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A CONCISE VIEW

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I have purposely refrained from noticing the spread of the disease throughout the city generally, chiefly on account of my inability to do that subject justice, and further, because we may reasonably look to the various district medical officers in connection with the different boards for the most accurate and complete information. One thing, however, I feel bound to notice, because my position as hospital physician gave me an excellent opportunity of witnessing these, namely, the excessive labours which the gentlemen to whom I have just alluded underwent. I do believe that the profession generally entertains a very inadequate idea of the duties performed by district medical officers during epidemics of cholera. I have some right to speak of the indefatigable, disinterested, and generous manner in which, during several months, the visitation of cholera patients was daily and nightly performed by the gentlemen connected with the City Parish. It is proper that the Society should have an independent testimony to the zeal with which they were always animated, the more so that one of their number, and a member of this Society, in the very midst of his labours, fell a victim to the disease.

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ART. IV.—New Method of Treating Neuralgia by the direct application of Opiates to the Painful Points. By Alexander Wood, M.D., F.R.C.P., Lecturer on Practice of Medicine.

An immense improvement was effected in our treatment of neuralgic affections, when M. Valleix directed attention to the fact, that while, on the one hand, the superficial nerves of the body are of all others the ones most commonly affected with this disease, there are some points of their course in which it is much more liable to be seated than in others, although, in these, no structural alterations can be discovered to account for this liability. These points are usually more or less morbidly sensible to pressure, even in the intervals between the attacks of the sharp lancinating intermittent pain. A very slight touch in these situations is often sufficient to excite acute suffering; in other cases, however, even firm pressure is borne without any complaint. The points

1 Dr John Mackay, in whom, to a most amiable character and an excellent knowledge of his profession, was added an enthusiastic desire to dispense its benefits to the suffering poor, and who, by reason of his unwearied labours, there is too much reason to fear, fell an easy prey to cholera.
in the course of any nerve which are thus liable to be the
seat of tenderness are, according to Valleix:—
1. The place of emergence of the nervous trunk.
2. The point where a nervous twig traverses the muscles
to ramify on the integuments.
3. The point where the terminal branches of a nerve ex-
pand in the integuments.
4. The point where nervous trunks become superficial
during their course.

It is perhaps scarcely necessary to remark that all these
points are precisely those where the nerve tends towards the
surface, and therefore where, of course, it is the most amen-
able to local treatment.

Acting on the result of this observation, M. Valleix intro-
duced a plan of treatment, which, as an external remedy, I
have largely employed ever since my attention was first
directed to his work in 1842.

It consists in the application of a succession of small
blisters over the points in the course of the nerves which are
painful on pressure. Valleix does not recommend, as a
general rule, the application of morphia endermically, but
suggests that it may be attempted with advantage in some
cases. I have almost invariably employed an ointment con-
taining morphia to dress the blistered surface, and have been
acclimated to ascribe much of the benefit of the treatment
to this. In some cases, I have seen relief follow the appli-
cation of an ointment containing strychnine to the blistered
surface, but this must be used with great caution, as very
disagreeable results often ensue from its use.

It has frequently occurred to me, however, that a more
direct application of the narcotic to the affected nerve, or to
its immediate neighbourhood, would be attended with corre-
sponding advantage, and as the painful points so frequently
correspond with those in which the nerve becomes superficial,
I thought this might perhaps be accomplished. In pursuit
of this object, I have made several attempts to introduce
morphia directly by means of acupuncture needles and other-
wise, but without success.

Having occasion, however, about the end of 1853, to en-
deavour to remove a naevus by injection with the acid solu-
tion of perchloride of iron, I procured one of the elegant little
syringes, constructed for this purpose by Mr Ferguson of
Giltspur Street, London. While using this instrument for
the naevus, it occurred to me that it might supply the means
of bringing some narcotic to bear more directly than I had
hitherto been able to accomplish on the affected nerve in
neuralgia. I resolved to make the attempt, and did not long lack opportunity.

Miss ———, an old lady, who had long laboured under gastric and nervous symptoms, had suffered severely for four days from cervico-brachial neuralgia. This lady had the idiosyncrasy of not being able to take opium. Of this she had warned me many years before, when she first came under my care, and I consequently never prescribed it for her; however, once, when she was seen with me by the late Dr J. H. Davidson, he, disbelieving her former experience, prescribed opium, with the effect of bringing on a severe fainting fit.

The narration of her case may date from November 26th. She had not been able to sleep for the three previous nights from the violence of the neuralgic pain, and was quite exhausted with severe suffering. The usual internal remedies, with the exception of opium, had been tried, but without the least alleviation of her agony. Under these circumstances, I resolved to put in practice the plan which I had so long revolved in my mind.

Accordingly, on November 28th, I visited her at 10 P.M. to give the opiate the benefit of the night. Having ascertained that the most tender spot was the post clavicular point of Valleix, I inserted the syringe within the angle formed by the clavicle and acromion, and injected twenty drops of a solution of muriate of morphia, of a strength about double that of the officinal preparation.

In about ten minutes after the withdrawal of the syringe the patient began to complain of giddiness and confusion of ideas; in half an hour the pain had subsided, and I left her in the anticipation of a refreshing sleep.

I visited her again about 11 A.M. on the 29th; was a little annoyed to find that she had never wakened; the breathing also was somewhat deep, and she was roused with difficulty. Under the use of somewhat energetic stimuli, however, these symptoms disappeared, and from that time to this the neuralgia has not returned.

Case II.—Mrs ———, aged 30, of a gouty family, four years married, no family, short, and plump habit, very pale, menstruation scanty and painful, countenance anxious, urine high coloured, suffers much from flatulence and indigestion, tongue loaded, pulse 98.

After exposure to cold and damp, was seized with shivering and pain in the loins on the 9th December 1853. I saw her on the 13th. The pain in the back had then subsided, but the whole region of the left hip was tender, a distinct painful point was felt near the posterior superior spinous pro-
cess of the ilium, and another farther down, about the middle
of the thigh.

Twelve leeches were directed to be applied as nearly as
possible in the course of the sciatic nerve, their use to be
assiduously followed by that of warm fomentations, and one
of the following powders to be taken every sixth hour.

℞ Pulv. Doveri, gr. v.
Pulv. Colchici, gr. iv.
Hydrarg. c. creta, gr. ii.
M. Ft. pulv.

Next day (14th December) she was considerably relieved;
had enjoyed a short but refreshing sleep; the bowels had
acted three times freely, the motions being very dark and
offensive; thought herself much weakened by the bleeding
and purging; directed to continue the powders.

December 15.—Tongue cleaner, gums swollen and spongy,
coppery taste in mouth, tenderness of hip gone, the pain
otherwise much the same as on the preceding day; feels
sleepless and uncomfortable; bowels have not again acted.

Stop the powders; take two turpentine capsules three
times a-day; drink plentifully of linseed tea with gum dis-
solved in it.

December 16.—Feels very uncomfortable, the turpentine
has produced severe dysuria, pulse 104, tongue coated, the
pain in the hip has not returned, but the pains are more
severe and lancinating in the middle of the thigh and round
the head of the fibula.

The syringe was introduced at the painful spot in the
middle of the thigh, and 10 drops of Battley’s sedative solu-
tion were injected without any perceptible effect but that of
slight smarting at the seat of the puncture. Two hours after-
wards the pain ceased, and the patient fell into a deep sleep,
from which she woke entirely free from pain in the thigh or
leg, but suffering slightly in the region of the malleolus ex-
ternus.

December 18.—The pain in the malleolus is very severe,
and is much aggravated by pressure; the pain in the hip
and thigh is entirely gone.

The injection repeated in the malleolar region. This
operation was followed by no perceptible effect; but in about
four hours the pain began to abate, and ceased altogether in
about eight hours from the injection.

The state of the patient’s general health required some
attention; she is now much better, and her sufferings at the
menstrual period are diminished, but she has had two slight
returns of the sciatica, for which, at her own request, she has been treated by the opiate injections.

Case III.—Mrs ——, at. about 50, widow, plethoric habits, hysterical temperament, has suffered since the cessation of the menstrual flux about 10 years ago, from various anomalous symptoms, of a nervous kind, indicating great spinal irritation. Her liver is enlarged, and her heart is often functionally disordered. She has had severe attacks at different times of visceralgia, and has often suffered from neuralgia, chiefly of the dorso-intercostal and lumbo-abdominal varieties. Her very full habit, as also the cause from which these symptoms obviously arose, coupled with the evidence of cerebral congestion, with which her attacks were frequently accompanied, as also the fact of her pulse being at these times full and firm, her skin hot, and her urine high-coloured, had led me to treat them by cupping, purging, antimonials and salines. Opiates had no effect in alleviating her sufferings, and belladonna and aconite affected too powerfully her nervous system without abating her suffering.

I first tried the syringe with her on the 19th of April 1854, when she was suffering from a severe attack of lumbo-abdominal neuralgia.

The syringe was inserted in the lumbar point, a little to the outside of the vertebrae, and 25 drops of Batley’s solution were injected.

She had an easier night, and the pain, though somewhat better next morning, was by no means removed, and the following day it returned with such severity that her former treatment had to be resorted to with decided relief. She has certainly suffered less since the operation.

Case IV.—A married female, aged 25, in the lower rank of life, consulted me May 2, 1854. Had suffered three months previously from a miscarriage which had weakened her much; her countenance is exsanguine, lips nearly colourless, tongue and gums white. A loud bruit is audible over the heart and in the carotids. Has also had a great deal of mental distress.

About three weeks ago came from the country on the outside of a coach, and sat on a very damp cushion. Next day felt as if one leg was longer than the other; she had much pain in the lower part of the abdomen, in which she thought she felt a large painful ball. Pressure on the spinous processes of her dorsal vertebrae gives no pain; but a painful spot is distinctly to be detected a little to the left side. Os uteri open and flabby, very tender on pressure; surface velvety, much mucous discharge.
Dr Alexander Wood on the

The following medicine was ordered, with nourishing food:

R Citratis Ferri 3ii.
    Syrupi 3ss.
    Aqua cassiae 5 v. ss.
    m
    Sumat coch., amp. ter. indies.

May 16.—Somewhat improved in appearance, pain not abated; 25 drops of Battley’s solution were injected into the painful point. About an hour afterwards was seized with violent vomiting, with shivering and severe constitutional disturbance; pain not abated.

May 17.—Vomiting has ceased, but returns with every attempt to swallow, pain much worse, no sleep, tongue loaded, bowels costive. Ordered to use ice freely, and to take a drop of Fleming’s tincture of aconite every third hour for four times.

May 18.—Stomach much better, but the pain in the back is not abated. Ordered friction with the Tinctura saponis c. opio.

May 19.—Pain which was easier during the day, became much more severe at night, and she had an opiate by the advice of a friend. Severe vomiting followed its use, and it had no effect either in allaying the pain or in procuring sleep.

I recommended her to persevere with the iron for some time, but have lost sight of her.

Case V.—Mr ———, after much exposure to wet, consulted me on the 4th June 1854, on account of a severe attack of sciatica. I prescribed a smart dose of calomel and rhubarb, to be followed by an antimonial mixture, and on the evening of the following day, injected twenty drops of Battley’s sedative solution. Four hours afterwards he fell into a deep sleep, and wakened free from pain.

Case VI.—Miss ———, æt. about fifty, very stout, consulted me some years ago, about a uterine affection, accompanied with severe lumbo-abdominal neuralgia. The pain she suffered was great, and the lameness it occasioned entirely precluded the possibility of walking. I directed attention, in the first instance, to the uterine symptoms, hoping that on their removal, the neuralgia would disappear spontaneously. In this, however, I was disappointed. Great benefit undoubtedly followed the relief of the internal disorder, and the lameness diminished perceptibly; still the pain evinced little or no disposition to abate. On the 2d June 1854, I inserted thirty drops of Battley’s solution. Severe vomiting followed, and the pain was entirely diminished.
From that date, I directed my attention chiefly to the constitutional treatment, until the increased severity of the pain drew my attention to it. I injected thirty drops of Battley on the left side on the 13th December 1854.

December 14.—Pain on left side nearly gone; that on right very bad.

December 16.—Repeat the injection on the right side.

December 17.—Pain much relieved.

I saw this lady again on the 29th December. The pain was much easier, but she still continued lame, and the pain was apt to increase after any exertion.

CASE VII.—A gardener, advanced in life, after exposure to cold and wet, was seized on the 18th November with severe lumbago. This had yielded by the 2d December to the usual treatment; but there remained after its disappearance symptoms of that very rare form of neuralgia described by Cotungo and subsequently by Chaussier, and denominated by Valleix crural neuralgia.

He says he has lost the power of his limbs, though this is obviously not the case.

There is a painful point in the loins, another still more marked in the groin, a third at the head of the fibula, a fourth on the dorsum of the foot.

December 12.—15 drops of Battley’s solution were injected into the painful point on the loins. Next day the patient reported that he had felt no peculiar effect except that the pain was entirely gone from every point but the knee.

CASE VIII.—Mrs ———, aged about 80, has been suffering for some time from severe pain in the chest, cough, with mucous expectoration, which, together with the cough, have prevented her from sleeping for some nights. She is extremely deaf, so that it is not easy to make out her symptoms. I visited her first on the 12th December 1854. The bronchitic symptoms were then so severe that I directed attention exclusively to them. I need not detail the treatment which has no bearing on the matter on hand. On the 21st, I found the cough nearly gone, but she was still sleepless from the pain of the back, which I then for the first time examined. A painful spot was soon pointed out by the patient herself, seated near the trochanter. The integuments here were deeply seamed and scarred; the result she informed me of deep incisions made when she laboured under what she called “white swelled leg” (phlegmasia dolens I presume), 54 years before. Into this point I injected 30 drops of Battley. Next day (22d Dec.), when I visited her, she told
me she had enjoyed a capital sleep; but what was that you
gave me, she added, I saw the most glorious visions all
night. Since then the lancinating pain has ceased, though
what she describes as a dull stoulding pain remains.

Case IX.—Miss ———, aged about 30. About twelve years
ago, while travelling on the continent, suffered from severe
influenza; while scarcely convalescent, by the breaking down
of a bridge, was precipitated into a river, and had to sit some
hours in a carriage with wet clothes. After this suffered
from constant aching in the back, which rendered the supine
position essential. Some amelioration of this took place
under medical treatment. Her menstruation became scanty
and painful; for this she consulted Dr Simpson, and was
relieved by his treatment. Since then has had attacks of
pain in back at intervals.

Last spring, pain in back became severe, extending down
to knee—was recommended to take aconite, which she found
to give relief. Her left side is constantly cold. When in the
country, her medical attendant scarified the back and
rubbed in morphia. This was done nineteen times, and she
obtained some relief, but the operation was very painful.

December 24.—The pain was brought on by exertion
to-day, but is not very severe. 25 drops were injected—
She passed a very restless uneasy night, with much vomiting;
pain in back gone.

Dec. 26.—Slight return of pain; but on the whole better.
I have heard since that this young lady's health is permanently
improved.

For the following cases I am indebted to Dr Thomas
Wright, F.R.C.P., by whom the remedy was tried on my
suggestion:

Dr Wright's two cases treated by Dr Wood's method.

1. Mary Ann Forester applied at the New Town Dispensary
on account of a painful affection of the ulnar nerve and its
branches in the arm, fore-arm, and hand. During the late
severe frost she had been discharged from the Infirmary
cured of necrosis of the lower half of the humerus, and had
afterwards been much exposed to cold, having frequently
been obliged to sleep in a common stair. The limb, in con-
sequence thereof, became severely painful, especially at night,
and prevented her from either sleeping or following any
occupation. She complained of occasional rigors, and there
was considerable tenderness over the injured part of the
bone, but the pulse was natural and the tongue clean. Forty drops of Battley’s solution were injected into the cellular tissue above the inner condyle, the limb was rolled in flannel and bandaged, she was put upon a course of alterative and aperient medicine, and ordered to visit me again in two days. Directly after the injection of the opiate the skin over, and for two or three inches round, the part became erythematosus and covered with white patches of urticaria; but the severe pain in the fore-arm and hand immediately ceased. At her next visit she stated that there had been no return of the pain, but that she had suffered much from vomiting and headache, which came on directly after the injection, and lasted all the next day. She visited me only once afterwards, at which time the pain had not returned, but she had still much tenderness over the diseased bone, and occasional rigors. She was able to carry a basket of vegetables for sale.

2. Mrs A. B., a widow lady, aged 52, has been subject to periodic headache for several years. The attacks recur every fortnight or three weeks, and commence with pain in the nerves of the integument at the external angle of the right orbit and in the posterior branch of the second cervical nerve of the right side. After from four to six hours, during which time the nerves of all the right side of the scalp become severely affected, the pain either ceases altogether or passes to the other side of the head, and runs a similar course. At the commencement of a later attack, the injection of twenty drops of Battley’s solution into the cellular tissue around each of the starting points of pain before mentioned was attended with entire relief for several hours, after the expiration of which the pain commenced on the other side of the head, and was attended with more than usual suffering on account of the constitutional effects caused by the opiate.

I have tried this mode of using narcotics on some other cases not so appropriate. I am quite satisfied that in those not unfrequent cases where the disease has a central, not a centripetal origin, it is quite useless, unless from the power which it may for the time exercise on the imagination.

In one case in which I tried it, by the kind permission of Dr John Brown, the puncture was; in a few minutes, surrounded by a blush of urticaria.

In considering the modus operandi of this new application of remedial means, I think the following propositions will guide us to a right conclusion:—

§ 1. Medicines when exhibited have usually two effects—
1st, The local or topical—the particular effect of the medicine on the tissue to which it is applied; 2d, The remote effects—being physical, chemical, or vital changes produced on parts at a distance from those to which the medicine is directly applied, or on the system at large.

§ 2. The manner in which the local effect is produced is comparatively simple, and depends on the relation of the medicine to the tissue to which it is applied. Thus, some applications simply stimulate or irritate the tissue, the effect varying from the least powerful, which merely redden, to the strongest, which produce ulceration, or even gangrene. Others, again, form compounds with the elements of the tissue, thus chemically decomposing or corroding it, while a third class, according to Dr Christison,¹ “neither corrode nor irritate, but make a peculiar impression on the sentient extremities of the nerves, unaccompanied by any visible change of structure.”

§ 3. With regard to the manner in which the remote effects are produced, considerable difference of opinion prevails. Magendie² and his supporters contended strongly that they were conveyed by absorption from the part to which they are first applied, while Messrs Morgan and Addison³ are of opinion that the remote effects are exclusively due to sympathy, or an impression transmitted through the nerves.

§ 4. Sir Benjamin Brodie,⁴ Dr Christison,⁵ and others, however, unable to adopt either view exclusively, have contented themselves with admitting this double mode of operation; “a conclusion” which Messrs Morgan and Addison agree “that all fair analogy forbids.”

§ 5. With the exception of Morgan and Addison, who deny the doctrine of absorption only because they strongly hold that of sympathy, and because they think it “contrary to nature’s rule to adopt two ways of attaining the same end,” all authors agree in admitting absorption to be the most usual channel by means of which medicinal agents are conveyed from the part to which they are directly applied, so as to effect remote organs, or the system at large.

§ 6. Since the experiments of Hering, and more recently those of Mr Blake,⁶ have shown the extreme rapidity with which the round of the circulation may be accomplished, the

¹ Treatise on Poisons, p. 1.
² Magendie, Annales de Chimie et de Physique.
³ Essay on the Operation of Poisonous Agents, &c.
⁴ Phil. Trans. 1811-12.
⁵ Treatise on Poisons.
⁶ See this Journal, vols. liii. and lvi.
tendency has been greater to ascribe to absorption even those very rapid, or almost instantaneous general operations of certain poisons locally applied, which were formerly regarded as the strongest arguments for the theory of nervous transmission.

§ 7. Of the great effect of absorption we will be still more convinced, if we call to mind the rapid disappearance of the agent from the part to which it was applied,\(^1\) coupled with its speedy detection in parts at a distance,\(^2\) and the no less speedy communication of its qualities to the animal solids and fluids.\(^3\) The arrest of the action of the poison by arrest of the circulation from the part,\(^4\) and the failure of all attempts to arrest the production of remote effects by intercepting the nervous communication.\(^5\)

§ 8. The chief agents by which absorption is effected are the veins, though the lacteals and absorbents take up certain agents, but their operation is both limited and slow.

§ 9. Different tissues vary in their absorbent power. Thus, according to the very interesting experiments of M. Vernière,\(^6\) the mucous membrane of the intestinal canal absorbs less rapidly than the serous membranes, and they, in their turn, are less powerful channels of absorption than a vein or an open wound.

§ 10. Difference of tissue is therefore found to modify, to a great extent, the action of remedies. Thus, the stomach and intestines, which are the tissues to which medicines are generally applied, possess a considerable power of absorption, as indeed their office would lead us to suppose; nevertheless we find, from the experiments of Christison and Coindet,\(^7\) "that when oxalic acid is introduced under the same colla-

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\(^1\) Of four ounces of solution of oxalic acid, injected by Drs Christison and Coindet into the peritoneum of a cat, and which proved fatal in fourteen minutes, though none escaped by the wound, scarcely a thirty-second part was found after death.—(See this Journal, vol. xix. 335.)

\(^2\) As in the urine, see the very full experiments of Wöhler and Stehberger (Zeitschrift für Physiologie, Bd. für 1824–5.) Or, as in a case quoted from Fricke by Pereira (vol. i., p. 106), where iodine was detected in the tears by the formation of iodide of mercury, when calomel was applied to the eye of a patient who had been taking iodide of potassium. In the blood and urine, as by the experiments of Tiedemann and Gmelin.

\(^3\) Almost all the minerals, and many other substances which are given medicinally, have been detected in the bones, brain, skin, and liver (Pereira, op. cit., p. 104.)

\(^4\) See the experiments of Ségales, Emmert, and Blake (Muller’s Physiology, and op. cit.)

\(^5\) See the experiments of Magendie and Delille (Physiology by Milligan, p. 284.)

\(^6\) Journal des Progrès, 1827.

\(^7\) See this Journal, vol. xix., p. 330, and Christison on Poisons, p. 29.
teral circumstances into the stomach of one dog and the peri-
toneum of another, the dose may be so apportioned that the
same dose which does not prove fatal to the former kills the
latter in fourteen minutes."

§ 11. The few experiments which we had, until very recent
times, regarding the power of the pulmonary membrane to
absorb poisons, tended to cause it to be regarded as a channel
of extreme power. The rapidity of the fatal results which
follow gaseous poisoning may be instanced, as also the ex-
periment of M. Ségalas, who found that half a grain of solu-
tion of extract of nux vomica injected into the windpipe proved
fatal, while two grains might be injected into the stomach,
peritoneum, or chest, without any fatal effect.

§ 12. The experiments of Professor Simpson on the inha-
lation of chloroform, oil of juniper, ergotine, and other medi-
cinal agents, also show the value of this channel for the in-
troduction of certain medicaments into the system.

§ 13. The skin, which has at various times been employed
as a medium for the introduction of medicines into the sys-
tem, would appear to possess no very active power of absorp-
tion, at least unless it be denuded of its cuticle. "Accordingly," says Dr Christison, "many active poisons are quite
inert when applied to the unbroken skin, or even to the skin
deprived of the cuticle. Hydrocyanic acid, perhaps the most
subtle of all poisons, was found by Coullon to have no effect
when dropped on the skin of a dog." On the other hand,
Dr Madden, in his work on Cutaneous Absorption, has shown,
from carefully conducted experiments, the power which the
healthy skin possesses of absorbing from a gaseous and from
an aqueous medium, and has collected from various authors
proofs of its power to absorb medicinal substances.

§ 14. Both solids and fluids have been thus absorbed by
the skin. Kellie found salivation follow the use of a mer-
curial plaster. Arsenic employed to destroy lice has been
known to produce violent inflammation. Salivation has been
produced by the absorption of a solution of corrosive subli-
mate. Dr Madden, after immersing his hands in a solution
of hydriodate of potass, detected iodine in his urine, and he
also succeeded in purging himself, by applying to his skin
infusions of rhubarb, jalap, and gamboge.

§ 15. There is no more rapid way of securing the action
of poisons than by introducing them into a divided vein, or
into several divided veins, by means of an open wound.

1 On Poisons, p. 28.
2 An Experimental Enquiry into the Physiology of Cutaneous Absorption,
by W. H. Madden, M.D. Edin., 1838.
Treatment of Neuralgia.

"Some," says Dr Christison, "which act very slowly through the stomach cause instant death when injected into a vein."

§ 16. With regard to the cellular tissue, Dr Christison states, "that it is a ready medium for introducing poisons into the blood, especially if an artificial cavity be made where the tissue is loose, but that its power as a medium of absorption has not been, and cannot easily be ascertained. On the one hand, it is difficult to apply poisons to it without also applying them to the mouths of divided vessels, and, on the other hand, it is difficult to make a set of experiments for comparison with others on the stomach, pleura or peritoneum, as the cellular tissue does not form an expanded cavity, and, consequently, the extent of surface to which a poison is applied cannot be made the same in each experiment of a series."  

§ 17. The experiments which approach the most nearly to direct injection of the cellular tissue are those detailed by Sir Benjamin Brodie in the Philosophical Transactions for 1811-12, in which various poisons were introduced into wounds, and were found to produce very speedy results; but in all these cases the great division of parts exposed so many blood-vessels that it is not easy to say how much of the effect was due to the cellular tissue, and how much to the action of the divided vessels.

§ 18. I am at present engaged in some experiments on this subject, in which, by means of an improved apparatus, various substances have been introduced into the cellular tissue with comparatively little injury to the adjacent vessels, and, as far as these have gone, they would lead to our ascribing great absorbent power to the cellular tissue.

§ 19. The result of what has been stated proves satisfactorily—

1st, That medicines are more rapidly absorbed by some tissues than by others.

2d, That the stomach is by no means the most rapid way of introducing medicines into the system.

3d, That the cellular tissue has a great power of absorption.

§ 20. It has been further shown by Dr Christison, that the whole amount of difference is not to be explained by the rapidity with which absorption goes on, but is to be ascribed in part to the poison being more liable to decomposition in one tissue than in another. Thus, many remedies are much changed in the stomach, where the powers of assimilation are very strong, and the action of absorption slow.

1 On Poisons, page 30.
§ 21. We are thus conducted to this point of the enquiry. Have we no means of introducing medicinal agents very rapidly into the body, in a situation where they will not be readily decomposed; and where, in certain cases, we can secure at once their local and their remote effects.

§ 22. The value of such a method of procedure, in many diseases, will be apparent. We shall instance but one—neuralgia.

§ 23. In neuralgia we have usually a general and a local affection, a morbid state of the system, arising from many causes, displaying various symptoms, requiring varied treatment, and existing in states of the body the most opposite; a local affection, occurring in paroxysms of violent pain, either regular or irregular, plunging like electric shocks along the course of the affected nerve, ceasing, either to be suspended for a time, or immediately to recur with still more unbearable violence.

§ 24. An affection presenting characters such as have been described, would appear to demand at once a local and a general treatment;—a local treatment directed to, and intended to mitigate the fearful anguish, under which the patient is well-nigh driven to despair; a general treatment intended to correct the "habit neuralgicus" on which it depends, and having reference to the causes from which it has arisen, the state of the system in which it exists, and the diseases with which it may be associated.

§ 25. There are other circumstances in the history of neuralgia which seem to point at, and to give peculiar facilities to local treatment. It is admitted on all hands that the superficial nerves are of all others the most liable to the disease. It has further been shown by M. Valleix that some points in the course of the nerve are more liable to be affected than others, and that these points are frequently the very ones where the nerve is most superficial.

§ 26. Further, these points can almost always be detected in the course of the disease from their extreme tenderness on pressure. Even in the intervals between the paroxysms, very slight pressure on these points is sufficient in many cases to excite severe suffering, although, in some exceptional cases, firm pressure may be applied without exciting any complaint.

§ 27. The plan of local treatment which M. Valleix proposed was the application of a succession of small blisters

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over the points in the course of the nerves which are painful on pressure, and in all his cases it seemed to alleviate the symptoms.

§ 28. The plan of blistering is not new, but for the application of it to the tender points we are indebted to M. Val- leix, and that author has effected an immense improvement in practice by showing where our local treatment, whatever that may be, ought to be applied.

§ 29. Our own experience has not confirmed the value of simple blisters, and we prefer following them up by the end- dermic application of morphia.

§ 30. Two strong objections, however, apply to blistering, or the endermic application of narcotics in this disease—

1st, The painful nature of the remedy.

2d, The mark which it often leaves, which is very objectionable when the disease is seated in the nerves of the face.

§ 31. Various methods of applying narcotic or other remedies more directly to the seat of the disease have been introduced. Thus we have—

1st, The enepidermic method, in which the agent is simply applied to the surface of the skin.

2d, The intraleptic, in which the absorbents are stimulated by friction to take up the agents which are presented to them in solution or in a minute state of division.

3d, The endermic proposed by M.M. Lembert and Le- sieur, in which the obstacle which the epidermis offers to the entrance of the remedy is overcome by previously removing it.

4th, Inoculation, which, largely practised for the introduction of small-pox and cow-pox into the system, has been proposed by M. Lafargue St Emilion, to be extended so as to secure the application of remedies. This method was brought before the Westminster Medical Society in February 1837, by Dr Bureaud, but from the account given in the "Lancet," he does not seem to have been very successful, as only a slight local effect was produced. A report was made by M. Martin Solon for the Academy of Medicine, on this method of inoculation by morphia, proposed by Dr La- fargue, which report comes to the somewhat damaging conclusion that the effect produced was very much the same, whatever agent was inoculated even when the experiments were made with agents as dissimilar as belladonna, strych- nine, the gastric juice, chyme.

1 Lancet, 1837, p. 826.
§ 32. From all this it is plain that we are still in want of a method of directly applying sedatives to the affected part, and that such a method be suggested its value would be enhanced, could this be done almost without pain, and in a manner calculated, at the same time, powerfully and rapidly, to affect the general system.

§ 33. Of the value of such an application locally to the nerve affected, no one can be in doubt who calls to mind the result of the experiments instituted by Müller, which clearly shows that, to quote his own words, “narcotic poisons,” when applied locally to nerves, have only a local effect. I held the nerve of a frog’s leg which was separated from the body in a watery solution of opium, for a short time, and that portion of the nerve lost its irritability, but below the part that the poison had touched the nerve still retained this function; opium, therefore, produces a change in the nervous matter itself, but the influence is local.1

§ 34. Again, every one who has seen much of neuralgia is aware that, on the one hand, the pain, acute and agonising as it is generally, subsides spontaneously after some time; that on the other, opiates administered through the ordinary channels are usually some hours in taking effect, so that, if this class of remedies are to be of use at all, it must be an immense advantage to secure—

1st. A local effect, applied directly to the affected nerve.

2d. A remote effect, ensuing almost instantaneously on the application of the remedial agent.

§ 35. Several of the cases which I have detailed show with what rapidity narcotics take effect when introduced in this way; and in a case in which I tried it in the Royal Infirmary, through the kindness of my friend Dr W. T. Gairdner, the man, who was not at all aware of what was doing, told us that he felt as if he was drunk within a very few minutes after the introduction of the narcotic.

§ 36. These are the advantages which this new method of treatment seem to offer, and on which we venture to recommend it for trial; and I think we may safely arrive at the following important conclusions regarding it from the cases which I have submitted—

1st. That narcotics injected into the neighbourhood of the painful point of a nerve affected with neuralgia, will diminish the sensibility of that nerve, and in proportion diminish or remove pain.

2d. That the effect of narcotics so applied are not confined

1 "Pharmacology," by Baly, vol. i., p. 246.
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to their local action, but that they reach the brain through
the venous circulation, and there produce their remote
effects.

3d; That in all probability what is true in regard to nar-
cotics would be found to be equally true in regard to other
classes of remedies.

4th, That the small syringe affords a safe, easy, and almost
painless method of exhibition.

5th, That, destitute as we are of any precise experiments
as to the applicability of cellular tissue as a medium for the
reception of medicinal agents, the experiments made with
the syringe show that it seems to offer an excellent surface
for the absorbent action of the venous system.

6th, That the method now detailed seems as extensively
applicable as any of the methods of applying remedies to
the skin, whether

Eneipidermic,
Intraepileptic,
Endermic, or by
Inoculation.

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ART. V.—Brief Memorial of the Life and Writings of the
late Richard James Mackenzie, M.D., F.R.C.S.

Though departing from our usual practice, we should be
doing violence to our own feelings were we not to offer a
tribute of respect to the memory of one whose character,
professional and private, the incidents of whose life and
death, and whose intimate connection with ourselves in con-
ducting this Journal, alike demand it.

Richard James Mackenzie, the fourth son of the late Rich-
ard Mackenzie, Esquire of Dölphton, and deputy-keeper
of Her Majesty’s Signet, was born in Edinburgh on the 31st
of March 1821. His early education was, in the first in-
stance, conducted by Mr White, long eminent as a teacher
of English in this city, and thereafter in the New Academy,
which he entered in 1829; and where he continued uninter-
ruptedly during the full curriculum of seven years. After
leaving the Academy, where he distinguished himself, and
was successful in obtaining several prizes, he received in-
struction from a private tutor, along with his early friend
and future fellow-student in medicine, Walter Dickson, till
entering upon his professional studies in the autumn of 1837.
With Mackenzie the choice of medicine as a profession was
no sudden determination; on the contrary, from his boyhood