cases, not of plethora, but of passive congestion; and the blood-vessels, partaking of the generally relaxed and atonic state of the body, occasionally give way, and apoplexy or hæmoptysis occurs, from moderate exertion, or from undue excitement. It is surprising how very rapidly these patients improve in their general health under a course of gallic acid—how soon strength is given to every fibre, and the loosened textures become bound up with tone; the congested appearance of the countenance disappearing, and the little gorged capillaries vanishing in the general colour of health, while the tongue becomes firmer, and the pulse more full and powerful.

v. In the fifth class of cases, piles, wounds, etc., the effects of the external use of tannic acid and its preparations, are well known; and where severe hæmorrhage results from slight wounds, etc., as will sometimes occur in those of hæmorrhagic diathesis, the internal administration of gallic acid will greatly assist in arresting the flow of blood. It is probable that in some affections of the skin, and in varicose veins, gallic acid may prove serviceable.

In conclusion, I would once again seek to impress the fact that, in severe cases of hæmorrhage, gallic acid must be given fearlessly, and until complete saturation of the system is accomplished.

28 Old Steine, Brighton, June 1854.

USE OF BELLADONNA IN VARIOUS AFFECTIONS MARKED BY CONTRACTED PUPILS:

AND ON THE NON-SUSCEPTIBILITY OF THE DOG TO THE ACTION OF CERTAIN POISONS.

By W. LAUDER LINDSAY, M.D., late Resident Physician of the Surgeon Square Cholera Hospital, Edinburgh.

LAST winter I purposed making some experiments on the effects of belladonna in the coma, with contracted pupils, which sometimes occurs during the typhoid stage, or, as it is commonly designated, the "consecutive fever", of cholera. They were suggested to me by the success of some trials of this drug, in the Royal Infirmary of Edinburgh, made by my friend Dr. Anderson, in the coma, with contracted pupils, of continued fever, and of opium poisoning. Its good effects, apparently (to a certain extent, at least), as an antidote to poisoning by opium, was manifest in two cases in particular.

The first case was a man labouring under delirium tremens, who had accidentally taken, in thirty-six hours, two ounces of the solution of muriate of morphia. While he was in a state of deep coma, six drachms of tincture of belladonna (prepared by percolation in the proportion of four ounces of the leaves to two pints of rectified spirit) were given in doses of about one drachm every half hour. In four and a half hours, the patient was out of danger.

The second case was a woman, who had swallowed six drachms of tincture of opium, and in whom the means usually resorted to in cases of opium poisoning had failed in rousing her from coma. Within the course of an hour, she took ten drachms of tincture of belladonna (freshly prepared); and, in a few hours thereafter, she also was out of danger.

Belladonna had been previously tried elsewhere, with success, in delirium tremens. Our anticipations of its success were founded: 1. On the physiological fact that this substance—or its active principle, atropin—causes dilatation of the pupil when applied externally, or administered internally; and 2. On the supposition that this phenomenon might be a sign of, or co-existent with, a change in the condition of the brain, antagonistic to that of which the contraction of the pupils, with or without coma, in the diseases above mentioned, is a result. Or, in the words of Dr. Anderson,* it appears probable that "if we give an agent whose action on the brain is opposite to that of opium, so soon as its minor physiological effects are developed, the

evidence of the action of opium will disappear." Whether the theory of its action were correct or not, the success of its limited practical application appeared to me to justify its being more extensively tried in other diseases, attended by a similar condition of the brain or pupil.

In connexion with this subject, we were anxious to ascertain, by experiments on the lower animals, whether opium and belladonna—or their respective active principles, morphia and atropin—would uniformly and in all circumstances antagonise, or act as antidotes to, each other. I am not aware that these drugs have been much employed experimentally in the way here referred to. Several authors have, however, hinted at the probability of their success when thus applied, founding their opinion either on their physiological actions or on the resemblance of their effects to certain diseases, in which the administration of the one or other is generally known to be beneficial. For example, Dr. Graves states somewhere in his *Clinical Lectures*, that "in continued fever, with contracted pupils and coma, we are perhaps entitled to suppose that if we can, by an agent administered internally, so affect the brain that the pupils shall become dilated, the other symptoms of cerebral derangement will also be removed";† and Dr. Garrod, of University College, London, mentioned in his introductory lecture last session that, "from the resemblance of the poisonous action of belladonna to delirium tremens, in which disease opium is a most approved remedy, it is probable that, in poisoning by belladonna, opium may be found advantageous". Dr. Anderson states that he knew of several cases where hyoscyamus appeared to antagonise the effects of morphia—that is to say, where morphia alone produced its usual soporific effect, but, along with tincture of hyoscyamus in similar doses, and under otherwise similar circumstances, it produced no effect. This leads him to suggest that many of the solanaceous order of plants may likewise be found useful as antidotes to opium. The active principles of many of the solanaceæ "act as exaltants of the nervous system, increasing the rapidity of the respiration, and the strength and frequency of the pulse, causing delirium of various grades of violence, accompanied till death with dilated pupil, and terminating in coma, probably merely the result of exhaustion of the powers of the system. Now these are effects quite the opposite of those observed daily as the consequences of the administration of opium. That drug exerts its poisonous influence as a depressant of the vital powers, diminishing the number of respirations, weakening the heart's action, and causing coma as one of the first alarming evidences of its effects."

This investigation led us into a still wider field of inquiry, namely, to test the antidotal or antagonistic effects of certain other powerful poisons, which possess opposite physiological actions, viz. strychnia and brucia, conia and nicotina, etc. For these various purposes, I selected several dogs, which I had formerly employed in a series of experiments on the artificial communicability of cholera.† To them we gave various doses of the poisons above mentioned, with the following effects.

EXPERIMENT I. I injected by a common syringe into the mouth of a large, powerful, healthy retriever dog, a drachm of tincture of opium. This apparently produced no effect: he was allowed to run at large a few hours. In the evening, he was made to swallow, in small quantities, enveloped in pieces of bread, no less than twenty grains of muriate of morphia; he was tied up in a room by himself for the night. Next day, he was very quiet and even appeared drowsy; he whined constantly as if suffering from abdominal pain, and obstinately refused all food, on which he looked with evident suspicion. There was neither contraction of the pupil nor any approach to coma. He continued in this condition three days, when he became restless and discontented; but ran actively about the hospital grounds. On the fourth day, he swallowed food eagerly, and, though still whining occasionally, he became much more lively. From this period, he

* Transactions of the Physiological Society of Edinburgh, in the "Edinburgh Monthly Medical Journal" for April 1854.

† Paper (published separately) by Dr. Anderson, "On the Effects of the Internal Administration of Belladonna in Poisoning by Opium".
† Edinburgh Medical and Surgical Journal, April 1854.

rapidly improved, and exhibited no bad or equivocal symptoms.

EXPERIMENT II. Three drachms of tincture of opium were injected into the throat of a young mongrel terrier, which was lively and active, but in poor condition. A few hours afterwards, no appreciable effect being visible, a drachm of solution of muriate of morphia, mixed with a little milk, was also injected. A considerable portion of this was probably immediately vomited; but a great part must have been retained. Next day, he was quiet and drowsy, refusing all food and whining at intervals; though generally crouching in a corner of the room, he was quite able to run about when roused. There was no contraction of the pupil and no approach to coma. Two days afterwards, he appeared quite well.

EXPERIMENT III. I injected into the throat of a young mongrel terrier, which was in poor condition, six grains of muriate of morphia, dissolved in a small quantity of rectified spirit. In a few hours, he became very drowsy, and showed no inclination for food or escape, repeated attempts at which it was constantly making when well. He walked slowly, and with evident difficulty, dragging his hind legs awkwardly. But there was no contraction of the pupils. He vomited a considerable amount of food, but recently swallowed; his alvine evacuations were copious, viscid, and of a dark green colour. Next morning, he remained in the same condition. Six grains more were administered in the same way, but appeared to produce no further effect. On the following day, he was much better, and henceforth improved rapidly.

In none of the above cases was the comatose condition, characteristic of opium poisoning, developed; there was, therefore, no opportunity of testing the value of belladonna or atropin, as I had resolved not to administer the supposed antidote until narcotism had been unmistakably and fully produced.

EXPERIMENT IV. On the back of the tongue of a Scotch terrier, three months old and healthy, active, and lively, was placed one grain of strychnia. For seven minutes, he ran about as if nothing had happened; but suddenly he fell on his side, with his limbs outstretched and rigid, and with convulsive twitchings of his eyelids and facial muscles. Two drachms of fresh *succus conii* were instantly poured down the throat, but without effect; in three minutes, death supervened, having been preceded by convulsive movements of the jaws and limbs. Within five minutes after death, *post mortem* examination was made, of which the details need not here detain us, being interesting only in connexion with the cholera experiments before alluded to.

EXPERIMENT V. To the dog mentioned in Experiment III were given two grains of atropin. No appreciable effect followed.

EXPERIMENT VI. Into the mouth of the same animal were injected, on the subsequent day, two drachms of tincture of belladonna, and likewise two drachms into the anus. That injected into the anus was immediately voided, bringing with it a considerable quantity of feces. No farther bad effect followed.

EXPERIMENT VII. Into the anus of the dog mentioned in Experiment IV was injected half a grain of atropin, dissolved, along with a little rectified spirit and acetic acid, in an ounce of tepid water. It was immediately voided, but no other effect was produced.

In the last three, as in the first three cases, no narcotic or specific effect was produced; I had, therefore, no opportunity of testing the value of opium or morphia in poisoning by belladonna or atropin. In Experiment IV, the amount of strychnia administered was probably too large; and the quantity of *succus conii*, which was given in lieu of conia, too small. My removal from Edinburgh to Dumfries prevented my making any of these experiments on other animals, or completing them even so far as they regarded the dog.

I have been induced to make the above statements merely to show that the dog is not liable to be affected, in a proportionate degree to man, by certain narcotic poisons, and

especially by opium and belladonna, and their respective active principles; and to point out to future experimentalists the fallacy or inutilty, in investigations having similar aims, of employing the dog as the subject of experiment. These experiments were necessarily very crude and faulty; they were, however, merely the prelude to others, which were intended to be more accurate and specific. I had no opportunity of injecting into the cellular tissue or veins, which I should otherwise have proceeded to do. In some of the cases, to account for the failure of the supervention of narcotism, it may be argued, that the poison was not supplied in a soluble form, or one in which it could be readily absorbed into the system; but this objection certainly could not hold good in every case.

Crichton Royal Institution, Dumfries, May 1854.

ASSOCIATION INTELLIGENCE.

YORKSHIRE BRANCH:—ERRATA IN ACCOUNT OF ANNUAL MEETING.

The Secretary of the Yorkshire Branch, W. Matterson, Esq., wishes to direct attention to three errors in the report of the meeting of that Branch, in the JOURNAL of May 26th.

1. THOMAS MALLORIE LEAK, of Hemsworth, near Pontefract, (one of the new members), is described as "Thomas Maltone Leak, of Hemsworth, near Pontypool."

2. A paper on the death of Mr. Haywood, of Sheffield, furnished by Mr. BARBER, was read by Mr. JACKSON.

3. Mr. "TUNLEY" ought to have been "TIMSLEY".

MEETINGS OF THE BRANCHES.

A Special General Meeting of the Metropolitan Counties Branch will be held on Tuesday, the 13th June.—*Vide* the advertising columns of this day's Journal.

The Annual Meeting of the West Somerset Branch will be held at Wellington, on Wednesday, the 14th June, under the presidency of W. E. GILLET, Esq.

The Annual Meeting of the South Eastern Branch will be held on Wednesday, 21st June.—*Vide* advertisement.

The Annual Meeting of the Suffolk Branch will be held on Friday, the 23rd of June, at Bury St. Edmunds, under the presidency of W. E. IMAGE, Esq.—*Vide* advertisement.

EDITOR'S LETTER BOX.

CONVENTION OF POOR-LAW MEDICAL OFFICERS, AND MR. PIGOTT'S PARLIAMENTARY COMMITTEE.

LETTER FROM CHARLES F. J. LORD, Esq.

SIR,—Many of your readers, and particularly the 3,000 union surgeons, must feel deeply interested in the proceedings of the Parliamentary Committee now sitting on Poor-Law Medical Relief. It is to be hoped that the mode of taking evidence may be candid, dispassionate, and impartial; and that all concerned in so vitally important an investigation may rise above the littleness of prejudice and the bias of credulity—the danger of sentimental benevolence on one hand, and the sternness of financial calculation on the other.*

The Committee of the Convention of Poor-Law Medical Officers met on the 2nd instant, after a repose of three years, to renew its sittings during the present parliamentary inquiry. A review of the lengthened correspondence in which the Committee have been engaged from its formation, of their various memorials, reports of depositions to the Poor-Law Board, and to the government, and petitions to the legislature, took place. These documents were found to fully represent the evils of the present system, and suggested remedies relative thereto, which

* As there appeared a reluctance on the part of the Parliamentary Committee to have medical evidence taken, Dr. Hodgkin, as Chairman of the Convention, was authorised by the Committee to communicate with the Parliamentary Committee, to request that at least five members of the Convention might be examined on this important subject.