An essay on the medical application of electricity.

AN ESSAY

ON

THE MEDICAL APPLICATION

OF

ELECTRICITY.

THE applications of the electric fluid to the diseases of the human body may all be comprised under three heads: the first, under the form of radii, when projected from a point; the second, under the form of a star, when many of these radii are concentred on a brass ball; and the third, under that of a globe, when a number of these sparks are condensed in a Leyden jar. Now to each of these heads a specific action belongs: the first or radiated state, acts as a sedative; the second, concentrated state, as a stimulant; and the last, condensed state, as a deobstruent.

With these three plain intentions, I apply electricity to disease, being guided by anatomy, to the distinction of local, from constitutional complaints; in the former of which I trust to its

power singly ; and in the latter, join the aid of the physician and his art.

The apparatus I have also reduced to a simple form, consisting of a moderate-sized cylinder, conductor, and Leyden jar, with an insulating chair and electrometer; a glass-mounted director with a wooden handle, to the extremity of which a brass ball or wooden point is fitted, and a brass director mounted in wood.

When I wish to apply the fluid, I connect by a smooth wire the glass-mounted director to the conductor with a point at its extremity, and the radii are projected from it to the part affected. When desirous of propelling the sparks, I change the point for the ball. When the shock is intended, the circuit of the Leyden jar must be made. A person insulated may be subjected to a twofold intention at one moment. Suppose a pain in the eye, requiring a sedative application to the affected part, and the stimulus of a blister at a remote place: the fluid may be flung from the wooden point on the eye, and stimulating sparks may be drawn at the same instant, by a brass ball applied between the shoulders.

By means of the electrometer and these directors, the shock is also manageable to the most exact nicety, and applicable to the seat of disease alone.

The ingenuity with which these simple modes of application may be varied, to puzzle and deceive the observation of a by-stander, is unbounded, and would have formed a grand basis for empiricism, if they had been artfully employed; but as electricity has escaped abuses, and I trust, is worthy the serious attention of every practitioner, I submit the following cases to the candour of the public for their determination, whether I have followed an idle pursuit, or dedicated my hours to an important object, that has already proved in no inconsiderable degree beneficial to mankind.

Cases of the Electric Power, applied in the Form of Radii or Fluid.

J. M. aged 18, received a blow from a hammer on his thumb, the pain of which extended up his arm, the flexor muscles were in a short time thrown into such strong action, that the fingers were immoveably contracted. The proper remedies, both internal and external, were ineffectually applied for several weeks; the lad was then sent to St. Thomas's hospital, under the care of Mr. Chandler, who, finding his applications unserviceable, sent him to the electric room for my opinion. In the presence of several of the young gentlemen, I placed the lad on the insulated chair, and connecting him to the prime conductor, I drew the electric fluid from the fore arm by a needle point. In about three minutes he complained of uneasiness in the flexor muscles of the fingers; immediately the fingers began to extend, and in about five minutes he had the complete use of them.

The indentation in the palm of his hand was considerable, from the length of time the fingers had been contracted. I prognosticated this effect would not be permanent; it continued, however, till the hour of rest; but in the morning the hand clenched. This readily gave way to the re-application

plication of electricity the next day; on the third day, the spasm returned, but in a much slighter degree; the same application was continued for six days, when the muscles appearing to have recovered their tone, it was desisted from. Some appearances of relapse being observed on the 10th day, electricity was resumed, and continued for several successive days, and at the expiration of a month, the lad was presented from the hospital well. About fourteen days after, he returned to the hospital with his fingers again contracted, owing to an exertion he had made in the use of a hammer at a smith's forge. Electricity was applied as before, and with the same good success. The young man who had the conduct of the machine, chusing to depart from the system I recommended on the third day, drew some sparks, and passed a few slight shocks through the muscles of the fore arm, which immediately caused the contraction of the fingers, and so strong, that he could not overcome it by the fluid for the three succeeding days. I was then acquainted with the fact, and putting the machine into high order, I drew the fluid from the hand and arm for about six minutes; I perceived a tremulous motion take place in the flexors, which was followed by an extention of the fingers one after the other; the antagonist muscles then acted so forcibly as to bend back the fingers; a perfect

relaxation

relaxation of spasm next took place, and the lad was relieved as usual. I directed this gentle treatment to be continued every day for a fortnight, when he was again discharged from the hospital, cured.

A shopman of Mr. Baratty's, of Fish-street-hill, had been three years afflicted with a coldness, and a total loss of the use of his lower extremities; he had gained no relief from the advice and remedies he had used, and therefore was sent for my opinion. Upon examination of the spine, I found no reason to conjecture it depended on any affection of that part; the disease had gradually come on from a chill, after heating himself in a summer's day; he was otherwise well in health; I therefore thought the electric friction or shock might probably be serviceable, and I put them in use. The first week I made powerful frictions, but with no advantage: the week following I used shocks, and increased them from day to day, but the patient was not better; however, he felt no inconvenience from the experiment. I then proposed to him, that for one month he should regularly suffer me to draw the fluid only, through the affected limbs, and I had not adhered to this simple experiment more than one week, before evident advantages were

were perceived; I determined, therefore, not to alter my plan, and within the month proposed, my patient was able to walk with the help of a stick.

Somebody advised him to use cold bathing, but he staid so long at the edge of the bath, that no re-action followed the use of it, and his extremities again failed him. He applied to me a second time, and I put the same method of electricity in use, with equal good success. The patient obtained a perfect cure.

A young gentleman, whilst a pupil at St. Thomas's hospital, had an eruption on his face, which followed a fever, and which had resisted all the advice and treatment of eminent abilities. It appeared in small blisters, which broke and scabbed, and were extremely unpleasant in their appearance. I persuaded him to let me try the experiment of drawing the electric fluid through the parts, to which he readily submitted, though he laughed at the proposal; the instant relief he found from its first application changed his ridicule into hope; he was glad to repeat it every day, and in one week he was well. Some weeks after he was fishing, and exposed to the power of the sun, which renewed the blisters; he called on me that day, was electrified a few times, and relieved as before.

Mr. A—— having been a great while under the care of my friend Dr. Huck, for an eruption on his hands and fingers, without the least relief, came at length to consult me by the doctor's desire: the eruption had been suspected to be the itch, and the scurvy, and had been treated as such without relief; the discharge was copious, the skin stiff, and the fingers unpliant. It was in vain to propose unguents or lotion, I knew the skill of Dr. Huck had left none untried; I had only to propose the experiment of the electric fluid, which immediately gave so pleasant a feel to the skin, and rendered for a short time the fingers so pliable, that the patient and myself were equally surprized at the effect. I requested that no application should be made externally or internally; I applied the fluid only once a day, and in a fortnight he was quite well, and continued to remain so.

About two years since, the same gentleman finding a little girl, about 9 years old, affected exactly in the same manner, recommended her to my care. I applied the electric fluid in the same manner, and she was cured in one week's time.

An infant under three months, who had sucked her mother during an inflammatory fever, was so

so exhausted, that Mr. Crawfurd thought it impossible she could survive the day. The mother had recovered, but was in a very weak state; the child had lost all febrile symptoms, and had formed a critical abscess near the knee, but the powers of life seemed to be exhausted to such a degree, that the infant was incapable of taking sustenance, or refreshing itself by sleep. In this state Mr. Crawfurd thought it would be a very fair experiment, to try if the electric fluid would as it were re-animate the system. The nurse being seated in the insulated chair, the fluid was drawn through the child for a few minutes; the languid pulse was evidently strengthened, the child went almost immediately into a quiet sleep, which lasted two hours; on waking, it took the breast, then slept again; in the evening it was most clearly better. I electrified it again; sleep and food alternately occupied it till the morning; from this time the child throve and grew strong: the abscess in a few days pointed, I punctured it, and discharged an ounce of good pus; two other abscesses formed, and at least an ounce of matter was discharged from each: daily electricity was continued, the abscesses were only kept clean, and dry lint applied to them; the Peruvian bark was given to the mother. Notwithstanding this large depot of matter, the child

mended daily, the punctures healed kindly, and the infant recovered.

Two years after I innoculated it for the small-pox.

An infant of six months, remarkably healthy, and born of very healthy parents, was innoculated in the spring of the year 1780, and had the small-pox very favourably; she was purged afterwards and returned home. In about two months, the lymphatic glands in the neck appeared tumid, the child lost her appetite, her fæces were of a bad colour, she fell away, and the tumours increased. Dr. Hebberden was consulted, and after the child had taken the medicines he directed for some weeks, without any relief, I waited on him, to know his opinion of the case: with his usual perspicuity and candour, he told me, he thought the child must die, because the glands of the mesentery appeared to be as much diseased as those of the neck, which now were suppurating. For a dernier resort, I proposed to him a trial of the electric fluid, to which he readily assented, as from that mode of application he thought no harm could result.

The next day I placed the nurse in the chair, with the child in her lap; I tied the wire, connected with the prime conductor, to the infant's hand,

hand, and drew the fluid through the tumours; I next presented the point to the abdomen, and continued the operation a few minutes: the sensation appeared agreeable to the child, for she smiled and played during the whole time: as she rode home she fell asleep; on waking, she took nourishment, appeared more cheerful during the evening, and rested well at night. In a very few days, there was a visible alteration in the child's spirits and general appearance; the tumours, which I thought would burst every night, did not discharge till the tenth day; she then gained appetite and strength: I applied nothing but dry lint to the ulcers, and continued to draw the electric fluid through them daily; they healed quickly, the surrounding glands diminished, the abdomen grew soft, and in about two months she was recovered. The summer advancing, I advised sea-bathing, which was accordingly put in use; the young lady is now in perfect health, and no marks of scrophula have ever appeared.

A servant maid in my neighbourhood was seized in the autumn of 1781 with a constipation in the bowels. The first day she kept her complaints from the family; the next, she was so ill, that the apothecary was sent for. He endeavoured by five purgative doses, given at pro-

per intervals, to open a passage; on the third day, the medicines being ineffectual, a clyster and the warm bath were administered; nothing succeeded, her pain was extreme, her pulse very quick and low. She began to vomit. In this extremity it was proposed to electrify her; she was brought into my house, and placed in the insulated chair. I connected the chair to the prime conductor by a wire, and drew the fluid through her clothes with a steel point. She instantly complained of a burning heat all over her body; in less than two minutes, the pain in her bowels increased so violently, that she fainted; on her recovery she felt quite easy, and was in such a hurry for an evacuation, that she could scarce reach the convenience. After this, she was carried to her bed, and fell asleep. In about four hours after, her pain and *constipation* returned; I directed her to have the experiment repeated; it was followed with the same success, a second evacuation was produced in five minutes: her medicines now took effect, their operation, as may be supposed, was violent: the rest of her cure remained with the apothecary; she recovered in a few days.

A lady, upwards of 70 years old, of a firm and healthy constitution, after a fit of the gout, had her

her foot and ankle swelled and weak; she hoped the advantage of country air and exercise would restore it, but she gained no benefit from them. As she passed through London, she consulted me; I persuaded her to let me pass the electric fluid from a point through the affected joint; she complained of feeling a creeping sensation up her leg as I was electrifying the ankle, it was then evening, she grew hot and restless, slept ill that night, and the next morning was surprized with an eruption of the catamenia. I was not alarmed at this, as I had known similar circumstances; I requested her to keep at home and do nothing: after the third day *they* disappeared; the swelling of her foot subsided, she recovered the strength and the use of the limb, and returned into Sussex perfectly well.

BY FRICTION.

INTERMITTENT complaints were extremely frequent in the years 1780 and 81, insomuch that the failure of the Peruvian bark, which had been considered as a specific in this disorder, was remarked by many practitioners, and hence the red bark was introduced.

Several patients were submitted to the experiment of electricity, when other means failed of success, and the result of repeated experiments was remarkable.

A young man, aged 22, had been 6 months afflicted with an ague, which at its commencement was a tertian, and degenerated into a quartan ague; he had taken the cortex and various other remedies without success, he was much emaciated; I electrified him with frictions, directed him to try the bark again, and to come when he expected his next fit. The bark would not stay upon his stomach, but he came on the day he expected his fit, one hour previous to its usual time. I placed him in the insulated chair, and applying the ball of the glass-mounted director, connected to the prime conductor by a wire, to the region of the stomach, I poured a stream

stream of electric sparks into the stomach, and extracted them by a brass ball applied up and down the spine: he perceived himself warm and easy, yet at the expected time his rigor attacked him. I immediately electrified him again in the same manner, and in less than 3 minutes his rigor ceased: in 15 minutes the rigor returned, I repeated the operation with the same effect; his pulse now quickened, and the fever came on; he went home and into his bed, the sweat succeeded, and the paroxysm ceased; the succeeding day he found himself much better than usual. I continued to electrify him in the same manner the 4 following days, and his fit did not return; then I directed him to take the cortex in powder, which agreed well with his stomach, and his ague was cured.

Mr. Saltinstall hearing of this case, requested me to electrify a patient of his, who had a quartan ague, which resisted the cortex and other remedies. I applied the sparks to him in the same manner, and at the access of the cold fit, with equal success. After being electrified, the cortex would rest upon his stomach, and his ague never returned.

A servant in my neighbourhood had been for many months afflicted with a quartan ague, for which

which he had taken a variety of remedies with very little relief. In April 1780, he was tormented with a periodical pain in his head, preceded by shiverings and attended with fever. Dr. Warren directed for him a vomit, and the cortex to be freely taken after it: this judicious treatment however gave no respite to his pain, or alleviation to his sufferings; I was therefore induced from compassion to try the effects of electricity on his case. I insulated him, and passed the stream of electric fluid from the forehead through the back of the head; this speedily gave ease, but only for a few minutes: I then covered the head with flannel, and rubbed the sparks along the os frontis, extracting them from the occiput for a few minutes. This application succeeded, his pain ceased, he passed a comfortable evening, and slept well at night; but about an hour after he rose in the morning, his pain returned as violent as ever: he came, and I repeated the frictions as before, but could gain only a momentary intermission of his anguish; I resolved therefore to try the effect of a gentle shock, through the affected part; his pain was instantly removed to another part: I repeated the shock in the direction he pointed, the pain vanished, and never returned. By the advice of the doctor, he continued the bark for a few days, and recovered his health.

A maid

A maid servant was afflicted with a similar complaint, which resisted the bark; I electrified her with the sparks, and stopped the pain: she remained well 14 days, and then a heavy wash renewed the pain: I electrified her a second time in the same manner, and completed her cure.

A servant in the Temple had been long afflicted with a quartan; I electrified him at the access of the cold fit, by the frictions applied to the stomach, and extracted from the spine, and stopped the rigor; no fever ensued, and he remained well one month: when, waiting for his master at the House of Commons, he got wet, and his ague returned; he then took a vomit, and two ounces of good bark, but his ague continued. I began again with electric frictions, and succeeded in stopping the fit the first time I applied them: I afterwards electrified him every fourth day, for one month, and his ague did not return.

I did not escape myself from an attack of intermittent fever. My friend, Dr. George Fordyce, directed for me an emetic, and some febrifuge draughts; after the second fit, he ordered the cortex, of which I took an ounce and half, and I flattered myself with success, for several hours

elapsed beyond the expected time of the returning paroxysm. Just as I was sitting down to dinner, a nausea and chillness seized me, my pulse quickened, and the fever approached; I ordered my bed to be prepared, but I wished to experience the sensation of electricity under this state of approaching fever; accordingly I was insulated, and frictions passed through the stomach and spine; the sensation was very agreeable, a glow returned upon my skin, and the quickness of my pulse abated: on my return to the dining-room, I found the effluvia of the table not disagreeable to me, I could have tasted something, but I refrained; I sat by the fire 15 minutes, and found myself revive: before I went up stairs, I repeated the electric frictions, and when I reached my dressing-room, I was too well to go to bed; so I amused myself with reading for an hour, when I found myself perfectly easy, free from heat or thirst, my pulse quite moderate, and my stomach wishing for food; I took only some tea, with bread and butter; at supper-time I eat some vegetable, and went to bed at twelve, quite well. I continued well the next day, went abroad, and had appetite; I resolved to take no medicine for the sake of the experiment. I passed a good night, but at 8 o'clock in the morning I found the fever beginning its attack; I rose immediately, and ran to the machine; I was electrified

fied in the same manner, and the symptoms flew before it. I remained well that day and the next, but the following morning, at 9 o'clock, I began again to change; the electric machine was a third time applied to with equal success, and from that period I never had any return of my complaints.

A young lady, during the month of her lying-in, was seized with a paralytic affection of the muscles on one side her face; the eye-lid dropped, and the mouth was drawn on one side; stimulants were applied to the part without relief; when she was able to go abroad, she came to consult me. I covered that side of the face with her shawl, and drew the fluid through it, first with a piece of wood, and a few days after, with a brass ball in a wooden handle; the cheek, on the affected side, was flushed with a beautiful vermillion colour every day, for several hours after the application; in less than three weeks she was perfectly recovered.

These local attacks are not uncommon, and when unattended with further symptoms, are not considered of much moment.

In 1801, an infant, not a year old, was brought to me, labouring most evidently under an hydrocephalus internus: the pupils of the eye were dilated, the limbs inactive, the bones of the head widely separated, the pulse oppressed and feeble, and its evacuations insensibly performed.

Mr. John Pearson, of Golden-square, had seen and prescribed for the child, but had given no hopes of its recovery.

The mother, who had herself once received much benefit from electricity under my direction, wished for my opinion; and, as I had in my lectures proposed the trial of it *early* in such cases, I was glad of the opportunity to put the experiment in use.

Accordingly I insulated the child, and drew the fluid by a point through the head in the direction of the falciform processes. The mother thought the child somewhat relieved, and the next day I repeated the experiment, and applied a slight bandage over the head. The bandage was not found inconvenient, the same mode was pursued every day, and by the end of the first week a very great amendment was evident: in a fortnight the child had lost all the oppressive symptoms, and at the end of one month I dismissed it perfectly recovered, to the astonishment and satisfaction of every one who had seen it. The child has continued to thrive ever since,

since, and I pronounce this to be the most pleasing and satisfactory case of any I now publish.

A young man, aged 23, was seized with a paralysis, which affected his speech, and the muscles of his face and arm: finding little relief from the usual remedies, he applied to electricity; by the use of powerful frictions with a metallic ball, he was completely recovered in about one month.

An old man, who for 3 years had been groaning under the affliction of an hemiplegia, and who, though wealthy, had not the heart to apply to a physician for aid, and had too much pride to ask relief from an hospital, came recommended for advice. I insulated him, and put in use powerful electric frictions, which perfectly cured him within one month.

A gentleman, who had been many years an invalid, but who had attained his 60th year, being opposed to a bleak wind, was blighted (if I may be allowed the expression) on the exposed side; the muscles on that side his face entirely lost their action, his eye-lid dropped, his tongue hung

hung slabbering from his mouth, his face was drawn on one side, his speech affected, and his arm and hand benumbed; his leg was but slightly attacked. In this situation, he advised with Dr. Hugh Smith, who was no inactive practitioner; but during a month, he received little or no benefit. By the doctor's advice he applied to me; I confess, I despaired of being able to render any relief to this patient, whose habit of infirmity was not unknown to me; but being urged by a lady of his acquaintance, to leave no exertion untried, I ventured on the experiment; and the rather, because this lady, who was an infidel respecting electricity, declared, if her friend's case was relieved, she would give credit to all she had heard. The method I put in use, was insulation and electric frictions, which from day to day gained visible advantage, and in a few weeks established a cure; my patient being able to ride, and take sufficient exercise, beside attending to an intricate train of professional business, which called for his mental exertions. In the long vacation, he journied to Wales, and returned in the winter in much better health than he had been accustomed to enjoy. Every spring, for three successive years, he wished to have a course of electric operations, which he thought *reanimated* his nerves. The winter of the fourth year he did not journey to London, and the succeeding year he died in Wales.

Cases

Cases of the Electric Power applied in the Form of Shock.

A Boy, 12 years old, in the workhouse of St. Clement's parish, had been left there two years with a fixed jaw, and with an enlargement of the glands from the submaxillary to the clavicle.

He had been in St. Thomas's hospital without receiving benefit; he took his food through an aperture left by the loss of two teeth, and excepting this local malady, was in good health and spirits. As it was customary for the children to flock about the machine, I one day passed a moderate shock through the masseter muscles and the angles of the lower jaw; on my next visit to the house, the master surprised me with saying, the boy had been able to separate his teeth ever since: this unexpected amendment induced me to repeat the application. On the second repetition, I perceived evident advantage; I therefore daily attended to it, and passed some shocks through the enlarged glands, one of which, in about 14 days, came to suppuration: the discharge from this assisted the relaxation of the jaw, and gave me an opportunity to discover a large portion of diseased bone, which I extracted a few days after: the pain of extracting this portion of the jaw brought on the spasm, which was completely

completely relieved the next day, by the application of the shocks.

The cause of the disease being thus removed, nature effected the remainder of the cure, by dispersing the enlarged glands with the help of electricity, supplying the chasm made by the exfoliation, and restoring the lad, who was very much disfigured by the disease, to a decent, and not uncomely countenance; in consequence of which, his parents relieved the parish of his burthen, by apprenticing him to their trade.

A young woman, who came into the workhouse pregnant, had been obliged to labour, almost barefoot, during the latter stages of her pregnancy, in cold and wet situations. On her recovery from child-birth, her legs and feet were numbed and cold, her ankles extremely weak and painful; when she attempted to stand, she had great pain in her ankles and trembling: having recovered her health in every other respect, and the apothecary finding general remedies of no effect, I was desired to try the experiment of electricity. I passed gentle shocks through the ankles, where she described her chief complaint to reside. The pain was instantly relieved, a glow came on the lower limbs, and continued for some hours. On repeating the shocks the next

day,

day, the pain was removed to her knees, and did not return to the feet. On the third day after being electrified, she was able to walk, but her nervous tremblings still affected her. I therefore passed gentle shocks daily, from her hands to her feet in cross directions: these quickly removed her tremblings, she gained strength, and in a fortnight was discharged perfectly well.

A fishmonger in my neighbourhood, who had lost the sight of one eye in his youth, applied to me, with an acute pain in his head, which he had suffered for some weeks, and which affected the vision of his other eye. The pain shot from his forehead to the summit of the cranium, produced convulsive spasm of the upper extremities, which were followed by tremors and great oppression of spirits. Confiding in the notion of the electric shock being harmless, under proper management, I did not hesitate to pass one through the brain, in the direction he pointed out, that is, from the frontal sinus to the summit of the cranium. He was instantly relieved from his acute pain, the sight of his eye became perfect, and he thought himself cured as by magic.

Not trusting to the permanency of such sudden relief, I persuaded him to let me repeat the

shock, after which I passed others from the summit of the cranium to the vertebræ of the neck, and from the vertebræ of the neck to the hands. I prognosticated his pain would return in a few hours.

In the evening the pain did return, but was neither so violent, nor of so long duration; I repeated the shocks the next day; on the third day he said his pain had vanished, but the weight of his hat was irksome to him: on repeating the shocks in the same manner, this symptom immediately disappeared, and he could wear his hat with ease: on the fourth day he was free from all complaints, his pain, his defect of vision, his tremors and his oppression of spirits had quite left him. I passed the shocks again for the last time, and had the satisfaction to find that his cure remained complete.

A young woman under the care of the late Mr. Else, surgeon of St. Thomas's hospital, had repeatedly strained her wrist, in consequence of which the ligaments were so weakened, and the surrounding parts so enlarged, that she had no use of her hand. I would have undertaken the cure in this state, but Mr. Else thought it would give way to the successive applications of steaming, blistering, and bandage. After ten months

ineffectual

ineffectual trial of these remedies, he delivered her into my care. She had acquired some small degree of flexion in her fingers, and some little strength in her wrist, but not enough to grasp a knife, or lift the smallest weight. My mode of electrifying her was by passing small shocks through the parts affected every day; she gained sensible advantages each time it was done, and in fourteen days I presented her to Mr. Else holding a pitcher in that hand containing two quarts of liquor. In a few days after she was discharged well from the hospital. After six weeks she presented herself to Mr. Else for inspection; her hand was strong and useful, and free from pain, some little enlargement and stiffness remained about the wrist joint, which yielded to the repetition of the shocks in three days; but as she was able to execute the work of her service with ease, and to wash and scour rooms, it was inconvenient for her to attend at the hospital longer. Six years after her recovery, she again strained the same wrist, in wringing cloaths; she sought me at the hospital, and I again electrified her in the same manner, and cured her completely. The last application was in the year 1785, and I have seen her within these twelve months perfectly well.

Mr. Else being satisfied of the powers of electricity by the preceding case, desired me to take the care of a woman in St. Thomas's hospital, who, after recovering from a fracture of the knee-pan, by a second fall had injured the patella and its ligament, in consequence of which considerable tension, pain, and enlargement of the knee-joint, and of the whole limb ensued. It had continued in this tumid and motionless state for eleven weeks, notwithstanding cataplasms, embrocations, fomentations, and bandages had been put in use.

I ventured to make trial of the electric shocks in this case, and passed several through the joint and through the whole limb, till she was sensible of an unusual warmth, which immediately removed her pain; for three hours after she felt a remarkable throbbing, and her first sleep was disturbed by the sensation of the shock passing through the limb, a symptom not at all unusual. The next day the swelling was apparently less, and she had placed her shoe on her foot for the first time. I repeated the shocks.

The third day after being electrified, she was able to put her foot to the ground. On the fourth day the swelling had quite subsided, and she was able to walk with one crutch. I would have desisted from electrifying her, as the intention of reducing the size of the limb was answered,

ed, but she requested me to continue it, in hopes it would expedite the free motion of the limb. At the end of twelve days she was able to walk into the street; but having left off a bandage by my direction, lest it should impede circulation, she perceived a crepitus in moving the limb, which was at some times so considerable as to impede it's use, and to produce great pain and some swelling: I therefore applied a proper bandage, which remedied this inconvenience, and she was dismissed from the hospital in a few days after.

The success which followed the application of electricity to the two last cases, induced Mr. Else to send for me in the month of June 1779, to a man whom he had taken into the hospital for what is commonly called a white swelling of the knee-joint. The disease commenced about three weeks before his admission; he was first attacked with a sharp pain under the patella, which was followed by a swelling, the agony of which produced a considerable fever, which lasted nine days, and then left a vast enlargement of the joint, with evident fluctuation, the limb contracted and wasted both above and below the knee. On minute examination, the inner condyle of the femur was enlarged; I thought this circumstance an objection to my experiment, but at Mr. Else's

desire,

desire, I began to electrify him with moderate shocks, which produced an immediate warmth in the part, continuing for four hours after. I visited him every day, and repeated the shocks. On the third day, he could set his foot to the ground; the swelling gradually lessened from day to day; the fluid was reabsorbed, the limb gained strength, the muscles filled out, and at the end of the fortnight he was able to walk as far as Tower-hill. On that day he omitted to be electrified, but felt the want of it sensibly: I resumed the shocks the next morning, and continued them to the end of the fifth week, when the tumor of the soft parts was entirely reduced, the contraction of the limb removed, it's size restored, and the leg perfectly useful. He was desirous of returning home, and accordingly was presented cured from the hospital.

The enlargement of the inner condyle of the femur was very evident when the tumor of the soft parts subsided, but on examining the whole limb, I found a similar appearance at the lower extremity of the tibia, and the patient told me that about ten years preceding, when a boy, he went into the water after strong exercise, in consequence of which he lost the use of his lower limbs, which confined him several weeks to his bed. On his recovery these two swellings were observed, which had continued ever since without much inconvenience to him.

Mr.

Mr. Else giving little credit to this account, seemed to think the cure incomplete, but I had reason from particular inquiry to think the fact was as the patient related, and therefore it was agreed the man should present himself before us at the expiration of six months, which he accordingly did, and Mr. Else was so satisfied of the effects of electricity, as to declare he would never amputate another limb for this complaint, till it had been properly tried.

In the month of September following, Mr. Else desired me to repeat the experiment, which had so happily succeeded in the last case, on a boy, aged 16, who was admitted into St. Thomas's hospital with a similar swelling of the knee-joint. The lad's account was, that on the 19th of August, whilst sleeping in a chair, he was seized with an acute pain about the knee-pan, which waked him; the joint became immediately stiff, and soon after began to swell; the pain increased, and was attended with a considerable degree of fever for several days: when the tumour had increased to a certain degree, the pain and fever abated, and left him with a useless limb, much contracted, and incapable of touching the ground; the muscles above and below the joint, wasted, flaccid, and inelastic.

inelastic. Some blood was taken from the part by leeches, but without any relief.

September 26th, I undertook the treatment of him; I passed gentle shocks, as in the former case, until the part felt a sensible glow of heat. The skin was so much distended, that it had a shining appearance, as if smeared over with the white of egg; but in four days this appearance left him; the boy found some strength, and much more warmth in his leg.

October 1st, he was seized with a diarrhœa, at that time epidemic; he was speedily cured, by the attention of the physician; but this circumstance had no effect on his knee. On the 4th of October, my apparatus broke, and being sent for to Brighton, he was left without any aid till the 16th, at which time I found him precisely in the state I had left him. I then resumed the shocks, the good effects of which were plainly evident, for he could immediately move the limb with acquired facility; he now began to mend very fast, in a few days he flung away one crutch, and shortly after the other.

On the 26th of October, he was able to walk from the Borough to Essex-street in the Strand, and to return home again with the assistance of only one stick. The swelling changed from the inner condyle of the femur to the external one, with a deep seated fluctuation towards the pa-

tella: the limb was restored to it's size and power, the contraction almost removed, and the swelling very much abated. I continued the shocks till the 14th of November, when the fluid was entirely absorbed, the contraction removed, the limb was strong and perfectly useful, and the lad being desirous of returning to his business, was discharged from the hospital well.

I examined him the 17th of May, 1780, and was happy to find he had been perfectly well ever since.

A woman was admitted into St. Thomas's hospital, who had formerly had this swelling of the joint, which had been treated with fomentations, leeches, and internal remedies, and had for some time a discharge by two issues made with caustics, on each side the patella. The amputation of the leg had, by these means, been postponed; but as the knee was contracted, and the limb wasted and useless, the patient was not unwilling to have it removed, since the inconvenience of it prevented her going to service.

I first thought it proper to try the effects of the electric shock, which happily succeded in removing the contraction, and giving tone to the muscles of the limb, so that in a few weeks the woman left the hospital perfectly well.

An apothecary in Wesminster, who had been attacked with this disease, was cured by the taking repeated vomits of turbith mineral; the effects of which, however, so deranged the stomach, that it never recovered it's tone. In the winter of 1783, he was again attacked with a swelling of the knee, the progress of which was extremely rapid, and he was incapable of checking the pain by the comfort of opium, because his stomach rejected both food and physic. In an extremity of anguish, with an high symptomatic fever, dejected spirits, resting his last hope on the relief of Bath waters, but incapable of any motion, he sent for me, having heard of the success I had met with in similar cases. When I got to his house, Mr. J. Hunter was expected; I waited to consult with him, and learning the hopeless history of the case from him, I proposed immediately to pass the shock.

The patient was much alarmed at my proposal, conceiving in the agony he suffered, that an electric shock would increase his misery. I thought otherwise, and persuaded him to try the experiment, in the presence of Mr. Hunter. The shock was not painful, as he expected; on the contrary, he bore several repetitions of it, till the part felt such a glow, as it should do after a well-applied fomentation. I left him rather less in pain, and much satisfied with the experiment In

the evening, I visited him again, found him more easy, with a less frequent pulse; and after having repeated the shocks, he was able to move himself from one side of the bed to the other. He got sufficient sleep that night to refresh him, and was sensibly better in the morning. I repeated the shocks morning and evening; on the second day, he was able to get out of bed and have it made; he slept well that night; his fever subsided; small doses of opium abated the irritability of his stomach: from the third day, he gained apparent advantage each time he was electrified: at the end of a fortnight, he was able to ride in a coach to my house: at the expiration of three weeks, he returned his visits, walking with the help of one stick: in a month he was perfectly well.

A gentleman who had neglected the cure of repeated herniæ humerales testis, applied to me with a very large scirrhus of one of his testes, which I first attempted to resolve by mercurial friction, by vomits, cataplasms, and other external applications. These active remedies failing of success, I consulted Mr. Else, who thought castration the only resource; but as the spermatic chord was not enlarged, he advised the operation to be deferred till pain approached.

During this interval, I proposed to pass the shock of a jar, which would contain two quarts of water, through the part; the pain of this shock was not so much as I expected; the tumor, though large and pendulous, was lifted by the action of the cremaster muscle toight up to the abdominal ring; a considerable heat was felt for some hours in the part. Nothing further was done for a month, at which period I thought the hardness not so stoney, and proposed to repeat the shock, which was done. He went out of town for another month; at his return I could plainly perceive the tumor separated into three bodies; I therefore repeated the shock. He went far distant, and did not return to London for 9 months, when he sent to me; I supposed it was to fix a time for the operation, but to my astonishment, it was to shew me the dissolution of the tumor. This cure has remained perfectly well ever since, and if there is any difference between the testes, it is, that the diseased one is rather the smallest.

NOTE.

Take an orange, or an onion, place the directors on it's opposite sides, and pass a small shock, it will be conducted round from one director to the other by the fluids in the fruit; but pass a considerable shock from a large jar, it will illuminate

minate the whole body, and pervade every part of it.

Does not this point out the propriety of large shocks, when a scirrhous gland is to be roused into action?

A gentleman, who had been under the care of Mr. Hunter for a scirrhous testis, and who was recommended by him to try electricity, applied to me for that purpose. As his habit was weakened by mercurial frictions, which had been put in use, I thought it adviseable to direct him the bark, and to postpone the shock, till he had recovered his strength.

The spermatic chord was free from disease, though the testis was much enlarged, and very hard. I began with passing strong shocks, as in the former case, through the tumor, in different directions; but as his residence was a few miles from London, it was agreed he should visit me twice in a week: these strong shocks were therefore regularly applied at the appointed times, and it was one month before I perceived any alteration, when the tumor began to separate into two bodies: from this time it gradually lessened, the epididymis, and the body of the testis, being first distinguishable from each other; the testis next becoming

becoming softer and diminishing, and the hardness of the epididymis lastly disappearing.

While I was pleasing myself with the hope that the success of electricity, in this case, would be a sufficient proof of it's superior power to other remedies in local obstructions, the left testis began to be enlarged. I knew not how to account for this, unless from some general affection of the glandular system; and yet, under such a tendency to disease, I could not satisfy myself, why the other testis should have yielded to my local treatment.

While in this state of suspense, I resolved not to try the effect of a shock, till some other symptom should direct me further in the cause. In a little time, an external inflammation appeared, and then I was given to understand, that the radical cure of the hydrocele by caustic, had been made on that side by Mr. Else some years before; I therefore conjectured, that such part of the tunica vaginalis, as had not been destroyed, but had been left adhering to the tunica albuginea, was suppurating. I applied a cataplasm of farina semin. lini, and the skin burst and discharged. After the inflammation ceased, hardness and tumor surrounded the orifice: I then passed shocks through the diseased part, and covered the orifice of the opening with lint, applying the lotion of a solution of white vitriol over it.

it. After passing the shocks, the discharge was always increased; the hardness disappeared gradually, and when the parts recovered their natural state, the orifice closed.

As I have occasionally the pleasure of seeing this gentleman, I learn from him, that he not only remains well, but that the functions of the parts are restored, and their secretion perfect, though moderate.

A dragoon, who was in St. Thomas's hospital at the time of my election, had received a contusion on one of his testes, which had terminated in a scirrhus; it had resisted all the usual applications, and he came to the hospital to be castrated. I thought it first adviseable he should take the chance of the electric shock, which was administered daily, and in six weeks I discharged him from the hospital cured.

A serjeant of the Sussex militia was sent to the hospital with a scirrhous testis, which the late Mr. Bayford had condemned to the knife, as indeed any experienced surgeon, unacquainted with the powers of electricity, would have done. I thought proper to try the effects of strong shocks in this case, which were accordingly passed through the testis. The first application produced

ced a good deal of pain; on repeating them the third day, some fever arose, and the weather being hot, I sent the man to quarters at Newington, where he speedily recovered. On examining the part at his return, I found the mass of tumor beginning to part into portions; I then began to pass shocks, but smaller than at first. This mode agreed well with him, and the testis was gradually diminishing; but willing to know if the larger shocks were the cause of his first fever, I passed one; his pain was great, his fever followed. I sent him again out of the hospital till he recovered; on his return the testis was much diminished, and small shocks daily repeated completed his cure.

A negro servant was admitted into the hospital, under Dr. Blane's care, with a scirrhous testis. The doctor desired me to try the electric shock, which was administered in the same manner, as in the former cases, and he was presented out of the hospital in two months cured.

A coach-painter was seized with so violent an inflammation of the body of the testis, that a liberal use of bleeding, evacuations, and opiates gave him no relief. On the third day I found

it

it would terminate in an abscess; to prevent which, I proposed to pass small electric shocks through the part, which I accordingly did; the first was followed by some respite of pain. I repeated them every four hours, and the next day the pain and inflammation had so much subsided, that the fear of a suppuration vanished. I continued the small shocks, but less frequent, and at the end of one week the cure was completed.

A man was admitted into St. Thomas's hospital, with a scirrhous testis. On a consultation it was supposed he must part with it, but it was judged proper to try the electric shocks first. I passed considerable strong shocks, without any inconvenience to the patient; but the result was not as had been usual; for an abscess, formed I believe in the body of the testis, burst, and discharged externally. Electricity was omitted, and a soft cataplasm of linseed applied; the wound healed, but round the cicatrix was a considerable induration; I then resumed the shocks, another suppuration took place, discharged, and would have closed, but I repeated the shocks; and after each time I passed them, the discharge increased, and the hardness di-

minished. This mode was continued till the substance of the testis seemed in great measure melted away. When all induration ceased, I suffered the wound to close, and the patient left the hospital cured.

I see this man frequently; some years have now elapsed since he was in the hospital; he continues perfectly well.

A gentleman aged 28, in perfect health, went into the country to pursue the pleasures of the chace; the strong exercise which he used, and the little temptation he met with, made him indifferent about softer pleasures. At length this indifference amounted to a loss of power; and alarmed at this, he applied to a physician of eminence, who treated him with great judgment, but without success. The medicines all agreed with his stomach, he took them in powerful doses, but no good effects followed them. After the inability had continued twelve months, the physician directed him to apply to me for experiment. The experiment had been tried on animals with success; I therefore passed gentle shocks through both the testes, supposing their *deficiency* of secretion was the cause of the complaint. These were continued daily, and before the end of one week it was evident their secretion was *restored*. The

patient

patient however was so impressed with apprehensions, that he chose to continue the remedy a month before he satisfied himself of a perfect cure.

I saw him three years after, when he informed me, he continued well.

In the month of November, 1787, a porter at the India warehouses was sent to me by a lady of great humanity for advice, being in a state of melancholy, induced by the death of one of his children. Seven years before, he had been seized in the same manner from a similar event, but recovered from it in a short time, without medical aid. In the year 1786, he was a second time seized, and remained in this melancholy state upwards of twelve months before he recovered, although every proper advice was called to his assistance.

He had been two months afflicted when I first saw him. He was quiet, would suffer his wife to lead him about the house, but he never spoke to her; he sighed frequently, and was inattentive to every thing that passed; his appetite and sleep were moderate, his body regular, and his pulse weak and slow.

I covered his head with a flannel, and rubbed the electric sparks all over the cranium; he seemed to feel it disagreeable, but said nothing.

On the second visit, finding no inconvenience had ensued, I passed six small shocks through the brain in different directions. As soon as he got into an adjoining room, and saw his wife, he spoke to her, and in the evening was cheerful, expressing himself, as if he thought he should soon go to his work again. I repeated the shocks in like manner on the third and the fourth day, after which he went to work: I desired to see him every Sunday, which I did for three months, and he remained perfectly well. I then dismissed him, with a request that I might be acquainted if ever he had occasion for advice. In the latter end of August, 1791, the woman again applied to me; her husband had continued well till that time, but then had a recurrence of his melancholy without any proximate cause. As he had apparent feverish symptoms, I did not think him in a fit state for the electric shock; I therefore advised him to apply for medical aid, and to the hospital, if he grew worse, as I was leaving town. I am unacquainted with the sequel.

One of the public singers, from a variety of distressing causes, became extremely melancholy; his disease gained ground upon him so much, that he was totally incapable of taking an employment, which a kind friend had procured for him,

and was therefore sent to me for advice. He had no fever, his appetite was moderate, his body regular, but his depression of spirits excessive. Considering this in the same light as the former case, I began with passing shocks through the head, about six in number, and directed him to call the next day. He said he had rested better. The shocks were repeated daily; his accounts were daily more favourable. Within a fortnight, he asked me if he should accept an offer to sing at one of the summer theatres. I told him if he thought himself capable of undertaking it, he should, for employment would divert his mind. He accordingly attended some rehearsals. I electrified him after the first fortnight every other day: he anxiously waited from time to time, to find me at leisure for a conversation, which took place at the end of the month, when I pronounced him well enough to undertake his engagement. He then informed me, that his anxiety had arisen from a wish he had to impress me with the change which the first operation of electricity made in his mind. For some few days, previous to his consulting me, he declared he had at several times determined to put a period to his life; for this purpose he had pensively walked along the banks of the serpentine river in Hyde Park, when a thought of religion impressed him with the horror of the design. At another time he had the razor

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in his hand, when the footsteps of a friend stopped his purpose. He had resolved however to effect it, and was in the most distressful agitations about it, the morning he first applied to me. In the evening of that day, he declared he was so sensible of the divine interposition in preventing his wicked design; that he found himself able to return thanks; and this relief of his mind was followed by a refreshing sleep, from which he awoke a new being: that he felt sensible of the powers of electricity every day after it's application, being capable of mental exertions immediately. He could not be satisfied, he said, without making this declaration to me, as no one but himself could have an adequate idea of the sudden change the first electric shocks wrought in his mind.

After this conversation I dismissed him, and he fulfilled his engagement that summer with his usual applause.

Nine years after, I visited this man at Newbery in Berkshire. He had been perfectly well, and received my visit with the most grateful thanks.

A gentleman, who had been long a patient of Dr. Monro's, with a moping melancholy, and who had reached the age of 26 without any re-

lief,

lief, was brought to me, by the consent of the doctor, for experiment. As I had passed shocks through the brain with such advantage, I thought this a proper case to carry the experiment as far as prudence would direct. I therefore took a Leyden bottle, which contained 112 square inches of coated surface, and passed two strong shocks from it, in directions from the frontal to the occipital bone, and from one temporal bone to the other. The patient was at first surprised, not stunned with the shock, and in a few minutes desired me to repeat it if I pleased. The next day, he sat down with firmness, and as no inconvenience had occurred from the shocks, I encreased the strength, and passed two shocks in the same direction as before. On the third day, he was reported to have found no sort of inconvenience or alteration from the experiments; so I ventured to pass the full force of the bottle; this likewise produced no other effect than a slight head-ach, which lasted for an hour. I chose to omit two days, and then repeated the experiment; the patient strongly expressing himself satisfied, that this was the most likely means to do him service. I was, myself, most surprised that I could practise so boldly, without any serious inconvenience to the brain; and having carried the experiments as far as I wished, I dismissed the patient, without any hope of relief.

Some years since, I was directed by two eminent physicians to electrify a gentleman who had not secreted a drop of urine for nine days. Every means to procure a return of the secretion had been put in use. It was remarkable, that the patient suffered no apparent inconvenience, nor had any particular alarming symptom from this want of secretion. I passed slight shocks from the region of the kidneys to the perinæum, through the urinary passages; in eight hours after, about three ounces of a dark-coloured fluid, (not bloody) passed from the bladder: Within a few hours after the second application of the shocks, four ounces of a fluid was passed, having the colour but not the smell of urine. The next day, he was electrified morning and evening, and passed about twelve ounces of urine: the following day it increased to a pint, the fourth day he passed a natural quantity, and seemed well. However, the shocks were continued a few days longer, during which an eruption appeared on the skin. I then took my leave, and have the pleasure of knowing the patient has continued well.

Attending in a family with the late Dr. Warren, a woman servant was labouring under the same paralysis of the kidneys, which the Doctor despaired

paired to relieve. On relating the preceding case, he sent me to her chamber. I applied shocks in the same manner through the urinary passages, and the patient was relieved of this symptom and afterwards recovered by Dr. Warren; from whom I frequently received marks of friendship and approbation.*

The same year a gentleman in good health, and of regular habits, aged about 50, was seized with a palsy of his urinary bladder; for several days, his water had been regularly drawn off by the catheter: he had been duly attended, and well advised by an eminent physician and a surgeon, and was at that time taking a course of tincture of cantharides, without any relief: the parts began to grow tender with the passing of the instrument. I directed a stream of electric sparks from the pubis to the perinæum, and along the inferior part of the spina dorsi, for three days, without any relief: I then passed gentle shocks in the same direction, and found, three hours after, he was able to expel some urine by the muscular power of the bladder. I saw clearly this was the mode to be pursued; I

* With other great men, this great man too is passed away, and perhaps it is my vanity urges me to say, I felt distinguished by the particular notice he was pleased to bestow on me. He, is now beyond censure or praise, and I cannot be charged with adulation.

repeated the shocks with daily advantage; in a fortnight the cure was completed; the patient rode on horseback, went a long journey, and remained well.

An elderly gentleman, whose faculties were gradually leaving him, had a relaxation of the muscular coat of the bladder, which rendered his company offensive to his visitors and attendants. As I foresaw the inconveniencies which would result, being in attendance on him at that time for excoriations, I proposed passing some gentle electric shocks through the bladder, in hopes of restoring it's tone. I was permitted to carry my advice into execution: he went out in his carriage after the operation, and did not wet himself during his ride; the shocks were repeated in the evening, and he held his water during the night; the next day, his pulse was too quick, and his head confused; therefore I did not repeat the shocks, concluding they had occasioned these symptoms. Towards night these symptoms abated, and, as the bladder had recovered it's retentive power, I had not further occasion to repeat electricity.

A lady upwards of 70 years, attacked with a paralysis, which gained upon her, notwithstanding the

the most able assistance, from the involuntary flow of urine, was much excoriated: I was desired to attend her on this account, and was asked to electrify her for the palsy. Her extreme debility, and the space of time she had laboured under *this* increasing disease, rendered all prospect of recovery hopeless; I therefore proposed to confine my endeavours to the relief of that symptom which was becoming so prejudicial to her, and passed a few shocks from the os pubis to the os coccygis, directing proper applications to be made to the excoriated places. Finding no inconvenience result from the shocks, the next day, I repeated them more strong, and they were followed by apparently good effects, as she did not wet herself that day. I continued the same method, and the advantages were daily more favourable; the excoriations healed in proportion as their cause diminished: I then thought I might desist from constant attendance; but the first day's absence reproduced the complaint; the bladder lost it's retentive power, and her spirits were remarkably low; she did not speak the whole day, took little nourishment, and slept ill. Within an hour after I had electrified her the following day, she spoke, grew more chearful, and kept her water till night. I found a constant attendance necessary, and visited her daily for eight months. Every morning, after being electrified, she would speak, appear more chearful,

take her food, retain her urine, and sleep well at night; but before I came, she was speechless, shewed great marks of insensibility, and was averse to all the endeavours of her attendants to assist her. I was once obliged to absent myself two days; during this short interval, they all thought she would have expired: but on the re-application of electricity, she revived again; thus the electric power seemed to keep life, as it were, in a state of vegetation, and this was the only power it had, nature being too much exhausted to co-operate with it; however, it certainly made her exit comfortable, and the last periods of life supportable. The mortification, which usually follows the urinary excoriations, being as offensively disagreeable to the attendants, as distressing to the unhappy patient.

On Sunday the 3d of May 1789, a labouring man in a fit of despair hanged himself with his silk handkerchief, but being discovered by a watchman, was cut down before life was extinguished: how long he had been suspended was not to be ascertained with any accuracy. He was conveyed to a house, where all possible assistance was given him by a gentleman of the faculty; about ten o'clock the next morning he was brought to St. Thomas's hospital, where Mr. Johnson, jun. of the

the Minories, was on duty. At the time of his reception he was insensible, his breathing was laborious, noisy, and performed seldom; his pulse was slow and intermittent; his countenance indicated an accumulation of blood in the head; and he was incapable of swallowing any fluid. Mr. Johnson first opened a vien in the arm, and with much difficulty obtained between five and six ounces of blood: this evacuation producing no sensible alteration or effect, he thought an electric experiment might with great propriety be tried; he accordingly passed an electric shock from one leg to the other, the effect of which was extremely surprising; the patient started, opened his eyes, and seemed very much frightened. On repeating the shock he spoke, the blood left his face and his countenance became pale, his pulse was free and regular, and his respiration easy. The shocks were repeated three or four times more in the space of ten minutes; after the last, a kind of hysteric affection took place, and seemed further to relieve him; his feet became warm, a general perspiration ensued, he became quite rational, and on removing the bandage from his arm, it bled freely, and six ounces of blood were taken from it. The patient was kept quiet for three days, and then discharged well from the hospital.

On examining him with respect to what had passed

passed, he said, he recollected immediately after his suspension, to have felt a most oppressive pain in his back, afterwards a pleasing sensation of green fields (colours) before his eyes; from which time he recollected nothing till the electric shock, which he described as balls of fire darting through his eyes. I do not know whether this account given by the patient elucidates any thing; but it is evident, life apparently suspended was instantaneously called back by the shock.

I HOPE

I HOPE I may be allowed to claim what credit these cases afford, upon this ground, that the greater part of them state diseases which resisted the power of medicine, or diseases, which, for a cure, must have submitted to the knife; and it is almost unnecessary to assert the obvious superiority of cures effected by electricity, which so far from recurring to the dreadful remedy of amputation, do not even leave a scar.

I am also unfeignedly happy in being able to attest the permanence of those cures, for even at this distant period many of the patients are living and enjoying that health which electricity restored to them.

It was the usage of St. Thomas's hospital to admit nothing new into its practice until seven years experience had given it validity: I have had three times seven years test of the pre-eminent power of electricity, and am proud to own, that without this aid I must have been obliged to perform many more operations.

The medical application of electricity is indeed an admitted remedy for *Uterine obstructions*; but I feel that subject to be of such importance, that I wish to reserve it for a distinct consideration. I cannot forbear remarking, that electricity is neglected, when Charlatanry almost annually im-

ports some new-fangled caprice, when experience is too frequently sacrificed to experiment, when the diseases of animals are transfused into the human frame, and the imposition of hands or inspection of urinals are obtruded on us as Panaceas.

"——— *Primo avulso, non deficit alter*
" *Aureus, et simili frondescit virga metallo.*"

I repeat, I cannot forbear expressing my surprise, that electricity! this momentous discovery! founded upon principles expressly avowed, and fairly brought forward into open day; principles which challenge examination, from which so much good has been derived, and from which so much more may be expected, is, with the exception of some solitary instances, disregarded by a learned profession, while to the philosopher it daily exhibits new discoveries, and to the bold empiric it opens a road to riches, I had almost said to fame.

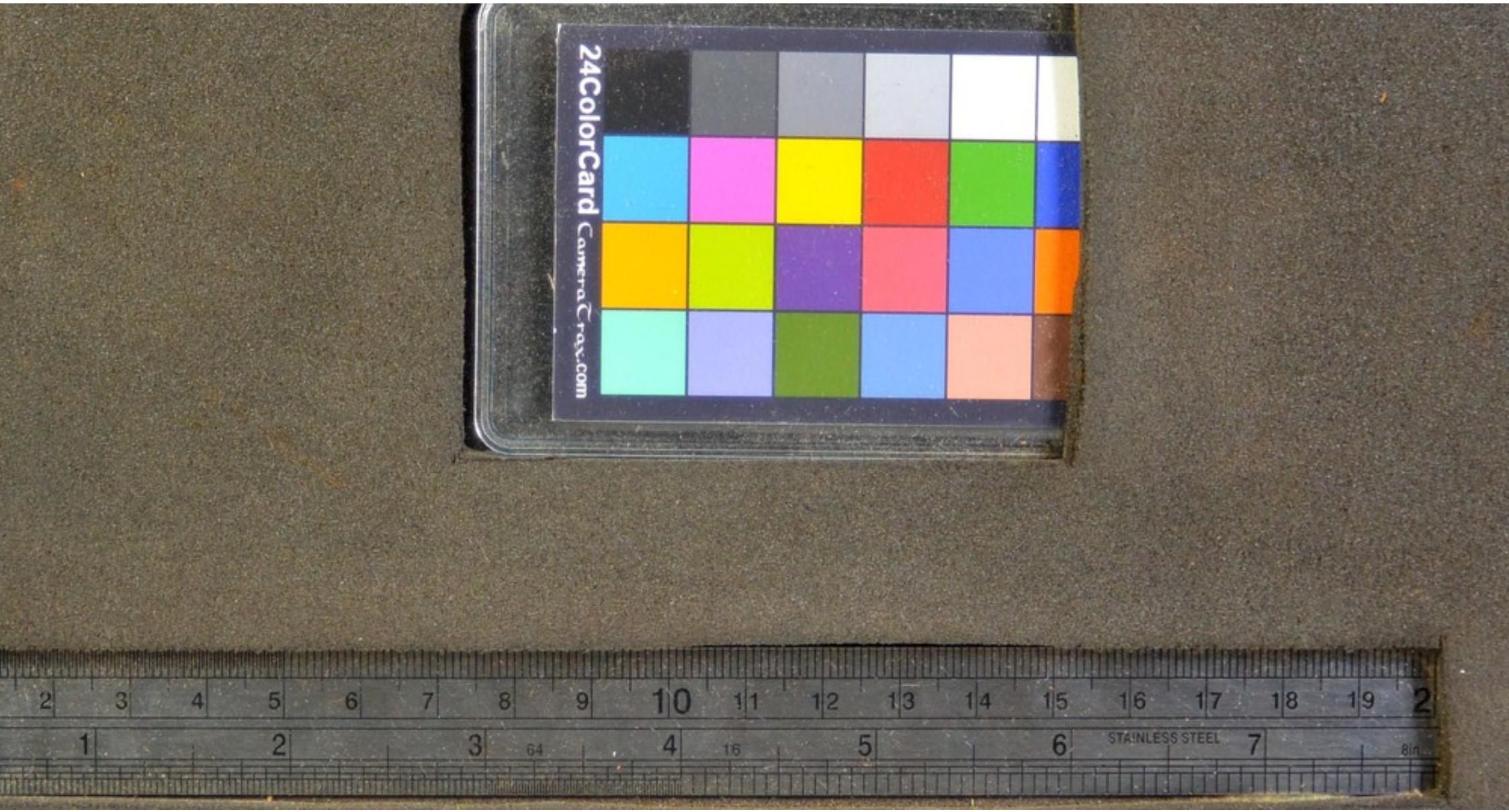
To rescue a philosophical research and the apparatus belonging to it from the hands of empiricism, and to give it a *modus operandi* on a rational system, was the original object of this publication.

I own, I do still indulge the hope, that I shall live to see an electrical machine considered among the necessary instruments of every surgeon; and that,

that in such cases as I have pointed out, the knife will be withheld, till a fair and candid trial of its powers has been made: after which, we are warranted by ancient authority, and long experience, to put the painful part of surgery in use:

"*Cuncta prius tentanda, sed immedicabile vulnus*
"*Ense recidendum; ne pars sincera trahatur.*"

THE END.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