A new and easy method for the subcutaneous application of morphia : without the pain, risk and expense of the hypodermic syringe / by John M. Crombie.

A

NEW AND EASY METHOD

FOR

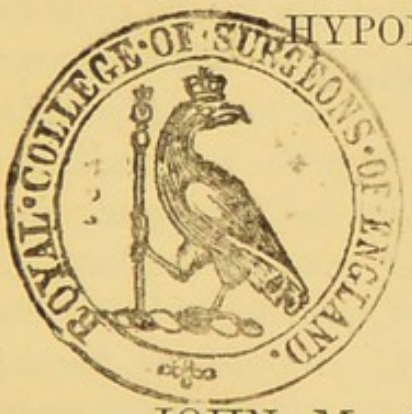
THE SUBCUTANEOUS APPLICATION

OF

MORPHIA,

WITHOUT

THE PAIN, RISK AND EXPENSE OF THE HYPODERMIC SYRINGE.



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SUBCUTANEOUS APPLICATION OF MORPHIA,

BY THE

HYPODERMIC SUPPOSITORY.

The introduction of morphia into the system sub-cutaneously becomes desirable in every instance where its anodyne effects are required, and where there yet exists a constitutional incompatibility or intoleration for the drug when administered by the mouth. The victim of a severe neuralgia, for example, is obliged to avoid the morphia draught or pill that under similar pressure is eagerly sought by another, because when taken it either does not at all alleviate his suffering, or if it does so in any degree is accompanied or followed by a train of experiences even more harassing than his antecedent condition—such as delirium, headache, sickness, burning thirst, and constipation. But let the morphia be brought to bear immediately on his suffering by deposition beneath the skin, and the probability is that the suffering ceases; he perhaps sleeps, and awakes refreshed, without having paid or having to pay any indemnity for his deliverance. The great frequency of such cases, it will be readily understood, gives a high importance to the hypodermic method. And, further, even when no serious inconvenience immediately follows the introduction of morphia into the stomach, if the drug has to be used for any length of time, it is found by experience that the subcutaneous application is by far the most beneficial mode of administration.

At first sight it may appear strange that such should be the case: that those who cannot endure morphia conveyed through the stomach should enjoy its special benefits without any drawback when introduced through the skin, and that the cutaneous method should be so much superior to the other in good results when a protracted course is necessary. There are, however, sufficiently well-known differences in the physiological action of the parts respectively concerned in each process to clearly establish the necessity of difference in the result. Thus, although it is impossible to trace the exact evolution of symptoms, the stomach exerts its digestive power, physical and chemical, on a portion at least of the morphia introduced, and thus alters its condition and composition, whereas when deposited under the skin the morphia is absorbed unchanged into the circulation. In the one case we obtain the pure physiological action of morphia, in the other case it is a varied result. Then, again, under the skin no important function is interfered with, but put into the stomach digestion is often at once most manifestly deranged, and sometimes arrested for days by a single dose. The intimate sympathy existing between the stomach and the brain renders any interference with the former highly injurious to the tranquillity of the latter, and this is particularly the case in nervous and debilitated females, who are, nevertheless more frequent than any one else the subjects whose condition in other respects calls for the use of morphia. It would not be uncommon to meet with many cases like the following, if the expediency of frequent trial were thought justifiable. A female suffering from an internal incurable malady, which was the cause of constant pain, had administered at intervals varying doses of every preparation of opium, including Nepenthe and other non-officinal varieties, with the effect of invariably producing excitement approaching delirium, and with little or no alleviation of pain. On the other hand, the injection of a quarter of a grain of the acetate of morphia, twice a day, at once completely raised her above her misery; restoring her equanimity of mind, and

visibly, in a short time, re-invigorating her shattered frame. For eight months she has employed this treatment daily, and will continue it, for it has become one of the first necessities of her existence. As a parallel and still more instructive instance, I shall take the liberty of quoting Dr. Lawson's own case, recorded in his excellent treatise on Sciatica, Lumbago, and Brachialgia :—"Indeed I am not outstepping plain matter of fact when I assert that in the method of treatment proposed and most patiently carried out by that gentleman, I owe my restoration to health. For six months I had hardly known what sleep was, notwithstanding the administration of opiates three and four times a day. Appetite was utterly lost, physical power was prostrate ; mind, through long suffering, was enfeebled to that degree that I look back to that period of my existence with astonishment and horror. I was indeed fast sinking into the grave, a victim to what the philosophy of modern physic styled a symptom, and which it was not considered necessary to deal with in any but a secondary degree. Five minutes after the first injection of morphia, I experienced the only ease I had known for six months, and I need not say that by a continuance—necessarily protracted in so grave a case—I was in a few months restored to perfect health." The relief of pain in Dr. Lawson's case was manifestly the cure of the disease—a disease (sciatica) which had reduced him to the condition of a helpless invalid.

While, therefore, it may be asserted as nearly absolutely certain that the relief of severe pain is sought at present almost exclusively in some form of opium, and that a large proportion of cases are, in consequence of debility, tendency to sickness and headache, or other constitutional peculiarities unfit for treatment by the usual method, it is highly important that the subcutaneous method should be made as simple, painless, and inexpensive as possible. It is with this view that I propose the hypodermic suppository in place of the hypodermic syringe. For although the syringe has done excellent service, and has been improved by several makers since its introduction, it is needless to repeat that the sub-

cutaneous application of morphia would have come into far more extensive employment—its advantages being so many and so manifest—had it not been for the several grave defects that cling to the use of the syringe, however constructed. As regards *pain* for example, some who are familiar with the instrument, have come to look on the insertion of the tube so much as an operation by itself as to recommend a preliminary anæsthetic process on the part selected : viz., local anæsthesia by freezing with ether spray. It is obvious, however that, all question of trouble, expense, and discomfort apart, this could not be carried out when the injection had to be repeated frequently without destroying the vitality of the part. The suggestion is impracticable, and yet that considerable pain attends the process, may be readily understood from the usual directions given for its performance. Dr. Lawson says : "Holding the syringe between the thumb and two fingers of the right hand, at a point at which the nozzle joins the rest of the instrument, and allowing the body of the syringe to rest against the finger, we steadily introduce the needle at an angle of about 40° to 45° to the depth of an inch to an inch-and-a-half."

The angle to the surface at which the syringe is thus held and the extent to which it is buried beneath the skin makes it something more than subcutaneous injection in the strict sense, and the directions are intended, I apprehend, for injection only in fleshy or adipose parts, such as in the treatment of sciatica, of which the author is speaking at the page quoted. Yet something more or less approaching to this is required in every case where we would make sure that none of the fluid shall escape from the wound, and that this entails for the time being considerable pain cannot be concealed. If the operation be done carelessly, or even inattentively, it is easy to see that the pain may be seriously increased, while puncture of important structures is far from impossible. Of course such faults manifestly belong to the operator, yet the occurrence of painful abscess after injection, although not likely to happen in skilful hands, has brought some discredit

on the syringe, which it cannot be denied is sufficiently complex to require at all times very careful management. And if this be the case when the point is in good condition, it is much more so when it gets blunted, which it very soon does when in use, owing to its being attenuated and partially hollow, and mostly made of metals less durable than steel. But besides the matter of *pain*, the hypodermic syringe is a very dear and a very delicate instrument however it may be constructed, the result of which is that many are deterred in the first instance from purchasing it, and when they do so are disappointed at the constant necessity of repair which a frequent use of the instrument inevitably entails. The point of the needle being partly tubular, as observed, is soon blunted, making its entrance into the skin correspondingly painful, or it breaks down altogether if unskilfully handled, or the tube gets loosened from the shoulder, or the screw or the piston gets out of gear, and the instrument has to be thrown aside; so that the patient has to go unrelieved unless there is another instrument ready in reserve. These are all very untoward events to those who are suffering pain—a time when patience is not usually at its meridian. There are besides several circumstances relative to the preparation of the solution to be injected and the manner of injection which when not carefully attended to entirely mar the desired result. Altogether the syringe has many practical deficiencies and imperfections, notwithstanding its elegance regarded merely as an instrument.

According to the method which I employ, a small portion of skin is pinched up between the finger and thumb (so as to include about half an inch), and a small thread, coated with the required quantity of morphia, passed through on the point of a needle. The two layers of skin are brought in contact, that is to say, there is no tissue pinched up between them; and, this being the case, there is no danger, when the cutaneous veins apparent on the surface are avoided, of puncturing any structure beneath, to whatever part of the body the application is made.

It is often of great importance in the hypodermic use of morphia that the application be made as near as possible to the seat of pain, and this, for reasons already stated, is not always possible with the syringe. I have introduced the suppository in the manner described in almost every situation: on the mamma, on the abdomen over the womb, on the sacrum over the rectum, on the side, arms, legs, &c., with the most gratifying results and without causing any inflammation of the skin. When it is not thought necessary to choose a particular spot, I would recommend the inside of the upper arm or thigh, as the skin in this situation is loosest.

Of course it is not pretended that the proceeding is entirely painless, but the pain is trivial, like the prick of a pin, when the needle is passed quickly, and the skin besides is in a manner anæsthetised by the slight pressure applied to it. The movement of the thread through the aperture is quite free from pain and should be done slowly, the end portion being left for three or four minutes before withdrawal, so as to ensure the absorption of the morphia. A few drops of warm water should be let fall on the suppository before passing it. They are made for the application of $\frac{1}{6}$ gr., $\frac{1}{4}$ gr., $\frac{1}{2}$ gr., and 1 gr. of morphia, although the $\frac{1}{4}$ gr. is the most that is generally required; the $\frac{1}{2}$ gr. and 1 gr. being necessary only for exceptional cases. The $\frac{1}{6}$ gr. should always be tried to begin with, except in cases where previous knowledge indicates the use of a larger quantity. This small quantity is often quite enough for the relief of severe pain.*

The advantages of this plan are that it is inexpensive, the elements employed being simple and durable; it is not painful, it is easily applied, and is not attended with any risk. It was indeed to extend the facility for the use of

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* The suppositories, with needles and directions for use, are sold in one dozen packets, by Messrs. Mackie & Co., Wholesale and Manufacturing Chemists, 1, Bouverie Street, E.C. As some misapprehension appears to exist as to the quantity of needles required, I may state that the same needle is good for almost any number of times.

subcutaneous morphia among the poor when necessary, that I directed my attention to the subject, and having simplified the process primarily to that end, I have the pleasure of thinking that I have also improved it. It is very certain that the hypodermic method is every way the best for protracted cases, as there is no danger of engendering a craving for the drug for its own sake, it acts more immediately than by any other channel, does not interfere with digestion, does not produce the distressing headaches, nor not less wretched languor, which a repeated course of the drug, internally administered, all but invariariably causes. For neuralgia in its various forms, sciatica, lumbago, rheumatism, the pains of cancer and phthisis, and other diseases, their allies, that stand at the head of the category of human woes, it is really and truly serviceable.

It will not be out of place here to add a word for the direct treatment of what "the philosophy of modern physic has styled a symptom," and which it is too frequently "not considered necessary to deal with in any but a secondary degree." Certain ideas of a metaphysical kind have invested "pain" sometimes with a holy function, or sometimes with a teleological or physiological function, to the prejudice of those who have had to suffer, and who thereby, perhaps, not in solitary instances, have been just reduced to the grave. Dr. Simpson was condemned for using chloroform for the relief of the pains of childbirth, as they were held to be a Divine appointment from the creation of the world onwards *per secula seculorum;* but Sir James had the good sense to adopt the advice given in the Book of Proverbs relative to the kind of answer meet for certain persons, and, by an ingenious play on two Hebrew words—one signifying pain in the sense of the obstetrician, the other in the sense of the patient—he succeeded in convincing his antagonists, and especially those who, like himself, understood Hebrew, that it was not impious to mitigate the suffering of the painful paroxysms of the woman in travail. Such is the weight of metapysical subtleties.

A high medical authority, in a most important position, at

one time forbade the relief of pain on the theory that it was a stimulant, and therefore useful in keeping alive the energies of the patient. Undoubtedly, in the first access pain is a stimulant—the strongest in existence,—and on certain rare occasions, such as poisoning by opium, may be inflicted, if there is any vitality to stimulate, for this purpose; but when it occurs spontaneously in the progress of disease, and in perhaps a worn out body, it is a stimulant that stimulates only to the grave.

In our opinion actual pain is a condition associated in no way whatever with any beneficent end, but, on the contrary, is to be removed on every occasion by the most suitable means, that is to say, the most directly competent consistent with the welfare of the patient. Every throb of pain is a petition for relief, to disregard which in the belief that it is otherwise, is to misinterpret the design of nature to our own serious disadvantage. The fallacy that misguides many into such an error, and leads them to regard pain as having often a salutary influence, arises from not perceiving the import of a capacity for pain and the actual pain itself that may result from it. It may be correct to say that no symptom is more favourable in certain diseases than that the patient is sensible of the pain, but nothing could be further from the mark than to suppose that the suffering itself is a good thing. The capacity to feel indicates vitality, but the painful feeling itself is directly fatal to life, The design of the sensibility is manifestly to put us on our guard against hurtful agencies; the more and the longer we suffer we are, *pro tanto*, the worse.

To wait for a return to perfect health as the proper egress from pain; to adopt a roundabout process of relieving it when it may be immediately and directly removed, is unwise and injurious. Locally or generally, the suffering man or the suffering organ is in a much more unfavourable condition for recovery than the man or organ, *ceteris paribus*, when the suffering has been alleviated. Intense pain, apart from the physical condition in which it arises, is a sufficient cause of

death. This has been forcibly pointed out by Professor Haughton in noting a historical fact:—"At an operation forty years ago you would have seen every man in the operating theatre with his watch in his hand. What was the reason of this? It was the deadly certainty that awaited them that if an operation lasted more than a few minutes *the patient would die of suffering*. The watch was taken out, the operation that lasted four minutes was often a fatal operation; if it could be done in that time the patient might recover. Now I have often seen an operation that lasted four hours and a half performed under the influence of anæsthetics."*

It is reasonable to suppose that an influence so lethal *in extremis* has its injurious effects, though more difficult to measure, when operating in a minor degree, and it is a matter of observation that the removal of local pain is directly conducive to the healing of wounds. The alleviation of pain, therefore, is always, without exception, an indispensable measure for the welfare of the patient. No course can be more justifiable, no rule more certain, and the choice of appropriate means depends upon the judgment, justice, and humanity of the counsellor.

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* On Science Education. Lecture delivered at the Liverpool School of Science, 1872.

By the same Author.

THE INDUCTION OF SLEEP

AND INSENSIBILITY TO PAIN,

By the Self-Administration of Anæsthetics.

"Dr. Crombie's Chloroform Apparatus (*Manufactured by S. Maw, Son & Thompson*).—This instrument, of which we append a woodcut, is a very ingenious and useful invention. The object of the inventor has been to make it possible for persons suffering from intense pain or insomnia to avail themselves of the benefits of those smaller doses ("stimulant" doses, we should call them) of chloroform, which will produce sleep without producing coma. It is notorious that an immense number of sick persons are in the habit of using chloroform with this intention, but that they usually take it by means of a simple handkerchief or lint, which, at any rate for self-administration, is a most dangerous method, and is already known to have caused several deaths, and suspected to have caused many others. In Dr. Crombie's instrument there is no danger of any untoward accident. The patient, lying comfortably on a sofa, or in bed, places the vessel containing the chloroform (the cap well screwed on) beside him, and puts the conical face-piece over his nose and mouth. He then proceeds to work the hand-ball with regular rhythm: this projects an exceedingly small quantity of chloroform, at each jet, on the blotting-paper in the case. Very soon a feeling of drowsiness comes over the patient, which renders it impossible for him to keep up the pumping movement, and he quickly drops off to sleep without the possibility of giving himself an overdose. We understand that this inhaler has been largely used for cancer patients, and other sufferers from painful incurable diseases, with great benefit.

It certainly affords the only means we know of by which chloroform can safely be administered to themselves by patients."—From *The Practitioner*, April, 1873.

"Dr. Crombie's Apparatus appears to be a good one, and to offer increased facilities for the safe application of slight anæsthesia for the relief of pain. We have employed it in suitable cases and it has acted well."—*British Medical Journal*, June 14, 1873.

"Chloroform has indeed, but more clumsily and less safely, been adopted by practitioners since its introduction for this purpose; but it has always most properly been placed in patients' hands with dread and misgiving, and the results have been in several cases disastrous; and no doubt the full therapeutic value of many anæsthetics for the relief of pain has not been taken advantage of for this reason. Dr. Crombie's clever mechanical contrivance recommends itself for fair trial under the surveillance of the medical practitioner."—*The London Medical Record*, May 28, 1873.

Spiral-Elastic Head Compress for the Relief of Headache.

(To the Editor of *The Lancet*.)

SIR,

The relief obtained from pressure in certain forms of headache is a well-known matter of fact in domestic as well as professional circles, the handkerchief bound round the temples having historical fame as a comforter for the aching head. Mr. Hooper, at my suggestion, has constructed a head-bandage of his excellent spiral-elastic fabric, which is worn with much more benefit and comfort than the handkerchief. From the nature of the material, as in the stocking and abdominal bandage, the pressure is equally distributed round the head, remains always of the same tension, and is not displaced by any movement of the head. Those who suffer from headache induced by afflux of blood, as from fits of coughing or other causes, producing congestion of the temporal vessels, will derive great benefit from the support and pressure thus supplied; indeed, the painful sense of bursting and fulness which more or less accompanies headache of every kind can be thereby greatly diminished.

Yours faithfully,
JOHN M. CROMBIE, M.A., M.D.

BROMPTON, *July 8th*, 1873.

DIRECTIONS FOR MEASUREMENT.

State the size of the head in a line with the middle of the forehead, measuring over the hair in its natural position.

DR. CROMBIE'S ABSORBENT PAPER,

AS PREPARED BY

MESSRS. BURGOYNE, BURBIDGE & Co.

THE special advantages of this preparation as a dressing for suppurating wounds and ulcers of all kinds are the following :—

1st. It sucks up from the discharging surface the thin acrid secretion which, by destroying the surrounding tissues, is the active agent in enlarging the wound when it is allowed to remain for any time in contact with the parts. Ordinary lint is a very imperfect absorbent, and hence keeps the discharge in contact with the surface instead of removing it.

2nd. It is a very clean and inexpensive dressing.

3rd. It can be employed in any degree of tenuity, and consequently is much lighter on the surface of sensitive sores than lint of any description.

4th. It can always be removed from the wound without breaking-down granulations, or causing bleeding or pain, because it has little tendency to adhere, and when adhesion does take place, it is easily overcome by simply soaking the paper with a little water.

The paper requires to be slightly wetted in water before application.

THE MEDICATED ABSORBENT PAPER.

The above, medicated in a solution of carbolic acid and chlorate of potash, constituting a valuable disinfectant for specific and contagious ulcers, syphilitic, lupoid, and cancerous; the modus operandi being the removal from the surface of the various discharges and their disinfection in the substance of the absorbent.

REMARKS ON MIDWIFERY.

AN INTRODUCTORY ADDRESS.

BY

CHARLES M. CROMBIE, M.B., M.C.

ABERDEEN: JOHN ADAM.

In the Press.

BY THE SAME AUTHOR.

THE CAUSE OF THE COMMENCEMENT OF LABOUR,

AND ITS APPLICATION IN PRACTICE.