.
- Thyroid gland of, excised and followed by tetany *G. D. Thane*, 1233.

CAZIN, PROFESSOR, reference, *H. Snow*, 2129.

CEREBRO-SPINAL MENINGITIS:

- Experimental methods essential to knowledge of, *J. Glaister*, 12852-61.
- More facilities necessary for investigation of, *J. Glaister*, 13003-5.
- Outbreak of, and methods pursued by Local Government Board *W. H. Power*, 4304-5.
- Propagation, experiments of little value as regards showing means of, *J. Glaister*, 12943-5.
- Statistics of outbreak of, in Scotland during 1907 *J. Glaister*, 12852.

CERNA, DAVID, reference, *Miss Lind-af-Hageby*, 9266.

CERTIFICATES:

- Abolition of, need not eliminate advisory bodies concerned in issue of, *Sir V. Horsley*, 15775.
- Amendment in method of granting, desirable *E. H. Starling*, *A. R. Cushman*, 3733, 3981, 4945-7, 5142-6.
- Applications for, for physiological and pathological experiments treated similarly, *W. P. Byrne*, 243-5.
- Applications for, carefully considered *Sir R. D. Powell*, 5736-9.
- Applications for, not signed without knowledge of applicant and proposed experiment *E. H. Starling*, 3739-43.
- Applications for, referred to inspector, *W. P. Byrne*, *G. D. Thane*, 32-3, 387-95.
- Association for Advancement of Medicine by Research consulted before granting, *W. P. Byrne*, 24, 27-9.
- Authorities concerned with granting of, *G. D. Thane*, 1483-4.
- Conditions illegally assumed by successive Home Secretaries to modify character of, *E. A. Schäfer*, 10172.
- Contravention of Act in regard to, *W. P. Byrne*, 36-50.
- Delay in granting, complaints *W. P. Byrne*, *E. A. Schäfer*, *F. Gotch*, 216, 10172, 13910-12.
- Delay in issue of, sometimes occasioned by necessity of consulting Association for Advancement of Medicine by Research *Sir J. Russell*, 566.
- Delay in obtaining fresh, and advisability of substituting a comprehensive licence for, *W. E. Dixon*, 19025.

CERTIFICATES—cont.

- Difficulties arising from restriction of number of experiments in, *Sir V. Horsley*, 15767-70.
- Difficulty on part of licensees in understanding powers conferred by, *Sir J. Russell*, 535.
- Disallowal of, by Home Office *W. P. Byrne*, *G. D. Thane*, *E. H. Starling*, *F. Gotch*, 166-7, 1098-1100, 1154-8, 3948-51, 13724-31.

Dispensing with Anaesthetics:

- Home Office Annual Return suppresses names of those who sign, *Hon. S. Coleridge*, 10573-602.
- May be granted, *W. P. Byrne*, *G. D. Thane*, 221-3, 260-5, 440.
- Misleading answer in House of Commons to question as to number of persons holding, *Hon. S. Coleridge*, 10317-29.
- Principle of protection to animals is nullified by, *Mrs. K. Cook*, *Sir G. Kekewich*, 2000-7, 20399-405, 20407.
- See also Certificate D.
- Foreigners should not be put under a disadvantage with regard to obtaining, *Sir J. F. Moulton*, 12751-4.
- Go to release conditions as to immediate killing of animals and antiseptics *W. P. Byrne*, 221-3.
- Heads of departments should have more liberty with regard to the range of work stipulated in, *J. Glaister*, 12885-7.
- Home Office do not enquire into personal character or humanity of applicant for, *Hon. S. Coleridge*, 10264.
- Inspection of, by three officials at Home Office *W. P. Byrne*, 199-204.
- Inspector has responsibility of advising Home Secretary as to grant of, *G. D. Thane*, 1466-8.
- Inspector's opinion should not overrule advice of authorities recommending grant of, *E. A. Schäfer*, 10172.
- Issue of, to veterinary surgeons *W. P. Byrne*, 70-2.
- Lapse of, experiments performed after, *G. D. Thane*, 477.
- and Licences, important distinction between *W. P. Byrne*, 25.
- Licensee's form of return to Home Office could be expanded so as to include all details supplied by, *Sir V. Horsley*, 15767.
- Medical qualifications, absence of, should not disqualify applicant *C. J. Martin*, *Sir J. F. Moulton*, 12148-52, 12751-4, 12768-74.
- Memorandum of unsuitable applicants for, *W. P. Byrne*, 65-9.
- Nature and usefulness of experiments investigated by inspector before issue of, *G. D. Thane*, 422-4, 439.
- Necessity of applying for, even in cases of painless inoculations, *W. E. Dixon*, 19017-20.
- Not allowed for severe operation without anaesthetics, *W. P. Byrne*, 160.
- Number of, in force in Ireland *Sir T. Stoker*, 765-7.
- Pain inflicted in experiments under, when animal is allowed to recover from anaesthetic is that which occurs in surgical operation *J. N. Langley*, 15102-108.
- Pressure put on Irish Chief Secretary as to granting of, disallowed *Sir T. Stoker*, 932.
- Procedure in issue of, *G. D. Thane*, *Sir J. Russell*, *E. H. Starling*, 420, 737, 4184-8.
- Protection against misuse of, *W. P. Byrne*, 224-6.
- Refusal or modification of, on various grounds *Sir J. Russell*, 519-20.
- Renewal of:
- Yearly *W. P. Byrne*, 48.
- Doubtful procedure as to, *Hon. S. Coleridge*, 10590-2.
- Review of all, at close of year before renewal *G. D. Thane*, 480.
- Separate, for experiments on cold-blooded animals unnecessary *Sir V. Horsley*, 16275-9.
- Should be dispensed with, and licence drafted, so as to cover all details at present stated in, *Sir V. Horsley*, 16016-25, 16090.
- Signatories:
- Contradictory statements by Home Office as to, *Hon. S. Coleridge*, 11092-7.
- Instance of inspector being one, *Hon. S. Coleridge*, 10418-22.

CERTIFICATES—cont.

Signatures of authorities enumerated in Act, Section 11, must be attached to, *W. P. Byrne*, 16.
 Special, to enable further investigation of alleged former discovery, *W. P. Byrne*, 242.
 Specification of animals required with all, *W. P. Byrne*, *Sir J. Russell*, 250-4, 628-32.
 Unnecessary, and only complicate administration of Act *Sir V. Horsley*, 15756.

A:

Alteration in wording of conditions since 1888 and inhumane condition at present *Hon. S. Coleridge*, 10274-5.
 Before 1888 no conditions attached to, and therefrom arose possibilities of torture *Hon. S. Coleridge*, 10272-3.
 Decision to grant, rests with authorities mentioned in Section 11, *W. P. Byrne*, 241.
 Experiments on cold-blooded animals require, *F. Gotch*, 13893-7.
 Experiments under, followed by great pain *G. D. Thane*, 457.
 Heads of departments should have wide instead of restricted form of, and reasons *J. Glaister*, 12952-5.
 Increase of experiments under, *W. P. Byrne*, 114-16.
 Insufficient for some important experiments which require to be done without anaesthetics *F. Gotch*, 13754-60.
 Licensees frequently guilty of irregularities by administering anaesthetics under, *G. D. Thane*, *Sir J. Russell*, *Sir V. Horsley*, 477, 555-6, 15757-60.
 Licensees making use of, in place of Certificate B, guilty of irregularity *W. P. Byrne*, 247-8.
 Local anaesthetics might be allowed with, but possible difficulty *Sir J. Russell*, 555-6, 624-7, 730-1.
 Mildness of experiments under, suggest advisability of permitting use of cocaine, *Sir J. Russell*, 622-4.
 Number of experiments under, should not be limited *J. Glaister*, 12918-20.
 Should be extended to skilled assistants working under licence *H. Morris*, 7805-9.
 Starvation experiments could not be conducted without, *G. D. Thane*, 1319.

A2; issue of, and as to range of work permitted under, *J. Glaister*, 12921-8.

B:

Abolition of, desirable *Hon. S. Coleridge*, 11468-522.
 Admits of large amount of pain and suffering to animals *Hon. S. Coleridge*, 10559-64, 11053-70.
 "Advancement of physiological knowledge" sufficient certification in applying for, *E. H. Starling*, 4005-16.
 Ambiguity in wording of, *J. R. Bradford*, 17785.
 Ambiguity in wording of, none as suggested by Mr. Coleridge *Sir V. Horsley*, 15945-9.
 Anaesthetics imperative under, *Sir J. Russell*, 557.
 Anaesthetics used throughout experiments under, *J. N. Langley*, *Sir V. Horsley*, *J. R. Bradford*, *J. Lorrain Smith*, 15112-3, 15302-7, 15761, 17743-6, 18368-9.
 Antivivisectionists' persistent misrepresentation of terms of, *Sir V. Horsley*, 15729.
 Curare never administered with anaesthetics under, *E. H. Starling*, 4056-61.
 Decision to grant, rests with authorities mentioned in Section II, *W. P. Byrne*, 241.
 Demonstration experiments performed under, and animal not allowed to recover *Sir V. Horsley*, 15621-7.
 Desirable to remove clause forbidding surgeons to acquire skill by experiment under, *E. H. Starling*, 4082-91.
 Development of physiology likely to necessitate increase in applications for, *E. H. Starling*, 4119.
 Experiments performed under, and meaning of term "initial operation" *F. Gotch*, 13901-9.
 Experiments under, not necessarily followed by pain *G. D. Thane*, 471.

CERTIFICATES—cont.

B—cont.

Experiments witnessed under, *G. D. Thane*, 1639.
 Gelding experiment for scientific purposes would require, and *F. S. Stockman*, 2884-7.
 Home Secretary may reduce number of experiments under, on advice of inspector *Sir J. Russell*, 633-4.
 Inoculation of rabbit for rabies requires, *S. Stockman*, 2590-7, 2858-70, 2912-4.
 Inspectors do not examine all animals in laboratories which have been operated on under, *Hon. S. Coleridge*, 11526-30.
 Length of operations under, *Sir J. Russell*, 545.
 Nature of experiments under, *G. D. Thane*, 467.
 No contravention of Act for animal already used under, to be further operated on under *C. G. D. Thane*, 1560-2.
 Obligation to kill animal after experiment under, a hardship *Sir J. Russell*, *G. D. Thane*, 557-61, 1180-5, 1301-2.
 Objection to experiments under, on ground of pain involved *Hon. S. Coleridge*, *C. R. J. A. Swan*, *Sir F. Banbury*, 11538-47, 19302-9, 19714-20.
 Pain subsequent to experiments under, *G. D. Thane*, *A. G. Scott*, 474-6, 1550, 19792-7.
 Useless for demonstration experiments, *Sir J. Russell*, 614.

B, EE:

Nature of experiments under, *G. D. Thane*, 467, 471.
 No general statement can be made as regards pain after operations under, *G. D. Thane*, 474-6.

B, F:

Experiments under, not necessarily followed by pain, *G. D. Thane*, 471.
 Nature of experiments under, *G. D. Thane*, 467.
 No general statement can be made as regards pain after experiments under, *G. D. Thane*, 474-6.

C:

Annual number of experiments under, *Sir T. Stoker*, 934-8.
 Applications for, almost exclusively from physiologists *Sir T. Stoker*, 872.
 Cases in connection with issue of, *Sir T. Stoker*, 793-5.
 Demonstration experiments require, *Sir J. Russell*, 611-15, 665-6.
 Difference of opinion between Chief Secretary in Ireland and inspector only in connection with, *Sir T. Stoker*, 789-90.
 Experiment under, sometimes witnessed by inspector, *Sir J. Russell*, 567-8.
 Inspector's advice with regard to issue of, frequently overruled *Sir T. Stoker*, 796.
 Memorandum furnished by inspector for Ireland against use of, *Sir T. Stoker*, 760-1.
 No contravention of Act for animal already used under B to be further operated on under, *G. D. Thane*, 1560-2.
 Objections to, *Sir T. Stoker*, 860-904.
 Objection to enforced destruction of animal operated on under, *G. D. Thane*, 1757-62.
 Unnecessary, *Sir V. Horsley*, 15761.
 Use of, necessary for effective teaching *G. D. Thane*, 1121.

D:

Never used, *E. H. Starling*, 3851-3.
 Repetition of experiments desirable because of the introduction of new methods *F. Gotch*, 13761-77.
 Unnecessary, and contrary to progress of scientific work *Sir V. Horsley*, 15761-2.

E:

Ambiguity in wording of, *J. R. Bradford*, 17787-8.
 EE substituted for, in 1888 *Sir V. Horsley*, 15762-3.
 Not in itself operative *Sir J. Russell*, 630.

CERTIFICATES.—*cont.*E—*cont.*

Originally liable to misapplication, and refusal of a previous Home Secretary to reconstruct it *Sir V. Horsley*, 15762-3.
Required for operation on dogs or cats *W. P. Byrne, G. D. Thane*, 252, 254, 423.

EE:

Required for experiments on dogs or cats, *G. D. Thane*, 423.
Substituted for Certificate E since 1888 *Sir V. Horsley*, 15762-3.

F:

Gelding experiments for scientific purposes would require Certificate B and, *S. Stockman*, 2884-7.
Not in itself operative *Sir J. Russell*, 630.
Required for operations on horses, asses, or mules, *W. P. Byrne, G. D. Thane*, 252, 423.
Unnecessary, *Sir V. Horsley*, 15765-7.

See also under VIVISECTION ACT, 1876, Suggested Amendments.

CERVELLO, paraldehyd, effect of, on animals investigated by, *A. R. Cushny*, 4733.

CHANTEMESSE, PROFESSOR, reference, *J. W. Graham*, 6103.

CHELSEA, laboratory at, held by Lister Institute of Preventive Medicine, *G. D. Thane*, 344.

CHEYNE, W. WATSON, F.R.S., C.B., table prepared by, showing discoveries consequent upon Lister's work *H. Morris*, 7673, 7841, 7848.

CHICAGO, opinion of Medical Officer at, as to value of diphtheria antitoxin, *C. J. Martin*, 11763, 11766-7.

CHICAGO UNIVERSITY, experiments in, *J. W. Graham*, 5871-3.

CHOLERA:

Antitoxin, see under SERUM THERAPY.

Comma bacillus now accepted as distinctive test of, *W. H. Power*, 4427-9, 4495-8.

Experiments upon, still being conducted, *Sir J. Russell, Sir T. Stoker*, 575-6, 844-5.

Foreign Office must notify to other Governments all occurrences of, in this country *W. H. Power*, 4301.

Local Government Board must notify all cases of, to Foreign Office *W. H. Power*, 4301.

Homeopathic remedies for, put forward by Hahnemann *G. H. Burford*, 9049-52.

CHOVEAU, M., smallpox inoculation of horses and cows in France practised by, *W. H. Power* 4486-7.

CHRISTIAN SCIENTISTS, considerable number of, in America *A. R. Cushny*, 5248.

CHRISTIANI, reference, *Miss A. Kenealy*, 5288.

CHRISTISON, SIR R.:

Physotigmin, action of, examined on himself without knowledge of its effect and almost fatal result *A. R. Cushny*, 4789-93, 4889-90.

Share taken by, in introduction of hypodermic medication *Sir L. Brunton*, 6972.

References *A. R. Cushny, Sir L. Brunton*, 5149, 6972, 7163.

CHURCH ANTI-VIVISECTION LEAGUE:

Evidence on behalf of, see LEWIS, REV. L. S., and WOODWARD, MISS A. L., 8629-8898.
Income of, *Hon. S. Coleridge*, 10260.

CHURCH, SIR W. S., BART., K.C.B., M.D., reference, *C. R. J. A. Swan*, 19277, 19278.

CLELAND, JOHN, M.D., opinion given before last Royal Commission as to insensibility of animals to pain *S. F. Smith*, 13049-52.

CLINICAL SOCIETY OF LONDON, therapeutical contributions classified in presidential address to, *Miss A. Kenealy*, 6165.

CLOSE, The late DEAN, anti-vivisection cause supported by, *Rev. L. S. Lewis*, 8738.

COBBETT, DR., diphtheria outbreak at Cambridge controlled by precautionary methods and use of anti-toxin by, *G. S. Woodhead*, 15528-9.

CORBE, MISS FRANCES POWER:

Experiments on cats said by, to have involved roasting to death, *Sir T. L. Brunton*, 6788.
Extract from letter to, *Rev. L. S. Lewis*, 8722.

COFFEY, PROFESSOR D. S., Catholic University School of Medicine, Dublin, Certificate C originally refused to, but subsequently granted against advice of inspector, *Sir T. Stoker*, 794A.

COHEN, DR. S. SALIS, views of, referred to *Miss A. Kenealy*, 5280.

COHNHEIM, experiments by, reference *Miss A. Kenealy, Sir H. R. Swanzy*, 5301, 9793.

COKE, LORD, statement by, as to interpretation of Acts of Parliament *Hon. S. Coleridge*, 10969.

COLAM, J., late Secretary to the Royal Society for the Prevention of Cruelty to Animals, evidence given by, before previous Royal Commission *A. G. Scott*, 19602-5.

COLCHESTER, municipal laboratory at, *G. D. Thane*, 339.

COLD-BLOODED ANIMALS:

Act should not have reference to, *E. A. Schäfer, F. Gotch, Sir V. Horsley*, 10187-8, 13824, 13864-9, 15952-4, 16267-74.

Experiments upon, require Certificate A *F. Gotch*, 13893-7.

Inclusion of, in Act at present hinders physiological research *J. N. Langley*, 15400-5.

Separate certificates for, unnecessary *Sir V. Horsley*, 16275-9.

Wiser to have separate certificates for, than to exclude them from Act *J. N. Langley*, 15399.

COLERIDGE, The late LORD CHIEF JUSTICE:

Anti-vivisection cause supported by, *Rev. L. S. Lewis*, 8726.

Important judgment of, in "Mignonette" case distinguishing between law and morality *J. H. Levy*, 18523-6.

COLERIDGE, THE HON. STEPHEN, Hon. Secretary to the National Anti-Vivisection Society, 10251-11629, 19842-983.

Abolition of all forms of cruelty must be proceeded with by degrees and no simple principle would discriminate 11351-70.

Anæsthesia, slight, meaning of term 10385-411, 11548-61.

Anæsthetics, meaning of term, 10385-411.

Anti-vivisection cause:

Quotation from *Idler* in support of, 10551.
Supporters of, 10261.

Anti-Vivisection Hospital, National Anti-Vivisection Society had no active share in promoting, 19905-19907.

Anti-Vivisection Societies, incomes of the various, 10260.

Anti-vivisectioners' plea for consideration of their mental suffering, 10265.

Bill Prepared by:

Animal to be killed if found to be suffering after experiment 10830-42, 11261-7.

Bacteriological experiments upon eyes to be prohibited 10843-6, 11268-71.

Certificate A to be retained 10752.

Certificate B to be abolished and general anæsthetics insisted on throughout experiment 10809-18, 11231-49, 11468-522.

Certificates:

Signatories of, to be published 10847-52.
Signatories to have proposed status 10894-8.

To be granted by Home Office after inquiry as to humanity of applicant, 11210, 11213-26.

Curare to be prohibited, 10823-9.

Demonstration experiments to be prohibited 10819-22.

COLERIDGE, THE HON. STEPHEN—*cont.*Bill prepared by—*cont.*

Experiments for purpose of attaining manual skill prohibited, as by present law, 11289-94.
Infliction of pain on animals for trade purposes not within purview of, 16396A-412.

Inspectors:

Reliance placed on, to safeguard animal from illegal treatment, 10736.
Reputation for humanity to be considered in appointment of, 11535-7.
To be appointed by Home Office 11208-9.
To be present at all experiments except inoculations and protection to animals thus afforded 10755-8, 11211, 11250-60.

Inspector to see that animal is killed after inoculations if found to be suffering 10765-7.
Letter from, to Mr. Ram, with reference to insertion of qualifying adjective to "pain" in, 19975-8.

Licences:

Time and place of experiment to be specified in each, 11272-5.
To be granted by Home Office 11208.
To specify only one experiment or a series of not more than six 11413.

Main provisions of, 10695-707.

No distinction to be made between vertebrate animals 10754.

Prosecutions:

Extension of time limit to two years, or proceedings must be instituted within six months of licensee's publication of experiment 11276-85.
Provisions obliging Home Secretary to institute, for offences 11115-23.

Suggested alterations made in, 11071.

Utilitarian object of experiments recognised in, 11227-30.

Will not hamper legitimate experimentation 10885-9.

Would amend present Act, 10749.

Castration:

Admittedly painful, and should be conducted under anaesthetics 11332-50.
Necessity of, 11582-6.

Certificates:

A:

Alteration in wording of conditions since 1888 and present inhumane condition 10274-5.
Before 1888 no conditions attached to, and therefore arose possibilities of torture, 10272-3.

B:

Admits of large amount of pain and suffering to animals 10559-64, 11538-47.
Inspectors do not examine all animals which have been operated on under, 11526-30.

Renewal of, doubtful procedure as to, 10590-2.

Circular letter issued by, enclosing German catalogue of surgical instrument maker misrepresenting use of anaesthetics in England *Sir V. Horsley*, 15728-9.

Curare should be prohibited 11575.

Demonstration experiments:

Demoralising and bad for students 11371-96.
Feeling deterring students from complaint of, 11433-52.

Diphtheria-antitoxin, statistics hardly point to beneficial effect of, 10755-8.

Evidence of, printed and circulated by National Anti-Vivisection Society 19956-66.

Evidence of Mr. Gotch:

as to Acceptance of statement that no vivisection experiments were performed last year in Physiological Laboratory, Oxford, 19933-54.
Keeble College undergraduates' case unfairly represented 19852-63.

COLERIDGE, THE HON. STEPHEN—*cont.*

Evidence of Sir V. Horsley:

Allegations with reference to circulation of catalogue of instruments unfounded 19877-9.
in *Bayliss v. Coleridge* libel case 19919-29.
Deception alleged with reference to letters to surgeons for definition of "incomplete anaesthesia" unfounded 19930-2.

Statement that permission to vivisection in unlicensed premises was not given by Home Office incorrect 19908-18.

Muzzling Order, allegation that National Anti-Vivisection Society opposed is untrue 19847-51.

Evidence of Sir R. D. Powell criticised 19890-4.

Evidence referred to:

Certificate B:

No ambiguity in wording of, as suggested *Sir V. Horsley*, 15945-9.

Persistent misrepresentation of terms of, *Sir V. Horsley*, 15729.

Suggestion that anaesthetics are not used throughout experiments under, quite baseless *Sir V. Horsley*, 15761.

Term "initial operation" wrongly interpreted *F. Gotch*, 13904-9.

Charges against the Home Office baseless *Sir V. Horsley*, 15729.

Dr. Crile's experiments, statements criticised *Sir V. Horsley*, 15688-728.

Control of animals during experiments, misrepresentation of evidence during *Bayliss* libel case as to, *Sir V. Horsley*, 16010-11.

Demonstration experiments wrongly said to have demoralising effect upon students *Sir V. Horsley*, 15606.

Experiments of Messrs. Dixon and Brodie wrongly alleged to have been performed upon unanaesthetised animals *W. E. Dixon*, 19012-15.

Keeble College undergraduates, actual facts of correspondence, and their subsequent withdrawal of charge *F. Gotch*, 13668-701.

Letter to surgeons re meaning of term "incomplete anaesthesia," deceptive and misleading *Sir V. Horsley*, 15728.

Mansion House meeting, actual facts in connection with incorrectly put forward *Sir V. Horsley*, 15594-601.

Pasteur Institute, statements with regard to proposal to institute, in England, contrary to fact *Sir V. Horsley*, 15672.

Dr. Shaw's experiments, allegation concerning, untrue, *J. Lorrain Smith*, 18402-23.

Statement that Home Office gave permission for vivisection to be carried out in unlicensed place utterly baseless *Sir V. Horsley*, 15735-43.

Experiments:

Dr. Bayliss', evidence of animal struggling in, 10720-2.

Dr. Crile's:

Description of, 10265, 19979-80.

Discrepancy between account of, in Home Office report and experimenter's description in *Surgical Shock* 10301.

Letter to surgeons requesting corroboration of Home Office statement as to operations under "incomplete anaesthesia," and replies received 10305-313, 10979-91, 10991-11043.

Reported as painless by Home Office 10289-300.

Subsequent explanation to Home Office not accepted 10938-51.

Dixon and Brodie's, torture involved in, 11562-9.

"Drowning":

Condemnation of Home Office for permitting, 10915-37.

Cruelty of, 10264-5.

Questions in House of Commons asked as to, 11049-53.

"Fasting," Dr. Noel Paton's, 11044-8.

COLERIDGE, THE HON. STEPHEN—*cont.*Experiments—*cont.*

Feeding:

Absurdity of obtaining licence for feeding kittens on cow's milk 10565-9.

Dr. Grünbaum's, illegality of 11125-34.

Sleeping sickness, suffering demonstrated by picture of dog experimented on at Khartoum 11071-81.

Dr. Shaw's, sanctioned by Irish Office 11135-9.

Professor G. N. Stewart's operations, possible cruelty in 11053-70.

Ferrier-Yeo case, 10555-7.

Guide to the Charitable by, points out diversion of hospital funds to medical schools 10261.

Has no objection to benefitting from results of vivisection, which do not involve fresh suffering 10740, 10760-1.

Home Office:

Cases in which alleged illegality has been defended by, 11150-91.

Charges against:

Animals not protected from unjustifiable suffering 10266-75.

Annual Parliamentary Return suppresses names of those who sign certificates dispensing with anaesthetics 10573-602.

Annual Return asserts that no experiments entail pain 10640-41.

Appointment of biased inspectors 10412-30.

Certificates signed by inspector 10418-22.

"Chemist and Druggist" case, breach of law by Dr. Grünbaum in demonstrating without proper certificates 10330-70.

Evasive and insufficient replies to plain questions on administration of the Act 10614-39.

Exemption of Sir Victor Horsley's experiments from inspection 10645-56.

Improper consultation with Association for the Advancement of Medicine by Research, 10675-91.

Misleading answer in House of Commons to question as regards number of persons holding certificates dispensing with anaesthetics 10317-29.

Officials have defended vivisection from criticism and case of Dr. Crile 10275-314.

Permission to Sir Victor Horsley to experiment in unlicensed place objected to, 11082-90.

Proceedings in connection with experiments performed by Messrs. Dixon and Brodie 10370-81.

Shielding of licensees known to have broken the law 10603-13.

Starvation of animals assumed to be painless 10514-48.

Twelve different, 10262-4, 11205-7.

Conflicting statements as to responsibility of, in deciding painful nature of experiments 10270-2.

Contradictory statements by, as to signatories of certificates 11092-7.

Has constituted itself the spokesman of vivisection and made disingenuous statements 10431-513.

Has never acted contrary to advice of Association for the Advancement of Medicine by Research 11049.

No inquiry made by, into personal character or humanity of applicant for licence and certificate 10264.

Permanent officials more responsible than Home Secretary 10276-83, 10899-912.

Policy of consulting Association for the Advancement of Medicine by Research objected to, 10265, 10909-14, 11098-109, 11615-21.

Home Secretary's answer to question dealing with number of experiments actually witnessed by inspector 10559.

Hospital Funds, diversion of, to Medical Schools protested against 10260-1.

COLERIDGE, THE HON. STEPHEN—*cont.*

Inoculations, pain can never be entirely eliminated from, 11603-5.

Muzzling Order, National Anti-Vivisection Society never opposed, but has been in favour of, 19847-51, 19901-19905.

Inspectors:

Dr. Poore, objection to, 10974-8.

Present system of inspection extremely imperfect 11572.

Kemble College Undergraduates:

First correspondence with, 11444-67.

Unfair accusations against personal representation of case 19863-76.

Letter from Duke of Portland repudiating suggestion to employ lost dogs for vivisection purposes 11624-6.

Letters written by, to surgeons on subject of "incomplete anaesthesia" 10979-91.

Libel action brought against, and disclosures during evidence 10264.

Licences, doubtful procedure as to renewal of, 10590-2.

Mansion House Meeting for establishing a Pasteur Institute, originally intended to be public, but private conditions enforced by action of, 19880-19901.

Morphia, not a general anaesthetic, 11576-80.

National Anti-Vivisection Society:

Achievements of, 10260.

Aim of, to regulate vivisection 11140-4.

Castration, not within scope of, 11295-7.

Constitution and membership 10254-8.

Journal published by, 11598-600.

Letter from Queen Victoria sympathising with views of, 10714-15.

Object and aims of, 10261.

Would welcome complete abolition of vivisection if within region of practical politics 11570-1.

Pain:

Dr. Klein's admission of indifference to, before previous Royal Commission is typical of vivisection's attitude 10656-74.

Objection to experiments on grounds of infliction of, 10708-10, 10776-99.

Risk of licensees becoming callous towards infliction of, 11614.

Press, desirability of permitting attendance of, during sittings of the Commission 10711-13.

Royal Commission on Vivisection, 1876, humane recommendations 10265.

Torture, definition of, from point of view of animal 11302-13.

Unacquainted with experiments from personal knowledge 10768-72.

Vivisection Act, 1876:

As administered has shielded the vivisection 10264.

Grounds of objection to, 10261.

Majority of licensees have contempt for, 11425-32.

Meaning of, may be interpreted by Report of previous Commission 10968-72.

No limit to suffering that may be inflicted under, 10716-19.

No protection afforded to animals by, 10264.

Precludes general public from witnessing experiments 11192-204.

Prosecutions under, desirability of extending time limit 11110-12.

Responsibility placed on Home Secretary by, has been abused 10264.

Secret administration of, 11091.

Section 13, no application to prosecute licensees has been made under, 11145.

Section 21, impossibility of prosecutions under, because of time limit 11146-9.

Should be amended so as to prevent serious pain 11314-31.

Viewed with contempt by physiologists, 10964-61.

COLLIER, Mr., reference Major L. Rogers, 8220.

COLLINGS, RIGHT HON. JESSE, M.P., reply to Mr. S. MacNeill in House of Commons as to allegations concerning Dr. Hime's experiments Miss A. L. Woodward, 8804.

COLONIAL OFFICE, laboratory owned by, for purpose of scientific investigation disapproved of, *J. Hughes*, 17507-11.

COLOGNE, Local Government Board vaccine lymph derived in first instance from, *W. H. Power*, 4478.

COMMISSION ON PLAGUE IN INDIA, 1901:

Appointed by Egyptian Government to investigate plague in Bombay and report against use of plague serum *Sir G. Kekewich*, 20485-90.

Constitution of, and investigations in connection with Haffkine's prophylactic *C. J. Martin*, 12080-95, 12134-6.

Investigations and report of *C. J. Martin*, 11654-6, 12291-3.

COMMITTEE OF MEDICAL AND SCIENTIFIC SOCIETIES:

Evidence on behalf of, see *STARLING, E. H.*, *CUSHNY, A. R.*, *BRUNTON, SIR L.*, *MARTIN, C. J.*, *BRADFORD, J. R.*, *HEAD, H.*, *BRUCE, COL. D.*, 3430-4280, 4640a-5274, 6777-7185, 11630-12382, 17621-17800, 17801-17995, 14184-14529.

Object of forming, *E. H. Starling*, 3727-32.

CONDENSED MILK CO., IRELAND, experiments in connection with bovine tuberculosis performed at Limerick by, *Sir T. Stoker*, 765.

COOK, MRS. K. ("MABEL COLLINS"), Chairman of the Executive Committee of the Parliamentary Association for the Abolition of Vivisection 1780-2097.

Abolition of vivisection advocated, and scope of experiments included, 1938-46, 1956-8, 1980-97. Anaesthetics, no confidence in efficiency of, employed 2018.

Antiseptic treatment of wound does not remove pain 2073-8.

Antiseptic precautions not compelled by Act 1915-16.

Beneficial influence of scientists on public opinion 1785.

Benefits possibly derived from experiments outweighed by moral considerations 1921.

Certificates granted for operations without anaesthetics 2000-7.

Curare:

Experiments under, without anaesthetics 2008-10.

Experiments should be made with, on willing human subjects 1971.

Use of, indefensible 1921.

Distinction between sacrifice of animals for purposes of scientific inquiry and for other uses 1969.

Ether, its fleeting effect 1955.

Evidence referred to:

Antiseptic treatment, statement that pain is not diminished by, untrue *E. H. Starling*, 4110.

Cambridge experiments, allegation concerning absence of anaesthetics unfounded *J. N. Langley*, 15389-93.

Curare, statement that pain is intensified by use of, incorrect 4111.

Dr. Thompson's experiments misrepresented *E. H. Starling*, 3636.

Drs. Brodie and Halliburton's experiments, allegations re insufficient anaesthesia in, unfounded, *E. H. Starling*, 3657-8.

"Frozen rabbit" experiment imaginary *A. D. Waller*, 18159-67.

Harley and Barratt's experiments on gall bladder of dogs, allegations re pain involved untrue *E. H. Starling*, 3677-84.

Mr. Baylis's experiments, allegations re insufficient anaesthesia in, unfounded *E. H. Starling*, 3639-55.

Précis, experts concerned in its preparation *Miss A. Kenealy*, 6754-7, 6765-70.

Prof. Langley's experiment, allegations re inefficient anaesthesia in, unfounded *E. H. Starling*, 3627-8.

COOK, MRS. K. ("MABEL COLLINS")—cont.

Evidence referred to—cont.

Professor Pawlow unjustly accused of cruelty in experiments *E. H. Starling*, 3634-5.

Professor Starling's experiment on gasserian ganglion of dog misrepresented, and charges re inefficient anaesthesia unfounded *E. H. Starling*, 3666-76.

Professor Starling's experiments on action of fifth nerve and gasserian ganglion confused and misrepresented *E. H. Starling*, 4132-40.

Starvation experiments, allegations as to their painful nature unfounded *E. H. Starling*, 3686-8.

Experiments:

Anaesthetic inefficient during, 1919, 2058-63. Dog illegally used for two, 1917-18, 2014-2018.

Increase in number of, since 1876 1964.

Inoculations of guinea pigs for testing tubercle in milk, objected to 2048-53.

Nerve stimulation, painful 2079-82.

On optic nerve, and pain caused 2083-5.

Repetition of, on gasserian ganglion of cats 1919.

as to Reports of, in journals 2091-6.

Experiments witnessed by, at Imperial Institute 1747-52, 2019-29.

Home Office Returns make misleading statements as to health of animals after inoculations 1919.

Inspectors, no security against animal suffering afforded by existence of, 1958.

Instances of cruelty in vivisection during the last thirty years 1785-1907.

Open letter sent to Commissioners, statements in 1922-37.

Pain, Dr. Klein's admissions of indifference to 2064-7.

Parliamentary Association for the Abolition of Vivisection:

Complaints to Home Office re irregularities of licensees not made by, 2043-5.

Constitution and objects of, 1972-9.

No prosecutions instituted by, 2092.

Open letter sent to Commissioners from, and as to its preparation 1932.

Prohibition of severe experiments insufficient 1997.

Public at present not in a position to prosecute 1960-3.

Registration of premises protects vivisection 1962-3.

Sufferings of animals after return to consciousness 1908-10.

Vivisection Act, 1876:

Greater cruelty under, than previous to 2030-4.

No knowledge of prosecutions instituted under, 2041.

Repeal of, desirable 1938-46, 2032-8.

Section 13, no knowledge of use of powers under, 2038a-40.

Useless nature of restrictions under, 1967.

Vivisection Commission, 1875, evidence before, and useless nature of subsequent legislative restrictions 1785, 1921.

Vivisection morally unjustifiable 1785.

References *H. Snow*, *Miss A. Kenealy*, 2224-6, 5280.

COPE, MR., formerly Chief Veterinary Officer at Board of Agriculture *S. Stockman*, 2651.

COPEMAN, S. M., F.R.S., M.A., M.D., Medical Inspector, Local Government Board:

Vaccination experiments made by, in private capacity *W. H. Power*, 4489-94.

Reference *G. D. Thane*, 1337-9, 1736.

CORNEVIN, preventive inoculation for blackquarter devised by, *S. Stockman*, 2544.

CORK:

Demonstration experiments in, *Sir T. Stoker*, 820.

CORK—cont.

Inspector assisted in, by report of Local Government Board medical inspector *Sir T. Stoker*, 831.

Inspection in, conducted by medical inspector from Local Government Board *Sir T. Stoker*, 971-5.

COUNTY OF LONDON, diphtheria case mortality for, *C. J. Martin*, 11711.

COWEN, R. J., L.R.C.P., L.R.C.S.I., National Canine Defence League, 19364-467 :

Anæsthetics, struggles of man or animal while under, are indicative of pain, 19419-25.

Dogs :

All animals that are mixed feeders are more suitable for experiments than, 19408-9.

Anatomical differences between men and, make results obtained from experiments on, erroneous 19371.

Cheapness and ease of procuring, for experiments 19403-7.

Complete anaesthetisation of, impossible for any length of time 19416-18.

Experiments on, should not be permitted 19426-7.

Experiments performed on, could in all cases have been performed on other animals 19384-5.

Not naturally mixed feeders, and hence conclusions drawn from experiments on digestive organs of, are valueless 19375-82.

Pigs more allied to man and more suitable for experiments than, 19372-4.

Special points of distinction between man and, rendering results of experiments on, inapplicable to man 19394-402.

Unsuitability of, for experiments proved by action of different drugs upon, 19410-15.

Experiments, extent of personal experience of, 19386-91.

Cows :

Diphtheria inoculations of, *Mrs. K. Cook*, 1796.

Dosed with arsenic, and reasons for not applying for certificate *J. Glaister*, 12956.

Local authorities examine, for detection of tubercle in milk *S. Stockman*, 3427-9.

Local Government Board have not of late years experimented with view to inoculating, with human small-pox *W. H. Power*, 4483.

Small-pox inoculations of, in France *W. H. Power*, 4486-7.

Tuberculin test, advisable to exclude all extraneous influences that might affect normal condition of, *S. Stockman*, 3178-89.

CRAMER, W., PH.D., Cancer Research Fund, experiments conducted by, *H. Snow*, 2114.

CRETINISM :

Endemic, as to treatment of cases in Savoy *W. Osler*, 16691-3.

and Goitre, connection between, long recognised *W. Osler*, 16631.

Thyroid extract administered for cure of, *Sir V. Horsley*, *W. Osler*, 15836-41, 16569, 16576-80.

and Thyroid Gland :

Clinical observation had never discovered connection between, *Sir V. Horsley*, 16231, 16238-9.

Experiments proving absence of latter responsible for, *Sir R. D. Powell*, *Sir L. Brunton*, *Sir J. F. Moulton*, *Sir V. Horsley*, 5684-93, 6958-64, 12735, 15688.

CHILE, DR. :

Experiments performed by, in connection with Surgical Shock :

Anæsthesia maintained throughout, and hence unjustifiably described as "terrible" *Sir V. Horsley*, 15893-7, 15975-6, 15977-80, 16220-2.

Anti-vivisectionists' persistent misrepresentation of, *Sir V. Horsley*, 15901-7.

Conclusions arrived at from, and their applicability to man *Sir V. Horsley*, 15857-60, 16202-3.

CHILE, DR.—cont.

Experiments performed by—cont.

Cruelty of, testify to personal inhumanity of experimenter *Hon. S. Coleridge*, 10265, 10284-8.

Crushing of dog's foot under incomplete anaesthesia reported as painless by Home Office *Hon. S. Coleridge*, 10289-300.

Discrepancy between experimenter's and Home Office report of, pointed out and Home Office defence *Hon. S. Coleridge*, 10301.

Description of, quoted *Hon. S. Coleridge*, 19979-80.

Explanation of, untrustworthy *Hon. S. Coleridge*, 10938-51.

"Incomplete anaesthesia" during :

Alleged deception as to meaning of, unfounded *Hon. S. Coleridge*, 19930-2, 19967-74.

Explanation of term as used to describe, *D. W. Buxton*, *Sir V. Horsley*, 12578-82, 15688-91, 16048-53.

Necessary and painless *E. H. Starling*, *Sir V. Horsley*, 4237-9, 15851-5.

Object was to investigate conditions of shock as arising in operations on human beings *Sir V. Horsley*, 15971-2, 16204-18.

Origin of, and as to Mr. Coleridge's observations on, *Sir V. Horsley*, 15688-91.

Proceedings and correspondence with Home Office and surgeons concerning, *Hon. S. Coleridge*, 10991-11043.

Some performed in America *Sir V. Horsley*, 16199-201.

References, *H. Morris*, *Hon. S. Coleridge*, 8021-4, 11154, 11168-71.

CROOKSHANK, PROFESSOR, views as to contagion of swine-fever *S. Stockman*, 2673-83.

CRUIKSHANK, early experiments of, with reference to surgical treatment of severed nerves *J. N. Langley*, 15140-6.

CRUISE, SIR F., Honorary Physician in Ordinary to H.M. the King in Ireland, Vice-President of National Canine Defence League *J. Hughes*, 17246.

CRUAN, DR. R., Catholic University School of Medicine, Dublin, Certificate C not allowed to, *Sir T. Stoker*, 794a.

CULLIS, MISS WINIFRED C., "pithing" of dogs improperly performed by, and without licence *Miss Lindaf-Hageby*, 7415-30, 9730.

CUNNINGHAM, PROFESSOR DOUGLAS :

Snake Poison :

Tested reputed antidotes for, with negative results *Major L. Rogers*, 8161-2.

Theory that immunity can be acquired by swallowing venom tested and disproved by, *Major L. Rogers*, 8202.

CUNYNGHAME, H. H. S., C.B., Asst. Under-Secretary, Home Office, reference *Hon. S. Coleridge*, 10301.

CURARE :

Activity of commercial, varies tremendously in quality *W. E. Dixon*, 18826-7.

Administered intravenously *W. E. Dixon*, 15992-3.

Administered in addition to anaesthetic to prevent reflex movements *G. D. Thane*, 1321-3, 1599-1605, 1600-17.

Administered only during effective anaesthetisation of animal *G. D. Thane*, *J. N. Langley*, *A. D. Waller*, 1705, 15169-78, 18130-7.

Administered to dog without an anaesthetic *Miss Lindaf-Hageby*, 9398-406, 9461-71.

Admission before last Royal Commission as to experiments performed under, *S. F. Smith*, 13054.

All indications of anaesthesia are absent under, *S. F. Smith*, 13084-98, 13316-18, 13498-504, 13519-26.

Animals dosed with, die under anaesthetic *J. F. Langley*, 15365-6.

Chemical constitution of, not yet known, though attempts have been made to discover it *W. E. Dixon*, 18910-11.

CURARE—cont.

- Circumstances during experiment on cat suggesting improper use of, *Miss Lind-af-Hageby*, 9388-97.
- Complete anaesthesia produced by large dose of, *W. E. Dixon*, 18673-6, 18745-51, 19055-6.
- Description of case of poisoning by, *Sir V. Horsley*, 15918-24, 15965.
- Difficulty of obtaining, and ignorance as to its chemical formula *A. R. Cushny*, *W. E. Dixon*, 5003-11, 18752-3, 18785-6.
- Doubts as to effects of, *Sir L. Brunton*, 6918.
- Excreted very rapidly, and hence its effect passes off before that of other anaesthetic administered *W. E. Dixon*, 18687-90.
- Experimenters' preference for, *Miss Lind-af-Hageby*, 4514A-21.
- Experiments requiring use of, not frequent, but important *W. E. Dixon*, 18697-708.
- Experiments should be made on willing human subject with, *Mrs. K. Cook*, 1971, 2089.
- Experiments testing effects of, and resulting in evidence that higher functions of brain are abolished by, *W. E. Dixon*, 18811-17.
- General consensus of opinion is that it is an anaesthetic *D. W. Buxton*, 12559-65.
- Illegal use of, *H. Snow*, 2328-9.
- Imp practicable to insist on attendance of inspectors at all experiments involving use of, *J. N. Langley*, 15367-8.
- Involuntary mechanisms not paralysed by, and possibility of determining effect of, by change in blood pressure *F. Gotch*, 13778-90.
- Nature and action of, *Sir J. Russell*, *E. H. Starling*, 642A-5, 3614-26.
- Nature, and restrictions as to use of, *Mrs. K. Cook*, 1801.
- Necessary to use, in some cases *J. N. Langley*, 15179, 15335-8.
- Necessity of giving continuous anaesthetics with, *J. N. Langley*, 15359-61.
- Never given until anaesthesia well established *E. H. Starling*, 4251-3.
- Never administered with anaesthetics under Certificate *B. E. H. Starling*, 4056-61.
- Never administered without anaesthetics, *Sir R. D. Powell*, 5615-19.
- No danger in using, with another anaesthetic *Sir V. Horsley*, 15913-18.
- No objection to issue of special certificate for use of, *J. N. Langley*, *G. S. Woodhead*, 15362-4, 15576-80.
- No objection to presence of inspector at all experiments involving use of, *Sir V. Horsley*, 16058-9.
- No positive knowledge as to paralysing action of, in large doses *A. R. Cushny*, 4993-5002.
- Not a unique drug, but one of a definite group which in big doses completely anaesthetises *W. E. Dixon*, 18673, 18809-11, 18828-47.
- Not an anaesthetic *Sir J. Russell*, *G. D. Thane*, *E. H. Starling*, 643-5, 1320, 3618, 4115.
- Not an anaesthetic, but pain intensified by, *S. F. Smith*, 13078-82, 13295-302.
- Number of experiments referred to in *Journal of Physiology* in which it was used *S. F. Smith*, 13068-77.
- Object and use of, *Sir R. D. Powell*, 5774-8.
- Paralyses the motor nerves before the sensory, and hence advisability of legal restrictions concerning use of, *W. E. Dixon*, 18905-7.
- Precautions adopted with administration of, *J. N. Langley*, 15170-8.
- Prohibition of, desirable *H. Snow*, *Miss Lind-af-Hageby*, *Hon. S. Coleridge*, 2229-30, 2235, 2236-43, 2357-75, 2392-4, 9246-50, 11575.
- Prohibition of, would be serious impediment to certain lines of research, but there might be special certificate for use of, *F. Gotch*, 13874-7.
- Proportion of experiments reported in *Journal of Physiology* in which curare was used *S. F. Smith*, 13290-4.
- Sensory impressions not intensified by use of, *E. H. Starling*, 4111.
- Suggestion that morphia as well as, was used in experiment on dog *Miss Lind-af-Hageby*, 9500-12.
- Use of, alone forbidden by Act *G. D. Thane*, 1320.
- Use of, as anaesthetic deprecated, but employment

CURARE—cont.

- of, with anaesthetics useful *Sir L. Brunton*, 7077-81.
- Use of, deprecated *Mrs. K. Cook*, *Miss A. Kenealy*, *H. Morris*, *Hon. S. Coleridge*, 1921, 6445-59, 8018-19, 11053-70.
- Use of, does not prevent knowledge of degree of anaesthesia attained *E. H. Starling*, *F. Gotch*, 4054-5, 13593-610.
- as to Use of, previous to existing law *Sir T. L. Brunton*, 6839-43.
- Used for certain blood pressure experiments *F. Gotch*, 13607-8.
- Used rarely, and apparatus employed for administering chloroform in case of its use *A. R. Cushny*, *E. A. Schäfer*, *Sir V. Horsley*, 5003-11, 10085-7, 16054.
- CUSHING, PROFESSOR HARVEY, Johns Hopkins College, Baltimore:
- Students' courses of operative surgery on animals instituted by, *E. H. Starling*, *Sir V. Horsley*, *W. Osler*, 3989-90, 15638-40, 16587, 16591-4.
- Views held by, as regards necessity of students acquiring surgical technique by operating on animals *W. Osler*, 16592-4.
- CUSHNY, A. R., M.A., M.D., Professor of Pharmacology and Materia Medica in University College, London, Committee of Medical and Scientific Societies 4640A-5275.
- Abdominal organs and intestines of men and animals not sensitive to pain 4988-9, 5058-67.
- America:
- Experiments in, only restricted by law against cruelty to animals, and anti-vivisection movement in, 5100-14.
- Large amount of unauthorised drug taking in, and also considerable camp of Christian Scientists 5248.
- Anaesthesia:
- "Incomplete," no possibility of during experiments 5175-8.
- Length of time it can be maintained in operations on men 5255-8.
- Local, means entire loss of local sensation of pain 5132-37.
- Sensation goes before motion under, 5176-8.
- Anaesthetics:
- and Analgesics, distinction between, 5270-4.
- Certain experiments for pharmacological research cannot be satisfactorily performed under, 4847-8.
- Efficient administration of, in experiments, and nature of those used 5039-57.
- Local, use of, always extending 4980-6.
- Paraldehyd largely used for experiments on rabbits 5184-7.
- Use of, prevents all pain in operations 5194-5.
- Antiseptics introduced as result of experiments on animals 4819.
- Certificates, amendment in method of applying for, desirable 5142-6.
- as to Choice of animals for experimental purposes 4820-6.
- Curare:
- Little used, and difficult to obtain 5003-11.
- No positive knowledge as to paralysing action of, in large doses 4998-5002.
- Demonstration experiments:
- as Advocated, would be performed under anaesthetics and animal would be subsequently killed 4831-7.
- Carried out in majority of large medical schools 5164-8.
- Necessity of, 4827-30, 4920-30, 4953-5, 5159-60.
- Dogs:
- Blood drawn from, for examination after doses of lead 4693-702.
- Much less liable to suffer from septic infection than other animals 4824-6.

CUSHNY, A. R., M.A., M.D.—*cont.*Dogs—*cont.*

Preferable to cats for experimental purposes and no difficulty in maintaining anaesthesia 5086-7.

Show no signs of apprehension in laboratories 5096-9.

Drugs:

Absorption and excretion of, should be ascertained before inclusion of, in therapeutic medicine 4826.

Action and active principles of, have only been investigated by experiments on animals 4993A-7.

Adrenalin discovered by means of experiments, and great value of, 4808.

African arrow poison, examination of its effects on animals led to discovery of valuable cardiac remedy 4787-9.

Alcohol, large number of experiments with regard to action of, 5225-8.

Aldehyd, nature and action of, 4735-6.

Amount of, tolerated is more or less in proportion to bulk of body to which it is applied 5012-16.

Amyl Nitrate:

Discovery of, 4894-902.

Experiments as to effect of, on heart 4799.

Antipyretic action of certain, discovered incidentally from experiments with object of rendering animal tissues antiseptic by means of those drugs 4772-7.

Antipyretics and analgesics introduced by means of experiments on animals 4767-70.

Antipyretics, part played by clinical observation in discovery of, 4782-6.

Antipyrin has replaced quinin as an anaesthetic 4879-80.

Caffein, no medicinal use of diuretics established before introduction of, 4813, 4893.

Care required as to inferences to be drawn from effect of, on animals 4906-89.

Chloral, its valuable soporific powers discovered 3222-3, 4712-29.

Cocaine:

Anaesthetising powers of, first discovered by experiments on animals 4751.

Danger of using, as an anaesthetic owing to difficulty of sterilising 4751-3.

Date of its introduction as a local anaesthetic 4867-9.

Past research into physiological action of cocaine and similar alkaloids 4869-72.

Search for substitute for, led to discovery of the orthoforms 4753-9, 4759-61.

Curare, *see that title above.*

Digitalis:

Action of, on heart discovered by experiments on animals 4652-67.

Action of, much more complicated than was believed 4860-2.

Clinical observation of its action would not have led to important results attained by experiments 4653-4, 4665-7.

Experiments demonstrating true effect of, 5115-8.

of Great value as a cardiac tonic in pneumonia 4850-8.

Introduced in 1785 as treatment for dropsy 4652.

Malpractice of formerly administering, in case of apoplexy 4972-6.

Effect of, on man can generally be inferred from their effects on animals 5028-33, 5082-5.

Emetics discovered entirely by means of experiments 4819.

Ergot:

Clinical opinion divided with regard to use of, in midwifery cases 5203-4.

Experiments with regard to use of, 5203-7.

Inferior nature of certain preparations 5207-9.

Its use, and as to attempts to isolate its essential factor in purer form 4819.

CUSHNY, A. R., M.A., M.D.—*cont.*Drugs—*cont.*

Few, have been discovered that are actual cures for disease 5230.

General rule that pharmacological action is dependent on chemical composition must be tested in each case 4745.

German and American firms have introduced an enormous number of new, 5246-7.

Great advances made in knowledge of effect of, on vital organs by means of experiments on animals 4651.

Inclusion of, in British Pharmacopoeia 5231-35.

Increased accuracy in therapeutic use of, results from experiments on animals 4710-11.

Introduction of new, and resuscitation of old, by means of experiments 5119-21.

Main object of pharmacology is to find out effects of, 5263-9.

Many ways of applying, and impossibility of introducing new, without experiments 4839-47.

Mercury, its specific action, 5259-63.

Narcotics, initial effect of, is to produce sleep, and larger doses produce anaesthesia 5181-2.

Necessity for testing principles of new, by experiments 5034-8, 5068-74.

Operation of, has been hitherto a matter of clinical observation 4549.

as to Pain caused by pharmacological experiments 5125-8.

Physostigmin, action of, demonstrated by experiments, and its consequent introduction into ophthalmic therapeutics 4787-96.

Pilocarpin, introduced by other than experimental methods 4819.

as to Possibility of testing, on human beings 5149, 5241-5.

Purgatives, animal experimentation has added very little to knowledge of effects of, 4550.

Quinin:

Before 1870, the only reliable antipyretic 4770, 4990-2.

Specific action of, 5259-63.

Salicylic Acid:

Observation of its antipyretic action before 1875 4777-82.

Only used as an antipyretic in rheumatic fever 4885-6.

Specific action of, 5259-63.

Scientific knowledge of action of, differs from clinical knowledge 4965-70.

Some, have a composite action 5210-12.

Soporifics:

All, are more or less dangerous 4866.

Are mainly alcohol derivatives 4740.

Discovered by experiments which could not have been performed on human beings 4787-50.

Standardisation of, must in certain cases depend on animal experiments 4838.

Sufficient resemblance between human beings and animals to make experiments as to effect of, of value in pharmacology 4939-43.

Sulphonal, discovery of its soporific powers 4730-1.

Theocin affects dogs and rabbits differently 5079-81.

Trional and tetronal, their therapeutic powers discovered by means of experiments 4733.

Urethane:

Anaesthetic and hypnotic influence of, 4741-2, 5186-7.

Large mortality of animals from anaesthetic doses of, 4743-5.

Urotropin introduced into therapeutics in 1894, 4813-16.

Useless, sifted out from Pharmacopoeia by means of experiments 4819.

Vascular contractors, all have been discovered by means of experiments on animals 4810-12.

Vascular dilators, all have been discovered by means of experiments on animals 4804.

CUSHNY, A. R., M.A., M.D.—*cont.*

Evidence referred to, statement as to absence of pain in experiments, disputed *Sir G. Kekewich*, 20428-33.

Experimental, inquiry leads to elimination of erroneous drug treatment 4689-707.

Experimental research in therapeutics gives clear definition of use of drugs 4665.

Experiments:

as to Hypnotic properties of various chemical bodies 4737-40.

Nature of, with object of discovering action of digitalis 4669-82, 4683-88.

for Testing anæsthetic properties of drugs 4763-7.

With view of noting anti-pyretic effects of certain drugs and success of same 4771-2.

See also under *DRUGS* above.

Experiments performed by:

on Cats, Dogs, and Rabbits, to ascertain contraction of uterus resulting from drug injections 5172-3, 5188-201.

Pain and needless suffering never inflicted 4931-8.

See also under *DRUGS* above.

Greater reliability of inference can be drawn from experiments on animals closest to man's status 5147-8.

Hemoptysis, opium substituted for lead in treatment of, 4863-5.

Licence held by, 4642.

Licence and certificate required for pharmacological experiments 4763-7, 5250-51.

Morphia an anæsthetic 5150-3.

Older remedies modified by chemical manipulations and advocated in medicine after preliminary trials on animals 4817-8.

Pneumonia:

Digitalis at one time erroneously used in treatment of, 5214-6.

Nature of heart affection in, 4850-8, as to Toxin treatment of, 5220-1.

Pharmacology and physiology not taught in Nottingham University College, 5165-6.

Poison remedies discovered by experimental means, 4819.

Present outcry against vivisection arises from misconception 4957-62.

Results of experiments can generally be accurately applied to human beings 5170-1.

Rheumatism caused probably by a micro-organism 4887-8.

Teaching experience of, 5017-19.

Text Book of Pharmacology and Therapeutics by, expresses views which contradict evidence *Miss Lind-af-Hageby*, 7317-21, 7342-9.

Vivisection Act, 1876, satisfactory except as regards method of obtaining certificates 4945-7.

Reference, *F. Taylor*, 5600.

CUVIER, experiments by, reference, *Miss A. Kenealy*, 5288.

DANGEROUS TRADES COMMITTEE, evidence given before, as to poisonous effect of West African Boxwood *W. E. Dixon*, 18729-30.

DARWIN, CHARLES, *The late*, evidence before Vivisection Commission, 1875 *E. H. Starling*, *C. J. Martin*, 3442, 3776-7, 11824.

Reference *J. D. Graham*, 5887.

DASTRE, M., reference to views of, *Miss Lind-af-Hageby*, 7342.

DAWSON, DR. PERCY, views as to necessity of distinguishing between diastolic and systolic blood pressure *Miss A. Kenealy*, 5316-21.

DAVIS, Messrs. Parke and, see PARKE AND DAVIS, MESSRS.

DEAN, MR., Assistant Surgeon to London Hospital, 1892, alleged cruelty in operations on monkeys and dogs performed by, *Mrs. K. Cook*, 1796.

DEARDEN, J. A., letter to, re incomplete anæsthesia, *Hon. S. Coleridge*, 10993.

351.

DELÉPINE, PROFESSOR:

Public Health Laboratory at Manchester superintended by, *J. Lorrain Smith*, 18179.

Reference, *S. Stockman*, 3161-3.

DENMARK, tuberculin test exploited in, and consequent reputation of Danish butter *S. Stockman*, 3204-18.

DESWATINES, DR., reference *Miss Lind-af-Hageby*, 9682.

DEUTSCHMANN, knowledge of eye disease, keratitis punctata, discovered by means of experiments by, *Sir H. R. Swanzy*, 9802-4.

DIABETES:

Extirpation of pancreas produces fatal, *E. H. Starling*, 3442-5, 4124.

Method of producing, in dogs, and resulting symptoms, *E. H. Starling*, 4042-8.

Whole pathology of, not yet known, but experiments have thrown much light on, *Sir L. Brunton*, 7124-6.

DIABETIC COMA, treatment of, is direct outcome of experiments, *E. H. Starling*, 3813-17.

DIGBY, SIR K., proposal by, that manner of recording experiments should form subject of conference, *W. P. Byrne*, 240.

DIPHTHERIA:

Anti-toxin, see under *SERUM THERAPY*.

Bacillus differentiated from other diphtheroid bacilli by means of experiments, *W. H. Power*, 4611-12.

Bacilli found in milk, *W. H. Power*, 4619.

Cambridge outbreak controlled and stamped out by careful methods and use of anti-toxin, *G. S. Woodhead*, 15528-9.

Cat's eyes inoculated with bacillus of, *Mrs. K. Cook*, 1919.

Communicability of, between men and animals doubted, *S. F. Smith*, 1336-43.

Conditions fostering spread of, *Sir R. D. Powell*, 5747-50.

Cow found to be suffering from, *W. H. Power*, 4474-6.

Diagnosis of:

Area enlarged by modern bacillary test, *G. S. Woodhead*, 15226-8.

Bacillus can be recognised by cultural method and without recourse to experiments, *J. R. Bradford*, 17714-16.

Bacteriological, gives greater certainty and effect upon statistics of case mortality, *W. H. Power*, *C. J. Martin*, *Sir J. F. Moulton*, 4613-16, 12257-70, 12715-16.

by Bacteriological methods allows slight chance of error, *C. J. Martin*, 12358-61.

Bacteriological, probably increases cases notified and affects statistics *W. H. Power*, 4613-16.

Based on experimental inoculation of animals with suspected organism *J. R. Bradford*, 17636-7.

Carried out by culture but guinea pigs inoculated in doubtful cases *J. Lorrain Smith*, 18187, 18196-201, 18210-13.

in Guinea pig after inoculation possible within 48 hours *J. Lorrain Smith* 18449-51.

More accurate now than hitherto, *Sir R. D. Powell*, 5747-50.

Previous to use of antitoxin clinical evidence was only method *W. H. Power*, 4398-402.

General mortality, as to non-decrease of, *Sir R. D. Powell*, *F. Taylor*, 5645-88, 5654-5.

Klebs Loeffler bacillus is cause of, *G. S. Woodhead*, 15512-18.

Klebs Loeffler bacillus not origin of, *S. F. Smith*, *G. G. Bantock*, 13229-31, 13436-42, 14545-6, 14550, 14660-2, 14767-9.

May be transmitted in milk, but unsanitary conditions less concerned with dissemination of, than in case of other diseases *W. H. Power*, 4392-4.

Mortality from, greater outside Metropolitan Asylums Board Hospitals, *W. H. Power*, 4387-91.

K

DIPHTHERIA—cont.

Mortality from, might be abolished by use of antitoxin in first stages of, *C. J. Martin*, 11763, 11766-91.

Mortality statistics fifteen years ago in Metropolitan Asylums Board hospitals compared with those of recent years *W. H. Power*, 4384-5.

No evidence that fluid surrounding bacilli is cause of, but bacillus not found in many cases of clinical, *G. G. Bantock*, 14644-59.

Observations of children in public elementary schools has led to detection of cases, *W. H. Power*, 4395-9.

Pathology of, known, and serious symptoms of, averted by use of antitoxin, *Sir R. D. Powell*, 5705-14.

Prevalence of, in some parts of the country may be due to neglect of antitoxin, *Sir R. D. Powell*, 5716-18.

Probability of varieties of, *S. F. Smith*, 13336-43.

Pneumonia often cause of death in patients suffering from, *F. Taylor*, 5829-30, 5833.

Reduction of case mortality in, undoubtedly due to use of antitoxin, *Sir R. D. Powell*, *F. Taylor*, 5641-2, 5643.

Reduction of death rate in Metropolitan Asylums Board hospitals:

Coincident with use of antitoxin, *W. H. Power*, 4541-50.

Suggested reasons for non-corresponding diminution in country generally, *W. H. Power*, 4541-50.

as to Sources of infection, *G. G. Bantock*, 14545-6.

Statistics:

Fallacies underlying, *S. F. Smith*, 13235-59.

Necessary conditions before reliable, can be obtained, *S. F. Smith*, 13244.

Showing decrease of mortality from, due to antitoxin treatment, *F. Taylor*, 5588-93.

Tables showing the case mortality from, before and after employment of the antitoxin treatment, *C. J. Martin*, 11711.

Testing of, in municipal laboratories *G. D. Thane*, 346-7.

Toxic, but not local symptoms of, can be produced in animals *G. S. Woodhead*, 15506-11.

See also Diphtheria Anti-toxin under SERUM THERAPY.

DISTEMPER:

Experiments for purpose of investigating, justifiable *F. Hobday*, 16358-65.

Experiments in connection with investigation of *G. D. Thane*, 1204-5.

Paralysis a symptom of, in young dogs, *S. Stockman*, 3135-6.

Possible effect on rabbit if inoculated with canine, *S. Stockman*, 3373-8.

Symptoms of, in dogs, *G. D. Thane*, 1674-6.

DISEASES OF WOMEN, see PUERPERAL FEVER.

DIVING-BELL, conditions attending work in, lead to "caisson" disease, *G. D. Thane*, 373-6.

DIXON, W. E., M.A., M.D., Professor of Materia Medica and Pharmacology, King's College, London; Therapeutical Section of the Royal Society of Medicine, 18646-19191.

Advanced students and qualified licensees witness experiments, 19087-94.

Advanced students should be permitted to acquire manual dexterity for surgical operations by experimenting on animals under supervision, 19029, 19034-8.

All experiments carried out in class room of, have been painless 19099-104.

Anæsthesia:

Blood pressure gauge of, not used in operations on human beings 18789-92.

Reflex actions are unconscious 18794-801.

Reflexes and blood pressure are chief gauges for testing, in animals, 18787-9.

Small doses of anæsthetic necessary for continuation of, when once produced, 18668.

Tested by corneal reflex of patient 18669.

DIXON, W. E., M.A., M.D.—cont.

Anæsthetics:

Chloroform:

Blood pressure just as delicate an indication of action of, as reflexes 18690-3.

Sensory nerve paralysed before motor nerves by, 18897-900.

Simple reflexes possible under, 18997-19000.

Local:

Anæsthesia produced by injection of, into spinal cord 18950, 18958-63.

Dangers in use of certain, 18964-6.

Investigations into relative action of new, 18948-54.

Method of injecting into spinal cord is quite painless, 19073-6.

Method of administering to animals and care taken in anæsthetising dogs 18677-9.

Mode of determining effect of, in animals 18955-6.

Narcotics and hypnotics administered in large doses are complete, 18652-3.

No essential difference between narcotics, hypnotics, and, 18652-4.

Renewal of, during experiment if necessary 18679-85.

Sensory cells paralysed before motor cells by, 18672.

Skilled anæsthetist unnecessary to assist in administration of, for experiments 18687.

Animals killed after experiments by blowing air into a vein 18734-9, 19062-3.

Arteriosclerosis:

Importance of experiments in connection with, 18933-4.

Nicotin action may produce, 18935-8.

Association for the Advancement of Medicine by Research is highly qualified to give advice as to issue of licences 19153.

Bacterial poisons act differently on different animals 18882-6.

Certificates:

Abolition of, desirable in interests of all concerned 19096-7, 19116-26.

Delay in obtaining fresh, and advisability of substituting a comprehensive licence for, 19020-19025.

Necessity of applying for, even in cases of painless inoculations 19017-19020.

Chloral:

Doses of, for rabbits and for man necessary to produce complete anæsthesia 18654-9.

Not often used as anæsthetic but method of administering, when employed, 18682.

Rarely used as an anæsthetic for man, 18654-7.

Used generally as an anæsthetic for animals, 18658.

Chloroform, see under ANÆSTHETICS above.

Cocaine:

Action of, 18901.

Action of, on cerebral hemispheres varies in different animals 18881.

Administered subcutaneously and depth of local anæsthesia produced 19067-70.

Would be an effective local anæsthetic in operation of castration 19071-2.

Curare:

Activity of commercial, varies tremendously in quality 18826-7.

Administered intravenously 18992-3.

Chemical constitution of, not yet known, though attempts have been made to discover it 18910-11.

Complete anæsthesia produced by large dose of, 18673-6, 18745-51, 19055-6.

Difficulty of obtaining, and ignorance as to its chemical formula 18752-3, 18785-6.

Excreted very rapidly, and hence its effect passes off before that of other anæsthetic administered 18687-90.

Experiments requiring use of, not frequent, but important 18697-90.

DIXON, W. E., M.A., M.D.—*cont.*Curare—*cont.*

- First paralyses the motor nerve endings and then the nerve cells, so that large dose is a complete anæsthetic, 18673-6.
- Not a unique drug, but one of a definite group which in big doses completely anæsthetises 18673, 18809-11, 18828-47.
- Paralyses the motor nerves before the sensory, and hence advisability of legal restrictions concerning the use of, 18905-7.
- Personally taken and effects noted 18819-25.

Demonstration Experiments:

- Familiarity with, does not tend to demoralise students 18732, 19077, 19081-3.
- Necessity of, for proper physiological knowledge and no harmful effects produced by, 18742-4, 18918-23.

Dogs, no difficulty in anæsthetising, 18732.

Drugs:

- Anæsthetics, *see that title above.*
- Animals generally used for standardisation of, 18995.
- Do not differ in their action on organs of animals and man except in case of brain 18881.
- Certain, can only be standardised by physiological method 18770.
- Chemical processes cannot detect the active principle of certain, 18778-83.
- Contradictory opinions as to action of, resulting from mere clinical experience 18713-15.
- Narcotics, large series which act on brain in same way and their differences are determined by differences in rate of absorption and excretion 18652-4.
- Physiological standardisation of, absolutely necessary, and experiments for this purpose are painless 18976, 18979-91, 18994, 19105-112.
- Varying opinions as to action of, resulting from mere clinical experience 18849-57.
- See also particular names of Drugs.*

Ergot, variations in quality and action, necessitate physiological standardisation, 18770-6.

Experiments performed by:

- Ergot, action tested, *A. R. Cushny*, 5203-4.
- for Investigating action of cardiac tonics 18942-7.
- for Investigating action of drugs on kidneys 18968-74.
- for Testing effects of curare and resulting in evidence that higher functions of brain are abolished by large doses 18811-17.
- Proceedings in connection with, *Hon. S. Coleridge*, 10370-81.
- with Mr. Brodie, and cruelty involved *Hon. S. Coleridge*, 11562-9.
- With regard to effect of drugs on blood clotting 18976-8.
- Wrongly alleged to have been conducted upon unanæsthetised animals 19012-15.

Has never witnessed a painful experiment upon an animal 19032-3.

Inspection is superfluous from vivisectioner's point of view, but it gives the public a sense of security 19165, 19167-72, 19180-6.

Inspector's visit and nature of his duties 19163-66.

Licences:

- Delay in obtaining, for research 19016.
- General Medical Council as now constituted would not be a suitable body to control issue of, 19152.
- Issue of, should be in hands of some responsible body rather than Home Office 19098.
- Medical qualifications need not be only guarantee for obtaining, 19626-9.
- as to Unsuitable persons applying for assistance to obtain, 19172-9.

Lymphocytosis, research showing that dose of pilocarpine produces, 18927-32.

Morphia:

- Absolute protection from pain afforded by, as at present administered 18887.

DIXON, W. E., M.A., M.D.—*cont.*Morphia—*cont.*

- Action of, different to chloroform, but produces similar insensibility to pain 18764-8.
- Action of, similar in all animals 18869-76.
- Claude Bernard's statement as to, mistranslated, and word "sensitive" substituted for "reflex" 18755.
- Dose of, necessary for anæsthesia bears relation to amount of brain substance 19004-11.
- Drugs having similar action to, 18862-4.
- Knowledge of how to properly administer, was unknown till recently 19049-54.
- Large dose of, produces complete anæsthesia 18757-63.
- Motor cells not affected by, and hence combined with hyoscin for operations, 18664-8.
- Not always absorbed, if given by the mouth 18756.
- Reflex test of anæsthesia inapplicable in use of, 18793.
- a Satisfactory anæsthetic if properly administered 19039-46.
- a Specific drug and attacks sensory nerve cells so that distinct reflexes can be obtained under anæsthesia produced by, 18663-7.
- Value of anæsthesia produced by combination of chloroform and, 18672.

Necessity of regulating experimental research by Act of Parliament 19095.

No objection to presence of accredited witnesses during experiments 19085-6.

Royal Society of Medicine, constitution of, and representative of large body of medical opinion 18858-61.

Urethane:

- Administered in large dose is a complete anæsthetic, but unsuitable for man on account of its prolonged action 18653.
- Composition and action of, 18888-91.
- Doses necessary to produce complete anæsthesia 18660.
- Generally used 19029-31.
- Method of administering, is by injection 18681.
- a Useful and reliable anæsthetic 18895-6.

Vivisection Act, 1876:

- Present inspection under, gives real security to public and irregularities cannot occur in licensed places 19157-60.
- Security afforded to public and to vivisectioners by, and necessity of continuing, 19130-9.
- Series of experiments suspended by introduction of, owing to difficulty of obtaining necessary certificates 19130, 19140-4.
- Vivisection practised before introduction of, by irresponsible persons 19145-51.

West African Boxwood:

- Discovery of poison in, effected entirely by experiments on animals, and methods employed 18717-30.
- Experiments showing poisonous effects of inhaling, and precautions suggested 18709-12, 18912-15.
- Experiments for purpose of ascertaining poisonous action of alkaloids in, were not painful 19113-115, 19057-61.

Docs:

- Administration of anæsthetics to, used to be frequently attended by fatal results owing to want of skill and method *F. Hobday*, 16294.
- All animals that are mixed feeders are more suitable for experiments than, *R. J. Cowen*, 19408-9.
- All necessary experiments on, should be conducted under anæsthesia, and morphia should be given to dull pain after recovery from anæsthetic *C. R. J. A. Swan*, 19254-6.
- Alleged cruelty of experiments on, *Mrs. K. Cook*, *Miss A. Kenealy*, *J. W. Graham*, *Hon. S. Coleridge*, 1785-9, 1796, 1798-9, 1913-4, 1910-11, 1914-17, 1919, 5302-21, 5842-4, 5857-60, 5861-71, 6047-8, 10265, 10289-300.
- Anæsthetisation of, impossible for any length of time *J. W. Graham*, *J. Hughes*, *R. J. Cowen*, 5960-9, 17156-8, 17455-62, 17522-8, 19416-18.
- Anæsthetisation of, more difficult than of men *E. H. Starling*, 3481-4.

DOGS—cont.

- Anæsthetisation of, care taken *W. E. Dixon*, 18677-9.
- Anæsthetisation of, no difficulty experienced *A. R. Cushny*, *D. W. Buxton*, *Sir V. Horsley*, *F. Hobday*, *J. R. Bradford*, *A. D. Waller*, *W. E. Dixon*, 5086-93, 12488-500, 15909, 16435-9, 17775-8, 18152-8, 18732.
- Anæsthetising properties of cocaine first tested on, *A. R. Cushny*, 4751.
- Anatomical differences between men and, make results obtained from experiments on, inapplicable to man *R. J. Cowen*, 19371, 19375-82, 19392-3, 19394-402.
- Apprehension in laboratories not shown by, *A. R. Cushny*, 5096-9.
- Bacterial inoculations of, rare *E. H. Starling*, 4174-5.
- Blood drawn from, for examination after doses of lead *A. R. Cushny*, 4693-702.
- Blood of animals suffering from tsetse fly disease, injected into, *Col. D. Bruce*, 14308-11.
- Blood pressure experiments could be performed equally well on rabbits as on, *C. R. J. A. Swan*, 19214-20.
- Breeding of, for experimental purposes objected to *G. D. Thane*, 1440-2.
- Can be kept under chloroform now for several hours, *Sir V. Horsley*, 16318-28.
- Case of graveriatric fistula *G. D. Thane*, 472.
- Case of performing further operation on, already under observation with a fistula *G. D. Thane*, 1551-69.
- Certificates E or EE required for experiments on, *G. D. Thane*, 423.
- Cheapness and ease of procuring, for experiments *R. J. Cowen*, 19403-7.
- Chloroforming of:
- Dangerous effects counteracted by prior administration of atropin *E. A. Schäfer*, 10088.
 - Series of experiments in connection with, and small percentage of deaths *F. Hobday*, 16434-5.
 - Statement as to danger of, not consistent with inspector's experience *Sir J. Russell*, 752.
- Clause in Dogs Act preventing sale of stray, foolish and irrelevant *E. H. Starling*, 3921-33.
- Condition of, after operation not seriously painful and in cases of serious pain killed *Sir J. Russell*, *G. D. Thane*, 552-3, 1209-1215.
- Cross circulation experiments on:
- Anæsthesia insufficient in, morphia alone being given *Col. Lawrie*, *Sir G. Keke-wei*, 16810-21, 16922-5, 16969-74, 20457-62, 20966-1372.
 - Circumstances attending performance of, laboratory assistant's evidence *W. Hall*, 21581-35.
 - Object of, circumstances attending, and contradiction of allegations re cruelty of, *L. E. Shore*, *H. K. Anderson*, *W. H. Gaskell*, 19430-1, 21636-704, 21373-580.
- Curare administered to, without an anæsthetic *Miss Lind-af-Hageby*, 9461-71.
- Curarised to prevent struggles *Miss Lind-af-Hageby*, 9398-406.
- Demonstration experiments before students of a prolonged and agonising nature *J. Hughes*, 17450-1, 17467-73.
- Differences between human and canine organs make experiments on, useless *J. Hughes*, 17158, 17359-60.
- Difficulty in housing large animals in towns makes it necessary to use, *Sir J. Russell*, 619.
- Digestive processes of absorption and secretion could be investigated in pigs instead of, *C. R. J. A. Swan*, 19231-4.
- Digitalis, action tested on, *A. R. Cushny*, 4657.
- Disapproval of destruction of superfluous, *J. Hughes*, 17491-95a.
- Disapproval of experiments on, for purpose of investigating diseases of, *J. Hughes*, 17484-6.
- Diseases of, see DISTEMPER and MALIGNANT JAUNDICE.
- Do not show signs of terror in anticipation of chloroform *F. Hobday*, 16334-6.
- Dr. Bain's experiment on gall bladder of, *G. D. Thane*, 1650-69.

DOGS—cont.

- Dr. Rose Bradford's experiments on ears of, were performed under anæsthetics, and did not give rise to great pain *J. R. Bradford*, 17724-36.
- Dr. Rose Bradford's experiments on kidneys of, misrepresented as painful *J. R. Bradford*, 17689-98, 17737-44, 17752-61.
- Dr. Crile's experiments on:
- Anæsthesia maintained throughout, and hence unjustifiably described as "terrible" *Sir V. Horsley*, 15893-7, 15975-6, 15977-80, 16220-2.
 - Conclusions arrived at from, and their applicability to man, *Sir V. Horsley*, 15857-60, 16202-3.
 - Description of, *Hon. S. Coleridge*, 19979-80.
 - Reported as painless by Home Office *Hon. S. Coleridge*, 10289-300.
 - Reference, *H. Morris*, 8021-4.
- Dr. Watson's experiments in dropping, from heights *Sir V. Horsley*, 16225-9.
- Doubts as to complete anæsthesia of, for long operations *Sir T. Stoker*, 862-8, 891-2.
- "Drowning" experiments:
- Number of, *E. A. Schäfer*, 10194-201.
 - Object of, now attained and repetition unnecessary *E. H. Starling*, 4078-81.
 - Strongly disapproved of, *J. Hughes*, 17498-504.
 - Undertaken with view to determine exact effect of death by, and as to best method of resuscitation, *Sir J. Russell*, *G. D. Thane*, *E. H. Starling*, *E. A. Schäfer*, 739-40, 1287-99, 1749-51, 3569-84, 10104-5.
- Drowning of superfluous, as practised in Edinburgh disapproved of, *J. Hughes*, 17502-3.
- Early experiments on, with reference to surgical treatment of severed nerves *J. N. Langley*, 15140-6.
- Eggs of tapeworms fed to, for purpose of observing development *S. Stockman*, 2444.
- Error of judgment in diagnosing as cancer tumour in, *H. Snow*, 2127-34.
- Excision of thyroid gland in, followed by tetany *G. D. Thane*, 1233.
- Exemption of, from experiment would not satisfy those who advocate total abolition of vivisection *J. W. Graham*, 6157-61.
- Exemption of, from experiments desired *J. Hughes*, *R. J. Cowen*, 17135-54, 17233-4, 17250-1, 17467-8, 19199-201, 19426-7.
- Experiment on salivary gland of *G. D. Thane*, 1499-1515.
- Experiments causing pain never conducted on un-anæsthetised, *A. R. Cushny*, 5123-31.
- Experiments on, at Sir Victor Horsley's laboratory under complete anæsthesia *E. H. Starling*, 4142-52.
- Experiments upon brains of, *F. Gotch*, 13569-70.
- Experiments on eye of, with view to testing anæsthetic properties of cocaine, *A. R. Cushny*, 4873-6.
- Experiments on, justifiable for sake of discovering remedy for distemper *J. Hughes*, *C. R. J. A. Swan*, 17487-90, 19291-7.
- Experiments on, justifiable if same can be proved to be of direct value to humanity *C. R. J. A. Swan*, 19289-90.
- Experiments on, justifiable provided there is no suffering, *C. R. J. A. Swan*, 19282-5.
- Experiments on kidneys of, objected to *C. R. J. A. Swan*, 19245.
- Experiments on, not sanctioned which could be done on other available animals *G. D. Thane*, 1197-1205.
- Experiments on, regrettable *W. Osler*, 16786.
- Experiments performed on, could in all cases have been performed on other animals *R. J. Cowen*, 19384-5.
- Experiments performed on, under morphia and insufficiency of dose to secure complete anæsthesia *Col. E. Lawrie*, 16869-85, 20986-21001.
- Evidence of Professor Pritchard before previous Vivisection Commission as to chloroforming, *Sir J. Russell*, 697.
- Fistulas in, would cause discomfort but not pain, *E. H. Starling*, 3762-7.
- Frequency of experiments on, at Edinburgh Veterinary College, *Sir J. Russell*, 754-5.

Dogs—cont.

- How obtained, by licensee, *Sir J. Russell*, 667-9.
 Illegal use of, for second experiment *Mrs. K. Cook*, 2014-18.
 In operations, as a rule, fastened to operating table *F. Hobday*, 16340-6.
 Indications of suffering in, *Sir J. Russell*, 715-19.
 Indispensable for certain important experiments, *G. D. Thane*, *Sir J. Russell*, *E. H. Starling*, *A. R. Cushny*, *J. N. Langley*, *Sir V. Horsley*, *G. S. Woodhead*, *J. R. Bradford*, 425-9, 603, 3445, 4039-40, 4824, 4234-6, 15180-2, 15942-3, 17660-5, 15582, 17703-8.
 Injections of chloral in, for purpose of discovering its soporific action *A. R. Cushny*, 4713.
 Investigation of canine diseases may require experiments on, but other means preferred *C. R. J. A. Swan*, 19353-63.
 Irregular heart action of, makes it dangerous to chloroform, *Sir T. Stoker*, 813-14, 836, 1039.
 Kidneys of, removed by *Simon of Heidelberg* previous to performing human operation *H. Morris*, 7786-8.
 Knowledge acquired of digestive processes by experiments on, could have been obtained by syphonage *C. R. J. A. Swan*, 19221-30.
 Lethal chamber is best means of destroying, *J. Hughes*, 17604-20.
 List of operative experiments on, *G. D. Thane*, 1232-3.
 Medical petition against vivisection of, and signatures obtained *J. Hughes*, 17186-216.
 Members of Parliament pledged to support Bill to prevent vivisection of, *J. Hughes*, 17212.
 Method of anaesthetising, and apparatus employed *G. D. Thane*, *E. H. Starling*, 1230-1, 3585-8.
 Misrepresentations of account of experiment on gasserian ganglion of, *E. H. Starling*, 3662-6, 4132-9.
 Morally wrong to chastise, unnecessarily *J. Hughes*, 17365-8.
 Much less liable to suffer from septic infection than other animals *A. R. Cushny*, 4824-6.
 Muzzling apparatus not used in operations on, *F. Hobday*, 16476-80.
 Nature of experiments at University College in 1902 on, *E. H. Starling*, 3470.
 No doubts as to possibility of anaesthetising, *C. R. J. A. Swan*, 19281.
 No evidence that sufferings of, under chloroform greater than those of other animals, *G. D. Thane*, 1222-28.
 No foundation for statement that stray, are procured for vivisection purposes, *Sir J. Russell*, 676-80.
 No knowledge of alleged cruelty to, at Wellcome Laboratory, Khartum *G. D. Thane*, 1306-10.
 Not less liable to succumb to effects of anaesthetics than other animals *Sir J. Russell*, *Sir L. Brunton*, 638, 7179-85.
 No reason to disbelieve in ill treatment of, in physiological laboratories *C. R. J. A. Swan*, 19286-7.
 Number of experiments on, *E. H. Starling*, 4033-4.
 Objection to experiments on, mainly based on sentiment *C. R. J. A. Swan*, 19264-7.
 Objection to experiments on, met by guarantee of anaesthesia and consequent painlessness of operation *C. R. J. A. Swan*, 19262-3, 19326-9.
 Other animals should be substituted for, in experiments whenever possible *C. R. J. A. Swan*, 19204-6, 19256-8.
 Pain anticipated by, instance of, *C. R. J. A. Swan*, 19236-45, 19312-16.
 Painless vivisection of, impossible because of difficulty of anaesthetising, *J. Hughes*, 17600-3.
 Paralysis a symptom of distemper in young, *S. Stockman*, 3135-6.
 Petition opposing vivisection of, and signatures received *J. Hughes*, 17166.
 Police in Edinburgh, their practice with regard to stray, *Sir J. Russell*, 725-7.
 Police may not sell stray, for vivisection purposes *Sir J. Russell*, *G. D. Thane*, 670, 1752-4.
 Possibility of using fox instead of, *G. D. Thane*, 1428-30.
 Preferable to cats for experimental purposes *A. R. Cushny*, 5086-93.
 Purchase of, for laboratory purposes *G. D. Thane*, *E. H. Starling*, 1421-3, 3519-22.

Dogs—cont.

- Prohibition of experiments on, would seriously hinder progress of science *E. H. Starling*, *Sir L. Brunton*, *Sir R. D. Powell*, *H. Morris*, *Sir V. Horsley*, 3479, 3966-9, 4035-6, 7066-71, 5610-11, 7810-11, 15808-11.
 Quarantine of, for precaution against rabies *S. Stockman*, 2868.
 Relative development of various senses in, *Sir J. Russell*, 741.
 Report as to grafting of kidney on blood vessels in neck of, *Sir J. Russell*, 685-6.
 Selected for experiments on account of their docility and obedience *J. Hughes*, 17395-438, 17584.
 Sensitiveness of, makes it desirable to conduct experiments on, with great reserve *Sir T. Stoker*, 807-8.
 Spinal cord of, sensitive to pain *Miss Lind-of-Hageby*, 9563-84.
 Stolen, prevention of their sale to laboratories a question for police *G. D. Thane*, 1435-8.
 Strapping down of, in operations necessary to maintain position *Sir J. Russell*, *D. W. Buxton*, 640-2, 12651-7.
 Stray, might be utilised for laboratory purposes instead of being destroyed in lethal chamber *G. D. Thane*, 1763-4.
 Students could be taught rise and fall of blood pressure by aid of diagrams and without recourse to experiments on, *C. R. J. A. Swan*, 19214-15.
 Suggestion that curare as well as morphia was used in experiments on, *Miss Lind-of-Hageby*, 9500-12.
 Suggestion that stolen, are used for experiments *C. R. J. A. Swan*, 19347-9.
 Suggestion to breed, for laboratory purposes *Sir J. Russell*, 674-6.
 Susceptibility of, to pain makes it desirable to minimise experiments on them *Sir J. Russell*, 607.
 Symptoms of distemper in, *G. D. Thane*, 1674-6.
 "Terrible increase of experiments on, during past three years," and reasons for statement *J. Hughes*, 17544-64.
 Terror of, in operating room *Sir T. Stoker*, 1048.
 Unnecessary to test digestive processes by experiments on, *C. R. J. A. Swan*, 19317-25.
 Unsuitability of, for experiments proved by action of different drugs upon, *R. J. Cowen*, 19410-15.
 Use of, for experimental purposes, regretted on grounds of sentiment *W. Osler*, 16638-40.
 Vivisection of, whether with or without anaesthetics unjustifiable *J. Hughes*, 17128-33, 17167, 17275-7, 17570-4.

DOUGHERTY, J. B., reference *Hon. S. Coleridge*, 10490.

DOUGLAS, RIGHT HON. A. AKERS, late Home Secretary:
 Memorandum by, as to Professor Schäfer's drowning experiments *G. D. Thane*, 1751.
 Parliamentary question re number of experiments performed under licence alone and under Certificate *B. Hon. S. Coleridge*, 10560.
 Refusal of certificate by, involving starvation experiments *E. H. Starling*, 3949-51.

Drugs:

- Absorption and excretion of, should be ascertained before use in therapeutics *A. R. Cushny*, 4826.
 Action and active principles of, have only been investigated by experiments on animals *A. R. Cushny*, *Sir R. D. Powell*, 4993A-7, 5621-4.
 Action of, can be accurately ascertained by homeopathic methods *G. H. Burford*, 9085-9.
 Action of, on animals gives suggestion for use of, on men, but care required in drawing inferences *A. R. Cushny*, *Sir L. Brunton*, 4906-19, 5028-33, 5082-5, 7162-7.
 Action of, on organs of men and animals not different except in case of brain *W. E. Dixon*, 18881.
 Action of, should be impressed upon students by demonstration experiments *Sir V. Horsley*, 15630-1.
 Advance in use of, due to experiments on animals *Sir L. Brunton*, 6925-35.
 Alcohol:
 Consensus of medical opinion as regards non dietetic value of, *Sir V. Horsley*, 15867.

Drugs—cont.

Alcohol—cont.

- Large number of experiments with regard to use of, *A. R. Cushny*, 5225-8.
- All experiments with new, should be made on dogs rather than upon man *Sir V. Horsley*, 15653.
- Amount of, tolerated is more or less in proportion to bulk of body *A. R. Cushny*, 5012-16.
- Anæsthetics, *see that title*.
- Animal experimentation contradictory, *S. F. Smith*, 13099-13107.
- Antipyretics, part played by clinical observation in discovery of, *A. R. Cushny*, 4782-6.
- Arsenic, horses dosed with, as remedy for nagana or tsetse fly disease *Col. D. Bruce*, 14318.
- Atoxyl, use of, as remedy for nagana or tsetse fly disease, *Col. D. Bruce*, 14312-14.
- Belladonna, homeopathic investigation of, 8922-3.
- Chemical processes cannot detect the active principle of certain, *W. E. Dixon*, 18778-83.
- Cholin, chemical test of, might be substituted for physiological test *Miss Lind-af-Hageby*, 7467-76.

Cocaine:

- Action of, *W. E. Dixon*, 18901.
- Action of, on cerebral hemispheres varies in different animals *W. E. Dixon*, 18881.
- See also under Local Anæsthetics.*
- Colchicum, homeopathic investigation of, and knowledge derived from, *G. H. Burford*, 8913-21.
- Contradictory opinions as to action of, resulting from mere clinical experience *W. E. Dixon*, 18713-15.
- Curare: *see that title*.
- Demonstration experiments necessary for students in case of, where actions are not universally recognised, *A. R. Cushny*, 4953-5.
- Experimentation with regard to effects of, has been neglected and is most necessary *Sir V. Horsley*, 15865.
- Experiments for purpose of investigating action of caffeine, urea and saccharin on kidneys *W. E. Dixon*, 18968-74.
- Experiments on animals have led to discovery of, tending to alleviate dropsy, *Sir L. Brunton*, 6948-9.
- Few, have been discovered that are actual cures for disease *A. R. Cushny*, 5230.
- German and American chemical firms have introduced an enormous number of new, *A. R. Cushny*, 5246.
- Great advances made in knowledge of effect of, on vital organs by means of experiments on animals *A. R. Cushny*, 4651.
- Homeopathic investigation on man has introduced more, than experimental investigation on animals *G. H. Burford*, 8993-6.
- Homeopathic methods give accurate knowledge of action of, on "tout ensemble" of patient *G. H. Burford*, 9085-9.
- Increase in number of useful, due to experiments *Sir L. Brunton*, 7005-11.
- Increased accuracy in therapeutic use of, result from experiments on animals *A. R. Cushny*, 4710-11.
- Injection of certain, followed by great pain *G. D. Thane*, 457, 462.

Introduced by means of experiments:

- Aconite, effects noted on pigeons *Sir T. L. Brunton*, 6818-23.

Adrenalin:

- Discovery that arterial sclerosis is caused by, gives means of studying development of the disease *J. Lorrain Smith*, 18236-7, 18288-96.
- Fall of blood pressure due to viperine snake poison counteracted to some extent by, *Major L. Rogers*, 8133-7.
- Great value of, *A. R. Cushny*, 4808.
- Serves no useful purpose and opposition to all therapeutic system *Miss Lind-af-Hageby*, 9720-3.
- Aldehyd, its nature and action *A. R. Cushny*, 4735-6.

Drugs—cont.

Introduced by means of experiments—cont.

Amyl nitrite:

- Action of, *Sir L. Brunton* 7140.
- Value of, in treatment of angina pectoris *A. R. Cushny*, *Sir L. Brunton* 4800-3, 6888-97.
- Analgesics, *A. R. Cushny*, 4767-70.

Anti-pyrin:

- And other anti-pyretics, *A. R. Cushny*, *Sir L. Brunton*, 4767-70, 4771-7, 7019-20.
- Has replaced quinin as an anæsthetic *A. R. Cushny*, 4879-80.
- Once in great repute but now considered useless *Sir G. Kekewich*, 20588-92.

Antiseptics:

- Introduction of various *A. R. Cushny*, *Sir L. Brunton*, 4819, 7019.
- Their local action could only be tested on living microbes *A. R. Cushny*, 4819.
- Apomorphin formed from morphin, *A. R. Cushny*, 4819.
- Arygol: A remedy for disease of conjunctiva, *Sir H. R. Swanzy*, 9843-8.
- Atropin: Dangerous effects of chloroform on dogs counteracted by prior administration of, *E. A. Schäfer*, 10088, 10152-4, 10229-31, 10238-40.
- Caffein, medicinal use of, established *A. R. Cushny*, 4813, 4893, 5074-77.

Calabar Bean:

- Action of, *Sir L. Brunton*, 7113-4.
- Eserin discovered, as remedy for glaucoma *Sir H. R. Swanzy*, 9836-40.
- Cardiac tonics *A. R. Cushny*, *W. E. Dixon*, 4797-9, 18942-7.

Chloral:

- Discovery of its powers *A. R. Cushny*, *Sir L. Brunton*, 4712-29, 5222-3, 7016-17.
- Doses of, necessary to produce complete anæsthesia in man and rabbits *W. E. Dixon*, 18654-9.
- Rarely used as anæsthetic for man owing to its tendency to make the medulla give out *W. E. Dixon*, 18654-7.
- Used generally as an anæsthetic for animals *W. E. Dixon*, 18658.
- See also under ANÆSTHETICS.*

Digitalis:

- Action of, much more complicated than was previously believed *A. R. Cushny*, 4860-2, 5210-11.
- Action of, on heart *E. H. Starling*, *A. R. Cushny*, 4262, 4652-67.
- At one time erroneously used in pneumonia, *A. R. Cushny*, 5214-6.
- Doubts as to efficacy of, in cases of pneumonia *Sir L. Brunton*, 6886-7.
- First introduced in 1785 in treatment of dropsy *A. R. Cushny*, 4652.
- Homeopathic method of investigating action of, *G. H. Burford*, 8928-35.
- Malpractice of formerly administering, in case of apoplexy *A. R. Cushny*, 4972-6.
- Method of standardising, introduced in 1896, *A. R. Cushny*, 4838.
- Value of, and clinical observation of its action contradicted *A. R. Cushny*, 4653-4, 4665-7, 4669-82, 4683-8, 4944, 5115-8.
- Value of, in pneumonia, *A. R. Cushny*, *Sir R. D. Powell*, 4850-3, 5704.

Emetics, *A. R. Cushny*, 4819.

Ergot:

- Acts upon several functions of the body, *A. R. Cushny*, 5210-11.
- Division of clinical opinion with regard to use of, in midwifery cases *A. R. Cushny*, 5203-4.

DRUGS—cont.

Introduced by means of experiments—cont.

Ergot—cont.

Inferior nature of certain preparations of, *A. R. Cushny*, 5207-9.Use of, demonstrated and object has been to isolate its essential factor *A. R. Cushny*, 4819, 5203-7.Variation in quality and action of, necessitates physiological standardisation *W. E. Dixon*, 18770-6.Eucaine, its introduction *A. R. Cushny*, 4753, 4758.Formaldehyd, most powerful disinfectant introduced of late years *A. R. Cushny*, 4819.Inclusion of, in British Pharmacopoeia, *A. R. Cushny*, 5231-5.Jequirity principle of paternoster bean discovered to be remedy for trachoma *Sir H. R. Swanzy*, 9820-30.

Narcotics:

Action of, *E. H. Starling*, 3836-40.Initial effect of, is to produce sleep and larger doses produce anaesthesia *A. R. Cushny*, 5181-2.Large series of, which act on the brain in same way and their differences are determined by differences in rate of absorption and excretion *W. E. Dixon*, 18652-4.Reasons for administering, in addition to anaesthetics *E. H. Starling*, 3607.

Nitro-glycerin:

Properties of, *F. Taylor*, 5585.Value of, in cases of angina pectoris *Sir L. Brunton*, 7142-6.

Paraldehyd:

Largely used for experiments on rabbits *A. R. Cushny*, 5184-7.Therapeutic effect of, *A. R. Cushny*, 4733.Paramedophenols, many shown to be available as antipyretics *A. R. Cushny*, 4771.

Physostigmin:

Action of, on eye demonstrated and consequent inclusion of, in ophthalmic therapeutics *A. R. Cushny*, 4787-96.Experiment on human eye for investigation of effect of, *A. R. Cushny*, 4889-92.Use of, without knowledge of power, and almost fatal results *A. R. Cushny*, 4789-93.

Salicylic Acid:

Anti-pyretic nature of large doses of, *F. Taylor*, *Sir R. D. Powell*, 5701-2, 5703.as to Observation of anti-febrile effects of, before 1875 *A. R. Cushny*, 4777-82.Only used as anti-pyretic in rheumatic fever *A. R. Cushny*, 4885-6.Originally given with object of destroying the fever micro-organisms and its action upon temperature thereby discovered, *A. R. Cushny*, 4772-7.Strophanthus discovered during examination of effects of arrow poison on animals *A. R. Cushny*, 4797-9.

Soporifics:

Alcohol derivatives mainly *A. R. Cushny*, 4740.All are more or less dangerous *A. R. Cushny*, 4866.Value of, *A. R. Cushny*, 4737-8, 5267.

Strychnin:

Benefits accruing from injection of, *Sir L. Brunton*, 6898-900.Chemical constitution and action of, *Sir L. Brunton*, 7019.

Sulphonal:

Incidentally discovered *A. R. Cushny*, *Sir L. Brunton*, 4730-1, 7018.Once in great repute, but now considered useless *Sir G. Kekewich*, 20588-92.

DRUGS—cont.

Introduced by means of experiments—cont.

Tetronal, therapeutic power of, discovered *A. R. Cushny*, 4733.Trional, therapeutic power of, discovered *A. R. Cushny*, 4733.

Urethane, see under ANAESTHETICS.

Urotropin, and other urinary disinfectants and solvents *A. R. Cushny*, 4813-16.Vascular contractors *A. R. Cushny*, 4810-12.Vascular dilators *A. R. Cushny*, 4804.Veronal, use of, *A. R. Cushny*, 4738-40.Introduction of new, and resuscitation of old, by means of experiments *A. R. Cushny*, 5119-21.Laudanum, dogs tolerant of large dose *F. Hobday*, 16509.Lead, experiments showed error in administering, for hæmorrhage and opium now substituted for, *A. R. Cushny*, 4689-709.Many ways of applying, and impossibility of introducing any new, without experiments *A. R. Cushny*, 4839-47.Mercury, its specific nature *A. R. Cushny*, 5259-62.

Morphia, see that title.

Nature of experiments for purpose of testing anaesthetic properties of, *A. R. Cushny*, 4763-7.Nature of experiments with regard to effect of, on blood clotting *W. E. Dixon*, 18976-8.Nicotin, its effect on blood pressure *W. E. Dixon*, 18935-41.Object of experiments as to contraction of uterus resulting from injection of, *A. R. Cushny*, 5196-201.

Opium:

Insensibility produced by use of, *Sir L. Brunton*, 6902-6.Substituted for lead in treatment of hæmorrhage *A. R. Cushny*, 4707, 4863-5.Used before discovery of chloroform, *D. W. Buxton*, 12642-7.Pharmacology means examination of action of, on animals, hitherto a matter of clinical observation *A. R. Cushny*, 4647-9, 5263-9.

Pilocarpin:

is Only drug of mediocre importance introduced by other than experimental methods *A. R. Cushny*, 4819.Research showing that lymphocytosis is produced by dose of, *W. E. Dixon*, 18927-32.Preparation of, in pharmaceutical laboratories *G. D. Thane*, 1348-53.Purgatives, animal experimentation has added very little to knowledge of effects of, *A. R. Cushny*, 4650.Purity of, insisted on under Drugs Adulteration Act *A. R. Cushny*, 5236-8.

Quinin:

Anti-pyretic nature of large doses of, *F. Taylor*, *Sir R. D. Powell*, 5701-2, 5703.Antipyrin has replaced, as an anaesthetic *A. R. Cushny*, 4879-80.Discovery of anti-pyretics other than, by means of animal experiments *A. R. Cushny*, 4770.Only reliable anti-pyretic before 1870 *A. R. Cushny*, 4990-2.Specific nature of, *A. R. Cushny*, 5259-61.Salicin, experiments as to effect of, on children *Rev. L. S. Lewis*, 8766-75.Some, have a composite action *A. R. Cushny*, 5210-12."Standardising" of, *G. D. Thane*, 356-8.Animals generally used *W. E. Dixon*, 18995.Experiments for purpose of, merely involve prick of needle and are painless *W. E. Dixon*, 18976, 18994.Physiological methods necessary *A. R. Cushny*, *W. E. Dixon*, 4838, 18770, 18979, 91, 19105-112.Starting point of experiments as to connection between chemical constitution and physiological action *Sir L. Brunton*, 7019.

Testing of:

Chemical, should be as satisfactory as physiological *Miss A. Kennedy*, *Miss Lind-of-Hageby*, 6578-83, 7496-303.

DRUGS—cont.

Testing of—cont.

Experiments for purpose of, cannot be made under anaesthetics *Miss Lind-af-Hageby*, 9214-15.

Experimental methods necessary, *A. R. Cushny*, *F. Taylor*, *E. A. Schäfer*, 5068-74, 5585, 10202-8.

Experiments in connection with, *A. R. Cushny*, 4747-50.

Homeopathic methods better than animal experiments *G. H. Burford*, 9076-7.

as to Possibility of, on human beings *A. R. Cushny*, 5149, 5741-5.

Upon animals unscientific and wrong, *Miss A. Kenealy*, *Miss Lind-af-Hageby*, 6299-304, 9239-41.

Theocin affects dogs and rabbits differently, and reasons for same, *A. R. Cushny*, 5079-81.

Urethane:

Anaesthetic and hypnotic influence of, *A. R. Cushny*, 5186-7.

A complete anaesthetic if administered in large dose, but unsuitable for man on account of its prolonged action *W. E. Dixon*, 18653, 18895-6.

Composition and action of, *W. E. Dixon*, 18888-91.

Doses necessary to produce complete anaesthesia, *W. E. Dixon*, 18660.

Useless, have been sifted out of Pharmacopeia by means of experiments *A. R. Cushny*, 4819.

Varying opinions as to action of, resulting from mere clinical experience *W. E. Dixon*, 18849-57.

DRYSDALE, DR., homeopathic investigations of, *G. H. Burford*, 8924.

DUBLIN:

Demonstration experiments at, *Sir T. Stoker*, 820-1.
Trinity College, experiment under Certificate C at, *Sir T. Stoker*, 935.

DUBLIN UNIVERSITY:

Experiments not allowed at one time in, *Sir T. Stoker*, 770-2, 976-7.

DUBOIS, M., of Lyons, writings and experiments of, on marmots, *Miss Lind-af-Hageby*, 9653.

DUCKWORTH, SIR DYCE:

Reference to address by, *G. D. Thane*, 1708-9.
Speech of, before Royal Medical Society of Edinburgh *G. D. Thane*, 1471-5.

DUPLAY, PROFESSOR, reference, *H. Snow*, 2129.

DUNCAN, MATTHEWS, drug investigations by, *Sir L. Branton*, *A. R. Cushny*, 7118-9, 5149.

DUPEÉ, DR., engaged in detection of poison in Lamson case, *J. Glaister*, 12844.

DURHAM, BISHOP OF, antivivisection cause supported by, *Rev. L. S. Lewis*, 8728.

DUVAL, work of, referred to, *Miss A. Kenealy*, 6557.

DYSENTERY ANTITOXIN, see under SERUM THERAPY.

EDINBURGH:

Chloroform administered by students in, during last century without any fatal results *Colonel E. Lawrie*, 16942-51.

Dick College, no physiological experiments performed at, *S. Stockman*, 3051-3.

Practice of police in, with regard to stray dogs, *Sir J. Russell*, 725-7.

Royal College of Physicians, see ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

Royal Society of, see ROYAL SOCIETY OF EDINBURGH.

Royal Medical Society of, see ROYAL MEDICAL SOCIETY OF EDINBURGH.

University of:

Evidence on behalf of, see SCHÄFER, E., A., 9980-10250.

Research scholarships given by, for purposes of studying on continent *Sir J. Russell*, 707.

EDINBURGH—cont.

Veterinary College, frequency of operations on dogs at, *Sir J. Russell*, 754-5.

ENTERIC FEVER:

Difficulty of diagnosing, from Malta Fever, *Colonel D. Bruce*, 14395.

Local Government Board research with view of finding prophylactic for, *W. H. Power*, 4301.

Very often communicated by milk, *Colonel D. Bruce*, 14396-8.

EDINGTON, DR., horse-sickness proved to be inoculable by, *S. Stockman*, 3392-7.

EDMUNDS, W.:

Alleged cruelty of experiments on dogs and monkeys by, *Mrs. K. Cook*, 1799-1800.

Alleged cruelty of feeding experiments by, *Mrs. K. Cook*, 1921.

EHRICH, PROFESSOR:

Opinion of, as regards cancerous nature of Jensen's tumour *H. Snow*, 2297-300.

Possibility of immunising animals from jequirity discovered by, and serum derived from such experiments, *Sir H. R. Swanzy*, 9820.

Theory of, with regard to obtaining preventive sera for swine erysipelas from horses *S. Stockman*, 2557-62.

Reference *E. H. Starling*, 3692.

ELECTORAL ANTI-VIVISECTION SOCIETY, income of, *Hon. S. Coleridge*, 10260.

ELLIOTT, T. R., Physiological Laboratory, Cambridge, experiments on suprarenal gland by, *Miss A. Kenealy*, 5322-5.

EMBLEY, DR., improvement made in the administering of anaesthetics, owing to experiments of, *E. A. Schäfer*, 10238.

ERICHSEN, DR. J. E., member of the Vivisection Commission, 1876, *W. P. Byrne*, 1.

ERICHSEN, SIR J., reference, *Hon. S. Coleridge*, *Sir V. Horsley*, 10274, 16070-1.

ETHICAL STANDPOINT:

Anti-Vivisection:

Animal rights rest on same foundation as human rights *Rev. L. S. Lewis*, 8636.

Anti-vivisectionists' position not illogical because all forms of cruelty cannot be exterminated at once *J. H. Levy*, 18614-29.

Christian ethics opposed to practice of vivisection *J. W. Graham*, 5841.

Cowardice in profiting by infliction of pain on others *Rev. L. S. Lewis*, 8636.

Demoralisation and callousness to suffering consequent upon vivisection *Miss Lind-af-Hageby*, *Rev. J. P. Hopps*, *J. W. Graham*, *Hon. S. Coleridge*, *S. F. Smith*, 7357-79, 8315-18, 8523, 5884-5890, 10262-4, 13061.

Experiments unjustifiable on moral grounds *Mrs. K. Cook*, *Miss A. Kenealy*, *J. W. Graham*, *Rev. J. P. Hopps*, *Rev. L. S. Lewis*, *J. Hughes*, *J. H. Levy*, 1785, 5372, 6276, 6324-6, 5841, 5844-7, 8329, 8370-6, 8636, 17132-4, 17571-2, 17322-334, 18497.

Dogs, should be exempted from experiments on moral grounds *J. Hughes*, *C. R. J. A. Swan*, 17135-43, 17144, 19201.

Exploitation of animals for man's use is wrong *Miss Lind-af-Hageby*, *Rev. L. S. Lewis*, 7620-44, 8636.

Exploiting of lower animals for man's purposes, justification for, doubtful *Sir G. Kekewich*, 20714.

Hedonistic principles must not be applied in the mode of direct balance of advantages *J. H. Levy*, 18473, 18488-97, 18490-5, 18528-33, 18554-66.

Dr. Johnson's views *Hon. S. Coleridge*, 10551.

Logical consequence of vivisection must be experiments on human beings *J. W. Graham*, *J. H. Levy*, 5884, 18601-6.

Moral progress demands prohibition of experiments *Miss Lind-af-Hageby*, 7204, 7455-8, 7620-2.

ETHICAL STANDPOINT—cont.

Anti-Vivisection—cont.

Nature thwarted by practice of preventive inoculations *Miss A. Kenealy, J. H. Levy, 5343-54, 18485-8, 18512.*

Pain, its intention perverted by object of vivisection *Rev. L. S. Lewis, 8636, 8643-52, 8662.*

Philanthropic and philo-zoic sentiment are inseparably connected *J. H. Levy, 18521-2.*

Physiologists consider scientific before moral claims *Miss Lindaf-Hageby, Rev. J. P. Hopps, J. H. Levy, 7288-99, 8523, 18493-9.* Scientific progress should go hand in hand with moral progress *Miss A. Kenealy, J. W. Graham, 5389, 5841.*

Selfishness is basis of vivisection *Rev. J. P. Hopps, 8829.*

Sympathy is basis of moral actions and this is destroyed by practise of vivisection *J. H. Levy, 18521-2.*

Pro-vivisection:

Anti-vivisectionists not justified in accepting benefits derived from vivisection *Sir V. Horsley, 16137-8.*

Anti-vivisectionists not morally justified in accepting knowledge gained by vivisection *Sir V. Horsley, 15589-94, 15872-4.*

Cause of opposition to vivisection sentimental opinion as to *A. R. Cushny, 4957-60.*

Demoralisation not consequent upon practise of vivisection *F. Gotch, W. E. Dixon, E. A. Schäfer, 13811, 19077, 10212.*

Experimental research justified in not aiming entirely at practical results *Sir J. F. Moulton, 12715-27.*

Humane susceptibilities rather increased than not by performing operations *Sir T. L. Brunton, 7059.*

Knowledge necessary for prevention of disease may be justifiably obtained by experiments on animals *Sir J. F. Moulton, 12735-7, 12786-90, 12812-14.*

Moral feelings and pursuit of knowledge are both parts of the evolution of the social feeling of the community *E. H. Starling, 3807.*

Moral right to take animal life in interests of man *E. H. Starling, H. Morris, 3470, 8026.*

Natural sentiment not deadened by vivisection *C. H. Morris, 12335.*

Observational methods quite inadequate for acquiring scientific knowledge *Sir J. F. Moulton, 12708, 12716.*

Obstruction of pursuit of knowledge is a moral offence *Sir Victor Horsley, 15588, 15868, 15870.*

Pain and suffering increased by ignorance which can be surmounted by knowledge acquired by experimental research *12707-8.*

Pain, diminution of totality of, justifies practice of experimental research *Sir J. F. Moulton, 12704-5, 12780-82.*

Pain, distinction between prevention and infliction of, not properly realised by anti-vivisectionists *Sir J. F. Moulton, 12707.*

Pain inflicted in experiments is infinitesimal in comparison with totality of unnecessary unfruitful pain in world *Sir J. F. Moulton, 12737, 12785.*

Pain, responsibility of diminishing preventable, justifies experimental research in curative science *Sir J. F. Moulton, 12702-4.*

Scientific knowledge depends on testimony of experimental research *Sir J. F. Moulton, 12708-9.*

Wrong to try new operation on man before testing it on animals *E. A. Schäfer, 10032.*

ESDAILE, DR., hypnotic experiments performed by, *Miss A. Kenealy, 6541.*

EVANS, A. C. C. HARVEY, charges against Mr. Gotch corroborated by, *Hon. S. Coleridge, 11454.*

EXPERIMENTS:

Anti-septic precautions required for all, except those connected with sepsis and septicemia *G. D. Thane, 469.*

EXPERIMENTS—cont.

"Baking":

of Cats and rabbits, alleged *J. W. Graham, 5844-9, 6131-40.*

Consisted merely in maintaining temperature during narcosis *Sir L. Brunton, 6785-829, 6906a-16, 7089-97.*

Blood:

Withdrawal of, for purposes of examination after doses of lead *A. R. Cushny, 4693-702.*

Blood pressure:

Dogs can be dispensed with for rabbits and cats in, *F. Gotch, 13956-9.*

Importance of, *Sir L. Brunton, Sir V. Horsley, 6943-6, 16040-1.*

Bowels, fistulous openings cause discomfort but no pain *E. H. Starling, 3762-7.*

Brain:

Diagnosis of different diseases of, can only be learnt by, observation during *Sir V. Horsley, 16036-9.*

Essential to further progress of brain surgery *Sir V. Horsley, 15842, 15846.*

Paralysis caused by removal of portions of apes', *Mrs. K. Cook, 1910.*

Rabies injections under dura mater, *G. D. Thane, 1671.*

Rapid recovery of cat from, *Sir J. Russell, 540.*

Removal of portions, from dogs and monkeys *Mrs. K. Cook, 1790, 1796.*

Skull of dog trephined for stimulation of cortex *G. D. Thane, 1519.*

References *E. A. Schäfer, 10111-16.*

In Brain Surgery:

Nature of, and absence of pain after, *Sir V. Horsley, 15986-97.*

Optical surgery greatly aided by observations during, *Sir V. Horsley, 16000-2.*

Caisson disease investigations *G. D. Thane, 383-4.*

Cerebral arteries of dogs, cats and monkeys ligatured, and subsequently irritated by electricity *Mrs. K. Cook, 1910-11.*

Choice of animals:

Considerations determining, *A. R. Cushny, 4820-6.*

Limitation would hamper scientific research *Sir H. R. Swanzy, C. J. Martin, F. Gotch, 9767-71, 12050-1, 13918.*

Reasons for non-restriction, *C. J. Martin, 11821-4.*

Conditions for care of animals after, *W. P. Byrne, 255-9.*

Condition of animals after, and difficulty of distinguishing between those which have and have not been operated upon, *Sir J. Russell, 552-3, 536.*

Consensus of medical opinion in favour of, *Sir V. Horsley, 15791-3.*

Continuation of, indissolubly bound up with advance in medical science *Sir L. Brunton, Sir V. Horsley, 7082, 16086.*

Clinical observation should go hand-in-hand with, *H. Head, 17880-5.*

Control of animals during:

Misrepresentation by Mr. Coleridge of evidence as to, during Bayliss libel case *Sir V. Horsley, 16010-11.*

Strapping down, for sole purpose of maintaining position *Sir J. Russell, Sir V. Horsley, 640-2, 16009.*

Cross circulation (Drs. Gaskell and Shore):

Circumstances attending performance of, laboratory assistant's evidence *W. Hall, 21581-35.*

Dogs insufficiently anaesthetised in, morphia alone being given *Lieut.-Col. Lawrie, Sir G. Kekewich, 16810-21, 16922-5, 16969-74, 20457-62, 20966-21372.*

Object of, circumstances attending, and contradiction of allegations re cruelty of, *L. E. Shore, H. K. Anderson, W. H. Gaskell, 19430-1, 21636-704, 21373-580.*

EXPERIMENTS—cont.

For Demonstration purposes:

- Anæsthesia completely secured throughout, and its necessity emphasised *J. N. Langley*, 15406-10.
- Blood circulation, *Sir T. Stoker*, 827-9.
- Blood pressure, *Sir T. Stoker*, 827-9.
- British Medical Association report as to, *W. P. Byrne*, 195.
- Callousness on part of students attending, no evidence as to, *Sir T. Stoker*, 1050-1.
- Cerebral hemispheres of frogs destroyed for purpose of proving continuation of movements after consciousness has been destroyed *M. S. Pembrey*, 13972-3.
- Certificate C required for, *Sir J. Russell*, 611-14, 665-6.
- Cinematograph could not take place of, *G. D. Thane*, 1526-30.
- Considerations determining choice of animal and anæsthetic used for, *F. Gotch*, 13640.
- Criticisms of Dr. Pembrey's statement that this year he had not performed any, *Sir V. Horsley*, 16265-6.
- Cruelty in, no indications of *Sir T. Stoker*, 1042.
- Demoralisation of students not consequent upon, and no signs of levity are shown at, *Sir T. Stoker*, *E. A. Schäfer*, *Sir J. F. Moulton*, *F. Gotch*, *Sir V. Horsley*, *W. E. Dixon*, 1061, 10013-16, 10209-12, 12806-8, 13612-38, 13810-12, 15606, 15886, 16116-21, 18741-2, 19077, 19081-3.
- Demoralising effect of, *Sir T. Stoker*, *Miss Lind-af-Hageby*, *Hon. S. Coleridge*, *Sir G. Kekewich*, 761, 776, 802-5, 809-11, 1050-1, 1061, 11371-96, 20419-22, 20701-12.
- Dogs used for purpose of demonstrating flow of chyle *J. N. Langley*, 15243-50.
- in Edinburgh *E. A. Schäfer*, 10009.
- Essential for proper education of students *G. D. Thane*, *E. H. Starling*, *A. R. Cushny*, *Sir R. D. Powell*, *Sir L. Brunton*, *H. Morris*, *Sir H. R. Swanzy*, *E. A. Schäfer*, *C. J. Martin*, *F. Gotch*, *M. S. Pembrey*, *J. N. Langley*, *Sir J. F. Moulton*, *Sir V. Horsley*, *J. R. Bradford*, *W. E. Dixon*, 1122-4, 1533-6, 1543-4, 3479-80, 4050-2, 4827-30, 4920-30, 4953-5, 5612-14, 6980-2, 7751-2, 9860-5, 10009, 10017-30, 10155-70, 10209-12, 11825, 12741, 13571-9, 13581-2, 13611, 13732-43, 13810-12, 13971, 15606, 15183-91, 15614-20, 15630-1, 15798-9, 15939, 16105-11, 17667-76, 17667-76, 17701-2, 18742-4, 18918-23.
- Frogs, rabbits and some dogs chiefly used for, *Sir J. Russell*, 662.
- Heart exposed to illustrate respiration and blood pressure *G. D. Thane*, 1521-2.
- Lecturers would not object to interested laymen attending, *H. Morris*, 7768-71.
- Limitations, no further, necessary *Sir H. R. Swanzy*, 9788-90.
- Manometer, its use in, *G. D. Thane*, 1524.
- None at Manchester University but would be very valuable *J. Lorrain Smith*, 18424-8.
- Number of, shown in inspector's annual report, *Sir T. Stoker*, 826.
- Open to all qualified persons *E. H. Starling*, 3546-51.
- Performed under Certificate B and animal not allowed to recover *Sir V. Horsley*, 15621-7.
- Poisons, action of, need not be illustrated *J. Glaister*, 12915, 13015-17.
- Practical teachers of physiology should have opportunity of witnessing, *H. Morris*, 8010-15.
- Principle contained in Act that lectures may not be illustrated by, subsequently nullified by certificates *Sir G. Kekewich*, 20407.
- Salivary gland dissected *G. D. Thane*, 1499-1515.
- as to Status of students attending, *E. H. Starling*, *E. A. Schäfer*, 3541-54, 10155-70.
- Sometimes witnessed by inspector *Sir T. Russell*, 567-8.
- Students should see, in connection with blood pressure *G. D. Thane*, 1122-4.
- Unnecessary, and should be prohibited *Sir T. Stoker*, *H. Snow*, *Miss Lind-af-Hageby*, *Sir G. Kekewich*, 760-1, 838-43, 871, 875-89, 893, 980-8, 1049, 2233-5, 7459, 9242, 14994, 20517.

EXPERIMENTS—cont.

- Dependence of recent physiological research upon, *G. S. Woodhead*, 15439-41.
- Desirable to minimise, on animals susceptible to pain, *Sir T. Russell*, 607.
- as to Desirability of permitting lay inspection of, *Miss Lind-af-Hageby*, 9610-11.
- for Diagnostic purposes:
- Necessity of, *Sir V. Horsley*, *J. R. Bradford*, 16087, 17628-42, 17709-13.
- Public health, interests require, *J. R. Bradford*, 17699-700.
- Difficulty in ensuring surgical cleanliness in, *S. F. Smith*, 13068.
- on Digestive organs, resulting in discovery of practical adjuncts to digestion *Sir L. Brunton*, 7028.
- Distinction between painful and painless, *J. N. Langley*, 15251.
- "Drowning" of dogs (Professor Schäfer's experiments):
- Described in report of Suspended Animation Committee *E. A. Schäfer*, 10089-101.
- Home Secretary petitioned to prohibit, *J. Hughes*, 17218.
- Memorandum as to, *G. D. Thane*, 1749-51.
- Number of dogs used, and value of new resuscitatory method derived *E. A. Schäfer*, 10194-201.
- Object and number of experiments performed *G. D. Thane*, 1287-99.
- Object of, now attained and repetition unnecessary *E. H. Starling*, 4078-81.
- Questions asked in House of Commons as to, *Hon. S. Coleridge*, 11049-53.
- Strongly disapproved of *J. Hughes*, 17498-504.
- on Ductless glands, and consequent fruitful results *Sir V. Horsley*, 16005-8.
- Ears (Dr. Rose Bradford's experiments):
- Performed under anæsthetics and did not give rise to great pain *J. R. Bradford*, 17678-87, 17724-36.
- Tympanic plexus destroyed and pain involved *J. W. Graham*, 5842-4.
- Enormous advantage to medicine gained by, *Sir L. Brunton*, 7014.
- Exhibition prohibited under Act, but permitted by Certificate C *Sir J. Russell*, 615.
- Eyes:
- Ciliary body, its functions discovered, and clues afforded thereby to knowledge of disease *Sir H. R. Swanzy*, 9799-804.
- Clinical observation could not have obtained knowledge derived from, *Sir H. R. Swanzy*, 9813-15.
- Cocaine, its anæsthetic properties tested by, *A. R. Cushny*, 4751, 4873-6.
- Conjunctiva, disease investigated and discovery of remedy *Sir H. R. Swanzy*, 9843-8.
- Conjunctivitis research *J. Lorrain Smith*, 18215-26.
- Cornea, transplantation of, *Sir H. R. Swanzy*, 9816-18, 9904-5.
- Diphtheria bacillus, injections of, *Mrs. K. Cook*, 1913-4, 1919.
- Endothelium, its functions discovered and value of such knowledge in optical operations, *Sir H. R. Swanzy*, 9805-12.
- Glaucoma investigations *E. H. Starling*, 4169-70.
- History, and value of knowledge attained by, *Sir H. R. Swanzy*, 9795-8.
- Irritating drug rubbed into rabbits' *J. D. Graham*, 6141-2.
- Jequirity, and discovery of possible immunising serum *Sir H. R. Swanzy*, 9820.
- Jequirity, and explanation of Dr. Shaw's connection with same *J. Lorrain Smith*, 18402-23.
- Physostigmin, its effect investigated on human eye, *A. R. Cushny*, 4889-92.
- Students would not gain by performance of, *Sir H. R. Swanzy*, 9891-7.
- Tuberculous aqueous humour injected for diagnostic purposes *Sir H. R. Swanzy*, 9819, 9941-7.

EXPERIMENTS—cont.

"Feeding":

- Absurdity of obtaining licence for feeding kittens on cows' milk *Hon. S. Coleridge*, 10565-9.
- Cruelty involved in, *Mrs. K. Cook*, 1921.
- Doubts as to whether Act includes, *Sir T. Stoker*, 945.
- Immoral, if involving cruelty *Miss A. Kenealy*, 6209.
- Monkeys fed with thyroid gland *Mrs. K. Cook*, 1799-1800.
- Painless, should be excluded from Act *J. N. Langley*, 15192.
- Starvation involves pain *Miss Lind-af-Hageby*, 9601-7.
- "Freezing" of hibernating animals, fallacious charges brought by anti-vivisectionists as to, and actual facts of case *M. S. Pembrey*, 14018-20.

Fistulae set up:

- Digestive organs investigated by means of, *G. D. Thane*, 1232.
- in Gall bladder *G. D. Thane*, 1646.

Gastric:

- Act contravened by performing operation without necessary certificates *W. P. Byrne*, 38-40.
- Nature of operation and earliest case recorded *E. H. Starling*, 3470-5.
- Intestinal, give rise to no abnormal conditions *E. H. Starling*, 4222-5.
- Pain does not follow, *G. D. Thane*, 1233.
- Pain, varying degrees after operation *G. D. Thane*, 1640.
- in Pancreas, *G. D. Thane*, 1642-5.
- Gall bladder, gall stones introduced with object of discovering to what extent they were dissolvent *G. D. Thane*, *Mrs. K. Cook*, 1232, 1640, 1919.
- Gelding, see CASTRATION.
- Heart exposed with view of discovering action of digitalis *A. R. Cushny*, 4684-8.
- re Hereditary transmission of acquired characters *W. P. Byrne*, 124.
- House of Commons air on mice, as to effects of, *W. P. Byrne*, 125.
- Humanely conducted *G. D. Thane*, 1162.
- Intestinal, may be followed by ascitis *G. D. Thane*, 472-3.

Kidneys:

- Dr. Rose Bradford's experiments:
 - Cruelty involved in, *Mrs. K. Cook*, 1798.
 - Misrepresentation of, and actual facts of case *J. R. Bradford*, 17737-44, 17752-61, 17689-98.
- Grafting on blood vessels in neck of dog, report as to, *Sir J. Russell*, 685-6.
- Kidney disease, its treatment has undoubtedly benefited by, *C. R. J. A. Swan*, 19270-1.
- Removal of dog's, previously to performing similar operation upon female patient *H. Morris*, 7786-8, 7988-91.
- Knowledge of operative technique and manual skill should be acquired by, *Sir V. Horsley*, 16170-7.
- under Licence alone, their prolonged nature *Sir J. Russell*, 546, 692-5.
- Large number of, are negative in results *G. D. Thane*, 452.
- Large number of, duplicated, and value or otherwise of such *W. P. Byrne*, 196-8.
- Legal control of, necessary in order to allay public apprehension, *J. R. Bradford*, *W. E. Dixon*, 17797-800, 19095.
- Legislative enactments not necessary with regard to, but no objection to licensed places *W. Osler*, 16738-41.
- Liver, cruelty involved in applying plethysmograph *Mrs. K. Cook*, 1800.
- Local Government Board research for administrative purposes *W. H. Power*, 4301.
- Local Government Board's research for investigating purposes *W. H. Power*, 4301.
- Local Government Board research for prophylactic purposes, *W. H. Power*, 4301.
- Medical knowledge at a standstill without recourse to, *Col. D. Bruce*, 14196-8.

351.

EXPERIMENTS—cont.

Nerves:

- Abdominal, cruelty inflicted on dogs *Mrs. K. Cook*, 1917.
- All functions of nervous system have been discovered by, *Sir V. Horsley*, 16088.
- Division of, in cat *G. D. Thane*, 1247-59.
- Exposure and irritation of cats', *Mrs. K. Cook*, 1790.
- Gasserian ganglion:
 - Exposure of, in cats and cruelty involved *Mrs. K. Cook*, 1919.
 - Misrepresentation of account of, *E. H. Starling*, 3662-6.
 - Nature and results of, *E. H. Starling*, 4132-9.
- No pain after section of nerves *G. D. Thane*, *E. H. Starling*, 1580-4, 3959-61.
- No pain felt in division of nerves *G. D. Thane*, 1257-9.
- Optic:
 - Cruelty involved in, on rabbit *Mrs. K. Cook*, 1793-5.
 - Pain caused by tying, *Mrs. K. Cook*, 2083-5.
- Process of healing not necessarily painful *J. N. Langley*, 15332-4.
- Professor Sherrington's, on the distribution of the posterior roots bore out theory concerning zones of referred pain *H. Head*, 17835-65.
- Spinal, and necessity of repeating, *E. H. Starling*, 3847-50.
- Stimulating, complete anaesthesia maintained during, *E. H. Starling*, 3657-8.
- Stimulating of, in dog's neck, and cruelty involved *Mrs. K. Cook*, 1785-9.
- Stimulation of, painful *Mrs. K. Cook*, 2079-82.
- Superior cervical ganglion excised, and misrepresentation of operation *E. H. Starling*, 3666-76.
- Value of, in surgical treatment of severed and diseased nerves *J. N. Langley*, 15139-40.
- Number and nature of, for Ireland *Sir T. Stoker*, 767.
- Number of, growing *Sir J. Russell*, 600.
- Number of, in 1906 *Sir G. Kekewich*, 20528-31.
- Number of, on each animal *W. P. Byrne*, 274-7.
- Number of painful, relatively small *G. D. Thane*, 463.
- Number of, witnessed by Assistant Inspector *Sir J. Russell*, 563-4.
- Number of, witnessed by Inspector *G. D. Thane*, 447.
- Numbers have increased since 1876 *W. P. Byrne*, *Mrs. K. Cook*, 193, 1964.
- Pancreas:
 - Excision of, and diabetes produced *E. H. Starling*, 3442-5, 4124.
 - Excision of, for study of consequent changes in blood and urine *G. D. Thane*, 1232.
- Pancreatic duct, dog required to be killed after, utilised for demonstration experiment under lethal anaesthetic *E. H. Starling*, 3695-705.
- Pancreatic fistula set up in dog for study of pancreatic juice *G. D. Thane*, 1232.
- Pathological:
 - Definition *E. H. Starling*, 3451.
 - Wider knowledge gained by, *G. D. Thane*, 1079-82.
- "Peculiarly revolting and painful," *J. Hughes*, 17440-9.
- Peritoneum, tuberculosis injected and no pain involved *G. D. Thane*, 1678-9.
- Physiological:
 - Knowledge of physiological processes only obtained by, *E. H. Starling*, 3442.
 - Success of, demands elimination of pain *E. H. Starling*, 3451-4.
- "Pithing".
 - Definition of, and distinction between removal of entire brain or cerebral hemispheres only, *Miss Lind-af-Hageby*, 7403-30.

12

EXPERIMENTS—cont.

‘Pithing’—cont.

of Frogs:

Distinction between removal of brain and, with reasons justifying belief that purposive movements can exist without consciousness *M. S. Pembrey*, 14128-43.
Term denotes entire decerebration, and as to charges brought concerning, *M. S. Pembrey*, 14021-35.

Term denotes destruction of whole nervous system and consequent removal of all sensation to pain, *E. H. Starling*, *D. W. Buxton*, *F. Gotch*, 3462-70, 12666-74, 13702-10, 13930-4.

Poisoning:

Coal gas, practical value of results of, on rats and rabbits *M. S. Pembrey*, 13971.
on Dogs, in connection with investigation of different poisons *F. Hobday*, 16370-7.
Toot, rabbits dosed with, and effects *Sir J. Russell*, 543.

Progress of medical science due to, *H. Morris*, *J. R. Bradford*, 7837-40, 17723.

Published descriptions of, must be sent to Home Office *W. P. Byrne* 95-102, 233-7.

Spinal cord (Mr. Bayliss' experiments):

Anæsthesia complete during, and untrue statement as to neglect of same *E. H. Starling*, 3639-51.

Stimulation and excitation by electricity, and cruelty involved *Mrs. K. Cook*, 1914-17.

Spleen:

Health of animal not affected by removal, *G. D. Thane*, 471.

Nerves dissected *Mrs. K. Cook*, 1919.

‘Starvation’:

Certificate refused for, *E. H. Starling*, 3949-51.

Dr. Noel Paton's experiments, proceedings in connection with, *Hon. S. Coleridge*, 10514-48, 11044-8.

Object of, to study circumstances causing fatty degeneration *J. Lorrain Smith*, 18242-62, 18391-401, 18440-3.

Pain not felt after discomfort of first few days, *F. Gotch*, 13879-83.

Performed in Germany, and no similar investigations carried out in this country *J. Lorrain Smith*, 18320-5.

on Submaxillary glands, referred to *H. Snow*, 2224, 2226.

Sulphur dioxide, in connection with destruction of rats on plague ships, and position of physiologist compared with that of rat catcher *M. S. Pembrey*, 14058-66.

Suprarenals:

Excision of both, probably fatal *G. D. Thane*, 472.

One removed without affecting health of animal *G. D. Thane*, 471.

Transplantation, and useless results, *Miss A. Kenealy*, 5322-5.

re Surgical shock (Dr. Crile's experiments):

Anti-vivisectionists' persistent misrepresentation of, *Sir V. Horsley*, 15901-7.

Applicability to man of results *Sir V. Horsley*, 15850-60.

Crushing of dogs' feet under incomplete anæsthesia *Hon. S. Coleridge*, 10265.

Home Office defence of, *Hon. S. Coleridge*, 10289-300.

Necessary and painless *Sir V. Horsley*, 15851-5, 15893-7.

Object of, and conclusions *Sir V. Horsley*, 15688-728, 15971-2, 16202-3, 16204-18.

Same performed in America *Sir V. Horsley*, 16199-201.

Term ‘incomplete anæsthesia,’ as used in description of, does not mean consciousness to pain *Sir V. Horsley*, 16048-53.

Reference 8021-4.

EXPERIMENTS—cont.

Thyroid gland:

Excision followed by no painful symptoms in monkeys *Sir J. Russell*, 543.

Excision has varying effect in animals *G. D. Thane*, 1233.

Excision, in some cases, followed by nervous symptoms, *Sir J. Russell*, 543.

Excision probably fatal, though not causing acute pain *G. D. Thane*, 472.

Fatal symptoms in dogs resulting from excision, *Mrs. K. Cook*, 1799-1800.

Have led to no definite results *Miss A. Kenealy*, 5326-8.

Important results of, bearing on treatment of myxedema and cretinism *Sir L. Branton*, *Sir V. Horsley*, *W. Osler*, 51825-7, 6959-64, 15688, 15836-41, 16569, 16573-5.

Removal of gland from monkeys has not always produced cretinous and myxedematous symptoms *Sir V. Horsley*, 15831-5.

Unnecessary repetition of, and number of animals used *Miss A. Kenealy*, 6210-11, 6165.

Repetition of, corrects previous erroneous ideas *Sir J. Russell*, 571-2, 574.

Repetition of, except for special object, undesirable *H. Morris*, 7908.

re Röntgen ray and radium treatment, reference, *W. P. Byrne*, 118-23.

Records of, see that title.

Returns of, see under HOME OFFICE.

Viscera exposed and cannulae inserted for purpose of showing pulse action *J. W. Graham*, 6143-52.

Inoculations:

Anæsthetics not required for simple, *W. P. Byrne*, 6-9, 159.

Anæsthetics hardly required for, *Col. E. Lawrie*, 17038, 17044.

Could be performed under licence alone *Hon. S. Coleridge*, 10455-68.

for Diagnosis:

Accuracy and necessity of, *W. H. Power*, 4382.

of Bovine tuberculosis, see under TUBERCULIN.

of Canine distemper, *S. Stockman*, 3373-8.

of Glanders, see under MALLEIN.

Performed in municipal laboratories by licensees not possessing medical qualifications *G. D. Thane*, 406-7.

of Rabies, their reliability *S. Stockman*, 3371-2.

of Tuberculosis, in guinea-pigs *Sir J. Russell*, *S. Stockman*, *J. R. Bradford*, *J. L. Smith*, 711, 3415-8, 17630-5, 18185-8.

Difficulty in distinguishing animals which have undergone, from those which have not *G. D. Thane*, 452, 1576.

for Drug testing and standardising, see under DRUGS.

for Investigatory purposes:

Cancer, *G. D. Thane*, 465-6, 1688-91.

Cholin injections and uselessness of such *Miss Lind-of-Hageby*, 7219-20.

Chromic acid injections, *Sir J. Russell*, 543.

Diphtheria, and pain inflicted on cows thereby *Mrs. K. Cook*, 1796.

Local Government Board's, are mainly subcutaneous *W. H. Power*, 4351-2.

Louping ill, results obtained, *D. J. Hamilton*, 20016-19, 20020-8, 20212.

Plague, and pain suffered by infected animals *Sir J. Russell*, 543, 720.

Rabies:

Case of performing, without necessary certificates *W. P. Byrne*, 38.

Skull of rabbit trephined, *S. Stockman*, 2590-7, 3011-25, 3125-9.

Septicæmia, its different effects on field and house mice *H. Morris*, 7876-9.

Smallpox, reference *W. H. Power*, 4486-7.

Smegma, manure and tubercle bacilli identified by means of, *S. Stockman*, 3358-60.

EXPERIMENTS—cont.

Inoculations—cont.

for Investigatory purposes—cont.

Snake poison:

Interrupted by introduction of 1876

Act *Sir L. Brunton*, 6987-9.

Uselessness of, *Miss Lind-af-Hageby*, 9225-31.

Toot, injections, and pain following *Sir J. Russell*, 646-8.

Tuberculosis, and cruelty inflicted thereby *Mrs. K. Cook*, 1919.

Tuberculosis Commission research *G. D. Thane*, 1116-7, 1679.

see also under particular names of diseases.

Length of, without anaesthetics, doubtful *W. P. Byrne*, 134-8.

as to Pain in connection with, *S. Stockman*, 25605-7, 2614.

Pain involved by, is small *Sir J. Russell*, 708-9, 8720.

Painless, regulations with regard to, should be relaxed *Sir L. Brunton*, 6991.

Propagation of disease by means of, unjustifiable *J. H. Levy*, 18485-7, 18509-14.

for Production of serum:

Amount of blood usually drawn from horse without inconvenience to animal *S. Stockman*, 2618-23.

Controlled by Act, if for new serum *G. D. Thane*, 1730-4.

Horses largely used on account of size and cleanliness *S. Stockman*, 3271-2.

Hyper-immunisation of animal which has suffered from infectious disease produces powerful preventive serum *S. Stockman*, 3315-18.

Sold for therapeutic purposes, not controlled by Act *G. D. Thane*, 1730-2.

for Prophylactic purposes:

Attack of disease does not necessarily follow, *S. Stockman*, 3274-5.

African coast fever, Koch's treatment not successful in Rhodesia *S. Stockman*, 3331-50.

Braxy, failure of certain, *D. J. Hamilton*, 20247-8.

Sheep diseases, no pain caused *D. J. Hamilton*, 20118.

Rabies, no case of hydrophobia produced by, *C. J. Martin*, 12362-4.

Rinderpest:

Successful results in British South Africa *S. Stockman*, 2484-90.

Two methods of serum treatment *Major L. Rogers*, 8226-55.

Tetanus, horses undergoing immunity do not suffer *C. J. Martin*, 12044-9.

Vaccination, see that title.

see also SERUM THERAPY.

Returns of, see RETURNS OF EXPERIMENTS.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, evidence on behalf of, see *Glaister, J.*, 12819-13029.

FARADAY, scientific work of, referred to, *E. H. Starling*, *Sir J. F. Moulton*, 3442, 12769.

FAYRE, *The late Sir J.*:

Snake poison experiments by:

Cobra venom, action and antidote discovered, *Major L. Rogers*, 8032.

Hindered by conditions of Act, *Sir L. Brunton*, 6833-8.

Permanganate of potash found to be most practical remedy, *Major L. Rogers*, 8029-70, 8217-18.

Reference, *J. W. Graham*, 5856.

FERGUSON, *Sir W.*, statement to previous Royal Commission as to unnecessary repetition of experiments, *Sir V. Horsley*, 16254-6.

FERRIER, PROFESSOR:

Alleged cruelty of experiment on brain of monkey by, *Mrs. K. Cook*, 1790.

Pain sensations after removal of cerebral hemisphere admitted by, *Miss Lind-af-Hageby*, 7412.

Statement of, as to inapplicability of results of experimental physiology to human pathology quoted, *Miss A. Kenealy*, 6675-97.

Surgical treatment of nervous diseases due largely to experiments of, *Sir V. Horsley*, 15684.

References, *Hon. S. Coleridge*, 10559; *E. H. Starling*, *Miss A. Kenealy*, 3864, 5288.

FERRIER & YEO, references, *Hon. S. Coleridge*, 10555-6, 10559.

Fiji Islands, measles epidemic in, *Sir L. Brunton*, 6854-60.

FILEHNE, antipyrin introduced by means of experiments of, *A. R. Cushny*, 4784.

FINLAY, DR., of Havana, opinion of, with regard to the mosquito theory of yellow fever, largely responsible for steps taken by United States Commission, *W. Osler*, 16694.

FINSER LIGHT, possibility of utilising, as eye bacteria-cide, suggested by experiments, *Sir H. R. Swanzy*, 9849-52.

FISCHER, drug testing experiments of, referred to, *A. R. Cushny*, 4748.

FISH:

Feeding experiments on, licences granted for, *W. P. Byrne*, 207.

Investigations on, in connection with analysis of suspected river water, *J. Glaister*, 12957-63.

FISKE, JOHN, reference, *J. W. Graham*, 5887.

FLINT, PROFESSOR (U.S.A.), text book by, shows preference for no or light anaesthesia during experiments, *Miss Lind-af-Hageby*, 7262-6.

FLOURENS, experiments by, reference, *Miss A. Kenealy*, 5288.

FOOD POISONING, bacteriological experiments discovered various causes of, *C. J. Martin*, 11817-20.

FOREIGN OFFICE:

Local Government Board has to notify outbreaks of certain diseases to, *W. H. Power*, 4301, 4337-8.

Outbreaks of certain diseases have to be notified to foreign countries by, *W. H. Power*, 4301, 4337-8.

FORSTER, W. E., *The late Right Hon.*:

Member of the Vivisection Commission, 1875, *W. P. Byrne*, 1.

Minute by, as to use of animals in investigations of Local Government Board, *W. H. Power*, 4299.

FOSTER, GREGORY, Principal of University College, London, Slade School students' memorial to, *Miss A. L. Woodward*, 8824, 8856-61.

Reference, *W. P. Byrne*, 66.

FOSTER, *The late Sir M.*, K.C.B., F.R.S.:

Chairman of the Tuberculosis Commission, *G. S. Woodhead*, 15484.

Life of Claude Bernard, by, *Miss Lind-af-Hageby*, 7311.

Reference, *Sir J. F. Moulton*, 12738, 12771.

FOXES, possibility of substituting, for dogs, in experiments *G. D. Thane*, 1428-30.

FRANCE:

Alfort, experiments on animals at, for purpose of acquiring surgical skill *S. Stockman*, 3054-7.

Anthrax, successfully inoculated against in, *S. Stockman*, 2510-35.

Smallpox, inoculations of horses and cows in, *W. H. Power*, 4486-7.

FRANKFORT, International Congress for Cancer Research at, *H. Snow*, 2212-14.

FRANKLIN, *Sir Benjamin*, reference *Sir T. L. Brunton*, 7157.

- FRASER, SIR T. R., M.D., F.R.S., Professor of Materia Medica in University of Edinburgh:
Cobra anti-venin, discovered by, *Major L. Rogers*, 8034.
Eserin, its use as a pupil contractor, discovered by, *Sir H. R. Swanzy*, 9839.
Experiments by, with reference to action of various drugs *A. R. Cushny*, *Sir L. Brunton*, 4737, 4746, 4787-96, 7019.
Reference, *G. D. Thane*, 1751.
- FREEMAN, J. A. F., anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.
- FRIENDS' ANTI-VIVISECTION SOCIETY, income of, *Hon. S. Coleridge*, 10260.
- FRIMLEY, SURREY, heather tract at, registered for investigation of grouse disease *G. D. Thane*, 344, 356-8, 358-63, 1404.
- FRITSCH, The late PROFESSOR, surgical treatment of nervous diseases due largely to experiments of, *Sir V. Horsley*, 15684.
- FROGS:
- Brainless, acts of, are not purposive, but merely reflex *Sir V. Horsley*, 16185-7.
 - as Cold-blooded animals, should not come under the Act, *Sir V. Horsley*, 16267-74.
 - Chiefly used for demonstration experiments, *Sir J. Russell*, 662-3.
- Decerebration of:
- for Demonstrating complex reflex movements *M. S. Pembrey*, 13972-3.
 - Destroys all consciousness to pain *E. A. Schäfer*, 10063-7, 10232-5.
- Demonstration experiments on, not objected to, but of little value *Sir T. Stoker*, 1056-7.
- Drugs standardised by experiments on, *A. R. Cushny*, 4838.
- "Pithing" of:
- Denotes removal of whole central nervous system *F. Gotch*, *M. S. Pembrey*, 13702-10, 13930-4, 14021-35.
 - Destruction of brain and spinal cord essential to complete, *Miss Lind-af-Hageby*, 9272, 9689-99.
 - Directions in physiological text-books as to, *Miss Lind-af-Hageby*, 9272.
 - Distinction between removal of brain and, with reasons justifying belief that there can be purposive movements without consciousness *M. S. Pembrey*, 14128-43.
 - Evidence insufficient to show consciousness removed by, *Miss A. Kenaly*, 6591-6605.
 - Nature of operation, *E. A. Schäfer*, 10055-8.
 - Pain sensations not destroyed by certain methods of, *Miss Lind-af-Hageby*, 9255-9, 9272.
 - Spinal cord of, sensitive to pain *Miss Lind-af-Hageby*, 9565-84.
 - Students should be forbidden to experiment on pithed, *Miss Lind-af-Hageby*, 7409-10, 9255-9, 9272.
 - Too small to admit of practical study of most important physiological functions *E. H. Starling*, 3445, 3479-80.
- FRY, SIR EDWARD, member of committee appointed by King Edward's Hospital Fund, *Hon. S. Coleridge*, 10260.
- FURBINGER, reference *A. R. Cushny*, 4782.
- FURNEAUX, W., Science Teacher of London School Board, experiments recommended to students in text-book by, expurgated after exposure by Church Anti-Vivisection League *Miss A. L. Woodward*, 8824-6, 8867-80.
- GALEN:
- Knowledge acquired by, as to nervous system not especially valuable *H. Head*, 17938-9.
 - Vivisection of human beings said to have been performed by, *Sir V. Horsley*, 16160-3.
- GALVANI, scientific research of, reference *E. H. Starling*, 3442.
- GALWAY, inspection in, conducted by medical inspector from the Local Government Board *Sir T. Stoker*, 831, 971-5.
- GAMALEIA, protective inoculation against poultry diseases devised by, *C. J. Martin*, 11792.
- GAMGEE, A., M.D., F.R.S., experiments by, led to discovery of amyl nitrite as remedy for angina pectoris *Sir L. Brunton*, 6888-97.
- GASKELL, W. H., M.A., M.D., F.R.S. (a Member of the Commission), 21705, 21761.
- Cross circulation experiments under direction of: Dogs insufficiently anaesthetised in, morphia being alone administered, *Col. E. Lawrie*, 16969-73, 29066-1372.
 - Laboratory assistant's evidence re sufficiency of anaesthesia in, *W. Hall*, 21581-35.
 - Object of, circumstances attending, and contradiction of allegations re cruelty of, *L. E. Shore*, *H. K. Anderson*, 19430-1, 21636-704, 21373-580.
- GATTY MARINE LABORATORY, St. Andrews, reference *G. D. Thane*, 344.
- GEISELER, cancer investigations by, *H. Snow*, 2129.
- GENERAL MEDICAL COUNCIL:
- Not suited to be advisory body to Home Office *Sir T. Stoker*, *Sir V. Horsley*, *W. E. Dizon*, 1067, 15777-8, 19152.
 - Has no great power over details of medical education *G. D. Thane*, 1485-8.
 - Should have power to put a stop to unnecessary pain in vivisection *Col. E. Lawrie*, 16931-4.
- GENGOV, whooping-cough organism put forward by *C. J. Martin*, 12185.
- GERMANY:
- Chemical firms in, have introduced an enormous number of new drugs *A. R. Cushny*, 5246.
 - Hypnotism substituted for anaesthesia in certain experiments in, *M. S. Pembrey*, 14071-7.
 - Inquiries in, as to relationship between human and bovine tuberculosis *S. Stockman*, 3368-70.
 - Pasteur's method of inoculation against swine erysipelas now abandoned in, *S. Stockman*, 2824-8.
- GIBBONS, CARDINAL, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.
- GIBBALTAR, precautions taken against Malta fever in, *Col. D. Bruce*, 14288-90.
- GIBSON, R. J. HARVEY, M.A., West African Boxwood poison identified by experiments of, *W. E. Dizon*, 18718-28.
- GLAISTER, J., M.D., Professor of Forensic Medicine and Public Health, Glasgow University; Faculty of Physicians and Surgeons of Glasgow, 12819-13029.
- Antidotes for number of mineral and vegetable poisons derived from knowledge acquired by experiments 12883-4.
- Cerebro spinal meningitis:
- Experimental methods essential to proper knowledge of, 12852-61.
 - More facilities necessary for investigation of, 13003-5.
 - Propagation, experiments of little value as regards showing means of, 12943-5.
 - Statistics of outbreak of, in Scotland during 1907 12852.
- Certificates:
- A:
- Extension of scope, desirable 12833.
 - Heads of departments should have wide instead of restricted form of, 12952-5, 12964-72.
 - Limitation of number of experiments under, should not be imposed 12918-20.
- A2, issue of, and as to range of work permitted under, 12921-8.
- Heads of departments should have more liberty with regard to the range of work stipulated in, 12885-7.

GLAISTER, J., M.D.—*cont.*

Demonstration experiments unnecessary for illustrating action of poisons 13015-17.

Diphtheria anti-toxin, its success 13018-23.

Fish, investigations carried out on, in connection with analysis of suspected river water, and without applying for certificate 12957-63.

Has been engaged in researches without experimentation in animals for 25 years 12981-2.

Licence not held by, owing to lack of accommodation for experimental work 12824-8, 12836, 12910-14.

One of the statutory certificates under the Act, 12830-3.

Poisons:

Arsenic:

Antidote for poisoning by, discovered by experimental methods, and date of its introduction 12888-905, 12946-7.

Cows dosed with, and reasons justifying performance of these experiments without certificate 12956.

Chemical tests insufficient to detect certain alkaloids 12864-5.

Chloroform would mark effects of, and hence impossible to demonstrate such to students 13024-6.

Poisoning:

Food:

Bacilli more liable to destruction if food is well cooked 12999.

Cases in which investigation of causes of, has been hindered by inability to experiment on animals 12983-4.

Difficulty in detecting existence of ptomaines, without recourse to experiments 12986-999.

Gas, foreign experiments regarding physiological effects of arsenulated hydrogen 12879-80.

Investigations with regard to causes of, require experimental methods 12838-51, 12866-78, 12973-80, 13006-14.

Meat, necessary to resort to animal experimentation in cases of, owing to difficulty of identifying Gaertner's bacillus 12931-4, 12935-7.

in Scotland, cases rare, and as to procedure in obtaining certificate for investigating purposes 12948-51.

GLAUCOMA, *see under* OPHTHALMIC DISEASES.

GLASGOW:

Faculty of Physicians and Surgeons of, *see* FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Municipal laboratory at, *G. D. Thane*, 339.

University, research scholarships at, for purposes of studying on Continent *Sir J. Russell*, 707.

GLANDERS:

Danger of occult form of, *S. Stockman*, 2703-7.

Diagnosis of:

Experimental method, essential *S. Stockman* 2464-7.

by Mallein, *see that title*.

Mallein, alternative test to, is by subcutaneous injection of suspected tissue in guinea-pig *S. Stockman*, 2941-2, 3227-34.

Immunity from, may be conferred to certain degree by attack of, *S. Stockman*, 3259.

Knowledge of, entirely due to experiments *S. Stockman*, 2807-18.

Possibility of its being communicated to men *S. Stockman*, 3251-6.

Protective serum not desired, but stamping out of, could be effected by use of mallein and isolating cases *S. Stockman*, 3260-4.

GMELIN, gastric juice, knowledge of its nature and action derived from experiments of, *E. H. Starling*, 3442.

GOATS:

Malta fever organism proved by experiments to be conveyed by milk of, *Col. D. Bruce*, 14234-45, 14267-75, 14283-7.

GOATS—*cont.*

Suggested substitution of, for dogs in some experiments *Sir J. Russell*, 609-10.

GOLTZ, experiments on frogs by, reference *Miss A. Kenaly*, *Miss Lind-of-Hageby*, 5288, 9582.

GOODBODY, DR., Assistant Professor of Pathological Chemistry at University College, present at some of Dr. Crile's experiments, and his statement as to maintenance of complete anaesthesia therein *Sir V. Horsley*, 15977-80.

GORDON, DR. MERVYN:

Report by, for Local Government Board, on diphtheria bacillus *W. H. Power*, 4301.

Work of, for Local Government Board in connection with diagnosis of disease, *W. H. Power*, 4628.

GORDON COLLEGE, KHARTOUM, Home Office has no control over, *Sir J. Russell*, 651.

GOSLING, G. D., letter to, *re* incomplete anaesthesia, *Hon. S. Coderidge*, 10993.

GOTCH, FRANCIS, D.Sc., F.R.S., Waynflete Professor of Physiology, Faculties of Medicine and Science, University of Oxford, 13539-13967.

Anaesthesia and analgesia not necessarily coincident 13898-900.

Anaesthetics:

Duration of life under lethal dose of, 13641-56.

Experience in administering, and confidence in possibility of securing complete anaesthesia, 13583-7.

Nature of, generally used and efficiency of chloral hydrate, and urethane 13890-2.

Choice of animals for experiments should not be limited 13563-70, 13918.

Certificates:

A:

New classification of experiments under, suggested 13831-45.

Insufficient for some important experiments which require to be done without anaesthetics 13754-60.

B:

Animals operated upon under, might be kept outside laboratory premises, 13913-15.

Meaning of term "initial operation" in, 13901-9.

D, repetition of experiments desirable because of the introduction of new methods 13761-77.

Delay in obtaining, and as to *Sir J. F. Moulton's* suggestions 13910-12.

Recommendation for, in connection with starving experiment, refused 13724-31.

Circulation and blood pressure experiments, their object and value 13924-6.

Cold-blooded animals, experiments upon, require Certificate A 13893-7.

Conservation of energy, its law discovered by observation of physiological processes 13549-54.

Curare:

Involuntary mechanisms not paralysed by, 13778-82.

Object of using, and as to possibility of noting indications of anaesthesia during use of, 13593-610.

Prohibition of, would be serious impediment to certain lines of research, but there might be special certificate for the use of, 13874-7.

Demonstration experiments:

Choice of animals and anaesthetic for, considerations determining, 13640.

Necessity and importance of, 13571-9, 13581-2, 13732-43, 13810.

for Physiological phenomena, particularly essential 13611.

Students are not demoralised by witnessing, 13810-12.

Students' conduct most serious, and average attendance at, 13612-38.

GOTCH, FRANCIS, D.Sc., F.R.S.—*cont.*

Dividing line between highest animal and lowest form of human being can be drawn, justifying experiments on former 13919-23.

Dogs :

Have not been used for vivisection purposes of late years at Oxford 13954-5.

Rabbits and cats can be substituted for, in blood-pressure experiments 13956-9.

Evidence referred to :

Keeble College undergraduates :

Charges denied *Hon. S. Coleridge*, 11454-67.

Unfair charges brought as to Mr. Coleridge's action in case *Hon. S. Coleridge*, 19852-63, 19863-76.

Statement that no experiments were performed last year in his laboratory *Hon. S. Coleridge*, 19933-54.

Heads of departments and laboratories should be entirely responsible for the work which goes on there 13711-13.

Humanity of physiologists, testimony to, 13916-17. Inspector visits laboratory of, three or four times annually 13871-3.

Inspectors, no objection to increase of, but impracticable to insist on their presence at all experiments 13886-9.

Intimate association of all sciences, 13554-6.

Keeble College undergraduates' accusations, actual facts of case and subsequent withdrawal of charge 13668-701.

Licence and certificate held by, and large experience in experimenting, 13543-5, 13714-18.

Licences, medical qualifications should not be required of applicants 13799-806.

Monkeys, desirability of using for certain experiments, but largely a matter of cost 13745-52.

Natural science, as a whole, is retarded if the free development of any one of her branches is unduly restricted, 13548.

Number of animals experimented on yearly, in Oxford 13719-21.

Pain :

as to Analogy between development of senses and sensitiveness to, in animals 13940-53.

Capacity for feeling, varies in proportion to stage of development of animals 13850-4.

Physiological knowledge, advance in, based upon results of experiments 13557-60, 13561, 13807-9, 13847-9.

Physiological knowledge, importance of extending, by experimental research 13547, 13960-64.

"Pithing" of frogs denotes removal of whole central nervous system and consequent insensibility to pain 13702-10, 13930-4.

Starving experiments :

No material pain in, after discomfort of first few days 13879-83.

Water generally allowed in, relieving discomfort to a certain extent 13935-9.

Students should have licence for carrying out certain experiments under supervision, 13813-19, 13855-63.

as to Supply of animals for experimental purposes, 13824-30.

Vivisection Act, 1876 :

Has worked well, and does not restrict scientific research, 13870.

Should be limited to experiments on warm-blooded animals, 13824, 13864-9.

GOUT, whole pathology of, not yet known, *E. H. Starling*, 4272.

GOWERS, SIR W., discovery of ascending tracts in lateral column of spinal cord due to experiments of, and is basis of present knowledge of anatomy of nervous system *H. Head*, 17807-12.

Reference, *Miss A. Kenealy*, 5288.

GOWERS, DR., reference, *Rev L. S. Lewis*, 8776.

GRAEFE, VON, discovery of cure for glaucoma, by, *Sir H. R. Swanzy*, 9836.

GRAHAM, J. W., M.A., Principal of Dalton Hall in the Victoria University, Manchester; Parliamentary Association for the Abolition of Vivisection 5835-6131.

America, no federal regulation as to experiments in, 6049-53.

Anæsthesia :

Cruelty of experiment lies in incompleteness of, 6077-88.

Experiments not objected to provided complete, could be secured 5944-6.

Anæsthetics :

Danger to life of animal often prevents use of, and uncertain testimony as to efficacy of, 6096-110.

Efficient administration of, to men admitted 6089-93.

"Baking" of rabbits by Sir Lauder Brunton 5844-9, 6131-40.

"Borderland cases," problem should be left to judiciary to decide 6073-6.

Dr. Rose Bradford's experiments on dogs' ears and cruelty of same 5842-4.

Callousness and indifference to pain arise from constant practice of vivisection 5898-906.

Castration should be performed under anæsthetics, 5928-31, 6111-113.

Curare, no personal recollection of its use without anæsthetic 5895-7.

Dogs :

Dropped from heights upon iron ledges and cruelty of such experiments 5857-5861.

Exemption of, from experiment would not satisfy Parliamentary Association 6157-61.

Experiments on, involving exposure of viscera and insertion of cannule into throats without administration of chloroform 5861-71.

Impossible to anæsthetise completely 5960-9.

Drugs, testing of new soporific, on animals not objected to 6070-2.

Evidence referred to :

"Baking" experiments, explanation of, *Sir L. Brunton* 6785-829, 6818.

Dr. Rose Bradford's experiments, actual facts in connection with, *J. R. Bradford* 17678-87.

Immorality of vivisection, views as to, criticised *Sir V. Horsley* 15661.

Manchester University views not represented, and as to witness's connection with University *J. Lorrain Smith* 18372-87.

Experiments on rats with view to discovering sense of direction involved extreme cruelty 5871-7.

Home Office, speculation as to sanction of experiments such as have been performed in America 6054-5.

Laymen might be permitted to witness experiments 6156.

Licence, experiment performed without, 6044-6.

Moral objections to vivisection 5883, 5885, 5887, 5943-9, 5989-93, 6119-23, 6127-30, 6163.

No personal experience of experiments 6117-18.

Opposed to all forms of cruelty to animals, but prepared only to speak on question of vivisection 5994-6034.

Pain :

Amount suffered by animals in experiments 5878-82.

Anti-vivisectionists protest against indifference to, 5883.

as to Vitiating of experiments by, 5933-7.

Painless experiments, opinion as to sanction of, 5971-86.

Penalties to be imposed for performance of experiments not considered 5957-9.

Possibility of experiments in future on human beings 5887-90.

Prohibition of experiments, possible effects, 5951-6.

Dr. C. Shaw's experiments on eyes of rabbits, involving prolonged irritation 5849-55, 6059-69, 6141-2.

Snake bite experiments in India 5855-6, 6059-60.

GRAHAM J. W., M.A.—*cont.*

- Total abolition of vivisection desirable 5891-4, 5943-9, 6039-41.
Unwilling to give opinion on medical matters 5918-27.
Would not avail himself of doubtful advantages gained by vivisection 5917.

GRAVES' DISEASE, experiments in relation to bacterial origin of, and immunising and curative influence of culture sera *H. Morris*, 7726.

GRAY, CAPT., R.A.M.C., references *Col. D. Bruce*, 14476.

GRAY, C. E., M.R.C.V.S., Principal Veterinary Surgeon, Transvaal, reference *S. Stockman*, 3337.

GREENWOOD, G., M.P., pamphlet of, reference *E. H. Starling*, 4142.

GRIEG, CAPT., I.M.S., reference *Col. D. Bruce*, 14476.

GROOM, SIR J. H., President of Royal College of Surgeons, Edinburgh, reference *G. D. Thane*, 1751.

GROUSE DISEASE, Frimley heather registered for investigation of, *G. D. Thane*, 344, 358-63, 1404.

GROUSE DISEASE COMMITTEE, Frimley selected for experiments by, *G. D. Thane*, 365.

GROVE, LADY, reference *Hon. S. Coleridge*, 10993.

GRÜNBAUM, DR. :

- Apes, cruelty inflicted on, in experiments by, *Mrs. K. Cook*, 1910.
Experiments on the brain of the chimpanzee by, *E. A. Schäfer*, 10009.
Illegal exhibition of experiments in connection with action of snake poison on rabbits by, and consequent proceedings *Hon. S. Coleridge*, 10330-70, 11125-34, 11157, 11176-9, 19878.

GUINEA-PIGS :

- Cocaine, its anaesthetising powers first tested on, *A. R. Cushny*, 4751.
Drugs, action and amount of toxic dose tested on, *A. R. Cushny*, 4824.

Inoculations for diagnostic purposes :

- Diphtheria, *G. S. Woodhead, J. Lorrain Smith*, 15473-5, 18187, 18196-201, 18210-13.
Glanders, *S. Stockman*, 3228-34.
Necessity and value of, *E. H. Starling, W. H. Power*, 3445, 4306-7.
Objected to, *Mrs. K. Cook*, 2043-53.
Sheep disease, *G. D. Thane*, 373-6.
Tuberculosis, *Sir J. Russell, S. Stockman, J. R. Bradford, J. Lorrain Smith*, 711, 3073-4, 3415-8, 17630-5, 18452.

Microscopic examinations of bacilli in milk frequently made without resource to inoculation of, *S. Stockman*, 3088-90.

Physiological conditions prevent substitution of, for dogs or cats in certain experiments *G. D. Thane*, 427.

Supply of, for experiments :

- Bred, *G. D. Thane*, 1431-4.
Certain number bred in laboratories, but majority brought from outside *Sir J. Russell*, 673-4.

GULL, SIR WILLIAM :

- Clinical study of cretinism by, did not discover its connection with thyroid gland *Sir V. Horsley*, 16231.
Work of, in connection with pathology of myxedema and cretinism *Sir R. D. Powell*, 3684-93.
Reference *Sir V. Horsley*, 15688.

GULF STREAM, possible influence of, on prevalency of sheep disease *D. J. Hamilton*, 20302-7.

GUTHRIE SOCIETY, Sturges lecture by Dr. Sims Woodhead before, and cruelty of experiments referred to, *Mrs. K. Cook*, 1921.

HAFFKINE, W. M. W., C.I.E. :

- Cholera antitoxin devised by, and its success *W. H. Power*, 4324.

HAFFKINE, W. M. W., C.I.E.—*cont.*

- Experiments conducted by, in connection with investigation of plague *F. Taylor*, 5597-9.
Explanation by, as to occurrence of tetanus in India with use of plague serum *W. H. Power*, 4500.
Plague antitoxin, see under SERUM THERAPY.

HAGEBY, MISS L. LIND-*af*, see LIND-*af*-HAGEBY, MISS.

HAHN, EUGEN, experiment performed by, of inserting cancer from diseased into healthy breast of woman quite unjustifiable *J. H. Levy*, 18488-90, 18634-42.

HAHNEMANN :

- Fundamental principles of, still embodied in homeopathy *G. H. Burford*, 8963-9.
Homeopathic measures against cholera indicated by, and successful result *G. H. Burford*, 9049-52.
Homeopathic remedies for cholera put forward by, *G. H. Burford*, 9049-52.

HALDANE, J. S., F.R.S. :

- Appointed to give evidence on behalf of Oxford University, *F. Gotch*, 13791, 13796-7.
"Caisson" disease, experiments of, *E. H. Starling*, 3906.
Experiments by, resulting in treatment of poisoning by coal gas and charcoal fumes in mines *E. H. Starling*, 3442, 3809-10.
Report by, for Local Government Board on application of carbonic oxide to destruction of rats on plague-infected ships *W. H. Power*, 4301, 4631.

HALES, REV. STEPHEN, discovery of blood pressure by, *Sir T. L. Brunton, E. H. Starling*, 6944, 3442.

HALL, BASIL, protest against excessive operations on man by, *G. D. Thane*, 1579.

HALL, W., assisted by Drs. Gaskell and Shore's cross circulation experiments and sufficiency of anaesthesia vouched for by, 21581-635.

HALLIBURTON, W. D., M.D., F.R.S. :

- Complete anaesthesia maintained during operation of stimulating nerve performed by, *E. H. Starling*, 3657-8.
Experiment on spleen of dog by, and cruelty involved *Mrs. K. Cook*, 1919.

Handbook of Physiology by :

- Cholin tests referred to in, *Miss Lind-af-Hageby*, 7467-76.
Incomplete anaesthesia during experiments advised in, *Miss Lind-af-Hageby*, 7223-51.
Shambles of Science, quotes from paper by, *G. D. Thane*, 1269.

HAMILTON, municipal laboratory at, *G. D. Thane*, 339.

HAMILTON, D. J., Professor of Pathology at the University of Aberdeen, 19984-20378.

Aberdeen, little opposition in, to experiments on animals 20210-11.

Aberdeen University, evidence on behalf of general question of vivisection agreed with, 19986.

Agriculturists in Scotland would be entirely opposed to prohibition of experiments 20201-2.

Medical Faculty of Aberdeen :

- Perfectly satisfied with existing Act and its administration 20250.
Unanimity of, as regards necessity of experimenting on animals 20203-4, 20209.
Sheep, no official return of number of, in Scotland 20221-3.

Sheep Diseases :

- All, are acute febrile diseases 20250-3.
Bactericidal properties of sheep's blood introduce a most confusing element into problem of discovering prophylactic for, 20166-70.
Black quarter, diagnosed frequently as braxy and remedy for latter disease does not meet case of, 20112-3.

HAMILTON, D. J.—*cont.*Sheep Disease—*cont.*

Braxy:

- Average percentage of deaths from, in years 1901-3 20119-20.
- Bacillus of, voided in soil 20130-2.
- Better fed sheep are more susceptible to, 20291.
- Experiments with preventive remedy discovered showed that drenched animals did not die of, 20134-7.
- Essentially a disease of first-year sheep, and hence suggestion that immunity is acquired through some agency in the soil 20059-63, 20219-20.
- Failure of certain subcutaneous inoculations of, to produce immunity 20247-8.
- Highland and Agricultural Society, committee appointed to investigate *habitat* of, 20131.
- Immunity from, conferred by preventive treatment, generally lasts the lifetime 20183-4.
- Incubation period of, 20293.
- Lambs immune to, while suckling 20280-4.
- Malignant oedema symptoms often mistaken for, and hence results of preventive methods vitiated 20162.
- Mortality from, among drenched sheep considerably lower than among undrenched sheep 20226.
- Not primarily a blood disease, and therein differs from anthrax 20250a-6.
- Organism of, discovered by Nielsen and corroborated by experimental investigation 20033-9.
- Organism of, revealed by microscopical examination 20140-2.
- Origin and meaning of name 20041-2.
- Other diseases often diagnosed erroneously as, 20171.
- as to Risk in eating carcasses of animals that have died from, 20353-5.
- Symptoms of, not in the least similar to those of ptomaine poisoning 20272-3.
- as to Weather effects in outbreaks of, 20292.

Cure for, not claimed to have been discovered, but preventive remedy obtained 20127-9.

Departmental Committee appointed to investigate, 19990-5.

Date of first drenching methods adopted, 20181-2.

Distinction between different, sometimes confused, and bacteriological diagnosis necessary 20139, 20143-5, 20154, 20268.

Essential that experiments should be performed where disease is found and not in laboratory 20207-8.

Experimental investigations pursued have been approved of in Scotland 20195-200.

Experimental methods adopted with object of obtaining immunisation and remedy arrived at 19987-9, 20056-8, 20064-83.

Experiments in connection with, all conducted under licence 20122.

Experiments on behalf of the Board of Agriculture 20114-7.

Experiments performed under travelling licence 20205-6.

Farmers have given every encouragement to drenching method of immunisation 20230.

Gulf Stream influence on prevalence of, 20302-7.

Immunisation from, secured by drenching throats of animals and success of remedy in particular instance 20083-110, 20185-94.

Immunity obtained by giving animal mild form of disease at time of year when it is not naturally susceptible 20238-47.

Inoculation with bacillus of, attended with risk, but its administration by drenching process at proper season of year safe 20311-14.

Inoculation with virus produced at the symptoms of the disease 20233-4, 20269-70.

HAMILTON, D. J.—*cont.*Sheep Diseases—*cont.*

Louping Ill:

Bacillus not found microscopically in case of, but invariably discovered after incubation of peritoneal liquid 20259-61.

Best mode of investigating, was by allowing animal to die and examining peritoneal fluid 20179-80.

Caused by specific bacillus inhabiting intestine and method of its spread 20029-32.

Derivation of name, 20279.

Experiments to test theory that ticks communicated, were negative except in instance where tick was swallowed 20174-8.

First investigations into, carried out in valley of the North Tyne 20006-7.

Inoculations of blood and cerebro spinal fluid produced negative results 20016-19.

Liquid in peritoneal cavity of sheep suffering from, injected into healthy animals with fatal results 20020-8, 20212.

Post-mortem examinations revealed nothing as to cause of, 20012-16, 20126.

Pyæmia not analogous to, in 20262-6.

Symptoms and fatal results of, 20008-11.

Mortality statistics not always reliable owing to difficulty of differentiating between, 20340-8.

Pain not caused in inoculation experiments in connection with, 20118.

Popular remedies for, quite useless 20050-3.

Prevalency of, and disastrous effects on sheep farming industry in Scotland 19996-20004.

Prophylactic treatment:

General success of, 20349.

How suggested 20329-30.

Preparation of remedy and as to charge for its distribution 20350-1.

Method of protecting simultaneously against all, attempted but results not yet ascertained 20147-9, 20163-4.

Pens and folds, their condition as affecting, 20295-301.

Romney Marsh Outbreak, uncertainty as to its specific nature 20155-9.

Tuberculin, its reliability as diagnostic agent 20357-72.

Reference 7882.

HAMILTON, SIR W., reference, *Sir L. Brunton*, 7163-4.

HANAU, PROFESSOR VON, Zurich, cancer experiments on rats by, *H. Snow* 2178-80.

HANKIN, MR., Chemical Examiner and Bacteriologist for the N.W. Provinces and Oudh, Report to Plague Commission in 1899 by, concerning occurrence of plague among individuals in which no microbes were visible *G. G. Bantock* 14954.

HARBERTON, LORD, reference *Hon. S. Coleridge*, 10993.

HARCOURT, The late SIR WILLIAM, Home Office policy of consulting Association for the Advancement of Medicine by Research initiated by, *G. D. Thane*, *W. P. Byrne*, *Hon. S. Coleridge* 31, 397, 10909-14.

HARLEY, DR. VAUGHAN, cruelty of experiments on dogs' gall bladders performed by, *Mrs. K. Cook* 1919.

HARVEY, discovery of circulation of the blood, by, *E. H. Starling* 3442.

HARVEY, CAPT., R.N., anatomical change in brain brought about by sleeping sickness discovered by, *Col. D. Bruce* 14329-35.

HARVEY, DR. W. B., reference, *E. A. Schäfer* 10193.

HARVEY, PROFESSOR REUBEN, certificate C not allowed to, *Sir T. Stoker* 795.

HAUGHTON, The late PROFESSOR, experiments in Dublin University not permitted by, *Sir T. Stoker*, 770-2.

HANSEMAN, PROFESSOR VAN, doubtful as to malignant character of tumour in mice *H. Snow*, 2118-20.

HAVANNA:

Commission sent by United States in 1900 to, for investigation of yellow fever *W. Osler* 16531.
Mosquitoes in, methods adopted for extermination of, and yellow fever consequently stamped out *G. S. Woodhead, W. Osler* 15555-6, 16539, 16553-65.

HEAD, HENRY, M.A., M.D., F.R.S., F.R.C.P., Physician to the London Hospital 17801-17995.

Sir C. Bell's statements, as to uselessness of experiments of no value 17941-2.
Clinical observation should go hand in hand with experimental methods 17880-5.
Experiments on man should not be undertaken without full knowledge of circumstances attending his condition 17953-4.
Experiments performed by, on nerves of cats, and their comfortable condition after operation *G. D. Thane* 1247-59.

Experiment performed on nerves in hand of:

Conditions of operation, 17960-8.
Knowledge acquired from, though unobtainable from experiments on animals is useless if not associated with results derived from latter 17987-95.
Licence was not required for, 17889-90.
Object of experiment, *G. D. Thane, E. H. Starling*, 1249-51, 1257, 3961-2, 17874-9.
Result entirely revolutionised conception of sensation, 17891-908.
Result necessitated revision as to distinction generally drawn between muscular and cutaneous nerves 17918-23.
Tested theory arrived at by previous experiments on animals 17955-8.
Value of, with regard to future treatment and diagnosis 17972-82.

Licensed to perform experiments at University College and the London Hospital Medical College, *G. D. Thane*, 1385.

Nervous system:

Anterior root, value of knowledge as to its motor nature 17937.
Brown Séquard's observations on functions of, 17945-6.
Cases in which knowledge of, can be ascertained from operation on man.
Cases in which man is operated upon under conditions closely representing those of animal experiment are rare 17813-15.
Cerebral functions, localisation of, one of advances made 17947-52.
Experiments demonstrating connection between brain and limb movements 17812.

Functions and structure:

All rational diagnosis and treatment must be based upon knowledge of, 17804.
Ignorance as to, 60 years ago 17804-5, 17880, 17944.
Present knowledge of, entirely due to experiments on animals 17806, 17812, 17835.
Galen's knowledge as to, 17938-9.
Ganglion, irritation of, produced by shingles and knowledge acquired by studying this material 17873-4.
Gasserian ganglion, removed in man for case of persistent neuralgia and successful results 17813-34.
Nerve regeneration, opinions as to, are too complex to be classified as "periphalist" and "centralist" 17930-5.

Posterior roots:

Experiments on distribution of, bore out theory concerning zones of referred pain 17835-65.
Value of knowledge as to sensory nature of, 17937.

HEAD, HENRY, M.A., M.D., F.R.S., F.R.C.P.—*cont.*

Nervous system—*cont.*

Pain:

Difficulty of locating perception of, 17983-4.
Localisation of, is not the only factor in diagnosis 17928-9.
Prof. Sherrington's experiments greatly aided clinical observation 17971.
Spinal cord, discovery of ascending tracts in lateral columns of, due to experimental methods and is basis of knowledge of anatomy of, 17807-12.
Ulnar nerve, observation and experiments threw much light on sensation of, 17906-12.
Removal of nerve from horse's feet can be effected so that there is permanent insensibility to pain 17866-72.
Professor Sherrington's experiments were entirely separate to those of, but published results greatly aided, 17926-7.
Uselessness of experiments for merely practical ends 17886-8.

HEALD, GEOFFREY, charge against Mr. Gotch corroborated by, *Hon. S. Coleridge*, 11454.

HEARTWATER DISEASE, advances made in prevention of, *S. Stockman*, 2568-70.

HEHMAN, PROFESSOR, mallein discovered by, *S. Stockman*, 2376-8.

HEIDELBERG, International Congress for cancer research at, *H. Snow*, 2212-14.

HEMOPTYSIS, as to date of research which led to substitution of opium for lead in cases of, *A. R. Cushny*, 4863-5.

HEMPSON, MESSRS., Solicitors, reference, *G. D. Thane*, 1280.

HENDERSON:

Work regarding secretion and excretion of eye, by, *Sir H. R. Swanzy*, 9839.
Reference *E. H. Starling*, 4169.

HERFORD, Mrs., cries of animals in University Museum, Oxford, heard by, *Hon. S. Coleridge*, 11454.

HERHOLD, tetanus antitoxin employed by, *C. J. Martin*, 11754.

HERMAN, Dr., views of, with regard to value of serum treatment in cases of suppuration and blood poisoning, *S. F. Smith*, 13121.

HEROPHILUS, alleged to have vivisected human beings *Sir V. Horsley*, 16153-9.

HERTZ, PROFESSOR, reference to scientific research of, *E. H. Starling*, 3442.

HEWLETT, PROFESSOR, reference, *Miss Lind-af-Hageby*, 9682.

HIBERNATION, a natural condition of anaesthesia, *M. S. Pembrey*, 14152-5, 14178-83.

HIGHLAND AND AGRICULTURAL SOCIETY:

Committee appointed by, to investigate *habitat* of braxy bacillus *D. J. Hamilton*, 20131.
Experiments with regard to sheep disease performed at suggestion of, *D. J. Hamilton*, 19989.

HILL, DR. WOODROFFE, F.R.C.V.S.:

Letter from, objecting to vivisection of dogs *J. Hughes*, 17205-7.
Views of, as regards impossibility of anaesthetising dogs *J. Hughes*, 17523, 17455-62.

HILL, LEONARD E., M.B., F.R.C.S., F.R.S.:

Alleged cruelty of experiments performed by, *Mrs. K. Cook, J. W. Graham*, 1910-11, 5861-71.
"Caisson" disease experiments by, *E. H. Starling*, 3442, 3902-10.
"Caisson" disease, memorandum re, *G. D. Thane*, 381.
Physiology and Pathology of the Cerebral Circulation by, record experiments conducted chiefly under morphia and shows dislike of anaesthetics *Miss Lind-af-Hageby*, 7300.

HILL, LEONARD E., M.B., F.R.C.S., F.R.S.—*cont.*

Recent Advances in Physiology and Bio-Chemistry edited by, makes no mention of anaesthetics *Miss Lindaf-Hageby*, 7265-70.

HIME, DR. T. W., BRADFORD:

Allegations concerning experiments performed by, *Miss A. L. Woodward*, 8828-55, 8789-810, 8885-93.
Church Anti-Vivisection meeting at Bradford in 1898 and charges then brought against, *Miss A. L. Woodward*, 8789-810, 8828-55.

Home Secretary's unjustifiable action in connection with charges brought against, *Miss A. L. Woodward* 8829-55.

Object of experiments performed by, ignorance as to *Miss A. L. Woodward*, 8885-93.

HIPPEN, VON:

Cornea, its successful transplantation from eye of rabbit to man first performed by, *Sir H. R. Swanzy*, 9816-18.

Tuberculin treatment for eye diseases introduced by, *Sir H. R. Swanzy*, 9820.

HIRST, MR., remarks of, on measles epidemic in Fiji Islands, *Sir L. Branton*, 6854-60.

HITZIG, The late PROFESSOR:

Surgical treatment of nervous diseases due largely to experiments of, *Sir V. Horsley*, 15684.

Reference, *E. A. Schäfer*, 10009.

HOBDAV, F., F.R.C.V.S., F.R.S.E., 16284-523:

Anaesthetics:

Administered by trained assistant previous to operation 16332-3.

After effects of, on animals, 16441-6.

Chloroform, *see that title below*.

Investigations into method of administering, chiefly carried out on dogs and cats 16301-5.

Knowledge that a sufficient dose of, has been given is denoted by animal's irresponsiveness to severe pain, 16441-6.

No difficulty in determining whether animal is conscious of pain under, 16329-31.

Study of, specially undertaken at the Royal Veterinary College 16294.

Tracheotomy may or may not be performed under, 16517-18.

Antiseptic treatment of surgical wounds does away with the necessity of bandaging 16347-51.

Castration of horses, method adopted 16401-13.

Chloroform:

Administered by a mask always 16382.

Danger in administering, is at beginning of procedure 16455-60.

Investigations into method of administering, and records of cases 16305-16.

Margin between dose of, securing complete unconsciousness and lethal dose 16454.

Preferred to the A.C.E. mixture 16322-6, 16473-5, 16497-500.

Series of experiments in connection with administration of, to dogs and small percentage of deaths 16434-5.

Dangers attending abdominal operations in pre-antiseptic days 16391-4.

Dogs:

Anaesthetisation of, not difficult 16318-28, 16435-9.

Anaesthetisation of, used to be frequently attended with fatal results owing to want of skill and method, 16294, 16378-80.

Experiments on, justifiable for extension of knowledge with regard to distemper 16358-65.

Fastened to the operating table as a general rule 16340-6.

Muzzled during operation, but not to prevent cries 16476-80.

Terror not shown by, in anticipation of chloroform 16334-6.

Experiments performed by, as to most humane way of destroying animals 16416-33.

Frequent operations performed without anaesthetics on animals by, 16515-16.

Has performed very few experiments 16291-2.

HOBDAV, F., F.R.C.V.S., F.R.S.E.—*cont.*

Horses:

Chloroform can safely be given to, 16398-400, 16414-15.

Fired frequently without anaesthetics 16520-3.

Personal experience shows no danger in anaesthetising, 16440.

Large number of animals treated and operated on by, 16290.

Laudanum, dogs tolerant of large doses 16509.

Licence and certificate held by, in connection with investigation of methods of administering anaesthetics 16667-70.

Licence held by, while at Royal Veterinary College 16512-14.

Majority of surgical wounds heal apparently without pain 16352-6.

Morphia:

Affects different dogs differently 16487.

Dogs insusceptible to toxic dose of, 16483-5.

Instance of administering 20 grains to dog without fatal result 16501-7.

A narcotic, and used largely for stopping pain 16461-3.

Used for certain minor operations on dogs 16481-2.

Morphia said not to be an animal anaesthetic by, *Miss Lindaf-Hageby*, 7316-7, 7322.

Poisoning, experiments performed on dogs in connection with investigation of different methods of, 16370-7.

Professor of Therapeutics at the Royal Veterinary College for seven years 16286, 16366.

Reference *E. H. Starling*, 4155.

Hogg, Dr., Coroner for Middlesex:

Letter from, opposing vivisection of dogs *J. Hughes*, 17209.

Member of Committee of National Canine Defence League *J. Hughes*, 17244.

HOLMES, DR. TIMOTHY, F.R.C.S., correspondence with, as to use of "incomplete anaesthesia" *Hon. S. Coleridge*, 11308, 10991-11006.

HOLMES, OLIVER WENDELL, infectious nature of puerperal fever noted by *C. J. Martin*, 11647.

HOME OFFICE:

Action taken by, to prevent licensee delegating his powers to others *G. D. Thane*, 488-91.

Association for the Advancement of Medicine by Research advises, in issue of licences and certificates *W. P. Byrne*, *G. D. Thane*, *Sir J. Russell*, *Sir T. Stoker*, *Sir V. Horsley*, 24, 27-9, 131-3, 175-6, 435-8, 525-7, 1066-7, 16100-1.

Board of Agriculture experiments under control of, *W. P. Byrne*, 295-8.

Breaches of Act occurring without knowledge of, *W. P. Byrne*, 288-9.

Certificates nullifying usual restrictions as to experiments authorised by, *W. P. Byrne*, 260-5.

Certificates, responsibility of advising, as to their grant rests with inspector *G. D. Thane*, 1466-8.

Certificates sometimes disallowed by, *G. D. Thane*, 1154-8.

Charges brought by Mr. Coleridge against:

Animals not protected from unjustifiable suffering, *Hon. S. Coleridge*, 10266-75.

Annual Return asserts that no experiments entail pain, *Hon. S. Coleridge*, 10540-1.

Annual Return suppresses names of those who sign certificates dispensing with anaesthetics *Hon. S. Coleridge*, 10573-602.

Appointment of biased inspectors *Hon. S. Coleridge*, 10412-30.

Association for the Advancement of Medicine by Research improperly consulted in issue of licences and certificates 10675-91, 11049, 11068-109, 11615-21.

Baseless, *Sir V. Horsley*, 15729.

re "Chemist and Druggist" case *Hon. S. Coleridge*, 10330-70.

re Dr. Crile's experiments *Hon. S. Coleridge*, 10289-300.

re Dixon and Brodie's experiments *Hon. S. Coleridge*, 10370-81.

HOME OFFICE—cont.

Charges brought by Mr. Coleridge against—cont.

- Evasive and insufficient replies to plain questions on administration of the Act *Hon. S. Coleridge*, 10614-39.
- Exemption of Sir Victor Horsley's experiments from inspection *Hon. S. Coleridge*, 10645-56, 11062-90, 19908-18.
- Misleading answer in House of Commons to question as regards number of persons holding certificates dispensing with anaesthetics *Hon. S. Coleridge*, 10317-29.
- Officials have constituted themselves spokesmen of vivisection and made disingenuous statements *Hon. S. Coleridge*, 10275, 10431-513.
- Shielding of licensees known to have broken the law, *Hon. S. Coleridge*, 10603-13.
- Starvation of animals assumed to be painless *Hon. S. Coleridge*, 10514-48.
- Twelve different, *Hon. S. Coleridge*, 10262-4, 11205-7.
- Complaints as to cruelty in experiments would be referred to inspector by, *G. D. Thane*, 1260.
- Conflicting statements as to responsibility of, in deciding painful nature of an experiment *Hon. S. Coleridge*, 10266-75.
- Correspondence with, re Dr. Crile's experiments and subsequent proceedings *Hon. S. Coleridge*, 10289-316, 10991-11043.
- "Drowning" experiments required special permit from, *G. D. Thane*, 1291-7.
- "Drowning" experiments should have been prohibited by, *Hon. S. Coleridge*, 10915-37.
- Evidence of Principal Clerk, see *BYRNE*, W. P. 1-306.
- Experiments indirectly made use of by, *W. P. Byrne*, 301.
- Few complaints as to interference of, with legitimate research *W. P. Byrne*, 194.
- Gordon College, Khartoum, not under control of, *Sir J. Russell*, 661.
- Inspection carried out by, on behalf of public *G. D. Thane*, 1777-9.

Inspectors:

- Evidence of, see *THANE*, G. D., *RUSSELL*, SIR J., 307-504, 1071-1231, 505-755.
- Additional inspection could be secured by making whole time officers *Sir V. Horsley*, 16046.
- All painful experiments should be prohibited except in presence of, *A. G. Scott*, 19529-43, 19577-86, 19666-70, 19673-80.
- Applications for licences and certificates submitted to, *W. P. Byrne*, 32-33, 208.
- Daily inspection of laboratories should be made by, *A. G. Scott*, 19591-19601.
- Duties of, minutes as to, *G. D. Thane*, 1085.
- Duties of, superfluous from vivisection's point of view, but inspection gives public a sense of security *Sir V. Horsley*, *W. E. Dixon*, 16083-4, 19165, 19167-72, 19180-6.
- Fulfil no useful purpose, *Sir V. Horsley*, 16043-5.
- Impracticability of requiring, to watch all possible painful developments of inoculation experiments, admitted *A. G. Scott*, 19702-8.
- Increase of, not objected to, *J. N. Langley*, 15345-9.
- Increase of, not objected to, but impracticable to insist on presence of, at all experiments *F. Gotch*, 13886-9.
- Increase of, undesirable and any outside inspection should be authorised *Sir L. Branton*, 6919-23.
- Increase of, useless *Miss Lind af Hageby*, 7462-5.
- Influenced by recommendations of Association for the Advancement of Medicine by Research *Hon. S. Coleridge*, 10689-90.
- Insufficient number of, and necessity of their being whole time men *A. G. Scott*, *Sir F. Banbury*, 19499-512, 19544-51, 19577-86, 19798-836.
- Licences granted on advice of, *W. P. Byrne*, 131-3.
- Local Government Board's investigations subject to supervision of, *W. H. Power*, 435-6.

HOME OFFICE—cont.

Inspectors—cont.

- Necessary qualifications of, *A. G. Scott*, 19544-51.
- Number and duties of, *W. P. Byrne*, 185-7.
- Part time officers *Sir V. Horsley*, 16082.
- Publications of licensees scrutinised by *W. P. Byrne*, 190-1.
- Report of, as to suitability of premises for experimental work *W. P. Byrne*, 54-6.
- Report of, records all irregularities *G. D. Thane*, 477-8.
- Report of, with regard to suitability of applicants for licences quite apart from report of Association for the Advancement of Medicine by Research *W. P. Byrne*, 175-6.

Returns:

- All experiments recorded in, *Sir J. Russell*, 659-60.
- Alteration in form of, *G. D. Thane*, 1755-6.
- Certificates, number of, permitting experiments on dogs and cats and recovery from anaesthesia issued during 1906, set out in, *J. Hughes*, 17174-82.
- Contraventions of Act set out in, *W. P. Byrne*, 44.
- Increase in number of licensees and experiments shown in, *Sir J. Russell*, 600.
- Local Government Board, investigations recorded in, *W. H. Power*, 4348-50.
- Misleading statements in, as to health of animals after inoculations, *Mrs. K. Cook*, 1919.
- Nature of experiments now required to be distinguished in, *G. D. Thane*, 1334-5.
- 1900, painful inoculations, position with regard to, fully explained, *G. D. Thane*, 464.
- Painful and painless experiments, distinction formerly made between, of no value *G. D. Thane*, 1723-9.
- Sufficient number of, *Sir J. Russell*, *G. D. Thane*, 604, 1188-93.
- Unregistered places licensed for experiments subject to, *W. P. Byrne*, 82-7.
- Visit of, and nature of duties, *W. E. Dixon*, 19163-6.
- Visits of, have caused no trouble, *J. N. Langley*, *G. S. Woodhead*, *Sir V. Horsley*, 15345-9, 15574-5, 16042.
- Work of, might be facilitated by limiting number of registered places, *A. G. Scott*, *Sir F. Banbury*, 19618-20, 19508, 19778-82.
- Inspector and, do not disagree as to issue of licences, *G. D. Thane*, 1151-3.
- Inspector notifies all irregularities under the Act to, *G. D. Thane*, 1145-7.
- Investigations authorised by, *W. P. Byrne*, 293.
- Licences and certificates inspected by three officials of, *W. P. Byrne*, 199-204.
- Licences and certificates issued by, to veterinary surgeons on same terms as other applicants, *W. P. Byrne*, 70-2.
- Licences, applications for, made to, and subsequent procedure, *W. P. Byrne*, *G. D. Thane*, 155-6, 388-95.
- Licenses may be required to report in more detail by, *W. P. Byrne*, 103.
- Letter from *Sir Arthur Rücker* to, in connection with statements contained in *The Shambles of Science*, *A. D. Waller*, 18094-7.
- Local Government Board investigators make yearly return to, and figures for 1901, *W. H. Power*, 4333-6.
- Local Government Board investigations supervised by, *W. H. Power*, 4517.
- Personal character and humanity of applicant for licence and certificate not investigated by, *Hon. S. Coleridge*, 10264.
- Painfulness of experiments not decided by, *W. P. Byrne*, 129-30.
- Private places rarely registered for experimental purposes by, *W. P. Byrne*, 74-7.
- Publications of licensees must be sent to, *W. P. Byrne*, 95-102.

HOME OFFICE—cont.

Records of Experiments:

- Conference suggested to report as to, *W. P. Byrne*, 240.
- Return formerly provided for, now dispensed with *W. P. Byrne*, 188.
- Responsibility of permanent officials *Hon. S. Coleridge*, 10899-12.
- Takes no steps to investigate cases of experiments performed by unlicensed persons *W. P. Byrne*, 185.
- Time limit usually imposed by, in granting special certificates *W. P. Byrne*, 267.

HOME SECRETARY:

- General powers under the Act granted to, *W. P. Byrne*, 10-15.
- Justified in imposing conditions on licences, *E. A. Schäfer*, 10741-6.
- no Legal proceedings under Act instituted by, *W. P. Byrne*, 45-6.
- Letter from, as to allegations concerning Dr. Hime's experiments *Miss A. L. Woodward*, 8804.
- Letter from, concerning alleged vivisection of frog at physiological lecture by Dr. Langdon Down *Miss A. L. Woodward*, 8811-20.
- Minutes of, as to inspector's duties, *G. D. Thane*, 1085.
- Necessity of obtaining consent of, for the prosecution of a licensee should be abolished, *A. G. Scott*, 19559-67.
- Number of experiments under Certificate B may be reduced by, on advice of Inspector *Sir J. Russell*, 633-4.
- Petitioned to prohibit Professor Schäfer's drowning experiments on dogs, *J. Hughes*, 17218.
- Proposed investigation of painful character submitted to, *W. P. Byrne*, 218-20.
- Prosecution of licensee for contravention of Act cannot be instituted without assent of, *W. P. Byrne*, *Sir J. Russell*, 230-1, 591.
- Prosecution of licensees should be instituted by, *Hon. S. Coleridge*, 11115-23.
- Responsibility of protecting animals has been delegated by, to vivisectionists themselves *Hon. S. Coleridge*, 10265.
- Statement made by, in 1903 with regard to increase of experiments on dogs *J. Hughes*, 17547-58.
- Sanction of, required for all fresh licences and certificates, submission to, of all proposed investigations of a new character, *W. P. Byrne*, 2, 4.
- Unjustifiable action of, in connection with allegations against Dr. Hime *Miss A. L. Woodward*, 8829-55.

HOMEOPATHY:

- Colchicum investigated on principles of, and method adopted *G. H. Burford*, 8915-22.
- Digitalis, homeopathic method of investigating action of, *G. H. Burford*, 8928-35.
- Drugs can be tested better by methods of, than by animal experiments *G. H. Burford*, 9076-7.
- Drug testing by methods of, on volunteer patients *G. H. Burford*, 8909-13, 8952-6, 9002-5.
- Drug testing by methods of, on volunteer human beings should precede experiments on animals *G. H. Burford*, 8961-2, 9026-32, 9044-8.
- Equipment necessary for research on principles of, *G. H. Burford*, 9101-4.
- Hahnemann's fundamental principles still embodied in, *G. H. Burford*, 8963-9.
- Investigatory methods of, give accurate knowledge of action of drugs on "tout ensemble" of patient *G. H. Burford*, 9085-9.
- Many remedies have been introduced into medical practice by means of, *G. H. Burford*, 8924-6.
- Methods of, preferable to experiments on animals since final tests of remedies must always be on man *G. H. Burford*, 8942-49.
- Methods of, should supersede animal experimentation for pharmacological purposes *G. H. Burford*, 8908-13.
- Nature of experiments necessary for investigations on principles of, *G. H. Burford*, 9101-4.
- Remedies introduced into professional use through methods of, *G. H. Burford*, 8924-5, 9015-24.
- Vaccination as performed by methods of, *G. H. Burford*, 9053-69.

HOOKER, experiments by, reference, *Miss A. Kenaly*, 5296.

HOPPS, REV. J. PAGE, Social Purity Alliance 8312-628.

- Abolition of all experiments desirable 8501-4.
- Accounts of experiments published by Anti-Vivisection Societies indicate pain suffered 8449-53.
- Acquainted with general conditions of Act, but does not wish to give evidence as to evasion of, 8330-45.
- All operations on animals except for their good are criminal 8516-22.
- Castration, doubts as to justification for, 8435-46, 8610-11.
- Continental practice of experimenting on patients in hospitals 8519-27.
- Distinctions between using animals for food and other purposes 8482-500.
- Distrust of experiments derived entirely from reading and conversation 8589-96.
- Distrust of vivisection generally, 8615-28.
- Ethical objections to vivisection 8315, 8390-420.
- Experiments should be regulated by general law of cruelty to animals 8581-4, 8614.
- Illegal to obtain knowledge by experiments on animals 8447-8.
- Individual judgment must be standard of what is ethically right 8560-65.
- Justified in making statements as to tortures inflicted on animals by vivisectionists 8421-3.
- Man not justified in inflicting pain upon animals 8425-34.
- Medical profession not united as to desirability of vivisection 8352-3A.
- Morals deteriorated by practice of vivisection 8370-6, 8329, 8523.
- Observations made by experimenters untrustworthy and objectless 8354-69.
- Painless nature of experiments, scepticism as to, 8555-9.
- Practice of vivisection has fascination for those who engage in it, 8315-18.
- Public attention should be turned to improvement of sanitary conditions rather than to discovering remedies for disease 8585-8.
- Rats, their destruction permissible if painlessly conducted 8549-50.
- Sport of all kind objected to, 8542-5, 8597-608.
- Various grades of objections to vivisection 8569-72.
- Vegetarianism, doubts as to question of, 8377-8, 8471-5.
- Wrong to kill an animal painlessly for purposes of post-mortem observations 8463.

HORROCKS, MAJOR, R.A.M.C., Sanitary Officer at Gibraltar:

- Experiments performed by, in connection with communication of Malta fever by dust, not successful 14457.
- Measures adopted by, in stamping out Malta fever at Gibraltar 14288-90.

HORSES:

- Act does not control use of, for production of sera *G. D. Thane*, *C. J. Martin*, 1747-8, 11845-7.
- Anæsthetisation of, no danger involved *F. Hobday*, 16440.

Castration of:

- Anæsthetics may or may not be used for, *S. Stockman*, 2873-87.
- Anti-tetanus serum generally injected before, *S. Stockman*, 3281-2, 3287.
- Method adopted, *F. Hobday*, 16401-13.
- Certificate F. required for experiments on, *G. D. Thane*, 423.
- Chloroform can safely be given to, *F. Hobday*, 16398-400, 16414-15.
- Diphtheria anti-toxin, prepared from, *G. S. Woodhead*, 15473-5.

Docking of:

- Anti-tetanus serum generally injected before, *S. Stockman*, 3281-2, 3287.
- Superficial pain only caused *E. H. Starling*, 3956-8.
- Exported to Continent for horseflesh, meat tested on arrival with mallein, *S. Stockman*, 3250.

HORSES—*cont.*

- Fired frequently without anæsthetics, *F. Hobday*, 16520-3.
- Inoculated with tetanus anti-toxin and immunity thereby produced, *S. Stockman*, 2507-23.
- Inoculation of, for purposes of immunising against tetanus, does not involve suffering, *C. J. Martin*, 12044-9.

Inoculations for serum production:

- Blood, amount that can be drawn without inconvenience to animal, *S. Stockman*, 2618-23.
- Care taken to secure healthy conditions, *G. D. Thane*, *C. J. Martin*, 1443-7, 11696-710.
- Swine-erysipelas, *S. Stockman*, 2557-62.
- Inoculations of small pox into, in France, *W. H. Power*, 4486-7.
- Inoculations of, with toxin, do not necessarily produce attack of disease, *S. Stockman*, 3274-5.
- Reaction of, from mallein, not always conclusive proof of glanders, *S. Stockman*, 3235-45.
- Removal of nerve from feet of, can be effected so that there is permanent insensibility to pain, *H. Head*, 17866-72.
- Sera largely obtained from, on account of its quantity and cleanliness, *S. Stockman*, 3271-2.

Horse-sickness.

- Advances made in immunising mules from South African, *S. Stockman*, 2568.
- Fairly accurate knowledge of, derived from experiments, *S. Stockman*, 3388-3402.

HORSLEY, SIR VICTOR F.R.S., F.R.C.S., British Medical Association, 15583-16283.

- Alcohol, consensus of medical opinion as regards its non-dietetic value, 15867.

Anæsthesia:

- Absence of purposive movements under, is criterion of unconsciousness to pain, 15929-35.
- Death under, possible difficulty of distinguishing cause of, 15863-4.
- "Incomplete":
 - Mr. Coleridge's* letter to surgeons regarding use of, deceptive and misleading, 15728.
 - Explanation of term as used in connection with *Dr. Crile's* experiments, 15721-8.
- Inquest or public enquiry not held in Scotland in case of death in hospital from, 15861-2.
- Object of modern research on, is to know how to paralyse higher centres of brain, 15900.

Anæsthetics:

Administration of:

- Knowledge of, should be acquired by practice on animals, 15644.
- Necessity of teaching by experiments, 15651-2.
- Pain, its gradual diminution during, 16012-14.
- Anti-vivisectionists' mistatements regarding performance of experiments in England without, 15728-9.
- Dogs can be easily kept under, 15909.
- Foreign experiments are rarely conducted now without, 15887.
- in Midwifery cases, 16015.
- No experiments involving cutting, of a painful character, have been performed during administration of Act without, 16188-99.
- Pain not felt under, 15899.
- Previous to discovery of, surgeons were justified in experimenting upon animals, 15869-71.
- Respirable gases and vapours, action of, established by experiments, 15652-3.
- Animals used in experiments, 16054.

Antiseptic surgery:

- Anti-vivisection opposition to, shows distinct lack of moral feeling, 15672.
- Blood poisoning and pyæmia after operations have disappeared owing to, 15669-71.

HORSLEY, SIR VICTOR F.R.S., F.R.C.S.—*cont.*Antiseptic surgery—*cont.*

- Introduction of, entirely due to experiments on animals, 15669-71.
- Invention of, has saved incalculable degree of pain, 15669-71.
- Anti-vivisectionists not morally justified in accepting knowledge gained by vivisection, 15589-94, 15872-4, 16137-8.
- Aseptic surgery is logical outcome of Lord Lister's teaching, 15666-8.
- Association for the Advancement of Medicine by Research, necessity of Home Secretary being advised by, in issue of licences, 16100-1.
- Boy employed in laboratory of, testifies to cruelty of vivisection practised there, *Miss A. L. Woodward*, 8824.
- Blood pressure, knowledge of, has been entirely obtained by experiments and its vital importance both clinically and in operations, 16512-14, 16040-1.

Brain:

- Diagnosis of different diseases of, can only be learnt by observation during experiments, 16036-9.
- Optical surgery advanced by observations made during experiments on, 16000-2.

Brain surgery:

- Nature of experiments, and absence of pain in same, 15986-97, 16003-4.
- Successful operative treatment of brain and spinal cord wholly due to experiments on animals 15842, 15846, 15998-16000.

British Medical Association:

- Constitution and membership 15585-6.
- Deputation sent from, to express to *M. Pasteur* feelings of the profession as to value of his work 15603.
- Only public body in this country that thanked *Mr. Long* for imposing Muzzling Order 16026-30.
- Scientific Grants Committee gives grants to students for purposes of research 15586, 15782-4.
- Views of, as to morality of vivisection and immorality of anti-vivisection 16135-41.

Carbolic ligature, statement as to its failure untrue 15962-5.

Certificates held by, 16052-3.

Certificates:

- A, difficulties arising from fact that anæsthetics are not permitted under, 15757-60.
- Abolition of, desirable 15767.
- Abolition of, need not eliminate advisory bodies concerned in issue of, 15775.

B:

- No ambiguity in wording of, as suggested by *Mr. Coleridge* 15945-9.
- Suggestion that anæsthetics are not used throughout experiments under, quite baseless 15761.

C, unnecessary, 15761.

D, unnecessary, and contrary to progress of scientific work 15761-2.

E, originally liable to misapplication and refusal of a previous Home Secretary to reconstruct it 15762-5.

EE, substituted for Certificate E since 1888 15762-3.

Experimenters' form of return to Home Office could be expanded so as to include all details supplied by, 15767.

F, unnecessary, 15765-7.

Restriction of number of experiments in, and difficulties arising therefrom 15767-70.

Unnecessary, and only complicate administration of Act, 15756, 16090.

Charges brought against Home Office concerning, see under HOME OFFICE.

Chloroform:

- Discovered by accidental inhalation 16258.
- Percentage of, to secure unconsciousness, much the same in all warm-blooded animals 15645-9.

HORSLEY, SIR VICTOR, F.R.S., F.R.C.S.—*cont.*Chloroform—*cont.*

System of introducing, from another room through a tube quite satisfactory 15910-12.

Cold-blooded Animals:

Act should not have reference to, 16267-74.

Distinction between warm-blooded animals and, should be only form of differentiation between animals under Act 15952-4.

Separate certificates for experiments on, unnecessary 16275-9.

Mr. Coleridge's charges against Home Office *re*, baseless, and actual facts in connection with permission to perform two experiments away from laboratory 15729, 15733-56.

Control of Animals during Experiments:

Animals are tied down for sole purpose of keeping them in position 16009-11.

Misrepresentation by Mr. Coleridge of evidence during Bayliss libel case as to, 16010-11.

Dr. Crile's experiments performed in laboratory of, *Hon. S. Coleridge*, 16265.

Dr. Crile's Experiments:

Anesthesia maintained throughout, and hence application of term "terrible" to, unjustifiable 15893-7, 16220-2.

Anti-vivisectionists' persistent misrepresentation of, 15901-7.

Conclusions arrived at from, and their applicability to man 15850-60, 16202-3.

"Incomplete anesthesia," term as used in description of, does not mean consciousness to pain 16048-53.

Necessary and painless 15851-5.

Object was to investigate conditions of surgical shock as arising in operations on human beings 15971-2, 16204-18.

Origin of, and as to Mr. Coleridge's observations on, 15688-91.

Personally witnessed six or seven of, and no suffering observed 15975-6.

Some performed in America 16199-201.

Curare:

No danger in use of, with accompanying anaesthetic 15913-18.

No objection to presence of inspector at all experiments involving use of, 16058-9.

Rarely used, 16054.

Mr. White's case of accidental poisoning by, 15918-24, 15965.

Demonstration Experiments:

Essential, for proper education of students 15630-1, 15606, 15614-20, 15798-9, 15939, 16105-11.

Mr. Pembrey's statement *re*, criticised 16265-6.

Performed under Certificate B, and animal not allowed to recover 15621-2.

Students not demoralised by witnessing, 15606, 15886, 16116-21.

Diagnosis and operative technique of surgery require to be advanced by experiments 16087.

Director of Brown Institute for several years, 15981.

Dogs, absolutely essential, both for demonstration and original research purposes 15808-11, 15942-3.

Drugs:

All experiments with new, should be made on dogs, rather than upon man, 15655.

Experimentation with regard to effects of, has been neglected, and is most necessary 15865.

Ductless glands, fruitful results of experiments on, 16005-8.

Evidence of, in Bayliss v. Coleridge libel case accurately represented *Hon. S. Coleridge*, 19919-29.

Evidence referred to:

Catalogue of instruments, charges *re* circulation of, *Hon. S. Coleridge*, 19877-9.

Deception alleged in letter to surgeons with reference to meaning of "incomplete anaesthesia" unfounded *Hon. S. Coleridge*, 19930-2, 19967-74.

HORSLEY, SIR VICTOR, F.R.S., F.R.C.S.—*cont.*Evidence referred to—*cont.*

Mansion House meeting, charges *re* inaccurate account of, *Hon. S. Coleridge*, 19845, 19880-901.

National Anti-Vivisection Society never opposed Muzzling Order as stated *Hon. S. Coleridge*, 19901-19905.

Suggestion that witness' experiments were only ones witnessed last year by inspector *Sir G. Kekewich*, 20433-8.

Exemption of, from inspection by Home Office *Hon. S. Coleridge*, 10645-56, 11082-90, 19908-18.

Experiments on dogs at laboratory of, under complete anaesthesia *E. H. Starling*, 4142-52.

Experiments performed by, conducted mainly at University College and Brown Institute, and inspection frequent 15981-4, 16075-9.

Experiments performed by, on thyroid gland demonstrated that its absence or disease is responsible for cretinism and myxedema, *Sir R. D. Powell, W. Osler*, 5684-93, 16570, 16576-80, 16626.

Explanation of statement that vivisection is a narrow and restricted province, in physiology 15806-7.

Foreign experiments, conduct of, irrelevant to present inquiry 16126.

Foreign experiments, connection with, repudiated by, *Miss Lind-of-Hageby*, 7223.

Foreign experiments rarely performed now without anaesthetics, 16122-3.

Frogs deprived of their cerebral hemispheres capable of most complex reflex acts, but not purposive ones 16185-7.

Galen's experiments are the foundation of medical knowledge 16160-3.

General Medical Council not suited to be advisory body to Home Office 15777-8.

Herophilus is alleged to have vivisected human beings 16153-9.

Human vivisection would be immoral, and knowledge gained thereby immorally gained 16143-52.

Immorality of obstructing pursuit of knowledge 15588, 15868.

Inspectors:

Additional inspection could be secured by making, whole-time officers 16046.

Duties of, superfluous 16043-5, 16083-4.

Part-time officers 16082.

Intestinal surgery:

Experiments in connection with, not painful 15686-8.

Success of, due to preliminary experiments on animals 15686.

Johns Hopkins' Hospital, Baltimore, animals operated upon by students under most modern conditions at, 15638-44.

Listerism:

Carbolic spray never a leading feature of antiseptic surgery, and abandoned owing to demonstration that air was not toxic to the degree first imagined 15668, 15800-1.

First use of antiseptic treatment 16260-4.

Generally adopted, not only in England, but over the whole Continent 15679.

Modern aseptic surgery is logical outcome of, 15665-8.

Licence held continuously by, since 1883 16060-1.

Licences:

Details of proposed experiments should be stated on application for, and licence should be drafted so that certificates could be dispensed with 15767, 15771-4, 16016-25, 16099.

Draft form suggested, if certificates were abolished 15955-61.

Medical opinion, consensus of, in favour of experiments 15791-3.

Member of past committee to inquire into tuberculosis in animals and minority report of, 16243-53.

Morality of vivisection 16135-41.

Morphia, sufficient dose is an anaesthetic of the most pronounced kind 15926-8.

HORSLEY, SIR VICTOR, F.R.S., F.R.C.S.—*cont.*

National Anti-Vivisection Society, action taken by, with respect to Muzzling Order was immoral 15605.

Nerve sutures, successful modern treatment due to experiments on animals 15684-5.

Nervous system:

All functions of, have been discovered by experiments 16088.

Fundamental knowledge of, all derived from experiments on animals 15680.

Marchi's investigations of the anatomy of, most valuable 15682.

Surgical treatment of diseases of, due largely to experiments 15684.

New surgical operations should always be tested on animals 15653.

Oppenheim's views concerning diagnosis of cerebral tumours 15845.

Operative technique and manual skill should be acquired by experiments 16170-7.

Pasteur Institute:

Actual facts in connection with meeting held at the Mansion House in 1889 *re* benefits derived from work of, 15594-601.

Statements by Mr. Coleridge with regard to institution of English, contrary to fact 15672.

Pasteurian treatment for hydrophobia:

Efficacy of, undoubted 15813, 15819-21.

Rabbits used for propagation of virus, and very little pain involved 15814-22.

Physiology can only be advanced by experiments, 16086.

a Practising surgeon, and has been operating for last twenty years 15967-70.

Rabies:

Absence of, in England, due to Muzzling Order and quarantine imposed by Board of Agriculture 15597-8, 15880-3.

Anti-vivisection campaign against Muzzling Order and Pasteurian treatment for, 15597-600.

Bill for universal collaring of dogs, suggested in connection with outbreak of, 15884.

Infectious not otherwise than by contact or bite 15876-9.

Knowledge of, and efficacy of muzzling dogs for stamping out, entirely due to Pasteur's experiments on animals 15602-3.

Muzzling Order in connection with suppression of, was compulsory over whole country 16026-30.

Records of experiments, Home Office regulations as to inspection of, 15770.

Reflex action, definition 16178-83.

Statement of, as to result of experiments upon thyroid glands Miss A. Kenealy, 6165.

Students should be permitted to acquire manual skill in surgery by experimenting on animals 15632-5, 15794, 15936-8, 16032-6, 16115.

Students should learn administration of anaesthetics by experiments, 16112-114.

Surgical practice no longer reserved to specialists, but carried out by general practitioners 15795-7.

Surgical shock, question of, closely connected with blood pressure, and therefore knowledge of circulation, which can only be acquired by experiments, is essential 15612-4.

Thyroid gland:

Clinical investigation had not discovered connection between cretinism and, 16231.

Clinical observation of, had never discovered connection between cretinism and, 16238-9.

Date of first successful operation of transplanting, from sheep to human subject not known 16241-2.

Loss of, demonstrated by experiments to be cause of cretinism and myxedema 15688.

Outcome of experiments on, has been discovery of value of thyroid extract in treatment of myxedema and cretinism 15836-41.

and Parathyroid, their functions differ only in degree 15829.

HORSLEY, SIR VICTOR, F.R.S., F.R.C.S.—*cont.*Thyroid gland—*cont.*

Removal of, causes symptoms of cretinism and myxedema, but no pain 15825-7.

Removal of, from monkeys has not always caused cretinous and myxedematous symptoms 15831-35.

Treves, Sir F.:

Letter to *The Times* from, *re* misrepresentation of his views on experimental methods Sir V. Horsley, 16031, 16131-2.

Quotation from address by, on subject of intestinal surgery, so often misrepresented by anti-vivisectionists 15803-5, 16130-2.

University College, inspectors' connection with, has made no difference to inspection 16072-4.

Vivisection Act, 1876:

Administration of, hinders progress of physiology 16095.

Drafting of, shows ignorance of conditions surrounding experiments on animals 15762.

Licensing and registration principles embodied in, should be preserved 15729.

Necessary, in view of public opinion, but superfluous from physiological standpoint 16091-2, 16096-8.

Section 3, sub-section 5, should be repealed 15606.

Title of, objected to, 16092, 16096.

Vivisection Commission, 1875:

Evidence before, as to unnecessary repetition of experiments, unwarrantable 16254-6.

Evidence before, as to value of clinical observation 16164-9.

No evidence before, as to "inhumanity" in this country 16129.

Dr. Watson's experiments referred to, 16225-9.

References, Sir L. Bruntton, E. A. Schäfer, C. R. J. A. Swan, 6958-64, 10032, 19273.

HOUGHTON, MR. (Parke, Davis, and Co.), method of standardising drugs, introduced by, A. R. Cushing 4838.

HOSPITAL FUNDS, protest against diversion of, to medical schools Hon. S. Coleridge, 10260-1.

HOUSE OF COMMONS, effect of air of, on mice W. P. Byrne, 125.

HOUSTON, DR., Local Government Board investigations conducted by, W. H. Power, 4301.

HOWARD, DR., resuscitatory methods invented by, E. A. Schäfer, 10107.

HOWELL, PROFESSOR, physiological demonstrations in laboratory of, at Johns Hopkins Hospital, and their advantage to students W. Osler, 16758-67.

HUGHES, CAPTAIN. R.A.M.C.:

Claim put forward by, as to cause of Malta fever, Col. D. Bruce, 14405-13.

Work of, in investigating Malta fever Col. D. Bruce, 14485.

HUGHES, JOHN, F.R.G.S., Secretary of the National Canine Defence League, 17109-17620.

Buisson bath treatment for hydrophobia:

National Canine Defence League agreed as to merits of, 17248-9, 17252-63.

National Canine Defence League originated, in opposition to Pasteur treatment 17235-40.

Dogs:

Anæsthetisation of, difficult without causing death 17156-7.

Anæsthetising impossible 17455-62, 17567-8.

Certificates, number of, issued during 1906 permitting experiments on, and recovery from anaesthesia 17174-82.

Chastisement of, unnecessarily, morally wrong 17365-8.

Demonstration experiments upon, of a prolonged and agonising nature 17450-1, 17467-73.

Destruction of superfluous, disapproved of 17491-95A.

HUGHES, JOHN, F.R.G.S.—*cont.*Dogs—*cont.*

- Differences between human and canine organs make experiments on, useless 17158, 17359-60.
- Drowning experiments on, strongly disapproved of 17498-504.
- Drowning of superfluous, as practised in Edinburgh, disapproved of 17502-3.
- Exemption of, from experiments desirable on moral grounds 17135-54, 17233-4, 17570-4, 17467-8.
- Experiments on, for purpose of extending knowledge *re* canine diseases, questionable, 17361-4, 17484-6.
- Experiments on, terrible increase of, during past three years, and reasons for statement 17544-64.
- Lethal chamber is best means of destroying, 17604-20.
- Medical petition against vivisection of, and signatures obtained 17186-216.
- Members of Parliament pledged to support Bill to prevent vivisection of, 17212.
- Operations on, for curative purposes justifiable 17487-90.
- Opinion with regard to impossibility of anaesthetising, might possibly be modified 17463-6.
- Painless vivisection of, impossible because of difficulty of anaesthetising, 17600-3.
- Petition opposing vivisection of, circulated and signatures received 17166-185.
- Selected for experiments on account of their docility and obedience 17395-438, 17584.
- Vivisection of, with or without anaesthetics unjustifiable 17128-33, 17167, 17275-7, 17467-8.
- Government laboratories for purpose of experimental investigations disapproved of 17507-11.
- Medical profession not entirely on side of vivisection 17512-18.
- Morally wrong to cause pain unnecessarily to any animal 17369-86.
- National Canine Defence League:
 - Bill embodying views of, has been before Parliament 17159-5.
 - Committee of, its constitution 17241-6.
 - Dogs, anaesthetisation of, considered impossible by, 17520-34.
 - Dogs, their exemption from vivisection approved by all members of 17250-1.
 - Founded in 1891 as an Anti-muzzling League 17120-7.
 - Dr. Hutchinson, late M.P. for Rye, unseated owing to efforts of, 17212-3.
 - Influence of, far-reaching 17226.
 - Membership and income of, 17114-118, 17279-85.
 - Object of, does not include general opposition to practice of vivisection on other animals than dogs 17269-74.
 - Objects, one is one total suppression of support of vivisectioning institution by public money 17227-31.
 - Object to protect dogs from all ill-treatment 17119.
 - Petition presented to Parliament by, 17536.
 - Sport indefensible on moral grounds, but question not dealt with by, 17384-90.
 - Stewart, Sir Mark, candidature of opposed at General election by, 17287-95.
- "Peculiarly revolting and painful" experiments 17440-9.
- Rabies:
 - Diagnosis of, unreliability of methods adopted 17338-42.
 - Existence of, denied in certain districts and as to inaccuracy of statistics 17295-342.
 - Existence of, in this country previous to muzzling order to a less extent than stated by Board of Agriculture 17351-8.
 - Existence of, was not such as shown by Board of Agriculture Returns 17343-8, 17585-6.
 - Muzzling of dogs ineffective to prevent, and also cruel 17591-9.

HUGHES, JOHN, F.R.G.S.—*cont.*

- Mr. Starling's statement that he had never seen pain inflicted during experiments incredible 17575-9.
- Useless nature of knowledge acquired by vivisection 17233.
- HUGHES, DR. LUCAS, Liverpool, letter from, with regard to impossibility of anaesthetising dogs 17524-8.
- HUGHES-BENNETT, DR. A., cocaine, its anaesthetic properties first discovered by, Sir T. L. Brunton, 7025, 7027.
- HUGO, VICTOR, anti-vivisection cause supported by, Hon. S. Coleridge, 10262.
- HUMPHREY, PROF., reference, S. F. Smith, 13049.
- HUNGARY:
 - Anthrax successfully inoculated against in, S. Stockman, 2528.
 - Statistics in, with regard to mortality from swine erysipelas, S. Stockman, 2562.
- HUNTER, DR. WILLIAM, cruelty in experiments for jaundice on dogs, Mrs. K. Cook, 1796.
- HUTCHINSON, The late C. F., M.P., M.D., defeated at General Election partially owing to efforts of National Canine Defence League, J. Hughes, 17212-3.
- HUTCHINSON, JONATHAN, F.R.C.S.:
 - Letter from, as to "incomplete anaesthesia" Hon. S. Coleridge, 10308.
 - Man kept purposely uncured for several days in diseased condition by, Rev. L. S. Lewis, 8775.
 - Reference, G. G. Bantock, 14723.
- HUTTON, R. H., member of Vivisection Commission 1875, and reservation signed by, W. P. Byrne, 1.
- HUXLEY, The late RIGHT HON. T. H.:
 - Comparative insensibility of animals to pain maintained by, S. F. Smith, 13046-8.
 - Member of Vivisection Commission 1875, W. P. Byrne, 1.
 - Statement by, that field of morality is a reclamation from a state of nature, J. H. Levy, 18515-18.
 - Views of, with regard to regulation of painless inoculations Sir L. Brunton, 6991.
 - Reference, Hon. S. Coleridge, 10657, 10660-2, 10669.
- "HUXLEY" LECTURE, Psychical condition of dogs referred to in, E. H. Starling, 4230-4.
- HYDERABAD COMMISSION ON CHLOROFORM:
 - Action of chloroform laid down by, and disregarded by English physiologists, Col. E. Lawrie, 16834-6.
 - Conclusions arrived at with regard to morphia Col. E. Lawrie, 20993-6.
 - Conclusions of, have been absolutely ignored, Col. E. Lawrie, 16924-5.
 - Experiments performed by, were necessary to refute results of previous experiments, Col. E. Lawrie, 16986A-7.
 - Method of administering chloroform laid down by, is only safe method, Col. E. Lawrie, 16935-7.
- HYDROPHOBIA:
 - Bacillus of, not yet discovered C. J. Martin, 11909.
 - Buisson bath treatment:
 - Exploded Sir L. Brunton, 7147-57.
 - National Canine Defence League generally agreed on merits of, J. Hughes, 17252-63.
 - National Canine Defence League originated, in opposition to Pasteurian treatment, J. Hughes, 17235-40.
 - Deaths from, occurring during, or within 15 days after completion of treatment excluded from statistics C. S. Martin, 11914-19.
 - Experiments in relation to bacterial origin of, and immunising and curative influence of culture sera, H. Morris, 7726.

HYDROPHOBIA--cont.

Pasteur's treatment:

Efficacy of, undoubted, *Sir V. Horsley*, 15803-11.

Rabbits used for propagation of virus and very little pain involved, *Sir V. Horsley*, 15814-22.

Pasteur's inoculations produced no case of, *C. S. Martin*, 12362-4.

Pasteur's reasons for expecting virus of, might be discovered in nervous system, *C. S. Martin*, 11910-3.

Potassium of potash useful in cases of, *Major L. Rogers*, 8186.

Preventive and curative methods discovered by experiments and Pasteur's work *C. J. Martin*, 11658-95.

Stamped out in this country without recourse to Pasteur's treatment, *C. S. Martin*, 11924.

See also RABIES.

HYPNOTISM:

Experiment on animals under influence of, in Germany, *M. S. Pembrey*, 14071-7.

an Unreliable substitute for anaesthesia, *J. N. Langley*, 15270.

IMPERIAL CANCER RESEARCH FUND:

Authorities directing, *H. Snow*, 2113.

Causal organism of cancer never proclaimed by, *H. Snow*, 2246A.

Congress for investigation of cancer suggested to, *H. Snow*, 2210-2210A.

Experiments on behalf of, *H. Snow*, 2110-5.

Laboratory of, at Ponsfoll's Farm, Hatfield *G. D. Thane*, 344.

Reports:

Article in, on "Transplantation of malignant new growths" referred to, *H. Snow*, 2110-15, 2289-92.

Error of judgment in diagnosing tumour in dog as cancer, *H. Snow*, 2127-34.

Error in statement as regards, admitted *Miss A. Kenealy*, 5495.

Statement in, as to nature of tumour investigated in mice *H. Snow*, 2108-9.

Unsatisfactory conclusions of, *H. Snow*, 2118-20.

Table of tumours examined by, *H. Snow*, 2182.

Tumour specimens forwarded to, but reports of such not founded on clinical diagnosis *H. Snow*, 2191-8.

Work of, useless with regard to Jensen's tumour *H. Snow*, 2163.

IMPERIAL INSTITUTE, experiments at, *Mrs. K. Cook*, 1947-52, 2019-29.

INDIA:

Effort made by Commander-in-Chief in, to secure inoculation of troops against typhoid *C. J. Martin*, 11803-16.

Kasauli Institute, working of, *Major L. Rogers*, 8299-306.

Plague, investigations in, *C. J. Martin*, 11654-6.

Rinderpest in, see that title.

Snake-bite, reduction of mortality from, owing to use of remedy discovered by means of experiments on animals *Sir L. Brunton*, 6870-9.

Snake-poison experiments in, see under SNAKE POISON.

Students in, taught to operate by experiments on animals *Col. E. Laverie*, 17019-35.

Tetanus, its prevalence in certain parts of, *S. Stockman*, 2510.

Tetanus, explanation of its occurrence, with use of plague serum in, *W. H. Power*, 4500.

United Provinces, outbreak of rinderpest in, when inoculated animals did not suffer as uninoculated, *Major L. Rogers*, 8264-9.

Unrest in, alleged to be partly due to unsuccessful use of plague serum *Sir G. Kekewich*, 20627-31.

INDUSTRIAL DISEASES, necessity of using dogs for experiments in connection with, *G. D. Thane*, 1205-351.

INFLUENZA:

Ignorance of medical profession as regards, is evidence of uselessness of experimental methods *Sir G. Kekewich*, 20746-55.

Pneumonic, possible difficulty in diagnosing, *W. H. Power*, 4629.

Theories with regard to bacterial cause of, have been useless in practical treatment *Sir G. Kekewich*, 20583-7.

INTERNATIONAL MEDICAL CONGRESS, 1891, Lord Lister's address before, and acknowledgment of errors in antiseptic surgery, *G. G. Bantock*, 14545-6.

IRISH OFFICE, Dr. C. Shaw's experiments sanctioned by, *Hon. S. Coleridge*, 11135-9.

IRELAND:

Administration of Act in:

Careful, and with humanity *Sir T. Stoker*, 760, 785.

Improvements effected by Mr. Morley, *Sir T. Stoker*, 853.

More continuity desirable, and should be in hands of permanent official *Sir T. Stoker*, 782-3, 854, 953-5, 1068.

Certificates, number of, in force in, 765-7.

Chief Secretary:

Administration of Act by, lack of consistency in, *Sir T. Stoker*, 761.

Applications for licences go through inspector direct to, *Sir T. Stoker*, 848-9.

Applications for licences referred to, and granted on advice of inspector *Sir T. Stoker*, 789-90.

Difference of opinion between inspector and, in connection with granting Certificate C *Sir T. Stoker*, 789-90.

Inspector's advice as to issue of licences sometimes overruled by, *Sir T. Stoker*, 932.

is Licensing authority *Sir T. Stoker*, 761, 767.

Prosecution of licensee requires consent of, *Sir T. Stoker*, 917-18.

Department of Agriculture:

Cattle hospital of, at Belmont *Sir T. Stoker*, 765.

Veterinary Department now under, *Sir T. Stoker*, 858.

Experiments in, total number performed *Sir T. Stoker*, 767.

Inspection in, efficient *Sir T. Stoker*, 956-7.

Inspector for:

Evidence of, see STOKER, SIR T., 756-1070.

Salary of, insufficient *Sir T. Stoker*, 787.

Licences:

No practice of submitting applications for, to a society analogous to Association for Advancement of Medicine by Research, *Sir T. Stoker*, 847.

Number of, for class purposes, *Sir T. Stoker*, 762.

Procedure in obtaining, the same as in England, *Sir T. Stoker*, 789, 832-3 920.

Held by veterinary surgeons, *Sir T. Stoker*, 1043-4.

Licensing authority, change of, desirable *Sir T. Stoker*, 778.

Local Government Board:

Medical Inspectors:

Functions of, *Sir T. Stoker*, 971-5.

Inspection in certain places conducted by, *Sir T. Stoker*, 971-5.

Should be licensing authority *Sir T. Stoker*, 855.

Private laboratories in, reason for institution of some, *Sir T. Stoker*, 770-4.

Rabies in, practically stamped out *Sir T. Stoker*, 777, 860-1.

Registered places in, statistics *Sir T. Stoker*, 764-5.

Separate inspector for, *G. D. Thane*, 325.

Under-Secretary:

Appointment permanent, and recently non-political *Sir T. Stoker*, 956.

Uncertain connection of, with administration of Act *Sir T. Stoker*, 849-51.

- IRTHLINGBOROUGH, Northamptonshire, cases of cerebro-spinal fever at, *W. H. Power*, 4304-5.
- IRVING, *The late Sir H.*, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10261.
- JACKSON, HUGHLINGS, reference *H. Head*, 17812.
- JACKSON, SIR R., Vice-President of National Canine Defence League *J. Hughes*, 17246.
- JACQUES, pain not experienced in fast undertaken by, *Hon. S. Coleridge*, 11046.
- JAPANESE ARMY, successful inoculations against tetanus in, *H. Morris*, 7744-5.
- JENNER, DR. :
 Father of modern preventive medicine *S. Stockman*, 3319.
 Vaccine of, analogy between, and modern prophylactics *W. H. Power*, 4587-8.
- JENNER, SIR WILLIAM, part played by, in foundation of Association for the Advancement of Medicine by Research *Hon. S. Coleridge*, 10677.
- JENSEN'S TUMOUR, see under TUMOURS.
- JESSE, *The late G.*, evidence of, before the Vivisection Commission, 1875, *Mrs. K. Cook*, 1785.
- JESSOP, T. R., letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.
- JOHNSON, DR. :
 Idler quoted in support of anti-vivisection cause *Hon. S. Coleridge*, 10551-2.
 Views of, re immorality of vivisection *Rev. L. S. Lewis*, 8726.
- JOINT DISEASES :
 Rheumatoid arthritis, nothing definite with regard to, has yet been discovered *J. Lorrain Smith*, 18457.
 Research into, especially requires experimental investigation *J. Lorrain Smith*, 18267-74.
- JOLLY, V. A., animals used by, in experiments on thyroid glands *Miss A. Kenealy*, 6165.
- JOSEPH, DON R., St. Louis University, U.S.A., injections into dogs of organ extracts of cold-blooded animals by, *Miss A. Kenealy*, 5302-21.
- JOSUE, value of discovery of, that arterial sclerosis is caused by adrenalin, *J. Lorrain Smith*, 18236, 18288-96.
- JOHNS HOPKINS COLLEGE, BALTIMORE, students' courses of operative surgery on animals at, and value of same, *E. H. Starling*, *Sir R. D. Powell*, *Sir V. Horsley*, *W. Osler*, 3989-90, 5768, 15638-44, 16583-7, 16590-5, 16636, 16646-52, 16752-7.
- JOURNALS AND PUBLICATIONS :
Animal Physiology, by *W. Furneaux*, experiments recommended to students in, expurgated after exposure by Church Anti-Vivisection League, *Miss A. L. Woodward*, 8324-6, 8867-80.
Brain, Dr. Head's experiments on nerves published in, *G. D. Thane*, 1257.
Bradford Observer, Church Anti-Vivisection League meeting reported in, *Miss A. L. Woodward*, 8792.
British Medical Journal :
 Address by *Sir F. Treves* reported in, *Sir V. Horsley*, 16131.
 Anti-venin referred to in, *Sir R. D. Powell*, 5679-83.
 Case of chronic ulcer benefiting by presence of micro-organisms, brought to notice of, *G. G. Bantock*, 14723-7.
 Case of curare poisoning described in, *Sir V. Horsley*, 15965.
 Diphtheria, sources of infection discussed in, *Miss Lind-of-Hageby*, 7223-31.
 Egyptian Plague Commission's Report published in, *Sir G. Kekewich*, 20485.
 Experiments reported in, referred to, *Mrs. K. Cook*, *Sir R. D. Powell*, *J. W. Graham*, *Hon. S. Coleridge*, 1910-11, 5721, 5849-55, 5857-60, 6047-8, 10481-513.

JOURNALS AND PUBLICATIONS—cont.

British Medical Journal—cont.

- Results of physiological research published in, *E. H. Starling*, 4181-2.
 Unlicensed experiments reported in, *Sir T. Stoker*, 914.
 References, *A. R. Cushny*, *M. S. Pembrey*, 5172-4, 5887-90, 14019.
- Broadway or Westminster Hospital Gazette*, incidental cruelties practised in experiments for causation of disease reported in, *Mrs. K. Cook*, 1921.
- Cancer and Cancer Progress*, by *H. Snow*, M.D., views contained in, *H. Snow*, 2144-9.
- Chemist and Druggist*, proceedings in connection with Dr. Grünbaum's experiments reported in, *Hon. S. Coleridge*, 10330-70.
- Christison on Poisons*, antidote for arsenic recommended in, *J. Glaister*, 12888-12905.
- Collected Papers on Circulation and Respiration*, by *Sir Lauder Brunton*, M.D., F.R.S., absence of humane teaching in, *Miss Lind-of-Hageby*, 7379.
- Confessions of a Physician*, by *Dr. Smidovich*, necessity of disregarding animal suffering admitted in, *J. H. Levy*, 18497.
- Dictionary of Treatment*, by *Dr. Whitler*, statement in, as to uncertain success of anti-tetanus serum, *S. F. Smith*, 13132.
- Directions for Class Work in Practical Physiology*, by *E. A. Schäfer*, F.R.S., absence of humane teaching evident in, *Miss Lind-of-Hageby*, 7223.
- Elements of Human Physiology*, by *E. H. Starling*, M.D., F.R.S., absence of humane teaching evident in, *Miss Lind-of-Hageby*, 7223, 7354-63.
- Essentials of Experimental Physiology, for the Use of Students*, by *T. G. Brodie*, absence of humane teaching and preference for light anaesthesia evident in, *Miss Lind-of-Hageby*, 7223, 7232-47.
- Essentials of Human Physiology*, by *D. Noel Paton*, absence of humane teaching evident in, *Miss Lind-of-Hageby*, 7223.
- Exercises in Practical Physiology*, by *Aug. D. Waller* :
 Absence of humane teaching and preference for light anaesthesia evident in, *Miss Lind-of-Hageby*, 7223, 7234-51.
 Caution against use on anaesthetics in, merely a statement of fact, *A. D. Waller*, 18086.
- Experiments on Animals*, by *Stephen Paget*, criticism of accuracy of statements made in, *S. F. Smith*, 13099-13132.
- Criticism of statements in, re anti-tetanus serum, *S. F. Smith*, 13132-5.
- Criticism of statements in, re myxedema, *S. F. Smith*, 13130-1.
- Statements in, with regard to serum treatment in suppuration and blood poisoning criticised *S. F. Smith*, 13121-9.
- Experiments on the Influence of Digitalis on the Pressure of Blood in the Arteries*, by *Sir T. L. Brunton*, present publication of, containing account of brutal experiments before 1876, shows want of humane feeling *Miss Lind-of-Hageby*, 7379-96.
- Functions of the Brain*, by *Ferrier*, quotation from, relating to consciousness of pain in animals after removal of cerebral hemispheres *Miss Lind-of-Hageby*, 7412.
- Guide to the Charitable*, by the *Hon. S. Coleridge*, diversion of hospital funds to medical schools pointed out in, *Hon. S. Coleridge*, 10261.
- Handbuch der Speciellen Arzneimittellehre*, erroneous statement as to action of digitalis on heart in, *A. R. Cushny*, 4653.
- Handbook of Physiology*, by *W. D. Halliburton* :
 Absence of humane teaching evident in, *Miss Lind-of-Hageby*, 7223.
 Incomplete anaesthesia advised in, *Miss Lind-of-Hageby*, 7223-31.
- Handbook of Physiology for Students and Practitioners of Medicine*, by *Austin Flint* (American) :
 Absence of humane teaching evident in, *Miss Lind-of-Hageby*, 7223.
 Preference for light or no anaesthesia evident in, *Miss Lind-of-Hageby*, 7262-6.

JOURNALS AND PUBLICATIONS—cont.

Hospital, The:

Sir V. Horsley's views on experiments upon thyroid glands quoted in, *Miss A. Kenealy*, 6165.

Therapeutics, decline of interest in, commented on by, *Miss A. Kenealy*, 6165.

Introduction to Physiology, by L. A. Hodgkinson Lack, absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223, 7357-74.

Journal of Medical Science (America), successful operation for nerve disease recorded in, *J. N. Langley*, 15156-62.

Journal of Bacteriology, bogus cancer parasite displayed in, *H. Snow*, 2352.

Journal of Pathology and Bacteriology, experiments reported in, *Mrs. K. Cook*, 1796, 1799-1800, 1913-4, 1919.

Journal of Physiology:

Experiments reported in, *Mrs. K. Cook*, *E. H. Starling*, *Miss A. Kenealy*, *J. W. Graham*, *Miss Lind-af-Hageby*, *Hon. S. Coleridge*, *W. E. Dixon*, 1785-9, 1790, 1793-5, 1798, 1800, 1914, 1917, 1919, 3648-52, 5296-301, 5302-21, 5322-5, 5842-4, 7415-30, 11053, 19012-15.

Home Office proceedings in connection with Messrs. Dixon and Brodie's experiments reported in, *Hon. S. Coleridge*, 10370-81.

Physiological research, chief results published in, *E. H. Starling*, 4180.

Proportion of experiments reported in, in which curare was used, *S. F. Smith*, 13290-4. Seventy-one per cent. of experiments from 1896 to 1900 published in, were cutting experiments *S. F. Smith*, 13065-8.

Keetley's *Index of Surgery* quoted, with reference to operation for harelip in children *S. F. Smith*, 13055.

Laboratory Manual of Physiology, by F. O. Busch (America), absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.

Lancet:

Article in, with regard to value of serum treatment in cases of suppuration and blood poisoning, *S. F. Smith*, 13121.

Experiments in connection with amyl nitrite referred to in, *A. R. Cushny*, 4895-902.

Statement in, as to uncertain success of anti-tetanus serum *S. F. Smith*, 13132.

Leçons de Physiologie Opératoire, by Claude Bernard:

Morphia no anæsthetic acknowledged in, *Miss Lind-af-Hageby*, 7316.

Quotation from, as to fatal dose of morphia for dog, *Miss Lind-af-Hageby*, 9262.

Life of Pasteur, by René Valléry Madot, reference *H. Morris*, 7705.

Manual of Pharmacology and Therapeutics, by W. Murrell, statement in, as to fatal doses of morphia for dogs *Miss Lind-af-Hageby*, 9262-71.

Manual of Physiology, a, by G. N. Stewart, absence of humane teaching, and preference for light anæsthesia evident in, *Miss Lind-af-Hageby*, 7223, 7234, 7253-62.

Manual of Practice of Medicine, by F. Taylor, M.D., M.R.C.S., reference *F. Taylor*, 5596.

Manual of Surgery, by Messrs. Rose and Carless, statement in, as to disappointing results of anti-tetanus serum *S. F. Smith*, 13132.

Military Hygiene of the Japanese Army, by Baron Takaki, statement in, as to successful inoculations against tetanus *H. Morris*, 7744-5.

Morning Leader, statements in, as to continental method of experimenting upon patients in hospitals *Rev. J. P. Hopps*, 8319-27.

Nature of Man, by Professor Metchnikoff, deplorable suggestions in, *Mrs. K. Cook*, 1785.

New Hygiene, by Professor Metchnikoff, Director of the Pasteur Institute, statement that morality is second to hygiene contained in, *Rev. L. S. Lewis*, 8754-8.

New Serum Therapy, by Dr. Montgomery Paton, reference *A. Kenealy*, 6392-6, 6560-1.

Outlines of Practical Physiology, by W. Sterling, absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.

JOURNALS AND PUBLICATIONS—cont.

Oxford Chronicle, letter in, from Vice-Chancellor of University, making public apology from Keble undergraduates in connection with charges brought against Professor Gotch, *F. Gotch*, 13668.

Oxford Times, letter in, from Vice-Chancellor of University, making public apology from Keble undergraduates in connection with charges brought against Professor Gotch, *F. Gotch*, 13668.

Pall Mall Gazette, letters on subject of anæsthetics in, *J. W. Graham*, 5878-82.

Pathology of Asthma, by T. G. Brodie and W. C. Dixon, experiments recorded in, conducted without anæsthetics *Miss Lind-af-Hageby*, 7299.

Plüger's Archives, research resulting in introduction of cocaine published in, *A. R. Cushny*, 4867-9.

Physiological Action of Drugs, by M. S. Pembrey and C. D. F. Phillips, students should be permitted to experiment on frogs, stated in, *Miss Lind-af-Hageby*, 7410.

Physiology and Pathology of the Cerebral Circulation, by Leonard Hill, experiments recorded in, conducted principally under morphia, and dislike of anæsthetics evident in, *Miss Lind-af-Hageby*, 7300.

Practical Physiology, by Beddard, Edkins, Hill, Macleod and Pembrey:

Absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.

Case of anæsthesia by morphia alone referred to in, *G. D. Thane*, 1628-9.

Experiments referred to in, *G. D. Thane*, 1499-1506.

Preference for light, or no anæsthesia evident in, *Miss Lind-af-Hageby*, 7273-5.

Practitioner, heating experiments on animals reported in, *Sir L. Brunton*, 804-808.

Quarterly Reminder, reference, *J. W. Graham*, 5875-9.

Rational Organo-Therapy, by Professor von Poehl, reference *Miss A. Kenealy*, 5284.

Recent Advances in Physiology and Bio-Chemistry, edited by Leonard Hill, anæsthetics, use of, not mentioned in *Miss Lind-af-Hageby*, 7262-70.

Recent Advances in the Physiology of Digestion, by E. H. Starling, F.R.S., researches mentioned in, *G. D. Thane*, 1546-9.

Revue Scientifique, curare not an anæsthetic, stated by Claude Bernard in, *Mrs. K. Cook*, 1801.

St. Bartholomew's Reports, experiments recorded in, *Sir L. Brunton*, 6786-7.

Scientific Research, by S. F. Smith:

Experiments performed at University College with suggested insufficient anæsthesia described in, *S. F. Smith*, 13303-15.

Object of writing, *S. F. Smith*, 13261-4.

Shambles of Science, by L. Lind-af-Hageby and L. K. Schartau:

Anæsthesia fully maintained through experiments described in, and movements seen were merely reflex *A. D. Waller*, 18109-10.

Anæsthesia incomplete during experiments described in, *Miss Lind-af-Hageby*, 9130-1.

Adherence to views honestly expressed in, *Miss Lind-af-Hageby*, 9630-3.

Authors of, attended advanced demonstration lectures in London *E. H. Starling*, 3545, 3552-3.

"Brown dog," contradictory statements as to health of, and illegality of two successive operations *Miss Lind-af-Hageby*, 9730-51.

Charges brought in, contradicted *M. S. Pembrey*, 14036-56.

Curare not used in any of experiments described in, *A. D. Waller*, 18128.

"Dog infected with a substance derived from a lunatic":

Animal fully anæsthetised in, *A. D. Waller*, 18048-56.

Method of killing dog referred to in, *A. D. Waller*, 18139-41.

"Dog that escaped," curare used in experiment described in, and no anæsthetic *Miss Lind-af-Hageby*, 9398-406, 9461-70.

JOURNALS AND PUBLICATIONS—cont.

Shambles of Science—cont.

- Enquiry into allegations against vivisectionists contained in, *G. D. Thane, E. H. Starling*, 1261-82, 4274-80.
- Evidence of joint author of, see *LIND-AF-HAGEBY, Miss*.
- "Experimental production of blood clotting by injection of a nucleo proteid," complete anaesthesia maintained throughout experiment described in, *A. D. Waller*, 18034-42.
- "Experiment that is not supposed to be useful":
- Animal was not curarised in, and absolutely anaesthetised *A. D. Waller*, 18043-7.
 - Suggestion that morphia as well as curare was used in, *Miss Lind-af-Hageby*, 9500-12.
 - "Grand Demonstration," a suggestion throughout chapter is of difficulty of anaesthetising animal, *Miss Lind-af-Hageby*, 9408-17.
 - a Highly coloured representation of facts, *A. D. Waller*, 18010-13.
 - Lecture given immediately after publication of, answering allegations contained in, *A. D. Waller*, 18077-8, 18100.
 - Letter from Sir A. Rücker to Home Office in connection with statements contained in, *A. D. Waller*, 18094-7.
- Marmot incident:
- Actual facts in connection with, *A. D. Waller*, 18142-3.
 - Misstatement by Dr. Thane as to, *Miss Lind-af-Hageby*, 9354-86, 9651-7.
 - Spinal cord of animal had never been divided and other erroneous statements with regard to, *M. S. Pembrey*, 13975-14017.
- Materialism attributed to physiologists in, denied, *M. S. Pembrey*, 14106.
- Movement of animals during experiments described in, indicated returning consciousness, *Miss Lind-af-Hageby*, 9144-7.
- Movements in physiological demonstrations referred to in, were probably reflex, *D. W. Buxton, J. N. Langley*, 12588-98, 15314-15.
- "Painless Experiments":
- No vivisection was performed at lecture described in, *A. D. Waller*, 18025, 18032-3.
 - Notes on statements contained in, *A. D. Waller*, 18014.
- Publication, legal proceedings in connection with, and statement as to withdrawal of, *Miss Lind-af-Hageby*, 7567-89.
- "Quiet Cat" circumstances described in, suggesting improper use of curare, *Miss Lind-af-Hageby*, 9388-97.
- Reasons for not making direct representations as to cruelty of experiments described in, *Miss Lind-af-Hageby*, 9608-9.
- "Scarcely any Anaesthetic," preference for curare and morphia in experiments, *Miss Lind-af-Hageby*, 4514A-21.
- "Struggling Cat":
- Adherence to statement as to lack of artificial respiration during experiment and misstatements by Drs. Thane and Bayliss, *Miss Lind-af-Hageby*, 9634-50.
 - Incomplete anaesthesia during experiment described in, *Miss Lind-af-Hageby*, 9157-97.
- Mr. Thane's criticism of, objected to, *Miss Lind-af-Hageby*, 9148-53.
- "The Only Completely Satisfactory Method," curare not used as stated in, and students are not necessarily aware of every fresh dose of anaesthetic, *A. D. Waller*, 18066-76.
- "Troublesome Dog" lecture described in, did not take place, as stated, at London University, *A. D. Waller*, 18001-8, 18058-65.

JOURNALS AND PUBLICATIONS—cont.

Shambles of Science—cont.

- as to Withdrawal of, from publication, *G. D. Thane*, 1276-80.
 - Withdrawal from publication, statement as to, incorrect, *Miss A. L. Woodward*, 8826-7, 8894-8.
 - References, *E. H. Starling*, 3497-501; *Sir G. Kekewich*, 20470.
- Standard, letter from Dr. De Watterville in, arguing morality of vivisection, *J. H. Levy*, 18497.
- Surgical Shock, by Dr. Crile:
- Discrepancy between account of experiments described in, and Home Office report and consequent proceedings, *Hon. S. Coleridge*, 10289-316.
 - Experiments described in, testifying to personal inhumanity of author, *Hon. S. Coleridge*, 10284-8.
- Star, statements in, as to continental method of experimenting upon patients in hospitals, *Rev. J. P. Hopps*, 8319-27.
- Surgical Diseases of the Dog and Cat*, by F. Hobday, morphia not an animal anaesthetic, stated in, *Miss Lind-af-Hageby*, 7316-7.
- Text Book of Pharmacology*, by W. E. Dixon, quotation from, as to anaesthesia produced by narcotics or hypnotics, *W. E. Dixon*, 18653.
- Text Book of Pharmacology and Therapeutics*, by A. R. Cushny, views as to anaesthetic powers of morphia in, contradict evidence given by author, *Miss Lind-af-Hageby*, 7317-21, 7342-9.
- Text Book of Physiology*, by E. A. Schäfer:
- Absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.
 - Reference in, to pain sensations after removal of cerebral hemispheres, *Miss Lind-af-Hageby*, 7411.
- Text Book of Physiology*, by E. H. Starling, statements in, referred to, *Miss A. Kenealy*, 5280.
- Text Book of Physiology*, by W. S. Hall (America), absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.
- Text Book of Physiology for Medical Students and Physicians*, by W. S. Howell (America), absence of humane teaching evident in, *Miss Lind-af-Hageby*, 7223.
- Text Book of Human Physiology*, by Robert Tigerstedt, quotation from, showing foreign practice of disregarding anaesthesia, *Miss Lind-af-Hageby*, 7299.
- The Buddhist Ray*, vivisection condemned in, *J. W. Graham*, 5890.
- Therapeutics*, by Sir L. Brunton, lancet for injecting permanganate of potash as antidote for snake poison, described in, *Major L. Rogers*, 8069.
- Times:
- Letters from Dr. Timothy Holmes to, re correspondence with Mr. Coleridge as to "incomplete anaesthesia," *Hon. S. Coleridge*, 10995-11001.
 - Letter from Sir Victor Horsley in, repudiating connection with foreign experimentation on animals, *Miss Lind-af-Hageby*, 7223.
 - Letter from Dr. J. G. Rogers in, stating that plague is best dealt with by sanitary measures, and opposing use of serum, *Sir G. Kekewich*, 20485-90.
 - Letter from Sir F. Treves to, *Sir V. Horsley*, 16031, 16131-2.
- Toxicology and Public Health*, by John Glaister, reference, *J. Glaister*, 12908.
- Vita Medica*, by Sir B. W. Richardson, statements in, as to action of amyl nitrite, *Sir L. Brunton*, 6888-97.
- Work of the Digestive Glands*, by Professor Pawlow, lectures published in, show that ideal conditions of experimentation are by no means yet attained, *Miss Lind-af-Hageby*, 7276-87.
- Zentral-blätter, results of physiological research published in, *E. H. Starling*, 4183.
- Zeitschrift für Klinische Medizin*, results of starvation experiments in Germany, published in, *Lorrain Smith*, 18320-5.

JOURNALS AND PUBLICATIONS—*cont.*

Zoophilist, *The*, published by National Anti-Vivisection Society, *Hon. S. Coleridge*, 11598-600.

JOYCE GREEN HOSPITAL, permission of Metropolitan Asylums Board required for registration of, but no experiments yet performed there, *G. D. Thane*, 1743-6.

KANTHACK, PROFESSOR, paper read before British Medical Association, pointing out that presence of bacillus coli is necessary to health, *G. G. Bantock*, 14713-16.

KARSLAKE, SIR J. B., member of the Vivisection Commission, 1875 *W. P. Byrne*, 1.

KASALI INSTITUTE, constitution and work of, *Major L. Rogers*, 8299-306.

KAST, PROFESSOR, therapeutic powers of trional and tetralon discovered by means of experiments on animals by, *A. R. Cushny*, 4733.

KEBLE COLLEGE UNDERGRADUATES:

Accusations brought by, with reference to vivisection at Oxford, and charges against Mr. Gotch *Hon. S. Coleridge*, 11444-67.

Actual facts of case, and subsequent withdrawal of charge by, *F. Gotch*, 13668-701.

Case of, unfairly represented by Mr. Gotch *Hon. S. Coleridge*, 19852-63, 19863-76.

KEITH, GEORGE, M.D., Edinburgh, action of drugs investigated by, *A. R. Cushny*, 5149.

KEKEWICH, SIR G., K.C.B., M.P., Hon. Sec. of the Parliamentary Association for the Abolition of Vivisection, 20380-965.

All experiments arising from other than scientific investigations should be controlled by one Act 20470.

Anæsthetics:

Doubts as to efficacy of, employed in experiments and cases where Act is evaded as regards, 20470, 20715-24.

Experiments with, or without, unjustifiable 20599.

Testimony of competent anti-vivisection witness required before believing in universal use of, at experiments 20452-6.

Torture of animals implied by fact that certificates disallow use of, 20736-43.

Vivisectionists' statements as to sufficiency of, unreliable 20593-8.

Anti-pyrin and sulphonal once in great repute, but now considered useless 20588-92.

Cancer experiments on mice, necessarily painful, 20600-5.

Castration, reasons for not including, in same category as experiments on animals 20791-7.

Certificates, as to procedure gone through before granting, 20810-15.

Clinical research confessedly superior to experimental research 24023, 20882-4.

Clinical research subordinated to experimental research, and no beneficial knowledge obtained by latter 20568-79.

Cross-circulation experiments performed without anæsthetics 20457-62.

Demonstration experiments:

Demoralising effect of, on students 20419-22, 20701-12.

Not necessary for the training of medical students, and evidence supporting this view 20517.

Demoralising effect of experiments 20903-910.

Diphtheria antitoxin objected to, 20788-90.

Evidence before the Commission has aggravated the widespread disquietude as regards vivisection 20415-8.

Germ theory of disease not proveable 20899-900.

Humanity, lack of, in medical profession 20557-64.

Influenza:

Ignorance of medical profession as regards influenza is evidence of uselessness of, 20746-55.

KEKEWICH, SIR G., K.C.B., M.P.—*cont.*Influenza—*cont.*

Theories with regard to bacterial cause of, have been useless in practical treatment 20583-7.

Inspectors, increase of, would not meet objections 20465-7.

Medical knowledge, its present barren state 20434-7, 20886-94.

Medical opinion as to value of experiments, biased 20858-80.

Morphia not an anæsthetic 20728-35.

Number of experiments performed in 1906, 20528-31.

Pain:

Fact that healing of wounds inflicted in experiments causes, is ignored 20765-79.

Mr. Pembrey's admissions with regard to infliction of, contradict statements of other vivisectionists 20439-50.

Mr. Pembrey's statement with regard to necessary infliction of, 20931-52.

Statements as to absence of, in experiments disputed 20428, 20533-47, 20615-17.

Parliamentary Association for the Abolition of Vivisection:

Experiments considered unproductive of any beneficial result by, 20387.

Increase of inspection would not meet objections of, 20465-9.

Objects and membership of, 20385-8, 20465-9, 20780-4.

Vice-presidents increased since publication of evidence before Royal Commission 20318.

Views of, not yet drafted in a Bill 20411-14.

Plague, outbreak in Alexandria, and successful treatment of by methods of sanitation only 20485-90.

Plague serum:

Enormous amount of suffering caused in preparation of, 20471.

Inefficacy of, for conferring permanent immunity 20861-7, 20640-75.

Use of, has propagated the disease, and partly responsible for unrest in India 20472-5, 20485, 20621-31, 20633-7, 20671-5.

Précis of, experts responsible for its preparation and accuracy, 20606-14, 20836-48, 20924-30.

Public Authorities Protection Act affects prosecution of licensee under Vivisection Act, 20818-35.

Serum therapy, its commercial aspect 20494-516.

Vaccination objected to, 20787.

Vivisection Act, 1876:

has acted as stimulus to vivisection 20410.

Bill introducing, was not properly discussed in Parliament 20523-7.

Framed in accordance with views of medical profession 20553-6.

Motive power of, and inadequate consideration of Bill in Parliament 20389-98.

Principle of protection to animals, is nullified by exceptions allowed on certificates 20399-405, 20407.

Prosecutions under:

Objection to provision concerning, 20408. Made impossible by provisions of Public Authorities Act, 1898 20409.

KELLARD, DR., Southsea, horror of vivisection expressed by, *J. Hughes*, 17209.

KEMPE, A. B., M.A., Treasurer of Royal Society, reference, *Lord Rayleigh*, 5548.

KENEALY, MISS ARABELLA, L.R.C.P. (Dublin), Parliamentary Association for the Abolition of Vivisection, 6164-6776:

Alkmaon identified brain with centre of consciousness by intuitive knowledge 6197, 6201.

Anæsthetics, impossible to remove consciousness to pain completely by, 6426-44.

KENEALY, MISS ARABELLA, L.R.C.P.—*cont.*

Anti-toxins:

- Diphtheria, paralysis caused by use of, 6166-70, 6384-91.
- Disbelief in all, and statistics as to value of such, deceptive 5504-5529.
- Exploded theory of, 6369-75.
- Harmful, and use of, should be legal offence 6171-87.
- Injurious, and objections to immunity conferred by 6355-67.
- Tendency of medical mind to be diverted to study of, 6261-3.

Anti-vivisection movement chiefly from outside medical profession, 6470-2.

Assumed right of man to kill animals for food, but painless killing should be enforced, 6473-86.

Cancer:

- Pain probably suffered by mice inoculated with, 5496-5503.
- Hereditary nature of, 5494.

Cancer Research Fund:

- Admission of error in statement as regards report of, 5495.
- Castration, a question not considered by Parliamentary Association for the Abolition of Vivisection 6305-12.

Clinical observations neglected 6487-95.

Contagious Diseases of Animals:

- Experimentation unnecessary in connection with preventative measures for, 6241-8.
- No knowledge of, but reliance placed upon general principles 6351-55.

Curare, use of, 6445-59.

Does not claim to speak as an expert 5426-7.

Drugs, testing of, on animals unnecessary 6578-83, 6299-304.

Experience as medical practitioner 6512-517.

Experiments:

- Abolition of all desirable, 5411-16, 6235-40, 6316-17, 6327-33.
- Brain, different conditions arising from, 5288-92.
- Conflicting results of, prove their futility, 5286, 5329-40, 5463-75, 6379-83.
- Demonstration of heart action by, unnecessary 6224-7.
- Erroneous deductions from, 6292-7.
- Futility of, in connection with flow of post-mortem lymph 5295-301, 6699-710.
- Justifiable to certain extent when aim is to benefit animals themselves 6341-3.
- on Suprarenal glands, conflicting results of 5322-5, 6645-58.
- on Thyroid gland unnecessarily repeated 5326-8, 6165.
- on Thyroid gland unnecessary to prove beneficial result of thyroid extract in treatment of myxedema 6210.
- Valueless when concerned with artificial phenomena 5294.

Evolution hindered by thwarting natural process of disease 6543-6.

Feeding experiments are immoral if involving cruelty 6209.

Ferrier's statement as to worthlessness of experiments on brain and glands 6675-95.

Frogs:

- Ignorant that law compelled anaesthetisation or pithing of, during experiments 6584-90.
- Not sufficient evidence that pithing of, destroys pain sensations 6591-6605.
- Futility of experimental physiology, 5281-4, 5295-301.
- Hypnotism, possibility of employing, in performing experiments, 6539-42.
- Immorality of experiments and as to misleading results 5372-91, 5406-9, 6276-91, 6324-6, 6461-9, 6771.
- Immunity to noxious gases and microbes acquired by men working in sewers 5450-62.

KENEALY, MISS ARABELLA, L.R.C.P.—*cont.*

Inoculations:

- Susceptibilities of animals conferred on human beings by, 5418, 6392-411, 6547-63, 6564-77.
- an Unscientific principle of obtaining immunity from disease 5341-71, 5369-71.

Medical knowledge has gained no useful addition from experiments 6344-50.

Medical profession a prey to fetish of vivisection 6520-32.

Micro-organisms not yet proved to be causes of disease 8440-6.

Monkeys, analogy between man and, not close enough to make experiments on, valuable, 6607-15.

Moral standard by which vivisection should be judged 6532-8.

No practical experience of the treatment of animals 6340-1.

Number of experiments, reticence on part of experimenters as to, 5476-93.

Objective and scientific methods of research should be abandoned in favour of more intelligent and pathological methods 5392-5.

Object of medical science nowadays to render us immune to diseases incurred by neglect of natural laws 5429-38.

Open letter sent to Commissioners drafted by, Mrs. K. Cook, 1932.

Optic nerves, probably do not carry pain 6759.

Organ extracts of cold-blooded animals injected into warm-blooded animals and useless results of such injections 5302-21, 6711-52.

Pain, optimistic statements as to absence of, in experiments doubted 5280.

Pathology can be studied without recourse to experiments 6249-60.

Physiological discoveries made without help of experiments 6341-3.

Physiological knowledge not advanced by experiments 5280, 6202-5, 6616-20, 6318-23, 6496-9.

Plea for preservation of humane sense 5395-403.

Practice of vivisection has existed for centuries 6195-6.

Précis of Mrs. Cook's evidence, as to its preparation 6754-7, 6765-770.

Suprarenal glands, knowledge as to, acquired chiefly by clinical observation 6633-43.

Therapeutics, decline of interest in, 6165.

Torture of animals involved in experiments 6412-25.

Tuberculosis:

- Susceptibility of calves to, 6401-11.
- Uncertain that tubercle bacillus is cause of, 6500-11.

Vaccination: an abnormal practice, 6565-71.

Vegetable world supplies sufficient healing substances without recourse to animal extracts 6218-21.

Vivisection should be made a legal offence 6327-33.

Zymotic diseases have developmental functions in scheme of Nature 6264-75.

References Sir G. Kekewich, 20613, 20840, 20845-8.

KENT COUNTY ASYLUM, first trial of anti-typhoid vaccination at, C. J. Martin, 11793.

KEPP, drug experiments by, A. R. Cushing, 4771.

KERR, DR., Bradford, reference, Miss A. L. Woodward, 8792.

KHARTOUM:

- Dog inoculated with sleeping sickness at, and signs of suffering shown in photograph, Hon. S. Coleridge, 11071-81.
- Dog inoculated with sleeping sickness at, no knowledge of alleged cruelty, G. D. Thane, 1306-10.
- Gordon College, see that title.

KINGDON, J. A., letter to, re "incomplete anaesthesia," Hon. S. Coleridge, 10993.

KING'S LYNN, typhoid outbreak, water said to be source of, but no bacillus discoverable, G. G. Bantock, 14717-22.

KITASATO, tetanus bacillus first isolated and cultivated by, *C. J. Martin*, 11653.

KLEIN, EDWARD E., M.D., F.R.S.:

Certificates dispensing with anaesthetics held by, *Miss Lind-af-Hageby*, 9429.

Comma bacillus now accepted as distinctive test of cholera by, though doubts previously held *W. H. Power*, 4429-30, 4495-8.

Cows inoculated with diphtheria by, and consequent suffering *Mrs. K. Cook*, 1796.

Employed as investigator by Local Government Board and as to evidence of, before previous Vivisection Commission *W. H. Power*, 4414-22.

Evidence of, before Vivisection Commission 1875, admitting indifference to animal suffering, *Mrs. K. Cook*, *J. W. Graham*, *Hon. S. Coleridge*, *Sir G. Kekewich*, 1919, 2064-7, 5883, 10656-74, 10852-78, 20450.

Inoculation experiments performed for Local Government Board by, of a most cruel character *Mrs. K. Cook*, 1919.

Local Government Board investigations carried out by, *W. H. Power*, 4584-5.

Report by, for Local Government Board on agglutination by blood of emulsion of microbes *W. H. Power*, 4301.

Report for Local Government Board by, on nature of Haffkine's Plague Prophylactic *W. H. Power*, 4301.

Smallpox inoculations conducted by, and unsatisfactory results *W. H. Power*, 4484-5.

Tuberculosis, its communicability proved by experiments on guinea pigs by, *Sir J. F. Moulton*, 12712.

References *G. D. Thane*, *W. H. Power*, 1737-40, 4628.

KLENCKE, communicability of tuberculosis discovered by, *C. J. Martin*, 11643.

KOCH, ROBERT:

Antiseptic surgery, value of experiments in connection with, *H. Morris*, 7673.

Atoxyl treatment for nagana used with success in Uganda by, *Col. D. Bruce*, 14314.

Atoxyl treatment for sleeping sickness put forward by, without success *Col. D. Bruce*, 1442-3.

Comma bacillus accepted generally as diagnostic agent of cholera, *W. H. Power*, 4427-9.

Failure of experiments with regard to Rhodesian fever conducted by, *S. Stockman*, 3331-50, 3403.

Failure of, to develop successful method of inoculation against horse-sickness *S. Stockman*, 3401.

Infectious diseases, knowledge of cause of various, due to experiments of, *C. J. Martin*, 11643.

as to Phthisis remedy of, *H. Snow*, 2261-2.

Postulates established by, demanding satisfaction before a specific micro-organism can be identified as cause of a disease, *H. Morris*, *S. F. Smith*, *Col. D. Bruce*, 7678-83, 13229-31, 14222.

Preventive inoculations against Rhodesian fever conducted by, unsuccessful *S. Stockman*, 3331-50, 3403-8.

Rinderpest, inoculation against, devised by, *Major L. Rogers*, 8226.

Statement of, as to relation between human and bovine tuberculosis *S. Stockman*, *G. S. Woodhead*, 3366-7, 15499-502.

Transvaal expedition of, its cost *S. Stockman*, 3347.

Tubercle bacillus discovered by, *S. Stockman*, 3098-9.

Tuberculin discovered by, *S. Stockman*, *F. Taylor*, 2576, 3149, 5594.

Tuberculin prepared by, and as to its rejection as curative agent *S. Stockman*, 3146-55.

Tuberculin treatment, fiasco of, *G. G. Bantock*, 14663-8.

Views of, as to non-communicability of bovine tuberculosis to man *S. Stockman*, 3098-9, 3102-15.

KOCHER, THEODOR, reference, *Sir V. Horsley*.

KOEFPE, experiments on himself by, *A. R. Cushny*, 5149.

KOLLE, inoculations against rinderpest devised by, *Major L. Rogers*, 8226.

351.

KOLLER, PROFESSOR, anaesthetising properties of cocaine tested on animals by, *A. R. Cushny*, 4751, 4873-6.

KUSKOW, PROFESSOR, reference to work of, *G. G. Bantock*, 14695.

LABORATORIES:

Cambridge, pathological and physiological, licensed as one *G. D. Thane*, 501-3.

Chemists, list of, *G. D. Thane*, 344.

Government, list of, *G. D. Thane*, 342-4.

Municipal:

List of, *G. D. Thane*, 339-42.

Object of, *G. D. Thane*, 346-50.

Officials attached to, *G. D. Thane*, 351.

Science graduates without medical qualifications licensed to, *G. D. Thane*, 404-5.

Licences held by qualified chemists in official or municipal, *G. D. Thane*, 1450.

Oxford Physiological, statements as to howling of animals in, *Hon. S. Coleridge*, 11444-67.

Pharmaceutical, registered for preparation of sera, toxins, and drugs *G. D. Thane*, 1348-53.

Private pharmaceutical, reasons for registration *G. D. Thane*, 356, 1366-70.

at Research Institutions:

List of, *G. D. Thane*, 344.

Salaried and unsalaried licensees attached to, *G. D. Thane*, 354.

Used by private investigators *G. D. Thane*, 355.

Proximity of, to dwelling-houses not complained of *G. D. Thane*, 1343-6.

see also REGISTERED PLACES.

LACK, S. HODGKINSON, *Introduction to Physiology* by, shows indifference to pain produced in experiments, *Miss Lind-af-Hageby*, 7357-74.

LAHMANN, DR., reference, *Miss Lind-af-Hageby*, 9687.

LAMB, CAPTAIN, bitten by cobra and saved by use of anti-venin *Major L. Rogers*, 8034.

LAMSON POISONING CASE, aconitin employed in, and only detected by experimental methods *J. Glaister*, 12844-50.

LANGDON-DOWN, DR., frog vivisected at lecture given by, *Miss A. L. Woodward*, 8811-20.

LANGLEY, J. N., M.A., D.Sc., F.R.S., Professor of Physiology in the University of Cambridge, 15099-15425.

Anæsthesia:

Can be maintained for eight or ten hours without artificial respiration 15114-18.

First movements which return after complete, are not indicative of consciousness 15274-5.

Margin between disappearance of consciousness and disappearance of reflexes under anaesthesia much greater in case of animals than in man 15266-7.

Meaning of term varied, but usually denotes absence of pain 15411-16.

Anæsthetics:

A.C.E. mixture generally used, and as to its gradual action 15311-313.

Entirely necessary for all operations and experiments 15273.

Knowledge of administering, to animals would be of advantage in human practice 15268.

Maintained throughout all demonstration experiments 15387.

Slight operations involving mere discomfort do not require, 15325-8.

Applicability to man of results obtained from experiments, 15137.

Certificates:

B, anaesthesia maintained throughout experiments under, and animal killed if found to be suffering, 15112-3, 15302-7.

B and E E, a single certificate should be substituted for, 15192-201.

LANGLEY, J. N., M.A., D.Sc., F.R.S.—*cont.*

Cold-blooded animals :

Inclusion of, in Act at present hinders physiological research 15400-5.

Separate certificates for experiments on, wiser procedure than inclusion of, in Act 15399.

Control over experiments necessary 15253-7.

Mrs. Cook's statement as to experiment performed by, without anaesthetics, unfounded 15389-93.

Cruelty of experiment on dog performed by, Mrs. K. Cook, 1785-9.

Curare :

Animals dosed with, die under anaesthetic, 15365-6.

Inspector's attendance at all experiments involving use of, impracticable 15367-8.

Necessary to use, in some cases 15179, 15335-8.

Necessity of giving continuous anaesthetics with, 15359-61.

No difficulty in maintaining anaesthesia when curare is given 15169-78.

Precautions adopted with administration of, 15170-8.

Special certificates for use of, not objected to 15362-4.

Demonstration experiments :

Anaesthetics, method of administering, for, and necessity of securing perfect anaesthesia throughout, emphasised 15406-10.

at Cambridge, three or four yearly for illustration of lectures 15101.

Dogs used in certain, to illustrate flow of chyle 15243-50.

Essential, and no levity shown by students at, 15183-91.

Dogs essential for certain experiments 15180-2.

Evidence referred to, re pain caused in experiments *Sir G. Kekewich*, 20449.

Hypnotism an unreliable substitute for anaesthesia 15270.

Inspectors, visits of, cause no annoyance, and no objection to increase of, 15345-9.

Licence held by, since 1876 and certificates 15231-4.

Licences :

Experiments under, alone, involve no pain since animal is not allowed to recover 15102.

Medical training not necessary to qualify applicants for, 15294-7.

Necessity of taking out certificates in addition to, should be lessened 15192.

Should be endorsed after being granted for ten years and necessity of certificates dispensed with 15394-5.

Students might be permitted to hold, and experiment under careful supervision of heads of departments 15298-301.

Morphia :

Acts gradually on nervous centres and less rapid action than chloroform 15417-9.

An absolute anaesthetic if given in sufficient quantities 15351.

An analgesic but less rapid action than chloroform 15422-5.

Claude Bernard's views as to action of, erroneous and based on false experiments 15421.

Precise action of 15120-2.

Reflex action less controllable by, than other anaesthetics 15350.

Nerves :

Certain, not sensitive to both temperature and pain 15322-4.

Early experiments on dogs with reference to surgical treatment of severed, 15140-6.

Experiments on animals bearing on surgical treatment of severed and diseased, 15139-63.

Functions of certain, can only be determined by actual experiments 15130-7.

LANGLEY, J. N., M.A., D.Sc., F.R.S.—*cont.*Nerves—*cont.*

Healing process after regeneration experiments not necessarily painful 15332-4.

Rival schools known as the central and peripheral schools, 15286-91.

Stimulation of, severed from central nervous system not painful 15316-18.

Surgical operations for severed and diseased, successful owing to preliminary experimental work 15276-85.

Nerve Diseases :

Acute anterior poliomyelitis successfully treated owing to knowledge acquired by experiments 15156-62.

Infantile paralysis, its treatment benefited by results of experiments 15381-5.

Successful treatment of, due to knowledge acquired by experiments on animals 15163-8.

Number and nature of animals experimented on by, 15236-7.

Pain :

as to Amount of, caused in experiments 15335-6.

Animal always killed after experiment if found to be in, 15339-44.

Animals' susceptibility to, is less than man's 15308-10.

Diminution of, desirable 15272.

Experiments under certificate do not involve more, than that occurring in recovery from surgical operation 15102-108.

Intestines not generally sensitive to, but subject to special stimulus which may cause, 15319-21.

Limit of range between disappearance of, and disappearance of reflex action is far wider in animals than in man 15120-9.

Painful and painless experiments, distinction between, 15251.

Personal experience points to strictest care in maintaining anaesthesia throughout experiments 15108-11.

Physiological and medical knowledge, progress of, depends on experiments 15130, 15138.

Reflex action is never conscious 15259-63.

Shambles of Science, movements of animals during experiments referred to in, probably reflex ones 15314-15.

Students occasionally see some research experiments 15329-31.

Vivisection Act, 1876 :

Amendments Suggested :

Animals should be allowed to be kept in any place provided address is notified to inspector 15210-16.

Elimination of non-painful experiments and injection of non-irritating substances 15192, 15369-80.

Penalties should not be imposed for mere technical infringements 15225-30.

Second operation should be permissible upon animal required to be killed before recovery 15216-24.

Teaching Certificates, word "absolutely" should be struck out of expression "absolutely necessary" in clause relating to, 15202-210.

Physiological research not seriously hindered by, 15253-7, 15397-8.

Reference, *E. H. Starling*, 3978.

LAWRIE, I.T.-COL. E., M.B., I.M.S. (Retired), 16793-17108 :

Anaesthetics specially studied by, since 1865 16957-9, 17018-19.

Anaesthetics :

Administration of, to animals as at present conducted wrong and involves cruelty 16798, 16808, 16801-7, 16838-53.

Chloroform :

A safe anaesthetic if administered correctly, 17000, 17045-52, 17053-7.

LAWRIE, LT.-COL. E., M.B., I.M.S. (Retired)—*cont.*
 Anaesthetics—*cont.*

Chloroform—*cont.*

- Administration of, through trachea instead of by inhalation has no advantages and should be abandoned 16886-98, 16911-22, 17080-5.
- Administration of, without fatal results, by students in Edinburgh during last century 16942-51.
- Can be given with perfect safety, so long as regular respiration is maintained 16952-6.
- Clinical experience rather than laboratory experiments has been truer guide in administration of, 16975-86.
- Death under, occurs from failure of respiration leading to heart failure 16860-1.
- Discovered by experiment on man, but its present position depends on animal experimentation 16961-2.
- Experiments brought into disrepute owing to physiologists' rejection of work done by Hyderabad Commission on, 16836.
- Experiments performed with view of ascertaining action of, on heart, see Dr. Gaskell's cross circulation experiments *below*.
- Fallacy to suppose that heart failure under anaesthesia is due to, 16822-4.
- First effect of, is to lower blood pressure and respiration stops from want of nutrition 16825-30.
- Has no more direct action on heart than bullet wound in brain or hanging process 16862-6.
- Hyderabad Commission's conclusions with regard to action of, have been absolutely ignored 16924-5.
- Hyderabad method of administering, is the only safe method 16935-7.
- Nurses and hospital orderlies should be taught how to administer, 16938-9.
- Progressive diminution of sensibility to pain under, 17008-17.
- Quantity respired cannot be measured 16927-30.
- Specialists in anaesthesia were called into existence by belief that fall of blood pressure under, is synonymous with heart failure 16940-1.
- Symes' method of administering, based on clinical experience and quite satisfactory 16963-5.
- Theory that heart failure is directly due to action of, contradicted by finding of Hyderabad Commission 16834-5.
- Tracheotomy performed on animals before administration of, is illegal 16801-7, 16838-53, 17058-66.
- Discomfort and fear not caused to animals by administering, 17039-42.
- Students learn wrong methods of administering, 16905-9.

Curare, no experience of, 17089-94.

Evidence referred to:

- Cross circulation experiments, performance of, under morphia alone *Sir G. Kekewich*, 20457-62.
- Cross circulation experiments, record of, forwarded for signature but no reply received *L. E. Shore*, 19472-7.
- Haffkine's serum, its frequent impurity *Sir G. Kekewich*, 20642.
- Morphia, inaccurate statements as to amount of dose given to dogs during experiment *L. E. Shore*, 19457-63.
- Experience of, in administration of chloroform and statistics of cases published 16960.
- Experiments are necessary for the advancement of medical science and benefits derived from them admitted 16988-91.

LAWRIE, LT.-COL. E., M.B., I.M.S. (Retired)—*cont.*

Dr. Gaskell's cross circulation experiments:

- Circumstances attending performance of, laboratory assistant's evidence, *W. Hall*, 21581-35.
- Dogs insufficiently anaesthetised in, morphia alone being given, 16810-21, 16922-5, 16969-74, 20966-21372.
- Object of, circumstances attending, and contradiction of allegations re cruelty of, *L. E. Shore*, *H. K. Anderson*, *W. H. Gaskell*, 19430-1, 21636-704, 21373-580.
- General Medical Council should have power to put a stop to unnecessary pain in experiments 16931-4.
- Haffkine's plague prophylactic frequently impure 17107.
- Hyderabad Commission's experiments re action of chloroform, necessity of, 16986A-7.
- India, students in, taught to operate by experimenting on animals 17019-35.
- Inoculations hardly require anaesthetics 17035, 17044.
- Morphia:
 - Amount of dose likely to prove fatal to dog, 17098-100.
 - Not an anaesthetic unless lethal dose is given 17086-8, 17101-5.
 - Tracheotomy performed on rabbit without anaesthetic 17072-9.

LAVERAN, reference *S. Stockman*, 3046.

LAZEAR, DR.:

- Death of, from yellow fever as result of submitting himself to infection, *G. S. Woodhead*, *W. Osler*, 15478, 16536.
- Member of United States Commission to investigate cause of yellow fever in Havannah, *W. Osler*, 16531.
- LEAD, administration of, in treatment of hæmorrhage proved by experiment to be erroneous, *A. R. Cushny*, 4689-707.

LEBER, PROF.:

- Endothelium, its functions discovered by, *Sir H. R. Swanzy*, 9805-12.
- Eserin, its use as remedy for glaucoma discovered by, *Sir H. R. Swanzy*, 9836-40.
- Reference, *Sir H. R. Swanzy*, 9793.
- LECKY, history of European morals by, reference, *Rev. L. S. Lewis*, 8780.

LEEDS TOWN COUNCIL, persuaded to discontinue practice of drowning superfluous dogs, *J. Hughes*, 17502-3.

LEGGE, T. M., M.D., Chief Inspector of Factories, Home Office, testimony of, to success of anthrax serum *H. Morris*, 7741-4.

LEGGE, WICKHAM, experiments by re action of apomorphin, *A. R. Cushny*, 4819.

LENARDIN, observations of, as regards insensibility to pain of internal organs, *Sir R. D. Powell*, 5584.

LEVY, J. H., Honorary Secretary of the Personal Rights Association, 18463-645:

- Anaesthetics, grounds for doubting efficacy of, based on fact that curare is used 18500-1.
- Animal rights must be protected 18502, 18567-88.
- Animal rights, reasons for including, in sphere of personal rights, 18465.
- Anti-vivisectionists' position not illogical because of impossibility of exterminating all forms of cruelty at once 18614-29.
- Cancer inoculation performed on woman by Eugen Hahn unjustifiable 18634-42.
- Cruelty, definition of, 18608-10.
- Ethical ground of vivisection is a repudiation of morals 18497.

LEVY, J. H.—*cont.*

Evidence of Lord Justice Fletcher Moulton:

- Arguments advanced in, as to analogy between destruction of rats and practice of vivisection for good of community, unsound 18552.
- Ethical views in, one-sided and unsound 18473, 18546.
- Criticism of statement as to proof of communicability of tuberculosis by experiments 18550-2.
- Criticism of statement with regard to absence of progress in observational sciences 18549-50.

Experiments not justified by the fact of obtaining thereby beneficial knowledge 18488-91.

Experiments on animals are to a large extent illusory owing to complexity of conditions relating to human beings 18546-8.

Experiments on men justifiable in case of their voluntary submission and under strong public guarantee of their necessity 18534-7.

Experiments only justifiable under complete anaesthesia and animal is killed before regaining consciousness 18477-83.

Hedonistic principle must not be applied in the mode of direct balance of advantages 18528-33, 18554-66.

Huxley's statement as to field of morality being a reclamation from a state of nature agreed with 18515-18.

Logical consequence of experiments on animals must be experiments on men 18601-6.

Immorality of taking cosmic process as a moral exemplar 18518-20.

Inoculations:

No good results have ever been obtained from practice of propagating disease by, 18485-7.

Propagation of disease by means of, unjustifiable 18509-14.

Justifiable to kill animals for food 18504-8.

Objection to causing pain to animals varies with regard to their sensibility 18607.

Objections to vivisection based on grounds of disbelief in anaesthesia and pain 18477-83.

Personal Rights Association:

Membership of, 18467-9.

Reasons for including animal rights within scope of, 18465.

Philanthropic and philo-zoic sentiment are irreparably connected 18521-2.

Dr. Smidovich, his views as to necessity of being indifferent to animal suffering 18538-9, 18643-5.

Syphilis experiments on monkeys by Professor Metchnikoff unjustifiable 18544-5, 18630-3.

Unjustifiable to protect ourselves by infliction of serious pain upon animals 18506-8.

Vivisection, though immoral, cannot be regulated entirely by law 18524-7.

Vivisectionist argument of primacy of science over morals 18493-9.

LEVY, DR., cruelty of experiments performed by, *Mrs. K. Cook*, 1917.

LEWIS, *The late G. H.*, reference, *S. F. Smith*, 13049.

LEWES, G. H., student, Physiological Laboratory, Cambridge, experiments on suprarenal glands of different animals by, *Miss A. Kenaly*, 5322-5.

LEWIS, REV. L. S., M.A., Church Anti-Vivisection League 8629-8785.

Castration, objected to, if not for animal's good 8664-84.

Church Anti-Vivisection Society:

Constitution and membership, 8633-5.

Objects and aims of, 8715-18, 8721-2.

Complete anaesthesia of human beings accepted as possible 8655-6.

Cowardly to share in advantages derived from infliction of pain on animals 8685-8.

Experiments on man must be logical outcome of experiments on animals, and as to foreign experiments on man 8630, 8759-85.

LEWIS, REV. L. S., M.A.—*cont.*

Immorality of vivisection 8636-42.

Inoculations against disease with serum obtained from animals unjustifiable 8751-4.

Inoculations, pain involved in, 8719-20.

Justifiable to use whip and spur to horse as punishment 8699-708.

Man kept purposely uncured for several days in condition of disease by Dr. Jonathan Hutchinson 8775.

Metchnikoff's statement that morality is second to hygiene 8754-8.

Morality abused by principle of inflicting pain and views of great thinkers on subject 8723-32.

Rights of animals rest on same foundation as rights of man, and distinction between legitimate and illegitimate sacrifice of animals 8657-61.

Right to kill animals admitted in certain circumstances but unjustifiable to inflict suffering 8643-52.

Snake poison, justifiable to use antidote for, which is not in itself product of vivisection 8741-5.

Sport involving suffering to animals is immoral 8689-98.

Vivisection, its whole principle objected to and anaesthesia for animals disbelieved in, 8662, 8746-50.

Would refuse to avail himself of diphtheria anti-toxin 8733-40.

LICENCES:

Anaesthetics compulsory in all experiments under licence alone *E. H. Starling*, 3470.

Applications for signature carefully considered *Sir R. D. Powell*, 5736-9.

Applications for signature not signed without knowledge of applicant and proposed experiment, *E. H. Starling*, 3739-43.

and Certificates:

Bulk of investigations require both, *W. P. Byrne*, 213-15.

Important distinction between, *W. P. Byrne*, 25.

Conditions attached by Home Secretary to, quite justifiable *E. A. Schäfer*, 10241-6.

Condition requiring animal experimented on under, to be killed before recovery from anaesthesia strictly conformed with *D. W. Buxton*, 12467-9.

Contravention of Act in regard to use of, *W. P. Byrne*, 36-50.

Difficult to forbid use of knife when issuing licence for inoculation purposes *G. D. Thane*, 412.

Draft form suggested in event of abolishing certificates, *Sir V. Horsley*, 15955-61.

Drugs, experimental administration of, requires, *A. R. Cushny*, 4763-7, 5250-1.

Experiment alleged to have been performed without, *J. W. Graham*, 6044-6.

Experiments not permissible without, and joint experimenters must both hold, *W. P. Byrne*, 284-5.

Experiments under licence alone are painless since anaesthesia is maintained throughout until animal is killed *J. N. Langley*, 15102.

Experiments under licence alone of a prolonged nature *Sir J. Russell*, 546.

Experiments without, no foundation for report as to, in Scotland *Sir J. Russell*, 586.

Experiments without, no possibility for performance of, in registered places *Sir J. Russell*, 587-8.

Foreigners frequently licensed *W. P. Byrne*, 273.

Foreigners should not be put under a disadvantage with regard to obtaining, in this country *C. J. Martin*, *Sir J. F. Moulton*, 12153-63, 12751-4.

Granted for fish feeding experiments *W. P. Byrne*, 207.

Granted for testing and standardising of anti-toxins, *G. D. Thane*, 1374-5, 1741-2.

Granted freely in cases where hardly necessary but for protection of applicant, *W. P. Byrne*, 205-7.

Inoculations could be performed under, without certificates *Hon. S. Coleridge*, 10455-68.

LICENCES—cont.

Issue of:

- Applicant's qualifications carefully investigated before, *W. P. Byrne*, 18.
- Applications for, must be submitted to Home Office *W. P. Byrne*, 155-6.
- Applications for, referred to inspector after submission to Association for Advancement of Medicine by Research *G. D. Thane*, 387-95.
- Applications never refused in area of Assistant Inspector *Sir J. Russell*, 519.
- Association for the Advancement of Medicine by Research consulted before, *W. P. Byrne*, 24, 27-9, 281-2.
- Complaints regarding, *W. P. Byrne*, 19-23, 140.
- Delay in, complaints as to, *W. P. Byrne*, *W. E. Dixon*, 216, 19016.
- Delay sometimes occasioned by consulting Association for Advancement of Medicine by Research, *Sir J. Russell*, 566.
- Further restrictions with regard to, would hamper research *J. Lorrain Smith*, 18277-8.
- General Medical Council, as now constituted, would not be a suitable body, to control, *W. E. Dixon*, 19152.
- Home Office and Inspectors do not disagree as to, *G. D. Thane*, 1151-3.
- Home Office do not inquire into personal character or humanity of applicant *Hon. S. Coleridge*, 10264.
- Inspectors consulted before, *W. P. Byrne*, 32-33.
- in Ireland:
 - Applications referred directly to Inspector *Sir T. Stoker*, 924-5.
 - Applications require similar signatures as in England *Sir T. Stoker*, 832-3.
 - Inspector's advice to, occasionally overruled, *Sir T. Stoker*, 932.
 - No practice of submitting applications to Association for Advancement of Medicine by Research, *Sir T. Stoker*, 847.
 - Procedure *W. P. Byrne*, *Sir J. Russell*, 149-56, 516.
 - Procedure might be simplified and amendment suggested *E. H. Starling*, 3723, 3981.
 - Procedure similar to that in England *Sir T. Stoker*, 789, 920.
- Sanction of Secretary of State required for *W. P. Byrne*, 2.
- to Students, with condition that experiments shall be performed under supervision *G. D. Thane*, 415-18.
- Three officials at Home Office concerned in, *W. P. Byrne*, 199-204, 208-12.
- to Veterinary surgeons under similar conditions as to other applicants *W. P. Byrne*, 70-2.
- Licencees' returns practically give assurance of complete precautions taken during experiment *G. D. Thane*, 1771-6.
- Licencee tacitly accepts conditions attached to, though giving no actual undertaking *G. D. Thane*, 494.
- Medical qualifications need not be only guarantee for obtaining, *G. D. Thane*, *E. A. Schäfer*, *C. J. Martin*, *J. N. Langley*, *A. D. Waller*, *W. E. Dixon*, *Sir J. P. Moulton*, 404-5, 1706-7, 1449-51, 10192-4, 12148-52, 15294-7, 18120-5, 19026-9, 12751-4, 12765-74.
- Memorandum of unsuitable applicants for, *W. P. Byrne*, 65-9.
- Necessary qualifications of applicants for, *G. D. Thane*, 399-403.
- Necessity of taking out certificates in addition to, should be lessened *J. N. Langley*, 15192.
- No complaints as to performance of experiments without, *W. P. Byrne*, 47-8.
- No restrictions as to animals except a horse, ass, or mule, under, *G. D. Thane*, 434.
- Number of, in Great Britain *G. D. Thane*, 369-70.
- Number of, increase in, *W. P. Byrne*, 107-13.
- Number of, held for class purposes in Ireland *Sir T. Stoker*, 762.

LICENCES—cont.

- One granted for observation of prostate gland in dogs *Sir T. Stoker*, 909-10.
- Premises where experiments are to be performed specified in, *G. D. Thane*, 499-500.
- Production of vaccine and diphtheria antitoxin does not require, *G. S. Woodhead*, 15550-1.
- Prosecution of licensee for non-fulfilment of conditions requires assent of Home Secretary *W. P. Byrne*, 230-1.
- Refusal of, to foreigners unjustifiable *C. J. Martin*, 12338-40.
- Refusals to grant, cases of, *W. P. Byrne*, *Sir J. Russell*, *G. D. Thane*, 166-7, 522-4, 1098-1100.
- Regular exercise of power to annex conditions to, *W. P. Byrne*, 5.
- Regulations of Home Secretary under Section 8, Vivisection Act, 1876, attached to, *W. P. Byrne*, 14.
- Renewal of:
 - Annual, *W. P. Byrne*, 48.
 - Annual, and pressure in inspector's work caused by *Sir J. Russell*, 598-9.
 - Doubtful procedure as to, *Hon. S. Coleridge*, 10590-2.
- Signatures of authorities enumerated in Vivisection Act, 1876, Section 11, must be attached to, *W. P. Byrne*, 16.
- Suspended for irregularities *W. P. Byrne*, 34-40.
- Suspended only four times in thirty years as punitive measures *W. P. Byrne*, 177-9.
- Veterinary surgeons in Ireland holding, *Sir T. Stoker*, 1043-4.
- See also under Suggested Amendments, under VIVISECTION ACT, 1876.
- LIEBERICH, PROFESSOR, Berlin, valuable soporific powers of chloral discovered by experiments on animals by, *A. R. Cushny*, *Sir L. Branton*, 4712-29, 7016-7.
- LILLE, cobra antivenin discovered by, *Major L. Rogers*, 8034.
- LIMERICK, laboratory of Condensed Milk Company at, *Sir T. Stoker*, 765.
- LIND-AF-HAGEBY, MISS L., Joint Author of *The Shambles of Science*, 7186-7650, 9105-9751.
- Adrenalin serves no useful purpose and opposition to all therapeutic system 9720-3.
- Anæsthesia:
 - Distinction between that employed in experiments and that in veterinary operations 7350-4.
 - Foreign text books, quotations from, showing practice of disregarding use of, 7299.
 - Imperfect, frequently required by some experiments 7438-41, 7620-5.
 - Incomplete, frequently advised in physiological text books 7223-97.
 - Light, means incomplete 9137-40, 9486-91, 9546-62.
 - Light, means incomplete, and as to unreliability of narcotics 9658-61.
 - Movement of animals on operating table indicates incomplete, 9661-4.
 - Physiologists' expressions of admiration for Professor Pawlow's experiments without, 7276-87.
 - Unreliability of, and drug experiments cannot be made under 9208-15.
- Castration should be performed under anæsthetics 9281-4.
- Chloroform a true anæsthetic if used properly 7599-602.
- Cholin, chemical test of, should be as satisfactory as physiological test 7496-503.
- Demonstration experiments should be prohibited 7459, 9242.
- Diphtheria antitoxin valueless 9675-88.
- Distinction between right and wrong use of animals 9325-45.
- Education and experience of, in physiological study 7186-95.

LIND-AF-HAGEBY, MISS L.—*cont.*

Evidence referred to:

- Anæsthetics, unreliable methods of, said to be in vogue *Sir G. Kekewich*, 20470.
- Exercises in Practical Physiology*, caution in, against use of anæsthetics *A. D. Waller*, 18086.
- Marmot, erroneous statements made with regard to condition of, *M. S. Pembrey*, 13975-14017.
- Movements in physiological demonstrations at University College referred to by, probably reflex ones *J. N. Langley*, 15314-15.

Experiments are performed under abnormal conditions and therefore valueless 9452-8.

Experiments on the higher animals especially objected to 7459-61.

General grounds of opposition to vivisection 9586-9.

Has written exclusively on vivisection of late years, 9105-13.

Inoculations:

- Objected to, 7466.
- Principle of conferring artificial immunity by, objected to 7645-50, 9347-53.
- Inspectors, increase of, useless 7462-5, 9598-600.
- Lay inspection of experiments, as to desirability of permitting, 9610-11, 9665-9.
- Lectures attended by, application for permission made in usual way 9628-9.
- Lectures attended by, conditions with regard to admission 7483-5, 9115-27.
- Lectures attended by, Mr. Starling's misrepresentation of methods adopted for gaining admission 7590.
- Limitation of experiments and prohibition of morphia and curare would be accepted by, as preliminary measures 9590-2.
- Moral objections to all experiments on animals 7204, 7455-8, 7620, 9200-6.

Morphia:

- Amount of fatal dose, 9262-71.
- and Curare should be prohibited as anæsthetics 9246-50.
- No anæsthetic and difference between narcosis and anæsthesia 7602-17.
- Pain sensations under, and its unanæsthetic effect on animals 9472-85.
- Should be prohibited as an anæsthetic 7300a-46, 7345-9.
- Myxedema, its treatment by thyroid extract might have been discovered by chemical experiments, 9719.
- No useful results obtained from experiments 7627, 7644, 9700-11.
- Opposed to all forms of cruelty to animals 9618-21.
- Pain, its absolute elimination from experiments would not affect moral opposition to vivisection 9312-24.
- Pasteur treatment of hydrophobia objected to 9712-15.
- Physiological text books contain callous references to pain and dislike of anæsthetics 7299, 7354-76.
- Physiologists consider scientific claims before moral ones 7288-99.
- Physiologists' publications show absence of humane teaching, 7375-7379.

"Pithing" of frogs:

- Essential conditions for complete, and as to wrong use of expression 9272, 9689-99.
- Improperly conducted by Dr. Brodie and Miss Cullis who held no licence 9730.
- Publication of experiments illegal under present Act shows want of humane feeling and should be prohibited 7379-96.
- Removal of cerebral hemispheres does not mean removal of consciousness of pain 7411-27.

Röntgen Rays:

- Infinite possibility in discovery of, for physiological investigation and treatment of disease 9726-7.
- Study of intestinal movements of animals under, are conducted under normal conditions and should be encouraged 9242.

LIND-AF-HAGEBY, MISS L.—*cont.*

Serum therapy, its useless nature 9717-18.

Shambles of Science, the:

Adherence to views honestly expressed in, 9630-3.

Anæsthesia incomplete in some experiments described in, 7350-3, 7454, 9130-1, 9157-97, 9408-17, 9594-7.

"Brown dog":

Contradictory statement as to health of, made by vivisectioners 9730-51.

Illegality of two successive operations upon, 9730-51.

"Dog injected with substance derived from a lunatic":

as to Anæsthetics used in, 7482-9.

Cholin tests conducted by Dr. Hallibarton referred to in, 7219-220, 7467-76.

Method of killing animal chiefly criticised in, rather than insufficiency of anæsthesia 7504-38.

"Dog that Escaped," curare used in experiment described in, 9398-406, 9461-71.

"An Experiment that is not supposed to be useful," suggestion that morphia as well as curare was used in, 9500-12.

"An Experimental Production of Blood clotting by injection of a Nucleo Proteid," justification of statements made in, 7432-3.

Humane feeling absent and indifference to pain shown during experiments described in, 7223.

Lectures described in, attended by authors 7477-81.

Levy of students referred to in, 7598.

Marmot referred to in, had been previously experimented upon and its spinal cord divided 9354-86, 9651-7.

Movements of animals during experiments described in, indicated returning consciousness 9144-7.

Morphia used as an anæsthetic during experiments described in, 7300a-9.

Object of writing, 7194-7204.

"Pain," operators engaged in experiments described in, 7448-52.

"Painless experiments," statements in, adhered to 7399.

Pithed frog, theory supporting statements made as to possibility of pain sensations in, 7403-30.

Publication, legal proceedings in connection with, and statement as to withdrawal of, 7567-89.

"A Quiet Cat," circumstances described in, suggesting improper use of curare 9383-97.

Reasons for not making direct representations as to cruelty of experiments described in, 9608-9.

"Scarcely Any Anæsthetic," preference for curare and morphia in experiments described, 4514a-21.

Section 3 of Act abused by performance of experiments described in, 7213-22, 7442-5.

"The Struggling Cat," adherence to statement as to lack of artificial respiration during experiment and misstatements by Drs. Thane and Bayliss 9634-50.

Mr. Thane's criticisms of, objected to, 7539-60, 7590-8, 9148-53.

"a Troublesome dog," operators engaged in experiment described in, 7448-52.

Snake-bite experiments, their scientific value doubted 9225-31.

Spinal cord of frogs, dogs and monkeys sensitive to pain 9563-84.

Sports, all involving cruelty to animals, objected to 9232-8.

Starvation experiments, pain involved in 9601-7.

Students should be forbidden to experiment upon pithed frogs, and as to certain modes of pithing which do not destroy sensation of pain 9255-9, 9272.

Tuberculin, its failure 7634-8.

Uselessness of experiments, since final test must always be on man 9239-41.

LIND-AF-HAGEBY, MISS L.—*cont.*

Vaccination, objection to, and to whole principle of serum therapy, on humanitarian and hygienic grounds 9216-24.

Vivisection Act, 1876:

Condition of things under, an improvement on foreign conditions 9287-90.

Experiments can be controlled to a certain extent under, but great deal of cruelty admitted by, 9297-303.

Repeal of, desirable, and abolition of all experiments enacted 9275-8.

Vivisectioners are artists in black art of producing utmost agony, 9419-50.

Would make no personal use of supposed advantages derived from experiments 7631-8.

References, *G. D. Thane*, *E. H. Starling*, 1230, 3545, 3552-3.

LINDGARD, DR., reference, *Major L. Rogers*, 8226.

LISTER, THE RIGHT HON. THE LORD.

Antiseptic surgery introduced by, *see* LISTERISM.
Errors of antiseptic treatment acknowledged by, *G. G. Bantock*, 14545-6.

Evidence of, before previous Royal Commission with regard to part played by experiments in discovery of antiseptic surgery, *H. Morris*, 7664-73.
No connection between work of Semmelweis and, *G. G. Bantock*, 14759-60.

Opponents of, do not realise distinction between prevention and infliction of pain *Sir J. F. Moulton*, 12707.

Statement of, as to possibility of experimenting on human beings *J. W. Graham*, 5887-90.

Work of, *Sir R. D. Powell*, 5584.

Reference, *S. F. Smith*, 13049.

LISTERISM:

Abandonment of, for aseptic methods of surgery *G. G. Bantock*, 14546-6, 15051-64.

Antiseptic and aseptic surgery are both applications of the principle of, *W. Osler*, 16681-4.

and Aseptic surgery, clear distinction between, *G. G. Bantock*, 15085-98.

Basis of theory, was concerned with notion of influence of atmospheric germs *G. G. Bantock*, 14551-5, 14822-32.

Beneficent results of, *H. Morris*, *Sir J. F. Moulton*, *W. Osler*, 7726, 7750, 12707, 16675-80.

Carbolic Spray:

At first regarded as most important part of procedure, but finally discarded *G. G. Bantock*, 14745-6.

Never a leading feature, and reasons for discarding it *Sir V. Horsley*, 15800-1, 16259.

Use of, now discarded owing to proof that risk of bacterial infection from air was slight *Sir V. Horsley*, 15668.

Date of introduction of treatment *G. G. Bantock*, *Sir V. Horsley*, 14564-70, 16260-4.

Definition of, *E. A. Schäfer*, *G. G. Bantock*, 10141-51, 15083-4.

Essence of, was to destroy atmospheric germs by use of carbolic acid spray, and error of such a theory *G. G. Bantock*, 14556-63.

Generally adopted not only in England, but over the whole Continent *Sir V. Horsley*, 15679.

Modern aseptic surgery is logical outcome of, *Sir V. Horsley*, 15665-8.

Modifications of technique since 1876 *H. Morris*, 7845-7.

Opposition to, *G. G. Bantock*, 14752-4.

Principles of, embodied in modern aseptic surgery *W. Osler*, 16742-6.

See also ANTISEPTIC AND ASEPTIC SURGERY.

LISTER INSTITUTE OF PREVENTIVE MEDICINE:

Authorities' conclusions as to reasons for cases of tetanus following use of Haffkine's serum at Malkowal *C. J. Martin*, 12295-9.

Constitution of, is on similar lines to the Pasteur Institute in France *Sir V. Horsley*, 15672.

Evidence of Director of, *see* MARTIN, C. J., 11630-12140.

LISTER INSTITUTE OF PREVENTIVE MEDICINE—*cont.*

Experiments performed in, almost exclusively confined to inoculations and injections *C. J. Martin*, 11826-7.

Local Government Board investigators' work at, *W. H. Power*, 4284.

Not exactly a private institution *G. D. Thane*, 1366-70.

Paralysis following use of antitoxins, cases of, quoted in report of, *Miss A. Kenaly*, 6166-7.

Research work on behalf of, carried out at Chelsea and Aldenham, *G. D. Thane*, 344.

Salaried and unsalaried licensees attached to, *G. D. Thane*, 354.

Salaries of staff do not depend on amount of products sold *C. J. Martin*, 11844.

Substances produced in, *C. J. Martin*, 11831-4.

Work done at, *C. J. Martin*, 12074-9.

LIVERPOOL:

Corporation, investigations on behalf of, performed in University buildings *G. D. Thane*, 340-41.

University of:

Cancer research laboratory at, *G. D. Thane*, 1686.

Professorship of bio-chemistry founded by, *Sir V. Horsley*, 16008.

Work on behalf of, *G. D. Thane*, 340.

LOCAL GOVERNMENT BOARD:

Annual Report, 1889, inoculations of Dr. Klein reported in, *Mrs. K. Cook*, 1919.

Bacteriological investigations not undertaken by staff of, *W. H. Power*, 4582-3.

Bacteriologists employed by, diagnosis of diseases, *W. H. Power*, 4627-8.

Dairies and Cowsheds Order, its administration *S. Stockman*, 3419-22.

Diphtheria antitoxin and cholera preventive recommended by, *W. H. Power*, 4310-12.

Diphtheria antitoxin issued by, but without specific instructions *W. H. Power*, 4604, 4624-6.

Epidemiological method of working at causation of Malta Fever authorised by, unsuccessfully *Col. D. Bruce*, 14261.

Evidence on behalf of, *see* POWER, W. H., 4281-4640.

Experimental investigations on behalf of, reported annually in Parliamentary paper *W. H. Power*, 4339-50.

Experiments for, in connection with destruction of rats on plague ships *M. S. Pembrey*, 14058-66.

Experiments on behalf of, subject to supervision of inspector *G. D. Thane*, 1339-40.

Foreign Office is informed by, of outbreaks of certain diseases for notification to foreign countries *W. H. Power*, 4301, 4337.

Functions of, as regards experimental investigations *W. H. Power*, 4299.

Haffkine's plague serum issued by, *W. H. Power*, 4624-6.

Inspection:

Investigatory work no longer carried out by, *W. H. Power*, 4299.

Work of, *W. H. Power*, 4534.

Investigators employed by, and as to supervision of such *W. H. Power*, 4284-97.

Koch's consumption cure not applied by, to human beings, *W. H. Power*, 4467.

Laboratories not owned by, *W. H. Power*, 4283.

List of scientific authorities employed by, *W. H. Power*, 4413-4.

Local authorities generally adopt prophylactics suggested by, *W. H. Power*, 4325.

Local authorities notified by, of all new prophylactics discovered, *W. H. Power*, 4310.

Medical Officers of, since 1900, *W. H. Power*, 4297.

Medical staff of, *W. H. Power*, 4302.

Nature of research investigations carried out by, *W. H. Power*, 4300-1.

Painful experiments on behalf of, would be reported to *W. H. Power*, *W. H. Power*, 4529-31.

Procedure of, in outbreaks of disease, *W. H. Power*, 4304-5.

Prophylactics not actually recommended by, but notified to and placed at disposal of local authorities, *W. H. Power*, 4368-9, 4437-40.

LOCAL GOVERNMENT BOARD—*cont.*

Prophylactics tested before recommendation to local authorities, *W. H. Power*, 4318-20, 4440.
Reports received by, from local authorities as to efficacy of prophylactics recommended, *W. H. Power*, 4317, 4322-4.

Research Work :

Aim of investigations, *W. H. Power*, 4423-4, 4578-9.
Animals chiefly used, *W. H. Power*, 4343-5.
Experiments essential for, *W. H. Power*, 4357.
Experiments with view to discovery of preventive sera, *W. H. Power*, 4307-9.
Few experiments of painful character, *W. H. Power*, 4526.
Home Office inspection, extent of, *W. H. Power*, 4356, 4519.
Inspectors no longer carry out, *W. H. Power*, 4299.
Investigators employed in, and as to supervision of such, *W. H. Power*, 4284-97.
Investigators make yearly returns to Home Office, *W. H. Power*, 4333-6.
Laboratory formerly rented for, but practice now discontinued, *W. H. Power*, 4411.
List of investigators employed, *W. H. Power*, 4413-4.
Majority of experiments are subcutaneous inoculations and painless *W. H. Power*, 4351-4, 4532, 4574-5.
Nature of, *W. H. Power*, 4300-1.
Reasons for employing outside investigators, *W. H. Power*, 4359-60.
Sir J. Simon's and Mr. Forster's minutes concerning principles governing, *W. H. Power*, 4299.
Smallpox inoculations not latterly conducted, *W. H. Power*, 4483-5.

Treasury grant to, for purposes of conducting experiments, *W. H. Power*, 4408-10.
Tuberculin, its curative value not yet considered by, *W. H. Power*, 4405-6.
Tuberculosis treatment, recommendations of Board as to, in abeyance until report of Tuberculosis Commission is issued, *W. H. Power*, 4455-6.
Vaccination lymph carefully tested before issue from, *W. H. Power*, 4513.
Vaccine tested and prepared by, and as to derivation of lymph, *W. H. Power*, 4477-8, 4482, 4488, 4513, 4591-7.

in Ireland :

Experiments on behalf of, *Sir T. Stoker*, 776-7.
Licences should be issued by, *Sir T. Stoker*, 778-80, 855.
Medical inspector assists Inspector under Vivisection Act in some places, *Sir T. Stoker*, 831.

LOCK, REV. W., D.D., Warden of Keble College, Oxford, letter from, with reference to apology from Keble undergraduates *F. Gotch*, 13668.

LONDON ANTI-VIVISECTION SOCIETY :

Application from, to prosecute licensee for supposed breach of conditions and consequent proceedings *W. P. Byrne*, 232.
Income of, *Hon. S. Coleridge*, 10260.

LONDON HOSPITAL, cats kept at, by Dr. Head *G. D. Thane*, 1248A, 1256.

LONDON HOSPITAL MEDICAL COLLEGE, Dr. Head licensed to perform experiments at *G. D. Thane*, 1385.

LONDON :

King's College :

Demonstration experiments at, *A. R. Cushny*, 5164.
Harben lecture at, delivered by Professor Metchnikoff *Mrs. K. Cook*, 1785.

School Board, Experiments recommended to students in manual of, expurgated after exposure *Miss A. L. Woodward*, 8824-6, 8867-80.

LONDON—*cont.*

School of Medicine for Women :

Demonstration experiments at, *A. R. Cushny*, 5168.
Not registered for experiments, *Miss Lind-af-Hageby*, 9626-7.

University :

Evidence on behalf of, see *WALLER*, A. D., 17996-18167.
Lectures at, attended by authors of *The Shambles of Science*, *Miss Lind-af-Hageby*, 7477-81.
Resolution passed by, in favour of giving evidence, and witnesses appointed *A. D. Waller*, 18091-3.

University College :

Cruelty of experiments on cats and dogs at, *Mrs. K. Cook*, 1801-7, 1917-19.
Demonstration experiments at, *A. R. Cushny*, 5164.
Dog used illegally for two experiments at, *Mrs. K. Cook*, 1917.
Experiments resulting in discovery of adrenalin at, *E. H. Starling*, 3555-60.
Dr. Head licensed to perform experiments at, *G. D. Thane*, 1385.
Inspectors' connection with, has made no difference to inspection *Sir V. Horsley*, 16072-4.
Nature of experiments in 1902 on dogs at, *E. H. Starling*, 3470.
Number and nature of experiments on dogs at, *E. H. Starling*, 3527-33.
Physiological Laboratory, *G. D. Thane*, 1237-46.

LONG, THE RIGHT HON. W. H., muzzling orders for suppression of rabies introduced by, see *Muzzling Order under BOARD OF AGRICULTURE*.

LONGST, experiments by, reference, *Miss A. Kenealy*, 5288.

LOUPEING ILL, see under *SHEEP DISEASES*.

LOREBURN, THE RIGHT HON. THE LORD, antivivisection cause supported by, *Hon. S. Coleridge*, 10262.

LUDWIG, experiments by, were starting point of present abdominal surgery *Sir L. Brunton*, 6952.

LUTAUD, DR. :

Letter from with regard to fallaciousness of statistics of Pasteur's treatment for rabies *G. G. Bantock*, 14786-96.
Reference, *Miss Lind-af-Hageby*, 9686.

MACAULAY, DR., quotation from essay by, shows little experience and knowledge of drugs *H. Morris*, 7982-6.

MACCARTHY, DR., Abbeyfeale, County Limerick, total abolition of vivisection except by expert original investigators desired by, *J. Hughes*, 17209.

MCDONNELL, R., M.D., evidence of, before Vivisection Commission, 1875, *S. F. Smith*, 13049.

MC EWEN, PROFESSOR, reference, *G. Fr. Burford*, 9081.

MACFADYEN, ALLAN, investigation into cause of Malta fever caused death of, *Col. D. Bruce*, 14414-7.

MACKARNES, DR., *The late*, Bishop of Oxford, antivivisection cause supported by, *Rev. L. S. Lewis*, 8728.

MACKENDRICK, PROFESSOR, experiments by, leading to discovery of anæsthetic properties of cocaine, *Sir L. Brunton*, 7025-7.

MACLAGAN, MR., reference *A. R. Cushny*, 4781-2.

MACNEILL, J. G. SWIFT, M.P., question in Parliament to Home Secretary by, as to Dr. Hime's experiments *Miss A. L. Woodward*, 8804, 8846.

MCVAIL, DR., antiseptic methods of, *G. G. Bantock*, 14748-51.

MCWEENEY, PROFESSOR, experiments conducted by, for Irish Local Government Board *Sir T. Stoker*, 776-7.

MAGENDIE :

Experiments performed by, previous to use of anæsthetics *E. H. Starling*, 3445-9.
Experiments by, reference *Miss A. Kenealy*, 5288.

MAIDSTONE, typhoid outbreak, bacillus not discoverable in suspected water *G. G. Bantock*, 14707-22.

MALARIA:

Combated by destroying agent of communication *Sir J. F. Moulton*, 12732-5.
Communicated by mosquitoes *W. Osler*, 16699-71.
Destruction of mosquito and isolation of cases is best method of stamping out, *W. Osler*, 16703-4.
Discovery of mode of transmission of, will make the tropics habitable *W. Osler*, 16543.
Experiments on birds not essential in proving that mosquitoes convey, *S. F. Smith*, 13114-117.
Large proportion of population in malarial districts though practically immune to, are yet capable of infecting mosquitoes *W. Osler*, 16789-90.
Method of controlling, resulting from experiments will enable Panama Canal to be built *W. Osler*, 16541-2.
Might be stamped out if infected district could be wholly immunised *W. Osler*, 16705-6.
Mosquito probably infectious after having bitten infected patient at any period during course of, *W. Osler*, 16701-2.
Organism of, discovered by experiments on birds *W. Osler*, 16747-9.

MALKOWAL, INDIA, conclusions of Lister Institute as to tetanus following use of Haffkine's vaccine at, *C. J. Martin*, 12295-9.

MALLEIN:

Board of Agriculture do not issue instructions as to use of, *S. Stockman*, 3248.
Discovery of, as diagnostic agent of glanders *S. Stockman*, 2576-8.
Errors, possibility of, in assuming that all reactions prove existence of glanders *S. Stockman*, 3235-45.
Generally accepted as diagnostic agent of glanders *S. Stockman*, 3246.
Has no curative power *S. Stockman*, 3257-8.
Horses exported to Continent for horse-flesh meat tested on arrival with, *S. Stockman*, 3250.
Prepared similarly to tuberculin, *S. Stockman*, 3227-34.
Value of, and small proportion of errors in its use as diagnostic agent *S. Stockman*, *F. Taylor*, 2576-8, 2807-18, 3379-83, 5722-4.

MALTA:

Chart showing monthly prevalence of Malta fever among troops in, *Col. D. Bruce*, 14210-15.
Investigation of Mediterranean fever at, and satisfactory results *Lord Rayleigh*, 5557, 5568.
Tables showing incidence of fever among troops in, and number of those invalided home *Col. D. Bruce*, 14216-20.

MALTA FEVER:

Animal experimentation essential to investigation of, *Col. D. Bruce*, 14260, 14495-6.
Case mortality, proportion compared with typhoid *Col. D. Bruce*, 14380.
Cases of, on board s.s. "Joshua Nicholson," arising from goats' milk, *Col. D. Bruce*, 14400-4.
Cause of, could never have been discovered without experiments on animals *Col. D. Bruce*, 14452-3.
Cause of, has not been investigated so closely in other places than Malta, *Col. D. Bruce*, 14250-2.
Caused in most cases by drinking goats' milk, *Col. D. Bruce*, 14216-19, 14518-21.
Charts showing monthly prevalence of, *Col. D. Bruce*, 14210-15.
Claims put forward as to actual discoverer of cause of, *Col. D. Bruce*, 14405-7.
Commission formed in 1904 to investigate, *Col. D. Bruce*, 14484-5.
Communicated purely by food, and not by inhalation, *Col. D. Bruce*, 14465-8.
Decrease in prevalence of, after adoption of preventive measures in 1906 *Col. D. Bruce*, 14381-93.
Difficulty of distinguishing enteric fever from, *Col. D. Bruce*, 14395.
Entire elimination of, from Army and Navy, but native population is still subject to, *Col. D. Bruce*, 14490-1.

MALTA FEVER—cont.

Experiments proved that cause of, was not conveyed by air, effluvia, or harbour water, but by goats' milk *Col. D. Bruce*, 14234-45, 14291.
Goat not only susceptible to, but several species of animals, *Col. D. Bruce*, 14253.
Koch's three postulates satisfied in case of, and *micrococcus melitensis* demonstrated as cause by series of experiments on monkeys *Col. D. Bruce*, 14222-35.
Maltese less susceptible to, than foreigners *Col. D. Bruce*, 14255.
Manner in which *micrococcus melitensis* spreads from goat to goat not exactly known, *Col. D. Bruce*, 14504.
Measures taken to stamp out, after cause was traced to drinking of goats' milk *Col. D. Bruce*, 14245-9.
Micrococcus melitensis discovered to be cause of, in 1886 *Col. D. Bruce*, 14267-75, 14483-4.
Micrococcus melitensis multiplies in mammary glands of goats *Col. D. Bruce*, 14522-5.
Nature and average duration of, *Col. D. Bruce*, 14202-10.
No proof that infection is carried by dust, *Col. D. Bruce*, 14465-7, 14492-3.
Observational methods alone insufficient for investigation of, *Col. D. Bruce*, 14260-5.
One attack of, is to a certain extent protective, *Col. D. Bruce*, 14256-8.
Precautions taken in Gibraltar against, *Col. D. Bruce*, 14288-90.
Preventive methods adopted against, *Col. D. Bruce*, 14369-73.
Remedies for, must be tested by animal experimentation *Col. D. Bruce*, 14473.
Results of experimental work in connection with, have been of enormous assistance in stamping out the disease *Col. D. Bruce*, 14201.
Serums prepared for, without much success at present, *Col. D. Bruce*, 14374-9.
Statistics of cases after stopping supply of goat's milk *Col. D. Bruce*, 14454-64.
Tables showing incidence of, among troops in Malta and number of those invalided home *Col. D. Bruce*, 14216-20.
Widespread and known under different names, *Col. D. Bruce*, 14204-9.

MALVERN WELLS, municipal laboratory at, *G. D. Thane*, 342.

MANCHESTER:

Inoculation experiments in, for detecting tuberculous cows *J. Lorrain Smith*, 18344-57.

Victoria University:

Dalton Hall:

Evidence of Principal, see *GRAHAM*, *J. W.*, 5837-40.
Object and constitution of, *J. W. Graham*, 5837-40.

Evidence on behalf of, see *LORRAIN SMITH*, *J.*, 18168-18462.

MANCHESTER ANTI-VIVISECTION SOCIETY, views of, see *GRAHAM*, *J. W.*, 5836.

MANCHESTER FRIENDS' ANTI-VIVISECTION SOCIETY, views of, see *GRAHAM*, *J. W.*, 5836.

MANCHESTER SOCIETY FOR THE PROTECTION OF ANIMALS FROM VIVISECTION, income of, *Hon. S. Coleridge*, 10260.

MANNING The late CARDINAL, anti-vivisection cause supported by, *Rev. L. S. Lewis*, *Hon. S. Coleridge*, 8728, 10262.

MANSION HOUSE MEETING, 1899:

Object of, was merely to pass resolution in recognition of Pasteur's work, and actual facts of case misrepresented by Mr. Coleridge *Sir V. Horsley*, 15594-601.

Promoters' object was to establish Pasteur Institute in England, but this intention, as well as public character of, frustrated *Hon. S. Coleridge*, 19880-19901.

MANSON, SIR PATRICK:

Disagreement with views of, concerning doubtful cause of sleeping sickness *Col. D. Bruce*, 14436-40.

MANSON, SIR PATRICK—*cont.*

Experiment in connection with investigation of filaria sanguinis hominis proposed by, Sir V. Horsley, 15733-5.

Opinion of, with regard to cause of sleeping sickness, altered Col. D. Bruce, 14449-51.

MARCHI, method devised by, in investigating anatomy of the nervous system most valuable Sir V. Horsley, 15682.

MARCONI, reference E. H. Starling, 3442.

MARMOT (referred to in *The Shambles of Science*):

Adherence to statement that spinal cord of, had been divided Miss Lind-af-Hageby, 9354-86.

Spinal cord of, had never been divided, and erroneous statements made by Miss Lind-af-Hageby re condition of, M. S. Pembrey, 13975-14017.

Spinal cord of, had never been divided, and post-mortem examination of, made G. D. Thane, M. S. Pembrey, 1272-4, 14124-7.

MARSHALL, DR. F. A. H., reference, A. E. Schäfer, 10193.

MARTIN, MESSRS. Brady and, see BRADY AND MARTIN, MESSRS.

MARTIN, C. J., M.B., D.Sc., F.R.S., Director of the Lister Institute of Preventive Medicine, 11630-12382.

Anti-toxins, their production, and precautions taken in their manufacture 11696-710.

Anti-vivisection feelings natural but unreasonable 12331-5.

Bacterial origin of most infectious diseases 11879-88.

Causes of several infectious diseases not yet identified, and obstacle in some cases has been their non-communicability to animals 11904-9, 12178-92, 12314-5.

Choice of animals for experiments should not be limited 11821-4, 12050-1.

Colonial regulations of experiments differ in different countries, but restrictions generally looser than in England 12053-8.

Cruelty not involved in experiments and anaesthesia always complete 12342-9.

Diagnosis of infectious diseases, importance of experiments in, 11657.

Demonstration experiments necessary for students to have clear conception of physiological facts 11825.

Diphtheria:

Anti-toxin:

Cost per unit 11836-43.

Effect of, upon mortality of laryngeal cases 11730-1.

and Hydrophobia vaccine, distinction between principles of, 11920-2.

Mortality could be abolished by immediate application of, 11763, 11766-91.

Most successful of all serum treatments and necessity of its use in early stages of disease 11985.

Paralysis following use of, as to statistics of cases 12316-24.

Prophylactic action of, 11739.

no Statistics of London cases treated with and without, 12252-6.

Success of, 11985-12030, 12355-7.

Tables showing curative value of, and conclusions drawn from such statistics 11711-35.

Tables showing influences of early and late administration of, upon case mortality 11733-7.

Bacterial diagnosis of, its accuracy and effects upon statistics of case mortality 12257-70, 12358-61, 11985-12030.

Knowledge of, acquired by experimental methods 11652.

Dysentery anti-toxin:

Not used in India to any great extent 12031.

Possesses preventive and curative properties in animals, but no extensive data as to its value in man yet available 11755-9.

Practical value of, predicted 11764.

MARTIN, C. J., M.B., D.Sc., F.R.S.—*cont.*

Evidence of, agreed with J. R. Bradford 17749-50.

Evidence referred to:

Diphtheria statistics, fallacy of, S. F. Smith, 13235-59.

Haffkine's plague vaccine, statement re, criticised Sir G. Kekewich 20471.

Experimental methods the only possible way of properly advancing science of medicine, 11643.

Hydrophobia:

Deaths from, occurring during, or within fifteen days after completion of Pasteur's treatment excluded from statistics 11914-19.

No specific microbe of, 11909.

Pasteur's inoculations created no case of, 12362-4.

Pasteur's reasoning for assuming nervous system would be site of virus of, 11910-3.

Preventive and curative sera for, discovered by experiments and requiring inoculation of animals for their production 11658-95.

Stamped out in this country without recourse to Pasteur's treatment, 11924.

Injections of toxins derived from specific microbes of disease produce that disease in modified form 11900-1.

Licences:

and Certificates, medical qualifications should not be necessary for obtaining, 12148-52.

Home Office action in refusing, to foreigners unjustifiable 12338-40.

Melbourne regulations as to, quite proper 12350-3.

Lister Institute:

Experiments performed in, almost exclusively confined to inoculations and injections 11826-7.

Salaries of staff do not depend on amount of products sold 11844.

Substances produced in, 11831-4.

Work carried on at, 12074-9.

Number of experiments performed by, 12032-5.

Plague:

Advisory Committee on, in India and Commission appointed by, 12286-91.

Anti-toxin (Haffkine's):

Discomfort not involved by inoculation, 12097-102.

Discovery of, and statistics as to its use 11792.

Effect of, in preventing spread of disease in India and statistics 11925-39, 12300-310.

Immunity conferred by, no accurate data as to period of, 12128-33.

Precautions taken for purity and strength of, 12071-3.

Use of other than, 11939-41.

Bubonic form not infectious 12141-5.

Commission on, in India, its constitution, investigations and report 12080-95, 12134-6, 12291-3.

in India, experimental investigations re spread of, 11654-6.

Transmission of, by rat flea discovered to be most serious mode of spread, 12103-26.

Pneumonia anti-toxin not popular 11969.

Public Health, importance of experiments in connection with testing of water and food 11817-20.

Puerperal fever:

Knowledge of, acquired by experimental methods 11967-8.

Serum treatment for, not always satisfactory 11967-8.

Rabies:

Abolition of, in this country 12241-51.

Mortality statistics affected by inclusion of all cases dealt with by Pasteur's treatment 12169-73.

MARTIN, C. J., M.B., D.Sc., F.R.S.—*cont.*Rabies—*cont.*

Pasteur's treatment had nothing to do with the stamping out of, in this country 12164-8.

Serum production; experiments for, not under the Act 11845-7.

Sleeping sickness, case of Khartoum dog, inoculated with, 12137-40.

Snake poison:

Anti-venin only useful treatment for, 12283-5.

Futility of certain remedies advocated, 12271-82.

Stamping out and control of certain infectious diseases have been effected without use of preventive sera 11850-8, 12193-205.

Syphilis, as to cause of, 12229-40.

Tetanus:

Anti-toxin:

A certain remedy if promptly administered 11760-2.

Chiefly used, as prophylactic 11970-6, 12038-49.

a Curative and prophylactic agent 11740-54.

Has not justified expectations 11963-5.

Method of obtaining, 12038-49.

Production of, involves no pain 12065-70.

Knowledge of, acquired by experimental methods 11653.

Occurrence of, after use of Haffkine's plague vaccine at Malkowal, Lister Institute's conclusions as to, 12295-9.

Sanitary conditions chief preventive, 11984.

South African war, few cases in, and consequently small use of serum 11977-81.

Tuberculin, as to its prophylactic use, 12209-12, 12373-82.

Tuberculosis:

Communicability of, from animals to man proved by recent research 12219-24.

Contended at one time to be no specific disease 12206-8.

Knowledge of, acquired by means of experiments 11644-6.

Sanitary conditions, enforcement of, best preventive, 12214-16.

Typhoid anti-toxin:

First trial of, and statistics as to its use 11793-813.

Wright's, and as to its value, 11942-6, 11952-7.

Vaccination against small-pox:

Difference between lymph used in, and other protective sera, 11867-76, 11902-3.

Jenner's discovery involved no experiments on animals, 11859-62.

Vivisection Act has not materially hindered cause of science, 12336.

References *Sir L. Brunton*; *E. A. Schäfer*, 7161, 10238.

MARTIN, SIDNEY, M.D., F.R.S., Professor of Pathology, University College, London.

Local Government Board investigations conducted by, *W. H. Power*, 4284, 4523.

Report for Local Government Board by, on Chemical Products of Diarrhoea-producing Bacteria *W. H. Power*, 4301.

MARTINEAU, JAMES, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.MARSHALL, F. A. H., reference, *E. A. Schäfer*, 10193.

MATTHEWS, THE RIGHT HON. H. (now Viscount Llandaff), Home Secretary, 1886-92.

Refusal of, to reconstruct Certificate E as originally worded, *Sir V. Horsley*, 15762.

Restrictions imposed on certificates by, as to number and duration of experiments *Sir V. Horsley*, 15767-70.

MATTHIÉSSON, MR., apomorphin formed from morphin by, *A. R. Cushny*, 4819.

MAXWELL, PROFESSOR CLERK, scientific work of, referred to *E. H. Starling*, 3442.

MAY, DR. G., Consulting Surgeon at the Royal Berkshire Hospital, correspondence with as to "incomplete anaesthesia," *Hon. S. Coleridge*, 10308, 10993.

MAYER, DR. ROBERT, law of conservation of energy discovered in consequence of observation of physiological processes, *F. Gotch*, 12549-54.

MEASLES:

Epidemic of, in Fiji Islands, *Sir L. Brunton*, 6854-60.

Specific bacillus of, not yet discovered, *Sir R. D. Powell*, *C. J. Martin*, 5666-71, 11904.

MELBOURNE, licensing regulations in, *C. J. Martin*, 12060-4, 12350-3.

MELVILLE, DR., late Civil Surgeon to Natal Field Force, statistics given by, with reference to inoculation for typhoid fever, *S. F. Smith*, 13109.

MENDEL, experiments by, reference *Miss A. Kenealy*, 5296.

MEREDITH, GEORGE, O.M., anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

MERING, drug experiments by, *A. R. Cushny*, 4748.

METABOLISM, effect on, of diverting or obstructing flow of bile into large intestine can only be performed on dogs, *G. D. Thane*, 1232.

METCHNIKOFF, E., Director of the Pasteur Institute.

Statement by, as to supremacy of science over morality, and award of Harben gold medal to, *Rev. L. Lewis*, *J. H. Levy*, 8754-8, 18496-7.

Syphilis experiments on monkeys by, *Sir J. Russell*, *J. H. Levy*, 684, 18544, 18630-3.

Teaching and suggestions of, *Mrs. K. Cook*, 1785.

METROPOLITAN ASYLUMS BOARD:

Diphtheria anti-toxin reported upon and its preparation undertaken for, *G. S. Woodhead*, 15449-54.

Hospitals:

Percentage of deaths from diphtheria fifteen years ago in, and comparison with recent years, *W. H. Power*, 4384-5.

Statistics re use of diphtheria anti-toxin in, *C. J. Martin*, *G. S. Woodhead*, 11711, 15457-64.

Statistics showing decrease in diphtheria mortality at, due to antitoxin treatment, *W. H. Power*, *F. Taylor*, *Sir R. D. Powell*, 4361-2, 4387-91, 4541-50, 4632-8, 5585-93, 5657, 5666-71.

Joyce Green Hospital, registration required consent of, *G. D. Thane*, 1744.

Licenses in connection with, engaged in testing and standardising anti-toxins *G. D. Thane*, 1741-2.

METTAM, PROFESSOR:

Licence held by, *Sir T. Stoker*, 1043-5.

Statement by, that all diseases of the human eye affect also eyes of animals, *Sir H. R. Swanzy*, 9898.

MICE:

Action of respirable gases and use of vapour in anaesthesia established by Priestly's experiments on, *Sir V. Horsley*.

Cancer inoculations in, no grounds for supposing they involve pain *G. D. Thane*, 1692-3.

Cancer inoculations in, *G. D. Thane*, 465-6.

Cancer inoculations in, necessarily painful *Miss A. Kenealy*, *Sir G. Kekewich*, 5495-503, 20600-5.

Experiments to test effect of House of Commons air on, *W. P. Byrne*, 125.

Glanders sometimes diagnosed by inoculating, *S. Stockman*, 3233.

Jensen's tumour predominates in, and symptoms differentiating it from human-cancer *H. Snow*, 2105-8, 2120-1, 2125.

MICE—cont.

- Septicemia has different effects in field, and house, *H. Morris*, 7876-9.
 Tuberculosis inoculated in, and cruelty of such experiments *Mrs. K. Cook*, 1919.
 Tumour in, doubts as to its malignant character, *H. Snow*, 2118-20.
 Tumour in, incorrectly diagnosed as cancer, and therefore its investigation can lead to no useful result *H. Snow*, 2121, 2125, 2127, 2134-7A.
 Used chiefly for inoculation experiments *E. H. Starling*, 3445.

MICHIGAN UNIVERSITY, U.S.A., no law regulating vivisection in, *A. R. Cushny*, 5019-27.

MIDDENDORF, DR., reference, *G. G. Bantock*, 14696-7.

MIDWIFERY, clinical opinion divided as to use of ergot in cases of, *A. R. Cushny*, 5203-4.

"MIGNONETTE" CASE, judgment of Lord Chief Justice Coleridge in, and its bearing on question of morality *J. H. Levy*, 18523-6.

MILL, J. S., immorality of taking cosmic process as a moral exemplar argued by, *J. H. Levy*, 18518-20.

MILROY, T. H., Queen's College, Belfast:

- Certificate C not allowed to, in first instance, but afterwards granted *Sir T. Stoker*, 793-4.
 Six experiments under certificate C performed by, *Sir W. Thornley Stoker*, 937.

MONKEYS:

- Act does not specify, *Sir T. Stoker*, 775.
 Anaesthetised without difficulty *A. R. Cushny*, 5095.
 Analogy between men and, close enough to make experiments valuable *E. A. Schäfer*, 10126.
 Analogy between man and, not close enough to make experiments on valuable, *Miss A. Kenealy*, 6607-15.
 Cretinous and myxedematous symptoms not always produced in, by removal of thyroid gland *Sir V. Horsley*, 15831-5.
 Cruelty of experiments on, *Mrs. K. Cook*, 1790, 1796, 1799-1800, 1910-11, 1913-4.
 Desirability of using, for certain experiments, but use of is largely a matter of economical cost *F. Gotch*, 13565-8, 13745-52.
 Experiments on, proving removal of thyroid gland is cause of cretinism and myxœdema *W. Osler*, *Sir V. Horsley*, 16582.
 Experiments on, valuable owing to their highly developed nervous system *G. D. Thane*, *E. H. Starling*, 1205, 3445.
 Inoculated with blood of persons suffering from sleeping sickness and disease thereby produced *Col. D. Bruce*, 14502-3.
 Killed by overdose of anæsthetic *Sir J. Russell*, 549.
 Local Government Board do not experiment upon, *W. H. Power*, 4343-5, 4528.
Micrococcus melitensis proved to be cause of Malta fever by series of experiments on, *Col. D. Bruce*, 14222-35, 14272.
 Nervousness of, *G. D. Thane*, 1427.
 Pain not indicated after brain operations on, *E. A. Schäfer*, 10127-31.
 Spinal cord of, sensitive to pain *Miss Lind-af-Hageby*, 9563-84.
 Susceptibility of, to pain makes it desirable to minimise experiments on them *Sir J. Russell*, *Sir T. Stoker*, 607, 807-8.
 Syphilis communicated to, *J. H. Leay*, 18544.
 Syphilis experiments on, application to perform, would require to be urged by strong reasons *Sir J. Russell*, 684.
 Thyroid gland excision followed by no painful symptoms *Sir J. Russell*, 543.
 Tuberculosis common among caged, and care taken to guard, from infection *S. Stockman*, 3225.
 MONTENEGRO, PROFESSOR JOSE VERDES, statement of, as to results following inoculation with plague serum *Sir G. Kekewich*, 20640, 20664-6.
 MOONEY, DR., argyrol first used by, in case of inflammation of interior of eye, *Sir H. R. Swanzy*, 9845.
 MOORHOUSE, DR., The late BISHOP OF MANCHESTER, anti-vivisection causes supported by, *Rev. L. S. Lewis*, 8728.

MOORSON, COL., Chief Constable of Lancashire, reference, *Sir V. Horsley*, 15883.

MORLEY, THE RIGHT HON. JOHN (now Viscount), O.M.:

- Anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.
 As Chief Secretary for Ireland effected improvement in Irish administration of Act, *Sir T. Stoker*, 767, 853-4.

MORPHIA:

- Absolute protection from pain afforded by, as at present administered *A. R. Cushny*, *J. N. Langley*, *W. E. Dixon*, 5150-3, 15119-351, 18887, 19039-46.
 Action of, different to chloroform but produces similar insensibility to pain *W. E. Dixon*, 18764-8.
 Action of, in frog *E. H. Starling*, 3836-40.
 Action of, similar in all animals *W. E. Dixon*, 18869-76.
 Acts gradually on nervous centres and less rapid action than chloroform *J. N. Langley*, 15120-2, 15417-9.
 Affects different dogs differently *F. Hobday*, 16487.
 Amount of dose likely to prove fatal to dog *Col. E. Lawrie*, 17098-100.
 as to Amount of fatal dose *Miss Lind-af-Hageby*, 9262-71.
 an Analgesic but has less rapid action than chloroform *J. N. Langley*, 15422-5.
 Chief value of, and reasons for administering *E. H. Starling*, 3607-10.
 and Chloroform, value of anæsthesia produced by combination *W. E. Dixon*, 18672.
 Claude Bernard's views as to action of, erroneous and based on false experiments *J. N. Langley*, 15421.
 Dogs insusceptible to toxic dose of, *F. Hobday*, 16483-5.
 Dose of, administered before general anæsthetic makes less amount of latter necessary, *D. W. Buxton*, 12502.
 Dose of, necessary for anæsthesia bears relation to amount of brain substance *W. E. Dixon*, 19004-11.
 Drugs having similar action to, *W. E. Dixon*, 18862-4.
 Except in large doses, only affects sensory cells and therefore not suitable anæsthetic for vivisection experiments *W. E. Dixon*, 18755.
 Experimenters' preference for, *Miss Lind-af-Hageby*, 4514-21.
 Experiments performed on dogs under, and insufficiency of dose to produce complete anæsthesia *Col. E. Lawrie*, 16869-85.
 Fatal dose of, probably necessary to secure complete anæsthesia *G. D. Thane*, 1631-3.
 Hypodermic syringe at first confined to injection of, *Sir L. Brunton*, 6974.
 Injection of, frequently before operations, *G. D. Thane*, 1624-5.
 Insensibility produced by use of, *Sir L. Brunton*, 6902-6.
 Instance of administering 20 grains to dog without fatal result *F. Hobday*, 16501-7.
 Knowledge of how to properly administer was unknown till recently *W. E. Dixon*, 19049-54.
 Large dose of, produces complete anæsthesia *E. H. Starling*, *E. A. Schäfer*, *D. W. Buxton*, *Sir V. Horsley*, *H. Morris*, *W. E. Dixon*, 3610, 3970-3, 8027-8, 10189, 12474-6, 15926-8, 18757-63.
 Motor cells not affected by, and hence hyocin combined with, for operations *W. E. Dixon*, 18664-8.
 a Narcotic and used largely for stopping pain *F. Hobday*, 16461-3.
 a Narcotic but can produce profound anæsthesia *A. D. Waller*, 18150-1.
 Not a complete anæsthetic, but not used alone *H. Morris*, 7797-9.
 Not a general anæsthetic, *Hon. S. Coleridge*, 11576-80.
 Not always absorbed if given by the mouth *W. E. Dixon*, 18756.
 Not an anæsthetic, *Miss Lind-af-Hageby*, *S. F. Smith*, *Sir G. Kekewich*, 7300A-46, 7602-17, 9472-85, 13316-18, 20728-35.
 Not an anæsthetic unless lethal dose is given, *Col. E. Lawrie*, 17086-8, 17101-105.

MORPHIA—*cont.*

- Operation on human subject under morphia alone not advised *D. W. Buxton*, 12541-2.
- Prohibition of, as anæsthetic desirable *Miss Lindaf-Hageby*, 7345-9, 9245-50.
- Prolonged action of, *G. D. Thane*, 1634.
- Rarely used as an anæsthetic alone *G. D. Thane*, *D. W. Buxton*, 1626-32, 12448.
- Reasons for objecting to use of, as anæsthetic *D. W. Buxton*, 12568-9.
- Reflex action less controllable by, than other anæsthetics *J. N. Langley*, 15350.
- Reflex test of anæsthesia inapplicable in use of, *W. E. Dixon*, 18793.
- a Specific drug, and attacks sensory nerve cells so that distinct reflexes can be obtained under anæsthesia produced by, *W. E. Dixon*, 18663-7.
- Used for certain minor operations on dogs, *F. Hobday*, 16481-2.

MORPHIN, *see* MORPHIA.

MORRIS, HENRY, F.R.C.S., President of the Royal College of Surgeons of England 7651-8028.

Anæsthesia :

- Complete, always aimed at and secured during experiments 8020.
- Consciousness disappears long before movement under, 7937-52.
- as to Length of time animals and men can be kept under, 7802-4.
- Movement and cries possible without consciousness under light, 7996-8002.

Anæsthetics :

- Local, never used personally in surgical practice 7969-73.
- Unnecessary to prescribe particular forms of, in granting certificates 7964-7.
- Animals appear less susceptible to pain than man 7957-9.

Antiseptic surgery :

- Advance in, due to experiments on animals 7705-22, 7726, 7750.
- Aseptic surgery has taken the place of, 7899.
- Koch's discovery of bacteriological origin of wound infections 7673, 7685-9.
- Lister and Pasteur's discoveries, necessity for continuing research bearing on, 7778-82.
- Lister's and Pasteur's experiments in connection with, 7664-73.
- Modifications of technique in Lister's treatment since 1876 7845-7.
- Pasteur's work on spontaneous generation is fundamental basis of modern, 7841-2.
- Wounds treated antiseptically heal with practically no pain 7723-6.

Anti-vivisection feelings, causes contributing to 7814-18.

Anthrax :

- Antitoxin, its success in United Kingdom and in Japan 7741-9.
- Bacillus of, not always discoverable 7871-3.
- Safe to argue from experience in animals to man in cases of, 7873.
- Sclavo's serum for, 7868-70.
- Bacillus and coccus, distinction between 7674.
- Bacilli originally alleged to be causes of diseases have in some instances been disproved by experimental research 7880-5.
- Bacteria, study of, and their effects on animals has opened up question of obtaining immunity from diseases 7705.
- Bacteriological culture and toxin production 7669-73.
- Blood poisoning, bacilli responsible for, discovered by experiments on animals 7690.
- Certificate A, skilled assistants working under licensee holding, should be permitted to perform inoculations, 7806-9.
- Clinical inquiry important as well as experimental inquiry, 7900.
- Dr. Crile's experiments in relation with surgical shock, 8021-4.
- Curare, its use deprecated, 8018-19.

MORRIS, HENRY, F.R.C.S.—*cont.*

Demonstration experiments :

- Lecturer would not object to interested laymen attending, 7768-71.
- Necessary, for proper training of students, 7751-2.
- Practical teachers of physiology should have opportunity of witnessing, 8010-15.
- Diagnosis of disease by means of experimental methods, and importance of Pasteur's work in this connection, 7694-701.
- Distinction between bacilli which are themselves origin of poison and those whose toxin are source, 7888-90.
- Dogs, their exclusion from experiments would seriously hamper progress of science, 7810-11.
- Evidence of, disagreed with as regards debt of surgery to experiments, 14774.
- Experiments for acquiring surgical technique might be permitted, 8004-8.
- Experiments in relation to bacterial origin of certain diseases, and immunising and curative influence of culture sera, 7726.
- Experiments in relation to cancer research, 7726.
- Experiments in relation to knowledge of shock, 7726.
- Experiments upon dog by Simon of Heidelberg previously to removing kidney from female patient, 7786-88.
- Hæmorrhage now more successfully controlled by methods other than acupressure, 7978-81.
- Hypnotism, as to possibility of employing, in performing experiments, 7960-3.
- "Immunity," "serum therapy and immunity," and "increasing resisting power of the body" impossible without experiments, 7848-9.
- Koch's three postulates bearing on infectious disease and consequent discoveries, 7678-83.
- Levy on part of experimenters never witnessed by, 7790-2.
- Medical science, its progress inseparably connected with experimental work, 7837-40, 7932-3, 7909-11.
- Moral justification for experiments, 8026.
- Morphia is not an anæsthetic in small doses, but poisonous dose removes all consciousness, 7797-9, 7819-23, 8027-8.
- No experiments ever performed by, *Sir G. Kekewich*, 7824-7, 20517, 20916.
- Opposition to statement that differences between animal and human intestines nullify application of experimental work, 7977.
- Pasteur's treatment for hydrophobia advocated, 7993-5.
- Repetition of experiments, except for special object, undesirable, 7908.

Royal College of Surgeons :

- Council of, its constitution and membership, 7924-31.
- Regulation relating to Fellowships of, require candidates to have attended course of practical physiology, 7754-65.
- Unanimous resolution from, practically supports existing law, 7653-4, 7921-3.

Septicæmia :

- Experiments show bacilli to-be cause of, 7673-7.
- Inoculations of, into field and house mice have different results, 7876-9.
- Statement of *Sir Charles Bell* re uselessness of experiments contradicted by his work, 7901-6, 7913-20.
- Surgeons cannot perform experiments on animals for acquiring manual skill, 7827-32.
- Surgical experience of, 7934-6.
- Surgical knowledge, advances due to experiments, 7657-63.
- Surgical practice, advances which have been made independent of experimental research, 7891-4.
- Tetanus anti-toxin, its success in America, 7727-40.

Vivisection Act, 1876 :

- Ample protective against cruelty to animals and sufficiently free for proper scientific inquiry, 7805.
- With exception of small amendment suggested, no modification of, required, 7833-6.

MORRIS, HENRY, F.R.C.S.—*cont.*

Wound ligatures, improvement in methods of, due to careful study by experiments of bacteriological organisms, 7705-14.

MOSQUITOES:

Destruction of, best method of abolishing yellow fever *W. Osler*, 16623-4, 16703-4.

Methods adopted to exterminate, in Havannah *W. Osler*, 16553-65.

Reasons for suspecting that yellow fever was propagated by, *W. Osler*, 16694.

Reduction in numbers of, owing to methods adopted for extermination, very remarkable *W. Osler*, 16562-8.

Susceptibilities of, to pain doubtful *Mrs. K. Cook*, 1988.

Yellow fever infection proved by experiments to be carried by, *W. Osler*, 16535-9.

Yellow fever transmitted by, after biting infected persons *W. Osler*, 16548-9.

see also under MALARIA and YELLOW FEVER.

MOTT, DR.:

Anatomical change in brain during sleeping sickness described by, *Col. D. Bruce*, 14329-35.

Cruelty of experiments performed by, *Mrs. K. Cook*, 1910-11.

MOULE, DR., Bishop of Durham, anti-vivisection cause supported by, *Rev. L. S. Lewis*, 8728, 8738.

MOULLEN, MANSELL, letter to, *re* "incomplete anaesthesia," *Hon. S. Coleridge*, 10993.

MOULTON, THE RIGHT HON. SIR J. FLETCHER, F.R.S., Lord Justice of Appeal, 12691-818.

Anaesthesia:

Humanitarian principles do not call for interference with experiments under, 12741.

No doubts as to maintenance of efficient, during experiments, 12809-11.

Anthrax, Pasteur's work demonstrating microbic cause of, and possibility of obtaining immunity from, 12730.

Antiseptic surgery heads list of benefits derived from experimental research, 12727-8.

Anti-vivisectionists do not realise distinction between prevention and infliction of pain, 12707.

Certificates, men of acknowledged capacity in research should have general, entitling them to perform experiments subject to fully reporting the same to Home Office, 12741-8, 12757-62.

Demonstration experiments:

Absolutely essential for the proper education of students 12741.

No justification for statement that students are demoralised by witnessing, 12806-8.

Diphtheria, diagnosis, progress in, has possibly affected statistics of case mortality 12715-16.

Diseases combatted by means of destruction of agent of communication 12732-5.

Diseases, their microbic causes discovered by experimental methods 12728-30.

Evidence referred to:

Arguments advanced as to analogy between destruction of rats and practice of vivisection for good of community, unsound *J. H. Levy*, 18552.

Criticism of statement with regard to absence of progress in observational sciences 18549-50.

Ethical views are one-sided *J. H. Levy*, 18546.

Suggestions *re* granting general certificates to men of acknowledged reputations, approved *F. Gotch*, 13910-12.

Tuberculosis, statement as to first proof of its communicability by experiment *J. H. Levy*, 18550-2.

Experiments on men not justifiable 12735-7, 12791.
Home Office, control over non-painful experiments should only have regard to reliability of experiments and not to nature of experiment 12756.
Humanitarian morals, growth of progress in, 12697.

MOULTON, THE RIGHT HON. SIR J. FLETCHER, F.R.S.—*cont.*

Knowledge necessary for prevention of disease may be justifiably obtained by experiments on animals 12735-7, 12786-90, 12812-14.

Licences, Mr. Coleridge's suggestion that applicants for, should produce certificate of humanity is absurd 12775-7.

Licences and certificates:

Applicants for, should not be restricted to those holding medical qualifications 12751-4, 12768-74.

Foreigners should not be put at a disadvantage with regard to obtaining, in this country 12751-4, 12766-7.

Malaria, combatted by destroying agent of communication 12732-5.

Man justified under certain circumstances in experimenting upon himself, 12798-805.

Misrepresentation responsible for opposition to experimental research 12737-41.

Observational methods quite inadequate for acquiring scientific knowledge 12708, 12716.

Pain:

Diminution of totality of in men and animals should be a guiding motive 12701-2.

Diminution of totality of, justifies practice of experimental research 12704-5, 12780-2.

Inability to diminish, is due to ignorance 12707.

Responsibility of diminishing preventable, is ethical standpoint of experimental research in curative science 12702-4.

and Suffering increased by ignorance which can be surmounted by knowledge acquired by experimental research 12707-8.

That inflicted in experiments is infinitesimal in comparison with totality of unnecessary and unfruitful pain in world 12737, 12765.

Painful experiments should be controlled by two classes of certificates 12741.

Physiological functions, essential to acquire knowledge of, by experiments 12735.

Practical results should not always be main object of experiments 12717-27.

Prophylactic methods due entirely to knowledge of microbic causes of disease obtained from experiments 12730-2.

Prophylactic methods of destroying invading organisms of disease by stimulating natural agencies of resistance 12732.

Scientific knowledge depends on testimony of experimental research 12708-9.

Sufferings of men and animals, distinction between, 12697-700.

Thyroid gland, its relation to myxedema and cretinism discovered by means of research into functions of physiological organs 12735.

Tuberculosis, its communicability, ignorance as to, dispelled by series of experiments on guinea-pigs 12709-15.

MULLER, PROFESSOR, Royal Veterinary School, Berlin, views of, as to treatment of anthrax *S. Stockman*, 2743-5.

MUNK, experiments by, reference *Miss A. Kenealy*, 5288.

MURRAY, DR. G., thyroid treatment for cretinism and myxedema put forward by, *Sir L. Bruton*, *Sir V. Horsley*, 7138, 15688.

MURRAY, J. A., M.B., B.Sc., cancer research experiments conducted by, *H. Snow*, 2114.

MURRELL, W., *Manual of Pharmacology* by, gives amount of fatal dose of morphia for dogs *Mrs Lindaf-Hageby* 9262-71.

MURRILL, DR., experiments *re* effect of pure nitrate of sodium on animals by, *Rev. L. S. Lewis*, 8778.

MUZZLING ORDERS, *see under BOARD OF AGRICULTURE.*

MYXEDEMA:

Cure of, effected by administration of thyroid extract, *Sir R. D. Powell*, *Sir L. Bruton*, *Sir V. Horsley*, *W. Osler*, 5758-60, 7041-3, 15836-41, 16569.

MYXEDEMA—*cont.*

Experiments unnecessary to prove beneficial effect of thyroid extract in cases of *Miss A. Kenealy*, *Miss Lind-of-Hageby*, 6210-11, 9719.

Method of administering thyroid extract for, and necessity of continuous treatment *W. Osler*, 16576-80.

and Thyroid gland:

Clinical investigation had not demonstrated connection between, *W. Osler*, 16627, 16631.

Connection between, discovered by experiments *Sir R. D. Powell*, *Sir L. Brunton*, *Sir J. F. Moulton*, *Sir V. Horsley*, *W. Osler*, 5684-93, 6958-64, 7138, 12735, 15836-41, 16570.

Connection between, might have been discovered without experiments *S. F. Smith*, 13325-35.

NAGANA:

Animal parasite is micro-organism causing, *Col. D. Bruce*, 14306.

Arsenic used in first instance as remedy for, without success *Col. D. Bruce*, 14318.

Examination of blood of cattle suffering from, demonstrated existence of specific micro-organism *Col. D. Bruce*, 14293-8.

Non-pathogenic in wild animals or man *Col. D. Bruce*, 14419-23.

Trypanosome of, is transferred from wild to domestic animals by tsetse fly, *Col. D. Bruce*, 14418.

Tsetse fly disease and, discovered to be synonymous *Col. D. Bruce*, 14293-310.

Value of experiments in connection with, and remedy discovered thereby *Col. D. Bruce*, 14312-14.

Wild animals are immune to, *Col. D. Bruce*, 14304, 14310.

NARCOTICS, *see under* DRUGS.

NATAL, rinderpest outbreaks in, *S. Stockman*, 2492-3.

NATIONAL ANTI-VIVISECTION SOCIETY:

Evidence on behalf of, *see COLERIDGE, THE HON. STEPHEN*.

Muzzling orders and Pasteur's rabies inoculations opposed by, *Sir V. Horsley*, 15597-600, 15605.

Muzzling orders not opposed by, *Hon. S. Coleridge*, 19849-51.

NATIONAL CANINE DEFENCE LEAGUE:

Bill embodying views of, has been before Parliament *J. Hughes*, 17159-5.

Buissou bath treatment for hydrophobia originated by, *J. Hughes*, 17235-40.

Candidature of *Sir M. Stewart* opposed at General Election by, *J. Hughes*, 17287-95.

Committee of, its constitution *J. Hughes*, 17241-6.

Dogs, anaesthetisation of, considered impossible by, *J. Hughes*, 17520-34.

Dogs, their exemption from vivisection approved by all members of, *J. Hughes*, 17250-1.

Evidence on behalf of, *see HUGHES, J., SWAN, C. R. J. A., COWEN, R. J.*, 17109-620, 19192-19427.

Founded in 1891 as an Anti-Muzzling League, *J. Hughes*, 17120-7.

Dr. Hutchinson, late M.P. for Rye, unseated owing to efforts of, *J. Hughes*, 17212-3.

Influence of, far-reaching *J. Hughes*, 17226.

Membership and income of, *J. Hughes*, 17114-118, 17279-85.

Muzzling Order opposed by, and not by National Anti-Vivisection Society *Hon. S. Coleridge*, 19849-51.

Object of, does not include general opposition to practice of vivisection on other animals than dogs, *J. Hughes*, 17269-74.

Object of, to protect dogs from all ill treatment, *J. Hughes*, 17119.

Objects, one is total suppression of support of vivisectioning institutions by public money *J. Hughes*, 17227-31.

Petition presented to Parliament by, *J. Hughes*, 17536.

Sport, question of, not dealt with by, *J. Hughes*, 17384-90.

NEISSER, PROFESSOR, reference, *Rev. L. S. Lewis*, 8754.

NERVE DISEASES:

Acute anterior poliomyelitis, successfully treated owing to knowledge acquired by experiments on animals *J. N. Langley*, 15156-62.

Infantile paralysis, successful union of nerves in cases of, due to previous experiments on animals *J. N. Langley*, 15156, 15381-5.

Successful treatment of, based on results of experiments on animals *J. N. Langley*, *J. Lorrain Smith*, 15139-63, 15163-8, 18262-7, 18312-19, 18388-90.

NETTLESHIP, E., letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

NEURALGIA, gasserian ganglion removed in cases of persistent, and successful results *H. Head*, 17813-34.

NEWCASTLE-ON-TYNE:

Brady and Martin's laboratory at, reference, *G. D. Thane*, 344.

Experiments in connection with "caisson disease" at, *G. D. Thane*, 372.

NEW SOUTH WALES, no separate vivisection law in, but clause regulating practice in Cruelty to Animals Act, *C. J. Martin*, 12053-9.

NEW YORK, table showing case mortality from diphtheria in, before and after employment of the anti-toxin treatment *C. J. Martin*, 11711.

NICOLAIE, introduction of urotropin into therapeutics by, after successful experiments on animals, *A. R. Cushny*, 4813-16.

NICOLLE, M., Pasteur Institute, opinion of, with reference to use of atoxyl, *Col. D. Bruce*, 14314.

NIELSEN, PROFESSOR, braxy organism first discovered by, *D. J. Hamilton*, 20331-9.

NIGERIA, domestic animals practically annihilated in, by indigenous diseases *S. Stockman*, 2569-71.

NOCARD, PROFESSOR:

Experiments on horses by, for prevention of tetanus *S. Stockman*, 2507-23.

Pleuro-pneumonia organism demonstrated by, *S. Stockman*, 2790-800.

NOEL, REV. C., statement by, as to proceedings at meeting of Church Anti-Vivisection League at Bradford, 1898, *Miss A. L. Woodward*, 8789-810.

NOON, MR., Lister Institute, experiments by, re effect of suprarenal extract on action of diphtheria anti-toxin, *Miss A. Kenealy*, 5325.

NORRIS, MR., M.R.C.V.S., Irish Department of Agriculture, licence held by, *Sir T. Stoker*, 1043-5.

NORTHERN HOSPITAL, success of diphtheria anti-toxin treatment in, *G. S. Woodhead*, 15462-4.

NORTHUMBERLAND, THE DUKE OF, assistance given by, to those engaged in investigating sheep disease *D. J. Hamilton*, 20006.

NOTT, MR., mosquito theory of yellow fever first suggested by, *W. Osler*, 16694.

NOTTINGHAM UNIVERSITY COLLEGE, pharmacology and physiology not taught in, *A. R. Cushny*, 5165-6.

NUNN, T. W., letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

OERSTED, reference to scientific research of, *E. H. Starling*, 3442.

OLIVER, DR. G.:

Clinical observations by, on effects of various organ extracts upon circulation, leading to no definite results *E. A. Schäfer*, 10250.

Experiments resulting in discovery of adrenalin by, *E. H. Starling*, *A. R. Cushny*, 3442, 3555-60, 4808-9.

OPENSHAW, T. H., correspondence with, re "incomplete anaesthesia," *Hon. S. Coleridge*, 10993.

OPPENHEIM, PROFESSOR, views of, concerning diagnosis of cerebral tumours *Sir V. Horsley*, 15845.

OPHTHALMIC DISEASES:

Cataract, knowledge of, gained by experiment
Sir H. R. Swanzy, 9841.

Conjunctivitis:

Argyrol a remedy for, discovered by experiments on rabbits *Sir H. R. Swanzy*, 9843-8.

Experiments in connection with investigation of, *J. Lorrain Smith*, 18215-26.

Generally common to men and animals *Sir H. R. Swanzy*, 9898-903.

Glaucoma:

Clinical observation has increased knowledge of, *Sir H. R. Swanzy*, 9836.

Curable only in early stages, at present *Sir H. R. Swanzy*, 9937-40.

Leber's experiments demonstrated reason of, and have led to use of eserine as remedy, *Sir H. R. Swanzy*, 9836-40.

Physostigmin used in treatment of, *A. R. Cushman*, 4787-96.

Keratitis punctata, knowledge of, discovered by means of experiments on animals *Sir H. R. Swanzy*, 9802-4.

Serum therapy now utilised for, *Sir H. R. Swanzy*, 9819.

Sympathetic Ophthalmitis:

Dr. C. Shaw's experiments in connection with, *Sir H. R. Swanzy*, 9921-8.

Experiments on animals with view to discover precise nature of, *Sir H. R. Swanzy*, 9831-5.

Trachoma:

Jequirity a remedy for *Sir H. R. Swanzy*, 9820-30.

Nature and frequency of, *Sir H. R. Swanzy*, 9907-12.

Successful treatment of, could not have been arrived at without experiments *Sir H. R. Swanzy*, 9859-71.

ORD, DR., work of, in connection with thyroid gland
Sir V. Horsley, 16231-2.

ORFILA, drug experiments upon animals by, *Sir L. Brunton*, 6972-3.

OSLER, W., F.R.S., F.R.C.P., Regius Professor of Medicine at the University of Oxford 16524-16792.

Agreement with general line of medical and physiological evidence 16529.

Appointed to give evidence on behalf of Oxford University *F. Gotch*, 13791-5.

Aseptic surgery embodies "Listerism" 16742-6.

Bacillus theory of disease is universally recognised 16685-90.

Baltimore, no active anti-vivisection society in, 16775-6.

Cretinism:

Association between goitre and, long recognised 16631.

As to treatment of cases of endemic, in Savoy 16691-3.

Difference between men and animals not sufficiently great to make results of experiments misleading 16730-1.

Dogs, their use for experimental purposes, regretted on grounds of sentiment 16638-40, 16786.

Has performed a certain number of experiments when teaching physiology in Canada 16727-9.

Humanity of physiologists should be implicitly trusted 16606-7.

Hunterian laboratory supported by the University 16783-4.

Johns Hopkins University, Baltimore:

Advantage to students gained by courses of practical operative surgery at, 16583-7, 16590-5, 16636, 16752-7, 16758-67.

Hunterian laboratory at, equipped as animal hospital, and operations performed by students in, 16583-7.

OSLER, W. F.R.S., F.R.C.P.—cont.

Johns Hopkins University, Baltimore—cont.

Possibility of establishing similar hospital in this country where diseased animals could be operated on by students 16643-52.

Legislative enactment not necessary with regard to experiments, but no objection to licensed places 16738-41.

Listerism:

Antiseptic and aseptic surgery are both applications of the principle of, 16681-4.

Introduction of, has revolutionised surgery 16675-80.

Malaria:

Communicated by mosquitoes 16699-71.

Destruction of mosquito and isolation of cases is best method of abolishing, 16703-4.

Discovery of mode of transmission of, will make tropics habitable 16543.

Large proportion of population in malarial districts, though practically immune to, are capable of infecting mosquitoes 16789-90.

Mosquito probably infectious after having bitten infected patient at any period during course of, 16701-2.

Organism of, discovered by experiments on birds 16747-9.

Stamping out, might be effected if infected district could be wholly immunised 16705-7.

Myxedema, previous clinical work had not demonstrated the connection between the thyroid gland and, 16627.

Oxford, no practical medical school at, 16637.

Pig possibly a more useful animal for purposes of experiments than dog 16732-7.

Students' courses of experimental surgery on animals:

Control of hæmorrhage which requires technical and manual skill could be learnt 16720-6.

Lethal dose of anæsthetic might be enacted in event of allowing, 16709-17.

Surgical technique could be acquired 16583, 16592-4, 16665-6.

Thyroid extract, methods of administering, and necessity of continuous treatment 16576-80, 16773.

Thyroid gland:

Myxedema produced by disease or failure of development of, 16570.

Removal of, from animals resulted in symptoms of myxedema and cretinism 16573.

Value of experiments showing that cretinism and myxedema are due to absence of, 16569-71, 16573-5, 16576-80, 16625-6.

United States, absence of legal restrictions of vivisection in, does not induce carelessness for pain inflicted in experiments 16553-64.

Vivisection Act, 1876, operations on animals for purpose of acquiring manual skill forbidden by, 16599-61.

Voluntary consent of individual to be experimented upon changes the question of immorality of such experiments 16609-10.

Yellow fever:

Animals in infected district, other than anthropoid apes, not susceptible to, 16695-6.

Commission appointed by United States in 1900 to investigate, and their work 16531-6, 16611-14.

Controlled by preventing breeding of mosquitoes and careful isolation of early cases of, 16553-65.

Destruction of mosquito and isolation of cases is best method of abolishing, 16623-4, 16703-4.

Discovery of relation of mosquito to, and consequent success in controlling spread of, will enable Panama Canal to be built 16541-2.

Discovery of mosquito as cause of infection not directly due to experiments on animals 16697-700.

OSLER W., F.R.S., F.R.C.P.—*cont.*Yellow fever—*cont.*

- Experiments carried out by United States Commission were on men who voluntarily submitted themselves to infection 16543, 16608, 16667-9.
- Experiments have shown that apes can be infected with, 16545.
- Experiments in connection with investigation of, though on man, could never have been devised without the investigators' previous experience of experiments on animals 16544.
- Experiments prior to those carried out by United States Commission 16611-13.
- Experiments proved that mosquitoes communicated infection 16535-9.
- Failure to discover cause of, before 1900 16531.
- History of, illustrates enormous benefit conferred on mankind by experiments on animals 16530.
- Incubation period 16538-9.
- Mosquitoes are capable of transmitting, after biting infected persons 16548-9.
- Natives have it in a mild form, 16546-7.
- Organism of, not yet discovered 16540-1, 16610-2.
- Reason for suspecting that mosquito propagated, 16694.
- Reduction in numbers of mosquitoes owing to methods adopted for their extermination, very remarkable 16562-3.
- Sanitation undoubtedly necessary for extinction of, but experimental methods have contributed to knowledge of how to carry out sanitation 16787-8.
- Theory and practice previous to 1900 based on bacillus as cause of, is erroneous 16615-20.

OWEN, E., F.R.C.S., Senior Surgeon at St. Mary's Hospital and Hospital for Children at Great Ormond Street:

Correspondence with, re "incomplete anaesthesia" *Miss Lind-af-Hageby*, *Hon. S. Coleridge*, 7438, 10305, 10993.

Statement by, as to use of deep anaesthesia in operations on men *Miss Lind-af-Hageby*, 7438-40.

OXEN, eggs of tapeworms fed to, for purpose of observing development *S. Stockman*, 2444.

OXFORD UNIVERSITY:

Evidence on behalf of, see *GOUGH, F.*, *OSLER, W.*, 13539-67, 16524-792.

Keeble College undergraduates, see *that title*.

PAGE, DR. F., Newcastle-on-Tyne, letter from, objecting to vivisection of dogs *J. Hughes*, 17205-7.

PAGET, The late SIR JAMES:

Evidence before previous Royal Commission as to value of clinical observation *E. H. Starling*, *H. Morris*, *Sir V. Horsley*, 3776-9, 7899, 16164-9. References *S. Stockman*, *S. F. Smith*, 2659, 13049.

PAGET, STEPHEN, *Experiments on Animals*, by, see under JOURNALS AND PUBLICATIONS.

PAIN:

- Abdominal organs and intestines of men and animals not sensitive to, *A. R. Cushny*, 4988-9.
- Absence of, in experiments, statements as to, disputed *Miss A. Kenealy*, *S. F. Smith*, *Sir G. Kekewich*, 5280, 13464-8, 20423, 20533-47, 20615-17.
- as to Amount of, caused by experiments, *A. R. Cushny*, *J. W. Graham*, *J. N. Langley*, 5125-8, 5878-82, 15335-6.
- Anaesthesia during experiments prevents all, *A. R. Cushny*, 5194-5.
- Animals may suffer without vocal manifestations of, *S. F. Smith*, 13061-4.
- Animals speedily killed after operation if found to be in, *W. P. Byrne*, *G. D. Thane*, *E. H. Starling*, 10-11, 13, 1209-15, 4017-21.
- Animal's susceptibility to, is less than man's *H. Morris*, *J. N. Langley*, 7957-9, 15308-10.
- Animals used for preparation of anti-toxins show no visible signs of, *S. Stockman*, 2902-7.

PAIN—*cont.*

- Antiseptic methods of surgery have greatly diminished, *Sir R. D. Powell*, 5761-4.
- Antiseptic treatment of wounds does not remove, *Mrs. K. Cook*, 2073-8.
- Blunting of physiologists' sensibilities to, *S. F. Smith*, 13061.
- Can never be entirely eliminated from experiments, *Miss A. Kenealy*, *Hon. S. Coleridge*, 6412-25, 11603-5.
- Cancer inoculations not necessarily followed by, *G. D. Thane*, 465-6, 1692-3.
- Capacity for feeling, varies in proportion to stage of development of animals *E. H. Starling*, 3963-5, 13850-4.
- Castration and spaying of animals attended by, *S. Stockman*, 3026-31.
- Cerebral cortex, its removal destroys consciousness to, *E. H. Starling*, 3462-70.
- Cerebral hemispheres, loss of, removes all sensation of, though there may be reflex actions *D. W. Buxton*, 12606-12.
- Cerebral hemispheres, removal of, does not remove consciousness to, *Miss Lind-af-Hageby*, 7411-27.
- Classification of painful and non-painful experiments no longer attempted by Home Office *W. P. Byrne*, *G. D. Thane*, 163-4, 1723-9.
- Consciousness to, under anaesthesia returns considerably later than power of movement *E. H. Starling*, *H. Morris*, 3591-3, 7937-52.
- Cowardly to share in advantages derived from infliction of, *Rev. L. Lewis*, 8685-8.
- Details of experiments connected with, given in inspector's report 1900 *G. D. Thane*, 464.
- Desirable to minimise experiments on animals susceptible to, *Sir J. Russell*, 607.
- Difficulty of locating perception of, *H. Head*, 17983-4.
- Diminution of, desirable *Sir H. R. Swanzy*, *J. N. Langley*, 9767-71, 15272.
- Docking of horses only causes superficial, *E. H. Starling*, 2956-8.
- Entire absence of, from experiments cannot be certified, *Sir T. Stoker*, 1063-5.
- Erroneous views of medical men as to comparative insensibility of animals to, *S. F. Smith*, 13046-51.
- Evidence of Dr. Klein before previous Royal Commission admitting his indifference to, *Mrs. K. Cook*, *J. W. Graham*, *Hon. S. Coleridge*, *Sir G. Kekewich*, 1919, 2064-7, 5883, 10656-74, 10852-78, 20450.
- Experiments involving, *G. D. Thane*, *Sir J. Russell*, 457, 473, 541-3.
- Experiments never performed under circumstances in which animal is necessarily sensitive to, *E. H. Starling*, 4063.
- Experiments objected to on grounds of infliction of, *J. H. Levy*, *A. G. Scott*, *Sir F. Banbury*, 18484, 19508-11, 19498-9.
- Experiments under Certificate B involve some, *G. D. Thane*, 1550.
- Experiments under Certificates B, B, E E, and B, F. not necessarily followed by, *G. D. Thane*, 471, 474-6.
- Eye is sensitive, and injection of foreign substances into eye for experimental purposes likely to produce, *Sir H. R. Swanzy*, 9951-4.
- Eye's sensitiveness to, varies in different parts *Sir H. R. Swanzy*, 9974-8.
- Few experiments involve, *W. P. Byrne*, *G. D. Thane*, *Sir J. Russell*, *E. H. Starling*, *Sir L. Brunton*, *J. N. Langley*, 4, 463, 471, 577-9, 1700-4, 3445, 3883, 7122, 15102.
- Fistulas cause varying degrees of, *G. D. Thane*, 1640.
- Fistulas in dogs would cause discomfort but not, *G. D. Thane*, *E. H. Starling*, *Sir L. Brunton*, 1233, 3762-7, 7029-40.
- General Medical Council should have power to put a stop to infliction of unnecessary, in vivisection *Col. E. Lawrie*, 16931-4.
- Home Secretary does not decide as to question of, in experiments *W. P. Byrne*, 129-30.
- Indications of, after injections do not appear for considerable time—and no prolonged period of suffering *G. D. Thane*, 452-6.
- Indications of, in dogs *Sir J. Russell*, 715-19.

PAIN—cont.

- Indifference and callousness to, characterise teaching of physiologists *Miss Lind-af-Hageby*, 7354-76, 7375-9.
- Inoculations attended by little, *Sir J. Russell*, *S. Stockman*, 708-9, 25605-7, 2614.
- Inoculations involve great, *Rev. L. S. Lewes*, 8719-20.
- Inoculations of plague in rats attended by, *Sir J. Russell*, 720.
- Inoculation of tooth in animals produces, but in men not necessarily attended by, *Sir J. Russell*, 646-8.
- Internal organs are not sensitive to, *Sir R. D. Powell*, 5584.
- Interpretation of, throughout administration of Act taken in wide sense *Sir J. Russell*, 515.
- Intestines not subject to, and reasons for, in colic and cholera *A. R. Cushny*, 5058-67.
- Limit of range between disappearance of, and disappearance of reflex action is far wider in animals than in man, *J. N. Langley*, 15120-9.
- Local Government Board's experiments do not generally involve, *W. H. Power*, 4353-4.
- Local Government Board's experiments have to be notified to Board's medical inspector if involving, *W. H. Power*, 4521-6, 4529-31.
- Loss of appetite and high temperature of animal after experiment indicate, *Sir J. Russell*, 550, 580-4.
- Mice inoculated with cancer probably suffer, *Miss A. Kenealy*, 5435-503.
- Monkeys show no sign of, after brain operations *E. A. Schäfer*, 10127-31.
- Morally wrong to cause, unnecessarily to any animal *J. Hughes*, 17369-87.
- Nerves, division of, does not produce, *G. D. Thane*, *E. H. Starling*, 1257-9, 1577, 1580-4, 3959-61.
- Nerves, excision of, does not involve, *E. H. Starling*, 3667-8.
- No disregard of, among keen operators *G. D. Thane*, 1397-8.
- No evidence that animals suffer, between operations *G. D. Thane*, 1570-5.
- No statutory requirement to kill animal after experiment if in, *G. D. Thane*, 1210-14.
- Noises made by animals under chloroform do not indicate, *E. A. Schäfer*, 10226-7.
- Objection to causing, varies with regard to sensibility of animals *J. H. Levy*, 18607.
- Mr. Pembrey's admissions with regard to infliction of, contradict assertions of other vivisectioners *Sir G. Kekewich*, 20439-50.
- Progressive loss of sensation to, through stages of anaesthesia *D. W. Buxton*, 12575-6.
- "Pithing" of frogs, certain modes of, do not destroy sensation to, *Miss Lind-af-Hageby*, 7403-30.
- Possibility of movement and cries without sensation of, under light anaesthetic *H. Morris*, 7996-8002.
- Possibility of, under light anaesthesia *Miss Lind-af-Hageby*, 9137-40, 9486-95.
- Protective function of, and evils attending modern desire to evade, *M. S. Pembrey*, 14082-8, 14098-105, 14119-23, 14144-9, 14156-8.
- Question of, considered before issue of licences and certificates *W. P. Byrne*, *G. D. Thane*, *Sir J. Russell*, 218-20, 422, 686.
- Reflex movements without any sensation of, occur in third degree of anaesthesia *D. W. Buxton*, 12400-10.
- Results from stones in ducts of gall bladder but not in gall bladder itself, *G. D. Thane*, 1657-62.
- Risk of licensees becoming callous towards infliction of, *Hon. S. Coleridge*, 11614.
- Secondary to object of experiment but efforts should be made to safeguard against, *Sir H. R. Searcy*, 9866-8, 9929.
- Sense of, probably more acute in animals than in man *S. F. Smith*, 13038-44, 13535-8.
- Spinal cord of frogs, dogs, and monkeys sensitive to, *Miss Lind-af-Hageby*, 9563-84.
- Starvation experiments not attended by, *E. H. Starling*, 3686-7.
- Success of physiological experiment demands elimination of, *E. H. Starling*, 3451-4, 3935-8.
- Sufferings of animals after return to consciousness *Mrs. K. Cook*, 1908-10.
- Surgical wounds, majority of, heal without, *Sir H. R. Searcy*, *F. Hobday*, 9930-1, 16352-6.

PAIN—cont.

- Susceptibility of animals to, varies with their intelligence *Sir T. Stoker*, *Sir J. Russell*, 761, 606, 671-2, 747-50.
- Torture, definition of from point of view of animal *Hon. S. Coleridge*, 11302-13.
- Viscera have no sense of, *E. H. Starling*, 3677-80 as to Vitiating of experiments by element of *J. W. Graham*, 5933-7.
- See also under ETHICAL STANDPOINT.

PANAMA CANAL, control of yellow fever and malaria will enable building of, *W. Osler*, 16541-2.

PARALYSIS, use of diphtheria anti-toxin followed by, *Miss A. Kenealy*, 6166-70, 6384-91.

PARASITIC DISEASES :

- Actinomycosis, past errors in diagnosing, *H. Snow*, 2129.
- Identity of various, can only be demonstrated by experiments *S. Stockman*, 2444.
- Tapeworms, knowledge of their development, derived from experiments *S. Stockman*, 2444-70.
- Trichinosis, measures for preventing, arrived at by experiment *S. Stockman*, 2461-3.

PARIS :

- Convention of, shortly to supersede Convention of Venice *W. H. Power*, 4337-8.
- Hericourt Hospital, table showing diphtheria case mortality before and after use of anti-toxin *C. J. Martin*, 11711.

PARKE, DAVIS AND Co., MESSES :

- Method of standardising digitalis introduced by, *A. R. Cushny*, 4838.
- Sole manufacturers of adrenalin in America *E. H. Starling*, 3564.

PARLIAMENT :

Acts :

Anatomy Act :

- Administration of, *Sir J. Russell* concerned with, *Sir J. Russell*, 511.

Contagious Diseases of Animals Act :

- Prohibition of experiments on animals would seriously hamper administration of, *S. Stockman*, 2845.
- Tests for tubercle in milk instituted by Local Government Board under, *S. Stockman*, 3419-22.

Cruelty to Animals Act, 1849, reference, *A. G. Scott*, 19508.

Dogs Act, 1906 :

- Clause preventing sale of stray dogs foolish and irrelevant *E. H. Starling*, 3921-33.
- Police prevented under, from selling stray dogs for vivisection purposes *Sir J. Russell*, *G. D. Thane*, 670, 1752-4.

Food and Drugs Adulteration Acts, purity of food and drugs insisted on under, *A. R. Cushny*, 5236-8.

Martin's Act, protection afforded to animals under, *Mrs. K. Cook*, 1946.

Public Authorities Protection Act, 1898 :

- Prosecutions of licensee under Vivisection Act, 1876 rendered impossible by provisions of, *Sir G. Kekewich*, 20409, 20818-37.

Vivisection Act, 1876 :

Administration :

- Certain dependence must be placed on licensee with regard to, *G. D. Thane*, 1390-3.
- Effective and satisfactory *Sir J. Russell*, *E. H. Starling*, *D. J. Hamilton*, 513, 3720-1, 20250.
- Hinders progress of physiology *Sir V. Horsley*, 16092.
- Home Office charged with giving evasive replies to questions on, *Hon. S. Coleridge*, 10614-39.

PARLIAMENT—cont.

Acts—cont.

Vivisection Act, 1876—cont.

Administration—cont.

in Ireland:

Humane and satisfactory as regards research experiments *Sir T. Stoker*, 785, 907.

Improvements effected by Mr. Morley *Sir T. Stoker*, 853.

More continuity necessary, *Sir T. Stoker*, 782-3, 854, 1068.

Should be in hands of permanent official *Sir T. Stoker*, 953-5.

Procedure in regard to, *W. P. Byrne*, 1-41.

Secret, and has shielded vivisectioners *Hon. S. Coleridge*, 10264, 11091.

Advancement of physiology not seriously hampered by, *J. N. Langley*, 15253-7.

Amendments suggested:

Animals should be allowed to be kept outside laboratory provided address is notified to inspector *E. A. Schäfer*, *F. Gotch*, *J. N. Langley*, 10173-8, 13913-15, 15210-16.

Certificates:

A, extension of scope desirable *J. Glaister*, 12833.

A, heads of departments should be allowed wider range of experiments under, *J. Glaister*, 12964-72.

Abolition of, desirable *Sir V. Horsley*, *W. E. Dixon*, 15767, 16016-25, 19020-4, 19096-7, 19116-26.

B and E E should be replaced by single certificate *J. N. Langley*, 15192-201.

Foreigners should be under no disadvantage as regards obtaining, *Sir J. F. Moulton*, 12751-4, 12766-7.

Inspector's opinion should not overrule advice of authorities recommending grant of, *E. A. Schäfer*, 10172.

Modification with regard to, desirable *A. R. Cusny*, *J. R. Bradford*, 5142-6, 17789-93.

Two classes of, should be granted and as to qualifications for such, *Sir J. F. Moulton*, 12741-8.

Word "absolutely" should be struck out of expression "absolutely necessary" in clause relating to teaching, *J. N. Langley*, 15202-10.

Cold-blooded animals should not be included in Act *E. A. Schäfer*, *F. Gotch*, *Sir V. Horsley*, 10187-8, 13824, 13864-9, 15952-4, 16267-74.

Demonstration experiments should be prohibited *Miss Lind-of-Hageby*, 7459.

Home Office control of, over non-painful experiments should only have regard to reliability of experimenter and not to nature of experiment *Sir J. F. Moulton*, 12756.

Inspectors, increase of, desirable *A. G. Scott*, 19756-62.

Licences:

Details of proposed experiments should be stated on application for, and licences should be drafted so that certificates could be dispensed with, *Sir V. Horsley*, 15767, 15770-4, 16099, 16016-25.

Foreigners should be under no disadvantage as regards obtaining, *C. J. Martin*, *Sir J. F. Moulton*, 12153-63, 12751-4, 12766-7.

PARLIAMENT—cont.

Acts—cont.

Vivisection Act, 1876—cont.

Amendments suggested—cont.

Licences—cont.

Heads of laboratories should be given comprehensive, and certificates then dispensed with *W. E. Dixon*, 19020-4.

Issue of, should be in hands of some responsible body rather than Home Office *W. E. Dixon*, 19098.

Necessity of taking out certificates in addition to, should be lessened *J. N. Langley*, 15192.

Professors of pathology, bacteriology, etc., should have power to sign applications for, *G. S. Woodhead*, 15565-71.

Should be endorsed after being granted for ten years and necessity of certificates dispensed with, *J. N. Langley*, 15394-5.

Should be given to recognised physiologists to cover all experiments *M. S. Pembrey*, 14093-5, 14150-1.

Special, might be more easily procurable 7050-8.

Special, should only be issued for each set of experiments *H. Snow*, 2235-7, 2414-5.

Students might be permitted to hold, and experiment under careful supervision of heads of departments *J. N. Langley*, 15298-301.

Licensee might be permitted to experiment in unlicensed premises *Sir Lauder Brunton*, 6992-5, 7046-7.

Non-painful experiments and injections of non-irritating substances should not be included in Act *J. N. Langley*, 15359-80.

Penalties should not be imposed for mere technical infringements of Act *J. N. Langley*, 15225-30.

Second operation should be permissible upon animal required to be killed before recovery, *J. N. Langley*, 15216-24.

Section 3:

Sub-section 1, amendment required *G. D. Thane*, 1177-9.

Sub-section 2, amendment required *G. D. Thane*, 1177-9.

Sub-section 5, repeal of, desirable *Sir V. Horsley*, 15606.

Simple inoculations might be done by laboratory assistant *E. A. Schäfer*, 10180-6.

Skilled assistants of licensee should be permitted to perform injections under Certificate A, *H. Morris*, 7806-9.

Students should be permitted to perform experiments for purpose of acquiring surgical technique *Sir R. D. Powell*, *Sir H. R. Swanzy*, *Sir V. Horsley*, *W. Osler*, 5765-7, 9771-81, 9888-90, 15632-5, 15794, 15936-8, 16032, 16036, 16115, 16583.

Students should learn administration of anaesthetics by a course of experiments *Sir V. Horsley*, 16112-114.

Surgeons should not be forbidden to acquire skill by experiments *E. H. Starling*, 4082-91.

Time limit for prosecutions under, should be extended *Hon. S. Coleridge*, 11110-12.

See also Bill drafted by Mr. COLERIDGE.

PARLIAMENT—cont.

Acts—cont.

Vivisection Act, 1876—cont.

- Amply protective against cruelty to animals and sufficiently free for proper scientific inquiry *H. Morris*, 7805.
- Animals well safeguarded against cruelty by, but sometimes unnecessarily killed under regulations, *D. W. Buxton*, 12477-87.
- Antagonistic to advancement of physiology, *M. S. Pembrey*, 14090, 14115-6.
- Antiseptic precautions not compelled by, *Mrs. K. Cook*, 1915-16.
- Bill introducing, was not properly discussed *Sir G. Kekewich*, 20389-98, 20523-7.
- Certificates nullifying usual restrictions of, may be granted *W. P. Byrne*, 260-72.
- Clumsy, but well administered *E. H. Starling*, 3998.
- Condition of things under, an improvement on foreign conditions *Miss Lindaf-Hageby*, 9287-90, 9297-303.
- Contraventions:
- Evidence concerning infrequency and vagueness of complaints of, contradicted *Miss A. L. Woodward*, 8820-4.
 - Experiments performed by licensee at place for which his licence not available *G. D. Thane*, 499-500.
 - Experiments performed by unlicensed persons, *G. D. Thane*, 477.
 - Experiments requiring Certificate B performed without submitting certificate, *G. D. Thane*, 477.
 - Injections into cats or dogs without Certificate E, *G. D. Thane*, 477.
 - Inspector's annual return reports all, *W. P. Byrne*, *G. D. Thane*, 44, 477.
 - Inspector notifies all, to Home Office *G. D. Thane*, 1145-7.
 - Licensee's return generally discloses, if any *W. P. Byrne*, *G. D. Thane*, 144-7, 179-83, 482-3.
 - Misunderstanding, ignorance, and carelessness usually responsible for, *G. D. Thane*, 477.
 - Number of, *W. P. Byrne*, 182.
 - Number of, small and of a slight character *W. P. Byrne*, *G. D. Thane*, 36-50, 477-8.
 - Performance of experiments after lapse of certificate *G. D. Thane*, 477.
 - Performance of a larger number of experiments than allowed *G. D. Thane*, 477.
- Cruelty greater under, than before, *Mrs. K. Cook*, 2030-4.
- Curare, its use alone, forbidden by, *G. D. Thane*, *Mrs. K. Cook*, 1320, 1801.
- Drafting of, shows ignorance of conditions surrounding experiments on animals *Sir V. Horsley*, 15762.
- Effect of, has not been to reduce number of experiments *W. P. Byrne*, 193, 303-4.
- Exhibition of experiments prohibited by, but permitted under Certificate C *Sir J. Russell*, 615.
- Experiments for obtaining new serum under control of, *G. D. Thane*, 1730-2.
- Feeding experiments, doubts as to their being controlled by, *Sir T. Stoker*, 945.
- Framed in accordance with views of medical profession *Sir G. Kekewich*, 20389-98, 20553-6.
- Grounds of objection to, *Hon. S. Coleridge*, 10261.
- Has acted as great stimulus to vivisection, *Sir G. Kekewich*, 20410.
- Has worked well and does not restrict scientific research, *Sir J. Russell*, *G. D. Thane*, *H. Snow*, *Sir R. D. Powell*, *C. J. Martin*, *F. Gotch*, *J. Lorrain Smith*, 566, 1111, 2231, 5608, 12336, 13870, 18275-6.

PARLIAMENT—cont.

Acts—cont.

Vivisection Act, 1876—cont.

- Home Secretary's responsibility under, has been abused *Hon. S. Coleridge*, 10264.
- Increase of experiments under, and probable consequences of repeal of, *H. Snow*, 2395.
- Inspection under, gives real security to public and irregularities cannot occur in licensed places *W. E. Dizon*, 19157-60.
- Inspector draws attention of licensee to requirements under, *G. D. Thane*, *Sir J. Russell*, 443, 601.
- Licences and certificates submitted to one of authorities mentioned in, *W. P. Byrne*, 208.
- Licensees have contempt for restrictions of, *Hon. S. Coleridge*, 10954-61, 11425-32.
- Licensees sometimes have difficulty in grasping requirements of, *Sir J. Russell*, 555.
- Licensing and registration principles embodied in, should be preserved *Sir V. Horsley*, 15729.
- Meaning of, may be interpreted by Report of previous Commission *Hon. S. Coleridge*, 10968-72.
- Monkeys not specified in, *Sir T. Stoker*, 775.
- Necessary, in view of public opinion but superfluous from physiological standpoint *Sir V. Horsley*, 16091-2, 16096-8.
- No limit to suffering that may be inflicted under, *Hon. S. Coleridge*, 10716-9.
- No protection afforded to animals by, *Hon. S. Coleridge*, 10264.
- Operations on animals for purpose of acquiring manual skill forbidden by, *W. Osler*, 16599-61.
- Precludes general public from witnessing experiments, *Hon. S. Coleridge*, 11192-204.
- Principle of protection to animals is nullified by exceptions allowed on certificates *Sir G. Kekewich*, 20399-405.
- Prosecutions under:
- Home Secretary has not instituted any, *W. P. Byrne*, 45-6.
 - Home Secretary's consent needed for, *Sir J. Russell*, 591.
 - Made impossible by provisions of Public Authorities Act, 1898 *Sir G. Kekewich*, 20409.
 - Objection to provision concerning, *Sir G. Kekewich*, 20408.
- Repeal of, desirable *Mrs. K. Cook*, *H. Snow*, *J. W. Graham*, *Rev. J. P. Hopps*, *Miss Lindaf-Hageby*, *Sir G. Kekewich*, 1943-6, 2032-8, 2336-43, 6039-41, 8614, 9275-8, 20469.
- Restrictions under, sufficient *E. H. Starling*, *S. Stockman*, *Sir H. B. Swanzy*, 2615-6, 4069-72, 9875-80.
- Restrictions under, useless *Mrs. K. Cook*, 1785, 1921, 1967.
- Satisfactory except as regards method of obtaining certificates *A. R. Cushny*, 4945-7.
- Science to a certain extent impeded by, *Sir L. Bruntton*, 6830-38.
- Section 3:
- Sub-Section 1, breach of, defended by Home Office *Hon. S. Coleridge*, 10330-70.
- Sub-Section 4:
- Experiments abusing provisions of, *Miss L. Lindaf-Hageby*, 7213-22.
 - Makes obligatory the killing of animal operated on under certificate B, *Sir J. Russell*, 559-61.

PARLIAMENT—cont.

Acts—cont.

Vivisection Act, 1876—cont.

Section 6:

Breach of, defended by Home Office
Hon. S. Coleridge, 10330-70.

Prosecution under, of Dr. Abrath in
1876 for advertising a public ex-
hibition of experiments and convic-
tion *A. G. Scott*, 19568-75, 19681-5

Section 7:

Experiments in unregistered places
licensed under, *W. P. Byrne*, 78-83.

Registration of premises provided for
under, *W. P. Byrne*, 53-62.

Section 8:

Contraventions of, *W. P. Byrne*,
246-8.

General powers granted to Home Sec-
retary under, *W. P. Byrne*, 13-15.

Regular exercise of power under,
W. P. Byrne, 5.

Regulations of Home Secretary under,
attached to licence, *W. P. Byrne*,
14.

Section 10, duties of inspector defined by,
G. D. Thane, 326-7.

Section 11:

Authorities under, have exclusive
power to sign applications for certi-
ficates, *W. P. Byrne*, 16, 149-52,
241.

Proposal that authorities mentioned
under, should confer with Home
Office on manner of recording ex-
periments, *W. P. Byrne*, 240.

Section 13, no application to prosecute
licensees has been made under, *Hon. S.
Coleridge*, 11145.

Section 21:

Assent of Home Secretary required
for prosecution of licensee who has
not fulfilled conditions, *W. P.
Byrne*, 230-1.

Impossibility of prosecutions under,
because of time limit *Hon. S. Cole-
ridge*, 11146-9.

Security afforded to public and to vivi-
sectors by, and necessity of continuing
W. E. Dixon, 19130-9.

Series of experiments suspended by intro-
duction of, owing to difficulty of obtain-
ing necessary certificates *W. E. Dixon*,
19130, 19140-4.

Serum production for commercial pur-
poses not controlled by, *G. D. Thane*,
C. J. Martin, 1730-2, 11845-7.

Shambles of Science, facts disclosed in,
constituted breach of, *Miss Lind-af-
Hageby*, 7442-5.

Snake poison experiments by Sir Lauder
Brunton temporarily suspended by
passing of, *Major L. Rogers*, 8043.

State of affairs previous to, *W. P. Byrne*,
1.

Substance of, *W. P. Byrne*, 1.
Supervision of experiments under, totally
inadequate *A. G. Scott*, 19724.

Title objected to, *Sir V. Horsley*, 16092-6.
Violation of, never witnessed *Sir J. Rus-
sell, J. Lorrain Smith*, 585, 18326-7.

Vivisection practised before introduction
of, by irresponsible persons *W. E.
Dixon*, 19145-51.

Summary Jurisdiction Act, 1848, reference
Mrs. K. Cook, 1962.

PARLIAMENTARY ASSOCIATION FOR THE ABOLITION OF
VIVISECTION:

Castration a question not considered by, *Miss A.
Kenealy*, 6305-12.

Complaints to Home Office in respect of cases of
cruelty not made by, *Mrs. K. Cook*, 2043-5.

PARLIAMENTARY ASSOCIATION FOR THE ABOLITION OF
VIVISECTION—cont.

Constitution, object and membership of, *Mrs. K.
Cook, Sir G. Kekewich*, 1972-9, 20385-8, 20465-9,
20780-4.

Evidence on behalf of, see *COOK, Mrs. K.,
KENEALY, Miss A., SNOW, H., GRAHAM, J. W.,
BANTOCK, G. G., KEKEWICH, Sir G.*, 14530,
20380-965.

Experiments considered unproductive of any bene-
ficial result by, *Sir G. Kekewich*, 20387.

Income of, *Hon. S. Coleridge*, 10260.

Increase of inspection would not meet objections
of, *Sir G. Kekewich*, 20465-9.

Open letter sent to Commissioners from, and as
to its preparation *Mrs. K. Cook*, 1922-37.

Prosecutions, none instituted by, *Mrs. K. Cook*,
1972-9, 2092.

Vice-presidents of, increased since publication of
evidence before present Commission *Sir G.
Kekewich*, 20318.

Views of, not yet drafted in a Bill, *Sir G. Keke-
wich*, 20411-14.

PARLIAMENTARY PAPERS:

Home Office Returns, see under HOME OFFICE.
Local Government Board, Medical Officer's Report,
see under LOCAL GOVERNMENT BOARD.

PARSONS, J. H.:

Experiments on eyes by, and preference for light
anesthesia expressed *Hon. S. Coleridge*, 10381.

Work by, leading to further knowledge of glau-
coma *Sir H. R. Swanzy*, 9839.

PASTEUR, M.:

Anthrax experiments of, demonstrated microbic
cause of disease and possibility of immunisa-
tion *Sir J. F. Moulton*, 12730.

Antiseptic surgery, experiments in connection
with, leading to discoveries *H. Morris*, 7664-8.

Hydrophobia treatment:

Buisson bath treatment originated by National
Canine Defence League in opposition to, *J.
Hughes*, 17235-40.

Deaths occurring during, or within 15 days
after completion of, excluded from statis-
tics *C. J. Martin*, 11914-19.

Discovery of, and statistics as to its preven-
tive and curative value *C. J. Martin*,
11658-95, 11910-3.

Efficacy of, undoubted *Sir L. Brunton, Sir
V. Horsley*, 7147-57, 15808-11.

Objected to, *Miss Lind-af-Hageby*, 9712-15.

Opposition to, founded on contention that the
statistics are fallacious *S. F. Smith*,
13136-212, 13400-21.

Rabbits used for propagation of virus and
very little pain occasioned *Sir V. Horsley*,
15814-22.

Infectious diseases, fundamental conception of
their nature due to, *C. J. Martin*, 11643.

Preventive inoculations for anthrax devised by,
generally confirmed by consequent reduction of
death rate *S. Stockman*, 2510-43, 2740-1, 3140-5

Preventive inoculation for swine erysipelas de-
vised by, abandoned in Germany for newer
method *S. Stockman*, 2824-8.

Puerperal Fever, investigations in connection with,
C. J. Martin, 11648-51.

Rabies, its contagious nature proved by inocula-
tion experiments of, *Sir V. Horsley*, 15603.

Rabies, knowledge of, and efficacy of muzzling
dogs for stamping out the disease entirely due
to experiments of, *Sir V. Horsley*, 15602-3.

Rabies test devised by, but first practised sub-
cutaneously without success *S. Stockman*,
3130-1, 3137-8.

Rabies treatment:

Acceptance of, by medical profession dis-
creditable and falseness of statistics, *G. G.
Bantock*, 14778-800.

Effect on mortality statistics of, by inclusion
of all cases treated *C. J. Martin*, 12169-73.

Efficacy of, shown by reduction of death rate
Sir V. Horsley, 15819-21.

PASTEUR, M.—*cont.*

- Work of, in connection with identification of anthrax and septicemia bacilli *H. Morris*, 7694-7701.
 Work of, on spontaneous generation is fundamental basis of modern antiseptic and aseptic surgery, *H. Morris*, 7841-2.
 References, *Sir R. D. Poore, J. W. Graham*, 5584, 5878-82.

PASTEUR INSTITUTE, PARIS, visit to, *S. Stockman*, 3058-9.

PATERSON, DR.:

- Cruelty of experiments on eyes of animals by, *Mrs. K. Cook*, 1913-4.
 Work by, leading to further knowledge of glaucoma *Sir H. R. Swanzy*, 9839.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND:

- Discussion before, as to nature of Jensen's Tumour *H. Snow*, 2167-72.
 Evidence on behalf of, see *LORRAIN SMITH, J.*

PATHOLOGICAL SOCIETY OF LONDON, address before, *Mrs. K. Cook*, 1910.

PATON, MONTGOMERY:

- Author of *The New Serum Therapy*, and views of, *Miss A. Kencahy*, 6392-6.
 Experiments by, in regard to conferring animal susceptibilities along with immunities by inoculations *Miss A. Kencahy*, 6547-63.
 References, *Miss A. Kencahy*, 5356, 5369.

PATON, NOEL, starvation experiments conducted by, and proceedings in connection therewith *Hon. S. Coleridge*, 10514-48, 11044-8, 11161-2, 11173-5.

PAULESCO, OF BUCHAREST, statement by, re abnormal conditions brought about by establishment of fistulae in animals *Miss Lind-af-Hageby*, 7288.

PAULTON, MR., M.P., question asked in House of Commons by, re signature of certificates *Hon. S. Coleridge*, 10615-31.

PAVY, DR.:

- Demonstration experiments by, reference *H. Morris*, 7753.
 Reference *S. F. Smith*, 13049.

PAWLOW, J.P., Director of the Physiological Department of the Institute for Experimental Medicine, St. Petersburg:

- as to Accusations of cruelty brought against, *E. H. Starling*, 3634-5.
 Admiration expressed by vivisectionists for methods of, *Miss Lind-af-Hageby*, 7276-87.
 Cruel nature of experiments by, *Mrs. K. Cook*, 1800.
 Digestive processes, knowledge acquired by experiments of, *E. H. Starling, Sir L. Brunton*, 3442, 7028.
 Experiments of, in connection with fistulas would cause discomfort but not pain, *E. H. Starling*, 3762-7.
 Knowledge of digestive processes derived from experiments by, *G. D. Thane, E. H. Starling*, 1546-8, 3442, 4226-9.
 Lectures published in *Work of the Digestive Glands* by, shows that ideal conditions of experimentation are by no means yet attained, *Miss Lind-af-Hageby*, 7276-87.

PEAT, A. H. M., charges against Mr. Gotch, corroborated by, *Hon. S. Coleridge*, 11454.

PEMBREY, M. S., M.D., Lecturer on Physiology, Guy's Hospital, 13968-14183.

Anesthetics:

- Discomfort arising from administration of, 14160-1.
 Pain a protective function and hence desirability of dispensing in some instances with, 14089-90.
 Unnecessary both in case of animals and men, pain being a beneficent and protective mechanism 14119-23.

PEMBREY, M. S., M.D.—*cont.*

- Asphyxia, meaning of term and conditions giving rise to, 14078-82.
 Castration, method of performing, 14162-9.
 Cerebral hemispheres of frogs destroyed for purpose of demonstrating continuation of movements after consciousness has been destroyed 13972-3.
 Charges brought against, in *The Shambles of Science*, contradicted 14036-56.
 Coal-gas poisoning, demonstration of its effects on rats and rabbits and value of such 13971.
 Demonstration experiments absolutely necessary for a proper knowledge of physiology in its application to medicine 13971.
 Dogs not used by, for demonstration experiments 14173-7.

Evidence referred to:

- Circumcision performed without anaesthetics *Sir G. Kekewich*, 20618-20.
 Demonstration experiments, criticism of statement re witness's non-performance of, this year *Sir V. Horsley*, 16265-6.
 Opinion of, as to hampering nature of Vivisection Act not representative of English physiologists *J. N. Langley*, 15396-8.
 Pain, its necessary infliction, statements contradicting evidence of other vivisectionists *Sir G. Kekewich*, 20439-49, 20535-51, 20931-5.

Experience of, in experimental work 13970.

"Freezing" of animals, fallacious charges brought concerning, and as to actual facts of case 14018-20.

Hibernating animals, reasons for experimenting upon, 14178-83.

Hibernation a natural condition of anaesthesia of which physiologists should be permitted to avail themselves, 14152-55.

Hypnotism, possible to experiment on animals under influence of, and instances in Germany 14071-7.

Licence and certificates held by, 14108-10.

Licences should be given to recognised physiologists to cover all experiments 14150-1, 14093-5.

Marmot referred to in *The Shambles of Science*.

Post mortem examination made of, 14124-7.

Spinal cord had never been divided and other erroneous statements with regard to experiments performed on, actual condition of 13975-14017.

Materialism wrongly attributed to physiologists, 14106.

Pain:

- Protective function of, and evils attending modern desire to evade, 14082-88, 14098-105.
 a Protective mechanism and in that sense beneficent, 14156-8.
 a Protective mechanism and infliction of necessary, justifiable 14144-9.

Painful experiments necessary in certain cases 14067-71.

"Pithing" of frogs:

- Distinction between removal of brain and, and reasons justifying belief that purposive movements do not imply consciousness 14128-43.
 Term denotes entire decerebration, and as to charges brought against witness concerning, 14021-35.

Sulphur dioxide experiments in connection with destruction of rats on plague ships and position of physiologist compared with that of rat-catcher 14058-66.

Vivisection Act, 1876, antagonistic to advancement of physiology, 14090, 14115-6.

PENFALL'S FARM, HATFIELD, Imperial Cancer Research Fund laboratory at, *G. D. Thane*, 344.

PERMANGANATE OF POTASH, as antidote for snake poison, see under SNAKE POISON.

PERSONAL RIGHTS ASSOCIATION:

- Animal right included in sphere of, *J. H. Levy*, 18465.
 Evidence on behalf of, see *LEVY, J. H.*, 13443-645.
 Membership of, *J. H. Levy*, 18467-9.

PREIFFER, influenza, its cause identified by, *C. J. Martin*, 12190.

PFLÜGER, experiments by, reference *Miss Lindaf-Hageby*, 9582.

PTIRISIS:

Claims for cure of, *H. Snow*, 2261-2.

Environment and employment essential questions in combating, *Sir R. D. Powell*, 5807-10.

a Specific disease, and can only be acquired by introduction of tubercle bacillus *Sir R. D. Powell*, 5779-92.

Tubercle bacillus of great value in diagnosis of, *Sir R. D. Powell*, 5794-8.

PIDCOCK, G. D., letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

PIGEONS:

Experiments as to anti-pyretic action of aconite on, *Sir L. Brunton*, 6818-23.

No starvation experiments on, *G. D. Thane*, 1318-9.

Pigs:

Difficulty of experimenting on, owing to length of intestine *E. H. Starling*, 4032.

Eggs of tapeworms fed to, for purpose of observing development *S. Stockman*, 2444.

Experiments on, for study of trichinosis *S. Stockman*, 2461.

Possibly more useful for experimental purposes than dogs, *W. Osler*, 16732-7.

Sensitiveness of, probably not different from dogs, *Sir J. Russell*, 747-50.

Substitution of, for dogs in certain experiments suggested *C. R. J. A. Swan*, *R. J. Cowen*, 19233-4, 19337-9, 19372-4.

Tuberculosis inoculations of, involving cruelty *Mrs. K. Cook*, 1919.

Unsanitary conditions of sties do not generate but foster swine fever *S. Stockman*, 3326-8.

PIONEER ANTI-VIVISECTION SOCIETY, income of, *Hon. S. Coleridge*, 10260.

PIRKIS, Mr., Chairman of the National Canine Defence League, dog belonging to, wrongly certified as rabid *J. Hughes*, 17338.

PLEURO-PNEUMONIA:

Cause of, identified to extent of obtaining virus *S. Stockman*, 2699.

Demonstration of microbe of, by Professor Nocard and consequent success in inoculating against, *S. Stockman*, 2790-2800.

Outbreaks of, in Great Britain and cost of stamping out the same *S. Stockman*, 2494-7.

as to Report of Departmental Committee to inquire into, *S. Stockman*, 2691-98.

South African method of dealing with, *S. Stockman*, 2494-2506.

PLAGUE:

Advisory Committee on, in India see ADVISORY COMMITTEE ON PLAGUE IN INDIA.

Alexandria outbreak, and its successful control by sanitary methods without use of plague serum *Sir G. Kekewich*, 20485-90.

Antitoxin, see under SERUM THERAPY.

Bubonic form not infectious, *C. J. Martin*, 12141-5.

Foreign Office has to notify to other countries all occurrences of, in England *W. H. Power*, 4301.

Local Government Board must notify all cases of, to Foreign Office *W. H. Power*, 4301.

Local Government Board research for prophylactic purposes *W. H. Power*, 4301.

Knowledge acquired by experimental methods and present investigations in India *C. J. Martin*, 11654-6.

Pneumonic, possible difficulty of diagnosing, *W. H. Power*, 4629.

Propagated by use of plague serum *Sir G. Kekewich*, 20471-85, 20621-31.

Rats and guinea-pigs infected with, suffer pain *G. D. Thane*, *Sir J. Russell*, 457-61, 543.

Report to Plague Commission in 1899 concerning occurrence of, among individuals in which no microbes were visible *G. G. Bantock*, 14954.

PLAGUE--cont.

Theory that communicability of, is effected by agency of fleas, ridiculous *G. G. Bantock*, 14696-711, 14952, 15071-9.

Transmission of, by agency of rat flea has been practically established by means of experiments on animals *C. J. Martin*, *Col. D. Bruce*, 12103-25, 14478-82.

PLAGUE COMMISSION, see COMMISSION ON PLAGUE IN INDIA, 1901.

PLAYFAIR, LORD, responsible to some extent for drafting of Vivisection Act, 1876 *Sir V. Horsley*, 15762.

PLIMMER, DR.:

Unlicensed assistant in chemical physiology at London University *E. H. Starling*, 3539-40.

Reference *E. H. Starling*, 3539.

PLUNKETT, THE RIGHT HON. SIR H., reference, *Sir T. Stoker*, 858.

PNEUMONIA:

Caused by excess of oxygen *J. Lorrain Smith*, 18239-42, 18297-303, 18304, 18340-3.

Digitalis at one time erroneously used in, *A. R. Cushny*, 5214-6.

Discovery by experimental methods of non-bacterial agent causing, *Lorrain Smith*, 18238-42.

Experiments with view to discover anti-toxin for, *Sir R. D. Powell*, 5603-5.

Nature of heart affection in, and value of digitalis as treatment for, *A. R. Cushny*, 4850-8.

Often cause of death in patients suffering from diphtheria *F. Taylor*, 5829-30, 5833.

as to Toxin treatment of, *A. R. Cushny*, 5220-1.

POEHL, PROFESSOR VON, reference, *Miss A. Kenealy*, 5284.

POISONING:

Arsenic:

Antidote for, date of its introduction *J. Glaister*, 12888-905.

Experimental methods chiefly responsible for discovery of antidote for, *J. Glaister*, 12866-78, 12946-7.

Arsenated hydrogen:

Cases of, arising in manufacture of bleaching powder *J. Glaister*, 12879.

Foreign experiments in connection with, *J. Glaister*, 12879-80.

Cases of, in Scotland, few, *J. Glaister*, 12948-51.

Chemical tests insufficient to detect certain alkalis *J. Glaister*, 12864-5.

Coal gas, practical value of experiments in, on rats and rabbits *M. S. Pembrey*, 13971.

Experiments on animals must be final resort in investigating cases of, *J. Glaister*, 13006-14.

Food, cases in which inability to make experiments on animals has hindered investigation *J. Glaister*, 12983-4.

Investigations with regard to causes of, require experimental methods *J. Glaister*, 12838-51, 12973-80.

Knowledge of antidotes with respect to number of mineral and vegetable, derived from experiments on animals *J. Glaister*, 12883-4.

Meat:

Necessary to resort to animal experimentation in cases of, owing to difficulty of identifying Gaertner's bacillus *J. Glaister*, 12931-4.

as to Possibility of destroying toxins without recourse to animal experimentation, *J. Glaister*, 12939.

Raw meat more likely to contain bacilli than cooked, *J. Glaister*, 12999-13001.

Ptomaine:

Animal experimentation is surest method of diagnosing, *J. Lorrain Smith*, 18227.

Condition of animal suffering from, *J. Lorrain Smith*, 18444-8.

Difficulty in detecting existence of ptomaines, without recourse to experiments, *J. Glaister*, 12986-99.

Sausage, bacillus in, cannot be recognised without animal experimentation *J. Glaister*, 12935-7.

POISONS:

- Chloroform would mark action of, and hence impossible to demonstrate effects of, to students *J. Glaister*, 13024-6.
Toot, effects of, different on men and rabbits *Sir J. Russell*, 543.

POLICE:

- in Edinburgh, practice with regard to stray dogs *Sir J. Russell*, 725-7.
Stray dogs cannot be sold for vivisection purposes by, *G. D. Thane*, 1435-8, 1752-4.

POLLOCK, LIEUT., R.A.M.C., reference *Col. D. Bruce*, 14476.

PONSONBY, The late RIGHT HON. SIR HENRY, letter from, on behalf of Queen Victoria, *Hon. S. Coleridge*, 10715.

POORE, DR., Inspector under the Vivisection Act, 1892-1900:

- Biased in favour of vivisection *Hon. S. Coleridge*, 10301-2, 10412-32, 10974-8.
Certificates signed by, while inspector *Hon. S. Coleridge*, 10418-22.
"Complete anaesthesia" defined by, *Hon. S. Coleridge*, 11028-34.
Instructions from, as to visits to registered places *Sir J. Russell*, 529-30.
References *Hon. S. Coleridge*, *Sir V. Horsley*, 10274, 10275, 16068-9.

PORTLAND, THE DUKE OF, letter from as to suggestion to employ lost dogs for vivisection purposes *Hon. S. Coleridge*, 11624-6.

PORTUGUESE, Commission to investigate sleeping sickness in West Africa sent out by, *Col. D. Bruce*, 14321.

POWELL, SIR R. DOUGLAS, BART., K.C.V.O., M.D., F.R.C.P., President of the Royal College of Physicians 5580-834.

- Anaesthesia fully secured in all painful operations and length of time possible to maintain it, 5771-3.
Antiseptic methods of surgery have greatly diminished pain, 5761-4.
Antitoxins, values of those discovered by experiments on animals 5584.
Bacteriological observations, influence of, on public health and prevention of disease 5584.
Bacteriology has been developed almost entirely by means of experiments on animals 5583.
Cretinism and myxedema, their pathology established by means of experiments 5684-93.
Cruelty not involved in experiments, 5606.

Curare:

- Never administered without anaesthetics 5615-19.
Object and use of, 5774-8.

Demonstration experiments necessary for advanced students 5612-14.

Digitalis, its use in pneumonia largely established by means of experiments 5704.

Diphtheria:

- Antitoxin used 5741-5.
Diagnosis of, more correct than heretofore and conditions fostering spread of, 5747-50.
Non-decrease of general mortality from, may be due to fact that antitoxin is not universally used 5645-88, 5716-18.
Pathology of, pretty well known and serious symptoms averted by use of antitoxin 5705-14.
Reduction of case mortality in, undoubtedly due to use of antitoxin 5641-2.

Dogs, prohibition of experiments on, would seriously hinder research, 5610-11.

Drugs could not have been adopted for human beings without experiments on animals 5621-4.

Evidence referred to, *Hon. S. Coleridge*, 10890-4.

Experiments performed by, 5601-3.

Experiments supervised by, with view to discover pneumonia antitoxin 5603-5.

Internal organs are not sensitive to pain, 5584.

Licences and certificates, applications for signature carefully considered by, 5626-36, 5736-9.

Member, ex officio, of Association for Advancement of Medicine by Research 5637-40.

POWELL, SIR R. DOUGLAS, BART., K.C.V.O., M.D., F.R.C.P.—*cont.*

Phthisis:

- Diagnosis of, 5794-8.
Environment and employment essential questions in combating 5807-10.
a Specific disease and can only be acquired by introduction of tubercle bacillus 5779-92.

Prohibition of experiments on animals would injure progress of medicine 5733-4.

Represents more or less general opinion of profession 5728-31.

Royal College of Physicians:

- Experiments on animals unanimously approved by council of, 5731-3.
Membership of, 5725-7.

Salicylic acid, antipyretic nature of large doses 5703.

Scarlet fever, reduction of case mortality in Metropolitan Asylums Board hospitals 5666-71.

Snake antivenin, as to 5678-83, 5719-21.

Students should be permitted to acquire manual skill by experiments on animals 5765-7.

Suprarenal extract, its value in treatment of Addison's disease 5758-60.

Thyroid extract, value of, in treatment of myxedema 5758-60.

Tuberculin:

Sometimes used as diagnostic agent for human beings 5799-803.

Use of, in treatment for human tuberculosis, and possibility of advantages derived therefrom 5819-28.

Tuberculosis:

As to communicability of bovine, to children in milk 5811-15.

Marmoric serum for, still under trial 5804-5.

Vivisection Act, its restrictions have not hampered scientific research 5608.

POWER, H., experiments by, in connection with transplanting cornea from eye of rabbit to man, *Sir H. R. Swanzy*, 9816.

POWER, W. H., C.B., F.R.S., Chief Medical Officer of the Local Government Board 4231-640.

Annual report of, shows details of all experiments performed for Local Government Board 4339-42, 4347.

Antitoxins, character of all, essentially the same 4557-61.

Board of Agriculture conduct research in respect of animal diseases 4576.

Cholera prophylactic, recommended by Local Government Board 4310-12.

Comma bacillus now accepted as distinctive test of cholera 4427-9, 4495-8.

Diagnosis of diseases:

by Inoculations of guinea-pigs or rabbits 4306-7, 4358, 4382.

Number of experiments in connection with, 4338.

Diphtheria:

Bacillus of, differentiated from other diphtheroid bacilli by experiments 4611-12.

Bacillus of, found in milk 4619.

Bacteriological test of, probably increases cases notified and affects statistics 4613-16.

Case of cow suffering from, 4474-6.

Clinical evidence only aid to diagnosis of, before introduction of antitoxin 4398-402.

Death rate from, lowered in Metropolitan Asylums Board hospitals, and reasons suggested for non-corresponding reduction in country generally, 4541-50.

as to Greater mortality from, outside Metropolitan Asylums Board hospitals 4387-91.

Mortality from, 15 years ago, in Metropolitan Asylums Board hospitals compared with statistics of recent years 4384-5.

Observation of children in public elementary schools has led to detection of, 4395-9.

Transmission of, may be in milk, but insanitary conditions less concerned with its spread than in case of other diseases 4392-4.

POWER, W. H., C.B., F.R.S.—*cont.*

Diphtheria Antitoxin:

- Higher level of efficiency reached by, than other prophylactics 4551-2.
- Increase in use of, though applications to Local Government Board for supplies of, are diminishing, 4536-40.
- Local Government Board no longer manufactures, for curative purposes, and enforces no test 4508-10.
- Medical men rarely protect themselves by use of, 4602.
- Power of, weakens after certain period and 4504-6, 4562-7.
- Recommended by Local Government Board, and supply of, put at disposal of local authorities 4310-12, 4449-51, 4501-3.
- Reduction in death-rate in Metropolitan Asylums Board hospitals coincident with use of, 4632-38.
- Statistics as to use of, 4607-9.
- Value of, and Metropolitan Asylums Board statistics as to use of, 4322, 4361-2.

Evidence referred to, as to remuneration of vivisection for laboratory work *Sir G. Kekewich*, 20494-5.

Experiments essential to discovery of prophylactics 4313-6.

Experiments in connection with testing of antitoxins involve no pain except that which may be caused by disease consequent upon inoculation 4554-6.

Experiments re public health administration and prevention of disease—their importance 4405-8, 4425.

Home Office Reports include information contained in Report of, 4348-50.

Instructions issued by, to investigators employed by Local Government Board 4290-1, 4521-22.

Jenner's vaccine, analogy between modern prophylactics and, 4587.

Local Government Board:

- Bacteriological investigations not undertaken by medical staff of, 4582-3.
- Bacteriologists employed by, diagnosis of diseases 4627-8.
- Diphtheria anti-toxin issued by, without specific instructions as to its use, 4624-6.
- Foreign Office is notified by, of outbreaks of certain diseases by, 4301, 4337-8.
- Inspectors' duties, 4534.
- Koch's consumption cure not applied by, to human beings 4467.
- Local authorities generally adopt prophylactics suggested by, 4325.
- Local authorities notified by, of all new prophylactics discovered 4310.
- Medical staff of, 4302.
- Procedure of, in outbreaks of disease 4304-5.
- Prophylactics not actually recommended by, but notified to and placed at disposal of local authorities 4368-9, 4437-40.
- Prophylactics tested before recommendation to local authorities 4318-20, 4440.
- Reports received by, from local authorities as to efficacy of prophylactics recommended 4317, 4322-4.

Research work:

- Aim of investigations 4423-4, 4578-9.
- Animals chiefly used 4343-5.
- Experiments essential, 4357.
- Experiments with view to discovery of preventive sera 4307-9.
- Few experiments of painful character 4526.
- Home Office inspection, extent of, 4356, 4519.
- Investigators employed in, and as to supervision of such 4284-97.
- Investigators make yearly returns to Home Office 4333-6.
- Laboratory formerly rented for, but practice now discontinued 4411.
- List of investigators employed 4413-14.
- Local Government Board inspectors no longer carry out, 4299.

POWER, W. H., C.B., F.R.S.—*cont.*Local Government Board—*cont.*Research work—*cont.*

Majority of experiments are subcutaneous inoculations and painless 4351-4, 4532, 4574-5.

Nature of, 4300-1.

Reasons for employing outside investigators 4359-60.

Sir J. Simon's and *Mr. Forster's* minutes concerning principles governing 4299.

Smallpox inoculations not latterly conducted 4483-5.

Treasury grant for, 4408-10.

Tuberculin, its curative value not yet considered by, 4465-6.

Tuberculosis treatment, recommendations of Board as to, in abeyance until report of Tuberculosis Commission is issued 4455-6.

Vaccine tested and prepared by, and as to derivation of lymph 4477-8, 4482, 4488, 4513, 4591-7.

Medical officer of Local Government Board since 1900, 4297.

Monkeys not used for painful experiments 4528.

Not licensed personally, 4282.

Painful experiments conducted on behalf of Local Government Board would be reported to, 4529-31.

Plague prophylactics:

Experiments with view to discovery of, and encouraging results 4329-31.

Haffkine's, misgivings with regard to, on account of its carbonic acid element 4441.

Not altogether satisfactory 4432.

Small use of, in this country 4569-72.

Tetanus, its occurrence in connection with use of, in India, and explanatory cause, 4435-6, 4500.

Pneumonic plague and pneumonic influenza, possibly difficult to distinguish between 4629.

Public vaccinators must not use arm-to-arm lymph 4515-6.

Recently appointed Chairman of the Tuberculosis Commission *G. S. Woodhead*, 15481-3.

Reports received by, from Local Government Board's scientific investigators as to progress of their research 4288, 4523-5.

Sanitation, value of, in combatting infectious diseases 4631.

Smallpox inoculations of cows and horses in France 4486-7.

Supervision of scientific workers employed by Local Government Board, not work of, 4517.

Typhoid prophylactics, *Wright's* not recommended 4433-4.

Tuberculin, as to curative value of, 4468-71.

Tuberculosis:

Tubercle bacillus the cause of, 4457-63.

Tuberculin test for bovine, of great use 4472.

PRIESTLY, DR., action of respirable gases, and use of vapour in anaesthesia established by experiments on mice carried out by, *Sir V. Horsley*, 15652-3.

PRITCHARD, W., M.R.C.V.S., evidence of, before previous Royal Commission as to chloroforming of dogs *Sir J. Russell*, 697, 753.

PROSECUTIONS UNDER VIVISECTION ACT, 1876, see under VIVISECTION ACT.

PUERPERAL FEVER:

Discovered to be infectious, and preventive methods adopted, *C. J. Martin*, 11647-51.

Serum treatment not always satisfactory *C. J. Martin*, 11967-8.

PURSER, PROFESSOR, Dublin University:

Private laboratory of, reason for allowing, *Sir T. Stoker*, 770.

Testimony of, as to high nervous system of monkeys *Sir T. Stoker* 808.

Reference *Sir T. Stoker*, 1048.

PYEMIA, experiments upon, still being conducted, *Sir T. Stoker*, 844-5.

THE QUEEN, Her Majesty, letter from, conveying her disapproval of Professor Schäfer's drowning experiments, *J. Hughes*, 17218-22.

QUEEN VICTORIA, Her late Majesty, letter from, sympathising with anti-vivisection cause, *Hon. S. Coleridge*, 10714-15.

RABBITS :

Acid-poisoning experiments on, gave rise to successful treatment of diabetic coma *E. H. Starling*, 3814.

Alleged cruelty of experiments on, *Mrs. K. Cook*, *J. W. Graham*, 1793-5, 1913-4, 1919, 5849-55, 6141-2.

Arygol, its use as remedy for disease of conjunctiva discovered by experiments on, *Sir H. R. Swanzy*, 9843-8.

"Baking" of, consisted merely in maintaining temperature of, during narcosis *Sir L. Brunton*, 6906A-16, 6785-98.

"Baking" of, said to have been performed *J. W. Graham*, 5844-9, 6131-40.

Bred for laboratory purposes, *G. D. Thane*, 1431-4. Canine distemper, possible effects of inoculating, *S. Stockman*, 3373-8.

Chloral injected into, for purposes of discovering its soporific action, *A. R. Cushny*, 4713.

Chloral or urethane used in anaesthetising, *G. D. Thane*, *A. R. Cushny*, 1635-8, 5048-55.

Chloroform not the anæsthetic generally used for, *Sir J. Russell*, 729.

Cocaine, its anaesthetising properties first tested on, *A. R. Cushny*, 4751.

Digitalis, action of, tested on, *A. R. Cushny*, 4657.

Disease diagnosed by inoculations of, *W. H. Power*, 4306-7.

Drugs, their general action, and toxic dose per unit of body weight tested on, *A. R. Cushny*, 4824.

Experiments in connection with transplantation of cornea to human eye from, *Sir H. R. Swanzy*, 9816-18.

Inoculations of, for rabies, tests and after effects, *S. Stockman*, 2590-7, 2863-4, 2912-9, 3011-25, 3125-8.

Inoculations of, for rabies, tests not painful *G. D. Thane*, 1670-3.

Paraldehyd used as anæsthetic in experiments upon *A. R. Cushny*, 5184-7.

Physiological conditions prevent substitution of, for dogs or cats in certain experiments *G. D. Thane*, 427.

Rabies inoculations of, for propagation of virus, and little pain occasioned *Sir V. Horsley*, 15814-22.

Rabies inoculation of, performed without necessary certificates *W. P. Byrne*, 38.

Sleeping sickness experiments on, *G. D. Thane*, 1311-2.

Toot administered to, and its effects *Sir J. Russell*, 543.

Tracheotomy performed on, without anæsthetics *Col. E. Lawrie*, 17072-9.

Tuberculous aqueous humour injected into eye of, for purpose of diagnosis *Sir H. R. Swanzy*, 9819.

Use of, for demonstration experiments *Sir J. Russell*, 602-3.

Use of, in physiological investigations *E. H. Starling*, 3445.

RABIES :

Abolition of, in England due to muzzling order and quarantine imposed by Board of Agriculture *Sir V. Horsley*, 15597-8, 15880-3.

Abolition of, in England without recourse to Pasteur's treatment *C. J. Martin*, 12164-8, 12241-57.

Control of, by muzzling dogs, due to knowledge of its infectious nature acquired by Pasteur's experiments *Sir V. Horsley*, 15602-3.

Diagnosis of, unreliable methods adopted, *J. Hughes*, 17338-42.

Diagnostic Tests of :

Anæsthetics required for inoculations of rabbits in connection with, *S. Stockman*, 2590-7, 2912-4.

Certificate B only used by Board of Agriculture for inoculations in connection with, and

RABIES—cont.

Diagnostic Tests of—cont.

methods adopted *S. Stockman*, 2590-7, 2858-70.

Conducted by Board of Agriculture *S. Stockman*, 3125-8.

First practised by subcutaneous inoculation without success *S. Stockman*, 3137-8.

Not painful *G. D. Thane*, 1670-3.

Reliability of, *S. Stockman*, 3371-2.

Existence of, to extent to which it was returned by Board of Agriculture doubted *J. Hughes*, 17296-342, 17343-8, 17351-8, 17585-6.

Infectious not otherwise than by contact or by bite *Sir V. Horsley*, 15876-9.

Microbe of, not visible *S. Stockman*, 3130-1.

Muzzling of dogs for preventing spread of, objected to as being cruel and ineffective *J. Hughes*, 17120-7, 17591-9.

Muzzling order in connection with suppression of, was compulsory over whole country *Sir V. Horsley*, 16026-30.

Pasteur's inoculation experiments proved the contagious nature of, *Sir V. Horsley*, 15603.

Pasteur's treatment for :

Efficacy of, shown by reduction of death rate *Sir V. Horsley*, 15819-21.

Mortality statistics affected by inclusion of all cases treated *C. J. Martin*, 12169-73.

Suppression of, in Ireland *Sir T. Stoker*, 777, 860-1.

RABIES ORDER, drowning of stray dogs under, *Sir J. Russell*, 670.

RAM, A. J., K.C. (a Member of the Commission) :

Letter to, with reference to insertion of qualifying adjective to "pain" in Mr. Coleridge's Bill *Hon. S. Coleridge*, 19975-8.

RATS :

Alleged cruelty of experiments on, *Mrs. K. Cook*, *J. W. Graham*, 1990-3, 5871-3.

Cancer inoculations of, *G. D. Thane*, 465-6.

Cancer said to have been communicated between, *H. Snow*, 2180.

Experiments on, for study of trichinosis *S. Stockman*, 2461.

Experiments on, in connection with investigation of sleeping sickness *G. D. Thane*, 1311-2.

Experiments on, in connection with powers of permanganate of potash as a tetanus preventive *Major L. Rogers*, 8183-5.

Inoculated with plague suffer pain *Sir J. Russell*, 543, 720.

Local Government Board Report on method of destroying, in plague-infected ships *W. H. Power*, 4301.

Sulphur dioxide experiments in connection with destruction of, on plague ships and position of physiologist compared with that of rat catcher *M. S. Pembrey*, 14058-66.

Used chiefly for inoculation experiments *E. H. Starling*, 3445.

RAYLEIGH, THE RIGHT HON. THE LORD, O.M., President of the Royal Society, 5530-79.

Applications for licences or certificates not referred to, 5554-5.

Evidence referred to *Hon. S. Coleridge*, 10880-4.

Physiological optics, as to advance made by experiments 5558-62.

Physiology no exception to principle that science is advanced by experimentation 5551-2.

Remarkable development of science due to experimental methods of investigation 5532-7.

Restrictions to further limit experiments should be carefully considered before being embodied in law 5532, 5539-41.

Royal Society has been concerned in investigation of Mediterranean fever at Malta and sleeping sickness in Africa 5557.

Royal Society often consulted in questions of public health in foreign parts 5570-1.

Royal Society :

Duty of advising Home Office in issue of licences and certificates could hardly be undertaken by, 5564-5.

RAYLEIGH, THE RIGHT HON. THE LORD
O.M.—*cont.*Royal Society—*cont.*

Number and status of Fellows 5550, 5573-5.

Resolution of, to present statement as to their views 5531-2.

Statement presented by, submitted to and approved unanimously by Council of Royal Society 5545-50.

READ, DR. WALTER, member of United States Commission to investigate cause of yellow fever in Havannah W. Osler, 16531.

REDWATER DISEASE, advance made in prevention of, S. Stockman, 2568-70.

REES, M. F., letter to, re incomplete anaesthesia Hon. S. Coleridge, 10993.

REGISTERED PLACES:

Accommodation in towns scarce at, for large animals Sir J. Russell, 617-19.

Government laboratories, G. D. Thane, 342-5.

Inspector visits only, G. D. Thane, 334.

Inspectors' visits to:

Instructions from Dr. Poore as to, Sir J. Russell, 529-30.

Notice not given G. D. Thane, 441.

Laboratories unconnected with teaching institutions G. D. Thane, 339.

Licensees allowed to experiment, in connection with certain investigations outside, W. P. Byrne, G. D. Thane, 78-83, 368, 372-3.

Minimum number of visits to, Sir J. Russell, 605.

Municipal laboratories G. D. Thane, 346-51.

Nature of premises and investigations made before registration G. D. Thane, 337-56.

Number and nature of, W. P. Byrne, 53-62.

Number of, in assistant inspector's district Sir J. Russell, 595.

Private, not registered without strong cause W. P. Byrne, G. D. Thane, 62, 74-7, 356, 1382-4, 1399-1404.

Private houses not registered, but occasional experiments allowed in private laboratories W. P. Byrne, 281-2.

Private laboratories in Ireland, and reasons for allowing Sir T. Stoker, 767-74.

Private premises G. D. Thane, 335-6.

Public laboratories preferable to private Sir T. Stoker, 977-9.

Registration protects vivisectionists from prosecutions Mrs. K. Cook, 1962-3.

Research institutions, G. D. Thane, 344.

Satisfactory condition of, in Ireland Sir T. Stoker, 835.

Specified in licence and offence in performing experiments where licence is not available G. D. Thane, 499-500.

Statistics of, in Ireland Sir T. Stoker, 764-5.

Time limit not imposed in registration G. D. Thane, 1341-2.

Unlicensed experiments cannot be performed in, without knowledge of inspector Sir J. Russell, 587-8.

REISINGER, experiment by, in transplanting cornea from eye of rabbit to man Sir H. R. Swanzy, 9816.

RETURNS OF EXPERIMENTS:

Certificate B classified among certificates dispensing with anaesthetics in, Hon. S. Coleridge, 10329.

Certificates for experiments on dogs and cats, number reported in, J. Hughes, 17174.

Home Office charged with putting forward, asserting absence of pain in experiments Hon. S. Coleridge, 10262, 10640.

Home Office charged with suppressing signatories of certificates dispensing with anaesthetics in, Hon. S. Coleridge, 10262, 10573-80.

Home Office:

All experiments recorded in, G. D. Thane, Sir J. Russell, 481, 659-60.

Details of painful experiments given in 1900 G. D. Thane, 464.

Experiments occasionally reduplicated in, Sir J. Russell, 659-60.

RETURNS OF EXPERIMENTS—*cont.*Home Office—*cont.*

Nature of experiments now required to be distinguished G. D. Thane, 1334-5.

1904, shows number of licensees who performed no experiments G. D. Thane, 1460-1.

Table showing number and nature of experiments performed W. P. Byrne, 106-28.

Increase in number of experiments reported in, Sir G. Kekewich, 20804.

Licensees:

Contraventions of the Act generally disclosed by, W. P. Byrne, 144-7.

Enlargement of, as to possibility of, W. P. Byrne, 238-40.

Home Secretary may require greater detail in, W. P. Byrne, 103.

Licensees make up their own, W. P. Byrne, Sir J. Russell, 188, 278-80, 657-8.

Obligatory W. P. Byrne, 89.

Occasional neglect in forwarding, W. P. Byrne, 90-4.

Two forms sent in, with details of all experiments Sir J. Russell, 657-8.

References, Mrs. K. Cook, Hon. S. Coleridge, 1919, 10477.

REW, R. H., erroneous views put forward by, with regard to milk consumption and prevalence of tabes mesenterica G. G. Bantock, 14547-50.

RHODESIA, Koch's preventive inoculation for S. African coast fever not successful in, S. Stockman, 3331-50.

RHODESIAN FEVER:

Koch's errors in experiments re, and as to present knowledge of, S. Stockman, 3336-50, 3403-8.

Transmitted by agency of blood-sucking ticks S. Stockman, 3410-4.

RICHARDSON, SIR B. W.

Experiments by, in connection with amyl nitrate A. R. Cushny, 4895-902.

Statements by, with regard to action of amyl nitrite Sir L. Brunton, 6888-97.

Reference Sir L. Brunton, 7019.

RICHTER, PROFESSOR CHARLES, opinion of, as to uselessness of morphia as an anaesthetic Miss Lindaf-Hageby, 7342.

RINDERPEST:

Cause of, not yet satisfactorily demonstrated S. Stockman, G. S. Woodhead, 2684-5, 15496.

Control of, dealt with by inoculation, owing to prejudice against slaughter S. Stockman, 2717-20.

Control of, method suggested S. Stockman, 2994-7.

Cost of various outbreaks of, and study of preventive inoculation for, S. Stockman, 2480-90.

Government laboratory in India for study of, Major L. Rogers, 8222-5.

Immunity from, knowledge of how to acquire, demands experimental investigation S. Stockman, 2476-84.

Koch's inoculations against, not successful in Transvaal S. Stockman, 3331-50.

Mortality from, and reduction after preventive inoculations Major L. Rogers, 8226-43.

Native objection to slaughter in India makes it impossible to stamp out, Major L. Rogers, 8245-9, 8270-2.

Origin of contagion and as to immunity produced by preventive inoculation Major L. Rogers, 8282-98.

Outbreaks of, in India and successful inoculation against, Major L. Rogers, 8226-43, 8264-9.

"Simultaneous serum" method of inoculation used whenever possible Major L. Rogers, 8252-5.

Successful inoculation against, reported by Transvaal Department of Agriculture S. Stockman, 2686-7.

RING, MRS. G. A. M., statement by, as to proceedings at meeting of Church Anti-Vivisection League in Bradford Miss A. L. Woodward, 8800.

RING, REV. T. P., statement by, as to proceedings at meeting of Church Anti-Vivisection League in Bradford Miss A. L. Woodward, 8800.

RINGER, DR. S., Professor of Therapeutics in University College, London:

Drug experiments on children conducted by, *Rev. L. Lewis*, 8766-75.
Reference, *J. W. Graham*, 5890.

RITCHIE, The late LORD:

Alleged disingenuous statement in House of Commons, 1902, *Hon. S. Coleridge*, 10469.
Regulation as to inspection of records of experiments made by, *Sir V. Horsley*, 15770.
Writings of, referred to *J. W. Graham*, 5887.

ROBIN, PROFESSOR A., reference, *G. H. Burford*, 9018.

ROGERS, DR. J. G., Director General of the Sanitary Department, Egypt, member of Egyptian Plague Commission and views as regards inefficacy of plague serum *Sir G. Kekewich*, 20485-90.

ROGERS, MAJOR LEONARD, M.D., F.R.C.P., I.M.S., Professor of Pathology at Medical College, Calcutta, 8029-8311.

Experiments of, in connection with antidotes for snake poison *Sir L. Brunton*, 6862-5, 6879-85.
Kasauli Institute, working of, 8299-306.
Permanganate of potash useful in cases of hydrophobia 8186.
Permanganate of potash useful preventive for tetanus and experiments in connection with its use 8183-5, 8189-98, 8220.

Rinderpest:

Government laboratory in India for study of, 8222-5.
Impossible to stamp out in India owing to native objection to slaughter 8245-9, 8270-2.
Method of inoculating against in India and success of same 8226.
Method of preparing serum, and origin of contagion 8282-98.
Outbreak of, in United Provinces, India, when inoculated animals did not suffer as uninoculated 8264-9.
Serum is protective but not curative, 8280-1.
"Simultaneous serum" method of inoculation used whenever possible 8252-5.
Two chief methods of inoculating against, prevalent in India 8226.

Snakes, coloured plates of different poisonous, issued to Indian dispensaries for training surgeons to identify 8051-3.

Snake Poison:

Antidotes:

Present knowledge of, founded on results of experiments 8031.
Reputed, tested with negative results 8161-2.

Antivenins:

Chemical evil obviated by, 8150-3.

Cobra:

Discovery and use of, 8034-9.
Useless against other snake poisons 8034, 8157-9.

Intravenous injections more efficient than subcutaneous 8207-10.

Practical use of, small until polyvalent serum can be obtained 8211.

Production of, entirely due to experiments on animals, and preparation of, 8117-20.

Clinical investigations pursued for many years but successful antidotes discovered by experiments 8138-40.

Different actions of different classes of, and work in connection with 8033.

Experiments conducted not in official capacity and reports published in medical journals 8098-8100.

Horses have been made immune by injection of, 8143-5.

Ligature not sufficient treatment in itself 8093-5, 8212-16.

Mortality from, depends upon amount of venom injected, and clothing may protect from bite 8172-8.

ROGERS, MAJOR LEONARD, M.D., F.R.C.P. I.M.S.—cont.

Snake Poison—cont.

Mortality from, depends upon amount of venom injected, and period elapsing between bite and treatment 8103-8.

Mortality from, in India, and returns 8071-80, 8089-92.

Nature and chemical composition of, 8082-6.

Permanganate of potash antidote:

Calmette's treatment and, should be combined 8114-15.

Difficult to induce Indian native to carry, and lancet for injection 8273-6.

Method of application and advisability of its speedy use after bite, 8040-70, 8121-7, 8146-7, 8166-70.

Most practical remedy, and adopted by Indian Government 8040-70, 8109-12, 8128-32, 8217.

Successful use of, in Egypt 8179-80.

Snake charmers immunise themselves by small inoculations 8206.

Theory that immunity from, can be acquired by swallowing venom disproved 8202.

Viperine, fall of blood pressure due to, counteracted to some extent by adrenalin 8133-7.

Tetanus antitoxin, no danger from use of, 8199-201.

References *Sir L. Brunton*, 6833.

ROKINTANSKY, PROKOP, experiments re action of strychnin by, *Sir L. Brunton*, 6898.

ROMER, serum prepared by, for treatment of ulcer of cornea *Sir H. R. Swanzy*, 9819.

ROMNEY MARSH, outbreak of sheep disease at, and uncertainty in diagnosing, *D. J. Hamilton*, 20155-9.

RÖNTGEN RAYS:

Infinite possibility in discovery of, for physiological investigation and treatment of disease *Miss Lindaf-Hageby*, 9726-7.

Study of intestinal movements of animals under, are conducted under normal conditions and should be encouraged *Miss Lindaf-Hageby*, 9242.

ROSCOE, SIR H., bill introduced by, for universal collaring of dogs, in connection with rabies outbreak *Sir V. Horsley*, 15884.

ROSENBAUGH, DR., reference *Miss Lindaf-Hageby*, 9682.

ROSS, MAJOR RONALD, C.B., F.R.C.S., F.R.S.:

Experiments on birds by, identified organism causing malaria *W. Osler*, 16747-9.

Licence not now held by, *G. D. Thane*, 1327-32.

ROUX, PROFESSOR, anthrax treatment devised by, *S. Stockman*, 3309.

ROY, DR., witness in Ferrier Yeo case, *Hon. S. Coleridge*, 10559.

ROYAL COLLEGE OF PHYSICIANS:

Applications for licences and certificates submitted for signature of President of, *W. P. Byrne*, 208.
Cancer Research Fund under direction of, *H. Snow*, 2113.

Evidence on behalf of, see *POWELL, SIR R. D., TAYLOR, F.*, 5580-5834.

Evidence put forward by, agreed with *W. Osler*, 16529.

Experiments on animals unanimously approved by, *Sir R. D. Powell*, 5728-31.

Membership of, *Sir R. D. Powell*, 5725-7.

Reference *G. D. Thane*, 1091.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, alleged cruelty of experiments on eyes of animals at laboratory of, *Mrs. K. Cook*, 1913-4.

ROYAL COLLEGE OF SURGEONS IN IRELAND:

Constitution of, *Sir H. R. Swanzy*, 9752-6.

Evidence on behalf of, see *SWANZY, SIR H. R.*, 9752-979.

Views of, on subject of experiments on animals *Sir H. R. Swanzy*, 9762-81.

ROYAL COLLEGE OF SURGEONS OF ENGLAND :

- Applications for licences and certificates submitted for signature to, *W. P. Byrne*, 208.
- Cancer Research Fund under direction of, *H. Snow*, 2113.
- Evidence on behalf of, see *MORRIS, HENRY*, 7651-8028.
- Evidence put forward by, agreed with, *W. Osler*, 16529.
- Reference *G. D. Thane*, 1091.

ROYAL COMMISSION ON TUBERCULOSIS :

- Experiments authorised by, in connection with transmission of disease *G. S. Woodhead*, 15481-3.
- Experiments on behalf of, *W. P. Byrne*, *G. D. Thane*, 88, 1116-8, 1205, 1679.
- Farms held by, for research work *G. D. Thane*, 342-4.
- Inquiry as to communicability of bovine tuberculosis to man being conducted by, *S. Stockman*, 3100-3.
- Koch's views concerning non-transmissibility of disease from men to animals contrary to conclusions of, *G. S. Woodhead*, 15499-502.
- Local Government Board waiting for Report of, before adopting measures for treatment of tuberculosis *W. H. Power*, 4455-6.
- Research work of, conducted by licensees *G. D. Thane*, 352-3.
- Report of, as to tuberculin tests in Denmark *S. Stockman*, 3209-12.
- Work of, impossible without recourse to animal experimentation *G. S. Woodhead*, 15440-8.
- References *Miss A. Kenealy*, *C. J. Martin*, 6403-4, 12222.

ROYAL COMMISSION ON VIVISECTION, 1875 :

- Appointment, nature of evidence before and consequent legislation on Report of, *W. P. Byrne*, 1.
- Condemnatory correspondence between Dr. Klein and Secretary of, *Hon. S. Coleridge*, 10852-78.
- Correction of evidence before, as to possibility of studying heart and circulation with removal of brain, *E. A. Schäfer*, 10060-3.
- Evidence before, as to insensibility of animals to pain, *S. F. Smith*, 13046-8.
- Evidence before, as to unnecessary repetition of experiments unwarrantable *Sir V. Horsley*, 16254-6.
- Evidence before, re regulations as to qualification for Fellowship of Royal College of Surgeons *H. Morris*, 7754.
- Evidence of Charles Darwin before, *E. H. Starling*, 3442, 3776-9.
- Evidence of Mr. Jesse before, *Mrs. K. Cook*, 1785.
- Evidence of Dr. Klein before, admitting his indifference to animal suffering *Mrs. K. Cook*, *W. H. Power*, *J. W. Graham*, *Hon. S. Coleridge*, *Sir G. Kekewich*, 1919, 2064-7, 4418-22, 5883, 10656-74, 10852-78, 20450.
- Evidence of Sir James Paget before, as to value of clinical observation *E. H. Starling*, *H. Morris*, *Sir V. Horsley*, 3776-9, 7899, 16164-9.
- Evidence of Mr. Pritchard before, as to chloroforming of dogs *Sir J. Russell*, 697.
- Evidence of Mr. Schäfer before, manifesting indifference to pain inflicted on frogs *Miss Lindaf-Hageby*, 9430.
- Evidence of Royal Society for the Prevention of Cruelty to Animals before, *A. G. Scott*, 19602-5.
- no Evidence before, as to "inhumanity" in this country *Sir V. Horsley*, 16129.
- Humane recommendations of, *Hon. S. Coleridge*, 10265.
- Report of, throws light on interpretation of Act *Hon. S. Coleridge*, 10968-72.
- Sheep-pox, cause of, incorrectly stated to have been discovered, in evidence before, *S. Stockman*, 2732-33A.
- References *W. P. Byrne*, *Sir R. D. Powell*, 140, 5583.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY, reference *G. D. Thane*, 1751.ROYAL MEDICAL SOCIETY OF EDINBURGH, *Sir Dyce Duckworth's* speech to, *G. D. Thane*, 1471-5.

ROYAL SOCIETY :

- Consulted in questions of public health in foreign parts *Lord Rayleigh*, 5570-1.

ROYAL SOCIETY--cont.

- Cost of experiments concerned with investigation of function of thyroid gland partly defrayed by, *Sir V. Horsley*, 15688.
 - Duty of advising Home Office in issue of licences and certificates could hardly be undertaken by, *Lord Rayleigh*, 5564-5.
 - Fellows of, their numbers and status *Lord Rayleigh*, 5550, 5573-5.
 - Investigations into sleeping sickness on behalf of, *Col. D. Bruce*, 14315-14321.
 - Statement on behalf of, see *RAYLEIGH, THE RIGHT HON. THE LORD* 5530-5579.
- ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS :
- Castration, a question not taken up by, *A. G. Scott*, 19695-700.
 - Castration, question of, should be dealt with by, *Hon. S. Coleridge*, 11298.
 - Constitution and membership of, *A. G. Scott*, 19490-5.
 - Definition of cruelty as held by, *A. G. Scott*, 19631-4.
 - Evidence of, before Vivisection Commission, 1875, *W. P. Byrne*, *A. G. Scott*, 1, 19602-5.
 - Evidence on behalf of, see *SCOTT, A. G.* and *BANBURY, SIR F., BART., M.P.*, 19484-19851.
 - No cases of the practice of unnecessary cruelty in laboratories brought forward by, *A. G. Scott*, 19568, 19576.
 - Object of, to prevent unjustifiable pain, *A. G. Scott*, 19642-60, 19686.
 - Prosecution of Dr. Abrath by, for advertising public exhibition of experiments, *A. G. Scott*, 19568-75, 19681-5.
 - Statement of, represents views of entire Council, *A. G. Scott*, 19628-30.
 - Statement of views, *A. G. Scott*, 19486-8.
 - Work done by, *Hon. S. Coleridge*, 10800-1.
 - Works under Martin's Act, *Mrs. K. Cook*, 1946.
- ROYAL SOCIETY OF EDINBURGH :
- Constitution and work of, *E. A. Schäfer*, 9983-8.
 - Evidence on behalf of, see *SCHÄFER, E. A.*, 9980-10250.
 - Resolution submitted by, *E. A. Schäfer*, 9990-5.
- ROYAL SOCIETY OF MEDICINE, evidence on behalf of Therapeutical Section, see *DIXON, W. E.*, 18646-10191.
- RUBINI, DR., homeopathic investigations by, leading to discovery of cactus for cardiac affections, *G. H. Burford*, 8924.
- RÜCKER, SIR A. W., F.R.S., letter from, to Home Office in connection with statements contained in *The Shambles of Science*, *A. D. Waller*, 18094-7.
- RUFFER, ARMAND, cancer parasite proclaimed by, *H. Snow*, 2281.
- RUSKIN, JOHN, anti-vivisection cause supported by, *J. W. Graham*, *Hon. S. Coleridge*, 5887, 10262.
- RUSSELL, SIR JAMES, LL.D., F.R.C.P. (Edinburgh), Assistant Inspector under Vivisection Act, 1876, 505-755.
- Accommodation for large animals in towns scarce, 617-19.
 - Anæsthesia during experiments tested by, 547-8, 549.
 - Anæsthetics :
 - Animals can be kept under, without difficulty, 733-6.
 - Animals recover rapidly from effects of, 540.
 - Efficiency of, in experiments 637-9, 700-1.
 - Great improvements since 1875 in administration of, 729.
 - Anti-toxins not manufactured in Scotland but procured from England 721-2.
 - Appointment, of, date 510.
 - Callousness to suffering on part of licensees not witnessed by, 620-1, 655-6.
- Cats :
- Scandal in connection with the Wellcome Research as to procuring, for vivisection purposes, 682.
 - Susceptibility of, to pain makes it desirable to minimise experiments on, 607.

RUSSELL, SIR JAMES, LL.D., F.R.C.P. (Ed.)—
cont.

Certificates:

A:

Applications for, refused on various grounds 519-20.
Local anesthetics might be allowed under, but possible difficulty 555-6, 624-7, 730.
Not allowed for severe operation and advisability of permitting use of cocaine 622-4.

B:

Length of operations under, 545.
Obligation to kill animal under, a hardship 557-61.
Useless for demonstration purposes, 614.

C:

Demonstration experiments require use of, 611-14.
Exhibition of experiments permitted under, 615.

D, one case of issue, 573.

E and F not in themselves operative, 630.

Issue of, procedure as to, 737.

Specification of animals necessary in all, 631-2.

Concerned with administration of Anatomy Act 511.

Demonstration experiments sometimes witnessed by, 567-8.

Difficulty in distinguishing between animals which have and have not undergone experiments, 536.

Dogs:

Calves or goats might be substituted for, in some experiments, but use of, in certain experiments essential 608.

Condition of some, after operations 552-3.

Indications of suffering in, 715-19.

as to Obtaining of, for experimental purposes 667-9, 676-80.

Practice of police in Edinburgh with regard to stray, 725-7.

Relative development of various senses in, 741.

Statements as to danger in chloroforming, not consistent with experience 753.

Strapped down during lengthy operation, but only to prevent movement 640-2.

Suggestions to breed, for laboratory purposes, 674-6.

Susceptibility of, to pain makes it desirable to minimise experiments on, 607.

Drowning, sensations during, 741.

Drowning experiments, for purpose of studying methods of resuscitation, 687-91.

Drowning experiments, reasons for choice of dogs in, 739-40.

Edinburgh Veterinary College, frequency of experiments on dogs at, 754-5.

Evidence of Mr. Pritchard before previous Vivisection Commission as to chloroforming of dogs not confirmed by, 697.

Evidence of, re susceptibility of animals to pain referred to S. F. Smith, 13055.

Experiments on thyroid gland, opinion as to, 571-2.

Frogs and rabbits chiefly used for class experiments and some dogs, 662.

Guinea-pigs bred in laboratories and also brought from outside, 673-4.

Home Office returns contain record of all experiments 659-60.

Home Secretary may reduce number of experiments under Certificate B, on advice of inspector 633-4.

Inoculations involve little pain 708-9.

Inspection essential, but no safeguard against wilful transgression 602-3.

Inspection, time given to, 596-8.

Inspector of Anatomy for Scotland, 511.

Inspectors:

Increase of, unnecessary 604.

Licences, annual renewal adds to work of, 593-9.

Visits of, do not permit witnessing of many experiments 517-18, 565.

Visits of, prevent irregularities 555, 601.

RUSSELL, SIR JAMES, LL.D., F.R.C.P. (Ed.)—
cont.

Licencees fill up two forms in recording experiments 657.

Licencees frequently have difficulty in understanding Act and powers conferred by certificates 555.

Licencees increasing in number 600.

Licencees' laboratory book always inspected by, 554.

Licencees' publications, inspection of, 528.

Licences:

Applications for, never refused in witness's area 519-20.

Considerations in recommending applications for, 686.

Issue of, procedure as to, 516.

Refusal of one to American lady on grounds of unsuitability and not being permanent resident, 522-4.

Monkeys:

Removal of thyroid gland from, followed by no painful symptoms 543.

Susceptibility of, to pain makes it desirable to minimise experiments on, 607.

Municipal and magisterial experience of, 507.

Number of experiments witnessed by, G. D. Thane, 563-4, 1234-6.

Pain:

Animals' susceptibilities to, varies with their intelligence 606, 671-2, 747-50.

Indications of, in animals 550, 580-4, 714.

Majority of experiments involve no, 577-9.

Painful experiments, 541-3.

Prolonged nature of some experiments 692-5.

Prosecutions, law of, different in Scotland and England, 589-91.

Recommendation of Association for Advancement of Medicine by Research not necessarily accepted by inspector 683.

Registered Places:

Appointments as to visits to, rarely made 533.

Instructions from Dr. Poore as to visits to, 529-30.

Minimum number of visits to, 605.

No obstacles in way of inspection of, 530.

Number of, in witness's district, 595.

Number of visits to, 530-1.

Unlicensed experiments cannot take place in, without inspector's knowledge 587-8.

Repetition of experiments for testing results, 574.

Report as to grafting of kidney or blood vessels in neck of dog, 685-6.

Report of, independent of that of Association for Advancement of Medicine by Research, 525-7.

Students, majority do not study abroad and few research scholarships given 704-7.

Unlicensed experiments in Scotland, allegations as to, unfounded 586.

Vivisection Act, 1876:

Administered carefully 513.

Legitimate research not hampered by, 566.

No wilful violation of, experienced 585.

"Pain" interpreted in wide sense throughout, 515.

References W. P. Byrne, G. D. Thane, 32-33, 133, 319, 339, 1434.

RUSSELL, tables showing case mortality from diphtheria in before and after employment of antitoxin treatment C. J. Martin, 11711.

RUTHERFORD, W., M.D.:

Evidence of, before Vivisection Commission, 1875, as to insensibility of animals to pain S. F. Smith, 13054.

Evidence of, before Vivisection Commission, 1875, as to unanesthetic powers of morphia S. F. Smith, 13317.

Experiments by, as to action of amyl nitrate led to its use as remedy for angina pectoris Sir L. Brunton, 6888-97.

Tracheotomy not performed before administration of anesthetics by, J. Lorrain Smith, 18431-2.

Tracheotomy performed before anesthetics were administered in laboratory of, Col. E. Lawrie, 16801-7, 16838-53.

ST. ANDREWS, Gatty Marine laboratory at, reference *G. D. Thane*, 344.

ST. BARTHOLOMEW'S HOSPITAL:

Laboratory at, formerly rented by Local Government Board *W. H. Power*, 4411.

Local Government Board investigator's work at laboratory of, *W. H. Power*, 4284.

Slavo's anthrax serum employed at, *H. Morris*, 7868-9.

ST. LADISLAUS HOSPITAL, Buda-Pesth, table showing case mortality from diphtheria at, before and after employment of antitoxin treatment *C. J. Martin*, 11711.

ST. PETERSBURGH HOSPITAL, Rauchfuss, Russia, table showing case mortality from diphtheria in, before and after employment of antitoxin treatment, *C. J. Martin*, 11711.

ST. MARTIN, ALEXIS, case of, *E. H. Starling*, *Sir L. Brunton*, *Sir V. Horsley*, 3470, 7028, 15686.

SALOMONSEN, experiments of, re cause of caseous pneumonia *C. J. Martin*, 11646.

SANARELLI, work of, in connection with yellow fever unsubstantiated *W. Osler*, 16611-14.

SANDERSON, *Sir J. Burdon*, M.D., F.R.S.:

Demonstration experiments to students strongly advocated by, *Sir V. Horsley*, 15607-11.

Formerly medical inspector and investigator for Local Government Board *W. H. Power*, 4300.

Opinions of, with reference to origin of tuberculosis *W. H. Power*, *C. J. Martin*, 4458, 4462, 12206-8.

Use of handbook by, in Oxford laboratories *C. R. J. A. Swan*, 19259-61.

References, *W. H. Power*, *S. F. Smith*, 4413, 13049.

SAVORY, *Sir W.*, Listerian methods of surgery opposed by, *G. G. Bantock*, 14752-4, 15080-2.

SAVOY, endemic cretinism in, *W. Osler*, 16691-3.

SCARLET FEVER:

Bacillus of, not yet discovered *Sir R. D. Powell*, *C. J. Martin*, 5666-71, 11905.

Case mortality of, reduced in Metropolitan Asylums Board hospitals *Sir R. D. Powell*, 5666-71.

SCHÄFER, E. A., LL.D., Sc. D., F.R.S., Professor of Physiology at Edinburgh University, Royal Society of Edinburgh, 9980-10250.

Adrenalin discovered by means of experiments of, *E. H. Starling*, *A. R. Cushny*, 3442, 3555-60, 4808-9, 10083-4.

Anæsthetics:

Complete unconsciousness always secured during experiments 10047-53.

Completeness of, secure against all pain 10069-71A.

Measures taken to resuscitate animal if anæsthesia is pushed too far 10072-82.

Nature of, generally used 10228.

Purposive movements and cries of animals under, do not occur in experiments 10213-21.

Sensation disappears before power of movement, 10222-4.

Animals after experiments might be removed from laboratory to registered place in country 10247-9.

Antiseptic surgery and aseptic surgery, distinction between, and definition of Listerism 10141-51.

Certificate held by, confusion as to actual signatory of, *Hon. S. Coleridge*, 10580-99, 11092-7.

Certificates:

B:

Animals experimented on under, might be kept outside laboratory 10173-8.

Conditions illegally assumed by successive Home Secretaries to modify character of, 10172.

Delay in granting, 10172.

Inspector's opinion should not override advice of authorities recommending grant of, 10172.

SCHÄFER, E. A., LL.D., Sc. D., F.R.S.—cont.

Chloroform:

Atropin counteracts any fatal effects of, in dogs 10088, 10152-4, 10229-31, 10238-40.

Noises made by animals under, do not indicate pain 10226-7.

Cold-blooded animals should not be included in Act 10187-8.

Continuance of experiments necessary 10132.

Curare infrequently used, but apparatus employed for administering chloroform in case of its use 10086-7.

Demonstration experiments:

Advocated, and as to status of students attending, 10155-70.

Necessary, for students to be properly impressed with fundamental physiological facts 10003-10009, 10017-30, 10209-12.

Students show no levity at, 10013-16, 10209-12.

Directions for Class Work in Practical Physiology by, shows lack of humane teaching *Miss Lind-af-Hageby*, 7223.

"Drowning" experiments performed by:

Choice of dogs, reasons for, *Sir J. Russell*, *E. H. Starling*, 739-40, 4039-40.

Home Office condemned for permitting, *Hon. S. Coleridge*, 10915-37.

Home Secretary petitioned to prohibit, *J. Hughes*, 17218.

Number of dogs used and value of new resuscitatory methods arrived at 10106-10, 10194-201.

Object of, *Sir J. Russell*, *G. D. Thane*, *E. H. Starling*, 687-91, 1749-51, 3569-84.

Object of, now attained and unnecessary to repeat experiments *E. H. Starling*, 4078-81.

Questions asked in House of Commons as to, *Hon. S. Coleridge*, 11049-53.

Strongly disapproved of, *Hon. S. Coleridge*, *J. Hughes*, 10264-5, 17498-504.

Undertaken with view to determine exact effect of death by drowning and best method of resuscitation 10104-5.

Drugs, testing of, on animals necessary 10202-8.

Evidence of, before Vivisection Commission, 1875, showed callousness with regard to experiments on frogs *Miss Lind-af-Hageby*, 9430.

Experiments on brain performed by, reference 10111-16.

Experiments performed by, on action of chloroform described in Report of Suspended Animation Committee 10089-101.

Frogs:

Always "pithed" before experiments and nature of "pithing" 10055-8.

Decerebration of, destroys all consciousness to pain 10063-7, 10232-5.

Legal restriction of experiments, no further, should be imposed 10172.

Letter from, as to "incomplete anæsthesia" *Hon. S. Coleridge*, 10308-11.

Licences:

Exclusion of physiologists from obtaining, on ground of no medical qualifications would be ridiculous 10192-4.

Justifiable to permit Home Secretary to impose conditions on, 10241-6.

Monkeys:

Analogy between men and, close enough to make experiments valuable 10126.

No sign of pain after operations shown by, 10127-31.

Morphia, sufficient dose of, entirely removes consciousness to pain 10189.

New surgical operations require to be tested on animals before attempting them on human beings 10031-46.

No disregard of animal suffering among physiologists 10172.

Royal Society of Edinburgh:

Constitution and work of, 9983-8.

Evidence on behalf of, 9997-10002.

Resolution submitted by, 9990-5.

SCHÄFER, F. A., LL.D., Sc. D., F.R.S.—*cont.*

- Simple inoculations might be done by laboratory assistant 10180-6.
 Suprarenal extract, discovery of active principle of, 10250.
 Witness before previous Commission and correction of evidence therein as to possibility of studying heart and circulation with removal of brain 10060-3.
 References *G. D. Thane, S. F. Smith, Sir V. Horsley*, 1300, 13049, 15688.

SCHÄFER'S SPLEEN BOX, used for applying plethysmographic observation to liver *Mrs. K. Cook*, 1800.

SCHANDIN, syphilis investigations by, *C. J. Martin*, 12235.

SCHARLIEB, Dr. H. J., investigations on action of chloroform, by, *E. A. Schäfer*, 10088.

SCHARPI, Dr., reference *Sir L. Brunton*, 7019.

SCHARTAU, Miss Leiza K., co-author of *The Shambles of Science* with Miss Lind-af-Hageby *G. D. Thane, E. H. Starling*, 1280, 3545, 3552-3.

SCHERCK, Dr., paper by, re value of tetanus antitoxin in America *H. Morris*, 7740.

SCHMIDT, digestive processes, knowledge obtained by experiments of, *Sir L. Brunton*, 7028.

SCHMIEDEBERG:

- Experiments by, with regard to action of digitalis and paraldehyd *A. R. Cushing*, 4654-67, 4734-5.
 Urethane built up from formula invented by, 18889-92.

SCHROEDER, Von, caffeine discovered to be a pure diuretic by means of experiments on animals by, *A. R. Cushing*, 4813-4893.

SCHULZ, Professor, opinions of, as to desirability of testing drugs on human beings *A. R. Cushing*, 5240-2.

SCLAVO, anthrax serum derived by, *S. Stockman*, 3309-14.

SCOTLAND:

- Antitoxins not manufactured in, *Sir J. Russell*, 721-2.
 Prosecution, law of different in England and, *Sir J. Russell*, 589-91, 594.
 Sheep farming in, terribly hampered by prevalence of louping-ill and braxy *D. J. Hamilton*, 19996-20004.
 Unlicensed experiments in, charges as to, unfounded *Sir J. Russell*, 586.

SCOTT, ARTHUR GUILLUM, Chairman of the Royal Society for the Prevention of Cruelty to Animals, 19484-19851.

Anesthetics, all severely painful experiments should be carried out while animal is completely under, 19507-8.

"Brown Dog of Battersea," particulars of case suggest that pain was inflicted 19513-22, 19775-7.

Certificate B, subsequent pain attending operations under, and necessity of increase of inspectors 19792-7.

Mr. Coleridge's Bill, clause concerning qualifications of signatories to applications for certificates not considered 19556-8.

Cruelty defined as infliction of unnecessary and excessive pain 19743-55.

Cruelty, no specific cases of, to bring forward 19607-11, 19731.

Experiments justifiable, for purpose of curing disease or advancing knowledge 19783-6.

Experiments justifiable so long as they do not involve infliction of pain 19508-11.

Experiments under licence alone not objected to, 19710-11.

Inoculations not considered painful and therefore not objected to, 19527-38.

Inspectors:

Impracticability of requiring, to watch all possible painful developments of inoculation experiments, admitted 19702, 19708.

Insufficient number of, and they should be present at all painful experiments 19502, 19544-51, 19577-86, 19666-70, 19673-80, 19756-62, 19798-836, 19591-601.

SCOTT, ARTHUR GUILLUM—*cont.*Inspectors—*cont.*

Necessary qualifications of 19544-51.

Objection to second experiment upon animal after recovery from anaesthetic 19732-42.

"Painful Experiments":

Definition difficult, but they obviously occur 19512.

Should be prohibited except in presence of an inspector 19529-43.

Prosecution of licensee, necessity of obtaining Home Secretary's consent for, should be abolished 19559-67.

Regulation that animals must be kept in licensed place after experiment unnecessary 19837-9.

Royal Society for the Prevention of Cruelty to Animals:

Castration, a question not considered by, 19695-700.

Constitution and membership of, 19490-5.

Definition of cruelty as held by, 19631-4.

Evidence of, before previous Royal Commission 19602-5.

Object of, to prevent unjustifiable pain to animals 19642-660, 19686.

Prosecution of Dr. Abrath by, for advertising public exhibition of experiments 19568-75, 19681-5.

No cases of the practice of unnecessary cruelty in laboratories brought forward by, 19568, 19576.

Statement of, represents views of entire council 19486-8, 19628-30.

Sport not disapproved of, 19687-94.

Vivisection Act, 1876, supervision of experiments under, totally inadequate 19724.

SCOTT, Professor, Carmichael College, Dublin, Certificate C allowed to, against inspector's advice *Sir T. Stoker*, 794.

SCOTTISH SOCIETY FOR THE SUPPRESSION OF VIVISECTION, income of, *Hon. S. Coleridge*, 10260.

SECRETARY OF STATE, *see under* HOME SECRETARY.

SELIGMANN, Dr., Frimley heather licensed for grouse experiments by, *G. D. Thane*, 364.

SEMMELWEIS, no connection between Listerism and work of, *G. G. Bantock*, 14759-60.

Persecution of, in Vienna, *C. J. Martin*, 12202.

Puerperal fever, its infectious nature noted by, *C. J. Martin*, 11647.

SEMPLE, vaccine against typhoid devised by, *C. J. Martin*, 11793.

SEPTICEMIA, antiseptic precautions cannot be imposed in investigations of, *G. D. Thane*, 469-70.

SERUM THERAPY:

Antitoxins:

Anthrax:

Dr. Legge's testimony to success of, *H. Morris*, 7741-2.

Statistics of successful use of, in Japanese Army *H. Morris*, 7742-9.

See also Sclavo's serum below.

Character of all, essentially the same *W. H. Power*, 4557-61.

Cholera (Haffkine's):

Recommended by Local Government Board *W. H. Power*, 4310-12.

Successful use of, *W. H. Power*, 4324.

Tested before recommendation to local authorities *W. H. Power*, 4318-20.

Degree of success obtained by, in laboratory work not to be confidently anticipated in its application to human body *W. H. Power*, 4447-8, 4535.

Diphtheria:

Animals inoculated with, show as a rule no signs of suffering, *G. D. Thane*, 452.

Case mortality reduction undoubtedly due to use of, *Sir R. D. Powell, F. Taylor*, 5641 2, 5643.

SERUM THERAPY—cont.

Antitoxins—cont.

Diphtheria—cont.

- Composition of, possible improvements in *G. S. Woodhead*, 15470.
- Cost per unit of, *C. J. Martin*, 11836-43.
- Diminution of disease greatly due to use of, *G. S. Woodhead*, 15557-60.
- Discovery of, investigations leading to, *C. J. Martin*, 11652.
- General mortality, non-decrease in, may be due to relatively small use of, *Sir R. D. Powell*, 5716-18.
- Higher level of efficiency reached by, than by other curative agents *W. H. Power*, 4551-2.
- and Hydrophobia vaccine, distinction between principles of, *C. J. Martin*, 11920-2.
- Immediate application of, would abolish mortality *C. J. Martin*, *G. S. Woodhead*, 11763, 11766-91, 15540-5.
- Licence not required for preparation of, *G. S. Woodhead*, 15550.
- Local Government no longer manufacture, for curative purposes and enforce no test *W. H. Power*, 4508-10.
- Local Government Board recommends, and places supplies at disposal of local authorities without much resulting use *W. H. Power*, 4310-12, 4449-51, 4501-3, 4604.
- Loses its power after a time, and Local Government Board notification of such a fact to purchasers *W. H. Power*, 4504-6, 4562-7.
- Mortality of laryngeal cases affected by, *C. J. Martin*, 11730.
- No confidence in, owing to fallacy of statistics and errors in diagnosis *S. F. Smith*, 13422-34.
- No reliable figures, coinciding in time, of London cases treated with, and without *C. J. Martin*, 12252-6.
- Objection to, and to whole principle of serum therapy on humanitarian and hygienic grounds *Miss Lind-af-Hageby*, 9216-24.
- Objection to, based solely on its inutility, *G. G. Bantock*, 14930-4.
- Paralysing effect of, statement as to, untrue *Sir L. Brunton*, 7128-35.
- Paralysis caused by use of, *Miss A. Kenealy*, 6166-70.
- Paralysis following use of, statistics as to *C. J. Martin*, 12316-24.
- Procurable from most large chemists *W. H. Power*, 4539-40.
- Production and test of, require use of animals *G. S. Woodhead*, 15473-6.
- Reduced demand for, from Local Government Board, but great increase in general use of, *W. H. Power*, 4536-40.
- Speculative objections to, *S. F. Smith*, 13229.
- Statistics hardly point to beneficial effect of, *Hon. S. Coleridge*, 10755-8.
- Statistics relating to, fallacious *S. F. Smith*, 13359-65.
- Statistics showing curative value of, and conclusions drawn from such *C. J. Martin*, 11711-35.
- Statistics showing decrease in mortality due to use of, *W. H. Power*, *F. Taylor*, *G. S. Woodhead*, 4361-2, 5588-93, 15457-64, 15520-4, 15530-41.
- Statistics showing influence of early or late administration of, upon case mortality, and summary *C. J. Martin*, 11733-7.
- Study and preparation of, undertaken on behalf of Metropolitan Asylums Board *G. S. Woodhead*, 15449-54.
- Success of, and reliability of bacteriological diagnosis afforded by use of, *C. J. Martin*, 11985-12030.
- Successful use of, in Cambridge outbreak *G. S. Woodhead*, 15528-9.

SERUM THERAPY—cont.

Antitoxins—cont.

Diphtheria—cont.

- Use of, averts serious symptoms *Sir R. D. Powell*, 5705-14.
 - Use of, based on proof that the Klebs-Loeffler bacillus is cause of disease *G. S. Woodhead*, 15512-18.
 - Use of, in Metropolitan Asylums Board hospitals has probably greatly reduced mortality *W. H. Power*, 4387-91, 4632-8.
 - Value of, as curative agent *W. H. Power*, *F. Taylor*, *Sir R. D. Powell*, *Sir L. Brunton*, *C. J. Martin*, *J. Glaister*, *G. S. Woodhead*, *J. R. Bradford*, 4322, 5744-6, 5813, 7128-35, 11739, 12356-7, 13018-23, 15465-9, 15470-1, 15546-9, 17718-21.
 - Valueless, and opinions supporting this view, *Miss Lind-af-Hageby*, 9675-88.
- Dysentery:
- Not used to any great extent in India *C. J. Martin*, 12031.
 - Practical value of, predicted *C. J. Martin*, 11764.
 - Preventive and curative properties in animals, possessed by, but no extensive data as to its value in man yet available *C. J. Martin*, 11755-9.
- Enteric fever, not altogether satisfactory *W. H. Power*, 4432.
- Expectations of perfecting efficiency of all, *W. H. Power*, 4553.
- Experiments in connection with testing of, involve no pain except that which may be caused by disease consequent upon inoculation *W. H. Power*, 4554-6.
- Homeopathic preparation of, *G. H. Burford*, 8997-8.
- Local Government place supplies of, at disposal of local authorities *W. H. Power*, 4437-40.
- Manufacture of, not carried out in Scotland, but procured from England *Sir J. Russell*, 721.
- Pneumonia, not popular, *C. J. Martin*, 11969.
- Rinderpest:
- Preparation of, *Major L. Rogers*, 8282-98.
 - Protective, but not curative, *Major L. Rogers*, 8280-1.
- Standardisation of, necessary *G. D. Thane*, 356-8.
- Tendency of medical mind to be diverted to study of, *Miss A. Kenealy*, 6261-3.
- Tetanus:
- Criticism of Mr. Paget's statements as to use of, 13132-5.
 - Curative powers of, doubtful and expensive nature of, *S. Stockman*, 2644-9, 3276-9.
 - Evidence as to efficacy of, *S. Stockman*, 3289-92.
 - First used for curative purposes, and length of immunity conferred by, *S. Stockman*, 3296-3302, 3384A.
 - Has not fulfilled expectations *S. F. Smith*, 13132-5.
 - Immediate application of, a certain remedy *C. J. Martin*, 11760-2.
 - Immunity conferred by, *S. Stockman*, 2830-4, 3384A.
 - Injected in castration, docking and other surgical operations *S. Stockman*, 3281-2, 3287.
 - Inoculations followed by no bad effects and duration of immunity conferred by, *S. Stockman*, 2975-80.
 - No danger from, and symptoms produced by, *Major L. Rogers*, 8199-201.
 - Production of, no pain involved *C. J. Martin*, 12065-70.
 - Prophylactic, chiefly *C. J. Martin*, 11970-6, 12038-49.
 - Protective nature of, opinion based on statistics *S. Stockman*, 3280.

SERUM THERAPY—cont.

Antitoxins—cont.

Tetanus—cont.

Standardising of, not difficult *S. Stockman*, 3293-5.

Value of, as a curative and prophylactic agent, *C. J. Martin*, 11740-54.

Valuable immunising properties of, and statistics as to its use in America *H. Morris*, 7851-64.

Typhoid:

17th Lancers inoculated with, and successful results *Col. D. Bruce*, 14528.

Statistics showing incidence of disease not diminished by use of, *S. F. Smith*, 13109-13.

See also Wright's Anti-Typhoid Vaccine below.

Anti-Venins:

Calmette's testimony to success of, *Sir R. D. Powell*, 5678-83, 5719-21.

Chemical evil of snake poison obviated by, *Major L. Rogers*, 8150-3.

Cobra:

Discovery and use of, *Major L. Rogers*, 8034-9.

Useless against viperine and other snake poisons, *Major L. Rogers*, 8034, 8157-9.

Discovery of all, due to experiments *Major L. Rogers*, 8117-20.

Experiments with view to discovery of, hindered by conditions of Vivisection Act *Sir L. Brunton* 6833-8.

Horses immunised by injection of, *Major L. Rogers*, 8143-5.

Intravenous injections of, more efficient than subcutaneous, *Major L. Rogers*, 8207-10.

Practical use of, small until polyvalent serum can be obtained *Major L. Rogers*, 8211.

Commercial aspect of, *Sir G. Kekewich*, 10494-516.

Haffkine's Plague Vaccine:

Discovery and statistics as to use of, *C. J. Martin*, 11792.

as to Effect of, in preventing spread of disease *C. J. Martin*, 11925-39.

Egyptian Plague Commission opposed to use of, as prophylactic *Sir G. Kekewich*, 20485-90.

Encouraging results of use of, *W. H. Power*, 4329-31.

Experience in this country of, small but Indian statistics of its value, as preventive *W. H. Power*, 4570-2.

Gradual inoculation with, involves no discomfort *C. J. Martin*, 12097-102.

Impurity of, *Col. E. Lawrie*, 17107.

as to Inefficacy of, and results of inoculations at Byculla jail *Sir G. Kekewich*, 20640-75.

Inefficacy of, for conferring permanent immunity *Sir G. Kekewich*, 20861-7.

Investigations in connection with, *C. J. Martin*, 12080-95.

Local Government Board recommend use of, *W. H. Power*, 4311-12.

Local Government Board report on nature of, *W. H. Power*, 4301.

Misgivings with regard to, on account of its carbonic acid element *W. H. Power*, 4441.

Not altogether satisfactory *W. H. Power*, 4432.

Precautions taken as to purity and strength of, *C. J. Martin*, 12071-3.

Preparation of, *W. H. Power*, 4590.

Preparation of, suffering caused in *Sir G. Kekewich*, 20471.

Prophylaxis conferred by, no accurate data as to, *C. J. Martin*, 12128-33.

Success of, on rat gave assurance of considerable efficacy if administered to men *W. H. Power*, 4366-7.

Tetanus following use of, at Malkowal, India *C. J. Martin*, 12295-9.

Tetanus, its occurrence with use of, in India explained *W. H. Power*, 4435-6, 4500.

Use of, *F. Taylor*, 5597-9.

SERUM THERAPY—cont.

Haffkine's Plague Vaccine—cont.

Use of, in India has propagated disease and contributed to unrest *Sir G. Kekewich*, 20472-5, 20485, 20621-31, 20671-5.

Valuable influence of, in checking spread of plague in India and statistics *C. J. Martin*, 12300-310.

Pasteur's treatment for hydrophobia:

Case against, founded on contention that statistics as to, are fallacious *S. F. Smith*, 13136-212, 13154-213, 13400-21.

Opposition to, *Miss Lind af Hageby*, 9712-15.

Success of, *Sir L. Brunton*, 7147-57.

Plague Prophylactics:

Haffkine's, see Haffkine's Plague Vaccine above.

Local Government Board procedure in recommending, *W. H. Power*, 4369.

New, not as yet used on human beings in this country, and further experiments desirable before adoption, *W. H. Power*, 4443.

Use of, other, than Haffkine's, *C. J. Martin*, 11939-41.

Principle of, objected to, as useless and immoral *Miss A. Kenealy*, *Miss Lind af Hageby*, 5356-71, 5418, 6171-51, 6355-67, 6369-75, 6392-411, 6564-77, 9347-53, 9717-18.

Selavo's serum for anthrax, *S. Stockman*, *H. Morris*, 3309-12, 7868-70.

Sera and vaccines should be prepared by a Government institute *G. D. Thane*, 1355, 1358-64.

Serum production not under control of Act *G. D. Thane*, 1444-6.

Serum production, precautions taken in, *G. D. Thane*, *C. J. Martin*, 1348-53, 11696-710.

in Suppuration and Blood Poisoning, criticisms of Mr. Paget's statements as to, *S. F. Smith*, 13121-9.

Swine erysipelas, nature of preventive serum, *S. Stockman*, 2556-67.

Swine fever, preventive inoculation against, *S. Stockman*, 2752-6, 2824-8.

Testing of sera, not a Government responsibility *G. D. Thane*, 1377-81.

Tuberculin, see that title.

Tuberculosis, marmoric serum for, still under trial see also Tuberculin *Sir R. D. Powell*, 5804-5.

Vaccination against smallpox, see that title.

Wright's Anti-typhoid vaccine:

Local Government Board do not recommend, *W. H. Power*, 4433-4.

Use of, and statistics as to success *C. J. Martin*, 11793-813, 11942-6, 11952-7.

17TH LANCERS, successfully inoculated with anti typhoid serum *Col. D. Bruce*, 14528.

SEWELL, A. E., F.R.C.V.S.:

Morphia not an anæsthetic for dogs stated by, *Miss Lind af Hageby*, 7316.

Reference *Miss Lind af Hageby*, 9736.

SHAFTESBURY, LORD, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

SHAKESPEARE:

Writings of, support anti-vivisectionists *Rev. L. S. Lewis*, 8726.

Reference *J. W. Graham*, 5887.

SHARPE, H. S., Keble College, Oxford:

Apology from, with reference to charges against Mr. Gotch made in letters to Mr. Coleridge *F. Gotch*, 13668-701.

Letters from, describing howling of animals in University Museum, Oxford, and charges against Mr. Gotch brought by, *Hon. S. Coleridge*, 11444-67.

References, *Hon. S. Coleridge*, 19861, 19862.

SHARPEY, DR., reference *Sir L. Brunton*, 7019.

SHARPEY, PROFESSOR, statement by, as to needlessness of repeating experiments with regard to functions of spinal nerves, *E. H. Starling*, 3847-50.

SHATLOCK, DR. S., typhoid bacilli found in blood of horse by, Miss A. Kenealy, 6559.

SHAW, The late ALEXANDER, reference H. Morris, 7901.

SHAW, C. E., M.D., M.A.:

Allegations re jequirity experiments performed by, untrue J. Lorrain Smith, 18402-23.

Circumstances suggesting no licence was held by, for jequirity experiments on eye of rabbit Hon. S. Coleridge, 10481-513.

Cruelty of jequirity experiments on rabbit's eye performed by, and without licence J. W. Graham, 5849-55, 6044-6, 6641-2.

Jequirity experiments performed by, in connection with study of sympathetic ophthalmia Sir H. R. Swanzy, 9921-8.

References, 11137, 11150.

SHEEP DISEASES:

All, are acute febrile diseases D. J. Hamilton, 20250-3.

Bactericidal properties of sheep's blood introduce a most confusing element into problem of discovering prophylactic for, D. J. Hamilton, 20166-70.

Black quarter diagnosed frequently as braxy, and remedy for latter disease does not meet case of, D. J. Hamilton, 20112-3.

Board of Agriculture experiments in connection with investigation of, D. J. Hamilton, 20114-7.

Braxy:

and Anthrax possibly related D. J. Hamilton, 20146.

Average percentage of deaths from, in years 1901-3 D. J. Hamilton, 20119-20.

Bacillus of, discovered by Nielsen and corroborated by experimental investigation D. J. Hamilton, 20033-9, 20331-9.

Bacillus of, revealed by microscopical examination D. J. Hamilton, 20140-2.

Bacillus of, voided in soil D. J. Hamilton, 20130-2.

Better fed sheep are more susceptible to, D. J. Hamilton, 20291.

Essentially a disease of first year sheep, and hence suggestion that immunity is acquired through some agency in the soil D. J. Hamilton, 20059-63, 20219-20.

Experiments in connection with investigation of, G. D. Thane, 1141-4.

Experiments with preventive remedy discovered showed that death of drenched animals was not due to, D. J. Hamilton, 20134-7.

Failure of certain subcutaneous inoculations of, to produce immunity D. J. Hamilton, 20247-8.

Immunity from, conferred by preventive treatment generally lasts the lifetime D. J. Hamilton, 20183-4.

Lambs immune to, while suckling D. J. Hamilton, 20280-4.

Mortality from, considerably lower among drenched than undrenched sheep D. J. Hamilton, 20226.

Not primarily a blood disease, and therein differs from anthrax D. J. Hamilton, 20250A-6.

Origin and meaning of name, D. J. Hamilton, 20041-2.

Other diseases often diagnosed erroneously as, D. J. Hamilton, 20171.

Period of incubation D. J. Hamilton, 20293.

as to Risk in eating carcasses of animals that have died from, D. J. Hamilton, 20353-5.

Symptoms of malignant oedema often mistaken for, and hence results of preventive methods vitiated D. J. Hamilton, 20162.

Symptoms of, not in the least similar to those of ptomaine poisoning D. J. Hamilton, 20272-3.

as to Weather effects on outbreaks of, D. J. Hamilton, 20292.

Clinical investigation had failed to discover cause of, D. J. Hamilton, 20214-5.

Conditions of pens or folds as affecting, D. J. Hamilton, 20295-301.

SHEEP DISEASES—cont.

Cure for, not claimed to have been discovered, but preventive remedy obtained D. J. Hamilton, 20127-9.

Date of first drenching methods adopted D. J. Hamilton, 20181-2.

Departmental Committee appointed to investigate, D. J. Hamilton, 19990-5.

Distinction between different, sometimes confused D. J. Hamilton, 20154, 20268.

Essential that experiments should be performed where the disease is found, and not in laboratory G. D. Thane, D. J. Hamilton, 373-3, 20207-8.

Experimental investigations pursued have been approved in Scotland D. J. Hamilton, 20196-200.

Experiments in connection with, all conducted under licence D. J. Hamilton, 20122.

Experiments in connection with, were inoculations and caused no pain D. J. Hamilton, 20118.

Experiments with object of obtaining immunisation from, and remedy arrived at D. J. Hamilton, 19987-9, 20056-8, 20064-83.

Farmers have given every encouragement to drenching method of immunisation D. J. Hamilton, 20230.

Immunisation from, secured by drenching throats of animals and success of remedy in particular instance D. J. Hamilton, 20083-110, 20185-94, 20238-47.

Inoculation with bacilli of, attended with risk, but its administration by drenching process at proper season of year safe D. J. Hamilton, 20311-14.

Inoculation with virus of, produced all the symptoms of the disease D. J. Hamilton, 20233-4, 20269-70.

Louping Ill:

Bacillus of, not found by microscopical examination, but invariably discovered after incubation of peritoneal liquid D. J. Hamilton, 20259-61.

Best mode of investigating, was by allowing animal to die and examining peritoneal fluid D. J. Hamilton, 20179-80.

Caused by specific bacillus inhabiting intestine and method of its spread D. J. Hamilton, 20029-32.

Derivation of name, D. J. Hamilton, 20279.

Experiments in connection with investigation of, G. D. Thane, 1141-4.

Experiments to test theory that ticks communicated, were negative except in instance where tick was swallowed D. J. Hamilton, 20174-8.

First investigations into, carried out in valley of the North Tyne D. J. Hamilton, 20006-7.

Inoculations of blood and cerebro spinal fluid produced negative results D. J. Hamilton, 20016-19.

Liquid in peritoneal cavity of sheep suffering from, injected into healthy animals with fatal results D. J. Hamilton, 20020-8, 20212.

Post-mortem examinations revealed nothing as to cause of, D. J. Hamilton 20012-16, 20126.

Pyemia, no evidence of D. J. Hamilton, 20262-6.

Symptoms and fatal results of D. J. Hamilton, 20008-11.

Mortality statistics not always reliable owing to difficulty of differentiating between, D. J. Hamilton, 20340-8.

Popular remedies for, quite useless D. J. Hamilton, 20050-3.

Prevalency of, and disastrous effects on sheep farming in Scotland D. J. Hamilton, 19996-20004.

Prophylactic acting simultaneously against all, as to possibility of discovering, D. J. Hamilton, 20147-9, 20163-4.

Prophylactic, its preparation and as to charge for its distribution D. J. Hamilton, 20350-1.

Prophylactic method of drenching not new, D. J. Hamilton, 20320-4.

Prophylactic treatment, how suggested D. J. Hamilton, 20329-30.

Prophylactic treatment, its general success D. J. Hamilton, 20349.

Romney Marsh outbreak, uncertainty as to specific nature of, D. J. Hamilton, 20155-9.

SHEEP DISEASES—cont.

Several contagious, between which it is necessary to discriminate by bacteriological investigation *D. J. Hamilton*, 20139, 20143-5.

Sheep-pox:

Alleged discovery of its cause invalid and organism not yet identified *S. Stockman*, 2732-3A.

Experiments upon pathology of, *Sir J. Russell*, 575-6.

SHERRINGTON, PROFESSOR:

Address to chemists and druggists by, and alleged subsequent illegal exhibition of experiments *Hon. S. Coleridge*, 10330-70.

Brain experiments by, and their value *E. A. Schäfer*, 10009.

Chemist and Druggist case, action in, *Hon. S. Coleridge*, 10330-70.

Experiments by, alleged cruelty *Mrs. K. Cook*, 1793, 1910, 2083-5.

Exhibition of rabbit with ligature round optic nerve by, *Mrs. K. Cook*, 1793.

Experiments in connection with brain localisation by, *E. A. Schäfer*, 10112.

Experiments on nerves by, of great value *H. Head*, 17836-65, 17926-7, 17971.

Physiological classes of, *F. Gotch*, 13820-1.

References *Miss Lind-af-Hageby*, *F. Gotch*, 7411, 13575.

SHIGA, bacillus of bacterial dysentery first isolated by, *C. J. Martin*, 11755.

SHIPMAN, DR., question asked in House of Commons by, *re Hon. S. Coleridge*, 10559-64.

SHORE, L. E., M.D., Lecturer on Physiology at Cambridge University, 19428-19483:

Anæsthesia, personal experience of, resulting in conclusion that painful sensation is first to be abolished under, 19479-81.

Chloroform:

Cross circulation experiments performed by:

Circumstances attending performance of, laboratory assistant's evidence, *W. Hall*, 21581-35.

Dogs insufficiently anæsthetised in, morphin alone being given, *Lieut.-Col. Laverie*, *Sir G. Kekewich*, 16810-21, 16922, 16969-74, 20457-62, 20966-21372.

Object of, circumstances attending, and contradiction of allegations re cruelty of, *L. E. Shore*, *H. K. Anderson*, *W. H. Gaskell*, 19430-1, 19437-63, 19472-7, 21636-704, 21373-580.

SHUTTLEFAST FARM, municipal laboratory at, *G. D. Thane*, 342.

SIBSON, DR., evidence of, before previous Royal Commission as to insensibility of animals to pain *S. F. Smith*, 13049-56.

SIMON, experiments on human beings by, *E. H. Starling*, 3899-901.

SIMON, SIR J., late Medical Officer of the Local Government Board:

Caution by, to investigators employed by Local Government Board against engaging in painful experiments *W. H. Power*, 4419-22.

Experiments under a Government Health Department first instituted by, *W. H. Power*, 4405-8.

Explanatory minute by, as to functions of Local Government as regards experiments *W. H. Power*, 4299.

SIMON OF HEIDELBERG, kidney removed from dog by, previous to performing similar operation upon female patient *H. Morris*, 7786-8.

SIMPLE CONTINUED FEVER, decrease in prevalence of, in Malta after adoption of preventive measures *Col. D. Bruce*, 14381-93.

SIMPSON, PROFESSOR, anæsthetic properties of chloroform discovered by, *Sir L. Brunton*, 7118-9.

SIMPSON, SIR J. Y., M.D., D.C.L., action of drugs investigated by, *A. R. Cushny*, 5149.

SKOLBERG, MR., measures adopted by, in treatment of pneumonia *Sir L. Brunton*, 7176.

SLADE SCHOOL OF ART, memorial presented to University College by students of, concerning hindrance to studies caused by cries of vivisected animals: *Miss A. L. Woodward*, 8824, 8856-61.

SLEEPING SICKNESS:

Anatomical change in brain brought about by, *Col. D. Bruce*, 14329-35.

Blood and cerebro spinal fluid of natives suffering from, found by microscopical examination to contain the suspected trypanosome *Col. D. Bruce*, 14324, 14500-1.

Blood of natives outside area of, examined and found free from trypanosomes *Col. D. Bruce*, 14324-5.

Cerebro spinal fluid in investigation of, examined because of effect of, on nervous system *Col. D. Bruce*, 14326-9.

Cerebro spinal fluid of natives suffering from, injected into animals and resulting symptoms were those of, *Col. D. Bruce*, 14325-9.

Claim put forward for a streptococcus as cause of, previous to discovery of trypanosome *Col. D. Bruce*, 14424-30.

Emaciation, not caused by, *Col. D. Bruce*, 14516-7.

Experiments in connection with the distribution of, by tsetse fly were valuable and essential, *Col. D. Bruce*, 14351-9.

Experiments on monkeys absolutely necessary in the investigation of, *Col. D. Bruce*, 14350-1.

Experiments on rats and rabbits in connection with investigation of, *G. D. Thane*, 1311-12.

Experiments proving that tsetse flies are carriers of, and as to distribution of the disease *Col. D. Bruce*, 14335.

Filaria perstans at one time asserted to be cause of, *Col. D. Bruce*, 14431-5.

Investigations into, on west coast of Africa, *Col. D. Bruce*, 14321-9.

Khartoum dog, case of, *C. J. Martin*, 12137-40.

Monkeys inoculated with, do not undergo pain *Col. D. Bruce*, 14514-5.

Monkeys inoculated with blood of persons suffering from, and disease thereby produced *Col. D. Bruce*, 14502-5.

Parasite in, closely related to malarial parasites and easily affected by drugs *Col. D. Bruce*, 14319-20.

Previous investigations of, especially by Portuguese *Col. D. Bruce*, 14321.

Reasons justifying conclusion that trypanosome is cause of, *Col. D. Bruce*, 14329-35.

Royal Society, investigations into, *Lord Rayleigh*, *Col. D. Bruce*, 5557, 5567-8, 14315, 14321.

Suggested remedies for, and as to their value *Col. D. Bruce*, 14318.

Tsetse fly not cause of, *G. G. Bantock*, 15032-5.

SMALLPOX:

a Bacillus not cause of, *G. G. Bantock*, 14545-6, 14636-8, 14897-902.

Local Government Board have not of late years experimented with view to inoculating cows with, *W. H. Power*, 4483.

No specific bacillus of, yet discovered *Sir R. D. Powell*, *C. J. Martin*, 5656-71, 11904.

Vaccination against, see VACCINATION AGAINST SMALLPOX.

SMIDOVICH, DR.:

Experiments on human beings with syphilis quoted by, *J. H. Levy*, 18543-5.

Quotation from book of, with reference to necessity of being indifferent to animal suffering *J. H. Levy*, 18497, 18538-9.

Reference *J. H. Levy*, 18643-5.

SMITH, DR. G., diphtheria outbreak at Cambridge controlled by precautionary methods and use of anti-toxin by, *G. S. Woodhead*, 15528-9.

SMITH, J. LORRAIN, M.A., M.D., Professor of Pathology in the Victoria University, Manchester, Pathological Society of Great Britain and Ireland: 18168-18462.

SMITH, J. LORRAIN, M.A., M.D.—*cont.*

Anæsthesia maintained throughout all cutting experiments, and no cruelty ever witnessed 18280-3.

Arterial sclerosis :

Experiments on animals justifiable in order to define cause of, 18435-6.

Discovery that adrenalin will cause, gives means of studying development of, 18288-96.

Investigation of, especially demands experimental methods 18236.

Not yet known whether that induced by adrenalin in animals is similar to that found in human beings 18436-9.

Certificates A and B held by, 18362-7.

Certificate B, anæsthetics used throughout experiment under, 18368-9.

Difficult to say whether identical disease found in diseased animal can be induced in another animal 18437-8.

Diphtheria, diagnosis of, in guinea-pig after inoculation possible within forty-eight hours 18449-51.

Experience of, in experimental work 18328.

Experiments in connection with investigation of conjunctivitis performed by, 18215-26.

Experiments on animals necessary to test conclusions arrived at by study of morbid anatomy 18310-11.

Jequirity experiments performed by, on behalf of Dr. Cecil Shaw, and explanation of case 18402-423.

Joint diseases :

Research into, especially requires experimental investigation 18267-74.

Rheumatoid arthritis, nothing definite with regard to, has yet been discovered 18457.

Licences, further restrictions in obtaining, would hamper research 18277-8.

Manchester, steps taken in, to test milk and diminish tuberculosis approved by medical officer of health 18344-7.

Manchester University :

Demonstration experiments not performed at, but would be very valuable 18424-8.

Mr. Graham did not give evidence on behalf of, 18372-9.

Public Health Laboratory, diagnosis experiments conducted in, nature of investigations and animals used 18175-209.

Statement as to general views of, 18174.

Nervous diseases :

Due to a form of tissue degeneration and advance in knowledge concerning cause of, owing to experiments 18262-7.

Experimental research bearing upon cause and possible prevention of, 18312-19, 18388-90.

Pathological investigation requires direct observation in early stages of disease, and hence necessity of recourse to experimental methods 18235-6.

Pathological Society of Great Britain and Ireland ; Evidence on behalf of, 18172.

Membership and aims of, 18228-35.

Pneumonia :

Caused by submitting animal to atmosphere of pure oxygen 18239-42, 18297-303.

Discovery by experimental methods of non-bacterial agent causing, 18238-42.

Fact that excess of oxygen can produce, implies caution as to its use in treatment 18304-9.

That caused by oxygen is progressive, and tends to fatal issue though germ free 18340-3.

Professional and hospital work of, 18370-1.

Ptomaine poisoning :

Animal experimentation is surest method of diagnosing, 18227.

Condition of animal suffering from, 18444-8.

SMITH, J. LORRAIN, M.A., M.D.—*cont.*

Starvation experiments :

Conducted for purpose of investigating fatty degeneration of the heart 18242-62, 18440-3. Knowledge acquired from, has borne upon treatment for fatty degeneration of heart 18391-401.

Performed in Germany, and no similar investigations in this country 18320-5.

Tracheotomy never performed on animal before administration of anæsthetics to knowledge of, 18431-2, 18460-1.

Tuberculosis :

Diagnosis of, after inoculating guinea-pig possible within six weeks 18452.

Inoculation experiments have successfully detected existence of, in cows in Manchester 18353-7.

Microscopical examination of milk unreliable, and fails to discover bacilli of, 18349-51.

Unnecessary to give further publicity to names of those engaged in experimental work 18329.

Vivisection Act, 1876 :

Anti-vivisectionist's statements regarding cruelty and pain inflicted under, are misrepresentations of fact 18330-7.

No objection to, 18275-6.

No violation of, ever witnessed 18326-7.

PRE-SMITH, DR., reference, *S. F. Smith*, 13049.

SMITH, STEPHEN FRANCIS, M.R.C.S., 13030-538.

Anæsthesia :

Disbelief in statements that movements of animals under, may be reflex actions 13469-72.

Reasons for supposing sharp dividing line between consciousness and, 13082-3.

Anæsthetics more difficult to administer to dogs than to human beings 13082.

Anti-vivisection Hospital :

Origin of name 13033-7.

Personal appointment at, and size of staff 13476-80.

Sera or antitoxins not used in, 13473-5.

Anthrax, bacteriological origin of, admitted 13446.

Curare :

Admissions before last Royal Commission as to experiments performed under, 13054.

All indications of anæsthesia are absent under, 13084-98.

Anæsthesia is impossible in curarised animals and as to general use of, 13498-504, 13519-26.

Experiments in which it was used 13068-77.

Pain intensified by, 13078-82, 13295-302.

Proportion of experiments reported in *Journal of Physiology*, in which is used, 13290-4.

Diphtheria :

Antitoxin :

Fallacies of statistics relating to, 13359-65, 13422-34.

Speculative objections to, 13229.

Conditions necessary before reliable statistics can be obtained 13244.

Fallacies underlying statistics and comments on such, 13235-59.

Klebs-Loeffler bacillus is not cause of, and opinion supporting this contention 13229-31, 13436-42.

Probability of varieties of, and doubts as to communicability between men and animals 13336-43.

Drug experiments, their useless nature, 13000-105, 13386-9.

Experience of, in physiological laboratories, 13265-89.

Experiments objected to on ground of pain inflicted 13448-61.

SMITH, STEPHEN FRANCIS, M.R.U.S.—*cont.*

Experiments on Animals, by Stephen Paget, criticism of accuracy of statements made in, 13099-132.

Foreign experiments, difference in nature of, and those in England admitted to certain extent 13486-97.

Hydrophobia, no personal experience in treating, 13215-6.

Malaria, experiments on birds not essential in proving that mosquitoes convey, 13114-117.

Morphia, views concerning unanæsthetic powers of, now modified 13515-17.

Myxedema:

Connection between thyroid gland and, could have been discovered without experiments 13325-335.

Criticism of Mr. Paget's statements with regard to, 13130-1.

Pain:

Amount of sensibility of animals to, as compared with men 13038-44.

Animals may suffer without vocal manifestations of, 13061-4.

Erroneous views of medical men as to comparative insensibility of animals to, 13046-51.

Evidence of, inflicted by experiments derived only from reports 13065.

Physiologists' sensibilities to, blunted 13061.

Sensitiveness of animals to, 13535-8.

Seventy-one per cent. of experiments published in *Journal of Physiology*, from 1896 to 1900 were cutting experiments 13065-8.

Statements with regard to absence of, in experiments doubted 13464-8.

Pamphlet on diphtheria and antitoxin by, statistics in, do not go beyond year 1900 13527-34.

Pasteur's Treatment of Hydrophobia:

Case against, founded on contention that the statistics are fallacious 13400-21.

Pasteur's case mortality compared with case mortality of text books, and internal evidence showing latter to be wrong 13154-213.

Statistical objections to curative value of, 13136-13212.

Scientific Research, by:

Experiment performed at University College with insufficient anaesthesia, described in, 13303-15.

Indications of anaesthesia are absent in curarised animals, 13516-18.

Object of writing 13261-4.

Statement in, as regards unanæsthetic powers of morphia 13516-18.

Serum treatment in suppuration and blood poisoning, criticism of statements made by Mr. Paget as to, 13121-9.

Surgical cleanliness in experiments on animals, difficulties in ensuring 13068, 13366-72.

Tetanus antitoxin, criticism of Mr. Paget's statement as to use of, 13132-5.

Typhoid fever, inoculation against, does not diminish incidence of disease as shown by statistics 13109-113, 13394-9.

Vivisection Act, 1876, has not made any practical modifications of practice of vivisection 13455-61.

SMITH, NOBLE, letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

SNAKES, Indian surgeons trained to identify, *Major L. Rogers*, 8051-3.

SNAKE POISON:

Antidotes advocated, futility of certain, *Major L. Rogers*, *C. J. Martin*, 8202, 12271-82.

Antidotes efficiently tested by experiments on animals *Sir L. Brunton*, 7169-73.

SNAKE POISON—*cont.*

Antidotes for, may be justifiably used if not in themselves products of vivisection *Rev. L. S. Lewis*, 8741-5.

Antidotes, present knowledge of, founded on results of experiments which have shown principal action of, *Major L. Rogers*, 8032.

Charmers immunize themselves by small inoculations *Major L. Rogers*, 8206.

Clinical investigations have failed to discover successful antidotes for *Major L. Rogers*, 8138-40.

Cobra, experiments with, led to discovery of principal action and antidote *Major L. Rogers*, 8032.

Experiments with object of discovering anti-venins disapproved of, *Mrs. K. Cook*, *J. W. Graham*, 1990-3, 5847-55, 6059-69.

Ligature not sufficient treatment for, *Major L. Rogers*, 8093-5, 8212-16.

Mortality from, depends upon amount of venom injected and period elapsing between bite and treatment *Major L. Rogers*, 8103-8, 8172-8.

Mortality from, reduced owing to introduction of anti-venin *Sir L. Brunton*, 6870-9.

Mortality in India from, and returns *Major L. Rogers*, 8071-80, 8039-92.

Nature and chemical composition of, *Major L. Rogers*, 8082-6.

Permanganate of potash antidote:

Acts against all snake poisons and method of applying, *Sir L. Brunton*, 6833-7, 6861-5, 6868-9.

Calmette's treatment and, should be combined *Major L. Rogers*, 8114-15.

Difficult to induce Indian natives to carry, and lancet for injection *Major L. Rogers*, 8273-6.

Effects of, *Major L. Rogers*, 8146-7.

Injection of solution not efficient *Major L. Rogers*, 8121-7.

Method of applying, and adoption of treatment in India *Major L. Rogers*, 8040-70, 8109-12.

Method of applying, and advisability of its speedy use after bite *Major L. Rogers*, 8040-70, 8121-7, 8145-7, 8166-70.

Most practical, and adopted by Indian Government *Major L. Rogers*, 8040-70, 8109-12, 8128-32, 8217-18.

Success of, when used, but universal distribution of, difficult *Sir L. Brunton*, 6870-8.

Successful use of, in Egypt *Major L. Rogers*, 8179-80.

Viperine, adrenalin to some extent counteracts fall of blood pressure due to, *Major L. Rogers*, 8133-7.

See also Anti-Venins under SERUM THERAPY.

SNOW, H., M.D., Parliamentary Association for the Abolition of Vivisection 2097-422.

Actinomycosis coccidial tumour, errors in diagnosing, 2133.

Anæsthesia, general, of human beings sometimes prohibited by patient's condition 2399-400.

Anæsthesia, maintenance of, in human operations 2379-91.

Animals should not be differentiated with regard to their exemption from experiments 2238-41, 2397-8.

Cancer:

Ample supply of living cells of, obtainable from human beings 2206-8.

Autositic theory the only valid theory of, 2152-6.

Bacillus of, not yet found 2347-54.

Causal bacillus of, no evidence as to 2248-9, 2272-87.

Clinical characteristics of, and importance of such 2301-12.

Clinical experience necessary for proper investigation of, 2139, 2190, 2194-8.

Communicable only with great difficulty between men and animals 2176.

Communicable with difficulty between human beings 2247.

as to Communicability of, between animals of the same species 2178-81.

Congress for investigation of, suggested by, 2210-10a.

SNOW, H., M.D.—*cont.*Cancer—*cont.*

- "Control" experiment neglected in investigation of, 2127-8.
- Definition of, 2144-9.
- Diagnosis of, importance of examining individual cells 2201-2.
- Diagnosis of, should rest mainly on clinical symptoms, but may be confirmed by microscopical examination 2250-4, 2403-4, 2416-8.
- Disappearance of, in human subject, no authentic cases 2215.
- Distinction between species and genera of, almost wholly ignored 2127, 2139.
- Errors in diagnosing external, should be rare 2419-22.
- Exists in a few domestic animals and experiments in connection with tumours in other animals require verification 2265-7.
- Failure in research due to lack of clinical knowledge 2344-6.
- as to Foreign experiments with view to communicate, to human beings 2258-9.
- Main feature of, is multiplication of cells by division 2157.
- Mortality from, increasing 2405-9.
- Negative results of research 2410-12.
- Numerous experiments in connection with investigation of, and useless conclusions of such 2221-3, 2243-6.
- Reproduction of, no progress made in, 2175.

Research Fund:

- Authorities directing, 2113.
- Causal organism of cancer never proclaimed by, 2245a.
- Experiments of, no personal knowledge as to, 2187.
- Reports of, on specimens of tumours, not founded on clinical bases 2194-8.
- Title of article on "Transplantation of Malignant New Growths" in Report of, not warranted by substance 2108-19, 2265-7.
- Unsatisfactory conclusions of, 2118-20.
- Work of, useless as far as concerned with investigations of Jensen's tumour 2163.
- Research into, its proper nature 2139-9.
- Serum advocated in France for treatment of 2256-7.
- Systematic tabulation of knowledge of, already acquired, necessary 2413.
- Curare objected to, and should be prohibited 2229-30, 2235, 2328-9, 2357-75, 2392-4.
- Demonstration experiments unjustifiable 2233-5.
- Endothelioma, doubts as to its cancerous nature 2172.
- Evidence of, given at request of Parliamentary Association for Abolition of Vivisection 2334.
- Experiments on animals desirable only under certain conditions 2263-4.
- Experiments on animals not witnessed by, as medical student 2217-20.
- Experiments on animals should only be allowed under exceptional conditions 2227-8.
- Formerly Senior Surgeon to Cancer Hospital, Brompton, 2098.
- Jensen's tumour, doubts as to cancerous nature of, 2295-300.
- Letter from, as to "incomplete anaesthesia" Hon. S. Coleridge, 10313.
- Licences, special, should only be issued for each set of experiments 2235-7, 2414-5.
- May claim to be an authority on subject of cancer, 2140-4.

Mice:

- Cancer in, totally different from that in human beings, and consequent uselessness of experiments on, 2105, 2121.
- Jensen's tumour predominates in, 2120-1.
- Tumour in, doubts as to its cancerous nature 2125, 2127.
- Tumour in, incorrectly diagnosed as cancer 2134-7a, 2188-9.
- Phthisis, claims for cure of, 2261-2.
- Took no part in International Congress for cancer research 2212-14.

SNOW, H., M.D.—*cont.*

- Tumour in dog incorrectly diagnosed as cancer 2127-34.
- Tubercle bacillus discovered soon after foundation of bacteriology 2355-6.
- Vivisection Act, 1876:
 - Increase of experiments under, and possible consequences of its repeal 2395.
 - Restrictions of, have not hindered scientific research 2231.
 - Should be abrogated with reservations 2336-43.
 - Work of, ignored by medical profession 2160-2.
 - References, Miss A. Kenealy, 5280, 5494.

SOBERNHEIM, anthrax treatment devised by, S. Stockman, 3312.

SOCIAL PURITY ALLIANCE, evidence on behalf of, see PAGE HOPPS, REV. J. P., 8312-628.

SOCIETY FOR THE ABOLITION OF VIVISECTION:

- Evidence of, before Vivisection Commission, 1875 W. P. Byrne, 1.
- Income of, Hon. S. Coleridge, 10260.

SOCIETY FOR UNITED PRAYER FOR THE PREVENTION OF CRUELTY TO ANIMALS, income of, Hon. S. Coleridge, 10260.

SOCIETY OF ANESTHETISTS, evidence on behalf of, see BUNTON, D. W., 12393-12690.

SOLDMANN, PROF., opinion of, as to uselessness of morphia as anæsthetic, Miss Lind af Hageby, 7342.

SOERENSEN, PROF., fallacies underlying diphtheria statistics recognised by, S. F. Smith, 13359-65.

SOLLMANN, PROF., morphia not an effective anæsthetic, opinion of, Miss Lind af Hageby, 7342.

SOUTH AFRICA, rinderpest, inoculations against, successful in, Major L. Rogers, 8226.

SOUTH AFRICAN WAR, statistics as to anti-typhoid inoculations among British troops during, C. J. Martin, S. F. Smith, 11799, 13109-13.

SOUTH AMERICA, necessity for inoculations against anthrax in, S. Stockman, 2541-3.

SPALLANGANI, knowledge of nature and action of gastric juice derived from experiments by, E. H. Starling, 3442.

SPENCER, HERBERT, reference, J. W. Graham, 5883.

SPINA, PROFESSOR, reference to work of, G. G. Bantock, 14691-4.

SPOTTISWOODE, The late MR., part taken by, in formation of Association for the Advancement of Medicine by Research, Hon. S. Coleridge, 10677.

SPURGEON, The late DR., anti-vivisection cause supported by, Hon. S. Coleridge, 10262.

STADELMANN, PROFESSOR, experiments on nature of diabetic coma and acid poisoning in animals, by, E. H. Starling, 3814.

"STANDARDISING" OF DRUGS, see under DRUGS.

STANLEY, The late DEAN, anti-vivisection cause supported by, Hon. S. Coleridge, 10262.

STANSTEAD, farms at, for use of Tuberculosis Commission lent by Sir J. Blyth, G. D. Thane, 342-4.

STARLING, E. H., M.D., F.R.S., Professor of Physiology at University College, London, Committee of Medical and Scientific Societies, 3430-4230.

as to Abnormal conditions imposed by experiments 4217-20.

Adrenalin:

- Discovered by experiments on animals 3555-60, 3567a, 3886-8.
- Experiments have still to be performed for satisfactory means of synthesising 3561.
- Obtainable at present only from manufacturing chemists and expensive 3564-6.
- Preparation and testing of, 3818-22.

STARLING, E. H., M.D., F.R.S.—*cont.*

"Advancement of physiological knowledge" sufficient certification in applying for Certificate B 4005-16.

All experiments conducted under anaesthetics in laboratory of, 3944-7.

Anaesthesia:

Complete, can be maintained for long periods 3470.

Condition of patient under profound, 3755-7.

Different degrees of, in different operations, 3889-90, 4062.

Anaesthetics:

Absence of, would not justify no experimentation but would limit number of operators 4160.

Effectiveness of, determined by blood pressure, 4053-4.

Method of administering, and completeness of anaesthesia 3603-6, 3828-35, 3878-80, 4154-9, 4242-52.

More given to animals than to man and former occasionally overdosed 3601-2.

Narcotics administered as well as, and reasons 3607.

Statement as to neglect of, during experiments, untrue 3639-56.

Use of, implies certain deviation from normal conditions, but their effect can be allowed for in judging experiment 4202-10.

Animals do not show apprehension in laboratories 3885, 4024-6.

Animals sometimes killed after experiment by blowing into veins 3912-16.

Animals speedily killed if found to be in pain after operation 4017-21.

Antiseptic precautions, occasional failure of, in operation necessitate killing of animal 3952-3.

Antiseptic treatment, statement that pain is not diminished by, untrue 4110.

Antivivisection, unjustifiable methods adopted by, to excite public feeling 3707-8, 4273.

Applications for licence or certificate not signed by, without knowledge of applicant and proposed experiments, 3739-43.

Aseptic treatment of wounds has abolished pain 4105-10.

Association for the Advancement of Medicine by Research:

Constitution, aims and functions of, 3859-77.

Procedure adopted by, in considering applications for certificates 4184-8.

Mr. Bayliss' experiments referred to by Mrs. Cook conducted under efficient anaesthetics 3639-55.

Benefit conferred on mankind by experiments on animals 4271-2.

Drs. Brodie and Halliburton's experiments referred to by Mrs. Cook performed under complete anaesthesia 3657-8.

"Brown Dog," as to alleged contravention of Act in performance of second experiment on, 3659-60, 3695-705.

"Brown Dog," experimented upon by, and breach of Act occasioned by not killing it immediately after operation *Hon. S. Coleridge*, 10470-6, 11158-9.

Caisson Disease, nature of experiments in connection with investigation of, 3902-910.

Cancer, trial of new remedy for, now being demanded 3993-4.

Carelessness in experiments or omission to kill animal when required, no evidence as to, 3919-20.

Certificates:

B, development of physiology likely to necessitate increase in applications for, 4119.

D never used 3851-3.

Refusal of certain, by Home Office 3948-51.

Choice of animals for physiological investigation, 3445.

"Classical experiments," meaning of term 3446-51.

Committee of Medical and Scientific Societies, object of forming, 3727-32.

Dr. Crile's experiments, conducted under efficient anaesthesia 4142-52, 4237-9.

STARLING, E. H., M.D., F.R.S.—*cont.*

Curare:

Anaesthesia well established before administration of, 4251-3.

Nature and action of, 3614-26.

Never administered with anaesthetics under Certificate B 4056-61.

Never regarded as an anaesthetic, 4115.

Statement that pain is intensified by, untrue 4111.

Use of, and as to suggested restrictions 3975-80.

Demonstration Experiments:

Importance of, in teaching physiology 3479-80, 4050-2.

No impediment in way of medical men desirous of attending, 4161-3.

Qualifications of students desirous of attending, 3541-54.

Diabetic coma, treatment of, is direct outcome of experiments 3813-17.

Difficulty of keeping pigs, sheep and goats in neighbourhood of laboratories renders them less available for experiments 4029-30.

Digestive processes, knowledge acquired by experiments 3842-5.

Digitalis, its action on heart revealed entirely by experiments 4262.

Docking of horses only causes superficial pain 3956-8.

Dogs:

Bacterial inoculations of, rare but dangerous to forbid same 4174-5.

Clause in Dogs Act forbidding sale of stray, foolish 3921-22.

Diabetes produced in, and resulting symptoms 4042-8.

Experiments on, essential and conducted without suffering 3966-9.

Method of anaesthetising, and apparatus employed 3585-88.

More difficult to anaesthetise than men 3481-4.

Number and nature of experiments on, at University College 3470, 3527-33.

Number of experiments on, at University College 4033-4.

Prohibition of experiments on, would irretrievably hinder advance of medical science 3479.

Psychical condition of, referred to in Huxley lecture 4230-4.

Purchase of for laboratory purposes 3519-22.

Prohibition of experiments on, would seriously hinder physiological research, 4035-6, 4235-6.

Professor Schäfer's experiments required use of 3569-84, 4039-40, 4078-81.

Drugs:

All, with one exception, introduced by means of experiments 4093.

Tested on animals before their adoption in Pharmacopoeia 3991-2.

Elements of Human Physiology by, makes callous references to production of pain in experiments *Miss Lind-a-Hageby* 7354-63.

Enforced killing of animal on failure of antiseptic precautions for healing of wound 3477-9.

Engaged in work at Guy's Hospital and University College 3439-41.

Evidence of, agreed with *Sir H. R. Swanzy, W. Osler*, 9786-9, 16529.

Evidence referred to:

Admission as to necessity of pursuing scientific investigation in spirit of pure curiosity *J. H. Levy*, 18497.

Brown dog, contradictory statements as to health of, *Miss Lind-a-Hageby*, 9730-51.

Dogs, number of experiments performed on, *J. Hughes*, 17561-4.

Dogs, statement as to their behaviour in laboratories *J. Hughes*, 17582-4.

Home Office policy of consulting Association for the Advancement of Medicine by Research *Hon. S. Coleridge*, 11049.

Morphia, statement as to fatal dose for dog disagreed with *Miss Lind-a-Hageby*, 9262-9.

STARLING, E. H., M.D., F.R.S.—*cont.*Evidence referred to—*cont.*

- Pain, statement as to absence of, in experiments disputed *J. Hughes, Sir G. Kekewich*, 17575-9, 20428-33, 20533-47.
- Prof. Pawlow's experiments, admiration expressed for, *Miss Lind-af-Hageby*, 7276.
- Reference *J. W. Graham*, 5883.
- Experiments conducted by, mainly for demonstration in teaching or pure scientific research 3502-24.
- Experiments on animals are necessary preliminaries to knowledge of diseases 4200.
- Experiments on animals, objects of, and as to past results of scientific research 3442-5.
- Experiments on animals should be permitted for acquisition of surgical skill 3982-90.
- Experiments on men both impracticable and undesirable 3791-5, 3799-805, 3899-901.
- Experiments performed by, on gasserian ganglion of cats and alleged cruelty *Mrs. K. Cook*, 1919.
- Experiments performed by, on action of fifth nerve and gasserian ganglion confused and misrepresented by *Mrs. Cook* 4132-40.
- Experiments performed by, on superior cervical ganglion, carried out under complete anaesthetics and object of experiment 3666-76.
- Experiments performed previous to 1840, before general use of anaesthetics 3445-9.
- Failure to discover object of experiment does not condemn experiment 3692-3.
- Fistulae:
- Establishment of, cause discomfort but no pain 3762-7, 4222-5.
- Nature of operation for establishment of, 3470-5.
- Glaucoma, research in connection with, 4169-70.
- Gout, pathology of, not yet known, 4272.
- Government appointment not held by, 4171-2.
- Harley and Barratt's experiments referred to by *Mrs. Cook* were not painful as alleged 3677-84.
- Illegal use of dog for second experiment by, *Mrs. K. Cook*, 2014-18.
- Immorality of law forbidding surgeons to acquire technical skill by experiments on animals 3490-4.
- Inoculation experiments, few carried on in laboratory of, nor production of painful diseases 3940-3.
- Inspection of experiments by *bonâ fide* laymen not objected to, 4164-7.
- Inspection of laboratories, further, not objected to 3724-5, 3893-6, 4064-8.
- Inspector's visits, as to number of, 3897-8.
- Internal organs, as to afferent or sensory nerves in, 4101-4.
- Professor Langley's experiments referred to by *Mrs. Cook* conducted under efficient anaesthetic *E. H. Starling* 3627-8.
- Licence held by, since 1889 3437.
- Licences and Certificates, method of granting, might be simplified 3723, 3981.
- Medical science, aim of, and advances made by means of experiments 4192-9, 4260-1.
- Methods adopted for killing animal at close of experiment 3488.
- Moral objections of anti-vivisectionists, as to 3796-7.
- Moral right to take animal life in interests of man, 3470.
- Morphia:
- Action of, 3836-40.
- a Complete anaesthetic if given in large doses, 3610, 3759-60, 3970-3.
- Narcotics, action of, 3836-40.
- Necessity for so-called purely scientific research 4002-3.
- No logical distinction but that of value can be drawn between use of men and animals for experiments 3995-7.
- Number of licensed assistants working under, 3534-39.
- Omnivorous animals, necessity of experimenting upon 4030-2.
- Pain:
- Capacity for, proportionate to grade of consciousness 3963-5.
- Consciousness of, destroyed by removing cerebral cortex 3462-70.

STARLING, E. H., M.D., F.R.S.—*cont.*Pain—*cont.*

- Experiments never performed under circumstances in which animal is necessarily sensitive to, 4063.
- Majority of experiments do not involve, 3445, 3883.
- Movement under light anaesthesia does not indicate sensitiveness to, 3589-93.
- Success of experiments demand elimination 3462-70, 3935-8, 4129-31.
- Pancreas, fatal diabetes produced by extirpation of, 4124.
- Professor Pawlow, unjust accusations of cruelty by *Mrs. Cook* against 3634-5.
- Professor Pawlow's experiments on digestive processes, their results practically accord with those of, 4226-9.
- Physiological investigation, as to places for pursuit of, 3445.
- Physiological laws can be traced with same accuracy as chemical or physical laws 4211-15.
- Physiological research, chief results of, published in medical journals 4180-1.
- Physiology, advanced by experiments on living animals 3715-18, 3768-75.
- Physiology, its scope and aims 3442.
- Poisoning by coal gas and charcoal fumes, method of treating, arrived at by experiments 3809-10.
- Repetition of experiments, danger of making general statements as to unnecessary for, 3846-50.
- Research by purely scientific men necessary for advancement of medical and surgical knowledge, 3735-8.
- Responsibility in experiments on animals increases with their kinship to men 4128.
- Revival of over anaesthetised animal, methods adopted 3481-7.
- Shambles of Science*, as to allegation of cruelty contained in, 4274-80.
- Starvation experiments not attended by pain 3686-7.
- Students are taught to administer anaesthetics 3750-2.
- Students should be permitted to acquire surgical skill by experimenting on animals 3744-9, 3751-4, 4255-6.
- Dr. Thompson's experiments, misrepresented by *Mrs. Cook* 3636.
- Valuable physiological knowledge has been attained without experiment 3781-9.
- Viscera have no sense of pain 3677-80.
- Vivisection Act, 1876:
- Clause forbidding surgeons to acquire skill by experiments under Certificate B should be removed 4082-91.
- Clumsy but administered well 3720-21, 3998.
- Vivisection not unfairly protected under, 4069-72.
- Unnecessary to alter, to any great extent 4073-7.
- Work abroad of, and observations as to greater humanity with regard to animals in England 3709-13.
- Work of regarding secretion and excretion of eye, *Sir H. R. Swanzy*, 9839.
- References, *G. D. Thane, Sir R. D. Powell, E. A. Schäfer*, 1546, 5610-11, 10054.
- S.S. JOSHUA NICHOLSON, Malta fever on board, traced to goats' milk *Col. D. Bruce* 14400-4.
- S.S. ST. NICHOLAS, cases of Malta fever on board, arising from drinking milk of goats imported from Malta *Col. D. Bruce* 14283-7.
- STEINER, experiments by, referred to *Miss A. Kenealy, Miss Lind-af-Hageby*, 5288, 9582.
- STEPHEN, LESLIE, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.
- STEVENSON, DR., Home Office Analyst:
- Certificate signed by Home Office Inspector, held by, *Hon. S. Coleridge* 10418-22.
- Detection of poison in Lamson case by experiments *J. Glaister* 12844-50.

STEWART, G. N.:

Experiments performed by, under curare and no mention made of anaesthetics used *Hon. S. Coleridge*, 11053-70.

Manual of Physiology by, shows lack of humane teaching and preference for light anaesthesia *Miss Lind-of-Hageby*, 7223, 7234, 7253-62.

STEWART, SIR MARK, candidature of, at General Election opposed by National Canine Defence League *J. Hughes* 17212-3, 17287-95.

STILLING, cornea transplanted from eye of rabbit to man by, *Sir H. R. Swanzy* 9816.

STOCKMAN, S., M.R.C.V.S., Chief Veterinary Officer of the Board of Agriculture and Fisheries, 2423, 3429.

Animals used for preparation of anti-toxins show no visible signs of pain 2902-7.

Anthrax:

Blood in cases of, tested by veterinary surgeons, 3117-9.

Destruction of carcasses and careful disinfection not best method of dealing with, 2743-5.

Diagnosis of, depends on finding bacillus anthracis 2667-8.

Diagnosis of, difficult without recourse to experiments 2819-23.

Difficult in some cases to find bacillus of, after death 3120-4.

Outbreaks of, notified by Board of Agriculture to local authorities 2633.

Pasteur's preventive inoculations for, generally confirmed 2740-1, 3140-5.

Post-mortems in cases of, forbidden 3110-11.

Prevalence of, and inoculations against, with consequent reduction of death-rate, 2524-43.

Rival methods for prevention and cure of, 3308-14.

Sources of, in man 2634-41.

Bacterial and parasitic diseases of animals, distinction between, 2442-3.

Blackquarter fever, successful results of preventive inoculations 2544-55.

Board of Agriculture:

Annual number of experiments performed on behalf of, 2852-5.

Certificate B only used by, for rabies cases 2858-70.

Contagious diseases of animals, investigations at present conducted by, 2572-5, 2871-2.

Diagnosis of disease by experiments conducted by, but use made of work done by local authorities 3112-16.

Has no power at present of enforcing use of sera, as curative or diagnostic agent 3003.

Instructions as to use of tuberculin and mallein not issued by, 3248.

Knife and anaesthetics rarely used in experiments of, 2579-84.

Rabies tests conducted by, 3125-8.

Castration:

Attended by considerable pain 3626-31.

Certificates B and F would be required for, if performed for scientific purposes 2884-7.

Nature of operation on horses 2873-87.

Certificates held by, 2856-8.

Contagious Diseases of Animals:

All discoveries with regard to, due to experiments 2599-604, 2626-32, 2654, 2665-6.

Causal microbes of certain, can be demonstrated but others remain invisible 3061-66.

Clinical observation for diagnosis of, insufficient 2788-9.

Clinical observation of, not prejudiced by experiments 2655.

Correct diagnosis of, of utmost importance and in many cases requires confirmation by experiments on animals 2444, 2476-8, 3108-9, 3076-87, 3358-60.

Experiments in connection with diagnosis of, 2464-7.

Immunity from, can only be learnt by experiments 2476-8.

STOCKMAN, S. M.R.C.V.S.—cont.

Contagious Diseases of Animals—cont.

Inoculation of animals with preventive sera not desirable as matter of routine 2765-9.

Invisible organisms of certain, 3006-10.

Measures taken at ports to prevent importation of, 2466-75.

Official method of checking outbreaks of, is by slaughter 2993-7.

Organisms besides causal one may be sometimes found 3067-9.

Preventive inoculation, evidence against, considered 2747.

Preventive inoculation of great value in controlling spread of, 3320-1.

Slaughter and disinfecting processes for controlling, not desirable to abandon completely 2770.

Slaughter and inoculation as preventive agents 2714-22.

Slaughter for controlling, desirable to find alternative method to, 2944-8.

Slaughter irrational in dealing with sporadic, 2772-8.

Two distinct methods of obtaining immunity from, 3032-5.

Unsanitary conditions do not generate, 3322-8.

Cowsheds, cubic space desirable in, 3203.

Departmental nature of evidence given by, 2652-3.

Distemper:

Paralysis a symptom of, in young dogs 3135-6.

Possible effect of inoculating rabbit with, 3373-8.

Experiments on animals in France for purpose of acquiring surgical skill 3054-7.

Experiments performed by, their nature 2429-40, 2909-11, 2955-63.

First application for licence of, and experience of experiments, 2849-50.

Foreign experience of, 2950-4.

Formerly Principal Veterinary Surgeon in Transvaal Agricultural Department 2428.

Frivolity or cruelty in connection with vivisection, none 2610-3.

Glanders:

Attack of, may confer some degree of immunity 3259.

as to Communicability of, to men 3251-6.

Danger of, in occult form 2703-7.

Diagnosed generally by mallein test but alternative method exists 2941-2.

Knowledge of, entirely based on experiments, and immense value of mallein, 2807-18.

No protective serum against, but disease could be controlled by use of mallein and isolation 3260-4.

See also Mallein below.

Horse sickness, fairly accurate knowledge as to, derived from experiments 3388-402.

Inspection of cattle market carried out by local authorities 2462-3.

"Invisible virus," use of term 2841-2.

Mallein:

Curative powers not possessed by, 2981, 3257-8.

Discovery of, 2576-8.

Errors small in diagnosis of glanders by, 3235-45, 3379-83.

Generally accepted as diagnostic agent of glanders 3246.

Horses exported to Continent for horse meat tested on arrival with, 3250.

Preparation of, similar to that of tuberculin 3227-34.

Microbes, claims to identification of, in lesions misplaced 2779-85.

Nature of a pure virus 2502-6.

No foundation for statement that veterinary surgeons experiment on animals in contravention of law 2846-8.

Parasitic diseases of stock in this country a serious question 2643.

Pasteur Institute, visit to, 3058-9.

Pleuro pneumonia:

Cause of, identified to extent of obtaining virus 2699.

STOCKMAN, S., M.R.C.V.S.—*cont.*Pleuro pneumonia—*cont.*

Microbe of, demonstrated by Professor Nocard 2790-6.

Nocard's researches in, adverse criticism, 2798, 2801-6.

Outbreaks of, in Great Britain and methods adopted for stamping out the same 2494-7.

Report of Departmental Committee to enquire into, 2691-8.

Prohibition of experiments on animals would seriously hinder investigation of disease, 2844-5.

Protective sera, their value 2943.

Protective sera, unnecessary to prepare, from diseased animal but inoculation with pure virus would cause disease 2964-71.

Rabies:

Anæsthetics required for inoculations of, under Certificate B 2590-7.

Inoculation of rabbit only serious experiment performed by, 3011-25.

Inoculation of rabbit with, and resulting symptoms 2912-19.

Microbe of, not visible 3130-1.

Pasteur's treatment for, 3140-5.

Reliability of inoculation test of, 3371-2.

Rhodesian Fever:

Koch's error in experiments re, and present knowledge of, 3331-50, 3403-8.

Transmitted by agency of blood sucking ticks 3410-4.

Rinderpest:

Bacillus of, not yet demonstrated 2684-51.

Cost of various outbreaks of, and study of methods of preventive inoculation 2480-90.

Experiments for investigation of, not in accordance with those conducted by Koch 3358.

Protective inoculations against, reported in Reports of Transvaal Department of Agriculture 2686-7.

Serum from animal which has suffered from infectious disease of little use until after hyper-immunisation of animal 3315-18.

Serum largely obtained from horses on account of quantity and cleanliness 3271-2.

Serum production, amount of blood drawn from horse for, 2618-23.

Serum treatment with regard to animal blood parasites not yet developed 3036-42.

Service of, in Transvaal and India 3329-30.

Sheep-pox, alleged discovery of its cause invalid and organism not yet identified 2732-3A.

Smegma bacillus plentiful in men and animals 3083-5.

Southern Nigeria, indigenous diseases in, practically annihilate domestic animals 2569-71.

Spaying of sows and bitches for non-scientific purposes 2889-7.

Swine erysipelas:

Pasteur's method of inoculating against, abandoned in Germany for newer method 2824-8.

Prevalence of, and nature of preventive serum 2556-67.

Swine fever:

Diagnosis of, difficult 2673-83.

Preventive inoculation the most successful method of dealing with, 2752-6.

Recent experiments have disproved former claim to discovery of organism of, 2835-40.

Tapeworms, experiments with object of acquiring knowledge of, 2445-60.

Tetanus:

Anti-Toxin:

Administered generally in cases of castration, docking and surgical wounds 3281-2, 3287.

Distinction between its uses as curative and preventive agent 2723-8.

First used for curative purposes 3296-302.

Immunity secured by, 2830-4.

STOCKMAN, S., M.R.C.V.S.—*cont.*Tetanus—*cont.*Anti-Toxin—*cont.*

Inoculations followed by no bad effects and duration of immunity conferred by, 2975-80, 3384A, 3296-302.

Standardisation of, can be effected without difficulty 3293-5.

Statistics point to value of, as preventive agent 3280, 3289-92.

Success in man, disappointing 2725-31.

Use of, as preventive agent 2507-23.

Value of, as curative agent, small and expensive nature of treatment 2644-9, 3276-9.

Clinical observation without experimentation would not give reliable information 3385-6.

Inoculations against, advisable 2920-39.

Mortality high in cases of, 2949.

Prevalence of, in certain parts of India, 2510.

Trichinosis, preventive measures arrived at by experiments 2461-3.

Tropical diseases:

Are very largely protozoa diseases and anti-serum treatment for such not yet developed 3039-50.

Experiments essential to investigation of, 2568-9.

Many, are insect borne and importance of preventing their importation, 2569.

Prospect of immunising animals against 2757-63.

Tuberculin:

Advisable to exclude all variations from normal conditions of animal during test 3178-89.

Disagreeable symptoms following injection of, may prevent its use as test in human beings 3159-61.

Discovery of, 2576-8.

Errors in use of, small 3379-83.

Farmers' use of, considerable 3197-202.

Koch's preparation of, and as to its rejection as a cure for tuberculosis 3146-55.

Limitations to reliability of, 3167-76.

Process of tuberculinisation in Denmark 3209-18.

Temperature of animal an important feature in test 3162-6.

a Test for tuberculosis in cattle 3156-8.

Use of, in Denmark has increased reputation of Danish butter 3204-18.

Used largely for testing animals for exportation 3219-21.

Tuberculosis:

Bacteriologists' opinion as to conveyance of, to children through milk 3095-7.

Common among caged monkeys and care taken to prevent their infection 3225.

as to Communicability of bovine, to man, 3100-3.

Curative sera not yet discovered 2982-7.

Diagnosed in cattle by inoculating guinea pigs with suspected tissue 3073-4, 3415-8.

German inquiries into relationship between human and bovine, 3368-70.

Knowledge of, chiefly based on experiments, 2660-4.

Koch's statement as to relation between human and bovine, 3366-7.

Local authorities conduct examination of cows, for detection of tubercle, 3427-9.

Microscopical examination of market milk not sufficient to detect tubercle bacillus 3363-5.

Microscopic examination of milk not an unreliable method of diagnosing 3361.

Overcrowding and lack of ventilation largely fosters but does not generate spread of, 3191-6.

Stamping out of bovine, can be effected by use of tuberculin and slaughter 3223-4.

Tubercle bacillus not generally found in human beings during early stages of, 3071.

Tubercle in milk diagnosed frequently by microscopic examination 3088-94.

Vivisection Act, 1876, restrictions of, satisfactory 2609, 2615-6.

STOKER, DR. GEORGE, case of chronic ulcer treated by, in which presence of micro organisms in wound had beneficial influence *G. G. Bantock* 14723-7.

STOKER, SIR W. T., M.D., F.R.C.S. (Ireland) Inspector for Ireland under the Vivisection Act, 1876, 756-1070.

Administration of Vivisection Act in Ireland:

Humane and effective as regards research work 785, 907.

Improvements effected by Mr. Morley 853.

More continuity desirable 760-1, 782-3, 854, 1068.

Anæsthesia, complete, not possible in all operations 815-19.

Anæsthetics:

A.C.E. mixture more efficacious for animals than chloroform, 1023, 1025-7.

Chloroform, small doses of, dull pain 1029-36.

Association for the Advancement of Medicine by Research:

Doubts as to wisdom of consulting 1066-7.

No practice in Ireland of submitting applications for licences and certificates to society analogous to, 847.

Certificates:

C:

Annual number of experiments under 934-8.

Difference of opinion with Chief Secretary only in connection with issue of, 789.

Disapproved of, 869-904.

Inspector's advice re issue of, frequently over-ruled 796.

Memorandum against, 761.

Number of, in force in Ireland, 765-7.

Table showing cases in connection with issue of, 723-5.

Demonstration Experiments:

Annual Report shows number of, and places where they are performed 820-826.

Cruelty, no evidence of, in but suggested demoralisation of students attending 1042, 1050-1.

Frogs, their use for, not objected to 1056-7.

Unnecessary, and tend to demoralise students 760-1, 776, 802-5, 809-11, 838-43, 980-8, 1008-14, 1017-22, 1049, 1061.

Dogs:

Anæsthetisation of, doubts as to, 862-8, 891-2.

Experiments on, should be conducted with great reserve 807-8.

Extent of witness's experience of operations on, 863-8, 896-9, 1023-8.

Susceptible to death under chloroform 813-14, 836.

Terror of, in laboratories 1048.

Dublin University, vivisection not permitted at on time in, 770-4.

Evidence referred to:

Demonstration experiments disapproved of, *Sir G. Kekewich* 20519.

Demoralisation of students at demonstration lectures, statements as to, unfounded *Sir V. Horsley* 15606.

Experience of, in teaching students, 1058.

Experience of, in witnessing experiments, 947-52.

Experiments carried on for public institutions in Ireland, 776-7.

Experiments conducted by unlicensed persons, 913-15.

Experiments in Ireland, number of, and animals used 767, 914-4.

Experiments upon cholera, tubercle and pyæmia still being conducted, 844-5.

Inoculation experiments, as to pain in connection with, 25605-7, 2614.

Inspection efficient in Ireland 966-7.

Inspection in certain places in Ireland conducted by Medical Inspector from the Local Government Board, 971-5.

Inspector assisted in places by Local Government Board Inspector's report, 831.

STOKER, SIR W. T., M.D., F.R.C.S.—*cont.*

Inspector's salary quite insufficient 787.

Inspects twice a year and no irregularities noted 796-7, 800.

Licences:

Applications for, go direct to Inspector and then to Chief Secretary 848-9, 924-5.

Inspector's advice as to issue of, sometimes over-ruled by Chief Secretary 932.

Issue of, procedure similar to that in England 789, 832-3, 920.

Number of, for class purposes in Ireland, 762.

Veterinary surgeons holding, 1043-4.

Licence and certificate issued for observation of prostate gland in dogs, 909-10.

Licensing authority in Ireland, change as regards, desirable 778-80.

Local Government Board should be licensing authority in Ireland, 855, 953-5.

Monkeys:

Act does not specify, 775.

Experiments on, should be conducted with great reserve 807-8.

Pain, entire absence of, in experiments cannot be certified 1063-5.

Prosecution of licensee requires consent of Chief Secretary 917-18.

Rabies successfully suppressed in Ireland 777, 860-1.

Registered places in Ireland:

List of, and statistics 764-767.

Private laboratories, reasons for their registration 770-4.

Public laboratories preferable to private 977-9.

Satisfactory condition of, 835.

Sensitiveness to sight of suffering increases with age, 1060.

Struggles of animals in severe operations are often reflexes, 1062.

Students witnessing operations in hospitals, no objection to, 989-1008.

References *G. D. Thane* 1089.

STRICKER, PROFESSOR:

Experiments by, as to effect of chloral on rabbits *Sir L. Brunton*, 6785-6.

First experiments re action of strychnin made in laboratory of, *Sir L. Brunton*, 6898.

Reference *Sir L. Brunton*, 6953.

SUDBURY, laboratory of Board of Agriculture at, *S. Stockman*, 2435-9.

SWAN, C. R. J. A., M.B., M.R.C.S., L.R.C.P., National Canine Defence League, 19192-19363.

Benefits obtained from experimental research admitted 19251-3, 19269-71.

Certificate B disapproved of, on grounds of subsequent pain after experiment 19302-9.

Clinical observation should supplement experimental observation, 19269.

Dogs:

All necessary experiments on, should be conducted under anæsthesia and morphia should be given to dull pain after recovery from anæsthetic 19254-6.

Anæsthetisation of, not doubted 19281.

Blood pressure experiments could be performed equally well on rabbits as on, 19214-20.

Canine diseases investigations may require experiments on, but other means preferred 19353-63.

Diffidence in opposing views as to necessity of experiments on, held by some members of the medical profession 19273.

Digestive processes can be tested by syphonage and no necessity of experimentation for this purpose 19221-30, 19317-25.

Digestive processes of absorption and secretion could be showed in pigs instead of, 19231-4.

Experiments on, justifiable for sake of discovering remedy for distemper 19291-7.

SWAN, C. R. J. A., M.B., M.R.C.S., L.R.C.P.—*cont.*Dogs—*cont.*

- Experiments on, justifiable if same can be proved to be of direct value to humanity 19289-19290, 19326-9.
- Experiments on kidneys of, objected to 19246.
- No reason to believe in ill-treatment of, in physiological laboratories 19286-7.
- Not opposed to vivisection except as regards experiments on, 19199.
- Objection to experiments on, met by guarantee of anaesthesia and consequent painlessness of operation 19262-3, 19282-5, 19326-9.
- Objection to experiments on, mainly based on sentiment 19264-7.
- Other animals should be substituted for, in experiments whenever possible 19256-8, 19332-9.
- Pain anticipated by, instance of 19236-45, 19312-16.
- Should be excepted from experiments on sentimental grounds 19199-203.
- Students could be taught rise and fall of blood pressure by aid of diagrams and without recourse to experiments on, 19214-15.
- Suggestion that stolen, are used for experiments 19347-9.
- Utility of, for experiments over-rated and other animals could be substituted for, 19204-6.
- Vivisectioners themselves may have same feeling as witness with regard to desirability of excluding, from experiments whenever possible 19344-6.

No personal experience of experiments of recent years 19274-8, 19340-3.

SWANZY, SIR H. R., M.D., President of the Royal College of Surgeons in Ireland: 9752-9979.

- Certain animals should not be exempted from experiments 9879-80.
- Demonstration experiments should not have any further restrictions 9788-90, 9860-5.
- Evidence referred to, re unnecessary of students acquiring operative skill by experiments on eye *Sir G. Kekewich* 20517-19.
- Evidence tendered by, represents unanimous opinion of Royal College of Surgeons in Ireland 9881-7.
- Eye specialist and traces success to knowledge gained by experiments 9757-9, 9853-9.

Eye-surgery:

- Antiseptics abandoned for aseptic treatment in, 9955-61.
- Cocaine chiefly used in, but animals would require general anaesthesia 9913-18.
- Skill is progressive but would not be benefited by permission to students to operate on animals, 9891-7, 9968-70.
- Transplantation of cornea in developmental stage 9904-5.

Eyes:

- Ciliary body, functions discovered by means of experiments and clues afforded thereby to knowledge of disease 9799-804.
- Clinical observation could not have obtained knowledge decided from experiments on, 9813-15.
- Cornea transplanted successfully owing to previous experiment on rabbit 9816-18.
- Endothelium, functions discovered and value of such knowledge in optical operations 9805-12.
- History of experimental research and value of knowledge attained by experiments on, 9795-8.
- Injection of suspected tuberculous aqueous humour into rabbit, for diagnostic purposes, 9819, 9941-7.
- Knowledge of inflammatory processes gained by experiments on, 9791-4.
- Sensitive to pain and injection of foreign substances for experimental purposes likely to produce pain 9951-4.
- Sensitiveness to pain varies in different parts 9974-8.

SWANZY, SIR H. R. M.D.—*cont.*

- Finsen light, possibility of utilising it, as eye bactericide suggested by experiments 9849-52.
- Gain to intestinal surgery if students could operate on animals for purpose of acquiring skill, 9971-3.

Ophthalmic Diseases:

- Cataract, knowledge of, gained by experiment 9841.
- Conjunctiva disease, argyrol a remedy for, discovered by experiments on rabbits 9843-8.
- Generally common to men and animals 9898-903.

Glaucoma:

- At present only curable in early stages 9937-40.
- Clinical observation has increased knowledge of, 9836.
- Leber's experiments demonstrated reason of, and have led to use of eserine as remedy 9836-40.
- Jequirity a remedy for, 9820-30.
- Serum therapy now utilised for, 9819.
- Successful treatment of, could not have been arrived at without experiments 9869-71.
- Sympathetic ophthalmitis, experiments on animals with view to discover precise nature of, 9831-5.
- Trachoma, nature and frequency of, 9907-12.
- Pain is secondary to acquiring knowledge but effort should be made to safeguard against it, 9866-8, 9929.

Royal College of Surgeons in Ireland:

- Constitution of, 9752-6.
- Views of, on subject of experiments on animals 9762-81.

- Dr. C. Shaw's experiments in connection with sympathetic ophthalmia 9921-8.
- Vivisection Act, should be amended to permit surgeons and students to acquire manual skill by experiments 9786-9, 9875-80, 9888-90.
- Wounds heal without pain, under aseptic conditions 9930-1.

SWINE ERYSIPELAS:

- Diagnosis of, by experiment necessary *S. Stockman* 2464-7.
- Pasteur's method of inoculating against, abandoned in Germany for newer method *S. Stockman* 2824-8.
- Prevalence of, and nature of preventive serum, *S. Stockman* 2556-67.

SWINE FEVER:

- Diagnosis of, by experiment necessary *S. Stockman* 2464-7, 2673-83.
- Preventive inoculation the most successful method of dealing with, *S. Stockman* 2732-6.
- Recent experiments in connection with have disproved former claims to discovery of organism, *S. Stockman* 2835-40.

SYLVESTER METHOD OF ARTIFICIAL RESPIRATION, useless, *E. A. Schäfer* 10107.

SYMES, MR., method of administering chloroform employed by, quite satisfactory and based on clinical experience *Col. E. Laurie* 16963-5.

SYPHILIS:

- Application to perform experiments as to, in monkeys would require to be urged by strong reasons, *Sir J. Russell* 684.
- as to Cause of, *C. J. Martin* 12229-40.
- Communicated to monkeys for purposes of experiment *J. H. Levy* 18544.
- Discovery by means of experiments of a coccus in, *F. Taylor* 5831-2.
- Experiments on men with, recorded by Dr. *Smidovich J. H. Levy* 18544.
- Mercury a specific for, *A. R. Cushny* 5259-62.

SZYMONOWICZ, adrenalin discovered by means of experiments by, *A. R. Cushny* 4808-9.

TAIT, The late MR. LAWSON:

- Anti-vivisectionists' misrepresentation of views of, re bacteriological experiments *H. Morris, Sir V. Horsley*, 7896-8, 15672-3.

TATE, *The late Mr. LAWSON—cont.*

- Listerian methods of surgery opposed by, *G. G. Bantock*, 14752-4.
- Utilitarian results of experiments on animals denied by, *G. H. Burford*, 9097.
- Reference, *G. D. Thane*, 1585.

TAKAKI, BARON, statement by, *re* successful inoculations against tetanus in Japanese Army, *H. Morris*, 7744-5.

TANNER, DR., fasting experiences of, *Hon. S. Coleridge*, 11048.

TARCHANOFF, PRINCE, views of, *re* danger of serum therapy *Miss A. Kenealy*, 6219.

TAYLOR, DR. C. BELL, Vice-president of National Canine Defence League *J. Hughes*, 17246.

TAYLOR, FREDERICK, M.D., M.R.C.S., Senior Physician to Guy's Hospital, Royal College of Surgeons, 5580-834.

Advanced students might be permitted to acquire manual dexterity by experiments on animals 5769-70.

Anti-pyretic nature of quinin and salicylic acid if given in large doses 5701-2.

Bacteriology, study of, impossible without animal experiments 5585.

Diphtheria:

Antitoxin:

Efficacy of, unanimity as regards, 5744-6, 5818.

Statistics showing decrease of case mortality due to use of, 5588-93, 5643.

General mortality from, as to non-decrease of, 5654-5.

Pneumonia is often cause of death in patients suffering from, 5829-30, 5833.

Drugs, necessity of testing, on animals before adoption in Pharmacopeia, 5585.

Experiments on animals essential to advance of medicine 5585.

Haffkine's experiments in connection with plague in India, 5597-9.

Mallein, success of, as diagnostic agent 5722-4.

Manual of Practice of Medicine written by, 5596.

Presidential address to London Clinical Society by, *Miss A. Kenealy*, 6165.

Regard and sympathy for suffering held by medical profession generally, 5834.

Syphilis, coccus of, discovered by means of experiments 5831-2.

Tuberculin:

Failure of, as curative agent might have been obviated by further experiments with regard to properties of, 5695-700.

Influence of, in treatment of tuberculosis 5594.

TENNYSON, *The late LORD*, anti-vivisection cause supported by, *Rev. L. S. Lewis*, *Hon. S. Coleridge*, 8276, 10262.

TETANUS:

Antitoxin, *see* under Antitoxins, under SERUM THERAPY.

Clinical observation without experimentation would not give reliable information in cases of, *S. Stockman*, 3385-6.

Excision of thyroid gland in man, dogs, and cats, followed by *G. D. Thane*, 1233.

Experiments in relation to bacterial origin of, and immunising and curative influence of culture sera *H. Morris*, 7726.

Inoculations against, advisable *S. Stockman*, 2920-39.

Knowledge of, acquired by experimental methods *C. J. Martin*, 11653.

Mortality from, high *S. Stockman*, 2949.

Occurrence of, in connection with use of plague prophylactic in India *W. H. Power*, *C. J. Martin*, 4435-6, 4500, 12295-9.

Potassium permanganate of potash a useful preventive, and experiments on rats demonstrating this *Major L. Rogers*, 8183-5, 8189-98, 8220.

TETANUS—cont.

Prevalence of, in certain districts, and method of producing, *S. Stockman*, 2507-23.

Sanitary conditions chief preventive *C. J. Martin*, 11984.

in South African War, few cases of, and consequent small use of antitoxin *C. J. Martin*, 11977-81.

THANE, G. D., LL.D., M.R.C.S., H. M. Inspector under the Vivisection Act, 1876. Professor of Anatomy in University College, London, 307-504, 1234-1779.

Address by Sir Dyce Duckworth, no reference in, to experiments 1709.

Anæsthesia, complete, necessary for success of operation 1596-8.

Anæsthetics:

Administration of, a special branch of medical practice 1718-9.

Administration of, in midwifery cases 1720-2.

Animals effectually kept under, 1617-22.

Chloroform and air administered to animals by means of Woulff's bottle 1615-16.

Inspector does not advise as to nature of, to be used 1166-9.

Local, used in some cases 1171-6.

Nature of, generally used 1170.

Overdose of, generally adopted for killing animal 1325-6.

Regular and measured administration of, at all experiments 1588-96, 1765-8.

Urethane or chloral used for anæsthetising rabbits 1635-8.

Animal killed when result of experiment achieved, 1315-6.

Anti-septic precautions enforced for all experiments, except those connected with sepsis and septicemia, 469.

Association for the Advancement of Medicine by Research:

Constitution of, 1086-93.

Report of, read by Inspector before writing his own 1094-7.

Board of Agriculture and Local Government Board experiments supervised by, 1339-40.

Caisson Disease, conditions giving rise to, and experiments in connection with 378-82, 383-4.

Cancer inoculations, methods pursued, 1688-91.

Cancer investigations abroad 1684-5.

Cancer not communicable between animals of different species 1680-3, 1687.

Cancer research, experiments 465-6.

Certificates:

Authorities concerned with granting of, 1483-4.

B:

Experiments under, 1639.

Experiments under, involve some pain 1550.

Obligation to kill animal after experiment under 1301-2.

B, B.EE, and B.F, Nature of experiments under, 467, 471, 474-6.

C:

Desirable for effective teaching 1121.

Experiments under, 1490-1.

Objection to enforced destruction of animal operated on under, 1757-62.

Considerations before issue of, 422-4.

Dispensing with anæsthetics, issue of, 440.

Home Office sometimes disallow, 1154-8.

Nature and usefulness of experiments investigated by, before issue of, 439.

No contravention of Act for animal operated on under Certificate B to be further used under Certificate C 1560-2.

Procedure in obtaining, similar to that for licences 420.

Refusals to grant 1098-100.

Responsibility of advising Home Secretary as to grant of, 1466-8.

Special, required for experiments on domestic animals 423.

THANE, G. D., LL.D., M.R.C.S.—*cont.*

Choice of Animals for Experiments:

Experiments on cats and dogs not sanctioned if substitution of other animals possible 432, 1197-205.

Physiological conditions prevent substitution of rabbits and guinea pigs for dogs or cats in certain experiments 425-9.

Complaints of cruelty in experiments would be referred by Home Office to, 1260.

Condition of animals after experiments 1209-12.

Contraventions of Act:

All recorded in annual report, 477-8.

Experiments performed by licensees in premises for which he was not licensed 495-500.

Experiments performed by unlicensed persons, 484-6.

Licensee's return discloses any, 482-3.

Misuse of licensee's authority, detection of, and steps taken to prevent 488-493.

Reported by Inspector to Home Office 1145-7.

Wilful, not met with and none of a serious nature 477-9.

Curare:

Administered in addition to anæsthetic to prevent reflex movements 1599-605.

Method of administering, with an anæsthetic 1321-3, 1600-17, 1705.

Demonstration Experiments:

Cinematograph could not take place of, 1526-30.

Major, performed to small number of students and object of such 1533-6, 1543-8.

Nature of, 1519, 1521-2.

Physiology cannot be taught without 1492-3.

Unnecessary for knowledge of spinal, cerebral and optic nerves 1126.

Digestion, recent experimental research into physiology of, 1546-8.

Distinction between animals "in stock" and those under experiment 443.

Dogs:

Anæsthetics, manner of administering, to, 1230-1.

as to Apprehension shown by, in laboratories 1424-6.

Dr. Bain's experiment on gall bladder of, 1650-69.

Breeding of, for experimental purposes objected to 1440-2.

Chloroforming of, not attended by pain 1219, 1222-8.

Distemper symptoms in, 1674-6.

Experiments requiring use of, 1232-3.

Foxes, as to possibility of substituting, for, 1428-30.

Laboratory attendants procure, for experimental purposes 1421-3.

Sale of stolen, to laboratories, police responsible for prevention of, 1435-8.

Stray might be utilised for laboratory purposes instead of being destroyed in lethal chambers 1763-4.

Dogs Act, effect of, 1752-4.

Drowning experiments, object of, and special sanction from Home Office required for, 1287-97, 1749-51.

Evidence referred to:

re Complaints, their infrequency disputed Miss A. L. Woodward, 8820-4.

Observations on *Shambles of Science*, objected to Miss Lindaf-Hageby, 7432-3, 7534-60, 9148-53, 9354-85, 9634-50, 9651-7, 9730-51.

Statement made by, as to absence of pain in experiment, based on insufficient experience Sir J. Kekewich, 20433-9.

Statement made by, pointing to fact that experiments performed by Sir V. Horsley were only ones inspected last year by, Sir G. Kekewich, 20433-8.

Experiments referred to in text-book, *Practical Physiology* 1499-1515.

THANE, G. D., LL.D., M.R.C.S.—*cont.*

Fistulae, establishment of, in animals, not painful 1233, 1640-9.

Frequent inspection by, Sir V. Horsley, 15982-4.

Frimley heather registered for experiments in connection with grouse disease 358-63.

German chemical laboratories, circulars from, 1710.

Glands enlarged in tuberculosis not painful 1694.

Guinea pigs and rabbits bred for laboratory purposes 1431-34.

Has free access to Home Office 1149-50.

Dr. Head's experiments on nerves of cat, and inspection of animals after operation by, 1247-59.

Home Office represents the public in matter of inspection 1777-9.

Horses:

Healthy condition of, for serum production, care taken to ensure, 1443-7.

Inoculation of, for serum production not controlled by Act 1444-6.

Humane conduct of experiments 1162.

Inoculated animals, difficulty in distinguishing, from uninoculated 1576.

Inoculations frequently witnessed by, 1163-5.

Inoculations of calves for vaccination purposes not under control of, 1336.

Inoculations with toxins and antitoxins, symptoms following, 453-6.

Inspection of laboratories by other than Government officials impracticable 1408-10.

Inspection:

Amount of, sufficient 1188-93.

No irregularities found in course of, as regards use of anæsthetics and aseptic treatment 450.

Time given to, 1071-4.

Visits paid without notice, and methods pursued 441-3.

Inspectors:

Duties of, defined by Act 1085.

Home Secretary's minutes as to duties of, 1085.

Laboratories of manufacturing chemists 344.

Licences:

All applications for, referred to Inspector after submission to Association for Advancement of Medicine by Research 393-5.

Difficult to forbid use of knife when issuing, for inoculation purposes 412.

Experiments without anæsthetics may be performed under licence alone 410-11.

Home Office and Inspector do not disagree re issue of, 1151-3.

Inspector does not communicate with Association for the Advancement of Medicine by Research re issue of, 397.

Issue of, to students, with condition that experiments shall be performed under supervision 415-18.

Licensee tacitly accepts conditions attached to, though giving no actual undertaking 494.

No restrictions as to animals except horse, ass, or mule, under, 434.

Number of, in Great Britain 369-70.

Qualifications for obtaining, 399-403, 1449-51, 1706-7.

Refusals to grant, cases of, 1098-1100.

Licenses are informed of all requirements of Act and Home Secretary by, 443.

Licenses in *statu pupillari*, 1453-6.

Licenses must be trusted to certain extent to administer Act properly 1390-3.

Manometer, its use in experiments, 1524.

Marmot referred to in *Shambles of Science*, examined and reported on by, M. S. Pembrey, 13985-90.

Monkeys, nervousness of, 1427.

Morphia:

Dose of, to secure complete anæsthesia probably fatal, 1631-3.

Injected frequently before operations, 1624-5.

Prolonged action of, 1634.

Barely used as an anæsthetic alone, 1626-32.

THANE, G. D., LL.D., M.R.C.S.—*cont.*

Number of experiments witnessed by, during year 447, 1106-9.

Pain:

Certain experiments followed by, 457.

Irritation of cutaneous and mucous surfaces results in, 473.

Not a necessary sequence of all operations 1700-4.

Not disregarded by experimenters 1397-8.

Painful experiments, details given in 1900 report 464.

Premises for experimental purposes reported on by, previous to their registration *W. P. Byrne*, 54-6.

Public spirit in England more humane than abroad, 1395.

Publications *re* physiological research, impossible to read all 1075.

Rabbit deprived of food for four days, but no starvation of pigeons, 1315-9.

Rabies inoculations of rabbits not painful 1670-3.

Registered Places:

Cambridge, Pathological and Physiological laboratories licensed as a whole 501-3.

Certain experiments sanctioned outside, 368, 372-3, 1137-44.

Complaints as to work in, none 1283-5.

Condition of animals kept in, most satisfactory 451-2.

Government laboratories 342-5.

Joyce Green Hospital, permission of Metropolitan Asylums Board required for registration of, 1743-6.

Laboratories unconnected with teaching institutions 339, 1389.

Municipal laboratories, officials attached to, and work done at 346-351.

Nature of premises 339.

No complaints as regards nearness of, to dwelling houses 1343-6.

No serious complaints of, 1083-4.

Private pharmaceutical laboratories, reasons for registration 1348-54, 1366-70.

Private premises only registered in exceptional cases 335-6, 1382-4, 1399-1404.

Research Institution laboratories 353-5.

Research Institutions, list of, 344.

Registered premises only, visited by, 334.

Registration of premises, procedure in regard to, 337-8, 356.

Reports presented annually by, 319-324.

Returns of Experiments:

All experiments recorded in, 481.

Alteration in form of, 1755-6.

Distinction formerly made in, between painful and painless experiments, of no value 1723-9.

Licenses, make annual, 1464-5.

Licenses practically give assurance of complete precaution in operating, 1771-6.

Made up from licenses' returns 480.

Nature of experiments now have to be distinguished 1333-5.

1905, number of licenses who performed no experiments 1460-1.

Second experiment for testing result of first experiment conducted always under anesthetics 1216-8, 1570-5.

Sera and vaccines should be prepared by a Government institute 1358-64.

Serum manufacture requires no licence 1373-4.

Serum production for commercial purposes not under Act 1730-2, 1747-8.

Serum production, precautions necessary 1355.

Serum testing, no Government responsibility *re*, 1377-81.

Shambles of Science:

Allegations contained in, without foundation 1261-82.

as to Withdrawal of, from publication 1276-80.

Sleeping sickness experiments on rats and rabbits, 1311-12.

THANE, G. D. LL.D., M.R.C.S.—*cont.*

"Standardising," meaning of term 357-8.

Students not licensed to perform experiments without supervision 1194-5.

Table showing annual numbers of experiments, and those witnessed by, 1234-6.

Thyroid gland, excision of, followed by different results in different animals 1233.

Travelling duties of, 331-3.

Sir F. Treves' statement *re* experimental methods misrepresented by anti-vivisectionists 1711-16.

Tuberculosis Commission, research work conducted on behalf of, 352-3.

Tuberculosis injections into peritoneum not painful 1678-9.

Two series of experiments on same animal, deprecated 1561-7.

Vivisection Act, 1876:

Amendments suggested, 1177-87.

Physiological and pathological progress not retarded by provisions of, 1111, 1697.

Wellcome Research Laboratory, Khartoum, no knowledge of alleged cruelty to dog in, 1306-10.

Work at University College, 1237-46.

References *Sir J. Russell*, *W. P. Byrne*, *Sir V. Horsley*, 32-3, 133, 516, 16075-9, 16067.

THEILER, DR.:

Engaged in investigating horse-sickness in South Africa *S. Stockman*, 3401.

Experiments for rinderpest conducted with, not in accordance with Koch's experiments *S. Stockman*, 3338.

THIERY, experiments by, were starting point of present abdominal surgery *Sir L. Brunton*, 6952.

THOMAS, PROFESSOR:

Digitalis treatment for pneumonia, opinion of, *re Sir L. Brunton*, 6786.

Preventive inoculation for black-quarter devised by, *S. Stockman*, 2544.

THOMAS, WOLFERSTON, experiments by, showing possibility of inflicting apes with yellow fever *W. Oster*, 16545.

THOMPSON, DR., Queen's College, Belfast:

Alleged cruelty of operations described by, *Mrs. K. Cook*, 1800.

Experiments under Certificate C performed by *Sir T. Stoker*, 937.

Experiments with curare alone performed by, *Mrs. K. Cook*, 2008-10.

Misrepresentation of experiments performed by, *E. H. Starling*, 3636.

THOMPSON, PROFESSOR, Belfast and Trinity College, Dublin, Certificate C allowed to, against Inspector's advice *Sir T. Stoker*, 794.

THOMPSON, SIR H., correspondence with, *re* incomplete anaesthesia *Hon. S. Coleridge*, 10993.

THORNE-THORNE, The late SIR RICHARD, views attributing prevalence of tuberculosis to consumption of milk *G. G. Bantock*, 14547.

THORNTON, SURGEON-MAJOR SIR J.

Case Against Vivisection, by, criticism of statements contained in, *Sir L. Brunton*, 7107-78.

Member of Committee of National Canine Defence League, *J. Hughes*, 17244.

TIEDMANN, knowledge of nature and action of gastric juice derived from experiments by, *E. H. Starling*, 3442.

TIGERSTEDT, PROFESSOR ROBERT, Professor at University of Helsingfors, Finland, *Text-book of Human Physiology*, quotation from, showing foreign practice of disregarding anaesthesia, *Miss Lind-af-Hageby*, 7299.

TOISTOY, COUNT, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

TOOT, injections of, in men and animals, symptoms following, *Sir J. Russell*, 646-8.

TORONTO, address to British Medical Association at, *E. H. Starling*, 4262-5.

TRANSVAAL:

Department of Agriculture, reports of, as to successful inoculations against rinderpest *S. Stockman*, 2686-7.

Koch's inoculations against rinderpest not successful in, *S. Stockman*, 3331-50.

Veterinary Department, advice of, as to stamping out of pleuro-pneumonia *S. Stockman*, 2494-501.

TRAUBE, experiments by, with regard to action of digitalis *A. R. Cushny*, 4652-67.

TREASURY, grant from, to Local Government Board for purposes of conducting experiments *W. H. Power*, 4408-10.

TREVES, SIR FREDERICK:

Admission of, as to gaining no profit from experiments on dogs, *Mrs. K. Cook*, 1711-1716.

Letter to *The Times* from, re misrepresentation of his views concerning value of experiments *Sir V. Horsley*, 16031, 16131-2.

Quotation from address by, on subject of intestinal surgery, so often misrepresented by anti-vivisectionists *Sir V. Horsley*, 16130-32.

Statement by, as to deductions from experiments on animals *Sir L. Branton*, 7110-11.

Statement by, with regard to value of experiments frequently misquoted *Sir V. Horsley*, 15803-5.

References, *G. D. Thane*, *Mrs. K. Cook*, 1585, 1801.

TRICHINOSIS, discovery of, *S. Stockman*, 2657-8.

TROTTER, MR., deputy inspector during absence of chief inspector *G. D. Thane*, 448-9.

TRUMAN, BASIL ^W, Keble College, Oxford, charges against Mr. Gotch, corroborated by, *Hon. S. Coleridge*, 11454.

TSETSE FLIES:

Carriers of sleeping sickness disease, as well as nagana, though latter is not communicable to man *Col. D. Bruce*, 14336, 14418, 14342-3.

Curious distribution of, in Uganda *Col. D. Bruce*, 14344-9.

Destruction of, best method of stamping out sleeping sickness *Col. D. Bruce*, 14444-8.

Experiments proving that bites of, were responsible for nagana or tsetse-fly disease *Col. D. Bruce*, 14307-11.

See also NAGANA and SLEEPING SICKNESS.

TUBERCLE PYEMIA, continuance of experiments upon, *Sir J. Russell*, 575-6.

TUBERCULIN:

Board of Agriculture do not issue instructions as to use of, *S. Stockman*, 3248.

Cattle tested with, on exportation *S. Stockman*, 3219-21.

Danish methods of diagnosing bovine tuberculosis by use of, *S. Stockman*, 3209-18.

Derivation of, and as to its rejection as curative agent *S. Stockman*, 3146-55.

a Diagnostic agent of tuberculosis in cattle *S. Stockman*, 3156-8.

a Diagnostic agent merely, and has no curative powers, *S. Stockman*, 2981.

Diagnostic value of its injection into eyes *Sir H. R. Swanzy*, 9819.

Disagreeable symptoms following injection of, may prevent its use as test in human beings, *S. Stockman*, 3159-61.

Discovery of, *S. Stockman*, 2576-8.

Curative powers of, in treatment of human beings not yet considered by Local Government Board *W. H. Power*, 4465-6.

as to Efficacy of, in treatment of phthisis *W. H. Power*, 4468-71.

Failure of, as curative agent *F. Taylor*, *Miss Lindaf-Hageby*, *G. G. Bantock*, 5695-700, 7634-8, 14663-8.

Further experiments should have been performed before administering, as treatment for tuberculosis *F. Taylor*, 5594-5.

Homeopathic method of preference, *G. H. Burford*, 8975-80.

TUBERCULIN—cont.

Much used, and as to possibility of fraudulent use, *S. Stockman*, 3197-202.

Reliability of, as diagnostic agent, limitations as to, *S. Stockman*, 3167-76.

Sometimes used as diagnostic agent in human beings *Sir R. D. Powell*, 5799-803.

Temperature of animal an important feature in test *S. Stockman*, 3162-6.

Test must be conducted carefully, and all variations from normal conditions excluded *S. Stockman*, 3178-89.

Tuberculosis can be stamped out by means of slaughter and, *S. Stockman*, 3223-4.

Use of, as curative agent *C. J. Martin*, 12209-12, 12373-82.

Use of, in treating human beings and possibility of advantages therefrom *Sir R. D. Powell*, 5799-803, 5819-28.

Value of, and small proportion of errors in its use as diagnostic agent *S. Stockman*, *W. H. Power*, *D. J. Hamilton*, 3379-83, 4472, 20357-72.

TUBERCULOSIS:

Alleged cruelty in inoculations for, on pigs, cats, rabbits, and mice *Mrs. K. Cook*, 1919.

Animals after infection with, show no indications of suffering *G. D. Thane*, 452.

Bacillus of, discovered soon after foundation of bacteriology *H. Snow*, 2355-6.

Bacillus not present in all stages of, *G. G. Bantock*, 14622-30, 14678-82.

Bacterial cause of, erroneous views, etc., *G. G. Bantock*, 14547.

Bacteriologists' opinion as to conveyance of in milk to children, *S. Stockman*, 3095-7.

Cause of, discovered by experiments and knowledge acquired as to its different manifestations *C. J. Martin*, 11644-6.

Causal bacilli of, do not exist and opposition to Koch's theories, *G. G. Bantock*, 14550.

Cause of, discovered by means of experiments on animals and as to prospects of stamping out disease *Sir Lauder Brunton*, 6999-7004.

Communicability of, ignorance as to, dispelled by series of experiments on guinea pigs *Sir J. F. Moulton*, 12709-15.

Commission, see ROYAL COMMISSION ON TUBERCULOSIS.

as to Communicability of bovine, to man *S. Stockman*, *Sir R. D. Powell*, 3100-3, 5811-15.

Communicability of, from animals to men proved by recent experimental research *C. J. Martin*, *Sir J. F. Moulton*, 12219-24.

Contended, at one time, to be no specific disease *C. J. Martin*, 12206-8.

Curative sera for, not yet discovered, *S. Stockman*, 2982-7.

Departmental Committee on, minority report of, *Sir V. Horsley*, 16243-53.

Diagnosis of, after inoculating guinea pig possible within six weeks *J. Lorrain Smith*, 18452.

Diagnosis of, carried out by inoculations of animals *J. R. Bradford*, *J. Lorrain Smith*, 17762-4, 18188, 18202-4.

Experimental diagnosis of, necessary *S. Stockman*, 2464-7.

Experiments in connection with bovine, carried on by Condensed Milk Company *Sir T. Stoker*, 765.

Guinea pigs inoculated with milk for testing purposes *Sir J. Russell*, 711.

Identity of various forms of, only established by experiment *S. Stockman*, 2444.

Injections of, into peritoneum not painful, *G. D. Thane*, 1678-9.

Inoculation experiments have successfully detected existence of, in cows in Manchester *J. Lorrain Smith*, 18353-7.

Inoculation of guinea pigs with suspected matter is only satisfactory method of accurately diagnosing, *J. R. Bradford*, 17630-5, 17644-61.

Inoculation test a far more positive one than the microscopic test *J. R. Bradford*, 17652-3.

Knowledge of, chiefly based on experiments *S. Stockman*, 2660-4.

Koch's statement as to relation between human and bovine, and German inquiries into same *S. Stockman*, 3366-7.

TUBERCULOSIS—cont.

- Koch's views concerning non-transmissibility of, from men to animals contrary to results of recent experiments *G. S. Woodhead*, 15499-502.
- Local authorities responsible for detection of, in milk *S. Stockman*, 3427-9.
- Local Government Board waiting for Report of Tuberculosis Commission before adopting measures of treatment of, *W. H. Power*, 4455-6.
- Microscopic examination of market milk not sufficient to detect bacillus of, *S. Stockman*, 3363-5.
- Microscopic examination of milk not an unreliable method of diagnosing, *S. Stockman*, 3361.
- Microscopic examination of milk unreliable and fails to discover bacilli of, *J. Lorrain Smith*, 18349-51.
- Necessity of using dogs or cats for experiments in connection with, *G. D. Thane*, 1205.
- Not communicable from men to animals, *G. G. Bantock*, 14683-9.
- Organisms besides causal one may be found in, *S. Stockman*, 3067-8.
- Overcrowding and lack of ventilation largely fosters but does not generate spread of, *S. Stockman*, 3191-6.
- Prevalence of, erroneously attributed to consumption of milk *G. G. Bantock*, 14547.
- Sanitary conditions, enforcement of, best preventive against *C. J. Martin*, 1221-16.
- Stamping out, can be effected by use of tuberculin and slaughter, *S. Stockman*, 3223-4.
- Susceptibility of calves to, *Miss A. Kenealy*, 6401-11.
- Testing of cases, in municipal laboratories, *G. D. Thane*, 346-7.
- Tests for, in milk instituted under Diseases of Animals Act *S. Stockman*, 3419-22.
- Tubercle bacillus not proved to be cause of, *Miss A. Kenealy*, 6500-11.
- Tubercle bacillus the cause of, *W. H. Power*, 4457.
- Tubercle in milk, possibility of error in certifying, *S. Stockman*, 3091-4.

TUCKETT, IVOR, Physiological Laboratory, Cambridge. experiments on suprarenal gland by, *Miss A. Kenealy*, 5322-5.

TUMOURS:

- Coccidial, errors in diagnosis of, 2133.
- Endothelioma, cancerous nature of, doubted, *H. Snow*, 2172.
- Jensen's:
- Cancerous nature of, disputes as to, *G. D. Thane*, 1681.
 - Cancerous nature of, doubted *H. Snow*, 2295-300.
 - Not a malignant growth and differences of opinion concerning nature of *H. Snow*, 2166-73.
 - Predominates in mice, *H. Snow*, 2120-1.
 - Spontaneous disappearance of, differentiates the growth from cancer in human beings *H. Snow*, 2125.
 - Work of Cancer Research Fund useless with regard to, *H. Snow*, 2163.
- in Mice, study valueless in diagnosing growth in human subject, *H. Snow*, 2134-37A, 2188-9.
- Sarcoma, errors in diagnosis of, *H. Snow*, 2133.
- Table of, examined by Cancer Research Fund, *H. Snow*, 2182.
- See also CANCER.

TURNER, Inoculations against rinderpest devised by, *Major L. Rogers*, 8226.

TWAIN, MARK, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10262.

TYPHOID FEVER:

- Antitoxin, see under SERUM THERAPY.
- Case mortality, proportion of, compared with Malta fever *Col. D. Bruce*, 14380.
- Inoculation against, does not diminish incidence of, *S. F. Smith*, 13109-113.
- 17th Lancers inoculated against, and successful results *Col. D. Bruce*, 14528.
- Statistics showing effect of inoculations against, inaccurate *S. F. Smith*, 13394-9.

TYPHUS FEVER, no exact bacteriological knowledge as regards, *Sir R. D. Powell*, 5666-71.

TYRELL, WALTER, letter to, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10993.

UGANDA:

Atoxyl used as remedy for nagana or tsetse fly disease with good results in, *Col. D. Bruce*, 14314.

Curious distribution of tsetse fly in, *Col. D. Bruce*, 14344-9.

UNITED STATES OF AMERICA:

Absence of legal restrictions of vivisection in, does not induce carelessness for pain inflicted in experiments *W. Osler*, 16653-64.

Chemical firms in, have introduced number of new drugs, *A. R. Cushny*, 5246.

Christian Scientists in, *A. R. Cushny*, 5248.

Commission sent to Savannah in 1900 by, to investigate cause of yellow fever *W. Osler*, 16531.

Drug taking in, large amount of unauthorised *A. R. Cushny*, 5248.

Experiments performed in, *J. W. Graham*, 5871-3, 5857-60, 6047-8.

Law against cruelty to animals alone restricts experiments in, and anti-vivisection movement there *A. R. Cushny*, *J. W. Graham*, 5019-27, 5100-114, 6049-53.

New York, statistics as to success of tetanus antitoxin treatment in, *H. Morris*, 7727-40.

UNITED STATES YELLOW FEVER INSTITUTE, monograph published by, *W. Osler*, 16561.

VACCINATION AGAINST SMALLPOX:

Act does not control inoculations for vaccine purposes *G. D. Thane*, 1336.

Analogy between modern prophylactic methods and, *W. H. Power*, 4587-8.

Difference between lymph used for, and other protective sera *C. J. Martin*, 11867-76, 11902-3.

Homeopathic administration of vaccine equally satisfactory as usual process *G. H. Burford*, 9053-70.

Jenner's discovery involved no experiments on animals *C. J. Martin*, 11859-62.

Knowledge acquired by experiments on animals with regard to vaccine *G. S. Woodhead*, 15485-93.

Licence not required for production of vaccine, *G. S. Woodhead*, 15550-1.

Lymph, as to its origin and preparation by Local Government Board *W. H. Power*, 4477-82, 4488, 4513, 4591-7.

Objection to, *Miss A. Kenealy*, *Miss Lindaf-Hageby*, *Sir G. Kekewich*, 6565-71, 9216-19, 20787.

Protective effect of, admitted *G. G. Bantock*, 14925-7.

VEGETARIANISM, doubts as to question of *Rev. J. P. Hopps*, 8377-8, 8471-5.

VENEREAL DISEASES, see SYPHILIS.

VENICE, CONVENTION OF:

Convention of Paris shortly to supersede, *W. H. Power* 4337-8.

Obligation of Foreign Office under, to notify outbreaks of certain diseases to foreign countries *W. H. Power*, 4337-8.

VETERINARY SURGEONS:

Breaches of Act committed by, *W. P. Byrne*, 288-9.

Licences in Ireland held by, *Sir T. Stoker*, 1043-4.

Section 11 of Act controls issue of licences to, and similar procedure as in other licences, *W. P. Byrne*, 70-2.

VINCENTINI, DR., views upheld by *G. G. Bantock*, 14631-5.

VIENNA, table showing case mortality from diphtheria before and after employment of antitoxic treatment, *C. J. Martin*, 11711.

VINCENT, SWALE, animals used by, in experiments on thyroid glands *Miss A. Kenealy*, 6165.

VINCI, eucaïne introduced by, *A. R. Cushny*, 4753, 4758.

VIRCHOW, work of, referred to, *E. H. Starling*, 3692.

VIVISECTION ACT, 1876 see under Acts under PARLIAMENT.

VIVISECTION COMMISSION, 1875, see ROYAL COMMISSION ON VIVISECTION, 1875.

VOLTAIRE, anti-vivisection cause supported by, *Rev. L. S. Lewis*, 8726.

VON, see under various names.

VULPIAN, experiments by, referred to *Miss A. Kenealy*, 5288.

WACHS, DR. P., views of, re danger of serum therapy *Miss A. Kenealy*, 6219.

WADE, DR., experiments on methods of destroying rats by *W. H. Power*, 4631.

WAGNER, anti-vivisection cause supported by, *Hon. S. Coleridge*, 10252.

WAKEFIELD, municipal laboratory at, *G. D. Thane*, 342.

WALKER, DR. T. J., M.R.C.S., correspondence with, re "incomplete anaesthesia" *Hon. S. Coleridge*, 10308, 10993.

WALLER, A. D., M.D., LL.D., F.R.S., lecturer at London University, 17996-18167.

Anæsthesia:

Conjunctival reflex is most practical test of sufficiency of, 18144-9.

"Light," does not imply sensitiveness to pain 18081-5.

Maintained fully in all laboratory experiments 18077, 18079-80.

Cats anaesthetised for twelve hours by, *E. H. Starling*, 3629.

Chloroform:

Action of, diminishes blood pressure apart from any connection with respiration 18087A-90.

Method of administering, devised by *Sir L. Brunton*, 6833, 6989.

Curare:

Animal immobilised by, can be anaesthetised 18130-7.

No experience of, in combination with an anaesthetic 18129-30.

Dogs can be anaesthetised without difficulty 18152-8.

Exercises in Practical Physiology, by:

Caution against use of anaesthetics in, referred to by *Miss Hageby* is merely statement of fact 18086.

Humane teaching lacking in, and preference for light anaesthesia expressed in, *Miss Lindaf-Hageby*, 7223, 7234-51.

Experience as a physiologist 18111-12.

Experiment of "frozen rabbit" referred to by *Mrs. Cook* imaginary 18159-67.

Licences, distinction between medical and physiological qualifications of applicants should not be made in issue of, 18120-5.

London University:

Evidence submitted to Physiological Committee of, 18101.

Resolution passed by, in favour of giving evidence, and witnesses appointed 18091-3.

Morphia, a narcotic, but can produce profound anaesthesia 18150-1.

WALLER, A. D., M.D., LL.D., F.R.S.—cont.

Nerve degeneration consequent on separation from nutritive centre discovered by, and value of such knowledge *H. Head*, 17806-7.

The Shambles of Science:

Anæsthesia fully maintained throughout experiments described in, and movements seen were merely reflex ones 18109-10.

Curare not used in any of experiments described in, 18128.

"a Dog injected with a substance derived from a lunatic":

Animal fully anaesthetised in, 18048-56.

Method of killing dog referred to in, 18139-41.

"an Experimental Production of blood clotting by injection of a nucleo proteid," complete anaesthesia maintained throughout 18034-42.

"an Experiment that is not supposed to be useful," animal was not curarised in, and absolutely anaesthetised 18043-7.

Highly coloured representation of what took place 18010-13.

Laboratory at which experiments described in, were conducted 18102A-8.

Lecture given immediately after publication of, answering allegations contained in, 1810, 18077-8.

Letter from *Sir A. Rücker* to Home Office in connection with statements contained in, 18094-7.

Marmot, episode of and actual facts in connection therewith 18142-3.

"Painless experiments":

Frozen rabbit, actual facts of case 18019-31.

No vivisection was performed at lecture described in, 18025, 18032-3.

Notes on statements contained in, 18014.

Present at a good many of the operations described in, 17999.

"The only completely satisfactory method," curare not used as stated in, and students are not necessarily aware of every fresh dose of anaesthetic 18066-76.

"A Troublesome Dog," lecture described in, did not take place as stated, at London University, 18001-8, 18058-65.

Students at London University not under practical tuition of, 18126-7.

Tracheotomy never performed before administering anaesthetic, in experience of, and would be illegal 18115-19.

WALLER, DR., explanation of statement made by, that vivisection is a narrow and restricted province in physiology *Sir V. Horsley*, 15806-7.

WALPOLE FARM, laboratory at, held by Tuberculosis Commission *G. D. Thane*, 342-4.

WALTHER, PROFESSOR, experiments on acid poisoning in rabbits gave rise to successful treatment of diabetic coma *E. H. Starling*, 3814.

WALTON SEWAGE FARM, official experiments not performed at, *G. D. Thane*, 339-42.

WARD, DR., bill introducing Vivisection Act, 1876, its rejection moved by, *Sir G. Kekewich*, 20553-6.

WARREN, T. H., Vice-Chancellor of Oxford University, letter from making public an apology from Keble College undergraduates in connection with charges brought against Professor *Gotch F. Gotch*, 13668.

WASHBOURNE, DR., J. W., Physician to Guy's Hospital:

Statement by, as to inefficacy of inoculation in cases of typhoid fever *S. F. Smith*, 13109.

Views of, as regards value of serum treatment in cases of suppuration and blood poisoning, *S. F. Smith*, 13121-4.

WATTEVILLE, DR. de, morality of experimental investigation argued by, *J. H. Levy*, 18497.

WATSON, DR., B.A., experiments in dropping dogs from heights performed by, *J. W. Graham, Sir V. Horsley*, 5857, 16225-9.

WATSON, JOHN B., Chicago University, Alleged cruelty of experiments on rat performed by, *J. W. Graham*, 5871-3.

WATSON, SIR T.:

Statement by, in 1847 as to difficulties and obstacles in treatment of nervous system is typical of ignorance then prevailing *H. Head*, 17804-5.

Reference *A. R. Cushing*, 4920-30.

WEHR, PROFESSOR, reference *H. Snow*, 2129, 2132.

WEIR, MR., M.P., misleading answer of Home Secretary to question in House of Commons by, as to number of persons holding certificates dispensing with anaesthetics *Hon. S. Coleridge*, 10317-29.

WELLCOME, MESSRS.:

Brockwell Hall laboratory of, *G. D. Thane*, 344.

Private laboratory of, reasons for registration, *G. D. Thane*, 356.

WELLCOME RESEARCH LABORATORY, scandal in connection with, as to procuring cats for vivisection purposes *Sir T. Russell*, 682.

WEST AFRICAN BOXWOOD, experimental investigation showing that alkaloids contained in, had curare like action and affected workmen employed in reel making *W. E. Dizon*, 18709-12, 18717-30, 18912-15, 19057-61, 19113-15.

WEST DERBY SEWAGE FARM, official experiments not performed at, *G. D. Thane*, 339-42.

WESTCOTT, DR., anti vivisection cause supported by, *Rev. L. S. Lewis*, 8728.

WHITE, PROF., Dublin, certificate C not allowed to, *Sir T. Stoker*, 794A.

WHITE, MR., case of curare poisoning described in *British Medical Journal* by *Sir V. Horsley*, 15918-24, 15965.

WHITLER, DR., *Dictionary of Treatment* by, see under JOURNALS AND PUBLICATIONS.

WHOOPING COUGH, specific bacillus of, not yet discovered, *C. J. Martin*, 11907.

WICKHAM LEGGE, see under LEGGE.

WILKS, SIR SAMUEL, statement by, as to decrease of death rate after operations, owing to improved methods of dressing wounds, *H. Morris*, 7750.

WILLIAMS, ROGER, opinion of, as to non-malignant nature of Jensen's Tumour *H. Snow*, 2168-71.

WILSON, DR. G., M.D., LL.D., allusion to commercial aspect of serum therapy by, *Sir G. Kekewich*, 20494-5.

WINMARLEIGH, LORD, member of the Vivisection Commission, 1875 *W. P. Byrne*, p. 1.

WOOD, The late DR. ALEXANDER, hypodermic medication introduced by, *Sir L. Branton*, 6972-4.

WOOD, H. C., experiment *re* susceptibility of dog to morphia by, *Miss Lind-af-Hageby*, 9266.

WOODHEAD, G. SIMS, M.D., Professor of Pathology in University of Cambridge 15426-582.

Alleged cruelty of experiments referred to by, *Mrs. A. Cook*, 1921.

Animals should be allowed to be kept outside laboratories 15572.

Applications for licences not signed by, 15565-6.

Contagious Diseases, specific organisms of certain, not yet demonstrated 15552-4.

Curare, certificate authorising more vigilance on part of inspector in experiments involving use of, not objected to 15576-80.

Demonstration experiments, not performed before junior students, but senior students witness certain, 15561-3.

WOODHEAD, G. SIMS, M.D. —*cont.*

Diphtheria:

Antitoxin:

Composition of, possible improvement in, 15470.

Death rate lower in consequence of use of, 15520-4.

Injection of, in first stage of disease would reduce mortality to nil 15540-5.

Licence not required for preparation of, 15550.

One of causes contributing to diminution of the disease 15557-60.

Production and test of, require use of animals 15473-6.

Statistics *re* use of, carefully recorded and decreasing death rate attributed to use of, 15457-64, 15530-40.

Study and preparation of, undertaken for Metropolitan Asylums Board 15449-54.

Success of, in reducing mortality 15470-1.

Use of, based on proof that the Klebs-Loeffler bacillus is cause of disease 15512-18.

Value of, as prophylactic 15546-9.

Value of, from personal observation 15465-9.

Diagnosis, area enlarged by modern bacillary test 15226-8.

Toxic symptoms of, though not local symptoms can be produced in animals 15506-11.

Dogs essential for certain experiments 15582.

Inspectors' visits have caused no trouble 15574-5.

Jensen's tumour, opinion *re* cancerous nature of, *H. Snow*, 2297-300.

Licence held by, for 24 years, and large number of experiments performed 15428-30.

Licences, professors of pathology, bacteriology, etc., should have power to sign applications for, 15565-71.

Member of the Royal Commission on Tuberculosis, 15433.

Malaria, value of experiments in connection with investigation of, 15477-80.

Physiological research, its dependence on experiments 15439-41.

Rinderpest, organism of, not yet discovered 15496.

Transmission of disease, necessity of experiments in investigating, 15481-2.

Tuberculosis Commission, circumstances leading to its appointment 15499-502.

Vaccine, knowledge as to, acquired by experiments 15485-93.

Wide experience in pathological laboratories in United Kingdom 15431-2.

Work has been chiefly in connection with diagnosis of diseases and preparation of antitoxins 15437.

Yellow fever:

Experiments valuable in investigating cause of, 15477-80.

Stamping out of, in Havana, undoubtedly due to measures taken for destroying the mosquitos 15555-6.

WOODWARD, MISS A. L., Church Anti-Vivisection League, 8786-8898.

Alleged illegality of experiments conducted by Messrs. Burroughs and Wellcome 8820, 8831-4.

Animal Physiology, by W. Furneaux, experiments recommended to students in, expurgated after exposure by Church Anti-Vivisection League 8824-6, 8867-80.

Animals for purposes of vivisection obviously stolen 8824.

Boy employed in Professor Victor Horsley's laboratory testifies to cruelty of vivisection 8824.

Dr. Hime:

Church Anti-Vivisection meeting at Bradford in 1898, and charges then brought against, 8789-810, 8828-55.

Home Secretary's unjustifiable action in connection with charges brought against, 8829-55.

Object of experiments performed by, ignorance as to, 8885-93.

WOODWARD, MISS A. L.—*cont.*

Lecture on Physiology by Dr. Langdon Down, and allegations concerning vivisection of frog thereat, 8811-23.

Memorial presented to University College by Slade School students concerning hindrance to their studies caused by cries of vivisected animals 8824, 8856-61.

Refutation of statement by Dr. Thane as to infrequency of complaints concerning alleged breaches of Act 8820-4.

Shambles of Science not withdrawn from publication, but copies offered for sale at Church Congress 8826-7, 8894-8.

WORLD LEAGUE OF OPPONENTS OF VIVISECTION:

Evidence on behalf of, *see* BURFORD, G. H., 8899-9104.

Income of, *Hon. S. Coleridge*, 10260.

WOOLSORTERS' DISEASE, *see* ANTHRAX.

WORCESTER, municipal laboratory at, *G. D. Thane*, 342.

WRIGHT, DR., anti-typhoid serum devised by, not recommended by Local Government Board *W. H. Power*, 4433-4.

WRIGHT, PROFESSOR:

Apomorphin formed from morphin by, *A. R. Cushny*, 4819.

Tuberculin, its efficacy upheld *C. S. Martin*, 12375-7.

WRIGHT, SIR ALMROTH:

Prophylactic methods devised by, of destroying invading organisms of disease by stimulating natural agencies of resistance *Sir J. F. Moulton*, 12732.

Serum treatment of, for tuberculosis of urinary tract *J. R. Bradford*, 17766-73.

WURTEMBERG, statistics in, with regard to swine erysipelas *S. Stockman*, 2563.

YELLOW FEVER:

Animals in infected districts other than anthropoid apes, not susceptible to, *W. Osler*, 16695-6. Controlled by preventing breeding of mosquitoes and careful isolation of early cases of, *W. Osler*, 16553-65, 16623-4, 16703-4.

Discovery of mosquito as cause of infection not directly due to experiments on animals *W. Osler*, 16697-700.

Discovery of relation of mosquito to, and consequent success in controlling spread of, will enable Panama Canal to be built *W. Osler*, 16541-2.

YELLOW FEVER—*cont.*

Experiments have shown that apes can be infected with, *W. Osler*, 16545.

Experiments in connection with investigation of, though on man, could never have been devised without investigators' previous experience of experiments on animals *W. Osler*, 16544.

Experiments prior to those carried out by United States Commission *W. Osler*, 16611-13.

Experiments proved that mosquitoes communicated infection *W. Osler*, 16535-9.

Failure to discover cause of, before 1900 *W. Osler*, 16531.

History of, illustrates enormous benefits conferred on mankind by experiments on animals *W. Osler*, 16530.

Mosquitoes are capable of transmitting after biting infected persons *W. Osler*, 16548-9.

Natives have it in a mild form *W. Osler*, 16546-7. Organism not yet discovered *W. Osler*, 16540-1, 16620-2.

Period of incubation *W. Osler*, 16538-9.

Reasons for suspecting that mosquito propagated, *W. Osler*, 16694.

Reduction in numbers of mosquitoes owing to methods adopted for their extermination, very remarkable *W. Osler*, 16562-8.

Sanarelli's work in connection with, unsubstantiated *W. Osler*, 16611-14.

Stamping out of, in Havana undoubtedly due to measures taken for destruction of mosquitoes *G. S. Woodhead*, 15555-6.

Theory and practice previous to 1900 based on bacillus as cause of, is erroneous *W. Osler*, 16615-20.

United States Commission:

Appointed in 1900, methods adopted and work of, *W. Osler*, 16531-6.

Experiments carried out by, were on men who voluntarily submitted themselves to infection *W. Osler*, 16543, 16608, 16667-9.

Value of experiments in connection with transmission by mosquitoes of, *G. S. Woodhead*, 15477-80.

YEO, PROF., alleged cruelty of experiment by, *Mrs. K. Cook*, 1790.

YERSIN, plague bacillus discovered by, *C. J. Martin*, 11654.

YOUNG, DR., reference *Sir L. Brunton*, 6786.

ZIEM, transplantation of the cornea, recorded by, *Sir H. R. Swanzy*, 9948.



