

On the preparation and medicinal employment of aconitine, by the endermic method, in the treatment of tic douloureux and other painful affections / by Alexander Turnbull.

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ON THE PREPARATION
AND
MEDICINAL EMPLOYMENT
OF
ACONITINE.

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ON THE PREPARATION
AND
MEDICINAL EMPLOYMENT
OF
ACONITINE,

BY THE ENDERMIC METHOD,

IN THE TREATMENT OF TIC DOULOUREUX AND
OTHER PAINFUL AFFECTIONS,

BY
ALEXANDER TURNBULL, M.D.

LONDON:

LONGMAN, REES, ORME, BROWN, GREEN, AND LONGMAN ;
ADAM BLACK, EDINBURGH.

1834.



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PREFACE.

THE object of the following pages is to bring before the notice of the Medical Profession a few facts relating to the History, Preparation, and Medicinal Employment of Aconitine, the active principle of the Aconites. Nearly a year ago, the investigation of this subject was entered upon, with that of two other bodies, Veratria and Delphinia, with a view to determine whether the action of the Aconitine in certain diseases was similar to that of these Alcaloids: for some time the most active preparations of Aconite that could be obtained were employed, but until the month of August last, it was found impossible to procure the active principle itself. At that period,

however, it is believed that the Aconitine was prepared for the first time in England, and its use was immediately resorted to in order to put the mode of action which theory had previously attributed to it to the test of experience. Some difficulty has arisen in obtaining a continued supply for use, and this circumstance has prevented a few of the cases in which it has been employed from being entirely satisfactory; in so far, however, as conclusions can be drawn from these, the Aconitine has fulfilled the anticipations that had been formed of its utility.

It was intended to have deferred giving any opinion upon the subject, or any account of the substance itself, until further opportunities for observing its action had occurred; but the curious properties possessed by the Alcaloid have of late become the topic of conversation amongst several Members of the Profession, and in the course of last week it was

hinted, that unless some communication were speedily made to the Profession regarding these, a notice would, in all probability, soon appear from another quarter, as its effects had been put to the test in one or two of the hospitals. In consequence of this, a hurried statement was drawn up, and sent to one of the weekly Journals; it was, however, not inserted, and in the 150th Number of the London Medical and Surgical Journal, published December 13th ult., were contained notices of five cases, in which the Aconitine ointment had been successfully employed by one of the physicians of St. Thomas's Hospital; two of these occurred in the wards of the establishment, and one of them is given in a detailed form.

The Report I have had reprinted at the conclusion of this Publication; it is a gratifying one, in so far as it gives evidence of the efficacy of the plan of

treatment now about to be described, but it cannot be denied that throughout the Report, any merit that may be attached to the discovery of the plan, is attributed to the gentleman under whose care the patients were placed. This mistake has without doubt arisen from the reporter, as he himself confesses, having been ignorant of the fact of the Aconitine having been employed externally by any one else, and that such has been the true cause of it will at once be seen by referring to the remarks made on the case itself.

It is this Report which has rendered it necessary to send forth the present publication. Although it may not contain all the information that might have been desired, it is hoped that it may not be entirely without interest. Three cases in which the Aconitine has been employed externally, have been given by way of illustration, and there are two reports, one from my friend Mr. Lyon, and the other is the one above alluded to.

It would have been desirable that a longer time had been allowed to elapse from the relief of the patients before the publication of these cases, but for the reason already assigned, their imperfection in this particular must be overlooked, and they must be considered simply as illustrations of the action of the medicine.

Russell Square, Dec. 15, 1834.

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ON THE
PREPARATION
AND
MEDICINAL EMPLOYMENT
OF
ACONITINE,
BY THE
ENDERMIC METHOD.

IN a work which I lately published on the medicinal employment of Veratria and Delphinia by the Endermic Method, it is stated that, in conjunction with Dr. Sutherland, I had entered upon a course of investigation with a view to determine whether other substances were not possessed of properties analogous to those exercised by Veratria on the animal economy ; and that we had been led by the botanical relations and resemblance in medicinal action of a number of plants, to the conclusion that a class of active principles would be discovered in which such properties would be found to exist.

On account of many considerations, which it is unnecessary at present to mention, it appeared that the family of plants most likely to yield these substances, was the *Ranunculaceæ*, and accordingly our attention has been directed almost exclusively to it: but in many of the individuals comprehended under it, the principles upon which their activity depends, are either so volatile or so easily destructible, that it is a matter of extreme difficulty, if it be not an impossibility, to obtain them in a state fit for being made the subjects of investigation. Almost all the plants of this order are acrid and caustic, and many of them are so energetic in their operation as to be really poisonous; but what is not a little singular, the active properties in many—for instance, in nearly the whole tribe of *Ranunculuses*—are destroyed by drying, boiling, or even by simple infusion in water; whilst they are augmented by acids, honey, sugar, wine, alcohol, &c.* In others, however, there is strong reason to believe, that the active principles may be separated in a

* De Candolle — Essai sur les Propriétés Médicales des Plantes.

solid form, but hitherto chemistry has only furnished us with two of these; both of which, however, have fully borne out the anticipations that had been formed of their peculiar effects, and of their utility in the treatment of disease.

One of them, the Delphinia,—the active principle of the *Delphinium Staphisagria*, I have used for some time past; and its utility as a medicinal agent has been already stated in the work above alluded to: the other, the Aconitine, is hinted at in the same place, but only generally, as at the time there were considerable doubts entertained regarding the discovery of the substance. It is nearly a year ago since we first endeavoured to obtain it for use, upon the presumption of its possessing the action about to be described; but although repeated attempts have been made for the purpose, it is only a few months ago since we succeeded. It is to the Aconitine that I now wish to direct the attention of the profession; but before doing so, it may not be out of place to give a short outline of the facts at present known with regard to the plant or

plants which yield it, and the preparations of those at present in use.

The genus *Aconitum* has been divided by De Candolle into four sections,—*Anthora*, *Lycoctonum*, *Cammarmum*, and *Napellus*. Several species have been introduced into medicine in different countries, and at various periods. An unknown species appears to have been used by Avicenna, the celebrated Arabian physician, in the treatment of skin diseases; but since his time, down to a comparatively recent period, no further notice seems to have been taken of it. The person who may be said to have introduced Aconite into practice, was Dr. Störk, and he recommended its employment in the form of inspissated juice, prepared from the fresh plant, in the treatment of Gout, Chronic Rheumatism, Amaurosis, Syphilis, &c.*

Considerable difference of opinion has prevailed as to the precise species made use of by Störk. He himself names two:—the *Aconitum Napellus* and *A. Neomontanum*. The

* Störk, Spicilegium Observationum de Aconito, 1788.

latter of these is the one determined by Willdenow; but De Candolle is of opinion that it is a variety of *A. Paniculatum*, to which he has given the name *Störkianum*, to distinguish it as the species employed by Störk. Besides these, however, the *A. Cammarum* and *A. Anthora* have found a place in several Continental Pharmacopœias.

Each of our Colleges has given a formula for the preparation of an inspissated juice from the fresh leaves of the monkshood; but in addition to this, the powder of the leaves, the wine, and an alcoholic and two ethereal tinctures, are made use of on the Continent; all of these are employed internally, but are very inconstant in their operation, as might easily have been anticipated from their manner of preparation; and this circumstance I shall presently notice. Very recently, M. Lombard, of Geneva, has recommended the use of an alcoholic extract of Aconite in the treatment of acute rheumatism, and has given a process for obtaining it. This, though a much less objectionable one than any of those above-mentioned, gives a product that is still

inconstant in its effects ; for he states that he has given with success from half a grain three times a-day, to a dram and a half in the twenty-four hours.* It appears to me that there are several causes why the preparations of Aconite at present in use are liable to inconstancy ; they are all prepared either from the fresh plant or from the expressed juice : in the first instance they must vary in power, according to the state of the plant, and the time when it is gathered ; and the extracts made by evaporating the expressed juice must also vary, as in the very act of expression, a change in the activity of the product appears to take place, and a still further alteration must ensue during the process of évaporation. I have myself tried several different extracts made in this way, and have found them almost inert. The process employed by M. Lombard consists in carefully evaporating the expressed juice of the plant, and treating the extract with alcohol ; then filtering and evaporating the tincture with a very gentle heat. In this way, the active matter contained in the inspissated juice may be pro-

* Gazette Médicale, Juin, 1834.

cured in a more concentrated form, but still the process is liable to some of the objections already stated.

Another objection to these preparations is, that they are all obtained from the least active part of the plant, for the root certainly contains a much greater proportion of the peculiar properties of the Aconite than any other part, and is consequently that which should be used. From these considerations, and from the difficulty of procuring the active principle, I was led to employ a tincture and alcoholic extract, prepared from the powder of the root carefully dried. The tincture is made by digesting one part by weight of the powder of the dried root in six parts by measure of strong alcohol, for seven days, and filtering through paper; and the dose for an adult ought not to be more than eight or ten drops three times a-day to commence with, but it may be augmented to twenty; beyond which, however, few patients will bear it to be carried. With regard to the extract, I have never exhibited it internally, but have employed it with great benefit in the manner I shall immediately mention.

When Aconite is administered internally, in any form, and in a small dose, it acts as a diuretic and diaphoretic, and accelerates the pulse: if it be pushed still further, it begins to affect the nervous system, and occasions headache, nausea, weakness of the joints and muscles, slight confusion of intellect, and a remarkable sensation of tingling in various parts of the body, particularly the head, face, and extremities. This latter circumstance was remarked by Dr. Duncan, jun., as always accompanying the relief afforded by the internal exhibition of extract of Aconite in cases of Sciatica.* If the dose be still augmented, aberration of mind, dimness of vision, and convulsive movements, come on. A few cases are on record, where such symptoms have shewn themselves when the Aconite had been swallowed accidentally; and they have, in some of these, been followed by fainting, vomiting, stupor, and death.

The diseases in which Aconite has been administered, are chiefly those already enumerated; and in addition I may mention,

* Edin. New Dispensatory, 1830.

that I have found much benefit from its employment in *tic douloureux*, and other painful nervous affections ; but from all I have seen of its internal use, it does not appear to me that the benefit to be derived from this method of exhibition, is at all to be compared with that which I have observed to arise from its administration by the Endermic Method, either as regards the amount of effect produced, or the perfect safety with which, in this latter mode, it may be used.

PROCESSES FOR PREPARING ACONITINE.

There are three forms in which I have employed the Aconite externally, namely, the active principle Aconitine ; impure Aconitine, as contained in the ammoniated extract ; and thirdly, in the form of tincture, or solution of the active principle in alcohol ; and of these I now propose to give a short account.

M. Peschier, of Geneva, appears to have been the first experimenter who detected the

presence of Aconitine, during a chemical examination of the *Aconitum Napellus* and *A. Paniculatum*: he describes it as a peculiar alkaline substance, capable of forming crystallizable salts with acids.* It appears again to have been detected by M. Brandes, in the *A. Neomontanum*; but no particulars regarding it are mentioned. In 1825, M. Pallas described the Aconitine as an alkaline substance, which he had obtained in scales of a yellowish colour.†

In the year 1832, M. Geiger, from the result of his physiological experiments with different Aconites, came to the conclusion, that the acrid Aconites contained a narcotic substance different from their acrid principle; and this opinion led M. Hesse to analyse the *Aconitum Napellus*; and from this he obtained a peculiar body, to which he has given the name Aconitina. The process for obtaining it consists in precipitating a decoction of the dried leaves by hydrated magnesia, washing the precipitate with water, drying it,

* Trommsdorff Neues Journal der Pharmacie, vol. 84.

† Journal de Chimie Médicale, tom. 1—193.

and then treating it with boiling alcohol, which dissolves the Aconitine and deposits it on cooling.*

It is described as being incrySTALLIZABLE, white and granular, or in a colourless mass, transparent, and having the lustre of glass. It is alkaline, inodorous, and has a bitter acrid taste. This acridity, however, does not belong to the Aconitine, but disappears if the base be several times combined with acids, and the salt formed decomposed. When deprived of this acrid principle, it is poisonous in the highest degree, a twelfth part of a grain being sufficient to destroy a little bird with the rapidity of lightning. Aconitine is very fusible: it is little soluble in water, but very much so in alcohol and ether. Its solutions are alkaline, and it neutralizes acids; but its salts are not capable of being crystallized. Such is the account of the substance obtained by M. M. Geiger and Hesse; but the elementary analysis has not yet been made.

* Journal de Chimie Médicale, Août, 1834.

We have made several attempts to obtain Aconitine from the Parisian chemists, for the purpose of employing it in medicine, but have never hitherto succeeded. It is now, however, prepared in town, and may be had in sufficient quantity for present use, by those practitioners who may wish to make trial of its properties.* We have contrived several processes for obtaining it, two of which shall now be given: the first is the easier to manipulate, but the second yields a much purer result.

A quantity of the fresh root of the *Aconitum Napellus* must be procured, and care should be taken that it be sound, and that the root be that of monkshood; for sometimes other roots are sold for it. Let it be carefully and cautiously dried, and then reduced to powder; this latter operation is not unattended by danger, especially if a part of the fine dust which rises from it be inhaled. One part by weight of the powder, and two parts by measure of strong alcohol, are to be digested

* Aconitine is at present prepared by Mr. Morson, chemist, Southampton Row.

together in a gentle heat for seven days, and the tincture, while warm, is to be filtered. It is then to be reduced to the consistence of an extract, by careful evaporation, at a low and well-regulated temperature ; the object of this, is to prevent the destruction or expulsion of the active principle, which would very probably ensue, if the temperature employed were higher than barely sufficient to carry off the alcohol. To the extract thus prepared, liquid ammonia is to be added, drop by drop, and mixed well with it, to precipitate the alcaloid ; and in this part of the process, care must be taken that too much be not added, as in some instances the product appears to have been decomposed by inattention to this circumstance. It is difficult to give a precise rule as to the quantity ; but enough will have been added, if the extract give out the odour of ammonia, when stirred.

The mass now consists of impure Aconitine, mixed up with a quantity of extractive and other matters, soluble in water ; and it may be taken up either with boiling

alcohol, or sulphuric ether; or the soluble matter may be removed, by repeated washings with small quantities of cold water, which will leave the Aconitine. This latter process, is the one we have generally employed, and is performed by pouring a little water on the extract, and mixing them carefully together, then allowing the undissolved part to subside, pouring off the fluid, and repeating the operation, as long as any soluble matter is taken up, a quantity of light brown or gray powder is left, which may be purified by subsequent solution in alcohol. This powder contains the active properties of the Aconite, in a high degree of concentration. A grain of it was dissolved in a dram of alcohol; and twenty drops of the solution put into the mouth of a guinea-pig, occasioned death in a few minutes. Other experiments have been performed; all of which prove the extreme energy of the substance.

The second process consists in dissolving the alcoholic extract, prepared as before, without the addition of the ammonia, in as much cold water as will take it up, and

carefully decanting the solution from the insoluble part, and then filtering it. To the filtered solution, liquid ammonia is to be added, drop by drop, as long as it occasions any precipitation. When the precipitate has subsided, the supernatant fluid should be carefully poured away, or drawn off by means of a syphon; and after the precipitate has been deprived of as much of the fluid as possible, it should be purified by a sufficient number of washings with small quantities of cold water, and then carefully dried. The product obtained by this process is white.

EXTERNAL APPLICATION OF ACONITINE.

Before stating the medical properties of the Aconitine, something ought to have been said of its chemical history; but as it is only a short time since the alcaloid has been obtained, this is necessarily too imperfect for publication; it may perhaps be done at some future time, if the subject be not taken up by abler hands. I less regret, however, the

absence of these details, as my object has been not so much to follow out the chemical considerations as the utility of the substance in the removal of disease.

I have elsewhere stated, that if a grain or two of Veratria or Delphinia be mixed up with a little lard, or dissolved in a dram of alcohol, and a small quantity be rubbed upon the skin of the forehead or other tender part, a sensation of heat and tingling will be experienced, after the friction has been continued for a minute or two. If the same procedure be followed with the Aconitine, a similar result will be obtained. The sensations produced by the three substances differ, however, in a few particulars. When Veratria is employed, it produces a strong sensation of tingling, or rather a sharp feeling, similar to that produced by receiving a succession of electric sparks on an uncovered part of the body ; whilst the Delphinia gives rise to a sensation of burning, not unlike that which manifests itself a short time after the application of a blister, but not to an unpleasant degree.

The Aconitine is possessed of an action similar, in some respects at least, to that of Delphinia. When a small quantity of it, either made into an ointment, or dissolved in alcohol, is rubbed for a minute or two upon the skin, a sensation of heat and prickling is experienced; to this, succeeds a feeling of numbness and constriction in the part, as if a heavy weight were laid upon it, or as if the skin were drawn together, by the powerful and involuntary contraction of the muscles beneath. This effect lasts from two or three, to twelve, or more hours, according to the quantity rubbed in. So small a portion as the one-hundredth part of a grain, has produced a sensation that has continued a whole day; but the alcaloid, in this instance, was in a high degree of purity.

The action of the Aconitine upon the cutaneous vessels, appears to be less than that of either Veratria or Delphinia; for in no case hitherto observed, has it produced a greater degree of vascular excitement than might easily be accounted for by the friction itself; and in one instance where the Veratria

ointment did occasion irritation, the Aconitine has been employed without giving rise to any.

The diseases in which I have chiefly employed the Aconitine externally, are Tic Dououreux and Neuralgic affections generally, and in gouty and rheumatic cases ; and its success has fully answered the anticipations that had been formed of its utility. I have employed it in the form of solution in alcohol, in the proportion of one or more grains to the dram, and in ointment, made according to the following prescription :—

R. Aconitinæ, gr. ii.
 Alcohol, gtt. vi. tere optime
et adde, Axung, 3 i. ut fiat unguent.

The object of adding the alcohol, is to prevent the Aconitine from forming a thick compound with part of the lard, which renders it difficult to make a proper ointment.

The proportion of the alcaloid in this prescription will, in general, be sufficient to

begin with, but it may be augmented to four or five grains to the dram, if necessary ; and in one case of *Tic Douloureux* of unusual severity, I prescribed as much as eight grains to the dram, with the most marked benefit. The best manner of applying the ointment, is simply to rub a small part of it over the whole seat of the affection, till the pain be either for the time removed, or until the full effect upon the cutaneous nerves above described be brought about ; and the friction should be repeated three or four times, or more frequently in the day, according to the effect produced upon the disease. The proportion of the Aconitine ought to be increased at every second or third friction ; and the same rule elsewhere laid down, in regard to the action of *Veratria* and *Delphinia*, also holds good in the present instance,—namely, that unless the friction occasion a full development of the peculiar impressions caused by the Aconitine when rubbed on the skin, no benefit whatever is to be looked for from its employment. It is almost needless to remark, that an application of such activity should not be resorted to, if there be the slightest abrasion

of the surface of the skin, and that it should be carefully kept from coming in contact with any of the mucous membranes.

EXTERNAL APPLICATION OF THE AMMONIATED
EXTRACT OF ACONITE, &c.

The next preparation that requires notice, is the Ammoniated extract of Aconite ; this is probably the best appellation for the substance, although it be in reality a mixture of all the active principles, along with extractive and other matters. It is made by evaporating very carefully, and at a low temperature, the tincture of the dried root of the plant, prepared as already directed in the process for obtaining the Aconitine, to the consistence of an extract. To every dram of this, eight or ten drops of liquor ammoniæ should be added ; and after the mixture has stood a short time in a very gentle heat, to drive off the excess of ammonia, it is to be used in the form of ointment, according to the following prescription.

R. Extract, Aconit. Ammon. 3 i.
Axung. 3 iii. M. ut fiat unguent.

This, from its dark colour, may be a less agreeable application than the Aconitine ointment; but it appears to me, to be at least as efficacious, and it has the advantage of being easily and cheaply prepared: and on these accounts, it is better suited for hospital practice. The proportion of the extract may be increased two or three fold according to circumstances.

When this ointment is rubbed upon the skin, it occasions sensations in the part, similar to those which are produced by the Aconitine ointment; they are, however, rather more pungent in their character; and this probably arises from the extract containing, what is called the acrid principle of the plant, as well as the alcaloid itself; and it is absolutely necessary that with this preparation also, these sensations should be induced, in order to its having a full effect on the disease for which it is applied.

In less severe cases, the simple saturated tincture of the dried root, with or without the addition of a little ammonia may be used; it has similar properties, but in a much

smaller degree of development, with the two preparations above mentioned, and the same instructions as to its use, ought to be attended to.

Connected with the use of these preparations is that of the extracts and tinctures of the *Veratrum Album*, *V. Sabadilla*, and *Delphinium Staphisagria*. These I have had made according to the formulæ already given, and have used several of them in different affections; but they appear to have a tendency in some instances, to produce eruptions in the parts where they are rubbed, along with the tingling sensations peculiar to the plants, from which they are prepared. The tinctures of *Delphinium Staphisagria* and *Veratrum Sabadilla*, are made from the seeds, and that of the *Veratrum Album*, from the dried root. In all cases, therefore, where a certain degree of irritation of the skin would be of service, along with the specific effects of the applications, they may be resorted to; and with these intentions I have employed them in paralytic cases, and in old standing rheumatic affections of the joints with some advantage.

CASES

IN WHICH THE ACONITINE OINTMENT HAS BEEN
EMPLOYED.

I ought here to have introduced a few examples, in which the Aconitine ointment has been employed ; but from the circumstances mentioned in the introduction, they must necessarily be little more than mere illustrative notices.

It is not an uncommon thing for some persons to object to cases which have not the names and residences of the patients affixed to them. In this instance, however, I shall suppress both, as the publication of either might be objected to by the parties. I intend simply to give the cases on my own authority ; and shall be ready to afford any information, in my power, on this subject, as well as in regard to the use of the Aconitine, to those professional gentlemen who may apply to me, personally, concerning it.

The first case in which the Aconitine was employed externally, occurred in the month

of August last : it was that of a personal friend who had suffered severely from Tic Douloureux, seated in the portio dura ; and the first few grains of the alcaloid that were obtained were tried for his relief. One grain was mixed up with a dram of lard, and a portion of the ointment was rubbed over the seat of the pain, during a paroxysm. In about five minutes it was completely subdued, and for a whole week afterwards it never recurred ; he rubbed with the ointment during the intervals and when the attack again came on it was impossible to obtain a fresh supply of the alcaloid, and the patient was obliged to make use of the tincture of Aconite. This application succeeded for some time in giving relief ; but the pain recurred from time to time, and it was found impossible to procure any more Aconitine ointment until about two months ago, when he got some for use, but was obliged to go to a distance from town immediately, and I have not heard of him since.

The disease in this case originally occupied the three branches of the fifth pair, as well as the portio dura, and in its previous treatment,

frictions with the ointments of Veratria and Delphinia, had been used. After considerable perseverance they had succeeded in removing the pain from the whole side of the face, except in one point immediately anterior to the ear, from which, however, both applications failed in removing it, and the Aconitine ointment was the first preparation that had any effect upon it. Neither of them was again applied, after we had failed in procuring a fresh supply of Aconitine; but subsequent experience has proved that they invariably, when used after it, augment the sufferings of the patients to an extreme degree, and I would therefore give this as a caution to those practitioners who may employ the medicine.

About the same time that the above case was treated, several others came under my care. In some of these it cannot be said that the Aconitine had a fair trial, as I was compelled to relinquish its use from the difficulty that occurred in obtaining it. This circumstance I have thought it necessary to mention, to show that I not only used all that could be prepared, but could have employed much more.

The next case I shall mention, is that of a young lady, who applied to me on the 14th of last month, on account of a painful neuralgic affection of the left ankle. Two years and a half ago she received a slight injury immediately above the internal malleolus. To this succeeded tenderness in the part, which went on increasing until she was unable to use the joint without considerable pain. She was treated by active local antiphlogistic means. The ankle was leeches and blistered repeatedly, and this plan was followed out at intervals, without any marked benefit, until last January, when it was discontinued, and another substituted in its stead. The plan of treatment alluded to, was the one since recommended by Mr. Scott, and consisted in the continued application of mercurial ointment and tartrate of antimony to the affected part: it was kept up for about six months, at which time she went to sea-bathing quarters from the debilitated state of her health. She was then obliged to support herself in walking, by means of crutches; and, by the advice of the medical gentleman who was called in, the treatment was given up, and the original

antiphlogistic means, along with soothing applications, were substituted. These, along with the change of climate, succeeded in recruiting her health, so as to enable her to walk without support, but still with considerable pain.

In this condition she came under my care at the above-mentioned date. I found the ankle joint, to all appearance, perfectly sound; the patient seemed in excellent health and without any constitutional taint, and, indeed, her only complaint was the occurrence of pain upon any attempts at motion in the affected joint. As this appeared simply a case of neuralgia, the patient was ordered to rub over the seat of the affection the following ointment:—

R. Aconitinæ, gr. ij.
 Alcohol, gtt. vj. tere optime.
Et adde Axung, 3 i. M. ut fiat unguent.

The friction was directed to be continued twice a day, for fifteen minutes each time, and oftener if the pain returned.

17th. After the friction was applied on the first day, the pain disappeared, and she could

walk without inconvenience ; the application was ordered to be continued as before. She has ever since been able to take exercise on foot, freely ; and to-day (the 15th December) is perfectly well, and has been so from the first application of the ointment.

The following is the only other case which I shall mention at present. It is an instructive one, as illustrating the effects of the different preparations of Aconite.

18th November, 1834.—Major M. about sixty years of age, has suffered from Tic Douloureux for five years. He states, that seven years ago, whilst breaking a piece of hard biscuit, he fractured the canine tooth on the left side : from this accident no immediate bad consequence resulted ; but about five years ago he felt slight twinges of pain in the situation of the infra orbitary foramen of the same side ; these continued, though not in severity, until one night, when he was awakened out of sleep by a violent stabbing sensation in the part. The pain now became almost insupportable, and recurred, night and

day, every few minutes, so that the patient was reduced to a state of much suffering.

The first remedy that was tried was the extraction of the old stump, which was supposed to be the cause of the mischief, and it, along with five or six decayed teeth in its vicinity, was removed at once, but without affording the slightest relief. He next tried the effects of sedative remedies, such as opium, hemlock, belladonna, both internally and in the form of plasters over the seat of the pain, which had now extended itself over the side of the nose and forehead of the same side; still no relief was experienced, and the same want of success attended the use of the Extract of Stramonium. Various lotions were likewise applied, one of which produced vesication; but these also failed in effecting a beneficial change.

Under the idea that the disease was of a remitting nature, the patient was next treated by preparations of bark; carbonate of iron was used in very large doses; but neither diminished the patient's sufferings. He was next salivated; but this treatment rather

aggravated the disease ; and about two years ago he gave up all medicine, and trusted to the effects of time, and attention to his general health. The pain was somewhat mitigated by the regimen adopted, until he received a violent blow on the back part of the head, from a fall ; but since then his sufferings have been very acute. He now complains of violent shooting pains in the course of the infra orbital and supra orbital nerves, which continue almost without intermission night and day, and which are augmented to a great degree by attempts at mastication, and by shaving the upper lip. He was ordered to rub over the whole seat of the disease the following ointment, and to continue the friction for ten minutes, or until the pain had disappeared.

R. Aconitinæ, gr. iv.
 Alcohol, q. s. ad solv.
 Axung, ʒ iv. M. ft. unguent.

This prescription was made use of about 3 o'clock, p. m., and I saw him again about 7. I found he had taken his dinner without experiencing the least uneasiness, a thing he

had not done for years, and that he had had no pain since the friction was made. The operation had occasioned a sensation of heat and drawing over the affected part; and to prevent a return, I ordered a small quantity to be rubbed inside the mouth, over the gum of the upper jaw of the affected side, and to be washed off immediately, which was done.

19th. Has rubbed the ointment last night and this morning, but has no threatening, as yet, of a return. Was ordered to continue the frictions twice a-day, or oftener, if the pain came on. This relief continued altogether above five days, during which time the patient walked about, and exposed himself to the air without experiencing any uneasiness.

26th. Yesterday he was ordered to make use of an ointment containing two grains of Aconitine to a dram of lard, and to rub it inside and out, as before. The alcaloid made use of in this prescription did not produce the usual sensations of prickling and numbness, but occasioned at first some degree

of uneasiness in the seat of the old stump. This gradually increased, till it amounted to pain, and to-day he is suffering severely. On account of the apparent inactivity of the ointment, he was ordered to take five drops of the Tincture of Aconite, internally, every three hours.

29th. The tincture has been used as directed, and has produced its full effects upon the patient. He feels weak and confused, and experiences a sensation of tingling in the head and extremities, but the pain is not at all abated. It was now determined upon to allow the effects of the previous treatment to subside by a few days' rest, previous to making use of such a preparation as would make a decided impression upon the disease.

Dec. 2nd. Since the last report the pain has continued unabated, and he appeared, when visited, to be in a state of considerable suffering. The following ointment was immediately rubbed over the seat of the pain, which now occupied the whole side of the face.

R.	Extract. Aconit. Ammoniat.	5 i.
	Adipis	5 ij.
	M. ft. ung.	

In about ten minutes after the commencement of the friction, the pain was gone, and the patient began to experience a slight degree of tingling where the ointment had been rubbed. The friction, however, was persevered in for half an hour, and during the continuance of it, a most acute pain came on in the eyebrow of the affected side. It was of such intensity that the patient declared all his previous sufferings inferior to it. It, however, lasted only two or three seconds, and since that occurrence he has had no return of the complaint, except a very slight feeling of uneasiness, which shewed itself in the gum. The object of continuing the friction so long as half an hour, was to induce the sensation of tingling to as great an extent as the patient could bear it; and the application was ordered to be repeated in the same manner whenever this subsided, the object being to keep up a continued impression upon the nerves of the part. He has made use of the above prescription with the exception of the proportion of the extract, having been increased from time to time to keep up the tingling. A day or two ago he was ordered an ointment containing

8 grains of white Aconitine to a dram of lard, which he was directed to apply two or three times a day, and he left town this morning (Dec. 15th) perfectly well.

Besides these cases, I have employed the Aconitine in many others with various degrees of success ; but from the circumstances under which this publication has been called forth, it will be impossible for me to insert a greater number. This is, however, less to be regretted, as I can with confidence refer to the report furnished me by my friend Mr. Lyon, and also to those cases which have occurred in Dr. Roots' practice, and these I shall now give.

MR. LYON'S CASES.

*"25, Montague Street, Russell Square,
December 15, 1834.*

"DEAR SIR,

"In reply to your communication, I beg to forward you a short notice of the cases you referred to. The first of these I do not consider a fair one, on account of the complicated disease under which the patient laboured, but

it will still, I hope, be sufficient, along with the others, to shew the utility of the plan you recommended, and to prove its efficacy in the treatment of a very painful class of affections. On the third of October last, I was called to a lady aged sixty-three, who was labouring under Tic Douloureux of the face. I found in addition to this, that she had been affected for the last twelve months with pulmonary disease, having cough and expectoration of a mucopurulent matter, sometimes amounting to a gill a day.

“The disease in the lungs was evidently most extensive in its nature. It was not on this account that I was consulted, but for the affection of the face. With this she had been troubled for four years, and for the last two she had been confined to her bed from the severity of the pain. She complains of pain in the left half of the tongue, in the gums, and inside of the cheek of the same side, and in the whole of the left side of the face, particularly about the chin, where the inferior maxillary nerve issues; sometimes it extends as far as the left ear and eyebrow.

The pain is so violent as to cause her to shed tears, and at times to shout so loudly as to be heard in the street. It comes on in paroxysms, and occasionally she has them every five minutes. There is a great flow of saliva. She has had four teeth extracted, and has taken a good deal of medicine without deriving any benefit. The bowels are irregular in their action, but the appetite is tolerably good. I saw her in some of the paroxysms, and it was a truly pitiable sight to see her suffering so intensely as she evidently did. For the last two years she had not had a respite from pain for more than two or three hours at a time.

“I consulted you about this case, and although you agreed in considering it of an unpromising nature, you prescribed frictions with the Tincture of Aconite over the seat of the pain, as the Aconitine could not at the time be obtained in sufficient quantity for continued use.

“I accordingly commenced with applying a saturated Tincture of Aconite (which had been prepared by digesting the dried root of the *Aco-*

nitum Napellus in an equal weight of rectified spirit of wine) to the tongue, gums, and inside of the cheek, and also to the whole of the left side of the face. The friction produced a tingling sensation in all the parts where it had been applied, with decided remission of the pain, and she was ordered to repeat the friction whenever the pain returned, until the tingling was induced, and to take five drops of the tincture of the same strength in water every three hours.

“4th. Has taken fifteen drops of the tincture. Had a very good night, and is nearly free from pain. Continue the internal and external treatment.

“5th. Has taken twenty drops. Passed a good night, having slept six hours. Complains of pain in the tongue. Continue the same treatment.

“6th. Passed a bad night from pain in the tongue and gums, but has no pain in the cheek. Has had tingling in the fingers and feet. Continue the internal and external treatment.

“7th. Had a good night. No pain the whole of yesterday. Continue the same treatment.

“8th. Had a good night. No pain until this morning, when she felt a little in the tongue. Same treatment.

“9th. No pain. To take four drops three times a day, and to continue the external treatment.

“10th. No pain. Slept well. Continue.

“12th. No pain. To take four drops twice a day, and to continue the external treatment.

“14th. Pain in the lip returned yesterday, and continued ten minutes. Occasionally has small twinges in the tongue. Continue the external and internal treatment.

“15th. Pain in the lip returned severely at three this morning. She applied the tincture, when it ceased. Pain in the tongue returned very severely at nine, A.M. but was removed

by the friction. To discontinue the internal use of the tincture, but to continue the frictions.

“18th. No pain for the last twenty-four hours. Slept well.

“From this time the pain appeared to be nearly subdued, and had the Aconitine itself been applied, I feel no doubt from what I have since seen of its action, that she would have been completely cured of the neuralgic affection in a very few days from the commencement of the treatment. For whole days she was entirely free from pain, and she was directed to rub a little of the tincture, should an attack come on. The pulmonary symptoms, however, gradually increased in severity, and at last she sank under them.

“During the progress of the preceding case, another presented itself to me of the utmost severity ; and I felt so satisfied with the effects of the Aconite in the foregoing instance, that I determined to make trial of it. Before doing so, however, I consulted you about it, and by your advice the saturated tincture was em-

ployed externally, and with most decided benefit even on the first application; but as the strength of the tincture could not be augmented to meet the severity of the case, the Aconitine was resorted to. On the 12th of November, the Aconitine was applied externally, in the proportion of two grains to the dram of lard, and was gradually increased to five grains to the dram. In a very few days the disease gave way, and the patient, I am happy to say, has been for three weeks completely free from pain. The further particulars of this case I have not given you, as the length of time which has intervened is too short to allow me to state, in a case of such severity, that the patient has been completely cured.

“In addition to the two preceding cases in which I have used the Aconite, I beg to state, that I have now under my care a case of acute rheumatism, in which I am applying the Ammoniated Extract of Aconite externally; and which, so far as it has gone, promises well.

“ I am, dear Sir, your's truly,

“ To Dr. Turnbull.”

“ I. LYON.

ST. THOMAS'S HOSPITAL REPORT.

(*From the London Medical and Surgical Journal, of
Saturday, December 13, 1834.*)

The writer of this report, after stating that he had never heard of Aconite having been used externally, proceeds as follows :

“ Of late years, the active principle of this (the *Aconitum Napellus*), as of many other plants, has been supposed to reside in an alkaloid. Dr. Roots has taken advantage of the discovery of the alkaloid Aconita, and thus has not only been able to apply the remedy in a concentrated form, but has avoided the disappointment which may arise from the uncertain strength of the leaves or extract. The following case will shew the value of this remedy as an external application :

“ Mary Ann Huntingford, a servant, æt. 28, was admitted into St. Thomas's Hospital, under the care of Dr. Roots, April 3rd, 1834. She then stated that she had been subject to

paroxysms of pain in the loins, thighs, and legs, for more than two years, which had gradually increased. She had been in the hospital, under Dr. Elliotson, in January last, by whom she was at first freely depleted; after which the disease assumed an intermittent form, and she then took large doses of quinine, and was slightly relieved by it, but left the hospital before she was well, and soon became worse.

“ At the time of her second admission, her general health was not impaired. She was subject to paroxysms of pain, generally two every day, in the loins, hips, thighs, and legs, following the course of the sciatic nerve. The pain was of a severe, cutting kind, and attended by some twitching of the muscles. There was tenderness on pressure of the lumbar vertebræ, and along the whole course of the sciatic nerve. The paroxysms of pain came on and ceased suddenly, and without any warning: they did not observe any regular intervals, and were of variable duration, often continuing for several hours; and in the intervals she was seldom free from uneasi-

ness. Has no symptoms of hysteria; menstruation regular.

“ Quinæ sulph. gr. v.

Ferri sub-carb. 3 ij.—6 ta. quaque horâ.

Empl. canth. sacro.

“ April 9th. No change.

“ Ferri. carb. 3 iij. extr. stramonii. gr.ss. 6 tis horis.

“ On the 12th, the paroxysms were of rather shorter duration, but returned as frequently, and were quite as severe as ever. The quinine was increased to gr vij, and the iron to 3 iv. in each dose. On the 14th she had no pain, and only a little on the evening of the 16th. Quinine increased to gr x in each dose. The intermittent character of the pain continued to the 30th, and the paroxysms had gradually become less severe and of shorter duration. The stramonium was omitted on this day, as the sight had become affected by it.

“ May 3rd. The improvement had continued, and the quinine was increased to gr xv. From the 9th to the 24th, she suffered from head-

ache and sickness; but the medicine was continued, and the pain abated. On the 24th, the iron was increased to 3vi; and on the 28th, gr $\frac{1}{6}$ of muriate of morphia was ordered with each dose.

“June 11th. The pain still better and intermitting; but, in consequence of continued headache and sickness, all the medicines were omitted.

“Ung. veratri (℥ i. ad. 3 i.?) 3 i. ter. die. lumbis.

“On the 14th, the pain had become more severe, and the quinine, carbonate of iron, and muriate of morphia, were gradually resumed, and increased up to August 23rd; at which time she was taking

“Quinæ sulph. ℥ i.

Ferri subcarb. ʒ i.

Morphiæ muriat. gr. $\frac{1}{3}$, 6 tis horis.

“These medicines were omitted for four days, during which she took some creosote; but the pains returned immediately after the medicine was changed, and continued to increase. The old medicines were resumed, and she quickly

improved, as before. She left the hospital on the 22d of September, of her own accord; the pain had diminished much in severity,—returned much less frequently, and not at any regular intervals. The pain soon increased, but never attained its original severity. She was again admitted into the hospital under Dr. Roots, Nov. 21st. The pain was of the same character, and in the same situation as before; commencing in the loins, and afterwards affecting the gluteal muscles, and extending down the back part of the thighs to the hams and heels. The paroxysms usually came on about 7, p. m., and continued four or five hours. During the attack the muscles were firm and contracted. There was some tenderness of the gluteal muscles at all times. General health, good; pulse, 75,—feeble. On the 25th, the following ointment was ordered:—

“ Aconitæ, gr. ij.

Ung. cetacei. ʒ i. ft. ung. et infricet pars sexta part.

dolent. nocte maneq.

“ On the 28th, she stated that after each application of the ointment, the parts rubbed

became hot, and smarted ; but this was quickly followed by numbness. After the third application, the pain was a little relieved ; and after the fifth, the amendment was very remarkable. The paroxysms were much diminished in severity, and did not continue more than one or two hours. The pain, which had formerly been very acute, she described as being much less severe, and called it a “ burning twitching.” The parts were less tender on pressure, and she could sit up without causing pain in the gluteal muscles, which she could not do three days since.

“ Infricet. unguent ter die.

“ Dec. 2d. Two days since, in the morning, she had a more violent paroxysm of pain than she has had since her admission. After it had continued an hour and a half, the ointment was applied, and in ten minutes she was much relieved. The paroxysms do not now last more than twenty minutes, and she says they have never been so slight before.

“ 6th. The pain has now resumed its inter-

mittent character. On the 3d, 5th, and 7th, she had a short and slight paroxysm in the evening; each being less severe than that preceding it.

“Quinæ. sulph. gr. v. 6 tis horis.

“9th. The pain returns every other night, but is gradually decreasing in duration and severity.

“There is a man in Luke's Ward, under Dr. Roots, who has a painful affection of the sciatic nerve, for which he used Veratrine ointment for some time without any benefit. He has used the Aconitine for a week, and a very decided mitigation of the pain followed its application.

“Dr. Roots informs me that he has used the same remedy in private practice, in three cases, with similar success.”

In the Report of the preceding case, it might be inferred that the discovery of the properties of the Aconitine, when applied externally,

was due to Dr. Roots ; but in justice to him, I must state that the Report was not drawn up by him, and that he has in the most handsome manner disclaimed all merit in the discovery.

In conclusion, these are the principal circumstances which occur to me at present, as worthy of mention in regard to the action of Aconitine. I have to regret the hurried manner in which this notice of it has been drawn up, but the facts which have been adduced appear to bear out the position advanced at the commencement—that there exists a class of active principles in the *Ranunculaceæ* possessed of similar properties when applied to the surface of the skin, and acting in a similar manner in the same diseases ; and if I succeed in calling the attention of the profession to them by what has been stated, my object in making this communication will have been answered.



