

The Treatment of Neuralgia.

By Neuralgia it is meant to convey - pain along the course of nerves and their areas of distribution, mostly paroxysmal - and it is caused by many agents - such as constitutional states - malaria, anaemia etc - by pressure especially apt to occur where 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]. Nor must decayed teeth as a cause 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 anaemia - where the neuralgia has been compared to the "cry" of the blood for treatment - so efficacious is the administration of iron; so also in



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 something similar does sometimes occur after an amputation; and a form of electricity has been tried for this condition, with a sixpenny 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 there are (to mention some) ^{preparations of} - Opium - morphina - aconite, belladonna - Cannabis Indica - hyoscyamus - alcohol - gelsemium - arsenic - iodide of potassium; quinine Salicylate of sodium - Salicylate of Quinine - phosphorus - Antipyrin - Exalgin - Boldin - pyrocin - and hypnotics such as Sulphonab. Locally - counterirritants - blistering - cauterizing and by acupuncture as in Sciatica; by the inunction of belladonna and aconite; by the injection of morphina and atropina - ; 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 - morphina and the like, and belladonna - aconite - cocaine - bromide of Potassium - and anaesthetics 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 Morphina - 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 morphina - 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 and act upon the whole ^{nervous} ~~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 cerebrospinal nervous system.

Turning to such remedies as the salicylates

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

"Miss B. aged 26 years had been for some time suffering from an intractable form of eczema localised chiefly on the vulva and pubes. 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 hyoscyamus. 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 weariness and depression, and a highly nervous dread; the 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
 "seemed 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 so
 "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 Dithiosalicylate"
 is very easily soluble. has a stronger action than
 Sodium Salicylate and is claimed (by Dr H. Lindenborn
 Frankfurt-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 come 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 has been testified by
"clinical experience. It is more than probable,
"too, 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 -

It diminished peripheral sensation,
Large doses slowed respiration,
It did not affect the pulse rate,
Small doses 5-10 gr. increased excretion of Urea,
Large doses diminished excretion of Urea,
No cutaneous eruptions were observed,
Effect on temperature was negative,
Occasionally it caused vomiting,
Diarrhoea sometimes noticed,
Patient sometimes awoke confused,
Incoordination of upper and lower limbs
sometimes happened,
Feeling of depression sometimes supervened,
Giddiness 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 stertorous breathing; his pulse was

"for the most part slow, but sometimes rose as high as 90 per minute; his temperature ranged between 100° 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 regards 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 it is given best in a warm liquid.

12

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 satisfaction, but more experience of it would be useful. Chloramide - seems a useful hypnotic - without bad after effects - and it is more soluble than Sulphonal - cheaper - and claimed to be quicker to act. D. 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. so perhaps would not be of great service in Neuralgia.

Chloride of Methyl, as a local anesthetic has been utilised by M. Debove a french surgeon; by means of the cold developed by its passage from a liquid to a gaseous

13.
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 principles of antiseptic surgery - and where he said "I instinctively distrust men who are always going in for new drugs"; 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

D. W. Fryrell Brooks (19 May 1890 British Medical Journal) stated (in substance) that

"Antipyrin has been very largely used as an anodyne - and Professors Sicé and Lépine claim that it is a reliable substitute for morphina - where the latter is contraindicated as in advanced kidney disease - acute gout and certain forms of cerebral irritation - to allay pain. For it does not cause cerebral symptoms like morphine - thus giving no vertigo nor vomiting and Sicé says not followed by nervous exhaustion - while Lépine even considers Antipyrin as an intellectual stimulant. Dr Brooks thinks that the sleep resulting from its use is rather the relief from pain than from its action as a "somnolent" - 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 5 grains for an adult giving relief in from 15 to 30 seconds, and the effect lasting for some hours. Dr Frenkel 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. Sicé recommends one to one and a half drachms

15
"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 Dr. 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~~ is 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 oxiquinism. Antefebrin - 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

Dr Donald MacAlister, delivered before the College of Physicians, London - June 1888 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 Masje with Eichhorst's radiometer.

For example in a case of febrile phthisis - while the temperature fell in two hours from 101°F to 97.7°F under Antipyrin - the radiometer^{tion} 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.

117
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 Schwarz. In fever the peripheral temperature underwent from time to time extremely marked oscillations. If 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 vitiated by faults 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 28 Dec 1888 - "Sawadowski found that on 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

19

Germain Sée; he 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 Sée, 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 - show 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 articular 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 drachms 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~~ ^{but} I give several
 accounts of its administration - both
 favorable and the reverse.

A letter, bearing the date 11 Feb 1888 was
 written by Dr Alex. Macdonald - Kirkcaldy
 Cumberland - "On Feb 2nd 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 Dr Sturge of Nice, Dr Barber of Brooklyn and Dr Whitehouse of Santiago 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." Dr. H. Coupland Taylor. Orstava Tenerife record. "A somewhat similar case to that lately recorded by Dr Sturge recently, came under my notice. I administered to a lady on two different occasions 8 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

22

"of having a severe attack of coryza; 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 antefebriin (3 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 hemicrania, as it has done on subsequent trials, without using antipyrin at all."

"Antipyrin Epilepsy" has been recorded by Tuczek - "a boy 9 years old - was given the drug to allay the paroxysms of whooping cough. He had never suffered from rickets 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 somnolence, ending in deep sleep. Rapid ensuing epileptiform spasms followed - sometimes general - sometimes unilateral, accompanied with grinding of the teeth and facilitation, arrhythmia of cardiac beat

20

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 acetonuria ascribed by Tuzek 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."

~~D. Wilding Bristol (14 Sept 1887) writes -~~
~~Toxic effect of ten grains -~~ Dr. Bourne
Shoeburyness - writes 12 Oct 1889 - "Unusual effects of Antipyrin." "Some two years ago - while residing in the South of France a patient - a martyr to 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 on 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 small
 shallow ulcers take the place of the white
 patches and subsequently heal rapidly
 enough."

Yet again - Dr Duffus of Springburn - Glasgow
 writes (29 Sept 1890. British Medical Journal) "As
 a contribution to the list of sequela

23

"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 scraped 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 uncomfortable symptoms soon passed away, and by next morning the enlarged parotids had subsided."

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

At the meeting of the Académie de Médecine on May 8-1888 M. Grand Clément of Lyons communicated the results of his experiments with injections

20

of antipyrin 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, irido-choroiditis; the injections were also useful in a case of old standing hemiplegia, of monocular hemeralopia and in several cases of "tics" in the orbicularis palpebrarum, of anterior scleritis and sclero-choroiditis, and of floating bodies in the vitreous humour." M. Clément had made over three hundred injections in the temporal region of twenty-five centigrammes of antipyrin, 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. M. 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 1889) as to the efficacy of Antipyrin in Sciatica - "In the Journal of March 16th is an annotation stating the successful treatment of Sciatica by antipyrin by Dr. Covarrubias of Limache; 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. Alexei G. Glinzky of Kharkov tried (Transactions of the Kharkov Medical Society Part 1 - 1887) Antipyrin and got good results in acute articular rheumatism - and in migraine and neuralgia of the fifth nerve. Unpleasant secondary effects (rash 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 "aconite 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

29

"I have found 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 J. R. Fraser delivered a lecture - Febr 1890 - at the Royal Infirmary, Edinburgh, upon the Analgesic action of Methyl acetanilide or exalgin - During some investigations made by M. M. Dujardin-Beaumont 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
 all kinds of neuralgia and is greater
 than antipyrin. After describing
 its properties and constitution - Prof.
 Fraser proceeded to quote numerous
 cases where pain was experienced,
 treated with exalgin - such as facial
 neuralgia - Sciatica - toothache etc -
 and he seemed 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 inconveniencies 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 quantity

51

"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 for 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 so free from contretemps owing 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 & Month 1890) - "The lecture of Professor Fraser which appears in the Journal of Feb'y 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 incommoding the patient. This, Professor Fraser has helped to do here; and I take

"is that a one-grain dose every four
 "hours is the standard of exalgine
 "Secondly, as the pain subduing property
 "of methyl acetanilide is largely
 "referable to its methyl molecule
 "-----" But Professor Fraser in
 a letter dated 3 March 1890. in
 suggesting exalgine as a remedy
 for influenza. adduces four 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 exalgine in this disease.
 "Its actions indicate 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 exalgine 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 1890 - Dr. A. W. Hinsley Walker, Harrogate speaks of the poisonous effects of Exalgine - "MCA - 29 - anemic - of nervous temperament" was the subject of a severe neuralgia attack "on 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 turgid, 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 dysmenorrhoea, "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 iron 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 4 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,"

37

"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. Gubbs
"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 of Dr. Gubb is as follows—
 "The curious effects observed by Dr.
 "Ainslie Johnston after the exhibition
 "of small doses of exalgine 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 Fraser. I have now used
 "exalgine 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 disagreeable,
 "still less alarming, effects as the
 "result of its administration."

Dr. George Herschell—London—writing
 upon the therapeutic value of exalgine
 July 19 1890— "I have found that from
 "one to three grains have given great

ca. folio 47
 Mrs. Herschell

"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. Trifacial 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
 "exalgine 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.
 "Exalgine three grains three times
 "a day removed the pain in two days".

Herpes Zoster. My friend, Mr. J.
 Wingrave, has recently given exalgine
 with complete success in a case of
 herpes zoster 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 ^{recovered} after taking the
 drug for a week. I may mention
 that in this case both morphine and
 antipyrin 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
 neuralgia 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 exalgine - 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, for from that 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 puts
 down the maximum dose at grj;
 this however though cautious, is not
 enough, very often, to relieve pain—
 He is Dr J. Sinclair Holden, Vice President
 of the East Anglian Branch of British
 Medical Association - 27 Sept 1890 -

"I have used exalgine 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 to me to the opinion that
 "if generally tried, exalgine 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; on its return a

"Second dose will give a longer immunity
"though 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, plethoric 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 exalgine was that of a
 "young lady, with abscess of the antrum
 "which was lanced; she had three days
 "of pain and sleeplessness, only partially
 "relieved by morphine. One grain dose
 "of exalgine removed the pain and gave
 "her four hours refreshing sleep. Nor
 "did she require to repeat the dose.
 "About the same time, a delicate deformed
 "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 halfgrain
 "doses of exalgin. 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 most cases it facial neuralgia.

"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 lumbago or sciatica in the cases
"I have tried it. It is not to be expected
"that esalgine 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. Molony, Ballingarry,
"writes - Oct 18 1890 British Medical Journal,
"I was glad to see in the British Medical
"Journal of September 27th Dr. Holden's
"useful memorandum on this subject

(The therapeutic uses of exalgine) "as I have
 "largely prescribed exalgine 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, phosphorus,
 "iron, or arsenic with anodynes, the
 "administration of 4 grains of exalgine 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. Dujardin-Beaumez
 "and Bardet); and though I have sometimes
 "had to double the dose before the analgesic
 "effect was obtained, in no case did
 "unpleasant symptoms follow its administration.
 "I have found it, as a rule, useful in
 "all forms of myalgia. I look on it
 "as almost a specific in facial neuralgia
 "occurring in anæmic neurotic persons,
 "and for that class of cases. I consider
 "it the most useful addition made
 "for years to the physicians arma-
 "mentarium."

But Messrs. J. Jessop Bokenham 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 exalgine. "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 exalgine - with
 " a view of relieving the pain. From this
 " date until June 8th the drug was given in
 " doses of grij ter die. The dose was then
 " doubled, but as even this amount failed
 " to give relief it was further increased
 " on June 10th to grij ter die - 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 3ij
 " 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 epistomium. At 3.30 p.m. a

"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 p.m., the
 "patient vomited, after which it became
 "still more marked. At 4:10 p.m. her
 "nails, lips, and cheeks were deeply
 "cyanosed; frothy saliva was escaping
 "from her mouth; she was delirious and
 "appeared to recognize no one. Her feet
 "were not blue nor cold. Temperature
 "99.8° F. pulse 144 very small, regular,
 "compressible. The amount of stimulant
 "was increased, and liq. strychnine mit
 "given hypodermically, a mixture containing
 "tinct. digitalis m_x being also given by
 "the mouth. She began to improve and at
 "9 p.m. her condition, save for slight
 "cyanosis, was fairly normal. She slept
 "well at night, and had no further untoward
 "symptom".

D. G. Ainslie Johnston - Penistone - whose
 letter has been referred to - wrote 3 May 1890
 "The following case of idiosyncrasy to
 "exalgine may serve a useful purpose

"to some; on April 5th a medical man
"aged between 40 & 50) experiencing severe
"pain in the lumbar and ilio 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 exalgine at 9.30 p.m., 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 p.m. when, without
"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.

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"Here 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; surface very
"cold and face pale - though not cyanosed.
"He continued in this distressing state
"till 1 a.m. when he vomited a little whisky
"(Containing some exalgine) 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 felt as if 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-Buddleigh
 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
 "a.m. when she awoke and felt headache
 "coming on again, so took another
 "dose and lay down. In about a quarter
 "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

"continuously; the whole head felt as if
"it was swelled, and kept expanding and
"contracting alternately. There was great
"oppression in the region of the diaphragm.
"In a few minutes the patient vomited
"and ejected the remains of the medicine.
"She then felt much relieved and lay down
"and slept, after taking a little tea. Two
"hours after the patient got up, but felt ill;
"the headache was slighter, but not gone;
"the numbness of the fingers and toes
"remained nearly all day, but beyond this the
"patient was little the worse for her experience.
"She went out the next day, but says she will
"be afraid to try the medicine again. I think
"this so called poisoning with exalgine is
"due to its being taken on an empty stomach
"as the former dose was well borne when
"food was present. so I always order it to
"be taken after a meal. I give the drug
"dissolved in tinctura aurantii and diluted.
"I have found it useful in toothache, facial
"neuralgia and in a case of long standing
"lumbago. No beneficial effect of the drug
"have I found from less than two grains
"for an adult."

The next gentleman is very uncompromising
in his opinion of exalgine - D. G. Armstrong

British Medical
Journal 1/2 June 1890

Atkinson. "The Therapeutical Value of Exalgine
 "Some little time before the appearance of
 "Professor Fraser's paper on this subject. I was
 "shown some of Brignonet and Naville's exalgine,
 "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 impetus 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
 "particularise 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 exalgine, 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 exalgine were doubled. She 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 oöphoritis with exacerbations at the menstrual periods, for the relief of which she usually took in solution $\frac{1}{10}$ grain of hydrochlorate of morphine every hour or two until relieved, had 4 grs of exalgine given instead, with 2 grains every hour afterwards for three hours. At the end of this time, being no free from pain she returned with benefit to the morphine solution. On a subsequent occasion I gave her 8 grains of exalgine 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 $\frac{1}{5}$ gr of morphine
 "hydrochlorate 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 exalgine
 "failed while antipyrin did not. My
 "experience of exalgine is such, therefore,
 "that I cannot regard its addition to
 "our therapeutic resources as of any moment."

Mr. Dyer of Bath - reported 30 Aug 1890 -

"A Case of Exalgine poisoning" - A Young
 "man A. J. M aged 20 - had been suffering
 "for some days from muscular rheumatism.

"I ordered a mixture containing exalgine

"grit in each dose with tincture of orange and
"water, to be given three times a day (this
"dose of exalgine being rather larger than
"that given by Professor T. R. 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 distinct 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
 "trouble gradually subsided after stopping
 "the exalgine and giving a diuretic and
 "diaphoretic mixture - and 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 $C_6H_5-N_2HCH_3O$,
 a crystalline powder very little soluble
 in water. According to the clinical
 and experimental observations of
 Dr. Dreschfeld of Manchester - which
 have been apparently confirmed by
 M. Lépine of Lyons - pyrodin acts in
 the same manner as - but more powerfully,
 than antipyrin - antifebrin, and phenacetin

37
and has been used effectively in migraines 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 antipyrin.

It was recommended by F. Mahner who experimented upon animals - the dose is 6 - 9 grains as an antipyretic and 12 - 13 grains as an antineuralgic. Dr. C. Piedler 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. Bristowe says that "Electricity is especially valuable." Duchenne

"employed cutaneous faradism rendering
 "the affected surface dry by dusting it
 "with powder - and then applying to it
 "for a minute or so - faradism of
 "considerable strength and repeating
 "the process from time to time according
 "to circumstances. But the continued
 "current is much more efficacious.
 "In this case - with well wetted sponges
 "must be used and the current employed
 "of 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 reophores - 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."

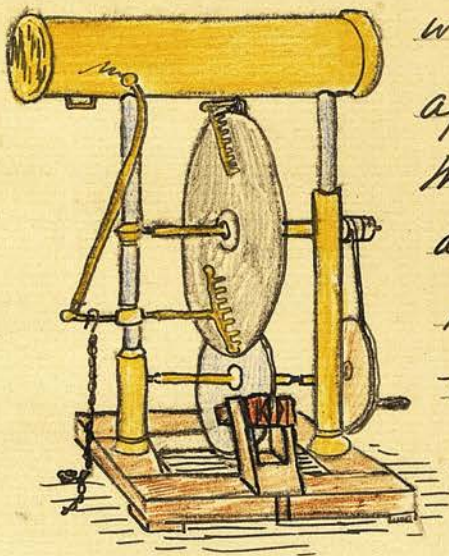
- Now faradism is rather painful
 in its application - and the continuous
 current is moreover admitted to be
 more efficacious - yet are there cases
 which galvanism does not much
 relieve. And this remark leads to
 the discussion of the object of this
 paper - which does not indeed advocate

34

anything ~~new~~ ^{new} 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 shew 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 "Static Electricity". It is my lot to have become the partner of Dr. Henry McClure of this place (Cromer) 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 shewed that terrestrial electricity

was identical with frictional or static electricity - this form is hence often called Franklinism. Sir William (when Dr) 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 Charcot and Vigoroux of Paris. Bartholow and Morton having taken it up in America. The most useful machine is that of Carrié; 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~~ 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 "souffle" by approaching near to the patient a piece of wood terminating in a ball (also of wood) either held in the operator's hand, ^{or} 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 thrown against the skin. Another form of souffle 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 point of cold wind were playing over the ~~part~~ 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 ring 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 "souffle"

friction and small sparks. If 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.

D^r 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 neuralgias - after having got quite chronic - have been successfully treated by D^r McClure and where other remedies have been exhausted. He says "The soufflé should be directed by the metal 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 brachial
 "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
 Browner Cottage Hospital with
 Graves' disease - with cervical
 neuralgia - her pulse was 130
 per minute on admittance. She
 is steadily improving - under
 the administration of strychnine.

electricity - applied more particularly
 to the regions of the heart and
 the thyroid - her pulse has
 subsided to 100. - ^{the neuralgia much relieved.} She has been
 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 should
 not be also given - as quinine
 where malaria is suspected -
 Salicylate of sodium for rheumatic
 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 etc 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 desiguedly 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 - with the (moistened) electrodes attached. The poles of the machine are now separated very slightly - giving a short spark;

during the passage of each spark - an induction current is sent down the cords - 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 jars 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 Lucan

M.B.C.M. Edin. 1887

Bromer. Norfolk