The Treatment of Neuralgia.

By Neuralgia it is meant to convey—pain along the course of nerves and their areas of distribution, smooth paroxysmal and it is caused by many agents such as constitutional states, malaria, anemia, etc., by pressure especially apt to occur when nerves pass through narrow bony canals which have been narrowed or lessened in calibre by effusion or new growths; or by the pressure of tumors upon the nerve trunks; by injuries to nerves due to bruising or tearing and in the including of nerves in various conditions such as cancer; or by rheumatic inflammation; and a case was recently recorded where neuralgia had occurred in Addison's disease [vide British Medical Journal Nov 15. 1890]. Not must decayed teeth as a case of facial Neuralgia be overlooked. In the treatment of Neuralgia a cause must of course be patiently sought for and in some of the above mentioned varieties of Neuralgia, great success can be attained such as anemia; where the neuralgia has been compared to the "cry of the blood for treatment" its efficacious is the administration of iron; so also is
is quinine in malarious cases; and surgical interference, if possible, to relieve pressure with mercury and Iodide of potassium to promote absorption in some cases.

As regards dental causes of Neuralgia—Cases of neuralgia of the face caused by defective teeth are common enough, and the extraction of such teeth generally cures the condition, although I have heard that occasionally even complete extraction of the teeth does not effect a cure. The explanation in such cases being given that the nerve endings are involved in the cicatrices, and strangely similar does sometimes occur after an amputation; and a form of electricity has been tried for this condition, with a dispassion piece and an equal-sized disc of zinc on either side of the gum—moistened with an acid solution—with what success I do not know. It is, however, undoubtedly the case that many severe examples of facial neuralgia would have been cured long before they were if the sufferers had been sent to a dentist, and it is possible that there are many suffering from decayed teeth who never get any suggestion from their medical adviser about their condition.
Again the habit some dentists have of
fitting false teeth over roots and without
properly stopping the dental canals of such
stumps ought not to be resorted to. After
the crown of a tooth is removed the remains
of the pulp left in the stump decay and
if allowed to remain - a small abscess
is formed at the apex of the dental canal
which may continue to discharge through
the canal into the mouth as long as the
stump remains. This discharge at the
same time causes more or less rapid
decay of the stump and is, besides, one
of the causes of offensive breath of
those who wear false teeth; and no
doubt is a cause of neuralgia; and
irritable and inflammatory states of the
 gums usually attributed to the pressure
of the plate is often also due to this.
But it is said that this condition may
exist without pain and without any
consciousness of the discharge; however
if after the removal of the crown the
contents of the dental canal are destroyed
and the canal filled further decay is
prevented and the possibility of such
a cause of neuralgia minimised.
But there seem cases of Neuralgia not
traceable to any such manifest causes
as have been mentioned, and remedies
are many—administered internally,
preparations of
there are (to mention some)—Opium,
morphine—aconite—belladonna—Cannabis
Indica—hyoscyamus—alcohol—gelsemium
arsenic—iodide of potassium—guaiacine
Salicylate of Sodium—Salicylate of Lumin
phosphorous—Antipyrine—Exalgia—Boldin
pyrochin— and hypnotics such as Sulphon.
Locally—counterirritants—blistering,
cautery and by acupuncture as in Oiatica;
by the injection of belladonna and
aconite; by the injection of morphine
and atropine, by resection as in the
supraorbital nerve; by local anaesthesia by
means of chloride of methyl—said to be
very effective; and by electricity in the
forms of faradism and galvanism—the
latter being considered the more effectual.

Respecting the drugs commonly used—the
most efficacious being opium—morphine
and the like, and belladonna—aconite—
cocaine—bromide of Potassium—and
anesthetics such as Ether—Chloroform and
Chloral, have all, more or less, well known
actions in other directions besides their relief of pain, which sometimes counterbalance such benefit. Not the least among them, is Morphine. The continued use of which often creates a terrible craving for the drug, and which desire once aroused is difficult indeed to be withstood; in connection with this, however, Cocaine has been used to combat it—and said to be found useful. The German Obersteiner has given it at the height of the symptoms produced by the withholding of morphine, not hypodermically, but in solution, frequently and not exceeding 8 grains a day—administered for about five days—and of course, never continued if any untoward symptoms due to Cocaine should arise.

With regard to these general remedies for Neuralgia—they permeate the whole system, nerves and act upon the whole system apparatus, where only perhaps some fibres of a sensory nerve are involved in the pain—and which alone require to be acted on in treatment—and further, evil results may be produced by so affecting all the parts of the circbrospinal nervous system.

Turning to such remedies as the salicylate,
and quinine-which may be similar in action-they are not entirely reliable as relievers of pain. Salicylate of soda, so often administered can give rise to disturbing symptoms. Dr. G. B. Barron reported May 31, 1890-as follows-

"Mr. B., aged 26 years had been for some time suffering from an intractable form of eczema-localized chiefly on the vulva and pubis. She went out on a cold day and in the evening complained of muscular rheumatism in the arms and legs. The following day salicylate of soda in 15 grain doses was prescribed with bicarbonate of potash and hyposymparnos. She took the remedies for 3 days and obtained much relief, when they were discontinued. A week afterwards she had a return of the rheumatism and again the salicylates were advised. The same chemist dispensed the medicine, and on inquiring from the same stock of the drug I was sent for in the evening after two or three doses had been taken, and found her in a state of great distress. She was covered with an intense erythematous rash, with tingling sensation over the whole body; the eyelids, hands, face and legs were swollen; a sense of weakness and depression, and a highly nervous dread. Her breathing was shallow and hurried, and severe headache, as though the head would "burst." Pulse 120 fluttering and feeble; temperature 107, and urgent thirst. At first I considered this alarming condition was due to some
improper or poisonous food; but on inquiring as to the diet,
this opinion proved erroneous. The Salicylate was discontinued,
to be replaced by other remedies to relieve the urgent symptoms.
In forty-eight hours, the rash disappeared, the pulse and
temperature resumed their normal condition and all
deemed well. A few days after, the rheumatic pains
again developed themselves, and again the Salicylate
was prescribed. After two doses, a similar train of
symptoms set in, and the evidence pointing as
forcibly—indeed unmistakably—to that drug being
the cause of the peculiar symptoms, it was not
again administered, and from that time the patient
was free. The high temperature was a singular feature
of the case.

However, a solution of the Salicylate of quinine
is said to be pleasant to take, and being more
readily absorbed, smaller doses are required
for immediate relief of pain. "Sodium Dithiodiuret" is
very easily soluble, has a stronger action than
Sodium Salicylate and is claimed (by F. F. Lindenborn
Frankfort-am-Main) to be better tolerated by the
stomach and has little or no after effects.

"An experimental Research as to the general
comparative action of the Natural and Artificial
Salicylic acids and their Salts of Sodium" was read in the Section of Pharmacology
and Therapeutics at the Annual Meeting...
of the British Medical Association held in Leeds, August 1889 - by Professor Charteris.
Experiments had been performed upon rabbits, and the conclusion came to was that "artificial
salicylates contained impurities - and until these can be extracted by the aid of chemistry,
the internal administration of salicylic acid or of its salt of sodium - artificially
prepared - should be discontinued. For the action of this impurity seems to be of the
nature of a slow but certain poison.
"Large and repeated doses of the sodium salt are necessary in the treatment of
acute rheumatism, and hence we may account for the restlessness, the confusion,
and the delirium sometimes attendant on its use, which have been testified by
clinical experience. It is more than probable,
for, that the retarded convalescence occurring
in some cases of acute rheumatism after the salicylate treatment is due to the great
and protracted prostration which the impurity or impurities give rise to. It is to be
remembered in connection with these symptoms, that prescriptions of the salicylate
of sodium are invariably made up, unless otherwise indicated, from the artificial salt.
Respecting Hypnotics. Taking Sulphonal as a well known example. A most interesting contribution to the study of Sulphonal has been afforded by Dr. John Gordon, Physician to the Aberdeen General Dispensary, and appearing in the British Medical Journal, March 26, 1890. After relating its physical and chemical properties he proceeds to describe the results of various experiments. Though so interesting, it is too long a paper to quote at any length here, but some of the results are as follows:

1. Diminished peripheral sensation.
2. Large doses slowed respiration.
3. It did not affect the pulse rate.
4. Small doses 5-10 gr. increased excretion of urea.
5. Large doses diminished excretion of urea.
6. No cutaneous eruptions were observed.
7. Effect on temperature was negative.
8. Occasionally it caused vomiting.
11. Incoordination of upper and lower limbs sometimes happened.
13. Faddiness noticed.

These resulted from doses of 30-60 grains.
Upon the whole, this evidence of Sulphonal was favorable. On the other hand, a fatal case has been reported by Dr. Knaggs of Morley—British Medical Journal October 6, 1890—as follows: "About 9 a.m. on Oct. 6, Dr. J. C. Clarke and myself were called to see a gentleman who was stated to have taken an overdose of Sulphonal, which drug he had taken for a short time to produce sleep. On arriving at the house, we found the patient in a state of stupor, from which, however, he could be partially roused. There were two empty one-ounce bottles of sulphonal on a table close to his bedside, one of which had been quite full on the previous evening, while the other had been almost empty, so he must have taken rather more than an ounce of the drug. The stupor gradually deepened into complete insensibility and anesthesia; the pupils remained normal and reacted to light, the conjunctiva became insensible to the touch, and the anesthesia became so complete as to prevent him swallowing. He lay on his side, breathing slowly and regularly, but there never was any discernible breathing; his pulse was
"for the most part slow, but sometimes rose as high as 90 per minute, his temperature ranged between 101° and 102°, 103° being the highest registered. His body was bathed in a profuse perspiration. There was total suppression of urine after the evening of the first day. He remained in this state until 3 o'clock on the morning of October 9th, when his breathing suddenly became short and jerky, and then stopped altogether, he having remained totally insensible from Monday morning until his death on Thursday morning. The treatment consisted in applying warmth and using the stomach pump in the first instance, and subsequently in administering enemata of brandy, eggs, and beef tea, together with hypodermic injections of brandy and strychnine.

Altho' in the above case there was a large overdose taken, yet it is possible that there are individuals who have an idiosyncrasy as regard this drug and whom much less would affect. A practical point in the administration of this drug is that its action is much more certain when finely triturated, and is given best in a warm liquid.
In the Zeitschrift des Apotheker Vereines of Nov 10, 1889 is a notice of a new hypnotic introduced by Herr Radlauer, Berlin, which he calls *Somnal*. It is formed by the union of chloral, alcohol and urethan, being a true chemical combination. Clear, colorless, slightly bitter crystals, soluble in water and alcohol. The dose is 2 grammes, and, it is said, half an hour after administration sound sleep is produced, lasting about six hours, with no unpleasant effects upon awaking. It appears to have given satisfactory, but more experience of it would be useful. Chloramide occurs a useful hypnotic without bad after-effects, and it is more soluble than Sulphonal, cheaper, and claimed to be quicker to act. T. W. Hale White has recorded some twenty cases of its administration and speaks well of it. It has, however, been employed chiefly as a sleep-producing agent in insomnia, not due to excitement or severe pain. It perhaps would not be of great service in Neuralgia.

Chloride of Methyl, as a local anaesthetic has been utilised by M. Debove a French Surgeon, by means of the cold developed by its passage from a liquid to a gaseous
state. Saturated plugs of cotton wool - with the liquid being placed upon the seat of the pain have proved very useful in neuralgia, sciatica etc. and the state of anaesthesia is said to be sufficient to allow of incisions, without pain. Interest cannot fail to be taken however, in the analgesic remedies. Since there are so many opportunities offering to endeavor to relieve pain, and to test the power of these remedies, one cannot agree with a gentleman, who lately read a paper attacking the principle of antiseptic surgery, and where he said: "I instinctively distrust men who are always giving in for new things", for it is only by experience and patient trial of them that their value can be ascertained. To take up some of these antipyretic analgesics and to discuss them quoting what testimony has been collected on one side and upon the other - let a beginning be made with Antipyrin. In his paper read before the Oxford Branch of the British Medical Association F. W. Tyrrell Brooks (19 May 1890 British Medical Journal) stated (in substance) that
Antipyrin has been very largely used as an anodyne and Professors Seb and Lépine claim that it is a reliable substitute for morphine where the latter is contraindicated as in advanced kidney disease, acute gout and certain forms of cerebral irritation, to alleviate pain. For it does not cause cerebral symptoms like morphine, thus giving no vertigo nor vomiting and does not follow by nervous exhaustion, while Lépine even considers Antipyrin as an intellectual stimulant. Dr. Brookes thinks that the sleep resulting from its use is rather the relief from pain than from its action as a demontent and that when sleep is required chloral should be administered as well; and that hypodermic administration (as it is very soluble in water) is best for an immediate relief of pain. For an adult giving relief in from 15 to 20 seconds, and the effect lasting for some hours. Dr. Frechel did not meet with a single failure. It has been used chiefly in Herpes Zoster, Lumbago, ataxia, hepatic and nephritic colic, acute asthma, rheumatism and gout. If given by the mouth large doses are required. Deé recommends one to one and a half drachms
"In the 24 hours, Antipyrin has been used with great success in nervous disorders. Supplying a specific for many Neuralgic and allied complaints. In Germany and France it has been much used for migraine and is then best administered as soon as possible before the threatened attack. In some cases of cephalalgia it relieves for a time, but at length the patient becomes habituated to the drug and relief is less marked. As Antipyrin has so marked an influence over these nervous complaints it seems natural to suppose it may be useful in epilepsy; as a sedative it has been tried in cases of nocturnal emission. To sum up it — Brooks thinks for migraine and cephalalgia it is magical and believes that the objection that symptoms of poisoning are alleged to have been caused by it, are of little value; and that one must expect cases of idiosyncrasy with this drug as with cocaine quinine etc.; its great objection being its expense. Its proper chemical name is dimethyl eauquinim. Antifebrin though not so certain as Antipyrin in migraine yet in many cases acts well and its expense is much less."

In the lectures upon Antipyretics by
Donald MacAlister delivered before the College of Physicians, London, June 1887.

He says: "To give a concrete turn to the discussion it would be well to consider in some detail the physiological properties of a particular drug. So far as they were known, and to inquire to which Antipyrin had attracted so much notice and had been so largely used and so closely investigated that it serves well as an example. Some of the effects of Antipyrin on the thermolytic processes were then dealt with. It was shown by the data of an actual experiment that a full dose of Antipyrin had a marked effect in increasing the rate of radiation from the unexposed skin as measured by Macle with Eichhorst's radiometer.

For example in a case of febrile phthisis while the temperature fell in two hours from 101.7°F to 97.4°F under Antipyrin, the radiometer increased rapidly and was twice as great at the end of the second hour as just before taking the drug. The rate of radiation from the cheek, which, as mentioned previously, was pretty nearly constant in normal circumstances, increased in the same time from 57 units to 133 units."
Antipyrin so modified the physical and chemical properties of the skin as to produce this protracted and steadily rising loss of heat by the single channel of radiation. Nothing but radiant heat was measured, and so nothing would be inferred as to the total heat discharge. Next as to the effect on peripheral temperature as determined by Schwyzer. In fever the peripheral temperature underwent from time to time extremely marked oscillations. Of at the time antipyrin was given the peripheral temperature was not very different from the central temperature, no marked differential effect was produced in the former by the drug. After some oscillations both central and peripheral temperatures began to sink. Lastly two out of many inquiries into the effect of the drug on metabolism, as evidenced by the excretions, were considered. One by Robin communicated by the French Academy was visited by fault of method, inasmuch as it did not appear that any precautions were taken to secure nitrogenous equilibrium in the patients observed; still the results taken for what they were worth, were
suggestive. Robin, found by examination, of the urine of healthy and diseased persons before and after taking Antipyrin, that the drug in health always diminishes the urine, the total urinary solids, the urea, and the chlorides, and that it increased the uric acid. In acute (febrile) diseases these effects were less marked than in health, and varied somewhat with the particular disease. In conclusion he derived from his examination chemical, that Antipyrin acted directly on the nervous system—lowering its excitability, and diminishing the catabolic and oxidative changes in the tissues.

In a communication in the British Medical Journal 25 Dec. 1880. Sawadowski found that in the nervous system Antipyrin acted as a sedative, and in large doses produced convulsions. Blumenau has shown that tactile sensibility is greatly increased by the local action of the drug, whereas the sense of pain is diminished; the vomiting, caused by Sawadowski says, by this drug is central in origin. For pain it is recommended hypodermically, by
Germain Deé recommends seven grains and a half two or three times a day, supplemented by mouth administration. The injection causes a local feeling of tension and actual pain, but it relieves all kinds of pain, and is better than that of morphine. Facial neuralgia was cured in a few hours. Subsequent observers do not completely confirm the glowing account given by Deé, but antipyrin is now a recognized remedy for many forms of functional headache and neuralgia. As a rule, antipyrin has no serious drawbacks to its administration but two cases among others published last year. Their great care must be taken in prescribing it. In one case, recorded by Bernouilli was that of a woman aged 52, suffering from subacute and afebrile arthritic rheumatism. Who had an attack of fever after taking antipyrin. A small dose produced pain in the chest and abdomen—rise of temperature, shivering, quickening of pulse—vomiting—turgescence of the face.
injection of the conjunctiva, and a rash.

The second case was that of a young man suffering from typhoid fever who took two directions and a quarter of antipyrin. In the course of a week this produced a universal rash which was like measles and scarlet fever over the body but resembled urticaria upon the face. The epidermis peeled off in flakes leaving a raw surface.

Both cases recovered after stopping the drug.

It will be seen that many effects are produced undesirable, when the one object of relieving pain is alone aimed at; and I give several accounts of its administration both favorable and the reverse.

A letter, bearing the date 11 Feb 1888 was written by J Alex Macdonald, Kirkoswald, Cumberland. "On Feb 2 I saw a girl who for twelve days had taken three doses of antipyrin daily to reduce high temperature in a typical case of typhoid fever. The antipyrin invariably reduced the temperature, and showed no bad effects until the twelfth day of its use, when a rash appeared on the thighs and abdomen, and on the
following day every part of her body (arms, hand legs and feet) was covered with a most copious rash of characteristic urticaria, except the face, which remained quite clear of the rash. There were no symptoms referable to the air passages. In the cases of T. Sturges of Nice, T. Barber of Brooklyn and T. Whitehouse of Santip, the urticaria seems to have come on after the first dose of antipyrin—whereas in my case the patient had taken it with impunity for twelve days. I discontinued the antipyrin and the rash rapidly faded away. T. H. Coghlan, Taylor, Orloa, Teneriffe record: "A somewhat similar case to that lately recorded by T. Sturges recently came under my notice. I administered to a lady on two different occasions 6 grains of antipyrin for attacks of migraine, and on each occasion, very shortly after taking it, a tight feeling of constriction was felt across the chest, with a burning sensation in the pharynx. These symptoms were immediately followed by sneezing, by intense suffusion of the eyes, and by quantities of mucus flowing from the nose, giving her all the appearances
of having a severe attack of cough. There was also great irritation in the larynx, causing severe fits of coughing, but unattended with expectoration. After a quarter of an hour these uncomfortable symptoms gradually subsided. There was no urticaria. I followed it up on each occasion with an equivalent dose of antipyrin (2 grains) which (with one repetition in the course of an hour on the first occasion, but which was not required on the second) completely relieved the severe hemiania, as it has done on subsequent trials, without using antipyrin at all. "Antipyrin Epilepsy" has been recorded by Tuzek. "A boy 9 years old was given the drug to allay the paroxysms of whooping cough. He had never suffered from rheumatic convulsions or worms. The doses were about 17 grains in three doses daily, for three weeks; after which time the patient was seized by vomiting and passed into a state of obnolence, ending in deep sleep. Rapid ensuing epileptiform spasms followed. Sometimes general, sometimes unilateral, accompanied with grinding of the teeth and fasciculation, arrhythmia of cardiac beat
and dilatation of the pupils. A macular eruption appeared on the skin, and the temperature became subnormal, while the pulse was slow and tense. On the third day of poisoning, consciousness began to return, and convulsions diminished in severity, and ceased entirely on the fourth day. For a few days the child was depressed, but completely recovered. During the whole time there was albuminuria ascribed by Tucher to the increased destruction of the albuminoid constituents of the body caused by antipyrin. During the poisoning there were no attacks of whooping cough, but afterwards the paroxysms returned with increased severity, and lasted for some months. Dr. Welding Bristol (14 Sept. 1888) writes: The toxic effect of ten grains of St. Bourn's antipyrin was observed by me 12 Oct. 1887. "Unusual effects of Antipyrin." Some two years ago, while residing in the South of France, a patient—a master in neuralgia—was recommended antipyrin in doses of 20 grains to be repeated in three hours if required, and has used it constantly if not recklessly ever since. No doubt it acts like a charm in the neuralgia
But it also produces a condition of the mucous membrane of the lips, tongue and mouth, which reduces the cure to the level of the disease. About half an hour after the administration of the drug, a slight itching of the lips and tongue is observed, accompanied by an increased flow of saliva. The lips assume a purple colour with a sharply defined edge where the mucous membrane runs into the true skin, exactly like the painted lips of actors when closely seen. This is followed by considerable swelling of the tongue, and small white patches on the surface of the labial, buccal and sublingual mucous membrane which extends to the fauces when the dose has to be repeated. At this period, the pain and irritation are considerable; mastication is impossible, and even the swallowing of fluids causes no little difficulty. In the course of twenty-four hours or all shallow ulcers take the place of the white patches and subsequently heal rapidly enough.

Yet again, Dr. Buffus of Springburn, Glasgow, writes (29 Sep 1890, British Medical Journal) "To a contribution to the list of sequelae..."
"after the administration of antipyrin, will
you allow me to give recent experience
in the use of the drug? A young woman
suffering from influenza, had ordered for
her some 10-grain powders of antipyrin.
Immediately after swallowing one of these
she experienced a feeling of suffocation
and felt as if a knife was being dragged
along the tongue and palate. Then within
ten minutes she called the attention
of her friends to a swelling arising
at each side of the face. I was sent for,
and saw her within twenty minutes after
the drug had been given, and found her
in a very excited state, complaining of
difficulty of breathing. The parotids on
both sides were enlarged, as if the patient
were suffering from mumps, and all
within twenty minutes time. The un-
comfortable symptoms soon passed
away, and by next morning the enlarged
parotids had subsided."

As much for the 'contras'; it is only fair
to give some of the 'pros'.

At the meeting of the Académie de
Medecine on May 3, 1888 M. Grand
Clement of Lyons communicated the
results of his experiments with injections
of antipyrine in the temporal region in
affections of the eye. He found that this
acted rapidly and certainly in relieving
ocular pain—especially periorbital pain,
and to a less extent in ocular spasm.
Speedy relief was also given in many
cases of keratitis, iritis and glaucoma.

Iris-choroiditis; the injections were
also useful in a case of old standing
hemianopia, of monocular hemeralopia
and in several cases of "tics" in the
sclerocorneal palseboideos of anterior
scleeritis and sclero-choroiditis, and of
floating bodies in the vitreous humour.
Mr. Clément had made over three
hundred injections in the temporal
region of twenty-five centigrammes
of antipyrine, and half a centigramme
of cocaine, mixed with ten drops of
distilled water. These injections were
never followed by abscess, but they
always caused slight swelling at the
seat of injection, which remained
tender for eight or ten days. Occasionally
slight oedema of the eyelids was
observed. Mr. Clément attributes the
successful results of the injections in
part to this subcutaneous derivation.
Again there is the testimony of Dr. Parrott (British Medical Journal, March 30, 1887) as to the efficacy of Antipyrin in Sciatica. "In "the Journal of March 16" is an annotation stating the successful treatment of Sciatica by Antipyrin by Dr. Covarrubias of Lima. I have lately treated two cases with the same drug. In both cases the pain was obstinate and severe, and numerous remedies had been tried, in the first case, after taking the Antipyrin, the patient had a good night after some weeks of sleeplessness; in the second, relief was obtained in twenty-four hours. "The mode in which I have given it has been in three 10-grain powders "every three hours."

Dr. Alexey G. Gininsky of Kharkov tried (Transactions of the Kharkov Medical Society, Part I, 1887) Antipyrin and got good results in acute articular rheumatism and in migraine and neuralgia of the fifth nerve. Unpleasant secondary effects (nausea, sickness, collapse) occurred in his experience very rarely."
As evidencing the power of Antipyrin upon the nervous system take the following account of Mr. Guy, Stephen, Nicosia Cyprus Medical Service. "The list of maladies for which antipyrin has been recommended is already long but I have one to add to it. It is of the greatest possible value in epidemic cerebro-spinal meningitis. Its success in this disease depends less on its property of reducing temperature than on its power of quelling those 'nerve storms' which are one of the principal causes of death in this disease. Its value is all the greater in that it is not, as in the case of other diseases, only a mere addition to the armament of the physician, but that it is practically the only medicine which is a real remedy against the disease. Opium, ergot, and belladonna, bromides and acridine all do good service in allaying the terrible pains and perhaps in favorably influencing the course of the disease. But they have no power of warding off impending death while antipyrin
I have found it to fulfill all three indications. The necessary doses vary somewhat, but forty-five grains in three doses distributed over the evening and night is the most usually successful quantity. I have not yet had an opportunity of trying it in idiopathic, traumatic or tubercular inflammations of the meninges, but the pathological conditions, apart from the causation and the symptoms, are so allied in character with those of cerebro-spinal fever that I would suggest a trial and expect it to yield results at least as favorable as those of the remedies already in vogue.

But now to take Exalgin, a drug which has been much used for Neuralgia. Professor T. R. Fraser delivered a lecture, Feb. 1890, at the Royal Infirmary, Edinburgh, upon the Analgesic action of Methyl acetanilide or exalgin. During some investigations made by M.M. Dujardin-Beaumetz and Bardet, they found that the ortho-aceto-toluide had a marked analgesic power so great
as to deserve the name Exalgin. According to these observers its power

to relieve pain is very marked in

tall kinds of neuralgia and is great

than antipyrin. After describing

its properties and constitution Prof.

Tracer proceeded to quote numerous
cases where pain was experienced.
treated with exalgin—such as facial

neuralgia, sciatica, toothache etc.

and he deemed to have been most

successful in the cases of facial

neuralgia—having treated eight
cases—all of which were relieved.

He said, "It has the enormous

advantage of being free from the

disturbances and inconveniences that

are associated with the action of

nearly all other pain-subduing

agents—and from the dangers

inseparable from the use of the more

powerful of those agents." As regards

the dose Prof. Fraser says, "I have

generally given it in the small

dose of half a grain—but one—two

and four grain doses have been

administered—the largest quantit"
given in 24 hours was 14 grains and no disagreeable, much less dangerous effect was produced by this quantity."

Now since the delivery of this interesting lecture, and in consequence of it there has arisen much airing of views and experiences of the use of the drug. For my own part I somewhat confidently administered it on several occasions after reading the account of the above mentioned lecture till I had rather an alarming experience. A dose of two grains of Exalgin I had given to a gentleman suffering from facial neuralgia. After taking the drug he said that certainly the pain stopped and most suddenly— but that he had also some very uncomfortable sensations—his head felt as if to burst— he gasped for breath— his sight became indistinct—; he was some time before he recovered— his breathing got some considerable period remaining difficult—; and since then I have never given it in doses over one grain.
but this seems sometimes quite insufficient to relieve pain. But as exalgin is most undoubtedly an effective remedy in many cases I have collected the published experiences of several persons in favor of, and against exalgin, and will proceed to give them. [It has occurred to me that Professor Fraser's results were too free from contretemps only to his only employing the exalgin of Brignonnet & Naville—and no doubt an especially good sample was sent to him]. Dr. Archibald D. Macdonald, Liverpool, speaks in its favor (British Medical Journal 8 March 1890). "The lecture of Professor Fraser which appears in the Journal of Feb 15th suggests one or two observations: First, that it is almost of as much benefit to mankind to determine the minimum efficient dose of a drug as it is to fix the maximum dose which may be given without poisoning or inconveniencing the patient. This, Professor Fraser has helped to do here; and I take
It is that a one-grain dose every four hours is the standard of exalgin.

Secondly, as the pain-subduing property of methyl acetanilide is largely referable to its methyl molecule, Professor Fraser in a letter dated 3 March 1890, in suggesting exalgin as a remedy for influenza, adds two grains every six hours or two grains every two or three hours — as follows:

"The continuance of influenza in various parts of the country induces me to ask those who may have the opportunity of doing so, to test the effects of exalgin in this disease. Its action indicates that it is likely to be serviceable, especially in the numerous cases in which pain is a prominent symptom. Probably the administration of two grains every two or three hours, or of four grains every six hours, would be sufficient to test its value. These doses refer to the exalgin of Brignonnet and Naville, of which alone I have as yet had any therapeutic experience."

The writer of the next letter appearing in the British Medical Journal 31 May 1870, Dr. A. W. Hinsley Walker, Harrogate, speaks of the poisonous effects of Eudargine. 

"...In a 29-year-old anemic, neuritic temperament, the subject of a severe neuralgic attack in April 18th, the pain she said, extended "all over the head." It seemed to start from the stumps of two right upper molar teeth, and accordingly she had these removed by a dentist. As however the pain was not relieved, I was called in to see her on the third day of the neuralgia. I found her distracted with pain, depressed in spirits, with a weak pulse of 110 per minute and a temperature of 99.4°; tongue clean. There was a slight swelling over the right canine fossa. The gum of the right upper maxilla was somewhat turgescent, really from the presence of an artificial tooth plate. The patient complained of tenderness all over the scalp, more marked on the right side, especially on pressure over the right supraorbital and infraorbital foramina. She had always suffered from dysmenorrhea, which I had been able to relieve by moderate
doses of tincture of pulsatilla with acetate of ammonia, a treatment suggested by Dr. James Braithwaite at a meeting of the Yorkshire Branch. The monthly period was due and commenced a little before the neuralgia appeared, and with the occurrence of neuralgia of the head and face the period stopped.

The treatment in this case was not easy. Both ivon and quinine in any form produced severe headache. It was with considerable hope that I prescribed one grain of exalgine at bedtime. This however, only produced a momentary relief, the pain returning as violent as before, and she passed a restless sleepless night. I increased the dose to 2 grains every four hours. This only gave temporary relief. The drug produced no effect so far as the circulation and respiration were concerned, and there was no particular effect upon the skin. The patient suffered from heat and perspiration which I attributed to weakness from loss of sleep and reflexly from pain. The neuralgia and sleeplessness, now of five days' duration, being still present, a single dose of 4 grains of exalgine
was given, and produced a marked
relief of pain and a continuous sleep
of about two hours' duration, coming
on about twenty minutes after the
administration of this dose. My
patient declared that though asleep
she was semi-conscious, and knew
what was going on around her. As
the neuralgia recurred on awakening,
I ordered 14 grains of exalgine to be
given every four hours. The patient
was induced to take a pill containing
quinine, iron, and valerianate of zinc
three times, and afterwards four times
in the day, and 2 grains of quinine
once daily, the quinine being relieved
by a 10-grain dose of antipyrin. On
two occasions, the pain being severe
as much as 5 grains of exalgine were
administered. On both occasions the
effect was similar, and is described
by the patient in these words: "I
entirely lost all feeling for about
ten minutes, I should think. But,
of course, it appeared to me a much
longer period, then having recovered
partial consciousness, I felt suspended
in air, a gradual sinking into space."
no feeling, no pain but quite numb, as though a cut or any sensations of pain of any kind would not have been felt. My eyes appeared to be very much enlarged, no distinct sight, but an appearance of misty vapour before the eyes. The Neuralgia returned on becoming conscious about four hours after taking the medicine. It was like coming to life after a dead faint. The Neuralgic pain ceased in ten days from the commencement of the attack, and its cessation was marked by the reappearance of the menstrual flow. The patient was then advised to take once more the water of one of our ferruginous springs, and has made a good recovery. Exalgine in this patient acted simply as an analgesic, and I believe it did so to a great extent by some special action on the central nervous system, chiefly on the cerebrum. I am quite in accord with Dr. Guppy that it is very necessary that in the administration of newly introduced remedies, whose physiological action is not fully worked out, small doses
only should be administered at first
that any idiosyncrasy may be
"detected at the outset." The letter
referred to by S. Guild is as follows—
"The curious effects observed by Dr.
Ainslie Johnston after the exhibition
of small doses of eoxalgin serve
to bring into prominence the intolerance
manifested by certain persons for
"many of these derivatives of the coal
tar series and for which it is always
"necessary to be prepared, hence the
"necessity for always beginning with
"small doses, as recommended by
"Professor Freer. I have now used
"eoxalgin in quite a number of
"cases of neuralgia in doses of from
"one to three grains, and while I
"have had every reason to be satisfied
"with the relief obtained, I have not
"so far been unfortunate enough to
"have to record the slightest disagree-
"still less alarming, effects as the
"result of its administration."
Dr. George Herschell, London, writing
upon the therapeutic value of eoxalgin
July 19, 1870—"I have found that from
"one to three grains have given great
relief in about 70 per cent of the cases where I have tried it. In some cases the relief was permanent after a very few doses. The following brief notes selected from a few of my successful cases will sufficiently indicate the conditions under which it may be expected to do good. The numbers appended to the cases do not denote the order in which they occurred, but are put simply for convenience and to avoid giving initials.

*Trigeminal Neuralgia: Man aged 32. Suffered from tic-douloureux on the left side for seven years. Attacks occurred in series of paroxysms every few minutes, and lasted the best part of a day. He was then free for two or three months. During his last attack he took three grains of 'exalgin' every two hours, with the result of arresting the paroxysm after the second dose.*

*Sciatica: Lady aged 40. Has had sciatica on right side for six weeks. The result of exposure to cold. Exalgin three grains three times a day removed the pain in two days.*
Herpes Goster. My friend Mr. T. Wengrove, has recently given exalginine with complete success in a case of herpes goster with intense pain lasting for a month after the eruption had ceased. He gave three grains every four hours. After the third dose the pain was greatly relieved. The patient completely after taking the drug for a week. I may mention that in this case both morphia and antispin had been tried without success. Dr. Farrar Gainsborough also speaks in its favor in a case of cancer of the liver complicated with most excruciating attacks of neuralgic of face and head. For which I tried everything that could reasonably be expected to give relief, without influencing in the least degree these really terrible attacks. If the sufferer fell asleep from sheer narcotism, the pains were still with him in his dreams and life was simply intolerable. I then thought of exalginine and gave it him in two-grain doses with the magical result that the first dose eased him
and the second, given two hours thereafter, completely cured him. From then day, to this, more than three months ago, he has never again suffered the slightest twinge of pain either in face or head. The next writer put down the maximum dose of 97; this however though cautious, is not enough very often, to relieve pain. He is Dr. S. Sinclair Holden, Vice-President of the East Anglian Branch of British Medical Association. 27 Sept. 1890.

I have used ecalginine very frequently since reading Professor Fraser's Clinical Lecture on the subject in the British Medical Journal of February 15th, and my experience with it inclines me to the opinion that if generally tried, ecalginine would take a permanent place among our analgesic remedies, and its proper therapeutic dose and range of usefulness would soon be determined. I consider the proper dose to be half a grain and not to exceed one grain. This is absolutely safe and free from poisonous effects. As a rule the half grain dose, in suitable cases, will relieve pain for a short time, perhaps half an hour, in its return a
Second dose will give a longer immunity
through a third or fourth may be required.
I seldom prescribe more than four
doses with instructions that when the
pain returns the dose is to be immediately
repeated. When the pain is very severe
commencing with a double dose is
more effectual. If exalgine fails to
relieve pain after the administration
of two grains divided in this manner
I think it is best to let it alone and
try some other remedy. From the various
published accounts of the poisonous
effects which have followed 4 or 5 grain
doses of exalgine it is evident that
such doses are excessive and dangerous.
To derive the greatest benefit from the
small doses they should be taken
upon an empty stomach. As to its
range of usefulness I find that
exalgine is generally efficacious as an
analgesic in thin spare persons of
nervous temperament and subject
to neurotic ailments. While it fails
with the robust, pellagric or phlegmatic,
whose functional pains more often
proceed from dietetic causes. It is
useless in relieving pain due to
mechanical or organic lesions; this often accounts for its failure in apparently suitable cases, where the pain is obscure. The first case in which I administered extralgin was that of a young lady with abscess of the anarchist which was lanced; she had three days of pain and sleeplessness, only partially allayed by morphia. One grain dose of extralgin removed the pain and gave her four hours refreshing sleep. Nor did she require to repeat the dose. About the same time, a delicate man, gentleman, whom I was attending for epistaxis, fell off his chair and bruised his sternum against a fender; several hours afterwards he was seized with acute pain in the affected part—this was quite arrested by four half-grain doses of extralgin. These successes encouraged me to use it in all forms of pain with the following general results: During the late epidemic of influenza it invariably more or less alleviated the frontal and orbital pains which were so marked a symptom of that peculiar disease. In cases of neuralgia, expiratory and inspiratory efforts were rendered much easier; it was also efficacious in a few cases of cerebral congestion.
and of toothache, not due to caries, it was successful, so much so that some lady patients are loud in its praise. In gastralgia it is uncertain, though a few cases experienced great relief from pain; one of these was recovering from ulcer of the stomach and was much benefitted by the half grain dose four times a day. It certainly gives relief in functional cardiac pain and in attacks of imperfect angina. I have not found it at all successful in allaying the pains of lumbar or sacro-iliac or in the cases I have tried it. It is not to be expected that exalgine will do more than give temporary immunity to painful neurotic affections, which is all that other analgesics confer. It has, however, the advantage, when given in small doses, of being perfectly safe and free from those inconveniences which accompany the administering of narcotics, and which have nothing to do with the relief of pain. Dr. H.G. Moloney, Ballingarry, wrote 1 Oct 1890 British Medical Journal, "I was glad to see in the British Medical Journal of September 27th Dr. Holten's useful memorandum on this subject..."
(The therapeutic uses of exalgin) as I have
largely prescribed exalgin, and formed
a high opinion of its value. The late epidemic
of influenza left a very general heritage
of neuralgia amongst my patients, and
no drug that I tried for its relief was
attended with such happy results as this.
In one case of facial neuralgia which had
failed to yield to quinine, phosphorous,
iron, or arsenic with anodynes, the
administration of 4 grains of exalgin in
divided doses was followed by instant
and permanent relief. I commence
with grain doses, repeated if necessary
every four hours (a much smaller dose
than that given by Dr. Dejardin-Beaumetz
and Bardet); and though I have sometime
had to double the dose before the analgesi
effect was obtained, in no case did
unpleasant symptoms follow its administra
I have found it, as a rule, useful in
all forms of neuralgia. I look on it
as almost a specific in facial neuralgia
occurring in anaemic neurotic persons,
and for that class of cases I consider
is the most useful addition made
for years to the physicians arma
mentarium.)
Paul Menor, J. Jessop, Pakenham, and E. Lloyd Jones... read a paper in the Section of Pharmacology and Therapeutics at the Annual Meeting of the British Medical Association held in Leeds of a case of poisoning by exalgin. "M. L. a girl aged 24 years, had myelitis, with great pain in the back and limbs. There was no elevation of temperature. On June 3rd it was decided to give exalgin with a view of relieving the pain. From this date until June 8th the drug was given in doses of a pint per day. The dose was then doubled, but as even this amount failed to give relief it was further increased on June 10th to a pint per day and continued until June 17th, when symptoms of poisoning set in. At 10.30 a.m. on the 17th the lips and cheeks were noticed to be blue, the pulse was small and compressible, but not rapid; temperature being normal. Though there were no very urgent symptoms the drug was discontinued, and brandy was ordered every hour. The patient stated that the medicine made her feel "sick and giddy" that her sight was indistinct, and that there was a feeling of weight at the stomach. At 9.30 hours she began to vomit, and at 10.50 a.m. the patient expired."

few inhalations of amyl nitrite were given; this considerably emphasised the blueness and caused marked dilatation of the vessels. It was thus evident that the whole of the circulating blood was profoundly changed. The cyanosis continued to increase, and at 3.45 pm, the patient vomited, after which it became still more marked. At 4.10 pm her nails, lips, and cheeks were deeply cyanosed; frothy saliva was escaping from her mouth; she was delirious and appeared to recognise no one. Her feet were not blue nor cold. Temperature 99.8° F., pulse 114, very small, regular, compressible. The amount of stimulant was increased, and Lq.: strychninae m. 1/2 given hypodermically, a mixture containing tinct. digitalis m. x. being also given by the mouth. She began to improve and at 9 pm. her condition, save for slight cyanosis, was fairly normal. She slept well at night, and had no further untoward symptom.

Dr. James Johnston Penistone, whose letter has been referred to, wrote 3 May 1870: "The following case of idiocy caused by exalgin may serve a useful purpose..."
to some; on April 5th a medical man (aged between 40 & 50) experienced severe pain in the lumbar and iliac sacral region, from which he had been suffering occasionally for some years, quite unrelieved by the ordinary medicines, took by my advice one grain of esalgin at 4.30 pm, and not feeling relief therefrom, at 10.15 he took two grains more in a little whisky. Shortly afterwards he complained of a feeling of giddiness, and several times said that his head felt so large that it seemed to occupy the whole room. He continued, however, playing cards till 11 pm. When, with further warning, he collapsed in his arm chair, prostrate, quite unable to speak or to move, but gasping for breath. He continued in that state for over half an hour, when he got slightly better, and said a few words between the gasps; he said he was not strong enough to move, and he felt that he must go on breathing, though each breath was a fearful effort. In that state he was carried up to his bedroom and placed at the foot of the bed; he said that he was unable to breathe lying down, and was then placed in an armchair well covered up before the fire.
"He again got much worse; his efforts at respiration became painful to witness. He seized and clenched the hands of those around him, and was in many respects just like a man suffering from a bad attack of asthma. His respirations were 38 to the minute, gasping and shallow; pulse quiet and rather weak; face very cold and face pale, though not cyanosed.

He continued in this distressing state till 1 a.m. when he vomited a little whitish fluid (containing some cyanine) and was almost immediately relieved, though it left him rather sick, and very giddy and weak, and he suffered for about an hour from constant dysuria (both frequent and painful). After that he got to bed and to sleep shortly after 2 a.m., had a good night's sleep, and was able next morning to set off for Scarborough, where he had previously intended going. He tells me that next morning he was slightly jaundiced, and that during the respiratory paroxysm he felt no pain (in the back or elsewhere) but a feeling of numbness all over, and that his diaphragm had stopped working, and he must go on breathing at any cost. I may mention
"that he is not at all subject to asthma,
but has a weak and very sensitive stomach." 
Again Mr. Henry F. Temple, Budleigh Salterton writing 12 July 1890 — says 
"Poisonous effects of exalgine — A. B. 
aged about 40 — a lady of hysterical 
temperament, has suffered from nervous 
headache monthly for the last ten or 
more years and has been treated with 
all kinds of drugs but without avail. 
Latterly I have been administering 
exalgine commencing with two grains 
twice a day, which gave great relief. 
The attack, however, recurred the next 
month, and two grains every four hours 
had very little effect, so I increased 
the dose to five grains twice a day. 
The first dose was taken at 10 p.m. 
after supper with great relief to the 
pain, and the patient slept till 6 
am. When she awoke and felt headache 
coming on again, so took another 
dose and lay down. In about a quarter 
the she jumped up with a sudden start 
and scream and thought she was 
dying; she had such curious sensations, 
felt numb all over, fingers and toes 
tingled and felt dead. Eyelids twitched
I have found it useful in such cases to have the
headache among other things as a stimulus to
the brain. I still see the former case in my mind
and give the drug. I do not find it in every case
but in a great majority of the cases. The
headache was still present and I always order it
even if a very small dose is given.

The headache was still present after the first
treatment and the patient got better. The patient
was still very ill and the dose was increased.

The patient's condition improved and he
got better. The patient was still ill and the
dose was increased. The patient got better and
the headache was still present.

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was still present.

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Some little time before the appearance of Professor Fraser's paper on this subject, I was shown some of Brignion and Naville's ecaulin, and I administered some of the powdered crystals in two cases of facial neuralgia in 2 to 4 grain doses without any effect. Regarding the drug as valueless, I did not intend further to exhibit it. The appearance of Dr. Fraser's paper in the Journal of February 15th gave however a fresh impulse to the subject, for when so distinguished a pharmacologist and so careful an observer gave so satisfactory an account of the therapeutical value of the drug one was compelled to doubt one's own conclusion. The general verdict recorded in the Journal has been favorable, but my experience has not. In all my cases, since Dr. Fraser's paper appeared I have given the drug dissolved in weak spirit. I shall particularize three cases.

1. A Lady aged 39 had for long suffered from neuralgia, chiefly of the fifth and the intercostal nerves. She was well acquainted with the action of various antineuralgic drugs, obtaining most relief from 10 grain doses of butyl chloral hydrate repeated in two or three hours if required and...
usually two doses were required. This patient, during a severe attack of neuralgia, began with 2 grains of excalgin, and was told to take 1 grain every hour until relieved. She found no relief from thirty-six hours of this treatment, and then after two 10-grain doses of butyl chloral hydrate, with two hours between, fell asleep, waking much relieved. A few days afterwards another attack occurred, on which occasion the doses of excalgin were doubled. The thought after seven hours' continuance of these doses there was some relief but returned with more decided benefit to the butyl chloral hydrate.

2 A lady suffering from chronic döphorities with exacerbations at the menstrual periods, for the relief of which she usually took in solution 1 grain of hydrochlorate of morphia every hour or two until relieved, had 11.5 grains of excalgin given instead, with 2 grains every hour afterwards for three hours. At the end of this time, being no worse from pain she returned with benefit to the morphia solution. On a subsequent occasion I gave her 5 grains of excalgin in one dose; she stated this gave her some relief, but only very little.
3. An old gentleman suffering from Sciatica,
for which I usually gave him 5 gr. of morphine
hydrobromate in solution, and half this
quantity, three or four times daily until
relieved, was much interested in the new
analgesic. He carefully took it in 1, 2, 3 or
4 gr. doses every hour for three or four hours,
but could obtain no relief, and returned
"to the morphine. The experiment was repeated
with the same result on four occasions.

The above three cases are patients on whose
observations I could rely. I have notes of
having given the drug in 24 other cases
of various forms of neuralgia. In some of
these, especially where toothache prevailed
some slight benefit was obtained. In
most of these 24 cases 3 to 5 grain doses
were administered. Some of them were
cases of influenza; in these exalginine
failed while antipyrine did not. My
experience of exalginine is such, therefore,
that I cannot regard its addition to
our therapeutic resources as of any moment.

Mr. Dyson of Bath reported 30 Aug. 1870:
"A Case of Exalginine poisoning. A young
man A. J. M aged 26 - had been suffering
for some days from muscular rheumatism.
I ordered a mixture containing exalginine
to be given three times a day (this dose of excyloline being rather larger than that given by Professor J. B. Fraser of Edinburgh but less than that given usually by Dr. Bardet and Dujardin Beaumetz). The first dose was given about 3 p.m. I was prevented from seeing the patient again until about 10 a.m. on the second day afterwards, so that he had taken six doses. I found him very dull and heavy and apparently presenting all the usual signs of carbolic acid poisoning. He had slept almost continuously, but waking up at short intervals, and starting in his sleep. On inquiry he complained of pain in the small of the back and on examining the urine it was found to be of a distinctive and pronounced olive-green color. He had only passed water twice in the twenty-four hours and on both occasions the amount was very small. On examination the urine was found to be of high specific gravity with a large deposit of urates but containing no phosphates, albumen, or blood; the temperature was 98° Fahr. pulse 102 of full volume and strong. The patient
complained of great thirst, and the skin was hot and dry. A peculiar feature of the case was that he suffered from excessive salivation for several days; this gradually diminished under the influence of chlorate of potash. The renal tremble gradually subsided after stopping the exalgine and giving a diuretic and diaphoretic mixture. The cerebral symptoms also passed off. I must remark that the exalgine certainly appeared to relieve the myalgia and rheumatism.

We see here various opinions about the maximum dose of exalgine—and about its efficacy; though there can be no doubt that it is a most valuable remedy, and is better known than the host of new drugs constantly vaunted, such as "Pyrodin" containing as its active agent acetylphenylhydrazin \( \text{C}_6\text{H}_4\text{N}_2\text{H}_2\text{C}_4\text{H}_4\text{O}_7 \) a crystalline powder very little soluble in water. According to the clinical and experimental observations of Dr. Dressfeld of Manchester, which have been apparently confirmed by Mr. Lépine of Lyons, pyrodin acts in the same manner as but more powerfully than antipyrin, antifebrin, and phenacetin.
and has been used effectively in migraine and neuralgia. But great caution is
required in its administration as it is apt to produce jaundice followed by anemia and even more serious
symptoms due to hemoglobinuria. Thus small doses only should be given
and at intervals sufficiently long to allow of the observation of toxic
effects.

Methacetin has been lately much
recommended as an antipyretic and
antineuralgic—and is claimed to be
considerably more active than antipyri
It was recommended by T. Wahnert
who experimented upon animals the dose
is 6 - 9 grains as an antipyretic and
12 - 13 grains as an antineuralgic. T.
G. Peldler has published a paper upon
the action of Methacetin in the Berlin
Klin. Wochenschrift, in which he reports
favorable results—but its use does not
yet appear general.

Electricity is mentioned as a form
of treatment of neuralgia in many
text books but is usually dismissed
in a few words. Pritchow says that
Electricity is especially valuable. Ducanne
employed cutaneous paradism rendering
the affected surface dry by dusting it
with powder and then applying to it
for a minute or so. Paradism of
considerable strength and repeating
the process from time to time according
to circumstances. But he continued
"current is much more efficacious."
In this case, with well-wetted sponges
must be used and the current employed
if no greater intensity than the patient
can readily bear; and as has been before
pointed out, the origin of the affected
nerves should be included between
the scopores of which one should be
moved over the painful region and
especially applied to the painful points.
Moreover here, as in the other case,
"the application should be of short
duration and frequently repeated."
Now paradism is rather painful
in its application, and the continuous
current is moreover admitted to be
more efficacious, yet in these cases
which galvanism does not much
relieve. And this remark leads to
the discussion of the subject of this
paper—which does not indeed advocate
anything but which has not been hitherto much mentioned. In criticising the foregoing remedies, I have not sought to cast discredit upon them, but merely to attempt to show that in my opinion, they are not yet so perfect as to exclude any other, and one other that I wish to discuss as a remedial agent for the treatment of Neuralgia is that form of electricity termed "Mater Electricity." It is my lot to have become the partner of Dr. Henry McClure of this place (Croome) a gentleman who has given much thought and time to the employment of this form of Electricity; and who has indeed written concerning it, and whom I will occasionally quote. With him, and on my own account, I have been able to see several cases treated, and to treat some myself.

Electricity has been defined as a specialized form of vibration of the ether which pervades all space and matter; and as Franklin showed that terrestrial electricity...
was identical with frictional or static electricity. This form is hence often called Franklinism. Sir William (when 57) Gull spoke well of it about fifty years ago, but it fell out of use—perhaps owing to the faulty machines then in use. But of late years it has been revived by Charest and Vigoroux of Paris, Bartholow and Morton having taken it up in America. The most useful machine is that of Carrière; and is best described by means of a diagram. The electricity is generated by cushions rubbing the revolving glass disc at the bottom. The ebonite disc above revolves at the same time but at a greater speed. Both discs are surmounted by a large brass cylinder—the prime conductor from which projects a brass rod having a number of points for collecting the electricity from the ebonite plate; this electricity is positive. Approaching the lower part of the ebonite plate on the same side is another brass rod
with points for collecting the negative electricity, and it terminates in the other conductor of the machine which can be made to approach or recede from the prime conductor and the length of the spark between the two is the measure of the power of the machine. The negative electricity is usually conveyed to the ground. A chain terminating in a hook is attached to the rod of the lower collector so that work is done with the positive electricity. Owing to the extensive surface of the prime conductor, the electricity is in a high state of tension. The sparks are long, of considerable volume, and succeed each other rapidly. To keep the machine in working order it is necessary to keep the room as dry as possible, and the machine when not in use is best kept covered or under a glass case. During warm...
and moist weather—before using it may be necessary to place it before the fire and well dry it. The patient must be insulated on a platform with glass legs, and connected to the prime conductor of the machine by a brass rod which he holds in his hand. Thus placed, the patient after a few turns of the driving wheel becomes charged with positive electricity— which passes out through all parts of the body; the hair stands on end, and there is rather a pleasant tingling. This is the mildest form of application and should always be used alone.

At the first sitting, next there is the production of the "squiffle" by approaching near to the patient a piece of wood, terminating in a ball (also of wood) either held in the operator's hand, and having an insulated handle and a brass chain conveying the electricity to the ground. It gives a crackling sound, and the patient has a feeling of sand blown against the skin. Another form of squiffle is when a fine metal point is held at some distance from the
part to be acted on, but not near enough to cause a spark. Applied to the hand this produces a very pleasant sensation as if a very fine stream of cold wind were playing over the hand part, and for the treatment of neuralgia should always be tried before sparks are drawn applied over the point of exit of the nerve or where it is superficial. To produce electric friction a large wooden or brass ball is used—kept in contact with the patient's body and moved in the direction required. To produce a heavy spark a large metal ball electrode with an attached chain is used (the chain being kept from touching the patient—by a wire with an insulated handle held in the operator's left hand). The static spark is particularly useful in neuralgias which resist the milder applications. The whole body should be gone over beginning at the head if it be even only a local affection—best done at the first few sittings by the wooden ball above alluded to; and it is desirable to 'lead up to' the heavy spark through 'rouffle'
Fiction and small sparks of the patient be impressionable the negative current can be tried done by connecting the large prime conductor with the ground by means of the chain and attaching the rod held by the patient to the horizontal part of the other conductor.

The first application should not be a long one—not more than 5 or 6 minutes, but as the case proceeds it may be lengthened to 10 or 15 minutes. One or two applications are often enough to cure neuralgia.

Dr. McClure believes that it has the power of "loosening" chemical compounds administered by the mouth that metals are set free from their salts and that it possesses an eliminative action. Facial neuralgies after having got quite chronic have been successfully treated by Dr. McClure and where other remedies have been exhausted. He says "the current should be directed by the metallic point to the painful spots for ten or twelve minutes; if this be not sufficient, small sparks may be
drawn by means of the wooden or ivory ball or the point of the metal electrode, and Lastly, heavy sparks may be drawn by means of the metal ball. Occipital and Brockhol "neuralgias yield readily to this treatment.

I will quote some of the cases treated by him - some of which I had the opportunity of witnessing.

A case of cervical neuralgia of a very severe type associated with some enlargement of the thyroid - violent throbbing felt in the neck palpitation of the heart - rapid pulse (120). Here the neuralgia was not only cured but a rapid diminution of the other symptoms followed. While the thyroid swelling gave way, sixteen applications had been used.

At the time of writing there is a case of a woman, now in the Grimes Cottage Hospital with "Graves' disease," with cervical neuralgia - her pulse was 130 per minute on admittance. She is steadily improving under the administration of Static.
Electricity applied more particularly
to the region of the heart and
the thyrovix, her pulse has
subsidized to 100. She has been
for a fortnight in the hospital and
received about ten applications.
So far as I have seen static
electricity is certainly better and
easier in application for neuralgia
than either galvanism or faradism
as I have said; but it is not
to be understood that the proper
remedies for special causes shall
not be also given—as quinine
where malaria is suspected—
salicylate of sodium for rheumatism
and iodide of potassium for
gouty (suspected) causes. In chronic
cases, treatment may require
to be extended over some time
but an ultimate cure in most
cases is most likely. I had an
opportunity myself of treating
a case of facial neuralgia
last winter; I was really
surprised by the result, though
prepared to expect something
from my partner's experience.
Of course it may be said that the change of air, freedom from anxiety it may with visitors to this seaside place have something to do with the cure of their neuralgias. But this is upon the east coast, not at all sheltered and is hardly the place to designedly go to for neuralgia. I am convinced however, that a static machine is almost a necessity in an electrical armamentarium. There is an "induced" form of static electricity which may be employed in the same way as faradism and it causes less pain. It is done as follows. A small Leyden jar is attached by means of a hook to each conductor of the static machine. To the outer coating of these jars is attached the ordinary conducting cords of a faradic machine—either (moistened) electrodes attached. The poles of the machine are now separately very slightly giving a short spark;
during the passage of each spark an induction current is sent down the cord, and received by the patient. Who need not be insulated; and nerve and muscle can be acted upon—just as in faradic application. The strength of the current is determined by the size of the jaws, and amount of separation of the poles of the machine.

Neither Dr. McClure nor myself has yet used this form of static electricity in the treatment of neuralgia but we intend to when we get a suitable case...

I certify that this thesis has been composed solely by myself.

Thomas Lewis
M.B. C.M. Edin. 1887

Bromer, Norfolk