C. Bader.—“The Dangers of Chloroform, &c., and the Nitrite of Amyl.”—*The Lancet*. 1875. No. XIX.

B. recommends nitrite of amyl as an antidote where threatening signs make their appearance during a chloroform narcosis, and communicates three clinical observations in illustration.

S. Mayer and J. Friederich.—“Ueber einige physiologische Wirkungen des Amylnitrits.”—*Archiv. für Exper. Pathol.* V. P. 55. *Centralblatt*. No. 38. 1876.

Experiments on animals:—The frequency of the pulse is increased in consequence of a depression in the tone of the pneumogastric centres. The drug acts directly on the walls of the vessels. After moderate doses the respiration becomes deeper and more frequent, but after large doses shallow and very slow.

Kelp.—“Amylnitrit.”—*Deutsch. Archiv. f. Klin. Med.* XV. P. 602. *Centralblatt*. No. 10. 1876.

In five cases of melancholia stupida the author had negative results from the use of nitrite of amyl.

Clapham.—“Nitrite of Amyl in Sea-sickness.”—*Lancet*. No. 8. 1875.

Out of 124 cases, 121 were completely relieved.

ART. III.—*Cases of Chorea in Relation to Treatment.** By J. MAGEE FINNY, M.D. Univ. Dubl.; Fellow King and Queen's College of Physicians; Physician to the City of Dublin Hospital.

THE cases of chorea which I bring under the notice of the Society are, though entirely uncomplicated and simple, well-marked and typical. In briefly describing them I shall refrain from considering the wide subject of chorea in its pathological aspect, not only because in none of my cases was there a fatal termination, but also because the whole subject of brain-diseases and nervous affections is at present veiled in such obscurity, that for me to ask you to follow me through the diverging paths of opinion—the one leading to the localisation of chorea in certain portions or centres of the brain, and the other to the denial of any one central origin, or that there is any structural change at all to be found in the brain in chorea—would be on my part at once improper and presumptuous.

* Read before the Medical Society of the King and Queen's College of Physicians, Wednesday, December 6, 1876. [For the discussion on this paper, see page 95.]

Nay, in particular would it be injudicious for me to introduce such a subject while these walls are, as it were, still echoing the learned words of the great scientist, as he threw to the winds the doctrines and theories of nervous physiology and pathology which he had not only originated, but had nurtured up by arduous study for fifteen years.

My object is to bring under your notice the advantages of a certain line of treatment, without in the least claiming that it is either new and untried, or that it is the best and only treatment to be adopted in chorea.

It is a line of treatment, however, which, as far as I can judge from observation of the treatment of chorea by other practitioners and the perusal of the cases recorded in our journals, is one that has, of late, rather fallen into disuse and discredit.

CASE I.—Severe Chorea; no history of Rheumatism; no cardiac complication; Treatment by Sulphate of Strychnia and Ether-spray, commenced a fortnight from the beginning of illness; Immediate benefit; Recovery in fifteen days. Total duration, four weeks and one day.

Richard F., aged thirteen, came under my care, in the City of Dublin Hospital, 15th May, 1875, a fortnight ill. No cause for the attack could be obtained, except that he was a very studious boy, extremely fond of reading, and used to devote most of his out-of-school hours to study. He was a fair-haired, well-nourished lad, and presented none of the anæmic symptoms so common in choreic patients. Before he came into hospital he had bitten his tongue on several occasions, but, although the movements of his body and extremities became much more excited for some days after admission, the tongue escaped further injury.

This lad was a well-marked example of severe choreic disturbance—for, in addition to the ordinary “madness of the muscles” of the eye-lids, lips, forearms, hands, and legs, he was totally unable to stand or take a single step. His whole body, as he lay in bed, was so jerked and thrown about, that it was found necessary to prevent his falling out by tying a folded sheet across the bed; while any attempt to lift him up in the bed threatened dislocation of the head, so violent and jerking were his nods. His speech was also greatly impaired by the want of co-ordination of the expiratory muscles and those of the tongue and lips, a sucking inspiration continually interrupting even the shortest sentences.

The treatment he had received before I saw him had consisted of succus conii and shower-baths, with beef-tea and milk dietary.

On 15th May, I commenced the administration of strychnia in doses of $\frac{1}{60}$ th grain of the sulphate three times a day.

On 17th the dose was increased to $\frac{1}{48}$ th grain, and each day it was increased little by little.

The prescription I adopted is one recommended by Hammond,* which, by its accuracy and the facility of regulating the dose, supercedes that of Trousseau.

A solution of sulph. strychniæ, of half the strength of that of the British Pharmacopœia, is made, so that five minims shall represent $\frac{1}{48}$ th grain of the alkaloid. Sufficient is ordered for one day, and syrup added. Each day an additional minim of this solution is added to the dose of the day before, so as gradually to reach the dose which will produce the physiological effects of this powerful excitant, or which will suffice to check the excited movements of the muscles. In the case before us I employed, in addition to the strychnia, what seems to me to be a useful adjunct—namely, the application of the ether spray to the spine, from the nape to the sacrum—a line of treatment, introduced by Zimmerlin and Lubilski, which is said of itself to be curative.

On the 17th I first applied it to this boy's back for four minutes. The operation was not very easily carried out, owing to his excited state—increased, doubtless, by the alarm at the novel remedy, so that it became necessary to have him held during its application. Immediately the spray was stopped and his fear passed away; the patient said he felt better, and he could speak with more ease.

It is commonly the case that the first application is dreaded most, and gives rise to most alarm, but afterwards this fear gives way to one of actual pleasure; so it was in this boy, for on the second occasion (21st May) he did not seem to mind it, and on the third and last (the 26th) he said he liked it, and, to all appearances, he enjoyed its application. After each spraying he always expressed himself more clearly and intelligibly, and said he felt steadier and better.

On the 19th and 20th May—that is, in four or five days from the beginning of the treatment when the dose of the strychnia had reached only $\frac{1}{30}$ gr. ter die.—there was marked evidence of improvement. The patient had much more command over the muscles of

* Diseases of the Nervous System. 3rd ed., p. 616.

his hand, so that by an effort (of certainly no long duration) he could keep it steady, and open and shut each finger in succession. He no longer needed the restraint of the folded sheet across him; he could also stand and walk very fairly with help; but the nodding of his head still persisted, and seemed beyond his control, so that it gave him a curious appearance as he walked. The next day he was able to feed himself; he was allowed up on the 22nd—the seventh day of treatment; and on the 26th he was able to walk out in the grounds of the hospital unsupported, his head being now quite steady. He was also able to hold a book and read it, and, in fact, he spent most of the remaining few days of his stay in hospital in this occupation. He left hospital, seemingly quite well, on the 29th, having been under strychnia treatment fourteen days. The highest dose of strychnia reached in this case was $\frac{1}{17}$ th grain on the 27th. It, however, produced none of its physiological effects, such as pains and stiffness in the neck, arching of the back, or cramps and pains in the legs. The only marked effect seemed to be the production of an enormous appetite for bread, of which the patient devoured, in addition to his allowance, an extra medium-sized loaf per diem.

Ten days after leaving hospital he came back with a slight return of the unsteady movements, but these passed away in a few days, and they were very probably induced by his eager haste for study, as I learned he had, immediately on leaving hospital, resumed his studies at a school in Marlborough-street.

The total duration of chorea in this case—excluding the relapse of a few days—was four weeks and a day. Improvement followed four days treatment, and cure was effected in fifteen days.

I am indebted for the notes of the foregoing case to Mr. W. Fraser, my clinical clerk.

CASE II.—*Severe Chorea; primary attack, bilateral; no Rheumatism or Cardiac Disease; Treatment by Strychnia and Ether-spray; Improvement in Four days; Cure in Twenty-five days of Treatment. Total duration, six weeks and three days.*

[Reported by Mr. Donelan, L.K.Q.C.P.I., practising pupil in 1875.]

Catherine T., aged eleven, was admitted into the City of Dublin Hospital on the 5th January, 1875. A week before admission I saw her in the extern department of the hospital, having walked thither. Her symptoms then consisted of grimaces, awkward jerky mode of walking, and dragging, unsteady motion of the left foot;

but between that day and the 5th, the choreic movements became much worse, and were so aggravated that she was unable to stand or walk, and had to be brought in a cab to the hospital and carried up stairs. She is the daughter of a man who had a year ago left the army, and seemed to lead a vagabond life. Her mother died two years before, and she has since been living a sort of gipsy life with her father, and by her general appearance, as well as by the presence of two spots of *tinea circinata*, it is evident the child was much neglected. Eight months before, while in Manchester, she had been ill of fever, but of what sort could not be ascertained. She had suffered from no fright, nor any specially cruel treatment, nor had she been with any case of chorea. She is a very bright, intelligent-looking child, with dark hair and eyes.

Her father stated that, about a week before I first saw her, he had noticed a "drag" in her left leg in walking, and that her left arm afterwards became unsteady; he complained also that "she kicked so that he could not sleep in the same bed with her."

The symptoms of the disease in all its fantastic shapes were well exemplified in this child, though they did not include biting of the tongue. The upper extremities were more affected than the lower, the left side being the worst, and the most remarkable feature was the rapidity with which complete supination, pronation, and rotation of the arm were performed.

Most careful examinations, frequently made during her stay in hospital, failed to discover any bruit or other evidences of any functional or organic disease of the heart; and although the pulse at times was quick, it seemed attributable to the general muscular excitement. Anæmic symptoms were not prominent.

Treatment consisted of plain nutritious food and the gradual and persistent use of strychniæ sulphas.

On the 9th January, $\text{m. } 4$ of the solution of sulph. strychniæ (referred to in last case), equivalent to about $\frac{1}{60}$ th grain, were administered in syrup three times a day.

On the 11th it was increased to $\frac{1}{40}$ th grain.

On the 12th to $\frac{1}{30}$ th grain; and so on each day to the 18th, when 14 m. of the solution, or $\frac{1}{17}$ th grain, were employed.

Improvement did not show itself the first two days of the treatment, rather she seemed worse. However, on the fourth day, while taking $\frac{1}{30}$ th grain, she began to show signs of amendment, and each day she got better and better. This continued to the 19th, when, as I have said, $\frac{1}{17}$ th gr. was reached. On that day it was

found necessary to stop the treatment, as the child complained of pain in her neck, with stiffness in neck, back, and legs; and when placed on her feet she was unable to stand, being inclined to arch backwards, the toes of both feet were drawn forcibly in under the soles, and she cried out from the pain. All medicine was omitted, and towards evening these symptoms, indicating a full physiological dose of strychnia, had entirely disappeared—and, what was of equal importance, with them to a great extent the irregular movements. Next day it was most evident to everyone that she was very much quieter than ever before; and, except when spoken to, or on attempting to sit up, the choreic movements had well-nigh ceased. I thought it well, however, not to stop the medicine altogether, so the patient recommenced next day the sulph. strychniæ in doses of $\frac{1}{24}$ th grain.

On this day I applied the ether-spray for two minutes, a longer application serving but to alarm the patient. I employed it again on 22nd and 27th, and it was followed by quietude in each instance. From the 20th January to 1st February the dose of strychnia was gradually again increased, and $\frac{1}{15}$ th grain, *ter in die*, was reached before its physiological effects again showed themselves to a slight degree. The dose was again reduced to $\frac{1}{20}$ th, and continued at that dose for four days longer, when pills of ferrum redact. were substituted. The improvement, which first showed itself in so marked a manner on 20th January, never went back, but rather steadily increased and continued without interruption till February 3rd, when *all* the symptoms, which on admission on January 5th she had exhibited, were completely gone. She was able to command the muscles of the face; could keep the arms and forearms steady; could extend and flex at pleasure her fingers; could walk with ease along a chalked line, and go up and down stairs. She left hospital perfectly well, fat and strong, in a few days afterwards.

She was thus under strychnia treatment for twenty-five days, while improvement showed itself in four days; and the whole duration of the attack was but six weeks and three days.

CASE III.—*Primary Severe Chorea, bilateral; no Rheumatism or Cardiac Complication; Treatment, Ether-spray and Nerve-sedatives; Improvement.*

[Reported by Mr. W. H. Bracken, Clinical Clerk.]

Joseph G., aged nine years, was admitted into hospital in March, 1876, suffering from chorea of about fourteen days' duration.

It appeared that about this time his mother noticed strange twitchings of his head. The irregular movements were next observed in the right arm, and afterwards in the right leg. The left side was then affected, but the movements were never so severe in the left as in the right side. There was no history of rheumatism. On admission there was well-marked chorea of the face, eye-lids, lips, and tongue; the whole body, and extremities, particularly those of the right side, were in constant agitation, so that various parts of his body were erythematous and abraded; the child could not stand, but he was able to walk in a wild, spraddling, plunging manner. The uneducated looker-on, in addition to being struck by its ludicrous appearance, must have expected such muscular exertion to be attended with perspiration and subsequent fatigue. Though well known, it is, nevertheless, a very curious fact, that sufferers such as this case and the others I have described, although they writhe, wriggle, toss and twist from morning to night, do not betray fatigue, nor are the most violent movements attended with perspiration. The patient could speak tolerably distinctly, though the words of the sentences he employed were run into each other with wonderful velocity, and many an ill-timed in-sucking of the breath made them halt and stagger in a curious way. There was no evidence of any organic disease of the heart or blood-vessels.

The only cause which could be learned as at all likely to produce chorea, in the absence of his having received any great fright, or of his having witnessed chorea in other children, was the existence of intestinal worms (*ascarides lumbricoides*), twelve of which had been expelled by santonin, by my colleague, Mr. Croly, who had seen the child before admitting him to hospital.

These entozoa have, by many, been considered a sufficient exciting cause of chorea, but why worms should in one child induce such an affection, and in another produce no nervous symptoms—and why, in this child, they did not induce this peculiar train of irregular movements sooner—I do not feel myself competent to explain, and I do not care to theorise about it.

While in hospital two more female worms were got rid of by santonin followed by castor oil.

In this case I was anxious to see which of the two remedies I employed in my former cases—the strychnia or the ether-spray—was the more to be relied on, and, accordingly, I gave no strychnia for the first ten days he was in hospital, and only employed the

spray to the spine, from the nape to the coccyx. At first the application was for five, and then for ten minutes. It was used every second day. In addition to the ether-spray, which seemed to be always followed by much comparative quietude, it was found necessary to give him sleeping draughts, as for some time before admission to hospital he had not slept, but tossed about all night. The following draught was ordered and repeated nearly every night:—

R. Potass. bromid. . . .	gr. 10,	
Tinct. hyoscyami . . .	m 20.	
Hydrat. chloral . . .	gr. 10.	
Syrupi simpl., . . .	ʒi.	
Aquæ	ʒi.	M.

At the end of the ten days the report was that the excited irregular movements are much lessened, and that he can perform, with some degree of ease, some small action, such as picking up a coin, shutting and opening his hand, but that he cannot walk steadily, nor extend and flex each finger at will. He was improved a little. I could, therefore, say that in this case the ether-spray, while it lessened the severity of the movements for a while, did not act curatively. The treatment was now changed, and strychnia commenced, but I lost sight of the patient soon afterwards, as his mother, seeing him somewhat better, took him home. The contrast of this case and the others is remarkable, and points to the advantages of the early use of strychnia.

CASE IV.—Chronic Chorea; Relapse; Treatment, Strychnia in small doses and Ether-spray; considerable improvement in a week.

A. M., a young lady, aged fifteen, came under my notice the middle of last year, suffering from a relapse of chorea. She had not as yet menstruated.

Three years before, she had got a severe attack of chorea, brought on by fright, the room in which she slept having caught fire. At that time she was hardly expected to live, so incessant, day and night, were the movements, and she was worn to a skeleton, showing that the functions of organic life were deranged as well as motility.

She, however, recovered, after nine months' illness, though the mind, for some time, showed evidences of impairment of healthy vigour. Since then she had three relapses, and seemed to be never completely free of some of the staccato movements of chorea. In

the early part of 1875, arsenic had been employed with benefit, but the treatment was stopped a month before I saw her. Before coming under my care the symptoms had returned with severity, so that she fell going up or down stairs, was unable to dress herself, tore her clothes by the wild unrestrained movements, while her lips and cheeks were rendered sore and raw from an unending sucking, smacking motion of the mouth and tongue. The emotions were also easily excited. She became fretful and irritable, and did not sleep. The right side of her body was that most affected.

The treatment I adopted was strychnia, and ether-spray to the spine on three occasions, with most satisfactory results, as, after a few days, the violence of the symptoms abated, and she was able to go about the house without danger to herself or injury to the furniture. The dose of sulph. strychniæ was not pressed to its physiological effects, not exceeding $\frac{1}{30}$ th grain—as in private practice one has not that constant supervision which one enjoys in hospital practice, and which is necessary, I conceive, to the wise and safe administration of so powerful a nerve-stimulant. Family circumstances made this patient leave town for the country before she was completely cured, when I lost sight of her for a year. I heard, however, that there have been no more severe relapses; and when last I saw her, a month ago, she was completely free of all signs of the disease.

How far this favourable change is fairly to be accredited to this treatment, or to the occurrence of puberty, I cannot decide; but, knowing how the regular establishment of menstruation allays emotional diseases, I incline strongly to the latter being the cause, rather than the former. I merely adduce this case as a fitting sequel to the former, inasmuch as it furnishes an example of the benefits of the treatment by strychnia, even in chronic cases, and when the medicine is given in but small doses.

The foregoing cases are too few from which to draw any general conclusion, either etiological or therapeutic, but it may not be out of place to notice, in passing, how in age they conform to that period which is generally looked upon as a predisponent factor. Chorea is especially a disease of childhood and youth. Thus, of Professor Sée's 531 cases, 453 occurred in children between six and fifteen years of age; of Hammond's 82 cases, 67 were in the same period; and in a valuable digest of 100 cases recorded by Dr. Hughes, in *Guy's Hospital Reports*, Vol. IV., 1846, 70 occurred under sixteen.

I lay no stress on the equal number of boys and girls affected, as it was entirely fortuitous—nor would I call attention to the fact that two were of a dark complexion and dark hair, and two were fair—except to express disapproval of the theory, which some have stated, that one or other variety of colour and complexion operates as a predisponent of this disease.

But I would beg your attention to the fact that, at no time under observation, did any of the four cases show the physical signs of endocarditis or pericarditis, nor was there a history of rheumatism in any one of them. This is a point of considerable importance, bearing, as it does, on the views of certain pathologists who connect chorea with rheumatism of the heart. While I agree with the general truth, that rheumatism and chorea are often associated, I am not prepared to concede the point to those who hold, with Dr. Tuckwell,^a “that the absence of cardiac murmur may exist, although the valves be extensively diseased, inasmuch as,” they say, “the warty vegetations and growths are upon the auricular surface of the mitral valves,” and they would have us believe that all the cases of chorea, which have been attributed to pregnancy, fright, worms, &c., can be really due to these vegetations on the valves becoming in their turn emboli, and thus setting up irritation and softening of the nervous centres.

Of the exciting causes to which chorea is usually attributed, in but two of my cases could any such be fairly adduced, though, doubtless, bad hygienic influences and deficient nourishment aided the production of chorea in the others. The first case may, I believe, be put down to excessive mental occupation by close study, and fright was clearly the excitant in the last.

The average duration of the disease, when left to itself, should be remembered when the treatment of the complaint and its influence on the progress of the case is considered. The tendency of chorea is to increase to a certain point, and then gradually diminish. Hammond considers the usual time to be three months, Niemeyer six to eight weeks, and several published cases—in particular 38 cases recorded by Drs. Gray and Tuckwell (*Lancet*, 1871, Vol. II., p. 814; and 1876, Vol. II., p. 711)—point to nine weeks and six days as its average duration. Hence one must take particular precaution not to fall into the fallacy that any special treatment is curing the patient, when the recovery is no sooner than in the average time of the disease when left to itself.

^a British and Foreign Quarterly Journal. September, 1867.

It is perhaps for this reason that there is no disease for which so many remedies have been recommended, and of which so many vaunted cures have been recorded, as chorea.

The treatment of chorea ought to fulfil two indications—to shorten its duration, and to temper and moderate the more distressing symptoms; and, should it fulfil these, it deserves to be valued as useful.

Opinions are divided as to the first indication—some, with Niemeyer and Drs. Gray and Tuckwell, holding that medication is totally ineffectual to check the progress of chorea; others, such as Trousseau, Begbie, and Hammond, believing that its course can be shortened by treatment. Dr. Broadbent has expressed in this point a sound opinion. He says:—"I have come to the conclusion that the duration of chorea may be shortened by treatment, but equally am I of opinion that the same treatment does not answer in all cases. I have seen successes with purgatives, tonics, iron, zinc, arsenic, bromide of potassium, cod-liver oil, &c., and I have also seen failures with all the heroic methods of administering strychnia, till its physiological effects were manifested, and of giving tartar-emetie in enormous doses." Agreeing, as I do, with this general statement, I would claim for strychnia that in the two cases in which its administration was fully and regularly carried out, it fulfilled the first indication by shortening the disease, and in three cases it rapidly alleviated the symptoms and quieted the movements. As far, therefore, as these cases go—and I desire not to strain their evidence—strychnia proved to be well suited and the proper treatment.

To come to any definite general conclusion on such a subject, without much and extended observation, would be in the highest degree reprehensible, but it is all the more the duty of each clinical observer to record the results of his experience. It is with such intention I have brought these cases of chorea under the notice of the Society, and it is my hope that their recital may elicit the much more extended experience, on this subject, of those among us who, from lack of time or inclination, could not sit down to detail the cases, which constantly fall under their notice, and the results of their treatment.

The treatment by strychnine, as adapted by Trousseau,^b has been misquoted in several books, and has unfortunately got the

^a British Med. Jour., 1869. Vol. I. P. 371.

^b Clinical Lectures. Trans. Syd. Soc. Vol. I. P. 418.

opprobrious title of "heroic;" and, probably, this has deterred many from employing it. Trousseau, himself, predicted its disfavour and disuse (p. 419). It has, moreover, been considered not only inefficacious, but absolutely dangerous by Rilliet and Barthez, and G. Sée; and although this latter view is contested by M. Moynier, one of Trousseau's pupils, it is a method which does not altogether commend itself to me, and which falls short of that I have employed. It may be summed up in the words of Moynier:^a—"The medicine must be given in doses not necessarily large, but sufficient to produce stiffness; and this rigidity should be attained *as soon as possible*, as the duration of the treatment is much prolonged when the patient has exhibited no rigidity."

The method of administering this powerful nerve-tonic, which I employed in all my cases, was that recommended by Hammond, and I was guided in the dose more by its influence on the movements of the patient than by the desire to produce its physiological results, as Trousseau would teach.

Besides chorea, I have employed strychnine in other cases in the manner I have described with excellent results—and in one case in particular, the choreiform movements of cerebro-spinal insular sclerosis were kept better under control by its employment than by other nerve tonics, or nerve-sedatives.

Administered in this way it is, I am convinced, a safe as well as a most useful remedy. It is not difficult to get children to take it, as its bitterness can always be masked by the various syrups of the Pharmacopœia, and it has the twofold effect of improving digestion and increasing appetite, as well as of keeping the bowels regular—matters of no small moment in the treatment of choreic patients.

Hammond^b states that he "had never seen the slightest ill consequences follow this mode of treatment," and "that he had carried it out in thirty-two cases occurring in children under the age of fifteen, and in three persons of adult years, without a single failure." Such evidence is worthy of all attention, and should be a sufficient answer to those who object to strychnia being used in doses large enough to produce its physiological effects, but I have a higher authority than Hammond on the safety of this medication and its therapeutic powers; for, as you all doubtless recollect, in his last lecture delivered in this hall (Nov. 27th, 1876)—one in

^a Du Traitement de la Chorée. Par Eugène Moynier. Archives Gen. de Méd. 1854. T. II., p. 36.

^b Ibid. P. 617.

which he dwelt on the treatment of brain-disease—Dr. Brown-Séquard gave it as his opinion—an opinion which must carry with it all the weight and force of such an authority—that in many cerebral diseases strychnine is the chief remedy to rely upon, and that to obtain its good results it should be employed, and employed fearlessly, to produce its physiological effects—nay, further, that these effects ought to be kept up, so that the slight tetanic rigidity of the muscles should be maintained for four, five, or six weeks.

ART. IV.—*On the Morbid Changes in the Nerve-elements of the Brains of the Insane.*^a By RINGROSE ATKINS, M.A., M.D., &c.; Assistant Medical Officer, District Lunatic Asylum, Cork.

PREVIOUS to the close of last session I had the honour of communicating to the Association the result of my investigations on the morbid changes occurring in the blood-vessels of the brains of the insane, and I then stated that I hoped to continue these investigations into the lesions taking place in the nerve-elements under similar circumstances, and, at some future period, to be able to demonstrate before you the various conditions I might observe. Accordingly, during the past year I have, with this object, examined minutely a considerable number of the brains of those dying insane, in varying phases and different stages of the disease, and the results obtained therefrom are embodied in the present paper; the actual conditions being demonstrated by the specimens and drawings submitted for your inspection. The cortex of the brain, as you are all probably aware, consists, especially in man, of a rather thick layer of grey nervous matter, spread like a cap over the entire upper surface of the hemispheres, and, indeed, everywhere over their surface, except a comparatively small space at the base of the brain, where it is absent to admit of certain masses of nerve-fibres passing in and out of the interior of the organ, and which fibres serve partly to connect the cells of the inner surface of the cortex with the masses of grey nervous matter of the medulla and spinal axis below it. The superficial area of this great cap of nervous matter is much increased by being thrown into numerous folds or convolutions, both longitudinal and transverse, which, if it could be blown out like a bladder or a balloon and the folds thus

^a Read before the Cork Medical and Surgical Association, April 12, 1876.