A letter to Mr. George Adams on the subject of medical electricity; from Mr. John Birch, surgeon.

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LETTER

TO

Mr. GEORGE ADAMS,

ON THE SUBJECT OF

MEDICAL ELECTRICITY;

FROM

Mr. JOHN BIRCH, *Surgeon.*

LONDON:

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ON

MEDICAL ELECTRICITY.

SIR,

THE pains you have taken to diffuſe a general knowledge of electricity, and the unremitting attention you have paid to the improvements of the apparatus, claim the approbation of every one, whoſe ſtudy has been directed to the ſcience. I am happy in an opportunity of teſtifying how much the ſucceſs of my practice has been owing to the expertneſs with which you have remedied the defects I found in the machine, as they have preſented themſelves to me in the courſe of my experience; for without your aid I ſhould, like many others, have been tired out by the inefficacy of the inſtru-

ment, though I ſhould not, like them, have condemned the art for the faults of the artiſt.

The public have a right to expect from me ſome account of the reſult of thoſe experiments in medical electricity, which I have now been more than twelve years engaged in, and in which I could never have ſo invariably perſiſted, had I not found it in many caſes excluſively eminent and efficacious; for if it applied only to ſuch diſeaſes as were curable by other means, it would, I am ſenſible, avail little in practice: but it's merit is, that it often affords relief where every other hope is loſt, and ſaves the noble art of ſurgery from the opprobrium of amputation.

It was not till after ſeveral years experience, that I formed in my own mind a ſyſtem ariſing from it's actions on diſeaſe; this ſyſtem was the reſult of continued obſervation, and as it has enabled me to teach the practice more ſcientifically, I can have no objection to add it to your uſeful Eſſay; and to illuſtrate it by a ſeries of caſes, which will enable the reader to judge of the truth or deception of it. If it ſhould induce thoſe who may have taken up the practice without a ſufficient knowledge of the ſubject, to reſume it on better grounds, I will venture to ſay, it will anſwer their expectations, provided they are maſters of the inſtrument,

and

and are acquainted with the cauſe and ſeat of diſeaſes.

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

Under 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 it's power ſimply; 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 and wooden point are fitted, and a braſs director mounted in wood.

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When I wiſh to apply the fluid, I connect by a ſmooth wire the glaſs-mounted director to the conductor with a point at it's 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 applied to the ſeat of diſeaſe only.

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

dour 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.

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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 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 though the muſcles of the fore arm, which immediately cauſed the contraction of the fingers, and ſo ſtrong that they could not overcome it by the fluid for the three

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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 then 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 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 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 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 only.

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, 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 of 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

the parts, to which he readily ſubmitted, though he laughed at the propoſal; the inſtant relief he found from it's 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 ſcurvy, and had been treated accordingly at different times; 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 has remained ſo ever ſince.

About two years ſince, this 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 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;

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 child 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

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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, and drew the fluid through the tumours; I next preſented it 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

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ſummer advancing, I adviſed ſea-bathing, which was accordingly put in uſe; the girl has been ſince 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 proper 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 cloaths 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.

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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 foot and ankle ſwelled and weak; ſhe hoped the advantage of country air and exerciſe would reſtore it, but ſhe got no better. 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 uſe of the limb, and returned into Suſſex perfectly well.

By

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 it's 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 it's 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 sto-

mach, I poured a 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.

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A ſervant in my neighbourhood had been for many months afflicted with a quartan ague, for 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. A phyſician 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 phyſician, he continued the bark a few days, and recovered his health.

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 an 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,

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 paroxiſm. 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 feel was vaſtly 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

tinued 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 it's attack; I roſe immediately, and ran to the machine; I was electrified 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; ſtimulents 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 3 weeks ſhe was perfectly recovered.

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

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 hemiphlegia, 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 ſlobbering from his mouth, his face

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 3 ſucceſſive years, he wiſhed to have a courſe of electric operations, which he thought *reanimated* his nerves. He is at preſent living, and enjoy-

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ing a ſtate of health, enabling him to uſe daily horſe exerciſe, with a chearful mind, and a vigour of health, which indicate no probability of his cloſing the period of his exiſtence ſpeedily.

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 angles of the lower jaw; on my next viſit to the houſe, the maſter ſurprized 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 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 reme-

dies

dies 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, 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 from day to day, from her hands to her feet in cross directions: these quickly removed her tremblings, she gained strength daily, and in a fortnight went out of the house 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 a long while after, that his cure remained complete.

A young woman under the care of the late Mr.

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 bandaging. After ten months 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, 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 6 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

tend 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 caſe 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 it's 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, 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

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, 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.

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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. 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 tumor 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. 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

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 patella: 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 ſucceeded 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 Weſtminſter, 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

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

tage 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 tight 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

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.

N O T E.

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 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

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 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

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. 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 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 conſiderably ſmaller than at firſt. This mode agreed well with him, and the teſtis was gradually diminiſhing; but willing to know if the larger

ſhocks

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 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 conſiderable hardneſs and 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 diſſolved. 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

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 judgement, 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 however was ſo impreſſed with the timor animi, 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 of 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

been ſeized in the ſame manner from a ſimilar event, but recovered from it in a ſhort time, without medical aid. In the year 1783, he was a ſecond time ſeized, and remained in this melancholy ſtate upwards of twelve months, 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 after, and he remained perfectly well.

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

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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 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 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

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.

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 relief, 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 increaſed 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, in the ſame unhappy ſtate he had ſo long ſuffered.

Two 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,

perinæum, through the urinary paſſages; in eight hours after, about three ounces of a dark-coloured fluid (not bloody) paſſed from the bladder: after the ſecond application of the ſhocks, four ounces of a fluid, having the colour, but not the ſmell of urine, paſſed in a few hours: 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.

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

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 at that time called to him 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 the night; the next day, his pulſe was too quick, and his head confuſed; I did not therefore repeat the ſhocks, concluding they had occaſioned theſe ſymptoms. Towards night theſe ſymptoms abated, and, as the bladder had recovered

covered the 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 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 her palſy. Her extreme debility, and the ſpace of time ſhe had laboured under her 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 coccigis, 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 this was followed by apparently good effects, as ſhe did not wet herſelf that day. I continued the ſame mode for a few days, the advantages were daily more favourable; the excoriations healed in proportion as their cauſe diminiſhed: I then thought I might interrupt my 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 would not ſpeak the whole day, ate

little,

little, 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 upwards of eight months. Every day, after being electrified, ſhe would ſpeak, appear more chearful, take her food, keep her water, 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: on my application of electricity, ſhe revived again; thus the electric power ſeemed to keep life vegetating, and this ſeemed 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, is 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

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 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 vein 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

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, 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 if this account of the patient's elucidates any thing; but it is evident, apparently, ſuſpended life was re-animated inſtantaneouſly by the ſhock.

If the foregoing caſes are not ſufficient to prove the ſyſtem I have adopted, they muſt at leaſt evince the advantages of electricity in the practice of ſurgery; for it is evident amputation muſt have been ſubmitted to in ſome of them, if the experiments had been unſucceſsful. I could adduce ſeveral more caſes to illuſtrate my meaning, but that I fear to be tedious; and there are already enough on record to have awakened attention.

A mechanical power, which poſſeſſes ſuch eminent utility as to leſſen the number of ſurgical

gical operations, is ſurely deſerving the ſerious attention of every practitioner: that it belongs to the department of ſurgery, and requires a knowledge of the cauſe and ſeat of diſeaſe, to be applied with effect, will, I truſt, be readily allowed.

Thus, Sir, having reſcued a philoſophical apparatus from the hands of empiriciſm, and given to it's *modus operandi* a rational theory, I ſhall hope that an electrical machine may hereafter be conſidered an inſtrument of ſurgery; and that in ſuch caſes as I have experienced it's ſalutary effects, the knife will be with-held, till a fair and candid trial of it's powers has been made; after which, we are warranted by ancient authority, as well as long experience, to put the painful part of ſurgery in practice.

" *Cuncta prius tentata: ſed immedicabile vulnus*
" *Enſe recidendum; ne pars ſincera trahatur.*"

I am,

SIR,

Your humble ſervant,

JOHN BIRCH.