ular are used for injection the result is the same, in the case of mere local irritation likewise—with a seton for example,—provided the action of the agency be not so severe as to cause early death, and sufficient to induce decided change in the local nutrition of the part operated on. Having explained this much, Dr. Sanderson handed round specimens of liver, cellular tissue, glands, lung, and other organs, showing the various changes artificially produced. In regard to the cellular tissue, there are found induration, abscess in the centre of the later, and small secondary abscesses in large numbers around. The microscope shows the induration to consist of nuclei or corpuscles entirely spherical, and the central part to be pus, a large number of “farcy cords” being present also. The glands in connexion with the inoculated spot are always affected; they are hyperplasmic, and the contents undergo caseous degeneration. In the lungs, grey granulations having the features of miliary tubercles are found, and the microscope detects a central portion consisting of round nuclei in a stroma, and an outside portion consisting of the thickening of the parietes of the alveoli, caused by the production of nuclear bodies, and epithelial accumulations and pigment-granules in the cavities; the principal seat of change being therefore in the walls of the alveoli, as indicated by the presence of nuclear corpuscles in a site where none exist normally. The liver is found to be enlarged, and to be invaded by new deposits (the same as that before described as seen in the lungs) around the branches of the bile-duct and the veins—an interlobular growth throughout the liver. Lebert calls it interlobular inflammation. Dr. Sanderson names the deposit adenoid tissue, because it bears resemblance to the pulp of lymphatic glands. In the peritoneum the same kind of foreign material is observed, apparently unconnected directly with the arteries. As we have said before, these pathological results are the same whatever be the matter used, and if only local irritation be employed to cause glandular irritation. The conclusions to which Dr. Sanderson’s experiments lead are clearly these, if the produced deposit be allowed to be true tubercle: that there is no specific virus or materies morbi in phthisis; and that, in the process of miliary deposit, the first step may be somewhat allied to, if not identical with, caseation of the inflammatory product in lymphatic glands, as stated by some of the continental authorities. Dr. Bastian, in the discussion, took exception to the identity of the deposit in Dr. Sanderson’s preparations and true tubercle. Mr. Simon, however, in the remarks he made upon the matter, specially referred to this point and the difficulty of defining the meaning of tubercle. It cannot be but intensely interesting, as he said, that a disease corresponding with what our present knowledge depicts as tubercle should be produced extensively throughout bodies of rodent animals by common irritation. It seems that Sir James Kay Shuttleworth, many years ago, in experimenting with the subcutaneous injection of mercury, was struck with the production of a condition like tubercle in different parts of the body. The subject is extremely interesting, and Dr. Sanderson has earned for himself such a reputation for accurate and patient research as entitles him to belief beyond the average. We must necessarily recur to so important a subject.

ROYAL COLLEGE OF PHYSICIANS: THE GULSTONIAN LECTURES.

THE physiological action and therapeutical use of belladonna formed the subject of the second of this course of lectures. Dr. J. Harley commenced by describing the effects of increasing doses of atropia used subcutaneously. Briefly summed up, the following are the effects of a full medicinal dose of atropia when administered by the skin:—

An acceleration of the pulse from 20 to 70 beats, with a slight increase in its volume, and a considerable increase in the cardiac and arterial contraction; a general diffusion of warmth throughout the cutaneous surface; a slight throbbing or heaving sensation in the carotids; a slight feeling of pressure under the parietal bones; giddiness, heaviness, drowsiness, or actual somnolency, accompanied by a tendency to quiet delirium and nervous startings; complete dryness of the tongue, roof of the mouth, and soft palate, extending more or less down the pharynx and larynx, rendering the voice husky,

and often inducing dry cough and difficulty of deglutition; a parched condition of the lips; occasional dryness of the conjunctival and Schneiderian mucous membranes; gradual and increasing dilatation of the pupils. After continuing for about two hours the dryness of the mouth suddenly gives way to a viscid, sticky, acid secretion of a peculiar and very sickly offensive odour, and the mouth becomes foul and clammy, and the tongue usually covered with a white fur. The pulse falls simultaneously, and rapidly resumes its ordinary rate and character. The pupils meanwhile attain their maximum dilatation. During the operation of the medicine the respiratory movements undergo no increase, and the breathing continues tranquil. The patient occasionally heaves a deep sigh, or more frequently gives a prolonged yawn as he sits still in a dull, heavy, or drowsy condition.

After the pulse has resumed its ordinary rate, the giddiness and drowsiness pass off, and the patient appears tolerably lively and brisk in mind and body, but he will himself continue to feel for several hours after the operation of the medicine such languor of body and dulness of mind as, accompanied as it often is by some dimness of vision occasionally amounting to an inability to read, will render him incapable of active bodily or mental exertion.

The lecturer having shown that precisely the same symptoms, including the acceleration of the pulse, followed the administration of the medicine by the alimentary canal, he next considered the conditions which interfered with the action of belladonna in the system, and then went on to show that atropia passes unchanged through the body, and that the kidneys are active in its elimination from the time it enters the blood until the symptoms of its presence within the system decline. He stated that he had repeatedly demonstrated the presence of atropia in the urine of a patient within twenty minutes from the time of introducing the one-fortieth of a grain of the sulphate beneath the skin.

He then proceeded to examine the influence of belladonna upon the system, and, from a number of complete analyses of the urine secreted immediately before and during the operation of the medicine, proved that the urea and sulphates and phosphates are invariably increased so long as atropia remains in operation within the system.

The simplest view to be taken of the operation of belladonna is that of direct and powerful stimulation of the sympathetic nervous system, of which the increased force and action of the heart may be taken as the exponent. In children, and in many of the lower animals, this is so far the chief effect that, in medicinal doses at least, it may almost be regarded as the only one.

Adverting then to the medicinal use of belladonna, the lecturer placed this plant at the head of all stimulants; and having illustrated its use as being at one and the same time the most potent cardiac stimulant and diuretic that we possess, advocated its use in cardiac asthenia and syncope, in the collapse of cholera, in suppression of urine, and in diseases attended by imperfect oxydation—viz., rheumatic fever and gout.

In chronic nephritis he regarded it as being a most hopeful means of restoring the kidneys to healthy action, and he adduced several cases to show that belladonna had been beneficial in exciting a healthy tone in the renal bloodvessels, and so diminishing the quantity of albumen in the urine.

Correspondence.

“Audi alteram partem.”

THE USE OF PROTOXIDE-OF-NITROGEN GAS.

To the Editor of THE LANCET.

SIR,—I send a short notice of some experiments with the protoxide-of-nitrogen gas which may interest your readers.

Last Tuesday night I was at the house of Mr. Hepburn, of Portland-place, and witnessed painless tooth-drawing under the effects of the gas, administered by Dr. Thomas W. Evans, of Paris. Being desirous of testing this new anæsthetic in the more delicate and sensitive operations on the eye, I asked Dr. Evans to give me an opportunity of trying it. He consented, and very kindly, and at great inconvenience, came on Thursday to the Central London Ophthalmic Hospital, where he administered it in several cases, before many members of

the profession. Mr. Wilkinson, one of my colleagues who attends at the hospital on the same days as myself, was also there.

Without going at length into the merits of the gas, or comparing it with other anæsthetics—for as yet I have not facts enough,—I will merely mention some of its characteristics as witnessed by myself.

Unconsciousness is produced in less than a minute; the sensations of the patient are not disagreeable; there is no struggling; the recovery is instantaneous, and without sickness, headache, or prostration.

There were five operations in all.

The first was on an intelligent young man, who understood the principles on which we were acting—those of ensuring perfect anæsthesia. He was instructed, if he felt pain of any kind, to cry out, or give some evidence of such sensation. A large tarsal tumour on the upper eyelid was his disease. I everted the eyelid, cut the tumour across with a small scalpel, and squeezed out the contents, together with the cyst, with my thumb-nail. The patient called out just as the knife touched him; but when questioned on arising, he said he was unconscious, and did not feel anything.

The second operation was for double internal squint in a little girl: a still better example than the above, as we thought, from her early period of life, to test the agent. I cut through the conjunctiva and divided the internal rectus of the right eye after my usual manner, and Mr. Wilkinson applied a stitch to close the external wound. The child revived just as all was over, never having given any evidence of pain. Time occupied for inhalation and operation, 2 min. 40 sec.

An interval of five minutes was allowed for the blood to be reoxygenated.

In this, the third, just as the mouth-piece was introduced, for the second eye to be operated on, the child retched, and quickly threw up some food that it had lately eaten. It appeared as if this was due to the mouth-piece touching the fauces. The process was again applied, and the second eye operated on in the same manner. Time, 2 min.

The fourth was congenital and hereditary ptosis, in a girl aged six. Mr. Wilkinson dissected away an elliptical piece of skin, and adapted the edges of the wound with four sutures. Time, 3 min. 2 sec. The child recovered just as the last suture was introduced. As soon as the blood flowed from the first incision that was made, it was thoroughly carbonised; towards the end of the operation it resumed its natural colour.

The fifth case was ectropium of the lower eyelid, in a male aged seventy-five. I first operated on the right eye without the gas, and took away a broad strip of the swollen and granular conjunctiva. I then did the other eye in the same manner, under the effect of the gas. Time, 2 min. 15 sec. The old man forcibly pointed out the difference to him between the two. The one "hurt him like the very devil," the other "he knewed nothing about, and it was nothing arter."

Directly that the operations were over, these patients were as to constitutional effect well; as well, indeed, as when they entered the operating room,—neither sick, nor stupid, nor weak. The children seemed a little scared, yet they did not cry, and the adults actually made merry over the matter. There was not any preparation made for the operation in a single case.

The evidence of insensibility is the same as that in chloroform: loss of sensation of the conjunctiva when touched with the finger, dilatation of the pupil, and snoring. But there are the unpleasant symptoms of blueness of the face and rigidity of the limbs. The pulse increases in frequency after a few inspirations, then rapidly declines; it recovers rapidly.

As the effects of the gas were very quickly dissipated, quick operating was necessary. Everything was at hand, and not a moment was lost. It may therefore be called a rapid anæsthetic, and one that answered well in all the cases. With our very limited experience, neither Mr. Wilkinson nor myself thought it advisable to apply it to a case of cataract done on the same day, where a longer time might possibly have been required for the operation. Mr. Wilkinson took an inhalation after I left the hospital. I hope that he will send you an account of the effects on himself.

I am, Sir, yours obediently,

HAYNES WALTON.

Brook-street, Hanover-square, April 4th, 1868.

To the Editor of THE LANCET.

SIR,—My colleague, Mr. Haynes Walton, having forwarded you a few remarks concerning some minor surgical operations

performed by us at the Central London Ophthalmic Hospital, on Thursday, the 2nd inst., under the anæsthetic influence of protoxide of nitrogen, administered by Dr. Evans, of Paris who kindly attended for the purpose, I beg likewise to offer a few remarks on my own observations, and its effects on myself, having taken it. No preliminary examination of any patient was made or suggested. I was much pleased with the results, so far as they went that day; anæsthesia was rapidly induced, and complete, there not being in any one of the cases the least evidence of that uncertain and perplexing latent sensibility so often roused under chloroform when an operation is commenced. The effects passed away as rapidly as they were induced, without any complaint of distress. They seemed rather to think it a joke, excepting the smartings of the wounds. Finding this suspension of nervous power so readily, conveniently, and effectively dealt with, I was induced to take it myself.

The gas was not in the least unpleasant, but rather the opposite. After taking some few deep inspirations, I began to feel a tingling sensation in the nerves of the arms and hands and legs and feet, with a fulness about the head and neck and bloated or suffused feeling in face. It continued to increase until I felt the fulness in the head a little unpleasant, such as one experiences from too tight a collar, which requires loosening to obtain ease. As this period was reached, I suddenly lost consciousness. I was, however, sensible of the use of my hands and feet, and these parts alone. I moved them freely, and tapped the floor to show that they could act, and I was conscious of this action, although my faculties were suspended from recognising in other parts. I was not aware my ear was pulled; no interference was made with my hands or feet, and so could not judge of their sensibility. The effects soon wore off, the extremes of my body gradually recovering themselves first, my pelvic region last. I inhaled the gas whilst sitting and partly reclining in a low-seated arm-chair.

I am, Sir, yours obediently,

J. SEBASTIAN WILKINSON, F.R.C.S. Eng. Exam.

Davies-street, April, 1868.

LOCOMOTOR ATAXY.

To the Editor of THE LANCET.

SIR,—In your journal of the 4th instant, the reviewer of Dr. Radcliffe's article on Locomotor Ataxy in Dr. Reynolds's "System of Medicine," observes that this article "for the first time furnishes a complete account of this remarkable disease from the pen of an English physician." I consider it only fair to state that, in the first volume of "St. George's Hospital Reports" (1866), I wrote, as Dr. Radcliffe knows, an article "On the Diagnosis, Pathology, and Treatment" of this disease, illustrated by an analysis and comparison of numerous typical cases which had come under my own observation. This article was extensively reviewed in British, American, and foreign journals. In this country I am the only person that has investigated the morbid anatomy and pathology of locomotor ataxy. I am, Sir, your obedient servant,

Belgravia, April 6th, 1868.

J. LOCKHART CLARKE.

SEQUEL OF A CASE OF CÆSAREAN OPERATION.

To the Editor of THE LANCET.

SIR,—The readers of your valuable journal may be interested in knowing the result of the case of Cæsarean operation successful to both mother and child reported in THE LANCET of January 18th last.

My patient continued convalescent up to the twenty-eighth day after the operation, the abdominal incision being united and very nearly cicatrised; her appetite was good, and in every respect she was well. She had not, however, been permitted to sit up, and the lochial discharge continued.

About the beginning of the fifth week she complained of slight pain with stiffness in the calf of the left leg, which was found to be swollen, and tender to the touch. The popliteal vein of the same side was also hard and tender. These symptoms, however, soon subsided under local fomentations and general stimulants, but were followed immediately by others indicative of pneumonic obstruction, accompanied with high fever, rapid pulse, and hurried respiration, though without any delirium. The accompanying pain was severe; first