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6. The Report of the Second Hyderabad Chloroform Commission, Appendix C, pp. 486-510.

7. Hewitt, Frederick William, 1857-1916
[Correspondence to the Editors of the Lancet on the Hyderabad Chloroform Commission.] p. 515.

8. Sheppard, Charles E.
[Correspondence to the Editors of the Lancet on the Hyderabad Chloroform Commission.] p. 568.

THE HYDERABAD CHLOROFORM COMMISSIONS.

THE REPORT OF THE SECOND COMMISSION.

APPENDIX C.

THIS Appendix (C) contains in a tabular form the details of experiments on animals conducted by the committee without recording apparatus, and forms in reality a continuation of the experiments made by the first Commission, already printed in Appendix A. In these experiments the anæsthetic was administered in various ways and in different forms of dilution, with the object of ascertaining, first of all, whether the heart would stop before the respiration; secondly, how far artificial respiration could be made available for restoring the animal after natural respiration had ceased; and, thirdly, the influence which various concomitant conditions would have upon the rapidity with which respiration would cease under chloroform, the length of time which elapsed between the cessation of respiration and the stoppage of the heart, and upon the comparative ease or difficulty with which life could be restored by artificial respiration.

In Experiments 1 to 9 the chloroform was administered very freely, and in Experiments 567 to 588 it was given very gradually and in small doses. In order to avoid the struggling which occurred when the animal was held down, another means of administering the chloroform was adopted. The animal was simply lifted into a box 42½ in. long, 19 in. broad, and 17¼ in. in depth. This was done without causing any struggling, and the lid of the box was immediately put on, the animal remaining all the time perfectly quiet. Along the edges of the box pieces of spongio-piline were nailed, so that when the lid was fitted on the chamber was air-tight. In the lid was an oblong opening which could be covered at will, either with a piece of board or with glass. Through this opening the chloroform was introduced by pouring it upon a piece of blotting-paper, and either dropping it into the box or allowing it to hang down through the opening in the lid. By using a glass covering it was easy to watch the movements of the animal, and to ascertain when the anæsthetic action had been induced. In order to discover the effect of agitation and struggling when the chloroform was given in a box, and thus to see whether confinement in a close atmosphere had modified the effect of the chloroform, the dog was excited by putting crackers into the box in Experiments 14 and 15. In Experiments 19 and 20 the effect of very large doses of chloroform administered at once was observed, and in 21, 26, 27, and 28 the same experiment was repeated with only half the dose of chloroform. In Experiments 373 to 382 the effect of chloroform upon monkeys was tested in a similar way, the animals being placed in a glass box containing one cubic foot of air, but the quantity of chloroform introduced into the box was only measured in some experiments, and not in all. In 21, 23, and 24 the chloroform was given with Junker's inhaler. In Experiments 186 to 196 large doses of chloroform were administered on a cloth cap inhaler, the anæsthetic being pushed until death occurred. In Experiments 247 to 261 the dogs were simply chloroformed as they were obtained from the bazaars, without any special preparation.

As one source of danger in operations appears to be exhaustion of the patient by prolonged fasting before the commencement of the operation, a series of experiments was instituted in order to discover what effect fasting or feeding would have upon the dogs subsequently chloroformed, and various kinds of food were employed, as well as pure stimulants like alcohol and aromatic spirit of ammonia, and substances like Liebig's extract, which lie on the borderline between food and stimulants, although they probably belong rather to the latter class. In Experiments 198 to 205 Liebig's extract was given a quarter of an hour before the inhalation was commenced, and in 216 to 220 it was given two hours before the administration of the chloroform. In Experiments 206 to 210 the dogs were kept fasting for twenty-four hours, and in 226 to 246 they were kept from thirteen or fourteen to nineteen or twenty hours without food. In Experiments 221 to 225 the dogs were fed with a meal of flesh, and in 360 to 370 with gruel, from one hour and a half to three hours before the chloroform was administered. The effect of stimulants—spirits, coffee, and ammonia—given before the administration of chloroform was tested in Experiments 211 to 215, 383 to 387, and 490 to 495.

A second series of experiments was performed for the purpose of ascertaining the comparative effects of large or small quantities of chloroform when given with a definite quantity of air, and for this purpose the animals were introduced into a tin box containing eight cubic feet of air, and a measured quantity of chloroform was allowed to evaporate in the box before the animal was introduced, the air thus containing a definite proportion of chloroform vapour, which, however, would vary somewhat during the experiment, owing to the absorption of chloroform into the blood and tissues of the animal. In Experiments 262 to 266 and in 282 to 286, two ounces of chloroform were diffused in eight cubic feet of air; in 267 to 271 and 287 to 291 one ounce was given; and in 272 to 276 and 292 to 296 half an ounce only was used. For comparison with these, two ounces of chloroform were administered at once on an inhaler in 277 to 281, and the effects of a limited quantity of chloroform with a free circulation of air were shown by 349 to 359. The chloroform was introduced into a bottle provided with valves, a full description of which is given in Appendix B. In Experiments 467 and 468 air containing a definite quantity of chloroform vapour was administered by artificial respiration.

In many operations, especially those about the face or head, it is of great convenience to administer morphine subcutaneously some time before an operation at which chloroform is to be given. With a view of ascertaining the effect of morphine used in this way, a third series of experiments was performed, consisting of Experiments 297 to 306. As atropine has been recommended by Schäfer and others to lessen the danger of death during chloroform narcosis, Experiments 542 to 553 were made, and as strychnine is one of the most powerful cardiac stimulants, as well as being a powerful respiratory stimulant, Experiments 530 to 541 were undertaken. The action of cocaine was tested in a similar way in 518 to 529. In 327 to 336 morphine and atropine were both injected before the chloroform was administered; in 312 to 326 morphine and strychnine were employed; and in 337 to 348 morphine, atropine, and strychnine were administered before the chloroform. In Experiments 499 to 504 the monkeys were chloroformed to death in an upright position, such as would be maintained in a dentist's chair. Section V. contains experiments on the efficacy of artificial respiration under various conditions, and Section VI. experiments on the after-effects of chloroform and ether.

EXPERIMENTS CONDUCTED BY COMMITTEE.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889. Oct. 23	1	Full-grown well-nourished pariah.	H. M. S. 2 51 0	H. M. S. 0 2 0	H. M. S. 0 3 20	H. M. S. 0 3 55	H. M. S. 0 3 55	H. M. S. 2 54 55	H. M. S. 0 3 0	The chloroform administered freely on a cloth cap with a sponge inside. The respiration was in mere gasps for some time before its final cessation. The dog continued to yelp for some time after the cornea became insensible. Artificial respiration for three minutes failed to restore the pulse or respiration. P. M.: Lungs healthy. Pulmonary veins much distended. Right auricle and ventricle full of blood. Left side empty. A leather muzzle was used to control the dog, which probably caused some constriction of the neck. Temperature of room 25·5° cent.
Do.	2	Ditto.	3 9 25	0 2 0	0 3 10	0 3 30	0 3 45	Not employed.	..	Chloroform administered as in No. 1. Leather muzzle as above. P. M.: Conditions the same as in No. 1.
Do.	3	Ditto.	3 26 0	0 0 43	0 1 50	0 3 23	0 3 45	Do.	..	Chloroform as in No. 1. In place of the leather muzzle a simple loop of rope was fastened round the jaws and tied behind the ears until the dog became quiet, so that no pressure was exercised upon the neck The dog continued to yelp and groan for 47 seconds after the cornea became insensible. P. M.: Both sides of the heart full of blood. Lungs normal.
Do.	4	Ditto.	32 44 40	0 1 3	0 1 28	0 1 50	0 2 10	3 49 10	0 2 0	Chloroformed freely, as in No. 1. The dog breathed more deeply than his predecessors. P. M.: Right side of the heart full of blood; left side moderately so. Lungs normal.
Do.	5	Ditto.	4 9 40	0 1 40	0 3 35	0 4 0	0 7 0	4 17 0	0 1 15	Chloroform in ½-drachm doses on the same cap, five doses in all. Inhaled freely. Yelped a little after cornea became insensible. P. M.: Lungs healthy; right ventricle distended with venous blood; left ventricle half full of bright arterial blood.
Do.	6	Ditto.	4 24 10	0 1 10	0 5 13	0 5 55	0 7 5	Not employed.	..	Chloroform in ½-drachm doses, as in No. 5—five doses in all. Continued to yelp loudly after cornea became insensible. P. M.: Conditions as in No. 5.
Do.	7	Full-grown well-nourished pariah, two hours after a full meal.	9 45 0	0 0 50	0 2 55	0 4 15	0 6 50	Do.	..	Chloroformed freely in the ordinary hospital way. No muzzle used. Continued yelping 1 m. 20 s. after cornea became insensible. One heaving respiration occurred about 30 s. after the respiration was considered to have ceased. Veins of the brain full. Structure normal. Right auricle and ventricle distended. Left side almost empty.
Do.	8	Ditto.	10 8 0	0 0 40	0 1 10	0 3 30	0 5 7	Do.	..	Chloroformed fully. No muzzle used. Respiration was thought to have ceased at 1 m. 10 s., but subsequently returned and continued until 3 m. 20 s., as noted in the table. The pulse similarly appeared to have ceased at 1 m. 50 s., but returned and continued until 3 m. 30 s. after the commencement of inhalation. No yelping or groaning. Both ventricles moderately firmly contracted. Right auricle distended.
Do.	9	Ditto.	10 17 35	0 1 53	0 3 30	0 4 10	0 5 40	Do.	..	Chloroformed fully. No muzzle used. Respiration stopped after 2 m. 40 s., after which there were only three gasps, and it finally ceased at 3 m. 30 s., as noted in the table. Pulse stopped after 3 m. 20 s., but returned and continued for 4 m. 10 s., as noted. Groaning continued for 2 m. 35 s.
Do.	10	Full-grown pariah (light meal only at 7.30).	10 9 40	0 5 25	0 9 50	0 11 25	0 13 53	Do.	..	Dog enclosed in a box 42½ in. by 19 in. by 17½ in. (8 cubic feet contents), which was opened occasionally in order to examine the dog, and chloroform given fully on a piece of blotting-paper placed under the lid. No struggling or excitement. Removed from the box after 6 m., and chloroform administered on a cap as before. Respiration ceased after 6 m. 15 s., but feeble occasional movements continued without probably any entrance of air into the chest for 9 m. 50 s. Heart as in previous cases. Blood in left ventricle rather venous in character.
Do.	11	Ditto, just caught.	10 48 50	0 7 0	0 9 42	0 16 30	0 18 0	11 7 15	0 2 0	Dog enclosed in the same box and chloroform administered as in No. 10. No excitement, the dog lying down quietly after about 4 m. Removed from the box after 8 m. 30 s. and

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after-	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
										chloroform administered on a cap as before; but the sponge was not pushed up close to nose, so that the vapour was not so concentrated as in the previous cases, and the last air which entered the lungs therefore contained a less proportion of chloroform. Both ventricles full, but not distended. The blood in the right ventricle dark; that in the left ventricle arterial, but not bright red.
Oct. 23	12	Full-grown pariah, rather thin.	11 17 50	0 4 10	0 5 53	0 12 35	0 16 0	11 33 40	0 2 0	Dog in box as before, but with a small opening covered with a glass lid, in order to observe movements. No excitement. Removed from box at 4 m. 30 s., and chloroform administered on a cap as in No. 11. Chest opened after 14 m., so that heart's movements could be seen. Only flickering contraction for last two minutes, after which the trachea opened and lungs inflated by means of bellows, but no restoration of heart's movements occurred, although it was stimulated by pressure.
Do.	13	Full-grown pariah brought in 3 hours before; no food since arrival.	11 40 50	0 4 28	0 5 50	0 7 7	0 8 30	11 48 40	0 1 50	In box as before. No excitement. Dog fell down in box at 11 h. 44 m. 8 s. Removed after 4 m. 30 s., and chloroform administered as before. Chest opened at 11 h. 48 m. 40 s. The heart only feebly flickering for half a minute.
Do.	14	Full-grown but rather small-sized pariah; dog rather thin; no food.	2 45 50	0 4 55	0 10 47	0 12 27	0 12 54	..	..	The dog in the same box, but excited by putting crackers inside the box and hammering it outside. Chloroform as before freely on blotting-paper inside the box. Dog fell down after 3 m. 45 s. Removed from the box after 5 m. 45 s., and chloroform administered on a cap as before. Respiration very slow after 8 minutes. A few flickering movements of chest wall after respiration had practically ceased. Heart as in No. 11. Blood rather venous on left side.
Do.	15	Large-sized full-grown pariah; not fed recently.	3 2 25	0 4 15	0 8 10	9 9 32	0 10 19	..	..	The dog in box and excited by crackers as in No. 14. Dog fell down after 1 m. 50 s., but continued to struggle. Dog removed from box after 4 m. 50 s. and chloroform continued as before. Breathing very shallow after 7 m., hardly more than flickering movement of the chest wall. Post-mortem condition the same.
Oct. 24	16	Small-sized but fully grown pariah just brought in.	3 17 50	0 6 55	0 15 50	0 17 40	0 18 11	..	..	Dog in the same box, only without agitation. Chloroformed as in previous cases. Removed from the box after 7 m. 5 s., and chloroform continued as before. Evulsion of the nails performed after 9 m. 17 s., and while respiration continued. No apparent effect on the pulse in femoral artery. Internal rectus muscle cut through after 13 m. 40 s. Pulse did not intermit during operation, but was felt to be hard and cordy. This condition had not been previously observed. Chloroform temporarily interrupted during operation. Pulse became feeble and intermittent after 15 m. 5 s.
										A very little almost venous blood in the left ventricle. Right side full. Liver very much congested; the large veins of the splanchnic area engorged, but venous radicles almost empty.
Oct. 25	17	Full-grown well-nourished dog, fed with beef-tea about a quarter of an hour previously.	9 30 15	0 4 15	0 6 5	0 7 12	0 7 50	..	9 34 5	In the same box, but this had been made more air-tight. Chloroform fully on blotting-paper. No excitement, the dog lying down after 3 m. 50 s. and rolling about from side to side. Convulsed violently at 4 m. Taken out of the box at 4 m. 45 s. and chloroformed with the ordinary cap. Respiratory movements and heart sounds both feeble at that time. Post mortem: Heart structure normal.
Do.	18	Full-grown pariah.	9 49 20	0 1 22	0 2 30	0 4 0	0 4 22	..	..	Chloroformed on the table with cap in the ordinary way. Pulse only flickering after 3 m. 29 s. No excitement and very little struggling. Heart healthy; both sides moderately full; that on left side rather venous in colour.
Do.	19	Full-grown well-nourished pariah.	9 57 27	Not observed.	0 4 38	0 5 38	0 7 10	..	..	In the box with 2 oz chloroform on a towel put into the box with the dog. Dog fell down after 2 m. 40 s. and struggled violently. Respiration shallow after 3 m. 30 s. Taken out of box when pulse stopped. Heart healthy, and in the same condition as the last. Liver very congested.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after	Pulse stopped after—	Heart ceased beating after	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct. 25.	20	Full-sized well-nourished dog.	10 10 55	Not observed.	0 2 52	0 4 35	0 4 45	..	..	Two ounces of chloroform introduced on blotting-paper into the box and allowed to completely evaporate before the dog was put in. Sat down after 1 m. Fell down after 2 m. Taken out after 3 m. 45 s., as the pulse had stopped, but it returned and flickered for nearly another minute. Heart as before; liver very congested; veins of the splanchnic, including the venous radicles, engorged.
Do.	21	Small badly-nourished pariah.	10 27 25	Ditto.	..	..	..	—	—	Box prepared as in the last, but with only one ounce of chloroform. Dog introduced when the blotting-paper appeared dry as in No. 20. Fell down after 1 m. 40 s. Struggling after 2 m. Breathing laboured after 2 m. 30 s.; shallow after 3 m. 35 s. Jerking of the thoracic wall merely at 5 m., but afterwards breathing more regularly and deeply, lying quietly at the bottom of the box. Box opened at 11.46 freely aired, another ounce of chloroform placed inside on blotting paper. Cornea now quite insensible. When respiration had ceased, the dog was removed from the box; no pulse could be felt or heart sound heard.
Do.	22	Full-sized fairly-nourished pariah.	10 50 33	0 12 25	0 19 24	0 21 30	0 22 15	—	—	Chloroformed with Junker's inhaler. No muzzle. The ball being compressed 20 times in a minute. Struggled a little at first. Cornea becoming insensible very gradually. Breathing ceased at 12 m. 38 s., but returned at 14 m. 30 s., the pulse during this interval being very rapid. Respiration then very shallow, but continued until 19 m. 24 s. after the commencement of inhalation. Four drachms of chloroform used. Heart, liver, and venous radicles as in No. 20.
Do.	23	Half-breed spaniel pariah, badly nourished.	11 27 33	0 2 32	0 5 18	Not noted exactly.	0 8 5	—	—	Chloroformed with Junker at the rate of 40 squeezes per minute. The pulse stopped about ½ m. after the respiration; exact time not noted. Two drachms of chloroform used. Left ventricle empty. Liver and venous radicles as in No. 20.
Do.	24	Half-breed black-and-tan pariah, well-nourished.	11 47 20	0 1 27	0 7 32	0 7 49	0 9 0	—	—	Chloroformed with Junker, squeezing rapidly so as to keep the second ball distended. Respiration stopped at 4 m. 26 s.; but, the chloroform being discontinued to listen to heart, the respiration returned, and finally ceased after 7 m. 32 s. Left side of heart almost empty and otherwise as in No. 23. 2½ drachms of chloroform used.
Do.	25	Full-sized, strong pariah.	2 25 10	..	..	..	..	..	..	Manometer experiment.
Oct. 26	26	Full-sized pariah (brown), fairly nourished	7 44 0	..	8 32 1	8 34 0	No cessation.	Employed, but not timed.		Box, 8 feet cubic contents, prepared as in No. 21, with 8 drachms of chloroform fully evaporated before the dog was put in. Transferred at 8 h. 19 m. 30 s. into another box of 9½ cubic feet contents prepared in the same way, before the dog was put into it, with 9½ drachms of chloroform, so that the proportion of vapour was equal in the two boxes. Removed from box at 8 h. 32 m. Heart beating very fast, but no pulse could be felt. Breathing returned in a few minutes, but stopped again, and was only fully restored after artificial respiration had been employed. Dog fell down at 7 h. 53 m. Box changed at 8 h. 19 m. 30 s.
Do.	27	Same dog.	8 52 0	—	9 29 0	9 31 30	9 31 50	Not employed.		Repetition of the last experiment with the same dog, which was still drunk from the previous experiment. Recovered. Respiration returned about 1 m. after the heart was supposed to have ceased beating. Respiration again stopped, 9 h. 35 m. 30 s. Breathing again 9 h. 37 m. 30 s. During this time the pulse had not stopped. Cornea sensible at 9 h. 38 m. 30 s. Respiration 34 per minute, and the dog fully recovered eventually. Was lying down at the commencement. Box changed at 9 h. 22 m.
Do.	28	Same dog.	10 44 0	—	11 35 0	11 35 0	—	—	—	Same boxes as in the last, with 8 drachms and 9½ drachms of chloroform respectively. Respiration gasping at 10 m. 48 s.; afterwards continuously, very feeble, but regularly. On respiration ceasing at 11 h. 35 m. he was taken out of the box; the pulse could not be felt, and the heart, which was beating very slowly, was thought to have stopped. He recovered, however, without artificial respiration, and commenced to breathe spontaneously at 11 h. 41 m. Dog fell down in box at 10 h. 47 m. 30 s. Box opened at 11 h. 23 m. 30 s.

* Nos. 29 to 185 were manometer experiments.

EXPERIMENTS CONDUCTED BY SUBCOMMITTEE.

I. (*a*).—*Large doses of chloroform given till death occurred, the chloroform being administered on a cloth cap inhaler. Dogs taken without any preparation.*

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct. 24.	186	Full-grown pariah, healthy.	2 18 30	0 1 50	0 3 10	0 3 50	0 4 50	..	..	Severe struggling, and had to be held down forcibly for the administration.
Do.	187	Full-grown, healthy pariah.	2 28 30	0 0 36	0 1 15	0 3 16	0 4 3	..	..	Two gasps were made after respiration had ceased, but no air entered the lungs. Struggled severely, and had to be held down forcibly.
Do.	188	Ditto.	2 37 0	0 0 57	0 1 12	0 1 32	0 3 35	..	..	Severe struggling, and had to be held down forcibly.
Do.	189	Ditto.	2 48 10	0 0 40	0 2 0	0 2 23	0 4 37	..	..	Pulse returned for a few seconds before the heart stopped beating. Struggled a great deal.
Do.	190	Ditto.	2 56 10	0 1 4	0 1 44	0 2 4	0 4 13	..	..	Struggled severely. Gasped six times after the respiration ceased.
Do.	191	Under-sized pariah.	3 8 50	0 0 37	0 1 15	0 1 23	0 4 20	..	..	Struggled severely.
Do.	192	Pariah puppy, nine months old.	3 16 10	0 0 36	0 1 37	0 1 56	0 5 23	..	..	Struggled severely. A few flickering beats were felt at the pulse when the dog gasped, which he did once before the heart ceased beating.
Do.	193	Full-grown, but small pariah.	3 23 4	0 0 48	0 3 50	0 5 48	0 8 27	..	..	Struggled severely. Gasped twice before the heart stopped.
Do.	194	Full-grown pariah.	3 35 5	0 0 52	0 1 33	0 2 48	0 4 33	..	..	Struggled. Gasped thrice before the heart stopped.
Do.	195	Ditto.	3 42 8	0 0 56	0 2 42	0 3 32	0 5 28	..	..	Struggled.
Oct. 25	196	Ditto.	9 49 0	0 0 50	0 1 25	0 2 4	0 3 42	..	..	Struggled.
Do.	197	Ditto.	10 6 4	0 0 46	0 1 13	0 2 25	0 4 19	..	..	Gasped twice after the respiration ceased. Pulse stopped after 1 m. 50 s., and, with gasping, returned for 30 s. Stopped finally after 2 m. 25 s.
		I. (*b*).—*Dogs fed on Liebig's extract of meat a quarter of an hour before inhalation.*								
Do.	198	Large-sized, full-grown, healthy pariah.	10 12 8	0 0 51	0 2 52	0 3 44	0 5 15	..	..	Had Liebig's extract of meat, two teaspoonfuls in hot water, a quarter of an hour before inhalation. Gasped four times, and pulse returned after 40 s. Pulse stopped again after 4 m. 45 s. Chloroform given as in the previous experiment.
Do.	199	Healthy, large-sized pariah.	10 27 12	0 1 8	0 2 10	0 2 54	0 4 32	..	..	Struggled. Had Liebig's extract of meat as in the above case.
Do.	200	Small-sized, healthy pariah.	10 38 2	0 1 4	0 1 22	0 3 41	0 4 14	..	..	Struggled. Gasped before heart stopped beating. Ditto.
Do.	201	Full-grown, well-nourished pariah.	2 5 0	0 0 58	0 2 22	0 2 30	0 4 14	..	..	Struggled. Had Liebig's extract of meat as in the last case.
Do.	202	Ditto.	2 18 0	0 0 54	0 1 56	0 2 3	0 4 2	..	..	Struggled. Had Liebig's extract of meat as in the last case.
Do.	203	Ditto.	2 21 0	0 1 1	0 1 48 Gasped from 1 m. 55 s. till 2 m. 9 s.	0 2 18 Pulse returned at 3 m. 10 s. till 3 m. 37 s.	0 4 17	..	..	Struggled. Respiration ceased after 1 m. 48 s. After 1 m. 55 s. gasped till 2 m. 9 s. Pulse ceased after 2 m. 18 s. Returned after 3 m. 10 s. and went on till 3 m. 37 s., when it finally stopped. Had Liebig's extract of meat as in the last case.
Do.	204	Full-grown, well-nourished, small-sized pariah.	0 2 29	0 1 20	0 4 17	0 5 2	0 7 34	..	..	Had Liebig's extract of meat as in the last case.
Do.	205	Full-grown, well-nourished, extra strong pariah.	2 41 0	0 0 50	0 1 20	0 1 22	0 1 22	..	..	In this case the dog, which was a very savage one, escaped twice before being chloroformed, and struggled very forcibly. He had to be brought into the room with a tight rope and chain round the neck, and was muzzled with the leather muzzle. The respiration ceased after 1 m. 20 s.; the muzzle and rope were removed as quickly as possible, but immediately afterwards, two or three seconds at most, the heart and pulse stopped simultaneously. It was impossible to perform ordinary artificial respiration, as no air could be forced in or out of the lungs. Post-mortem: Lungs engorged, right and left ventricle of heart engorged and distended with dark venous blood. Post-mortem appearances indicate death from asphyxia pure and simple. Liver contained less blood than usual, and it did not flow in section. Had Liebig's extract of meat as in the last case.
		I. (*c*).—*Dogs kept fasting for twenty-four hours.*								
Oct. 26.	206	Full-grown, healthy pariah, well nourished.	8 30 0	0 1 47	0 2 50	0 3 22	0 7 44	..	..	Struggled severely. Gasped several times in the interval between the stoppage of pulse and heart, and the pulse returned for 1 m. 35 s. (The chloroform in this and the following cases was given on the cloth cap inhaler.)

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct 26.	207	Full-grown pariah puppy, badly nourished.	8 43 0	0 1 9	0 2 13	0 3 23	0 6 35	..	..	Struggled severely. Gasped five times before heart stopped. Pulse returned for 30 s. before heart stopped acting.
Do.	208	Full-grown, well-nourished pariah.	8 54 0	0 1 40	0 3 0	0 8 0	0 8 48	..	..	Struggled severely. Gasped several times before heart stopped.
Do.	209	Badly nourished, full-grown, small-sized pariah.	9 9 10	0 1 7	0 3 4	0 4 6	0 6 23	..	..	Struggled severely. Dog gasped six times before heart ceased to beat.
Do.	210	Ill-nourished, full-grown pariah.	9 21 0	0 1 33	0 3 43	0 4 20	0 9 16	..	..	Struggled severely.

I. (*d*).—*Dogs that have had rectified spirit before inhalation. Chloroform in large doses on cloth cap inhaler.*

Do.	211	Full-grown, healthy pariah	10 42 0	0 0 50	0 3 2	0 3 48	0 6 18	..	..	Struggled. Had ½ oz. of spiritus rectificatus immediately before the inhalation.
Do.	212	Large-sized, unusually strong pariah.	10 58 0	0 0 44	0 2 34	0 2 54	0 5 4	..	..	A small dose of chloroform was given preparatory to the administration of the spirit, as there was difficulty in getting him to swallow it without the anæsthetic.
Do.	213	Full-grown, badly nourished pariah, with a healing wound on left side of thorax.	11 15 0	0 2 22	0 3 51	0 4 15	0 6 28	..	..	Had ½ oz. of spiritus rectificatus with water four minutes before the inhalation. Little or no struggling.
Do.	214	Full-grown, badly nourished, weak pariah (emaciated).	11 24 10	0 1 33	0 8 23	0 9 15	0 12 46	..	..	Had ½ oz. of spirits and water ten minutes before the inhalation, which made it drunk a minute after, and inhaled the chloroform quietly, with little or no struggling. No force was required to compel this animal to inhale, and there was no holding of the breath as in the cases where no spirit was administered or it was administered immediately before the inhalation.
Do.	215	Full-grown, well-nourished pariah.	11 50 0	0 1 2	0 3 20	0 4 6	0 6 20	..	..	This dog struggled a great deal, although it had had ½ oz. of spirits ten minutes before the inhalation, as in the last case.

I. (*e*).—*Five dogs that have had two teaspoonfuls of Liebig's extract of meat two hours before the administration of chloroform in large doses.*

Do.	216	Full-grown, healthy pariah.	2 30 0	0 0 42	0 1 22	0 1 38	0 4 18	..	..	Struggled a great deal. Inhaler was covered by mackintosh in this case to exclude air. Had extract of meat. The chloroform in this and the following cases was given as in the previous experiments.
Do.	217	Full-grown, healthy pariah, unusually strong.	2 49 30	0 0 53	0 1 40	0 2 8	0 4 46	..	..	Struggled a great deal. Pulse returned for 8 s. after it had stopped. Had extract of meat. Chloroformed in the same way.
Do.	218	Full-grown, ill-nourished pariah.	3 3 0	0 1 12	0 2 25	0 2 41	0 5 9	..	..	Struggled severely. Pulse returned for 17 s. before the heart stopped. Had extract of meat. Chloroformed in the same way.
Do.	219	Full-grown, healthy, well-nourished pariah.	3 17 0	0 1 48	0 3 0	0 3 38	0 6 17	..	..	Struggled severely. Had extract of meat. Chloroformed in the same way.
Do.	220	Large-sized, powerful pariah.	3 27 0	0 1 23	0 2 37	0 4 5	0 6 58	..	..	Struggled severely. Gasped, and the pulse returned for 40 s. before the heart stopped. Had extract of meat. Chloroformed in the same way.

I. (*f*). — *Five dogs that have had food two hours previously to inhalation and chloroformed in the above manner.*

Do.	221	Small-sized but full-grown and healthy pariah.	3 39 0	0 1 10	0 2 6	0 3 12	0 6 54	..	..	Struggled. Gasped after pulse stopped, and the pulse returned for 15 s. before the heart stopped. Had food two hours before.
Do.	222	Full-grown, healthy pariah.	3 49 10	0 1 10	0 2 22	0 3 17	0 6 38	..	..	Struggled very hard. Pulse returned for 28 s. after it had stopped. Had food two hours before.
Do.	223	Lean but full-grown pariah.	4 10 54	0 1 4	0 1 43	0 3 5	0 4 36	..	..	Struggled. Gasped after breathing had ceased. Had food 2 h. before inhalation.
Do.	224	Old and large-sized pariah.	4 20 40	0 0 58	0 2 0	0 2 33	0 5 43	..	..	Struggled a great deal. Pulse returned for 30 s. after it had stopped. Had food two hours before.
Do.	225	Well-nourished, full-grown pariah, unusually strong.	4 30 6	0 0 49	0 1 2	0 2 15	0 3 0	..	..	Struggled very hard, and was choked in being brought up to the table. Had food two hours before.

I. (*g*).—*Dogs kept fasting from the previous evening chloroformed with large doses as usual.*

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct. 28	226	Full-grown, well-nourished pariah.	10 18 40	0 1 20	0 2 5	0 3 20	0 8 20	..	..	Dog struggled very much during inhalation. Chloroformed fasting. The chloroform was given, as in the previous cases, on a cloth cap inhaler.
Do.	227	Under-sized, fairly-nourished pariah.	10 32 8	0 0 57	0 1 32	0 2 2	0 6 42	..	..	Dog did not struggle much. Chloroformed starving.
Do.	228	Large-sized, full-grown powerful pariah.	10 51 10	0 1 12	0 2 23	0 4 26	0 6 28	..	..	Struggled hard. Gasped after pulse stopped. Pulse returned simultaneously for 40 s. Chloroformed starving.
Do.	229	Large-sized, full-grown pariah.	11 1 48	0 0 45	0 3 14	0 4 4	0 6 42	..	..	Struggled hard. Chloroformed starving.
Do.	230	Large-sized, full-grown but ill-nourished pariah.	11 12 30	0 1 35	0 1 48	0 2 18	0 5 12	..	..	Struggled hard. Gasped, and pulse returned for 1 m. and 5 s. before heart ceased contracting. Chloroformed fasting.
Do.	231	Badly nourished, full-grown pariah.	11 23 6	0 1 23	0 6 18	0 7 11	0 9 3	..	..	Struggled a little. Chloroformed fasting.
Do.	232	Large-sized, full-grown pariah.	11 45 15	0 2 6	0 2 49	0 3 13	0 5 12	..	..	Struggled very hard. Gasped after respiration ceased. Pulse returned for 23 s. Chloroformed fasting.
Do.	233	Large-sized, powerful pariah.	11 55 0	0 1 3	0 1 28	0 1 53	0 3 13	..	..	Struggled very hard. Chloroformed fasting.
Do.	234	Full-grown pariah, well nourished.	3 3 30	0 1 14	0 1 45	0 2 20	0 6 28	..	..	Ditto ditto ditto
Do.	235	Full-grown, healthy, well-nourished pariah.	3 19 0	0 1 1	0 1 55	0 3 17	0 4 37	..	..	Struggled very hard. Chloroformed fasting.
Do.	236	Weakly pariah puppy, eight months old.	3 28 0	0 1 45	0 2 48	0 3 23	0 6 12	..	..	Struggled feebly. Chloroformed fasting.
Do.	237	Ditto.	3 38 0	0 0 39	0 1 48	0 3 12	0 4 13	..	..	Ditto ditto
Do.	238	Lean, full-sized, ill-nourished pariah.	3 47 45	0 0 57	0 2 14	0 3 26	0 5 27	..	..	Struggled hard. Gasped several (13) times, when the pulse returned for 23 s. Chloroformed fasting.
Do.	239	Lean and full-grown pariah pup, about nine months old.	3 56 20	0 1 11	0 2 24	0 3 43	0 6 0	..	..	Struggled. Chloroformed fasting.
Do.	240	Full-grown, badly fed pariah.	4 5 0	0 0 46	0 1 58	0 3 8	0 6 23	..	..	Ditto ditto
Do.	241	Full-grown, well-nourished pariah.	4 13 6	0 2 3	0 2 23	0 3 8	0 5 0	..	..	Struggled very hard. Gasped after breathing had stopped. Chloroformed fasting.
Do.	242	Large-sized, full-grown, powerful pariah.	4 23 0	0 1 6	0 1 48	0 2 43	0 6 58	..	..	Had to be muzzled. Struggled very hard. Gasped after breathing stopped, and the pulse returned for 12 s. Chloroformed fasting.
Do.	243	Full-grown, healthy pariah.	4 34 50	0 1 3	0 2 28	0 3 12	0 8 5	..	..	Struggled feebly. Chloroformed fasting.
Do.	244	Full-grown, well-nourished pariah.	10 30 0	0 0 46	0 1 12	0 3 52	0 5 25	..	..	Dog struggled. Chloroformed fasting.
Do.	245	Ill-fed pariah, full grown.	10 37 55	0 0 38	0 1 22	0 2 33	0 4 53	..	..	Struggled hard. Gasped. Chloroformed fasting.
Do.	246	Thin, full-sized pariah dog, with healing sore on back.	10 43 10	0 0 56	0 1 14	0 3 37	0 6 0	..	..	Struggled. Chloroformed fasting.

I. (*h*).—*Dogs chloroformed as they were obtained from the bazaars, and chloroformed with large doses on cloth inhaler.*

Do.	247	Full-grown, badly nourished pariah.	10 50 50	0 0 55	0 2 3	0 5 48	0 6 36	..	..	Struggled hard. Gasped before heart stopped. Dog chloroformed as he was brought in.
Do.	248	Ditto.	11 0 0	0 0 48	0 1 36	0 2 45	0 4 58	..	..	Struggled.
Do.	249	Badly nourished (emaciated), full grown pariah.	11 7 3	0 0 44	0 1 28	0 3 0	0 5 24	..	..	Struggled.
Do.	250	Well-nourished, full-grown pariah (very vicious).	11 17 30	0 0 50	0 1 47	0 6 33	0 7 48	..	..	Struggled very hard and gave trouble when being brought to the table. Gasped after breathing had stopped four times.
Do.	251	Full-sized, ill-fed pariah.	11 26 0	0 0 36	0 0 53	0 1 51	0 3 17	..	..	Struggled hard.
Oct. 29	252	Full-sized, well-fed, strong pariah.	11 32 40	0 1 22	0 2 31	0 4 16	0 11 12	..	..	Struggled. In this experiment the cessation of the heart's action was judged by means of a needle thrust into that organ, and not by auscultation as in the former cases.
Do.	253	Emaciated, full-grown pariah.	11 47 50	0 1 13	0 2 7	0 4 28	0 6 53	..	..	Struggled. Gasped several times. Needle used as in the last case.

Date.	No.	Description of dog.	Time at which inhalation commenced	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after	Artificial respiration commenced at—	Artificial respiration continued for—	* Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct. 29	254	Full-sized, healthy pariah.	3 1 11	0 1 59	0 2 42	0 3 58	0 12 8	..	..	Struggled hard.
Do.	255	Old pariah, blind of one eye from an opacity of cornea.	3 15 30	0 0 37	0 1 35	0 3 36	0 4 38	..	..	Struggled. Gasped after breathing had ceased.
Do.	256	Full-grown, well-nourished pariah.	3 24 30	0 0 58	0 2 3	0 3 58	0 8 33	..	..	Struggled. Gasped after breathing had ceased. Heart's action ceased to be heard with the stethoscope after 4 m. 37 s., but on thrusting a needle into the heart, it was found to be acting and ceased only after 8 m. 33 s. from the time of inhalation.
Do.	257	Well-nourished, full-grown, powerful pariah.	3 40 45	0 0 56	0 2 4	0 4 52	0 6 30	..	..	Struggled.
Do.	258	Well-nourished, full-grown pariah	3 56 10	0 0 48	0 1 16	0 3 17	0 6 40	..	..	Ditto.
Do.	259	Full-grown, well-nourished pariah.	4 4 0	0 0 53	0 1 50	0 2 43	0 7 38	..	..	Ditto.
Do.	260	Full-grown, ill-conditioned pariah.	4 16 25	0 1 36	0 2 37	0 3 35	0 6 33	..	..	Struggled very hard.
Oct. 30	261	Full-grown pariah, fairly nourished.	10 1 0	0 1 10	0 2 1	0 2 45	0 5 30	..	..	Struggled and resisted as usual. Needle, with flag, thrust into the heart after stopping of pulse. Movements of flag, at first violent, gradually became feeble, and when they were reduced to mere vibration, the heart was said to have ceased.
		II. (*a*).—*Two ounces of chloroform in tin box.*								
Do.	262	Ill-nourished, middle-sized pariah.	10 13 30	Not noted.	0 45 28	0 48 15	0 52 12	..	..	The anæsthetic was administered by placing the head and neck of the dog in a box 8 cubic feet in capacity, in which 2 oz. of chloroform had been evaporated. Dog struggled. Dog breathing naturally, with a good pulse, at 11 h. 10 m. Lid of box removed, and 2 oz. of chloroform placed in it on blotting paper. Box covered again at 11 h. 10 m. 45 s. The first dose of chloroform in this experiment was placed in the box an hour previous to the inhalation, and it was proved afterwards that the lid had been removed more than once during this time.
Do.	263	Ill-nourished, under-sized pariah.	11 30 0	Do.	0 0 45	0 2 30	0 3 45	..	..	Box cleaned, and dog chloroformed in the same way. Dog struggled. The inhalation was commenced immediately after the chloroform was put into the box.
Do.	264	Large-sized, full-grown pariah.	11 43 0	Do.	0 1 46	0 3 30	0 5 0	..	..	Dog struggled hard. Chloroformed in the same manner.
Do.	265	Ill-fed, small pariah.	3 0 0	Do.	0 2 43	0 6 8	0 6 55	..	..	Struggled as usual. Chloroformed as in the last case. Gasped once before death.
Do.	266	Small-sized, full-grown, and weakly pariah.	3 16 50	Do.	0 1 37	0 2 51	0 4 39	..	..	Struggled as usual. Chloroform given as in the last case.
		II. (*b*).—*One ounce of chloroform instead of two ounces given in the tin box as in* II. (*a*.)								
Do.	267	Full-sized, healthy, well-nourished pariah.	3 31 15	Not noted.	0 1 48	0 3 2	0 7 38	..	..	Dog struggled. One ounce of chloroform administered instead of two, but in the same tin box as in the last five cases.
Do.	268	Large-sized, powerful pariah.	3 42 45	Do.	0 3 14	0 6 12	0 8 5	..	..	Struggled a great deal. Chloroform given as in Experiment 267.
Do.	269	Full-grown, ill-nourished pariah.	3 55 0	Do.	0 2 35	0 4 26	0 5 8	..	..	Struggled as usual. Chloroform given as in the last case.
Oct. 31	270	Full-grown, ill-nourished pariah.	9 48 0	Do.	0 2 30	0 6 30	0 7 42	..	..	Chloroformed in tin box as in the last case. Did not struggle at all during inhalation.
Do.	271	Full-grown, well-nourished pariah.	10 0 0	Do.	0 3 0	0 6 40	0 10 15	..	..	Struggled as usual. Breathed again 50 s. after the respiration ceased and continued breathing for 50 s. Chloroform given as in the last case.
		II. (*c*).—*Half an ounce of chloroform used in the tin box.*								
Do.	272	Fairly nourished, full-grown pariah.	10 14 10	Not noted.	0 7 35	0 13 55	0 16 10	..	..	Chloroformed as above. Struggled as usual, yelped loudly. Breathing returned 20 s. after it had stopped and continued for 5 m. 25 s. afterwards.
Do.	273	Full-grown, fairly well-nourished pariah.	10 35 20	Do.	0 19 4	0 19 6	0 19 12	—	—	Struggled very hard and yelped loudly. The breathing stopped very gradually in this case, becoming shallow by degrees until it ceased. Chloroformed as in the last case.

Date.	No.	Description of dog.	Time at which inhalation commenced	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Oct. 31	274	Large-sized, powerful, full-grown pariah.	11 2 0	Not noted.	..	..	..	..	..	Struggled and yelped loudly. Breathing became stertorous after 19 m. 15 s. Convulsions set in at 11.45 o'clock. The dog gradually recovered and was let loose at 12.15.
Do.	275	Full-grown, healthy pariah.	3 38 0	Do.	0 11 15	0 12 2	0 13 12	—	—	Struggled and yelped loudly. Breathing stopped very gradually as in Experiment 273. The action of the heart became very intermittent towards the end. There were three distinct intervals of about 8 s. each, when there were no contractions, each interval being followed by very quick cardiac action. Chloroform given as in the last case.
Do.	276	Powerful, full-grown, healthy pariah.	4 6 0	Do.	0 17 5	0 17 12	0 18 2	—	..	Had to be muzzled. Struggled a great deal. Breathing ceased very gradually. Chloroformed as in the last case.
		I. (*i*).—*Dogs chloroformed with about* **two** *ounces of chloroform at a time on the cloth inhaler.*								
Do.	277	Full-grown, healthy pariah.	11 48 0	0 0 55	0 1 17	0 2 5	0 4 3	..	..	Struggled as usual.
Do.	278	Ditto.	11 55 0	0 1 7	0 1 58	0 3 21	0 5 34	..	..	Struggled as usual.
Do.	279	Full-grown, pariah pup.	3 43 0	0 0 45	0 1 23	0 1 52	0 4 28	..	..	Held its breath a great deal, and then made some very full inspirations. Gasped before heart stopped.
Do.	280	Full-grown, healthy pariah.	3 55 55	0 1 18	0 2 11	0 4 28	0 6 18	—	—	The dog struggled as usual.
Do.	281	Large-sized, full-grown pariah.	4 13 45	0 1 10	0 3 5	0 3 12	0 8 42	..	..	Struggled in the usual manner.
		II. (*a*).—*Two ounces of chloroform given in tin box.*								
Nov. 1	282	Under-sized, ill-fed pariah.	9 49 0	Not noted.	0 4 30	0 6 0	0 7 24	..	..	Chloroformed in tin box. Struggled as usual. Temperature in rectum at 9 h. 53 m. during inhalation 101·6° F. Temperature same after heart stopped.
Do.	283	Full-grown, well-nourished pariah.	10 2 30	Do.	0 11 47	0 12 30	0 15 17	..	..	Did not struggle at all. Temperature in rectum at 10 h. 5 m. 30 s. during inhalation 100° F. Temperature when heart stopped, 100·5° F.
Do.	284	Under-sized, ill-nourished pariah.	10 26 30	Do.	0 4 40	0 5 25	0 5 30	..	..	Chloroformed as above. Struggled as usual. Temperature in rectum before inhalation 102·4° F.; when heart stopped 103° F.
Do.	285	Full-sized, well-nourished pariah.	10 41 50	Do.	0 4 46	0 5 52	0 9 38	..	..	Temperature before inhalation 99·8° F. Struggled. Temperature immediately after death 100·4° F.
Do.	286	Full-sized pariah, with opacity of cornea in one eye.	10 58 13	Do.	0 4 24	0 5 8	0 8 59	..	..	Temperature (*a*) before inhalation 102° F.; (*b*) after heart stopped 102·8° F. Struggled.
		II. (*b*).—*One ounce of chloroform given in tin box.*								
Do.	287	Full-sized, well-nourished pariah.	11 12 0	Not noted.	0 8 31	0 10 0	0 14 6	..	..	Struggled very hard. Temperature before inhalation 102° F.; after heart ceased 103° F.
Do.	288	Full-sized, healthy pariah.	11 32 0	Do.	0 6 17	0 7 12	0 10 4	..	..	Temperature before inhalation 103·8° F.; after heart ceased 104° F. Struggled as usual.
Do.	289	Emaciated, full-grown pariah, lame in one leg from an old fracture.	3 7 0	Do.	0 4 12	0 4 53	0 10 13	..	..	Dog struggled. Temperature before inhalation 101·6° F.; after death 101·8° F. Gasped before the heart ceased. Pulse returned and lasted for 1 m. 50 s.
Do.	290	Full-grown, healthy pariah.	3 25 30	Do.	0 4 3	0 6 47	0 8 42	—	—	Temperature before inhalation 103° F. Dog struggled. After death 103·4° F.
Do.	291	Ill-nourished, full-grown pariah.	3 40 30	Do.	0 7 26	0 8 33	0 11 53	..	—	Temperature before inhalation 103° F. Dog struggled. Breathing stopped very gradually. Temperature after death 104° F.
		II. (*c*).—*Half an ounce of chloroform used in these cases in tin box.*								
Do.	292	Full-grown, ill-nourished pariah.	3 58 15	Not noted.	0 8 11	0 9 38	0 10 28	..	..	Dog struggled. Temperature before inhalation 103° F.; after death 103·2° F.
Nov. 2.	293	Under-sized, ill-nourished pariah.	9 26 0	Do.	0 10 40	0 11 10	0 15 40	..	..	Struggled as usual. Temperature in rectum before inhalation 99·8° F. Temperature remained the same when heart ceased acting. Gasped at 9 h. 38 m.
Do.	294	Under-sized, fairly well nourished pariah.	9 47 12	Do.	0 16 0	0 17 25	0 19 55	..	..	Struggled as usual. Temperature in rectum before inhalation 100° F., and remained the same when heart ceased acting.
Do.	295	Under-sized, fairly nourished pariah.	10 29 0	Do	0 10 30	..	..	..	..	Chloroformed as above. Temperature in rectum before inhalation 102° F. Respiration, after stopping for 30 s., returned again, and the dog gradually recovered. Temperature when removed 102·6° F. Removed from the box at 11 o'clock.
Do.	296	Full-grown, lean pariah.	11 7 45	Do.	0 14 8	0 16 31	0 18 1	..	..	Temperature in rectum before inhalation 100·6° F.; after death 101° F. Struggled a great deal.

III. (*a*).—*In these cases one-fourth of a grain of morphinæ hydrochloras was injected over the epigastrium of the dog fifteen minutes before the inhalation. Chloroform in large doses given on the cloth inhaler.*

Date.	No.	Description of Dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped beating after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 2.	297	Full-grown, small-sized pariah.	11 14 30	0 1 3	0 1 45	0 2 7	0 6 33	..	..	Morphine injected at 10 h. 59 m. Struggled as usual.
Do.	298	Full-grown, well-nourished pariah.	11 30 0	0 1 38	0 3 12	0 3 37	0 6 22	..	..	Morphine injected at 11 h. 16 m. Dog struggled.
Do.	299	Full-grown, healthy pariah.	11 46 0	0 1 48	0 2 5	0 3 13	0 7 58	..	..	Morphine injected at 11 h. 32 m. Struggled. Gasped after pulse stopped.
Do.	300	Full-sized, well-nourished pariah puppy.	2 36 0	0 0 35	0 1 5	0 1 10	0 2 5	..	..	Morphine injected at 2 h. 22 min. Pulse ceased almost immediately after the respiration stopped. Struggled.
Do.	301	Full-sized, well-nourished pariah.	2 45 0	0 0 43	0 1 33	0 1 52	0 5 3	..	..	Morphine injected at 2 h. 30 s. Gasped after pulse stopped.

III. (*b*).—*Half grain of morphine injected in these dogs before being chloroformed with large doses on the cloth cap inhaler.*

Do.	302	Full-sized, ill-nourished pariah.	3 3 10	0 1 1	0 2 12	0 3 4	0 5 17	..	..	Morphine injected at 2 h. 48 m. Dog struggled.
Do.	303	Large-sized, well-nourished pariah.	3 16 2	0 0 44	0 2 8	0 3 36	0 4 53	..	..	Morphine injected at 3 P.M. Struggled very hard and got loose. Caught and brought back, and held down forcibly a second time.
Do.	304	Full-sized, healthy pariah.	3 25 10	0 1 10	0 2 29	0 4 42	0 5 2	..	..	Morphine injected at 3 h. 11 m. 20 s. Gasped after pulse stopped.
Do.	305	Full-sized, ill-nourished pariah with a cyst on tongue.	3 38 20	0 1 3	0 1 36	0 2 28	0 5 47	..	..	Morphine injected at 3 h. 23 m.
Nov. 4.	306	Full-sized, fairly nourished pariah.	9 30 0	0 0 45	0 1 20	0 1 50	0 5 8			Morphine at 9 h. 15 m. Struggled as usual. Pulse stopped 30 s. after respiration.

V. (*d*).—*Artificial respiration tried after respiration ceased on dogs that had had a subcutaneous injection of half a grain of morphine. (The chloroform was given in large doses on the cloth cap inhaler.)*

Do.	307	Under-sized, fairly nourished pariah.	9 55 0	0 0 40	0 1 40	0 4 0	Not noted.	9 56 50	0 4 0	Morphine injected at 9 h. 38 m. Pulse found to have stopped at 4 m. after inhalation began. Artificial respiration commenced 10 s. after respiration ceased; continued for 4 m. Flag introduced into heart at the end of 4 m. did not vibrate. Artificial respiration commenced 10 s. after breathing stopped. Unsuccessful.
Do.	308	Ill-nourished, mangy pariah puppy, between four and five months old.	10 7 0	0 0 45	0 1 40	0 4 50	0 5 25	10 9 0	0 4 0	Morphine injected at 9 h. 47 m. Struggled slightly. Artificial respiration continued for 4 m.; no effect. Pulse stopped during artificial respiration. Artificial respiration commenced after 20 s. Unsuccessful.
Do.	309	Full-grown pariah puppy, emaciated.	10 28 50	0 0 46	0 1 4	Not noted.	Not noted	10 30 15	0 6 0	Morphine injected at 10 h. 17 m. Dog died. Artificial respiration commenced after 21 s. Unsuccessful.
Do.	310	Full-grown, powerful pariah.	10 38 0	0 0 48	0 1 52	..	..	10 40 0	0 8 0	Morphine injected at 10 h. 23 m. Natural respiration re-established at 10 h. 48 s. Artificial respiration commenced 8 s. after breathing stopped. Successful.
Do.	311	Emaciated, full-sized pariah.	11 6 0	0 1 0	0 3 4	Not noted.	Not noted.	11 9 20	0 12 0	Half grain morphine injected at 10 h. 52 m. Artificial respiration commenced 16 s. after breathing stopped. Unsuccessful.

III. (*c*). —*Half a grain of morphine injected fifteen minutes before, and varying quantities of strychnine immediately before, administration of chloroform. Artificial respiration tried. Chloroform given in large doses in cloth cap inhaler.*

Nov. 5	312	Ill-nourished, under-sized pariah.	9 48 0	0 1 0	0 2 30	0 5 0	0 7 10	..	..	Morphine injected at 9 h. 33 m.; ·02 gr. strychnine injected immediately before inhalation.
Do.	313	Badly nourished, under-sized pariah.	10 0 0	0 1 4	0 2 0	0 2 30	0 4 15	..	..	Morphine injected at 9 h. 45 m.; and ·02 gr. of strychnine immediately before inhalation.
Do.	314	Fairly nourished, small-sized pariah.	10 22 0	0 0 45	0 1 30	0 1 53	0 8 3	..	..	Morphine injected at 10 h. 7 m.; ·02 gr. of strychnine injected at 10 h. 22 m.
Do.	315	Full-sized, well-nourished pariah.	10 45 0	0 0 40	0 2 10	0 3 3	0 9 13	..	..	Morphine injected at 10 h. 30 m.: strychnine (·02 gr.) injected at 10 h. 44 m.
Do.	316	Full-grown, well-nourished pariah.	10 54 0	0 0 46	0 1 23	0 2 28	0 6 8	..	..	Morphine injected at 10 h. 35 m.; strychnine (·02 gr.) injected at 10 h. 53 m.
Do.	317	Full-grown, small-sized pariah.	11 0 30	0 0 53	0 2 8	0 2 53	0 6 41	..	..	Morphine injected at 10 h. 44 m.; strychnine (·02 gr.) injected at 11 h.
Do.	318	Full-grown, ill-nourished pariah.	11 8 0	0 0 42	0 1 7	0 2 40	0 6 1	..	..	Morphine injected at 10 h. 52 m.; strychnine (·03 gr.) at 11 h. 7 m. 30 s.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respication continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 5.	319	Full-grown, healthy pariah.	11 16 30	0 59 0	0 2 1	0 2 32	0 6 30	..	..	Morphine injected at 11 h. 2 m.; strychnine (·03 gr.) injected at 11 h. 16 m.
Do.	320	Full-grown, healthy pariah.	11 25 12	0 1 0	0 3 30	0 4 11	0 9 33	..	..	Morphine injected at 11 h. 8 m.; strychnine (·03 gr.) injected at 11 h. 25 m.
Do.	321	Full-grown, healthy pariah.	11 36 30	0 1 20	0 3 46	0 4 15	0 9 50	..	..	Morphine injected at 11 h. 16 m.; strychnine (·03 gr.) injected at 11 h. 35 m. 50 s.
Do.	322	Full-grown, powerful pariah.	11 47 0	0 0 54	0 13 4	0 13 46	0 14 6	..	..	Morphine injected at 11 h. 21 m.; strychnine (·03 gr.) injected at 11 h. 46 m. The respiration ceased for 40 s. at 11 h. 52 m. and returned.
Do.	323	Full-grown, healthy pariah.	12 6 0	0 1 15	0 2 0	0 2 54	0 4 50	..	..	Morphine injected at 11 h. 29 m.; strychnine (·03 gr.) injected at 12 h. 5 m.
Do.	324	Full-grown, large-sized, healthy pariah.	12 13 30	0 1 2	0 2 28	0 3 0	0 5 26	..	..	Morphine injected at 11 h. 56 m.; strychnine (·03 gr.) injected at 12 h. 13 m.
Do.	325	Full-grown, large-sized, ill-nourished pariah.	2 59 0	0 0 45	0 1 15	0 2 10	0 3 40	..	..	Morphine injected at 2 h. 44 m.; strychnine (·03 gr.) injected at 2 h. 58 m. Began to gasp 15 s. after respiration ceased.
Do.	326	Under-sized, ill-nourished pariah.	3 4 0	0 0 45	0 2 25	0 2 30	0 6 40	..	..	Morphine injected at 2 h. 47 m.; strychnine (1-10th gr.) injected at 3 h. 4 m. 15 s. Gasped five times 25 s. after cessation of respiration.
III. (*d*) —*Half a grain of morphine injected fifteen minutes before the experiment, and varying quantities of atropine immediately before. The chloroform was given in large doses on cloth inhaler.*										
Do.	327	Full-grown, healthy pariah.	3 12 30	0 1 10	0 1 55	0 2 23	0 5 55	..	..	Morphine injected at 2 h. 50 m.; atropine (1-100th gr.) injected at 3 h. 12 m.
Do.	328	Ditto.	3 22 0	0 1 12	0 2 8	0 2 15	0 7 35	..	..	Morphine injected at 2 h. 55 m.; atropine (1-50th gr.) injected at 3 h. 21 m. 30 s.
Do.	329	Small-sized, healthy pariah.	3 33 30	0 0 58	0 3 7	0 3 14	0 5 35	..	..	Morphine injected at 3 h. 10 m.; atropine (3-100ths gr.) injected at 3 h. 32 m.
Do.	330	Small, healthy pariah.	3 41 10	0 0 50	0 4 48	0 5 6	0 8 2	..	..	Morphine injected at 3 h. 20 m.; atropine (1-25th gr.) injected at 3 h. 40 m.
Do.	331	Full-sized, well-nourished pariah.	3 52 0	0 1 22	0 2 18	0 2 54	0 6 35	..	..	Morphine injected at 3 h. 35 m.; atropine (1-20th gr.) injected at 3 h. 51 m.
Do.	332	Ditto.	4 0 45	0 1 12	0 5 53	0 6 55	0 7 52	..	..	Morphine injected at 3 h. 46 m.; atropine (3-50ths gr.) injected at 3 h. 59 m.
Do.	333	Ditto.	4 18 0	0 0 37	0 2 36	0 3 24	0 5 15	..	..	Morphine injected at 3 h. 55 m.; atropine (7-100ths gr.) injected at 4 h. 17 m.
Do.	334	Full-grown, healthy pariah.	4 24 30	0 0 50	0 2 3	0 2 41	0 5 8	..	..	Morphine injected at 4 h. 5 m.; atropine (8-100ths gr.) injected at 4 h. 23 m.
Nov. 6.	335	Under-sized, ill-nourished pariah.	10 8 0	0 1 20	0 2 25	0 2 30	0 5 5	..	..	Morphine injected at 9 h. 45 m.; atropine (9-100ths gr.) injected at 10 h. 7 m. Found to be quite narcotised from effect of morphine.
Do.	336	Ditto.	10 16 0	0 1 8	0 2 0	0 2 28	0 4 50	..	..	Morphine injected at 9 h. 55 m.; atropine (1-10th gr.) injected at 10 h. 15 m.
III. (*e*).—*Half a grain of morphine injected some minutes before the experiment, and varying quantities of atropine and strychnine immediately before. The chloroform was administered in large doses in cloth cap inhaler.*										
Do.	337	Full-grown, fairly well-nourished pariah.	10 41 0	0 0 55	0 1 30	0 2 42	0 4 0	..	..	Morphine injected at 10 h. 23 m. Atropine (1-100th gr.) and strychnine (1-100th gr.) injected at 10 h. 19 m. 45 s. Chloroformed with the cloth cap inhaler as in previous cases.
Do.	338	Full-grown, under-sized, fairly well-nourished pariah.	10 47 50	0 0 58	0 2 2	0 5 42	0 7 56	..	..	Morphine injected at 10 h. 33 m. Atropine (1-50th gr.) and strychnine (1-50th gr.) of each injected at 10 h. 47 m.
Do.	339	Full-grown, large-sized pariah.	11 0 0	0 1 33	0 2 10	0 2 52	0 4 13	..	..	Morphine injected at 10 h. 45 m. 30 s. Injected strychnine (3-100ths gr.) and atropine (3-100ths gr.) at 10 h. 59 m.
Do.	340	Full-grown, healthy pariah.	11 9 10	0 0 53	0 2 35	0 3 2	0 4 20	..	..	Morphine injected at 10 h. 55 m. Injected strychnine (1-25th gr.) and atropine (1-25th gr.) at 11 h. 7 m.
Do.	341	Full-grown, well-nourished pariah.	11 28 5	0 1 28	0 2 5	0 3 3	0 6 15	..	..	Morphine injected at 11 h. 10 m. Atropine (1-20th gr.) and strychnine (1-20th gr.) injected at 11 h. 27 m.
Do.	342	Full-grown, emaciated pariah.	11 40 0	0 0 59	0 1 30	0 2 3	0 4 0	..	..	Morphine injected at 11 h. 21 m. Atropine (4-100ths gr.) and strychnine (6-100ths gr.) injected at 11 h. 39 m.
Do.	343	Large-sized, full-grown pariah.	12 14 0	0 2 4	0 6 11	0 8 30	0 14 3	..	..	Morphine (½ gr.) injected at 11 h. 50 m. Strychnine (7-100ths gr.) and atropine (7-100ths gr.) injected at 12 h. 5 m. Chloroformed in a box, as it attempted to bite everyone that approached it. Lid of box removed and chloroform given in the usual way at 12 h. 16 m. 15 s.
Do.	344	Full-grown, ill-nourished pariah.	3 36 40	0 0 53	0 1 22	0 1 55	0 5 53	..	..	Morphine injected at 3 h. 20 m. Atropine (8-100ths gr.) and strychnine (8-100ths gr.) injected at 3 h. 36 m.
Do.	345	Ditto	3 45 0	0 1 8	0 1 46	0 2 12	0 8 12	..	..	Morphine injected at 3 h. 25 m. Atropine (9-100ths gr.) and strychnine (9-100ths gr.) injected at 3 h. 44 m.

Date.	No.	Description of dog.	Time at which inhalation commenced	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued at—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 6	346	Full-grown, ill-nourished pariah.	3 55 0	0 1 6	0 1 48	0 2 0	0 5 6	..	..	Morphine injected at 3 h. 37 m. Atropine (1-10th gr.) and strychnine (1-10th gr.) injected at 3 h. 54 m.
Do.	347	Small-sized, healthy pariah.	4 15 45	0 1 4	0 2 1	0 2 48	0 6 3	..	..	Morphine injected at 4 h. 5 m. Atropine and strychnine (āā 1-10th gr.) injected at 4 h. 11 m.
Do.	348	Full-grown pariah puppy.	4 21 0	0 1 13	0 1 24	0 2 0	0 4 53	..	..	Morphine injected at 4 h. 6 m. Atropine and strychnine (āā 1-10th gr.) injected at 4 h. 19 m. 30 s.
IV. (*a*).—*Chloroform administered in a special bottle and inhaler with valves attached.* (*Vide Appendix B.*)										
Nov. 7	349	Small-sized, badly-fed pariah.	10 47 0	0 10 0	..	..	..	..	..	This was a trial experiment to see if the valves in the apparatus worked properly. The dog was allowed to revive, as several interruptions occurred.
Do.	350	Full-sized, healthy pariah.	11 13 30	0 6 43	..	..	..	..	..	Half an ounce of chloroform given in an apparatus specially devised for the purpose. By this means air was allowed to mix freely with the chloroform vapour in a bottle connected with the inhaler. Breathing became very rapid after the lapse of 14 m. (62 to the minute); after 23 m. it became very shallow, and remained so for half an hour. The cornea remained insensitive for fully an hour and a half. The dog gradually recovered, and was removed from the table at 10 m. past 1 P.M.
Nov. 8	351	Full-grown, small-sized pariah.	10 4 0	0 0 27	0 44 45	0 45 5	0 47 10	..	..	Half an ounce of chloroform given as in the above case. After 20 m. the tube, connected with the inhaler, for the exit of the expired air, was removed, as the valves were acting imperfectly, and the aperture of the tube was closed with a cork, to which a new valve was attached. Breathing became very slow and shallow towards death. This observation was not considered trustworthy on account of the interruptions during the experiment.
Do.	352	Small-sized, ill-fed pariah.	10 37 17	Not noted.	0 7 3	0 10 14	0 10 34	..	..	This observation is reliable, as the valves in the tubes were acting perfectly, and no interruption occurred; ½ oz. of chloroform was given as in the above case.
Do.	353	Full-grown, ill-nourished puppy.	11 14 30	0 1 48	0 18 8	0 19 1	0 22 14	..	..	Half an ounce of chloroform given as in the last case.
Do.	354	Small-sized, ill-fed pariah.	2 43 0	0 1 50	0 5 0	0 7 0	0 9 30	..	..	Ditto.
IV. (*b*).—*Three drachms of chloroform given in the same bottle apparatus.*										
Do.	355	Small-sized, ill-nourished pariah.	3 1 15	0 1 15	1 16 10	1 17 18	1 20 25	..	..	Three drachms of chloroform given in this case. The respiration became slow and laboured at 3 h. 15 m., and remained so for 45 m.; but as there were no indications of the dog dying at this time, an extra drachm of chloroform was poured into the bottle at 4 h. 3 m.
Do.	356	Ditto.	4 28 10	0 1 45	0 10 35	0 11 6	0 14 40	..	..	3 drs. of chloroform given as in the last case. After the breathing had stopped after 10 m. 35 s., it recovered in a minute's time and continued for 1 m. and 8 s., when it stopped again.
IV. (*c*).—*Two drachms of chloroform given in the same bottle apparatus:*										
Do.	357	Small-sized, ill-nourished pariah.	4 45 50	0 1 3	..	..	..	..	..	3 drs. of chloroform given in the same apparatus as in the last case. An extra drachm was poured into the bottle at 5 m. 20 s. Was seen to be recovering at 5 m. 49 s., and an extra drachm of chloroform was again placed in the bottle. At 6 m. 10 s. the dog was found to be again reviving, and he was removed from the table.
Nov. 9.	358	Ditto.	9 48 20	0 2 20	0 20 10	0 23 30	0 25 10	..	..	2 drs. of chloroform given as above, and had to be repeated, as the dog was recovering at 10 h. 8 m.
Do.	359	Full-sized, well-nourished pariah.	10 18 6	0 1 30	2 7 30	2 8 40	2 9 2	..	..	2 drs. of chloroform given as above. Dog was recovering at 11 h. 9 m. 1 dr. of chloroform added at 11 h. 10 m. Dog was seen to be recovering again at 12, when another drachm of chloroform was added. Dog 27 lb. in weight.
I. (*f*).—*Five dogs fed with gruel at 12.30 o'clock, and chloroform in the usual way with large doses on a cloth inhaler.*										
Do.	360	Full-grown, healthy pariah.	2 30 5	0 1 8	0 2 35	0 3 28	0 5 2	..	..	Struggled as usual. Weight of dog 24 lb.
Do.	361	Ditto.	2 41 20	0 1 2	0 1 53	0 3 47	0 5 11	..	..	Struggled more than usual. Dog weighed 26 lb.
Do.	362	Ditto.	2 52 18	0 1 33	0 2 55	0 3 29	0 5 16	..	..	Struggled as usual. Dog's weight 32 lb.
Do.	363	Ditto.	3 6 0	0 2 3	0 3 20	0 4 5	0 5 42	..	..	Do. Do. 28 lb.
Do.	364	Ditto.	3 15 30	0 0 42	0 1 56	0 3 55	0 5 6	..	..	Do. Do. 25 lb.

IV. (c).—*Two drachms of chloroform given in bottle apparatus.*

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 11.	365	Full-grown, well-fed pariah.	9 20 0	0 1 10	0 2 40	2 46 30	2 53 0	..	..	2 drs. of chloroform given in the bottle apparatus, 1 dr. repeated at 10 h. 27 m., and again at 11 and again at 11 h. 40 m.

I. (f).—*Five dogs fed with gruel at 9 a.m., and chloroformed with large doses on a cloth inhaler in the usual manner.*

Do.	366	Full-grown, large sized, powerful pariah.	10 36 30	0 0 45	0 1 10	0 1 48	0 5 24	..	..	Struggled as usual. Weight of dog 32 lb.
Do.	367	Full-grown, large-sized pariah.	10 46 30	0 0 54	0 1 38	0 2 5	0 4 40	..	..	Do. Do. 40 lb.
Do.	368	Full-grown, healthy, and large-sized pariah.	10 49 0	0 1 5	0 1 14	0 2 48	0 6 2	..	..	Do. Do. 34 lb.
Do.	369	Full-grown, healthy, large-sized pariah.	11 4 55	0 0 52	0 2 12	0 2 35	0 5 43	..	..	Struggled more than usual. Weight of dog 32 lb.
Do.	370	Full-grown, strong pariah.	11 14 30	0 1 17	0 2 23	0 11 33	0 13 18	..	..	Struggled as usual. In this case the respiration, after ceasing for 4 m., during which period the pulse could be distinctly felt, returned again and lasted for 3½ minutes. Weight of dog 38 lb.

V. (a).—*Artificial respiration practised in these cases, the chloroform being given in large doses on the cloth cap inhaler.*

Do.	371	Small-sized, full-grown pariah.	11 39 30	0 1 10	0 2 40	Had not stopped.	..	11 42 50	0 5 0	Artificial respiration commenced 40 s. after respiration had ceased. The dog was thought to be breathing naturally after one minute and was left alone, when the breathing ceased again and could not be re-established. Weight of dog 19 lb.
Do.	372	Ditto.	11 53 48	0 0 55	0 2 4	Do.	..	11 55 59	0 2 0	Artificial respiration was commenced 10 s. after respiration had ceased. The dog recovered. Weight of dog 23 lb.

I. (l).—*Monkey chloroformed in glass box (vide Appendix B).*

Do.	373	Small monkey	1 58 43	..	..	..	..	..	..	2 drs. of chloroform into a one-foot cube glass case containing monkey; not air tight; fell down after 2 m. 15 s.; taken out after 9 m. 50 s. and chloroform pushed on cloth cap inhaler. Cornea sensitive; great salivation; lay on his side and grabbed at imaginary objects until 2 h. 12 m. 30 s., when he jumped off the table.
Do.	374	Same.	2 12 55	..	0 3 40	Shortly after respiration.	0 5 58	..	..	Chloroformed in glass box and then taken out and the anæsthetic pushed on cloth cap inhaler. Monkey 4¼ lb. in weight.
Do.	375	Small monkey.	2 21 30	0 1 30	0 2 0	0 2 10	0 9 30	..	..	Chloroformed in the same way as before.
Do.	376	Ditto.	2 34 0	..	0 9 30	0 10 5	0 16 15	..	..	Weight of monkey 5 lb. In glass box at 2 h. 34 m. Fell down at 2 h. 35 m. 30 s. Taken out of box at 2 h. 38 m. 30 s. Cornea sensitive, but became insensible 30 s. after removal from box and administering more chloroform. Heart ceased 6 m. 10 s. after respiration stopped. Weight 4 lb.
Do	377	Ditto.	3 0 0	0 5 0	0 5 30	0 6 10	0 14 45	..	..	In glass box at 3 h. and chloroformed. Fell down at 3 h. 4 m. Taken out of box at 3 h. 4 m. 30 s., and more chloroform given. Heart ceased 9 m. 15 s. after respiration stopped. Weight 5 lb.
Do.	378	Ditto.	3 13 0	0 7 36	0 14 20	0 15 55	0 17 23	..	..	In glass box at 3 h. 13 m. and choroformed. Fell down at 3 h. 20 m. Taken out of box at 3 h. 20 m. 30 s. Weight 5 lb.
Do.	379	Ditto.	3 35 0	0 0 32	0 0 50	0 1 20	0 3 21	..	..	This monkey was asphyxiated when brought on the table owing to the noose around his neck having been drawn too tightly, and he was, after much difficulty, recovered. He was immediately after chloroformed on the table and not placed in the box. Weight of monkey 6 lb.
Do.	380	Ditto.	3 43 13	0 3 4	0 7 32	0 8 12	0 9 3	..	..	Put into the glass box at 3 h. 42 m. 13 s. Fell down at 3 h. 45 s. Taken out of box at 3 h. 45 m. 30 s. Chloroform pushed as in the other cases.
Nov. 12.	381	Young monkey.	10 23 0	0 8 30	0 11 30	0 12 50	0 14 15	..	..	Put into the glass box at 10 h. 23 m. Fell down at 10 h. 30 m., taken out of box at 10 h. 32 m. Temperature after taking him out of box 101·4° F.; temperature after death 100·4° F. Weight 5 lb.
Do.	382	Ditto.	10 54 0	0 16 12	0 17 3	0 18 7	0 23 5	..	..	Put into the glass box at 10 h. 54 m. Fell down at 11 h. 7 m. 30 s. Taken out of box at 11 h. 9 m. 4 s., and cloth inhaler placed over head. Temperature 103·2° F. when taken out of the glass box; after death 102·3° F. Weight 4 lb.

I. (*j*).—*Five dogs chloroformed with large doses in cloth inhaler after the administration of a large quantity of coffee.*

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 12	383	Full-grown, small pariah.	11 42 0	0 0 45	0 1 42	0 2 52	0 4 15	..	..	Temperature before inhalation 102° F. After death 103·2° F. Drank 12 oz. of prepared coffee at 11 o'clock. Weight 16 lb.
Do.	384	Ditto.	11 53 0	0 0 30	0 1 37	0 2 8	0 5 45	..	..	Temperature before inhalation 104° F. Had 12 oz. of prepared coffee at 11. Temperature after death 104° F. Weight 18 lb.
Do.	385	Full-sized, badly nourished pariah.	2 30 30	0 1 10	0 1 45	0 5 5	0 7 15	..	..	Temperature before inhalation 100° F. Temperature after death 100·6° F. Had about 12 oz. of coffee about 2 min. before inhalation. Weight 24 lb.
Do.	386	Under-sized, fairly nourished pariah.	2 43 0	0 1 15	0 2 30	0 3 50	0 6 35	..	..	Temperature before inhalation 102·8° F. Temperature after death 102·8° F. Had about 12 oz. of coffee half an hour before inhalation. Weight 16 lb.
Do.	387	Under-sized, badly nourished pariah.	2 55 30	0 1 30	0 2 10	0 3 45	0 4 0	..	..	Temperature before inhalation 102·5° F. Temperature after death 102·5° F. Had 12 oz. of coffee three-quarters of an hour before inhalation. Weight 19 lb.

V. (*a*).—*Artificial respiration tried in three cases, the chloroform being administered in large doses on cloth inhaler.*

Do.	388	Full-grown, large-sized pariah.	3 7 0	0 0 43	0 3 55	..	..	3 11 5	0 3 0	Struggled a great deal. Artificial respiration commenced 10 s. after respiration had ceased. Dog revived after artificial respiration had been practised for 2 m. Weight 25 lb.
Do.	389	Old, large-sized pariah.	3 20 0	0 0 52	0 4 30	..	..	3 24 50	0 3 0	Artificial respiration commenced 20 s. after respiration had ceased. The dog gasped twice, but could not be revived. Weight of dog 32 lb.
Nov. 13	390	Full-grown, small, and badly nourished pariah.	10 48 0	0 0 46	0 1 30	..	..	10 49 50	0 3 0	Artificial respiration was commenced 20 s. after breathing had ceased. Dog revived.
Do.	391	Full-grown, small-sized, badly nourished pariah.	10 57 0	0 2 10	0 6 40	..	..	11 4 10	0 1 30	Artificial respiration was commenced 30 s. after breathing had ceased. Dog revived.
Do.	392	Full-grown, well-nourished pariah.	11 9 0	0 0 52	0 5 12	..	..	11 14 47	0 6 0	Artificial respiration was commenced 35 s. after breathing had ceased, and proved unsuccessful.
Do.	393	Old, small, and emaciated pariah.	11 31 0	0 1 10	0 2 25	..	..	11 34 0	0 4 0	Artificial respiration was commenced 35 s. after breathing had ceased, and proved unsuccessful.
Do.	394	Under-sized, fairly nourished pariah.	2 40 0	0 0 45	0 1 30	..	..	2 42 0	0 6 0	Artificial respiration commenced 30 s. after respiration stopped. Gasped twice after 2 m., and ceased. Artificial respiration started again, and continued for 4 m., and proved unsuccessful.
Do.	395	Full-sized, well-nourished pariah.	2 50 0	0 0 55	0 2 5	..	..	2 52 20	0 9 0	Artificial respiration commenced 15 s. after respiration ceased, and continued for 9 m.; proved unsuccessful.
Do.	396	Ditto.	3 3 0	0 0 30	0 1 20	..	..	3 4 35	0 3 0	Artificial respiration was commenced 5 s. after the respiration had ceased. Dog revived.
Do.	397	Full-sized, healthy pariah.	3 12 45	0 1 12	0 2 35	..	..	3 15 50	0 4 0	Artificial respiration commenced 30 s. after the respiration had ceased, and proved unsuccessful.
Do.	398	Ditto.	3 27 30	0 1 17	0 2 45	..	..	3 30 50	0 1 0	Artificial respiration was commenced 35 s. after the respiration had ceased. Dog revived.
Do.	399	Small, but full-grown pariah.	3 44 30	0 2 0	0 1 30	..	..	3 46 30	0 6 0	Artificial respiration was commenced 30 s. after the respiration had ceased; unsuccessful.
Nov. 14.	400	Full-grown, small, ill-nourished pariah.	10 26 0	0 0 7	0 8 8	Not noted.	..	10 35 8	0 6 0	Chloroformed in a deal wood box 8 cubic feet capacity. Dog fell down at 10 h. 32 m. 32 s.; taken out at 3 h. 33 m. and placed on the table and some chloroform given. Artificial respiration was commenced 1 m. after breathing had ceased. A needle was put into the heart at 10 h. 41 m., and the heart was found to be contracting. Artificial respiration continued for 6 m., but proved unsuccessful.
Do.	401	Large-sized, ill-nourished pariah.	10 53 0	Not noted.	0 12 0	Not noted.	..	11 6 0	0 6 0	Chloroformed in the same manner at 10 h. 53 m. Dog fell down at 10 h. 57 m. 30 s. Taken out at 10 h. 58 m. and placed on the table and more chloroform given. Artificial respiration was commenced 1 m. after the respiration ceased. It was continued for 6 m., but proved unsuccessful.
Do.	402	Large-sized, well-nourished pariah.	11 15 0	..	0 16 10	..	..	11 31 35	0 2 0	Chloroformed in the same manner at 11 h. 15 m. Dog fell down at 11 h. 23 m. 45 s. Taken out at 11 h. 26 m. 30 s., placed on table, and more chloroform given. Artificial respiration was commenced 25 s. after the breathing had ceased, and proved successful.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 14.	403	Large-sized, well-nourished pariah.	11 36 0	..	0 9 2	..	..	11 45 32	0 8 0	Chloroformed in the same way. Fell down at 11 h. 39 m. 36 s. Taken out and chloroformed on table at 11 h. 40 m. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved to be unsuccessful.
Do.	404	Full-sized, ill-nourished pariah.	11 53 10	0 3 30	0 6 8	..	..	11 59 43	0 4 0	Chloroformed in the same way. Dog fell down at 11 h. 55 m. 28 s. Taken out at 11 h. 56 s., placed on the table, and chloroformed again. Artificial respiration was commenced 25 s after the respiration had ceased, and proved unsuccessful.
Do.	405	Full-sized, well-nourished pariah, and one that had revived in a former experiment.	12 7 0	..	0 6 30	..	..	12 13 37	0 5 0	Chloroformed in the same way. Fell down at 12 h. 11 m. Taken out of box 12 h. 11 m. Artificial respiration commenced 7 s. after respiration had ceased, and proved unsuccessful.
Do.	406	Full-sized, well-nourished pariah.	2 40 0	..	0 0 5	..	..	2 45 20	0 9 0	Chloroformed in the same box. Fell down at 2 h. 43 m. Taken out at 2 h. 44 m. 0 s. and chloroformed on the table. Artificial respiration was commenced 20 s. after respiration had ceased. Dog revived.
Nov. 15.	407	Under-sized, fairly-fed pariah.	9 31 38	0 0 43	0 1 16	..	..	9 33 6	0 5 0	Struggled a great deal. Artificial respiration was commenced 12 s. after the breathing had ceased, and proved successful. Chloroform in large doses with cloth inhaler.
Do.	408	Full-grown, well-nourished pariah.	9 40 30	0 1 2	0 2 0	..	..	9 42 40	0 4 0	Struggled a great deal. Artificial respiration was commenced 10 s. after breathing had ceased and proved successful. Chloroformed in large doses with cloth inhaler.
Do.	409	Full-grown, small, and well-nourished pariah.	9 53 0	0 0 54	0 1 25	..	..	9 54 40	0 3 0	Struggled as usual. Artificial respiration was commenced 15 s. after the breathing had ceased, and proved successful. Chloroformed in large doses with cloth inhaler.
Do.	410	Under-sized, lean pariah.	10 30 0	0 1 0	0 2 4	..	..	10 15 19	0 4 0	Struggled a great deal. Artificial respiration was commenced 15 s. after the breathing had ceased, and proved successful. Chloroformed in large doses with cloth inhaler.
Do.	411	Small, full-grown, well-nourished pariah.	10 33 30	0 0 45	0 2 40	..	..	10 36 30	0 2 0	Struggled as usual. Artificial respiration was commenced 20 s. after the breathing had ceased, and proved successful. Chloroformed as in the above case.
Do.	412	Large-sized, well-nourished pariah.	10 41 0	0 1 35	0 8 12	..	..	10 49 37	0 8 0	Struggled as usual. Artificial respiration was tried 25 s. after the breathing had ceased, and found to be successful.
Nov. 18.	413	Full-sized, healthy pariah.	9 41 0	0 2 20	0 3 50	..	..	9 45 15	0 3 0	Gradual administration of chloroform on cap. Dog struggled very much. Artificial respiration 25 s. after the breathing ceased, and found successful.
Do.	414	Under-sized, badly nourished pariah.	9 50 0	0 1 20	0 2 30	..	..	9 53 0	0 10 0	Chloroform administered gradually as above. Artificial respiration by bellows began 30 s. after breathing stopped, and continued for exactly 10 m. After this needle inserted into heart; no movement. Dog struggled during inhalation. Dog died.
Do.	415	Full-sized, well-nourished pariah.	10 7 0	0 2 3	0 2 30	0 5 0	..	10 9 45	0 6 0	Chloroformed gradually as above. Artificial respiration by bellows began 15 s. after breathing stopped and continued for 6 m. No effect. Needle inserted into heart and movements of flag noted. Dog died. Dog struggled as usual during inhalation.
Do.	416	Full-sized, healthy pariah.	10 20 0	0 1 15	0 3 10	..	..	10 23 30	0 5 20	Chloroformed gradually as above. Artificial respiration in the ordinary way began 20 s. after respiration ceased, and continued for 5 m. 20 s. Dog died. Struggled a great deal during inhalation.
Do.	417	Full-grown, large-sized pariah.	10 32 0	0 7 0	0 11 18	..	..	10 43 33	0 4 0	Chloroform given in very small quantities and very gradually, with a large admixture of air. Dog revived. Artificial respiration was commenced 15 s. after the respiration had ceased. Struggled during administration.
Do.	418	Full-grown, large-sized pariah.	10 32 30	0 4 30	0 9 2	..	..	11 1 57	0 3 0	Chloroformed gradually, as in the last case. Artificial respiration was commenced 25 s. after respiration had ceased, and proved successful. Struggled during administration.
Do.	419	Full-grown, large-sized pariah.	11 8 0	0 4 12	0 7 33	..	..	11 15 38	0 5 0	Chloroform gradually given, as in the last case. Artificial respiration was commenced 25 s. after the respiration had ceased. Dog died. Struggled during administration
Do.	420	Ditto.	11 21 0	0 2 40	0 16 2	..	..	11 37 22	0 6 0	Chloroform gradually given, as in the last case. Artificial respiration was commenced 20 s. after respiration had stopped, and proved successful.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 18.	421	Full-grown, large-sized, healthy pariah.	2 32 0	0 5 30	0 7 0	..	..	2 39 20	0 8 0	Chloroform gradually given, as in the last case. Artificial respiration commenced 20 s. after respiration had stopped. Dog died. Did not struggle much.
Do.	422	Full-grown under-sized, fairly nourished pariah.	2 51 30	0 1 45	0 4 15	..	..	2 53 0	0 1 30	Chloroformed as in the last case. Artificial respiration commenced 15 s. after respiration had ceased. Dog revived. Did not struggle very much.
Do.	423	Full-grown, well-nourished pariah.	3 0 0	0 2 30	0 9 14	..	..	3 9 34	0 3 0	Chloroform administered in small doses gradually, as in the last case. Artificial respiration was commenced 20 s. after breathing had ceased, and proved successful. Struggled as usual.
Do.	424	Ditto.	3 14 0	0 2 8	0 18 6	..	..	3 32 16	0 2 0	Struggled a great deal. Chloroform was administered as in the last case, and artificial respiration tried 10 s. after breathing had ceased. Dog revived.
Do.	425	Full-grown, well-nourished pariah.	3 36 45	0 2 55	0 11 50	..	..	3 49 5	0 3 0	Struggled as usual. Chloroformed as in the previous case. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved successful. Artificial respiration continued for 3 m.
Do.	426	Ditto.	4 1 0	0 2 3	0 4 8	..	..	4 5 38	0 3 0	Struggled. Artificial respiration was commenced 30 s. after the breathing had ceased, but did not prove successful. Chloroformed with a large dose, and with little air.
Nov. 19.	427	Full-grown, fairly nourished pariah.	9 48 0	0 1 20	0 2 5	..	..	9 50 20	0 9 0	Dog struggled very much; large dose of chloroform given, with very little air. Artificial respiration commenced 15 s. after breathing had ceased. Gave several gasps after 4 m. Artificial respiration unsuccessful.
Do.	428	Ditto.	10 6 0	0 6 15	0 13 45	..	..	10 20 0	0 3 30	Chloroform given in measured doses of 1 dr. at a time. Total given 4 dr. Artificial respiration commenced 15 s. after breathing had ceased, and proved successful. The doses of chloroform administered at an interval of 4 m. between each dose. Dog struggled slightly.
Do.	429	Large-sized, full-grown, well-nourished pariah.	10 26 0	0 3 45	0 12 2	..	..	10 38 7	0 2 0	Chloroform given as in above case. Artificial respiration commenced 5 s. after the breathing had ceased. Successful.
Do.	430	The same dog chloroformed a second time as soon as the cornea became sensitive.	10 43 4	0 2 18	0 5 23	..	..	10 48 32	0 2 0	Chloroformed as in the above case, and artificial respiration commenced 5 s. after the breathing had ceased. Successful.
Do.	431	The same dog chloroformed for the third time as soon as the cornea became sensitive.	10 55 0	0 1 43	0 10 3	..	..	11 5 8	0 4 0	Chloroformed as in the last case. Artificial respiration was commenced 5 s. after the breathing had ceased, but proved unsuccessful.
Do	432	Young monkey.	11 13 0	0 0 58	0 2 0	..	..	11 15 5	0 6 0	Chloroformed as in the last case. Artificial respiration was commenced 5 s. after the breathing had ceased, but proved unsuccessful. The bellows were used in this case for artificial respiration, and found unsuitable.
Do.	433	Ditto.	11 33 0	0 1 25	0 5 0	..	..	11 38 5	0 4 0	Chloroformed as in the last case. Artificial respiration was commenced 5 s. after the breathing had ceased, and proved successful. Artificial respiration was carried on in the ordinary manner with the hands.
Do.	434	Ditto.	12 0 0	0 1 15	0 4 56	..	..	12 5 6	0 3 0	Artificial respiration was commenced 10 s. after the respiration had ceased, and was unsuccessful.
Nov. 20.	435	Ditto.	9 26 0	0 8 0	0 17 20	..	..	9 43 50	0 3 0	Chloroform administered in 1 dr. doses at intervals of five minutes, with plenty of air. Artificial respiration commenced 30 s. after the breathing had ceased. Animal revived. Total chloroform administered 3 drs.
Do.	436	Ditto.	10 23 0	0 1 15	0 1 58	..	..	10 25 28	0 2 0	Chloroform administered as in the last case. Artificial respiration commenced 30 s. after respiration had ceased. Proved successful.

VI. (*a*).—*Animals chloroformed for one hour, allowed to revive, and killed with chloroform the next day.*

Do.	437	Full-grown pariah dog.	10 5 0	..	..	..	..	..	..	Chloroformed for an hour and allowed to revive for a further observation the next day.
		Nov. 21.	10 28 0	0 0 55	0 2 4	0 2 35	0 4 55	..	..	21st.—Post-mortem made after chloroforming the animal to death. Weight 24 lb. Liver and portal system congested generally; kidneys and spleen congested. Heart: Left side distended with arterial blood, and right side venous. Lungs and trachea were normal.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 20.	438	Young monkey.	10 8 0	..	..	..	..	..	..	Ditto.
		Nov. 21.	11 19 0	0 0 58	0 1 45	0 2 40	0 4 10	..	..	Weight 5lb. Post-mortem made after chloroforming to death. Post-mortem appearances as in 437.
Do.	439	Full-grown pariah dog.	10 0 0	..	..	..	..	..	..	Ditto.
		Nov. 21.	9 57 0	0 1 0	0 2 5	0 2 45	0 5 55	..	..	21st.—Chloroformed to death and a post-mortem made. Weight 26lb. The same post-mortem appearances were noticed as in the last case.
Do.	440	Young monkey.	10 0 0	..	..	..	..	..	..	Ditto.
		Nov. 21.	11 5 0	0 1 0	0 2 3	0 2 15	0 4 35	..	..	21st.—Chloroformed to death and a post-mortem made. The same post-mortem conditions were noticed as in the last case. Weight 8lb.
Do.	441	Young monkey.	10 0 0	..	..	..	..	..	..	Ditto.
		Nov. 21.	10 34 0	0 1 0	0 2 0	0 4 0	0 6 15	..	..	21st.—Chloroformed to death, and a post-mortem made. No difference to be seen in the post-mortem appearance. Weight 8lb.
Do.	442	Full-grown, large pariah dog.	10 0 0	..	..	..	..	..	..	21st.—Chloroformed to death, and a post-mortem made. No difference to be seen in the post-mortem appearance. Weight 8lb.
		Nov. 21.	10 0 0	0 0 50	0 1 30	0 2 50	0 6 0	..	..	21st.—Chloroformed to death, and a post-mortem made. Weight 30lb. Post-mortem appearance as in the other cases.
		V. (*a*).—*Artificial respiration tried in this case.*								
Do.	443	Young monkey.	10 36 0	0 2 50	0 8 2	..	..	10 44 32	0 2 0	Chloroformed as in Experiment 436, and artificial respiration commenced 30s. after the breathing had ceased. Monkey revived.
		I. (*c*).—*Monkeys kept fasting for twenty-four hours, and chloroformed to death with large doses on cloth cap inhaler.*								
Do.	444	Young monkey.	10 50 20	0 2 1	0 6 13	0 7 0	0 10 24	..	..	The monkey was fasting for twenty-four hours. Did not struggle.
Do.	445	Ditto.	11 5 0	0 1 56	0 3 18	0 4 2	0 8 16	..	..	Ditto.
Do.	446	Ditto.	11 14 0	0 0 58	0 2 2	0 3 5	0 4 6	..	..	In this case the effect of 1 oz. of chloroform on the cap was tried. Struggled.
Do.	447	Ditto.	11 20 0	0 1 6	0 1 45	0 2 0	0 8 40	..	..	Ditto.
		V. (*a*).—*Artificial respiration tried in these cases.*								
Do.	448	Young monkey.	11 29 0	0 2 6	0 3 20	..	..	11 32 50	0 2 0	Chloroformed in 1 dr. doses every 5 m. on cloth cap, as in Case 443. Artificial respiration was commenced 30s. after the breathing had ceased, and proved successful. Did not struggle.
Do.	449	Do. Was partially choked when brought on table, and had to be revived.	11 47 0	0 1 3	0 1 52	..	..	11 49 22	0 1 30	Chloroformed as in the previous case. Artificial respiration was commenced 30s. after the breathing had ceased, and proved successful. Did not struggle.
Do.	450	Young monkey.	11 53 0	0 2 0	0 4 14	..	..	11 57 49	0 2 1	Chloroformed as in Experiment 449. Did not struggle. Artificial respiration was tried 35s. after the breathing had ceased, and proved successful.
Do.	451	Full-grown monkey.	3 11 0	0 1 50	0 5 23	..	..	3 17 3	0 4 0	Struggled a great deal. Chloroformed as in Experiment 450. Artificial respiration was commenced 40s. after the respiration had ceased, and proved successful
Do.	452	Do.	3 30 0	0 1 17	0 6 0	..	..	3 36 45	0 3 0	Struggled. Chloroform given as in Experiment 451 and artificial respiration 45s. after the respiration had ceased. Monkey revived.
		VI. (*b*).—*Animals kept under the influence of ether for one hour and chloroformed to death the next day.*								
Do.	453	Large-sized, well-nourished dog.	3 0 0	..	..	..	..	..	..	Large doses of ether administered for one hour and allowed to recover for further observation.
		November 21st.	10 17 10	0 1 3	0 1 40	0 2 5	0 9 30	..	..	21st.—Chloroformed to death by large doses of chloroform. Gasped 21 times 4 m. 30s. after respiration ceased. Did not struggle. Weight 30 lb. Post-mortem appearances — congestion of liver and portal system generally. Kidneys highly congested. The spleen was three times larger than normal and puckered. Trachea and lungs normal. Heart: right side distended with venous blood and left with arterial. The post-mortem appearances corresponded generally with those seen in the animals that had had chloroform the day before instead of ether. Vide VI. (*a*).
Do.	454	Do.	3 0 0	..	..	..	..	..	..	Large doses of ether administered for one hour and allowed to recover for further observation.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
		November 21st.	10 42 0	0 1 10	0 2 18	0 2 40	0 6 15	..	..	21st.—Chloroformed in the same manner as in the above case. Dog struggled violently. Weight 32 lb. Post-mortem appearances as in the last case, with the exception of the spleen, which was simply congested and not enlarged.
Nov. 20	455	Do.	3 0 0	..	..	..	..	..	..	Large dose of ether administered for one hour and allowed to recover for further observation.
		November 21st.	10 50 0	0 1 15	0 1 50	0 2 10	0 3 10	..	..	21st. — Chloroformed to death in the same manner as in the last case the next day. Dog struggled violently. Post-mortem appearances as in the last case. Weight 33 lb.
Do.	456	Full-grown, small-sized monkey.	3 0 0	..	..	..	..	..	..	Large dose of ether administered for one hour and allowed to recover for further observation.
		Nov. 21st.	11 27 0	0 1 10	0 3 25	0 3 43	0 5 30	..	..	21st.—Chloroformed in same manner as in above case. Struggled a little. Weight 8 lb. Post-mortem appearances as in the last case.
Do.	457	Small monkey.	3 0 0	..	..	..	..	..	..	Large dose of ether administered for one hour, and allowed to recover for further observation.
		Nov. 21st.	10 57 0	0 1 10	0 3 45	0 4 30	0 4 45	..	..	21st.—Chloroformed as in the above case. Did not struggle at all. Weight 8 lb. Post-mortem appearances as in the last case.
Do.	458	Small monkey.	3 0 0	..	..	..	..	..	..	Large dose of ether administered for one hour, and allowed to recover for further observation.
		Nov. 21st.	11 40 30	0 1 0	0 3 0	0 3 30	0 4 15	..	..	21st.—Chloroformed as above. Weight 5 lb. Post-mortem appearances as in the last case.
			V. (*a*).—*Artificial respiration tried in these cases.*							
Nov. 22	459	Medium-sized monkey.	10 0 0	0 2 0	0 12 25	..	..	10 13 5	0 1 0	Chloroform administered in small doses with plenty of air. Artificial respiration commenced 40 s. after respiration had ceased and proved successful. Weight 7 lb.
Do.	460	Small monkey.	10 17 0	0 0 55	0 1 55	..	..	10 19 35	0 13 0	Chloroformed as in above case, but with less air. Artificial respiration commenced 40 s. after respiration had ceased. Unsuccessful.
Do.	461	Medium-sized monkey.	10 25 0	0 2 0	0 6 25	..	..	10 32 10	0 1 40	Chloroformed as in above case. Artificial respiration commenced 45 s. after respiration had ceased and proved successful.
Do.	462	Medium-sized monkey, subject of Experiment 274.	10 39 0	0 1 5	0 2 15	..	..	10 42 5	0 16 0	Chloroformed as in above case. Artificial respiration commenced 50 s. after respiration had ceased. Proved successful. Weight 7 lb.
Do.	463	Full-grown monkey.	12 0 0	0 2 4	0 8 13	..	..	12 9 8	0 10 0	Chloroformed as in the above case and artificial respiration commenced 55 s. after the breathing had ceased. Artificial respiration unsuccessful. The monkey gasped four times before he died.
Do.	464	Ditto	11 20 0	0 1 40	0 9 27	..	..	11 30 22	0 7 0	Chloroformed as in the above case, and artificial respiration commenced 55 s. after the breathing had ceased; unsuccessful.
Do.	465	Ditto	11 38 0	0 0 53	0 3 0	..	..	11 41 55	0 1 0	Chloroformed as in the above case, and artificial respiration commenced 55 s. after the breathing had ceased; monkey revived.
Do.	466	Subject of a former experiment.	11 51 0	0 1 3	0 3 16	..	..	11 55 11	0 2 0	Chloroformed as in the above case, and artificial respiration tried 55 s. after the resp. had ceased; proved successful.
			VII.—*Administration of a definite quantity of chloroform.*							
Do.	467	Full-grown, middle-sized pariah.	2 23 0	..	..	..	..	..	..	Chloroformed in a box at 2 h. 23 m. Fell down at 2 h. 30 s. Taken out and placed on the table at 2 h. 31 m. Trachea opened and tube inserted at 2 h. 40 m. A definite quantity of chloroform and air was then administered through the bellows from a box eight cubic feet in capacity, and into which two ounces of chloroform had been placed at 2 h. 45 m. At 3 h. 45 m. the dog was found to be coming out, and another ounce was placed in the box. Needle placed in heart at 4 h. Heart stopped at 4 h. 8 m. 13 s.
Nov. 25	468	Full-grown, well-nourished pariah.	9 50 0	..	..	..	0 40 0	..	..	Chloroformed in a deal wood box at 9 h. 30 m. Fell down at 9 h. 40 m. Was taken out of the box at 9 h. 45 m. Trachea opened and tube introduced at 9 h. 50 m. Chloroform given as in the last case with bellows and from the tin box. In this case the heart ceased beating, judging from needle in thorax, at 10 h. 20 s., and commenced again after a full minute, and then ceased finally at 10.30. The time of cessation of respiration could not be noted in this nor in the last case on account of bellows being used until death occurred.

V. (*a*).—*Artificial respiration tried in these cases.*

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 23	469	Full-grown monkey.	10 56 0	0 2 5	0 4 18	0 4 30	..	11 1 13	0 2 0	Chloroformed in large doses with cloth inhaler. Artificial respiration was commenced 55 s. after the respiration had ceased, and proved successful. Weight 6 lb.
Do.	470	Ditto	11 5 0	0 1 25	0 3 40	0 4 1	..	11 9 40	0 2 30	Chloroformed as in the last experiment, and artificial respiration commenced one minute after the respiration had ceased; the monkey revived.
Do.	471	Ditto Subject of Experiment 469.	11 18 18	0 2 0	0 4 53	Not noted.	..	11 24 11	0 6 0	Chloroformed as in the above experiment, and artificial respiration commenced one minute after the breathing had ceased. Needle in heart stopped vibrating at 11 h. 30 m.; unsuccessful.
Do.	472	Young monkey.	11 31 0	0 1 48	0 6 2	Not noted.	..	11 38 9	0 6 0	Chloroformed as in the above experiment. The respiration in this case ceased, after 3 m. 32 s., for 40 s., and commenced again. More chloroform had to be given, and he ceased breathing for the second time after 1 m. 2 s. from time of inhalation. Artificial respiration was commenced 1 m. 7 s. after the breathing had ceased, and proved unsuccessful. Needle in heart at 11 h. 42 m. found to be vibrating.
Do.	473	Ditto.	11 46 0	0 1 35	0 3 23	..	..	11 50 23	0 2 0	Chloroformed as in the above experiment. Artificial respiration was commenced one minute after the breathing had ceased, and proved successful. Struggled.

V. (*b*).—*Artificial respiration tried on dogs poisoned with phosphorus.*

Nov. 25	474	Full-grown, large pariah; has had ¾ gr. of phosphorus a day since the 22nd inst.	10 18 0	0 1 0	0 2 53	..	..	10 21 33	0 6 0	Chloroformed in large doses with inhaler tightly held over face. Struggled a great deal. Artificial respiration was commenced one minute after the breathing had ceased, and proved unsuccessful; weight 30 lb. The dog gasped several times after artificial respiration had been practised for a minute. Post-mortem appearances: Liver found ruptured in three places, and the peritoneal cavity full of dark blood. Liver distinctly fatty (mottled), soft, and friable. Heart soft, mottled on surface. Endocardium pale; lung dry and non-crepitant. Lines of medullary rays in kidneys were well marked.
Do.	475	Full-grown, large-sized pariah; has had ¾ gr. of phosphorus a day since 22nd inst.	10 43 0	0 1 48	0 2 18	..	..	10 46 18	0 2 0	Chloroformed as in the above experiment, and artificial respiration commenced one minute after the breathing had ceased. The dog was revived after artificial respiration had been practised two minutes. Struggled during inhalation.
Do.	476	Full-grown pariah: has had phosphorus as in the above case.	10 5 20	0 2 30	0 3 0	..	..	10 56 0	0 6 0	Chloroformed as in the last case, and artificial respiration commenced one minute after the breathing had ceased. Dog died. The needle in heart was found to be vibrating until 11 h. 3 m. 12 s. Struggled during inhalation. Weight 30 lb. Post-mortem appearances same as in No. 475, with the exception that the liver was not ruptured.
Do.	477	Ditto.	11 8 0	0 1 52	0 2 52	..	..	11 11 52	0 7 0	Chloroformed as in the last experiment. Artificial respiration was tried 1 minute after the breathing had ceased and proved unsuccessful. Weight 28 lb. Heart acted for 5 minutes after the respiration had ceased. Struggled during inhalation. Post-mortem appearances as in 476.
Do.	478	Full-grown, large pariah; was given phosphorus as in the previous cases.	11 18 0	0 2 1	0 4 1	..	..	11 22 45	0 6 0	Chloroformed as in above case, and artificial respiration tried unsuccessfully 45 s. after the breathing had ceased. Struggled a great deal. Post-mortem appearances as in 477.
Do.	479	Full-grown, large pariah; has had phosphorus as in the last case.	11 32 0	0 2 33	0 3 15	..	..	11 36 0	0 13 0	Chloroformed as in the above case. Artificial respiration was tried 45 s. after breathing had ceased. Needle thrust into the heart at 11 h. 47 m. was seen to be vibrating. Dog died at 11 h. 50 m. 5 s. Weight 22 lb. Post-mortem appearances as in 478.
Do.	480	Full-grown, large pariah; has had the same amount of phosphorus as in the previous cases.	11 51 0	0 1 53	0 2 13	..	..	11 53 51	0 3 0	Chloroformed as in the above cases, and artificial respiration tried 38 s. after the breathing had ceased. The dog revived 2 minutes after artificial respiration had been commenced.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889. Nov. 25.	481	Full-grown, large pariah; has had phosphorus as in the previous cases.	H. M. S. 12 0 0	H. M. S. 0 1 3	H. M. S. 0 2 18	H. M. S. ..	H. M. S. ..	H. M. S. 12 2 53	H. M. S. 0 6 0	Chloroformed as in 480. Artificial respiration commenced 35 s. after breathing had ceased. Dog died. Weight 35 lb. Post-mortem appearances as in 479.

V. (*a*).—*Artificial respiration tried in these cases without the previous administration of phosphorus.*

Do.	482	Young monkey.	3 29 0	0 1 13	0 3 56	..	..	3 33 26	0 3 0	Chloroformed in large doses with cloth inhaler tightly held over the face. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved unsuccessful.
Do.	483	Ditto.	3 39 0	0 0 56	0 4 2	..	..	3 43 32	0 6 0	Ditto. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved unsuccessful.
Do.	484	Ditto.	3 52 0	0 1 0	0 3 30	..	..	3 56 9	0 15 0	Ditto. Artificial respiration was commenced 30 s. after the breathing had ceased and continued 15 m.; proved unsuccessful.
Do.	485	Ditto.	4 8 0	0 1 45	0 4 0	..	..	4 12 30	0 1 0	Ditto. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved successful after a minute.

V. (*c*).—*The abdomen was opened in these cases and aromatic spirits of ammonia injected into the stomach before artificial respiration was tried.*

Nov. 26	486	Full-sized, healthy pariah.	9 47 30	0 1 0	..	..	..	..	..	Operation of opening abdomen begun at 9 h. 50 m. Cornea sensitive at 9 h. 54 m. More chloroform at 9 h. 54 m. 10 s. Cornea insensitive, and chloroform removed at 9 h. 55 m. 30 s., 1 dr. spirits ammonia co. being injected into stomach by hypodermic syringe 9 h. 58 m. 25 s. Injection completed at 9 h. 59 m. 10 s. Pushed chloroform at 10 h. 4 m., dog being still under. Respiration ceased at 10 h. 7 m. 50 s. Artificial respiration commenced 10 h. 8 m. 20 s.; 30 s. after breathing ceased, and continued for 5 m. 40 s., and proved unsuccessful. Weight 34 lb.
Do.	487	Full-sized, healthy pariah.	10 17 0	..	..	..	..	..	..	Chloroform inhalation begun at 10 h. 17 m. Cornea insensitive 10 h. 18 m. 10 s. Respiration ceased suddenly 10 h. 19 m., and artificial respiration commenced immediately and continued for 4 m. Operation of opening abdomen begun at 10 h. 24 m. Injection of 1 dr. spirits of ammonia co. begun at 10 h. 26 m. 30 s. into stomach as in above case. Finished at 10 h. 27 m. Pushed chloroform at 10 h. 30 m., dog being still under. Respiration ceased at 10 h. 36 m. 40 s. Artificial respiration commenced at 10 h. 37 m. 0 s. after breathing had ceased and continued for 2 m. Dog revived. Weight 29 lb.

V. (*a*).—*Artificial respiration tried.*

Do.	488	The same dog chloroformed again.	10 46 0	0 0 53	0 3 10	..	..	10 49 40	0 2 0	Chloroformed with large doses and artificial respiration commenced 30 s. after the breathing had ceased. Unsuccessful.
Do.	489	Young monkey; weighed 6 lb.	11 1 0	0 0 58	0 2 16	..	..	11 3 46	0 4 0	Chloroformed as in the above experiment. Artificial respiration was commenced 30 s. after the respiration had ceased and proved successful.

I. (*k*).—*Monkeys chloroformed to death after the subcutaneous injection of aromatic spirits of ammonia.*

Do.	490	Young monkey; had 20 minims of spirits of ammonia aromatic injected under the skin at 11 h. 2 m.	11 11 0	0 1 18	0 2 16	0 2 23	0 9 23	..	..	Chloroform in large doses till death occurred. Weight 6 lb.; gasped twice before the heart stopped.
Do.	491	Young monkey; had 20 minims of spirits of ammonia co. injected under the skin at 11 h. 12 m.	11 21 0	0 0 43	0 1 59	0 2 6	0 7 0	..	..	Idem. Weight 8 lb.
Do.	492	Full grown monkey; had 20 minims of spirits of ammonia aromatic injected at 11 h. 20 m.	11 28 0	0 1 18	0 2 53	Not noted.	0 10 12	..	..	Idem. Weight 12 lb.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 23.	493	Full-grown monkey; had 20 minims of spirits of ammonia aromatic at 11 h. 25 m.	11 35 0	0 1 12	0 2 27	0 2 48	0 15 0	..	..	Idem. Weight 12 lb.
Do.	494	Full-grown monkey, small size; had 20 minims of spirits of ammonia co. at 2 h. 45 m.	2 50 0	0 1 0	0 1 30	0 2 10	0 4 0	..	..	Do. Weight 5 lb.
Do.	495	Young monkey; had 20 minims of spirits of ammonia co. at 2 h. 55 m.	3 0 0	0 1 0	0 2 10	0 3 30	0 5 50	..	..	Do. Respiration returned 35 s. after it ceased and continued for 1 m., after which it ceased entirely.
V. (*a*).—*Artificial respiration tried.*										
Do.	496	Young monkey.	3 14 0	0 0 56	0 1 58	..	..	3 16 28	0 5 0	Chloroformed by 1 dr. doses at a time, the monkey being in the erect position. Artificial respiration was commenced 30 s. after the breathing had ceased, the monkey having been inverted before it was begun. Unsuccessful. The heart stopped beating seven minutes after inhalation. Weight 6 lb.
Do.	497	Ditto.	3 30 0	0 1 5	0 2 11	..	..	3 32 41	0 14 0	Ditto. Artificial respiration commenced 30 s. after the breathing had ceased. The monkey, being inverted, proved unsuccessful. A needle in the heart was found to be vibrating 15 m. after inhalation.
Do.	498	Ditto.	3 57 0	1 4 0	0 3 0	..	..	4 0 30	0 4 0	Ditto. Artificial respiration was commenced 30 s. after the breathing had ceased, the monkey having been inverted, and proved successful.
I. (*m*).—*Monkeys chloroformed to death in the erect position and with large doses on cloth inhaler.*										
Do.	499	Full-grown monkey.	10 37 0	0 1 30	0 5 0	0 9 30	0 11 15	..	..	Chloroformed in the erect position, and the anæsthetic pushed until death occurred.
Do.	500	Small monkey.	10 55 0	0 1 20	0 3 30	0 5 0	0 6 0	..	..	Do. Do. Weight 5 lb.
Do.	501	Ditto.	11 5 0	0 1 0	0 2 46	0 3 5	0 4 6	..	..	Do. Do. do.
Do.	502	Ditto.	11 13 30	0 1 5	0 1 50	0 3 15	0 3 38	..	..	Ditto. The thorax was opened in this case, and the heart seen to have stopped immediately after the needle in that organ ceased to vibrate. Weight 5 lb.
Do.	503	Young monkey.	11 27 0	0 0 52	0 4 18	0 4 23	0 4 40	..	..	Do. Do. Weight 8 lb.
Do.	504	Ditto.	11 43 30	0 1 0	0 6 2	0 6 23	0 10 12	..	..	Do. Do Weight 6 lb.
V. (*a*).—*Artificial respiration tried in these cases.*										
Do.	505	Ditto.	11 57 0	0 1 5	0 5 16	..	..	12 2 46	0 5 0	Chloroformed in the recumbent position with large doses and inverted before artificial respiration was begun. Artificial respiration was commenced 30 s. after the breathing had ceased, and proved ineffectual. Weight 7 lb.
Nov. 27.	506	Ditto.	2 51 0	0 1 15	0 5 0	..	..	2 56 30	0 2 0	Chloroformed as above. Proved unsuccessful. Artificial respiration commenced after 30 s. and continued for 2 m.
Do.	507	Full-grown monkey.	3 7 0	0 1 45	0 5 15	..	..	3 13 0	0 7 0	Chloroformed as above. Artificial respiration commenced after 45 s. and continued for 7 m. unsuccessfully.
Do.	508	Young monkey.	3 20 0	0 0 54	0 5 0	..	..	3 28 45	0 4 0	Chloroformed as in the above case, and artificial respiration commenced 45 s. after the breathing had ceased. Successful.
Do.	509	Ditto.	3 32 0	2 44 0	0 6 2	..	..	3 38 22	0 3 0	Chloroformed as in the above case. Struggled a great deal. Artificial respiration was commenced 20 s. after the breathing had ceased, and proved successful. Weight 8 lb.
Do.	510	The same monkey after he had revived.	3 44 0	0 0 42	0 1 14	..	..	3 45 44	0 6 0	Chloroformed as in the above case. Artificial respiration was commenced 30 s. after the breathing had ceased. Unsuccessful.
Do.	511	Full-grown monkey.	3 55 0	0 2 18	0 5 16	..	..	4 1 16	0 2 0	Chloroformed as in the last experiment. Artificial respiration was commenced 1 m. after the breathing had ceased, and found unsuccessful.
V. (*b*).—*Artificial respiration tried on dogs sick from phosphorus poisoning.*										
Nov. 30.	512	Dog sick from phosphorus poisoning. Had 1 gr. of phosphorus daily for three days from 25th inst.	10 23 0	0 1 40	0 4 15	..	..	10 27 40	0 2 0	Struggled. Artificial respiration was commenced 25 s. after the breathing had ceased, and succeeded in reviving the dog.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Nov. 30.	513	Ditto.	10 30 0	0 1 16	0 2 4	..	..	10 32 44	0 1 30	Struggled. Artificial respiration was commenced 40 s. after the breathing had ceased, and proved successful.
Do.	514	Ditto.	10 47 0	0 1 10	0 2 14	..	..	10 50 4	0 7 0	Struggled a great deal. Artificial respiration was commenced 50 m. after breathing had ceased. Dog died. Post-mortem appearances: Liver ruptured. It was soft, friable, and mottled, and distinctly fatty. Heart paler than usual.
V. (*e*).—*Three dogs sick from phosphorus poisoning etherised and artificial respiration tried on them.*										
Do.	515	Ditto.	11 3 0	0 2 16	0 6 18	..	..	11 9 43	0 6 0	Struggled. Artificial respiration was commenced 25 s. after the respiration had ceased, and proved unsuccessful.
Do.	516	Ditto.	11 35 0	0 1 45	0 12 10	..	..	11 47 40	0 2 0	Dog struggled much. Artificial respiration commenced 30 s. after respiration ceased, and continued for 2 m. Proved successful.
Do.	517	Ditto.	3 44 0	0 1 25	0 8 3	..	..	3 52 53	0 6 0	Artificial respiration was commenced 50 s. after the respiration had ceased. Dog died.
III. (*g*).—*Twelve dogs injected with cocaine into the peritoneum about 10 minutes before being chloroformed to death with large doses on cloth inhaler.*										
Dec. 2.	518	Full-grown, well-nourished pariah.	10 40 0	0 1 10	0 2 10	0 4 5	0 6 10	..	..	Struggled. Cocaine, ¼ gr., injected at 10 h. 30 m.
Do.	519	Ditto.	11 1 0	0 1 23	0 2 18	0 4 20	0 8 13	..	..	Struggled very much. Cocaine, ¼ gr., injected at 10 h. 30 m.
Do.	520	Full-grown, thin pariah.	11 11 0	0 1 11	0 2 30	0 3 24	0 8 0	..	..	Struggled very much. Cocaine, ½ gr., injected at 11 h.
Do.	521	Small-sized, full-grown pariah.	11 29 0	0 2 0	0 2 40	0 2 50	0 6 10	..	..	Did not struggle. Injected with ¼ gr. of cocaine at 11 h. 20 m.
Do.	522	Full-grown, lean pariah.	11 43 30	0 1 0	0 3 56	0 5 18	0 9 2	..	..	Struggled. Cocaine, 1 gr., injected at 11 h. 35 m.
Do.	523	Emaciated, full-grown pariah.	11 55 0	0 1 5	0 6 24	0 6 28	0 10 38	..	..	Struggled. Cocaine, 1 gr., injected at 11 h. 45 m.
Dec. 3.	524	Undersized, ill-nourished pariah.	10 0 0	0 0 52	0 1 50	0 2 12	0 5 20	..	..	Cocaine, 1½ gr., injected at 9 h. 45 m. inhalation. Dog struggled.
Do.	525	Full-sized, well-nourished pariah.	10 9 0	0 1 5	0 1 35	0 1 50	0 5 58	..	..	Cocaine, 1½ gr., injected at 9 h. 58 m. Dog struggled.
Do.	526	Full-grown, powerful pariah.	10 33 0	0 0 50	0 1 40	0 1 58	0 6 5	..	..	Cocaine, 1½ gr., injected at 10 h. 23 m. Gave great trouble in being chloroformed. Struggled a great deal, and had to be held down with much force.
Do.	527	Full-grown, middle-sized pariah.	3 57 30	0 1 40	0 4 30	0 5 0	0 8 28	..	..	Cocaine, 2 gr., injected at 2 h. 43 m. Dog struggled.
Do.	528	Full-grown, well-nourished pariah.	3 9 0	0 0 43	0 2 0	0 2 23	0 8 13	..	..	Cocaine, 2 gr., injected at 2 h. 54 m. Did not struggle.
Do.	529	Full-grown, small-sized, pariah.	3 24 0	0 1 14	0 2 18	0 3 6	0 5 33	..	..	Cocaine, 2 gr., injected at 3 h. 6 m. Shortly after the injection the dog became excited. He was then seized with convulsions; fell down at 3 h. 15 m. Did not struggle during the experiment.
III. (*h*).—*Twelve dogs injected with strychnine before being chloroformed to death with large doses on cloth inhaler.*										
Dec. 3.	530	Full-grown, well-nourished pariah.	3 39 0	0 1 2	0 1 40	0 2 5	0 4 3	..	..	Strychnine, $\frac{1}{20}$ gr., injected at 3 h. 35 m. Struggled.
Do.	531	Ditto.	3 47 0	0 1 41	0 3 0	0 0 32	0 6 18	..	..	Strychnine, $\frac{1}{20}$ gr., injected at 3 h. 35 m. Struggled.
Do.	532	Ditto.	4 2 0	0 0 59	0 1 42	0 2 18	0 5 31	..	..	Strychnine, $\frac{2}{20}$ gr., injected at 3 h. 43 m. Struggled severely.
Do.	533	Full-grown, large-sized pariah.	4 15 0	0 0 54	0 1 43	0 1 51	0 6 33	..	..	Strychnine, $\frac{1}{10}$ gr., injected at 4 h. 6 m. Struggled.
Do.	534	Full-grown, well-nourished pariah.	4 23 0	0 0 48	0 1 52	0 2 0	0 5 30	..	..	Strychnine, $\frac{1}{10}$ gr., injected at 4 h. 12 m. Struggled.
Dec. 4.	535	Full-grown, powerful pariah.	10 15 0	0 1 15	0 1 40	0 2 0	0 4 44	..	..	Strychnine, $\frac{1}{10}$ gr., injected at 10 h. 6 m. Struggled very hard. Gasped after the respiration had ceased, and before the heart stopped acting.
Do.	536	Full-grown, small pariah.	10 55 0	0 0 58	0 1 23	0 2 16	0 3 2	..	..	Strychnine, $\frac{2}{20}$ gr., injected at 10 h. 45 m. Muscles rigid, and symptoms of strychnine poisoning commencing when brought on table.
Do.	537	Full-grown, well-nourished pariah.	11 3 0	0 1 18	0 2 4	0 2 17	0 6 0	..	..	Strychnine, $\frac{2}{20}$ gr., injected at 10 h. 55 m. Brought on table with symptoms of strychnine poisoning.
Do.	538	Full-grown, small pariah.	11 12 0	0 0 30	0 2 0	0 2 8	0 4 10	..	..	Strychnine, $\frac{3}{20}$ gr., injected at 11 h. 5 m. Became convulsed at 11 h. 9 m. from strychnine poisoning, and was chloroformed in this condition.
Do.	539	Full-grown, large-sized pariah.	11 16 0	0 0 32	0 2 58	0 3 6	0 5 23	..	..	Strychnine, ¼ gr., injected at 11 a. 15 m. Tetanic convulsions set in in a minute's time, and the dog was at once chloroformed.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Dec. 4.	540	Full-grown pariah.	11 20 0	0 0 45	0 0 53	0 1 56	0 5 0	..	..	Strychnine, $\frac{1}{5}$ gr., injected at 11 h. 18 m. Tetanic convulsions set in in 1½ minutes 1st time, and the dog was chloroformed in this condition. Gasped 13 times before the heart ceased to beat.
Do.	541	Full-grown, small-sized pariah.	11 33 0	0 0 42	0 2 12	0 3 7	0 6 53	..	..	Strychnine, $\frac{1}{5}$ gr., injected at 11 h 23 m. Chloroformed during convulsions.
III. (*i*).—*Atropine injected in these cases before the dogs were chloroformed to death with large doses on cloth inhaler.*										
Do.	542	Ditto.	11 41 0	0 1 53	0 2 10	0 3 18	0 5 53	..	..	Atropine, $\frac{1}{25}$ gr., injected at 11 h. 30 m. Struggled.
Do.	543	Full-grown, well-nourished pariah.	11 46 0	0 0 58	0 2 33	0 4 0	0 6 2	..	..	Atropine, $\frac{1}{25}$ gr., injected at 11 h. 35 m. Dog struggled.
Do.	544	Full-grown, small pariah.	11 52 0	0 0 53	0 3 0	0 3 15	0 4 7	..	..	Atropine, $\frac{1}{25}$ gr., injected at 11 h. 40 m. Dog struggled.
Dec. 5	545	Full-grown, well-nourished pariah.	10 13 0	0 1 15	0 2 45	0 3 11	0 4 34	..	..	Atropine, $\frac{1}{10}$ gr., injected at 10 h. 3 m. Dog struggled during administration.
Do.	546	Full-grown, large, but emaciated pariah.	10 19 0	0 43 0	0 1 0	0 1 28	0 3 33	..	..	Atropine, $\frac{1}{10}$ gr., injected at 10 h. 7 m. Struggled during the administration, gasped before the heart stopped beating.
Do.	547	Full-grown, fair-sized pariah.	10 28 0	0 1 21	0 3 23	0 3 47	0 5 59	..	..	Atropine, $\frac{1}{10}$ gr., injected at 10 h. 16 m. Dog struggled.
Do.	548	Full-grown, badly nourished pariah.	10 37 0	0 1 1	0 1 46	0 2 0	0 4 46	..	..	Atropine, $\frac{1}{5}$ gr., injected at 10 h. 23 m. Dog struggled. Gasped before death.
Do.	549	Full-grown, emaciated pariah.	10 44 0	0 1 9	0 1 38	0 2 2	0 4 16	..	..	Atropine, $\frac{1}{5}$ gr., injected at 10 h. 35 m. Struggled during the administration.
Do.	550	Large-sized, badly nourished pariah.	10 50 0	0 0 42	0 1 13	0 1 20	0 5 12	..	..	Atropine, $\frac{1}{5}$ gr., injected at 10 h. 38 m. Struggled. Gasped before death occurred.
Do.	551	Large-sized, well-nourished pariah.	11 0 0	0 1 16	0 2 18	0 2 50	0 5 0	..	..	Atropine, $\frac{1}{5}$ gr., injected at 10 h. 48 m. Dog struggled.
Do.	552	Fair-sized, well-nourished pariah.	11 8 0	0 0 48	0 1 36	0 1 42	0 6 18	..	..	Atropine, $\frac{1}{5}$ gr., injected at 10 h. 55 m. Struggled very much. Gasped three times before the heart stopped.
Do.	553	Small-sized, very emaciated pariah.	11 13 0	0 1 2	0 1 28	0 1 32	0 2 20	..	..	Atropine, $\frac{1}{5}$ gr., injected at 11 h. Struggled in the usual way. As soon as the needle ceased to vibrate, the thorax was opened, and the heart seen to have stopped acting. A post-mortem examination was made, and the heart and other organs found healthy.
V.—*Morphine injected in these cases and artificial respiration tried.* (*The chloroform was administered in the usual way on cloth cap inhaler.*)										
Do.	554	Large-sized, powerful pariah.	11 6 0	0 1 43	0 3 0	..	11 9 30	0 8 0	..	Morphine, ½ gr., injected at 11 h. 52 m. Dog excited when brought on table and struggled very much during the administration of chloroform. Artificial respiration was commenced 30 s. after the breathing had ceased.
Do.	555	Full-grown, well-nourished pariah.	3 40 0	0 0 43	0 1 33	..	..	3 42 3	0 5 0	Morphine, ½ gr., injected at 3 h. 30 m. Artificial respiration was commenced 30 s. after the breathing had ceased. Needle in heart at 3 m. 47 s. ceased to vibrate; unsuccessful. Struggled during administration.
Do.	556	Large-sized, full-grown pariah.	3 51 0	0 1 0	0 2 11	..	..	3 53 41	0 7 0	Morphine, ½ gr., injected at 3 h. 37 m. Artificial respiration was commenced 30 s. after the breathing had ceased. Dog struggled during the administration. Needle in heart at 4 h. ceased to vibrate; unsuccessful.
Do.	557	Full-grown, fair-sized pariah.	4 0 0	0 0 53	0 1 11	..	..	4 1 31	0 4 0	Morphine, ½ gr., injected at 3 m. 50 s. Struggled during the administration. Artificial respiration was commenced 20 s. after the breathing had ceased; successful.
Do.	558	Full-grown, well-nourished pariah.	4 10 0	0 0 56	0 2 0	..	..	4 12 20	0 5 0	Morphine, ½ gr., injected at 4 h. Struggled. Artificial respiration was commenced 20 s. after the breathing had ceased. Needle in heart at 4 h. 17 m. did not vibrate; unsuccessful.
Do.	559	Full-grown well-nourished pariah.	4 21 0	0 1 13	0 2 17	..	..	4 23 37	0 5 0	Morphine, ½ gr., injected at 4 h. 9 m. Struggled. Artificial respiration was commenced 20 s. after the breathing had ceased. Needle in heart at 4 h. 28 m. did not vibrate.
Do.	560	Full-grown, fair-sized pariah.	4 32 0	0 0 57	0 3 14	..	..	4 35 29	0 4 0	Morphine, ½ gr., injected at 4 h. 20 m. Struggled. Artificial respiration was commenced 15 s. after the breathing had ceased; successful.
Do.	561	Full-grown, emaciated pariah.	4 41 0	0 1 5	0 5 52	..	..	4 47 17	0 3 0	Morphine, ½ gr., injected at 4 h. 30 m. Struggled. Artificial respiration was commenced 15 s. after the breathing had ceased; successful.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Dec. 5	562	Full-grown, large pariah, well-nourished.	4 52 0	0 1 3	0 1 23	..	..	4 53 33	0 6 0	Morphine, ½ gr., injected at 4 h. 40 m. Artificial respiration was commenced 15 s. after the breathing had ceased. Dog struggled; unsuccessful.
Dec. 6	563	Full-grown, well-nourished pariah.	10 40 0	0 0 57	0 3 0	..	..	10 43 33	0 10 0	Morphine, ½ gr., injected at 10 h. 25 m. Struggled. Artificial respiration was commenced 30 s. after the breathing had ceased; unsuccessful.
Do.	564	Full-grown, fair-sized pariah.	11 57 0	0 1 9	0 2 2	..	..	11 59 32	0 6 0	Morphine, ½ gr., injected at 10 h. 38 m. Struggled. Artificial respiration was commenced 30 s. after the breathing had ceased. Successful. This dog died 2 m. after it was taken outside and left alone.
Do.	565	Full-grown, well-nourished pariah.	11 7 0	0 1 10	0 2 26	..	..	11 9 56	0 4 0	Morphine, ½ gr., injected at 10 h. 50 m. Struggled. Artificial respiration was commenced 30 s. after the respiration had ceased. Needle in heart at 11 h. 16 m. ceased to vibrate. Unsuccessful.
V. (*b*).—*Artificial respiration tried on a dog poisoned with phosphorus, the chloroform being administered in the usual manner.*										
Dec. 7	566	Full-grown, well nourished pariah, ill from phosphorus poisoning.	10 49 0	0 0 58	0 2 5	..	..	10 51 35	0 12 0	1 gr. of phosphorus given every morning for three days (3rd, 4th, 5th). Did not struggle. Artificial respiration was commenced 30 s. after the breathing had ceased; unsuccessful.
I. (*n*).—*Dogs chloroformed to death with small doses on cloth inhaler.*										
Dec. 9	567	Under-sized, ill-nourished pariah.	10 32 0	0 0 55	0 2 55	0 3 0	0 6 10	..	..	Chloroform administered gradually, on a cap with plenty of air. Dog struggled as usual. Gasped twelve times before heart ceased, the last gasp at 10 h. 36 m. 15 s., or 1 m. 55 s. before heart ceased beating. Weight, 20 lb.
Do.	568	Full-sized, fairly nourished pariah.	10 40 20	0 1 50	0 3 50	0 6 40	0 8 50	..	..	Chloroformed as in the above case. Dog struggled slightly. Weight, 26 lb.
Do.	569	Full-sized, well-nourished pariah.	10 51 0	0 1 40	0 4 50	0 5 2	0 9 40	..	..	Chloroformed as in the above case. Dog struggled very much. Weight, 26 lb.
Do.	570	Full-sized, well-nourished pariah.	11 4 30	0 0 45	0 2 30	0 2 35	0 6 10	..	..	Chloroformed as in the above case. Dog struggled as usual. Gave one long gasp at 11 h. 6 m. 45 s., or 3 m. 55 s. before heart ceased. In this case the needle ceased vibrating at 11 h. 9 m. 15 s., when the thorax was opened and the heart found to be contracting until 11 h. 10 m. 40 s.
Do.	571	Full-grown, well-nourished pariah.	11 14 0	0 1 0	0 18 31	0 19 14	0 26 35	..	..	Chloroformed in small doses gradually given with plenty of air in cloth cap. Struggled. Thorax opened in this case, and the action of the heart watched to the end. Weight, 28 lb.
Do.	572	Full-grown, small-sized pariah.	11 40 0	0 2 29	0 4 32	0 5 4	0 7 52	..	..	Chloroform given as in the above case. Struggled feebly. Thorax opened, and the heart's action watched to the end. Weight, 20 lb.
Do.	573	Ditto	11 51 0	0 1 33	0 8 13	0 9 0	0 13 28	..	..	Chloroformed as in the previous case. Struggled. Thorax opened after the needle ceased to vibrate, and the heart found to have stopped acting. Weight, 17 lb.
Do.	574	Small and emaciated pariah.	12 17 0	0 1 11	0 4 40	0 5 3	0 8 6	..	..	Chloroformed as in the previous case. Struggled. Thorax opened after the needle ceased vibrating, and the heart's action stopped. Weight, 18 lb.
Do.	575	Small, but full-grown, pariah.	3 13 0	0 1 13	0 11 3	0 11 55	0 18 22	..	..	Chloroformed in a similar manner. Struggled. Thorax opened after the needle ceased to vibrate. Weight, 17½ lb.
Do.	576	Full-grown, large-sized pariah.	3 36 0	0 1 28	0 3 47	0 3 59	0 7 4	..	..	Chloroformed in a similar manner. Struggled very much. Thorax opened after the needle ceased to vibrate. Weight, 28 lb.
Do.	577	Full-grown, well-nourished pariah	3 45 0	0 2 16	0 3 0	0 3 15	0 7 11	..	..	Chloroform administered as in the previous case. Struggled. Gasped before the heart ceased to beat. Thorax opened after the needle ceased to vibrate. Weight, 21¾ lb.
Do.	578	Full-grown, large-sized pariah.	3 56 0	0 1 2	0 10 8	0 10 24	0 14 3	..	..	Chloroformed in the same way. Struggled. Weight, 30 lb.
Do.	579	Full-grown, small, and emaciated pariah.	11 6 0	0 3 42	0 8 13	0 8 32	0 12 9	..	..	Chloroformed as in 578. Struggled. Thorax opened after the needle ceased to vibrate. Weight, 20 lb.
Do.	580	Full-grown, well-nourished pariah.	11 20 0	0 1 10	0 3 54	0 6 2	0 6 53	..	..	Chloroformed as in the above case. Struggled severely, and had to be held down with great force. Weight, 29 lb.
Do.	581	Full-grown, well-nourished pariah.	3 3 0	0 1 52	0 8 4	0 9 0	0 12 8	..	..	Chloroform given as in the above case. Struggled severely, and had to be held down with force.

Date.	No.	Description of dog.	Time at which inhalation commenced.	Cornea became insensible after—	Respiration ceased after—	Pulse stopped after—	Heart ceased beating after—	Artificial respiration commenced at—	Artificial respiration continued for—	Remarks.
1889.			H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.	
Dec. 11	582	Full-grown, well-nourished pariah.	10 37 0	0 0 58	0 2 15	0 3 3	0 7 14	..	..	Chloroformed in small doses on cloth cap inhaler. Struggled very much, and had to be held down forcibly. Weight, 30 lb.
Do.	583	Ditto.	10 47 0	0 1 38	0 4 18	0 4 56	0 10 21	..	..	Chloroformed similarly. Struggled. Weight, 26 lb.
Do.	584	Full-grown, small pariah.	11 1 0	0 1 0	0 4 6	0 4 23	0 13 42	..	..	Chloroformed similarly. Struggled. Weight, 19 lb.
Do.	585	Full-grown, large pariah.	11 16 0	0 1 7	0 2 5	0 2 47	0 8 50	..	..	Chloroformed similarly. Struggled. Weight, 35 lb.
Do.	586	Full-grown, well-nourished pariah.	11 27 0	0 1 47	0 4 31	0 4 52	0 8 16	..	..	Chloroformed similarly. Struggled very much. Gasped before heart ceased beating. Weight, 32 lb.
Do.	587	Ditto.	11 37 0	0 2 51	0 8 41	0 8 59	0 12 4	..	..	Chloroformed similarly. Struggled. Weight, 31 lb.
Do.	588	Ditto.	11 53 0	0 2 2	0 5 53	0 6 0	0 15 31	..	..	Chloroformed similarly. Struggled. The respiration returned in this case at 12 h. 2 m., and continued for 3 m., when the chloroform was renewed in the cap. Weight, 28 lb.

REPORT OF THE LANCET
Special Sanitary Commission
ON
PUBLIC ACTION IN RESPECT OF COMMON LODGING-HOUSES.

THE EDINBURGH LODGING-HOUSES AND CITY IMPROVEMENTS.

No. IV.

IN dealing with the general question of the housing of the poor, and more particularly with common lodging-houses, Edinburgh may be considered as the antithesis of Glasgow. The problem in the two towns is different, and the solution attempted also differs. The overcrowding at Edinburgh was not due to a sudden, irresistible influx of countless strangers; of poverty-stricken, unskilled labourers from Ireland and the Highlands, all anxious to profit by the rapid industrial progress of a great manufacturing centre. Edinburgh is not an industrial and commercial town. It is a great seat of learning, and the letting of lodgings to students and others is one of the principal occupations of the native population. The overcrowding was due not so much to poverty and a phenomenal increase of population, as to the fact that Edinburgh was a walled city, and, its size being restricted by its fortifications, there was not room enough to build broad streets. As the city walls, crumbling with age, disappeared, the burgesses of Edinburgh began to realise that the foe was from within and not from without. Means of defence had to be devised, not against armed aggression, but against the spread of epidemic disease and the frequency of premature death. Simultaneously with their neighbours at Glasgow, they introduced a Bill in Parliament to authorise a scheme for the improvement of the city of Edinburgh. Having received the sanction of the Legislature, under the title of the City of Edinburgh Improvement Act of 1867, the trustees appointed by this Act spent, in all, £550,000 in clearing and improving unwholesome areas. The Act empowered them to borrow £350,000, and to increase the assessment throughout the city to the extent of 4*d.* in the pound sterling. By this increase of taxation, sufficient money was raised to enable the trustees to effect the desired improvements without borrowing more than £250,000. Being in command of the necessary financial means, streets were enlarged and some of the worst rookeries destroyed. Altogether about 3000 houses were pulled down and some 14,000 persons displaced. The authorities maintain that no difficulty was experienced in finding new quarters for the persons thus compelled to remove—a fact which would prove that Edinburgh enjoys facilities which are not so readily obtained in large manufacturing centres. Throughout, the Edinburgh trustees seemed animated by a less venturesome spirit than that which has characterised Glasgow. The one great object of the Edinburgh trustees has been to put an end, as rapidly as possible, to their responsibility, and not to attempt even the very mild ventures that are not only sanctioned but actually encouraged and suggested by the Edinburgh City Improvements Act. In following this timid though, if viewed from a purely business standpoint, very correct policy, the Edinburgh City Trustees have been eminently successful. What with the receipts obtained from the increased assessment of the town and the produce of the sale of the building sites created by the destruction of unwholesome property, the whole of the £250,000 borrowed has been refunded, and the accounts were finally closed last September, leaving in the hands of the trustees a small surplus of £8000 in cash, though, on the other hand, there remained little or no property. Thus the accounts are satisfactorily balanced, but the operations under the Act are now terminated; the chapter of improvements is closed; nothing more can be done unless a fresh Act is obtained from Parliament. Were it not for the fact that Edinburgh possesses a medical officer of health of exceptional ability, and a sanitary authority that has displayed the greatest energy, much of the new property created by these improvements would relapse into that condition of insalubrity which rendered the intervention of the Legislature necessary.

Foreseeing the possible difficulty of housing the poor who would be driven from their homes by the contemplated destruction of unwholesome property, a clause in the Improvements Act gave the Edinburgh trustees the power to spend at their discretion £10,000 in providing suitable houses for these people. The sum was small, still it sufficed to enable the trustees to give an example which the owners of private property would in time have been compelled to follow, just as in Glasgow private enterprise is now seeking to copy the excellent disposition and organisation of the common lodging-houses built by the Glasgow trustees. Also there is little doubt but that the sum might have been increased. Indeed, we see no reason why Edinburgh should not have enjoyed the same freedom of action as Glasgow, except it be that, in this respect, the Edinburgh authorities did not wish to act. This latter conviction was forced upon us by the conversations we held with various members of the City Trust, and by the record of what has been done. Instead of asking for more than £10,000, the trustees did not spend even this small sum. They only erected four tenement houses, and these in such a manner that they were in no wise suited to the poor people of the neighbourhood, who had been evicted in order to carry out the city improvements. These tenement houses cost only £7000, and were at once inhabited by a much higher class of occupiers—a class of people, in fact, who can always be housed fairly well without the necessity of intervention on the part of the authorities. No sooner had these comparatively high-class tenants been secured than terms were offered to them by which they could buy and become the permanent owners of their tenements. Thus the trustees sold off the property they had created, got their money back, balanced their

Correspondence.

"Audi alteram partem."

THE HYDERABAD CHLOROFORM COMMISSION.

To the Editors of THE LANCET.

SIRS,—Although wishing that space would permit me to express my keen appreciation of the work done by the Commission, I feel that, as there is so much to be said on this important subject, I must at once proceed to the consideration of the questions at issue.

In the first place I would ask what is the true value of the physiological fact that, when chloroform is administered in toxic doses to the lower animals, respiration ceases before cardiac action? Have we any clinical evidence to prove that, *under similar circumstances*, this sequence of events is not met with in human beings? In most, if not in all, of the rapidly fatal cases which have occurred under chloroform, it has, for obvious reasons, been a matter of extreme difficulty to say at what particular moment the heart ceased to beat. Failure of the pulse has often been taken to mean stoppage of the heart, but without sufficient grounds. If it were possible to make a series of observations upon human beings with that accuracy which is attainable when conducting experiments upon lower animals, I should not be surprised to learn that, when chloroform causes death solely by reason of its toxic properties, the same sequence of events as that observed by the Hyderabad Commission invariably occurs. But our knowledge concerning the action of the heart under anæsthetics is almost entirely dependent upon observations on the pulse; and it would seem that confusion has frequently arisen in consequence of failure of the pulse having been taken to mean that the heart has "suddenly ceased." I am here only referring to those cases in which chloroform itself would seem to have been the cause of death; and in such cases, which are usually rapid in their course, I do not think the clinical evidence we possess is sufficient to disprove the contentions of the Commission. But this, I submit, is the least important part of the subject. Even though we admit the fact that, when chloroform itself is the direct cause of death, respiration ceases before the action of the heart, we are confronted by a question which seems to me far more important than that upon which the Commission has laid so much stress. When fatalities occur during the administration of chloroform, are those fatalities invariably caused by the direct toxic effects of the drug? In other words, have we not conclusive evidence to show that, in man, deaths under chloroform sometimes arise by reflex cardiac failure which is only indirectly due to the anæsthetic? I cannot regard the experiments of the Commission in this direction as rendering such a position untenable; for cases have come under my own observation in which symptoms of cardiac depression obviously of reflex origin have arisen. Whether it be the low vascular tension of chloroform narcosis or other conditions I know not; but I feel sure that there is something that renders the human heart under chloroform susceptible to impulses which are utterly inoperative under ether. I am inclined to the belief that the performance of many operations under chloroform is attended by considerable risk from this quarter; and I am by no means satisfied that cardiac inhibition is less likely to be produced during profound than during imperfect anæsthesia under chloroform. Not long ago I administered chloroform, by means of Junker's apparatus, to a patient of about thirty-five years of age, whose general health was good. Anæsthesia was produced in from eight to ten minutes, and was characterised by muscular flaccidity, abolition of lid reflex, and slight stertor. There were two stages in the operation about to be performed, the first of which consisted in placing a temporary ligature round the carotid artery in the neck. Whilst the artery was being exposed for this purpose the pulse became extremely feeble, the face pale, and respiration shallow, and the operator had some difficulty in recognising the carotid artery by reason of its extraordinary diminution in size. The head was lowered. After three or four compressions of the chest the pulse improved, and, as rigidity and lid-reflex soon reappeared, I was obliged to continue the administration, having recourse to ether for the remainder of the operation, which was successfully performed. The day after the operation, whilst the wound over the carotid was being examined, the patient's face suddenly became pale, the artery contracted as on the previous occasion, the eyes were observed to turn upwards and the muscles of the jaw to twitch, and for a few seconds unconsciousness was present. Now in this case, when the first attack of syncope occurred the patient was thoroughly anæsthetised by chloroform; whilst the quick return of muscular rigidity and of lid-reflex proves that the anæsthetic was in no way to blame as a *direct* cause of the symptoms. Cases of this kind are, I believe, by no means uncommon, and they would seem to point to the conclusion that reflex syncope may undoubtedly arise under chloroform even when the anæsthesia is profound. Apart from anæsthetics, some persons are, as is well known, more prone to syncope than others, and this would seem to be so with regard to patients under chloroform. How can we compare the patient above referred to to the pariah dog? Would the latter be likely to be attacked with syncope by manipulating its carotid? I gather from the report of the Commission that syncope, should it arise, is a safeguard against chloroform poisoning rather than a condition involving much danger to life; but we cannot look upon it in this light when we meet with it upon the operating table.

In conclusion, I would say a few words concerning the indications afforded by the pulse during chloroform administration. There is much evidence to show that, in whatever way death occurs during chloroform narcosis, the pulse, if carefully watched, usually gives warning of the approach of danger before respiration has become seriously affected. In those cases in which cardiac depression is only indirectly due to the chloroform—such, for example, as the case I have related—the initial symptoms are obviously cardiac in origin, and are hence to be detected by alteration in the force and frequency of the pulse. In those cases, too, in which the symptoms are indisputably due to an overdose of chloroform—such, for example, as the cases reported by the Commission—the pulse will, in obedience to the fall of vascular tension (which, as the Commission admits, precedes stoppage of respiration), give indications of the most important character. If the Commission could prove that when chloroform is administered in toxic doses respiration invariably ceases *whilst* the radial pulse is practically unaltered in quality, we should begin to look upon chloroform as a respiratory poison only; but these are not the facts, so far as I understand. I cannot avoid the conviction that the Hyderabad Commission have incurred a grave responsibility in eulogising chloroform as an anæsthetic for general purposes, and in recommending administrators to disregard the indications afforded by the pulse. As I have before ventured to point out in these columns, we should consider the inexperienced rather than the experienced in recommending an anæsthetic. I have lately read the records of every fatal case reported by THE LANCET and *British Medical Journal* as having occurred under anæsthetics in the British Isles from 1880 to 1889 inclusive, and I find that out of a total of 130 chloroform deaths no less than fifty-four took place in connexion with minor surgical operations, most of which were doubtless conducted with somewhat less caution than would have been employed in more critical cases. Are we to advise the use of chloroform (which Dr. Lauder Brunton admits to be a most powerful drug) to recently qualified men, who have perhaps never employed it before? I confess I cannot regard it as advisable to permit those with but little experience to administer chloroform to patients coming into the surgeries of hospitals with a dislocated shoulder or a lacerated finger, yet this course is one which the Commission appear to countenance. Even though we accept the facts so ably put before us by the Hyderabad Commission, we are, I would submit, in no way justified in agreeing with the practical conclusions at which the Commission have arrived.

I am, Sirs, yours obediently,

FREDERIC HEWITT,
Instructor in and Lecturer on Anæsthetics at the London Hospital, &c.
George-street, Hanover-square, W., Feb. 24th, 1890.

Correspondence.

"Audi alteram partem."

THE HYDERABAD CHLOROFORM COMMISSION.

To the Editors of THE LANCET.

SIRS,—The importance of the issues at stake seems to render it incumbent upon everyone who has special opportunities for observing the action of anæsthetic agents to record his opinion concerning the results of the Hyderabad Commission. Many of the conclusions arrived at are of the utmost importance, and our best thanks are due to the Commission for bringing these prominently under notice. I allude more particularly to the influence of asphyxial conditions, the previous exhibition of certain drugs, hæmorrhage in considerable degree, and the position of the animal anæsthetised. On the other hand, there are many points for the final settlement of which we had all looked forward with the greatest interest to the experiments of the Commission, but in which we are, if anything, in a more uncertain position than before.

In the first place, it is unfortunate that all the evidence as regards the occurrence of primary syncope is negative, and one cannot help feeling that, even were the instances considerably multiplied, there still would be no certainty that the next experiment might not prove the exception to the rule. And if we are not justified in arriving at a dogmatic conclusion in the case of the lower animals, how much less are we warranted in applying the same conclusion to the human subject. The records of clinical experience, in fact, stand confronted with the results of laboratory experiment, and I think that everyone will allow more weight to one positive instance occurring in the former than even to thousands of negative instances in the latter. It is well known that many of the cases which have suddenly terminated fatally, or shown signs of serious cardiac failure during the administration of chloroform, come under a certain category, including forcible dilatation of the sphincter ani and other operations which I need not here specify. Other fatal results have occurred during the performance of trivial operations where the action of chloroform has admittedly not been carried to complete narcosis. Now, although there may be some difficulty in attributing the precise cause in each individual case, whether an overdose of the drug suddenly applied in order to check movement, or whether a reflex inhibition of the heart in consequence of incomplete anæsthesia, there can be no doubt as to the symptoms observed—viz., sudden pallor and failure of pulse, almost coincident with the commencement of operation, and in many cases absolute failure of all means of resuscitation, although promptly applied. Now, on referring to the experiments made upon the lower animals in this connexion, we find that, although all the operations associated with shock and cardiac failure were performed in all stages of chloroform administration, yet there was nothing beyond a slight variation in blood pressure to indicate anything approaching syncope or cardiac failure. Evidently, therefore, in this matter we stand face to face with a serious dissimilarity between the conditions as occurring in the human subject and in the lower animals respectively, and yet, on turning to the practical conclusions deduced from the experiments of the Commission, we find it recommended that, "as a rule, no operation should be commenced until the patient is fully under the anæsthetic, so as to avoid all chance of death from surgical shock or fright." With the conclusion I think most chloroformists will agree, but not with the method of arriving at it; and I maintain that if we followed the indications furnished by laboratory experiments in this instance we should be led into grievous error.

On making a general survey of the experiments as reported we cannot help being struck by one very important fact—viz., the uniformity with which the various phenomena presented themselves in each series, even in those purposely complicated for special objects. In other words, the percentage of typical cases is very large, and contrasts markedly with what is observed in the human subject, where the typical form is comparatively uncommon, but is nevertheless, when it occurs, recognised as the normal and made the point of departure for the consideration of all others. It is chiefly on this account that I feel I must disagree with the statement of the Commission that, if the rules laid down be followed, "chloroform may be given in any case requiring an operation with perfect ease and absolute safety." The public, who are our judges if anything goes amiss, will—nay, already have supplied the words "by anyone, experienced or inexperienced," and this idea, if allowed to gain acceptance, will, I am afraid, be fraught with disaster. Even assuming for the moment that primary cardiac failure never occurs in the human subject, cases are continually presenting themselves where the respiratory signs need the closest watchfulness. Clinical experience shows us that shallow breathing occurs at the two ends of the scale. On the one hand, when the subject is deeply under the influence of chloroform; on the other, when he is entering or emerging from its influence. In our typical cases the interval between the two is well marked, and the two conditions are easily distinguishable; but in others, not at all infrequent, the interval is so small and so slightly marked that it may be bridged over by a minute dose of chloroform, or even by a mere alteration of position in the patient. It is here that even the experienced administrator might be led into a fatal error if he trusted entirely to the ill-defined signs furnished by the respiratory function, and it is only by a careful attention to the important indications yielded by the pulse, the pupil, the conjunctival reflex, the colour, and temperature of the skin that he is able to conduct his patient safely through a truly perilous journey. I cannot conclude this letter without heartily endorsing every word in Dr. Hewitt's valuable letter on the same subject. I have myself notes of at least two cases in which, during complete and satisfactory chloroform narcosis, and without hæmorrhage of any importance, there was a rapid fall in the volume and tension of the pulse, attended with blanching of the lips and coldness of the surface, without any preliminary alteration in the depth or frequency of respiration. Whatever the exact cause may be, there can be no doubt that during the administration of chloroform we must always be prepared for such an occurrence, whereas with ether we may practically disregard its possibility. The duty of the anæsthetist during the performance of a surgical operation on the human subject must be regarded as a highly complicated one, and I am of opinion that the most reliable administrator is the one who, automatically, as it were, is at all times in full possession of the general condition of his patient, keenly alive to all the indications presented to him, however trivial, and at once prepared to regulate his procedure accordingly.—I am, Sirs, yours obediently,

CHARLES E. SHEPPARD,
Second Chloroformist to the Middlesex Hospital; Anæsthetist to Guy's Hospital (Dental School).
Welbeck-street, Cavendish-square, W., March 4th, 1890.

"A THERAPEUTICAL PARADOX: ACTION OF EXPECTORANTS."

To the Editors of THE LANCET.

SIRS,—Will you permit me to tender my best thanks to Professor Gairdner for the kind and courteous manner in which he speaks of my recent work on "Chronic Bronchitis and its Treatment"? I fear, however, that I cannot take credit for the theory which he criticises of the mode of action of certain expectorants. Dr. Lauder Brunton, in his classical work on Pharmacology, divides this group of agents into Depressing Expectorants, "generally tending to depress the heart, lessen blood pressure, and increase secretion," and Stimulating Expectorants, "generally stimulating the heart, increasing blood pressure, and diminishing secretion"; and the same classification in very similar terms is to be found in kindred works on the subject. I regret that, so far, I have been unable to obtain a copy of Professor Gairdner's paper in the *Glasgow Medical Journal*.

As reference has been made to the value of apomorphine as an expectorant, I may mention that I have employed it this winter in very many cases of chronic bronchitis with the most satisfactory results. I give it in doses of a tenth of a grain every three or four hours, usually with syrup of tar or syrup of Virginian prune. I often prescribe the tenth of a grain of hypodermic tabloids of apomorphine as cough lozenges. In this dose, given by mouth, it never excites vomiting, and very rarely nausea. The great bar to its general acceptance as an expectorant is that there is a deep-