Thesis

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(old Regulations)

by

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Migraine
or
Periodical Headache

Aetiology, Symptoms and treatment
with some cases.

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There is probably no functional disease which presents a greater puzzle to the pathologist than the very common complaint known as Migraine or Sick headache: there are certainly few which incapacitate their victims so frequently or so completely. Nevertheless, the affection is commonly regarded, and often even by our own profession, as a trifling inconvenience, and little attention paid to it, until the habits of life and occupation of the patient are so formed and necessary that it is impossible to change them. In many cases the affection is a most formidable one, interfering disastrously with a man's career and success, operating, as it does, with greatest intensity.

in his best working years. If diag-
-nosed at puberty, or sooner, as may
frequently be done, this I am convinced; the
duty of the medical man to urge on
parents the adoption for their child of an
open air life instead of an indoor
sedentary one, to which unfortunately
the temperament of migrainous patients
leans. Many who only experience the
milder forms of the malady are able
to enjoy their lives and work, with but
slight inconvenience, but the victims of
frequent and severe hemicranial headaches
have their capacity for work and
enjoyment immensely curtailed. In
point of fact, where the victim is a man,
he is handicapped to quite as great an
extent as a woman by severe Dysmenorrhoea.

In the case of professional men few functional troubles are more damaging, and in the severer cases the aphasia and other sensory disturbances may, and have had, a more obvious interpretation set on them by the vulgar. A medical freind of mine had this experience and Liveing[I] relates a similar case. Certain it is that the attacks usually continue till middle life is reached, and the prediction that they will then decline or cease, is not infrequently unfulfilled, especially when the strain of life and habits remain the same as in early manhood. Treatment, which often acts like a charm in the milder cases, in the more severe is generally useless or actually harmful.

[I] Liveing. On Megrim and Sick Headache p. 101. 1873.

So that it seems advisable, when one sees at puberty or thereabouts a well-marked case of migraine, to recommend the avoidance of a sedentary life, and, so far as is possible, the adoption of one which will raise the digestive and nervous systems to their highest pitch. By this means too it may be possible to avoid handing down this wretched ailment to future generations.

Strange though it be this disease seems to carry with it a certain "cachet de noblesse". Regarding other maladies which afflict them, for the most part, people are silent, but the victim of "nervous headaches" does not hesitate to refer to his infirmity or actually boast of it. Kovalevsky[I] in his recent book.

I. La migraine et son traitement. p. 21 Paris 1902.

has an amusing passage. He says, "On envisageait autrefois la migraine comme une maladie noble, propre exclusivement aux classes privilégiées. Il faut avouer, que si l'on envisage cette maladie comme le privilège d'une certaine classe, cela n'en est pas un que l'on puisse lui envier. Cependant je me rapelle le temps où les femmes nerveuses des classes moyennes de la société faisaient parade de la migraine, comme d'une preuve de la délicatesse de leur nature. Ensuite la migraine s'abaissa jusqu'aux classes moyennes, et il s'y trouva un grand nombre de personnes souffrant de la migraine. Quelque temps se passa encore, et l'on découvrit la migraine chez les paysans, chez les femmes de chambre, les cuisinières, les artisans, &c:

La Migraine se démocratisa : les classes moyennes ne s'en vantent plus, mais se sentent cependant choquées que le peuple se permette d'en souffrir aussi" However that may be, it is still regarded I think, as "vapeur de jolie femme" or "mal de bel esprit" by its victims ; pathologists are more inclined to regard it as a sign of Degeneration, but since many distinguished men E.g. Airy the astronomer, Charcot, Du Bois Reymond, and even it is said Napoleon I, have suffered from Migraine, one may well feel content to be degenerate in such Company.

The Literature of the subject is some-
what extensive considering how definite
are the typical symptoms. It is chiefly
interesting from the ingenious theories
that have been propounded to account
for the remarkable sensory phenomena.
It was known to the older writers,[I] Galen
Caelius Aurelianus, Alexander Trallianus.
French authors have devoted a good deal
of attention to the subject and until Liveing's
work appeared. there were no English
authors at all comparable to Tissot,
Piorry, Pelletan, Labarraque, Calmeil.
In spite of this fact, however, the French
writers, while accurately observing the
symptoms of the disease, have been
singularly barren of theories to account
for it, most of the latter being of ~~French~~

I. Pelletan. de la migraine et de ses divers traitements
2me Edn. 1843 p. 12.

English or German origin.[1] Tissot seems to have regarded it as a purely stomach affection. [2]Pelletan, ten years later, thought it was neuralgia arising from various reflex causes, especially in connection with the eyes, the uterus or the stomach. The first to assign the cerebrum as the seat of the disease was Romberg[3] who called it a neuralgia cerebralis, distinguishing it sharply from peripheral Neuralgia. Du Bois[4] Reymond, himself a sufferer from migraine was the first who tried to give a physiological Explanation of the sensory symptoms. He was followed by Mollendorf and Eulenburg[4] The Standard work in English is that of Liveing published in 1873. Lately

1. Traité des Nerfs, quoted by Liveing p. 236-8
2. Pelletan - de la migraine et de ses div: trait.s 2.nde Ed.n 1843.
3. } Eulenburg. in Zeimssen's Cyclopaedia of the Pract: of Med: 1878
4. } Chapitre IX. vol. XIV p. 1-30.

Haig[1] and Rachford[2] have published theories differing entirely from the older views. These theories as to the nature of the disease may be considered as falling into four groups. 1. Practically until the time of Du Bois Reymond, it was regarded as a neuralgia of the fifth nerve, caused by various peripheral irritations e.g. uterine, gastric, ophthalmic, Piorry[3], Pelletan, Labarraque[4], Tissot. 2. The vaso-motor theories which are associated with the names of Du Bois Reymond, Möllendarf, Eulenburg. 3. The sensory "nerve-storm" hypothesis of Lincing- and Hughlings Jackson. 4. The toxic theories of Haig ~~and~~ Rachford

I. Haig- Uric Acid in Causation of Disease 2nd Ed. 1894 Chap. VI et passim.

II Medical News. May 26 & Nov: 3rd 1894.

III. Piorry- Memoire sur la migraine 1831

IV. Labarraque- Essai sur la cephalalgie et la migraine. Thèse 1837.

who assume that Migraine is due to a chemical poison exerting a special predilection for certain parts of the cerebrum. Probably no one has died of migraine so that its pathological anatomy is not, but these theories, while mostly, no doubt, erroneous, have contributed in no small degree towards a rational treatment of the disease, and possibly some of the later ones may yet resolve themselves into facts.

The first view, that Migraine is a Trigeminal Neuralgia has its supporters still. Pinkler[1] says, it is evident that there is a strong relationship between Migraine and Neuralgia of the Trigeminal

1. Pinkler Wharton in Pepper's System of Pract: Med: 1886. p. 406.

nerve, and if we study the symptoms of the two conditions and consider the causes which produce attacks of each, we cannot but arrive at the conclusion that Migraine is a variety of neuralgia of the ophthalmic division of the fifth. Further, that Migraine in Early life may become later a pure neuralgia. Anstie[1] speaks of it as "an inherited imperfect organization of the larger or smaller tracts in the medulla causing atrophic molecular irritation in the root of the trigeminus." He himself, in Early life had typical migraine while later his attacks were pure neuralgia. Allbutt[2] too supports this view. But the

1. Practitioner vol IX p. 273.
2. Medical Times and Gazette. 1885 vol I p. 205.

objections to this theory are strong. It is true that certain cases of migraine[1] tend in later years to assume more and more the character of neuralgia. But such cases are probably mere coincidences. The character of the pain is totally different in the two affections. In the case of an inflamed supra orbital nerve pressure over the painful site increases the pain. In migraine there are as a rule no painful points, and pressure does not affect the pain. Neuralgias are piercing, darting, and paroxysmal in character: the pain in migraine is dull, steady and progressive. People who suffer from both complaints readily distinguish between the different characters of the pain.

1. Auld. Lancet 1893. volume I p. 351.

The vaso motor theory was propounded by Du Bois Reymnd[1] who drew his inferences from his personal symptoms. He assumed that, in his own case at any rate, the migraine was due to a unilateral tetanus of the vessels of the head in the district supplied by the Sympathetic cervical. He suggested that this form should be called Hemicrania Sympathico-Tonica. A few years later, Mollendorf[2] suggested that the true cause was the converse, viz a unilateral relaxation of these vessels. Eulenburg[3] tried to reconcile these opposing views by assuming that the two forms, the Sympathico-Tonic and the Angio-

1. "Arch: für Anat: u. Phys" v. Reichart u. Du Bois Reymnd Heft. IV. p. 461.
2. "Ueber Hemikranie". Möllendouf. Virchow's Archiv: f. Anat: u. Phys: 1867. p. 385
3. Zeimssen's Cyclopaedia 1878. vol XIV. p. 1-30.

-Paralytic occur in each attack, the dilatation of the vessels following as a natural consequence on the tonic contraction. That, when only the angio-paralytic form is exhibited, the reason is that the Tonic stage is so short as not to attract attention, the dilatation of the vessels following rapidly on the short stage of contraction. In the Tonic form at the height of the attack the face is pale, the Eye Sunken, the pupil dilated, the temporal artery hard and cord-like, and the Ear on the affected side pale and cold. Eulenburg says the temperature in the External auditory meatus may fall 0.4° to 0.6° C., and that pressure on the Carotid artery of the

affected side increases the pain. In the angio-spastic stage or variety the picture is reversed. The face is red hot and turgid, the conjunctiva injected, the pupil contracted, the ear red and hot, and the temperature in the external auditory meatus increased 0.2 to 0.4° C.; the secretion of sweat is increased, the temporal artery enlarged, and compression of the carotid on the affected side eases the pain, while compression on the opposite side increases it. Eulenburg further says that irritation of the cervical sympathetic produces symptoms corresponding to the Tonic form, while paralysis, as by section, produces symptoms analogous to the Paralytic.

form (Claud Bernard's experiments). That the dilatation of the pupil may be accounted for by the excitation of the Dilator fibres arising from the Cilio Spinal centre and following the course of the cervical Sympathetic. That local tenderness can be elicited during and sometimes between the attacks in the region of the upper cervical ganglion and Spinous processes of the lower cervical and upper dorsal vertebrae, corresponding to the Cilio-Spinal region of the cord. That, the retardation of the pulse and increase in the Salivary secretion sometimes occurring, point to sympathetic involvement. Lauder[1] Brunton tries to explain the discrepancies in this vaso-motor theory by suggesting

1. St Bartholemew's Hospital Reports vol XIX. p 329.

that contraction and dilatation exist at the same time at different points of the same artery "the consequence of this disturbance being, that the blood instead of being gradually regulated in its onward flow by the gentle action of a long artery, is suddenly checked by a local contraction, and the successive impulses produced by the jet of blood hammering upon this contracted point give rise to great pain". This engaging vasomotor theory seems to have been widely accepted, e.g. by Vernel[1] Hammond[2], Wilks[3], Mac Lennie[4]. But such clear cut clinical pictures as those described by the advocates of this theory must be comparatively rare.

1. Traité Pratique de Médecine. Tome III p. 604
2. Diseases of the Nervous System p 690
3. Lectures on Diseases of the Nervous System p. 550 2nd Ed.n
4. Allbutt's System of Medicine vol VIII p. 82. art: Migraine

I have never seen a case where the contraction or dilatation of the pupil was marked, nor where the patient had experienced, what must be a distinct subjective Symptom, viz: the change from the angio-spastic to the angio-paralytic stage. Nor does the theory account for the aphasia and hemianopsia. Liveing says, "I have myself repeatedly watched the severest paroxysms of typical migraine without being able to detect any of those indications of hyperaemia to which Dr. Hallendorf refers; Cases in fact where there has been no apparent dilatation or objective throbbing of the vessels, no conjunctival redness, no contraction of the pupil. I have also carefully exam-

I Liveing. p. 315.

-ined the fundus of the Eye with the Ophthalmoscope in a severe hemicranial Case, where the visual phenomena were highly developed, and where, if at all, we should certainly have expected to find the appearances Dr. Möllendorf describes; yet I have been unable to discover any distinct difference in the vascular condition of the Choroid, optic disk or retinal vessels on the two sides, or any striking departure from the appearance of the same parts in health, and certainly no Evidence of hyperaemia. I am far from saying that the megrim paroxysm is never attended by such a disorder as Dr Möllendorf describes, but I am sure that it is often, and, I suspect very generally,

absent; and, this being the case, it is impossible to regard it as an essential condition of the paroxysm, or a principal cause of the symptoms."

Kovalevsky[1] says "Mais si même l'explication d'Eulenburg répondait à toutes les conditions, nous ne pouvons pas la trouver satisfaisante, car elle se rapporte à des cas, décrits dans les livres, et non à des cas que nous rencontrons dans la vie. Les cas classiques de migraine spastique et paralytique ne font qu'une toute petite partie des cas qui existent, et font plutôt exception de la règle générale; la grande masse des cas ordinaires de la migraine offrent une telle combinaison des deux formes de la migraine, que ni

[1] Kovalevsky: Op: cit: p. 150, La Migraine et son traitement 1902.

l'une ni l'autre des deux théories
n'est en état de les expliquer".
Indeed these theories seem to me merely
to restate the clinical symptoms rather
than to explain the cause of them.

The third explanation of the nature
of migraine - the "Nerve-storm" theory - is
associated with the names of Liveing[x] and
Hughlings Jackson. Liveing[1] regards
the affection as essentially an idiopathic
neurosis closely allied to epilepsy, and
interchangeable with asthma, gastralgia
and angina pectoris. He says "On
this theory then the fundamental cause
of all the neuroses is to be found, not
in any irritation of the visceral or
cutaneous periphery, nor in any disorder

1. Liveing p. 336.

or irregularity of the circulation, but is a primary and often hereditary vice or morbid disposition of the nervous system itself; this consists in a tendency on the part of the nervous centres to the irregular accumulation and discharge of nerve force — to disrupted and uncoordinated action, in fact; and the concentration of this tendency in particular localities or about particular foci, will mainly determine the character of the neurosis in question. The immediate antecedent of an attack is a condition of unstable equilibrium and gradually accumulating tension in the parts of the nervous system more immediately concerned, while the paroxysm itself may be likened to a storm, by which

this condition is dispersed and Equilibrium for the time restored." In support of his theory he adduces the facts. 1. That in those diseases, migraine Epilepsy, asthma, the symptoms are paroxysmal and in many cases truly Explosive in character. 2. That they are intermittent, tending to recur at approximately regular ~~intervals~~ periods with healthy intervals. 3. The impunity with which a sufferer may expose himself to various influences, for a certain period after a seizure, which at another time would infallibly have occasioned an attack. 4. That the Exciting causes are so varied in character as to render their operation only intelligible on some such notion as that of a gradually increasing instability

of equilibrium in the nervous system. He also supports and illustrates his theory by the analogy of various healthy nervous actions which seem to partake of the character of "Nerve Storms". viz: the act of sneezing, the gradual accumulation and dispersion of a natural appetite, and the development of a mental Emotion or fit of passion -

Hughlings Jackson[1] speaks of migraine as a sensory Epilepsy, the discharging Centre being situated in the posterior lobes of the Cerebrum, or such parts of them as are developed out of the optic thalamus. He thinks migraine bears the same relation to hemianaesthesia with hemianopsia from disease of the optic thalamus, as unilaterally beginning convulsions do to the

1. The Lancet Aug: 14th 1875. p. 244.

ordinary kind of hemiplegia from destruction of the corpus striatum.

This doctrine of sensory nerve discharges is excellent as a theory, pure and simple, and, it has the advantage over the vaso-motor theories, in that the advocates of the latter were obliged because, in addition to the circulatory disorders, some kind of morbid irritability in the nervous system as a cause of the disordered circulation. But, while it is an adequate Explanation of the symptoms, it is utterly lacking in proof. Nor does it take us much further aetiologically, offering as it does no cause for these nerve explosions, the Explanation of which may possibly yet be found by the method of investigation next to be considered.

The fourth theory concerning the nature of migraine may be called the Toxic Theory. Its chief advocate is Haig.[1] Himself a sufferer from migraine and in despair of obtaining any complete relief from drugs he abandoned butcher meat, replacing it by milk and fish with complete relief from his headaches. Thinking that the clinical history of migraine brought out a strong relationship to gout, he began to suspect that Uric Acid might be the cause in both cases. He found that, when he "separated the urine excreted during the headache from that both before and after it, a definite and distinct relationship between the headache and the excretion of uric acid at once became apparent." After having noticed the relation of the headache to

I. Uric acid in Causation of Disease 2nd ed. 1894 p. 3.

the Excretion of uric acid, he "soon noticed that each of its concomitant symptoms bore exactly the same relation to uric acid, that, when the pulse was slow and of high tension, there was always a greater excretion of uric acid than when it presented the opposite character, and the same with the mental depression and scanty urine."
He then found that he could produce an intentional headache. ..."that when I produced an increased excretion with alkali, I produced the headache, mental depression, cold surface, slow pulse and scanty urine, and that, when I stopped the plus excretion with an acid, I removed all those symptoms; So that not only had I acquired the power ~~to relax or contract~~ to produce or remove the headache ~~the arteries~~, but I had also the power

to relax or contract the arterioles and capillaries, to affect the tension of the pulse, the rate of the heart's action, and thus to influence the circulation in the brain, skin and kidneys, and probably the whole body." He then went on to investigate the action of various drugs on the Excretion of uric acid and found that "I ~~acid~~ substances which increase the solubility of uric acid increase its excretion and clear it out of the body, while, conversely, all substances which diminish its solubility diminish its excretion and tend to produce its retention in the body and accumulation in various organs and tissues". Further he says "II ... as side issues I have been led to reason on the pathology of epilepsy,

I. Haig. p. 17. Uric acid in Causation of Disease 2nd Ed.
II Do. p. 4.

in some cases of which I found exactly similar fluctuations in the excretion of uric acid to those met with in migraine thus explaining a clinical relationship between these two diseases which had long been known and written about— also on the pathology of rheumatism and rheumatoid disease, the causation of Bright's disease, Raynaud's disease, and paroxysmal haemoglobinuria and anaemia." " I. As regards the causation of the headache, the effect which, as we shall see presently, uric acid exerts on all the vessels of the body, is closely allied to that which occurring locally, has been supposed to be the cause of the pain.... irritation of the vaso-motor nerves in the region of

I. Haig p. 123. Uric acid in causation of Disease 2nd Ed.

the cervical sympathetic ..... I think however that the effects of uric acid in contracting the peripheral vessels and producing high arterial tension, and the further effects of this high arterial tension on the intra-cranial circulation, will give us a much better explanation of the causation of the headache than any more or less hypothetical irritation of the cervical sympathetic". That uricacidaemia should produce in certain people migraine and not Epilepsy or arthritis, he thinks due to the probability "that certain parts (of the brain) possibly owing to local conditions of anatomy, function, or nutrition are specially affected and give rise to special symptoms." "Cf 2

1. Haig p 126. 2nd Edition, Uric acid in causation of Disease
2. Do p 127 "

regards migraine. I have suggested that that the possession of large arteries of supply may render some more liable than others to suffer from the intra cranial effects of high arterial tension: this in part accounting for the fact that migraine is more common among those who work with their brains than among those who work with their muscles."

I.
Rachford of Cincinnati has made some inquiries in the same direction. He confirms the results obtained by Haigh regarding the increased excretion of uric compounds during attacks of migraine, and, in addition, finds there is then a decided increase of paranucleine in the urine. In normal urine

Medical News. May 26th & Nov 3rd 1894. quoted by Lyman. in XX Cent: Pract: of Med: vol II p. 468

he finds it present in almost infinitesimal amount, but in migraine it and the other leucomaines of the Xanthin group are discovered in relatively large amounts. In one case he obtained a cubic centimetre from urine voided during a migrainous attack, whereas he found that one litre of healthy urine only contains one milligramme of paraxanthin. Following up these researches during the next three years [I] he says that in more than 50 migrainous patients he has rarely failed to find a great excess of paraxanthin in the urine, even when only small quantities of urine were available. Also that it was not excreted by these people at any other

I. American Journ: Med: Sc: April 1898.

time than during an attack. Its toxic effect on the nervous system he proved by injecting a small quantity into the peritoneal cavity of a mouse. He found it only in a small proportion of epileptics after an attack. He reasserts his belief that parananthin is an essential factor in the production of migraine.

Whether one or other of these theories is true remains to be seen. It is more than doubtful whether all cases of migraine show the high tension pulse which is an important part of Haig's theory. Still these investigations are a great advance on the vasomotor and nerve storm theories

Evidence[I] has long been accumulating that migraine and arthritism are in

[I] Jackson - Lancet 1875 vol II p 51
Liveing p. 399 - Jones, Lancet 1898 vol I p 326
Migraine et Arthritisme. Soula. Thèse de Paris 1884. p. 54.
Abbutt - Medical Times & Gazette 1886 vol I p. 205
Latham - Lancet 1886 vol I p. 773.

some way allied. A recent author[1] says migraine bears a close relation to gout. where the uric-acidaemia is only a symptom of the disease and not the cause. That it is a toxaemia, the nature of which is likely to be found in the investigation of the blood before, during, and after the paroxysms. That the liver and digestion are important elements in the causation. "If from any cause the power of the intestine to resist invasion by toxines formed by bacteria in the alimentary canal, but not under normal circumstances absorbed, be lowered, an absorption of these toxic substances may occur, and this absorption may initiate a disturbance in that part of the patient's

[1] article in Encyclopaedia Medica (Edin) vol 8 p. 93. (1901).

system which has naturally a low
resisting power."

Factors which act as Predisposing and Exciting causes of Migraine.

1. Heredity. Migraine is probably transmitted from parents or ancestors to children more constantly than almost any other disease. In 20 cases which I have investigated ~~observed~~ I have found a definite migrainous history in 13. Liveing[1] found it in half his cases. Kovalevsky[2] in ⅔ out of 110. Vermel[3] says it is the most important predisposing cause. Eulenburg[4] says it is as well established as in Epilepsy, insanity and hysteria. Pelletan[5] observes the same thing. Eulenburg thinks it follows most frequently in the female line. This is denied

1 Liveing p. 28
2. Kovalevsky, de la Migraine et son traitement p. 11.
3. Traité Pratique de Méd: Tome II. p. 605.
4. Zeimssens Cyclop: 1878 vol. XIV. p. 167.
5. De la Migraine et de ses divers traitement 2me Ed. 1843 p. 68.

by other[I.] writers but since women are probably more frequent victims than men it is naturally oftenest transmitted from the mother. French writers term this direct transmission of a similar disease l'hérédité similaire. By l'hérédité hétérogène, they designate migrainous cases which seem to owe their origin to parents of neurotic gouty or rheumatic diatheses. In this connection must be mentioned Epilepsy, which most of the older writers regarded as being closely connected with migraine. Hirtz[2] says they are closely allied. Eulenburg[3] says they often alternate in the same family. Féré[4] out of 308 Epileptics found that migraine Existed in the fathers

1. Kovalevsky p. 11. La Migraine et son traitement 1902. Sinkler in Hare's System of Pract: Therap.tics 1892 p. 407.
2. Dictionnaire de Med: et de Chirur: vol XXII p. 503.
3. op. cit: Viz: Zemissen's Cyclop: 1878 vol XIV. p. 7.
4. quoted by Kovalevsky p. 12. op: cit:

in 88 cases and in the mothers in 116 cases. Sucklng[1] says this closely allied to Epilepsy, that the subjects of migraine are liable to epileptic attacks which replace the attacks of migraine: that the Epilepsy of migraine is usually curable but the headaches become more severe when the Epilepsy is cured. Liveing[2] says "this is doubtless the particular neurosis which exhibits the closest connection with megrim" My own experience would lead me to believe that the relationship is not so close. I have only found a definite history of Epilepsy in 3 cases out of 20. Wood and Fitz[3] think it is in the highest degree improbable that any relationship

1. On Periodical Headache or migraine p. I.
2. Liveing p. 205.
3. Practice of Medicine. Wood Fitz 1897 p. 458

Exists. Hammond[1] is of the same opinion. Wilks[2] argues similarly, and affirms from his experience that migrainous patients never become epileptic or belong to epileptic families. "In a word," he says, "I see no resemblance between an attack of migraine and epilepsy. I observe they never pass the one into the other, they do not occur in the same families or the same class of persons and the remedies which relieve the two diseases are different." No doubt epileptics are frequent sufferers from headache but I do not think there is adequate proof that migrainous subjects tend to become epileptic. It is certain however that in nearly all

1. Diseases of the Nervous System p. 690
2. Lancet 1888 August 11th

migraineous histories nervous diseases abound. Many other Constitutional diseases have been suggested as the parents of migraine, e.g. gout, Rheumatism, tuberculosis, Syphilis, but, with the exception of the first two, none of the rest have any claim. Junker[1] in 1747 said that gout may manifest itself for some time solely as migraine, appearing later as regular gout. This accords remarkably with the theory of Haig. Wood and Fitz[2] say almost all cases seen in Philadelphia have a distinct gouty history. Sucklin[3] says in a large number of cases there is evidence of gout. Lueing[4] says there can be no question as to the frequent connection of

I. quoted by Kovalevsky op. cit: p. 13. La Migr: Hom trait:
II. Pract: of Med: 1897 p. 458
III. On periodical headache p. 1.
IV. Lueing op. cit: p. 404.

megrim with a gouty diathesis and its occasional replacement by fits of regular gout. Kovalevsky[1] quotes Charcot and Trousseau as favouring this view, and among his own cases 25 per cent had a gouty history.

2. Sex. Most authors are agreed that women suffer more frequently than men. Pelletan, Hirtz and Vermel[2] say they are more often attacked. Eulenburg[3] says the proportion is 5 women to 1 man. Kovalevsky[4] thinks it is about 2½ women to 1 man. Liveing[5] says it is about 5 to 4, while Suckling[6] thinks women suffer only a little more frequently but much more severely than men. It is likely that Liveing's figures are most.

1. Kovalevsky. La Migraine etom traitement 1902 p. 13.
2. Pelletan. De la Migraine 2me ed: 1843. p. 69.
   Hirtz. Dict: de Méd: et de chir: vol XXII. 1876 p. 503
   Vermel. Traité Prat: de Méd. 1897 Tome II. p. 606.
3. Eulenburg. Ziemssen's Cyclop: 1878. vol XIV. p 5.
4. op: cit: p. 18
5. Liveing. p. 22
6. Suckling On Periodical Headache p. 4.

correct. It is probable that in these cases the sexes were not Equally represented, since women seek advice more readily than men. The most typical cases I have seen have been in men and in them the optical and sensory phenomena have been better represented. However, since the catamenia are a frequent Exciting cause, probably women are a majority.

3. Age. Migraine is commonest in the active period of life. It is not uncommon in children before the age of puberty but young children seldom complain of headache and periodic malaise with occasionally vomiting may be all the subjective signs. Suckling[1] says there is usually fever in such cases but this occurrence would cast grave doubt on

1. Suckling: op cit: p. 4. on Periodical Headache.

the diagnosis. Later ##1 I will quote some cases of what I believe to be migraine in young children. Most frequently, however, it is manifested at puberty, increasing in violence till about the age of 30-35, and then, in a certain number of cases, becoming less severe and less frequent as age increases. Women often get relief with the menopause. Tissot[2] said if you did not have it before 25 you were immune. This is not absolutely true. I have seen several cases where migraine has appeared after thirty, owing to adverse circumstances, but in such cases the elimination of commencing organic disease has to be carefully made. The more marked the migrainous history the earlier is the disease likely to manifest itself, but I have not found that such

2. quoted by Eulenburg. op cit. p. 6.
1. vide page. 113. Cases 16. 17. 18 + Dr. Gee's cases p. 118

cases are more inveterate than where the hereditary tendency is less marked.

4. One of the most important factors amongst those which predispose to migraine is a sedentary indoor life. It is said that a regular and automatic mode of life is beneficial, but I think migraineux are more often than not people of fixed habits, whose lives run in a dull routine. People accustomed to a reasonable variety of climate, food, occupation, amusement, suffer far less frequently, probably because slight upsets do not act as exciting causes of the malady. If Haig's theory as to the causation of migraine be true, the explanation is simple, viz that unwonted exercise or emotion floods the blood with excess of uric acid, which

is eliminated by the urine. If however the Exercise be continued, since there is probably no increased formation of uric acid[1], there will soon cease to be an Excess in the blood.

5. Social position. Migraine belongs to all grades of life. Kovalevsky[2] says that out of 110 cases 54 belonged to the aristocracy, 30 to the clergy and business men, 8 to the lower middle classes and 16 to the labouring classes. Statistics of this kind however will vary with each observer. Lucius says a great proportion of cases lie among the working classes.

6. Visual Defects. With regard to visual defects as a predisposing cause there is considerable diversity of opinion. Weir.

1. Haig. p. 16 Uric Acid in Causation of Disease 2nd Ed.
2. Kovalevsky p. 22 La. Migraine et son traitement 1902.

Mitchell[1] was I think the first to call attention to eye defects as a cause of head-ache. Brunton[2] says between 80 and 90 per cent of all headaches are due to this cause, e.g. hypermetropia, myopia, astigmatism, inequality of the focal distance of the two eyes and imperfect converging power. This would practically reduce the treatment of migraine to a correction of abnormalities of vision. Kovalevsky[3] does not think it is a frequent cause and Suckling[4] out of an enormous number (over 5000) of cases has only met with 2 or 3 which have been benefited by glasses. Brunton[2] quotes several remarkable cases, but I think the frequency of this cause of headache has been

1. American Journ: Med: Sc: April 1876.
2. Practitioner Feb: 1894 p. 102.3
3. op. cit: p 31. La Migraine et son traitement 1902.
4. On Periodical Headache p. 7.

exaggerated in recent years, and, while bearing in mind the necessity of eliminating it, I am chary of holding out any hope of benefit by this means.

7. Migraine, like many other diseases has been included in the indefinite list of nasal reflex neuroses, from polypi adenoids &c. but with little foundation. For the last decade operations for adenoids have been exceedingly common and, if such a cause for migraine had existed, it would have been well established by now. I have not seen a case of the kind.

The exciting causes of migraine are very various. The slightest infraction of the rules of health, of fixed habits, overwork

want of sleep, Emotion, articles of food want of food, alcohal, railway journeys, crowded rooms, bright lights, changes of weather, sexual excitement, in short, circumstances of all kinds, in themselves the most commonplace, are sufficient to excite in a migrainous subject an attack of his malady. Kovalevsky[1] mentions the case of a lady who had an attack every time she touched a piece of satin, and Labarraque[2] that of a medical man who was similarly affected by an aut-opsy. I have a patient who is attacked every time he is foolish enough to eat salmon. The most common causes in my experience are Railway journeys, theatre-going and fatigue bodily or mental.

1. op. cit: p. 32. La Migraine et son traitement 1902
2. quoted by Hirtz: ~~op. cit~~: p. ~~507~~ 506. Dict: de méd: et de chir: 1876 vol XXII.

Clinical features of Migraine.

The symptoms of migraine vary both in severity and in character. Hirtz[1] well describes this peculiarity. "Véritable Protée dans ses manifestations, modifiant ses allures d'un malade à un autre..... la migraine comme l'hystérie ne se prête que difficilement à la description d'un type classique. ..... On peut dire que chacun a, pour ainsi dire, sa migraine, presque constante pour chaque individu, mais fort différente dans la généralité. ..... tandis que, pour les uns, l'accès détermine un accablement et une prostration qui jettent le malade impuissant sur son lit, il n'est que, pour les autres, qu'une sensation vague, soit de douleur céphalique,

1. Hirtz ~~loc cit~~: p. 507.
Dict: de Méd: et de chir: 1876 vol XXII.

Soit de naucsées, soit de somnolence, qui n'empêche pas le travail quotidien."

Many attempts have been made to classify the different varieties. E.g. Idiopathic and Symptomatic. Hughlings Jackson divided it into 3 varieties. Typical subtypical and supra typical according to severity. French writers[2] describe many forms. E.g. La migraine simple, ophthalmique, névrose, ophthalmoplégique. There does not seem to be any advantage in such subdivisions, which only tend to complicate the subject. The simplest method of describing the disease is, I think, to regard the form known as ophthalmic migraine as the typical form

1. Compendium de med: prat: article migraine 1845.
2. Kovalevsky p. 34. La Migraine et son traitement

and the other varieties as complicated or abortive types.

Attacks occur as a rule with but little regularity, every week or fortnight or month or year. There are exceptions however. Some women have attacks regularly at the catamenial period and at no other time. Pelletan[1] mentions the case of a monk who was attacked every Monday. Sutkler[2] quotes 6 cases in which attacks came on, on the same day regularly, with a definite cause in some cases, in others not. Some people too have attacks on Monday, often I think, the result of over-eating on Sunday. Liveing[3] says that in a considerable number

1 Pelletan. De la migraine 2nd Ed. p. 52.
2. Medical News 1889 July 19th
3 Liveing p. 39.

of cases there is a certain kind of periodicity, not exact like that of ague but only approximate. This is only what one would expect, since the exciting causes are so various and for the most part accidental in character. In this connection Lweing[1] has a remark, the truth of which I can vouch for from my own experience, viz: that the more severe the seizure, the greater the immunity which precedes or follows it.

Prodromal symptoms of various kinds have been described. Sinkler[2] has three remarkable cases. One, a woman who used to see two of her children at her right side before an attack.

1 Lweing p. 39.
2. Hare's System of Pract: Therap: 1892 vol III p 376.

Another, who used to see a large and hairy dog, and a third a green snake. Lueneig[1] and Kovalevsky[2] give examples of a somewhat similar kind, but I do not think these definite auras are met with often in some migraine. However, undoubtedly some people know that their enemy is imminent, but they are seldom able to say why, further than that they have a presentiment or foreboding. Occasionally a sense of depression and indisposition to work, a vague and groundless sensation of impending disaster, muscae volitantes, or borborygmi occasion the uneasy feeling of a coming attack. On the other hand it is not unusual to find patients who say they know

1 Lueneig p. 88-90 On Megrim & Sick headache
2 Kovalevsky p. 40-44. La Migraine et son traitement

they are in danger when they feel particularly well. Quite commonly. however the attack commences quite suddenly like a bolt from the blue, and, in cases where the ocular symptms are well marked this is in my experience the rule, that the amblyopia or other visual derangement is the first and most disquieting symptom. Vater[1] in 1713 is said to have been the first to describe this symptom under the title of partial temporary amaurosis. Parry[2] Wollaston,[3] the astronomer Airy[3] all suffred from this symptom and have left detailed descriptions of it. Piorry in 1831 was the first to make a special study of it, and described[4] it from his

1. Kovalevsky p. 69 La Migraine Etude Traitement
2 Dueing p. 9. on megrim & sick headache.
3. Idem p. 10. 419.
4. Quoted by Pelletan p: 30. De la migraine 2ème Ed: 1843.

sensations. Au moment de l'invasion la vue est moins nette, on éprouve une sensation très analogue à l'éblouissement, il semblerait qu'un nuage se manifeste au centre de l'image, qui se peint sur la rétine : peu à peu le point terne qu'on observait s'étend ; bientôt, et après une ou deux minutes, il se dessine à l'entour de l'espace obscurci un arc de cercle lumineux, colorés chez quelques individus, mais pâle chez les autres, disposé en zig-zags, agité par une sorte d'oscillation continuelle. D'abord très petite, cette portion de cercle grandit en même temps que le point central obscurci commence à s'éclaircir, et se développant de plus en plus

scintillant continuellement, semblant se rapprocher successivement de la circonférence de l'iris, l'arc lumineux finit par disparaître lorsqu'il arrive à l'extrémité du champ de la vision" Parry had previously given a very similar description, and Airy's later[I] one only differs in details. The phenomena described by these writers, the fortification spectra, luminous eddying wheels, balls of light, zig-zag lines and sparks of various colours are either as I think, comparatively rare, or else the anticipation of the suffering that is to follow produces a disinclination to accurate observation. In my own case where zig-zag fortification spectra

I. Dr. Hubert Airy, Liveing p. 802-4.

are very pronounced, any attempt on my own part to observe the phenomena continuously, speedily intensifies the nausea which is commencing at this time. The commonest description one hears from patients is that of a "mist before the eyes", and sometimes a description of the sensation caused by looking at the sun. The latter exactly describes my own case at the beginning, so well indeed, that, when I have inadvertently looked hard at the sun while golfing, I experience the well-known uneasy sensation. Wood & Fitz[I] say the most frequent disorder of sight is an amblyopia accompanied by vivid scintillations of light passing zig-zag over the field of vision. Nemeiopia, Either

I. Practice of Medicine - Wood & Fitz 1897. p. 458

monocular or binocular, sometimes lateral, sometimes vertical, may replace the amblyopia. Or a central scotoma may be the chief phenomena, and rarely these changes of vision change into one another. Kovalevsky[I] says "de toutes les formes de scotomes c'est le scotôme ordinaire et le hemi-scotôme qui se rencontrent le plus souvent, le scotôme central se rencontre plus rarement". Lueing[2] says both eyes are always affected, while Kovalevsky[3] declares that, either only one eye is affected, or only one half of the visual field. Probably, as in the case of migraine symptoms generally, there is not much uniformity in this respect. Nor is it easy to prove since the phen-

I. Kovalevsky p. 73. La migraine et son traitement 1902
2 Lueing p. 78 on Megrim & sick headache 1873
3. Kovalevsky p. 71

-omena continue when the eye is closed. Patients, too, are seldom seen in this stage, nor would they be likely to submit themselves to examination if they were. The same difficulty has prevented any reliable ophthalmoscopic examinations being made. Liveing[1] had an opportunity, but could detect no fundal changes. Moellendorf[2] says the results of ophthalmoscopic examination vary; that in a few cases there is dilatation of the central artery and vein of the retina on the affected side, and dilatation of the choroidal vessels, but that often the conditions are normal. Harris[3] professes to have studied 11 cases of hemi-anopia in migraine. He found that the dividing line passed exactly through

1. Liveing p. 80 on megrim and sick headache
2. quoted by Eulenburg in Reinssens Cyclop: 1878 vol XIV p. 15 13
3. American Year Book of Med: & Surg 1899 article Migraine.

the fixing points, and did not show the indenture which ordinarily appears in clinic cases; that quadrantic defects in the visual field are strongly suggestive of cortical lesion. He attributes the scintillating scotoma in Migraine, the fortification spectra &c: to discharge in the half visin centre in the Cuneus. Gowers suggests "a hypothetical higher visual centre in the region of the angular convolution, which immediately subserves the perception of visual impressions", and that the spectra of migraine and Epilepsy "may be due to some struggle, or, if the Expression may be pardoned, harmonious discord between the higher visual centres in the two hemispheres"

1. On Subjective visual sensations Lancet 1895 vol I p. 1564 + 1627.

During the persistence of the Ocular Symptoms the mind is quite clear: at first no headache is felt, but it soon makes its appearance, and, as it increases, the ocular symptoms pass off. They usually last about 20 minutes. Sometimes a considerable degree of vertigo is felt, and very commonly nausea, which passes off towards the end of this stage, to commence again later on. It is here too that the peculiar sensation of "faux souvenirs" is sometimes experienced. With regard to the condition of the pupil nothing definite is known. In my own case it remains quite normal. Some cases, which may be called Abortive Forms cease at this stage, "the vanishing I inheritance of previous generations"

Living p. 61 On megrim and side headache

This has been occasionally my own experience, more frequently during the last few years, when the attacks have become feebler and less frequent. In some people, but most infrequently, a timely dose of antipyrin and caffeine may produce a similar result. In others again this stage is omitted or is so slight as to escape notice. I may remark here, that, when the ocular symptoms are well-marked, as a rule the sensation is an extremely disagreeable one, so much so indeed, that one feels a sense of relief as the headache comes on and the eye symptoms pass off. The headache commences little by little, generally over a very small and definite area usually

supra-orbital or frontal. Gradually increasing it spreads towards the temporal and parietal regions and may involve the opposite side while yet preserving a maximum of intensity at the spot and side originally attacked. Vermeil[1] says a peculiarity of the headache is, that the pain is either all over the head or in one half, the front or the back, or in one quarter, that is half the front or half the back; it rarely is found in the sagittal direction, i.e. in one half of the front and one half of the back. In other words the carotids or the vertebral arteries are affected, or both, not one of each at the same time. The headache of migraine

1. Traité Prat: de Medecine. Tome II p. 614. Paris 1897. (Bernheim et Laurent)

is a dull boring pain quite unlike the piercing ordarting character of Neuralgia. The authors of the Compendium[I] describe it as follows ÷ "Il semble à l'un qu'on lui perfore la tête avec une vrille, ou qu'on la lui brise avec un marteau, à l'autre, qu'on y darde incessament des pointes acérées, ou qu'on exerce des tractions à l'aide de tenailles : celui-ci croit sentir un étau qui rapproche l'une de l'autre les regions temporales; celui-la, au contraire, croit que les sutures du crâne vont céder à une force intérieure". I have not noticed Tissot's painful spots but a general cutaneous hyperaesthesia is felt over the painful site in a diffuse form.

I. Compendium de med: prat: art: by Monneret et Fleury p. 507. 1845. quoted by Hertz op. cit p. 507.

Eulenburg[1] says deep pressure over the region corresponding to the upper sympathetic cervical ganglion causes pain, and sometimes also when applied to the spinous processes of the last cervical and first dorsal vertebrae. As a rule, the pain occurs on the same side in each person, but not invariably so, and it may leave one side altogether and take up the other[2]. The frequency with which the different sides are affected is doubtful. Hirtz[2] says the left side is commonest and compares Hysteria, where the motor and sensory symptoms are commonest on the left. Kovalevski[3] in 110 cases found the left side affected in 44, the right in

1. Eulenburg: ~~op. cit~~: page 11. Zeimssens: cyclop: vol XIV
2. Hirtz ~~op. cit. p. 510~~ p. 511 Dict: de méd et de chir: 2nd ed: vol 22.
3. Kovalevski ~~op. cit.~~: p: 46 La Migraine et son traitement

30, both sides in 32, and the vertex and occiput in 3 cases. As a rule I think the bilateral cases are the more severe. The headache is said to affect the side opposite that in which the visual disturbances occur. The special senses become hyperaesthetic and bright lights, noises. and smells are abhorrent. Some degree of mental confusion is common. The nausea which had lessened as the visual symptoms passed off begins to increase and attempts at Emesis increase the headache. In some cases vomiting gives relief, but often only adds to the discomfort. At a varying period of the attack, but always in my experience after the visual Symptoms

I. Kovalevsky p. 47. La Migraine etiology traitement.

have disappeared, two remarkable symptoms may appear, aphasia and numbness and tingling of the hands, arms or tongue. The nature of the Disorder of speech is doubtful. In the two cases in which I have observed it, it chiefly consists in a difficulty in finding the right words to express the idea which the patient wishes and which is quite clear to him. In mild attacks by speaking very deliberately, he may contrive to speak coherently, in the more severe, he is wise to wait until the symptom passes off. I think the disorder is rather amnesic than due to ~~in~~-coordination, since it is not words that are wanting but the right words. Liveing quites an excellent example of an in-

I Liveing p 97

-Coherent Conversation which is very similar to some I have heard.
The numbness and tingling is commonest in the fingers, hands and arms, and I have not observed it in other sites. Ewing[1] quotes cases where it occurred in the lips and tongue and rarely in the lower extremities. I think the affection is purely sensory: in two cases which I have observed, and in which the symptom is very well marked, there is no impairment of motor power. In both my cases both hands were affected but the right first and most severely. Ewing[2] observes that, out of 12 cases, in no instance was the left side alone affected where there was impairment of speech; Both my cases

1. Ewing p. 88-9
2 " p. 107.

had aphasia. Both these symptoms in my cases appeared when the head-ache was reaching its culmination, lasted about half an hour, and with their disappearance the headache and nausea began to decline. In some of Liveing's cases[1] however they appeared with the visual symptoms. I have not seen or read of any cases where the aphasia or numbness were the only features of the attack. With regard to the vomiting Wallace[2] says, I do not know on what grounds, that it is proportionate to the acidity of the gastric contents. In some cases it is so great that the stomach rejects everything. Not uncommonly after the attack there is some diarrhoea, or a copious discharge of urine

1 Liveing p. 101
2 Lancet vol. 1893 p. 80

During the attack the face is pale, the Eye sunken, the pulse slow, the Extremities cold. With regard to the State of tension of the pulse there is, I think, considerable variation. Soft Compressible pulses are met with as frequently as those betokening high blood pressure. I After a varying time, generally less than 12 hours, the patient falls asleep, or is able to get about. The after state varies greatly: Some are Comparatively well in a few hours; others remain in a languid state of mind and body for a couple of days, with often a slight remaining headache.

The Ophthalmic Form may, I think, be regarded as the typical fully-developed type of migraine, the other

I Haig Uric Acid in Causation of Disease 2nd Ed. p 116.

forms described by various writers being merely milder or more severe cases. There is I think no one symptom that is constant, neither the ocular symptoms, nor the headache, nor the nausea. The affections of speech and touch are the least frequent and have not occurred, I think, except in the Ophthalmic variety.

A few cases are described of what may be called an abortive type where the ocular symptoms constitute the whole attack. The only case of the kind I have met with is in a patient who suffers from typical ophthalmic migraine, and who occasionally, since his attacks have become milder, has the good fortune to find that the headache and nausea do not succeed. Lüning I. quotes several

I. Lüning p. 8. 9. 19.

. cases of this variety.

The commonest type is where the periodical headache is the only symptom, none of the other interesting phenomena being sufficiently in evidence to attract the patients attention. The periodicity of the attacks, the character of the pain, and the usually well marked heredity, render the diagnosis obvious.

A more obscure[I] variety which is probably of migrainous nature is that in which nausea and vomiting are the only symptoms. This type occurs in children, and its affinity to migraine may I think be inferred, from the family history, the periodical nature of the attacks, the absence of any obvious cause of vomiting, and the normal

I. Cases 16. 17. 18 page 113

state of health in the intervals. Further, the accidental and uncertain nature of the exciting causes, the irregular periodicity of the attacks, and the fact that immunity is conferred for some time by an attack, strengthens the inference. I have only v: page 113 cases 16, 17, 18
seen three cases of the kind. Dr. Gee[1] has quoted 9 cases and regards them as being allied to Migraine[2]: he says the tendency to vomit passes off usually in a few years. Whether such cases later develope typical migraine is an interesting question. Suckling has met with several cases of periodical vomiting which he regards as migraine (on Periodical Headache p. 5) Colliqnm gives as diagnostic points of migraine in children, recurring at-

1. On Fitful or Recurring Vomiting. Reprint from St Bartholomew's Reports vol XVIII. Cases quoted infra. p. 118. see also cases 16. 17 & 18 page 113.
2. In letter to author: Jan 4th 1900.

-tacks of vomiting lasting 3 or 4 days, at-
-tended not with marked headache, but
with considerable prostration ..... and
sensibility to light and sound.[I]

Cases[2] have been described from time to time of what is probably a variety of migraine under the title of Recurring or Periodical oculo-motor paralysis. Charcot,[3] who was one of the first to regard this condition as a variety of migraine, suggested the title of Migraine Ophthalmoplégique, the name by which it is now commonly known. It consists in periodical attacks of migraine, unilateral headache nausea and vomiting, which passes off leaving a varying degree of paralysis of the eye muscles both internal and

I. Révue mens: des. mal: del'enfance Jan '97.
Quoted in Me Amer: Year book of Med: & surg: 1898 art: migraine
2. vide Cases at end of Thesis. p. 122.
3. Charcot. Progrès Med: Aug: 2nd 1890

. External supplied by the 3rd nerve. The paresis is of varying duration but at first usually passes completely off before the next attack. With successive attacks however the Condition tends to become permanent. With rare Exceptions only one eye is affected. The patients are usually children or young adults and most of the cases quoted belong to the poorer classes. I cannot find a case where cure or Spontaneous arrest has taken place. Lüning[1] seems only to have seen one rather doubtful Case. (vide cases page 122)

There have been described, under the titles of the Transformations[2] or the Equivalents[3] of Migraine, certain diseases which

1 Lüning p. 424-5 On megrim and sick headache 1873.
2 " p. 204.
3 Kovalevski p. 104. La migraine étude traitement 1902.

alternate with or replace typical attacks. of the malady. Liveing[1] describes a case of a doctor who suffered from periodical stomach pain for sometime which was replaced later by attacks of headache. Kovalevski[2] relates a case, where severe pain in the right side of the chest replaced the headache in a migrainous patient, the vomiting and ocular affection remaining as before: and another[3] where heart-burn alternated with the headache in different attacks. Both these writers also quote examples[4] of asthma replacing migraine. Of the connection between Epilepsy and Migraine I have spoken before[5] (p. 37). Kovalevski[5] says they have the following affinities. 1. They are both hereditary. 2. They alternate in the same family and person. 3.

1. Liveing p. 213. On megrim sick headache
2. Kovalevski p. 106. de la migraine et son traitement 1902.
3. Do p. 107
4. Liveing p 214. Kovalevski p. 108-9.
5. Kovalevski p. 118.

They both appear periodically from accidental Exciting causes. 4. They are both followed by Exhaustion. 5. Both often accompany the uric acid diathesis. 6 Both may be followed by paralyses E.g ophthalmoplegia.

Anatomical Site of Migraine.

Very little is definitely known. Eulenburg[1] who is chiefly concerned with the headache thinks it is in the branches of the Trigeminal and Sympathetic which go to the Dura Mater. Vernel[2] is of the same opinion. Liveing[3] thinks the site is limited to the sensory tract and the ganglia of the sensory nerves from the optic thalamus above to the nucleus of the vagus below. Jackson[4] says the lesion is in some part of the cortex of the posterior lobe, and that the visual symptoms are probably accounted for by a discharge of nervous elements in Ferrier's visual centre. Against this latter theory is the fact that the cerebral substance seems under normal circumstances to be destitute of sensibility.

1. Eulenburg ~~op cit~~: p: 18. Zeimssens Cyclop. 1878 vol XIV.
2 Vernel ~~op cit~~: p. 669. footnote. Traité Prat: de Méd. 1897 vol II.
3 Liveing p. 395.
4 Lancet Aug: 14th 1875

Gowers says [I] "Loss of speech must be due to disturbed function of the cortex. The sensory symptom in the limbs is like that which in far more rapid evolution precedes convulsions from cortical disease, and this source is therefore probable. The hemianopia also is best explained by the assumption of deranged function in the occipital lobe, especially since Right hemianopia may correspond to almost simultaneous aphasia [" " 2]. Sympathetic nerve fibres accompany the arteries in the cerebral substance: there is reason to believe that the functional state of the cortex itself influences the state of its arteries (as is the case in all the other organs), and this must mean a relation of the cells of the cortex to the vaso-motor centre: hence it is quite possible that there may be a sensory representation of the substance of the brain, at least of its interstitial tissue, in the cortex of the brain itself"

1. Gowers. Diseases of the Nervous System vol II p. 857 2nd edition
2. Idem p. 851.

Diagnosis - In the more pronounced cases the diagnosis is simple: often the patients volunteer the information that they have sick-headache. In cases commencing after 35, it is necessary to exclude the possibility of organic disease e.g. uraemia, where the simulation of migraine may be fairly close. Chronic glaucoma may cause paroxysmal headaches. The headaches of hysteria, when characteristic, should present no difficulty, but in migrainous women about the menopause, migraine is often complicated by ~~with~~ hysteria. In the rare disease Lead Encephalopathy excruciating paroxysmal headaches are said often to be a prominent symptom. In children the diagnosis is more difficult inasmuch as the attacks are seldom typical before the age of puberty,

but periodical attacks of vomiting, or in the older children, headache without any symptoms of gastric disturbance or other obvious cause, should excite suspicion as to their nature. Headaches of reflex origin from the naso-pharynx — adenoids, rhinitis, polypi — are said to be accompanied by nausea and vomiting. I.

I. Guthrie. Lancet. 1893. Vol I p. 140.

Prognosis - It is probable that migraine seldom or perhaps never[I] menaces the life of its victim. Lueing[II] relates several cases where the patients developed organic cerebral disease, and while admitting that such an event is rare, he concludes "that a hereditary tendency to megrim indicates also a tendency to premature cerebral disorganization at a later period of life, or that the constant return of the seizures impairs the nutrition of the brain and predisposes to haemorrhage and softening". Kovalevski[III] says "Il est vrai, personne presque ne meurt à la suite de la migraine; mais si nous nous rappelons des cas où la migraine est suivie d'hémorragies, provoquant des aphasies, des hemiplégies, des

I. Pellétan - de la migraine 1re ed. p. 66. Eulenburg Zeiniens Cyclop: p: 22 Vernel: Traite Pat: de Med: Tome II p: 608
II. Lueing p 415 et seq:
III. Kovalevski p: 169 et 124-140 La migraine Thèse Montpellier

hémiplégies, le Status hemicranicus &c: la mort en est très peu éloignée". I do not think there is adequate proof of either of these statements or that the cases quoted are other than coincidences. Where gout co-exists, these disasters are likely to occur, but proof is wanting that migraine per se influences the circulation deleteriously. Tortuosity of temporal arteries occurs in my observation just as frequently in non-migrainous people. Where the state of health between the attacks is satisfactory I do not think that migraine shortens life. Where however the attacks occur so frequently that a virtual Status hemicranicus is established the mental condition may be a pitiable one, but here again migraine is usually only one symptom of the state of

health, and not the cause of it. Still by interfering with the power of work and capacity for keeping engagements it may lead to a depressed and hypochondriacal state of mind which is said to have in some cases culminated in mania. Kovalevski[2] says. "le pronostic de la migraine par rapport à la vie du malade ne doit aussi être porté qu'avec prudence, car souvent la personne souffrant de migraine est menacée, si ce n'est de la mort, dans tous les cas, d'un état invalide, qui est souvent pire que la mort." The forecast as to the cure of the complaint is even less satisfactory. Where the general health and conditions of life can be improved much benefit may accrue, but migraine, in otherwise healthy people is in my experience very intractable. In a certain

I. Suckling - on periodical headache p. 10. Kovalevski p. 124.
2. Kovalevski p: 169. La Migraine Etude traitement 1902.

proportion of people the malady lessens in intensity or disappears completely with advancing years, but even in this respect the prognosis requires to be very guarded.

Treatment. There are not many maladies for which more numerous or more diverse remedies have been proposed than for migraine. Nor is this surprising, considering how obscure is the nature of the disease, and how capricious its symptoms in each individual case. Pelletan[I] speaks jestingly of the "médicamens infaillibles et admirables" of the times preceding his own, but he is himself sceptical about the virtues of any specific remedy. Not only is the cure of the disease rendered difficult by the obscurity of its nature, but the actual relief of the paroxysms is hindered by the fact, often[II] observed, that once the attack is fairly under weigh, both secretion and absorption from the stomach are greatly arrested. Where the migrainous tendency is attended by any obvious departure from health. e.g.

I. De la migraine p: 85 2nd Ed^n. 1843.
II. Brunton - Practitioner Feb: 1894 p. 101: Loomis - system of Pract: med: 1898. vol IV p. 543
Loomis - System of Practical Medicine 1898 vol IV p. 543

anaemia, the remedying of such conditions may affect a marked amelioration of the malady, but very often, and especially in men, the condition of health between the attacks is perfectly normal. To such people, the administration of drugs toward off their attacks, is likely to prove of doubtful benefit, nor indeed are they disposed, as a rule, to submit to anything of the sort, having very often lost all faith in treatment both prophylactic and curative. So that I think, in the present state of knowledge, the aim should be to prevent the establishing of the malady while the patient is sufficiently young to choose his mode of life. It is certain that an open air life is inimical to migraine, no doubt by its tonic influence on the

nervous and digestive systems. Even in inveterate cases, change of air, food &c:, combined with plenty of exercise in the open air often works wonders. The benefit accruing from a visit to one of our Hydropathic Establishments is an example of this. But such benefit is usually only temporary and the trouble returns when the old conditions recur. If, however, the affection is recognized in childhood, I think the adoption of an active open air life will offer a fair guarantee that the malady will not become Establish-ed. Where the habit has been formed, after remedying any obvious defects of health, most benefit is likely, to be obtained by an easy out-of-door life, observing a due proportion between rest and Exercise.

I have not found dieting of much advantage. Haig,[1] however maintains that migraine is curable, by diminishing the amount of uric acid introduced in food, by avoiding animal foods, soups and extracts that are rich in it, also, strong tea, coffee, and vegetable alkaloids, after clearing out old accumulations of uric acid existing in the body. I have tried in several cases in the manner[2] he indicates, but with scant success. The drugs most frequently used for averting the seizures are probably the Bromides and Arsenic. Brunton[3] speaks strongly in favour of Potassium Bromide and Salicylate of sodium. Snibler[4] says he has had good results from the fresh fluid extract of Cannabis Indica.

1. Haig. Uric acid in Causn of Disease 2nd ed p 131.
2. ibidem
3. Practitioner Feb. 1894 p 105
4. Hare's System of Pract: Ther: 1892 vol 3 p. 375.

The prolonged exhibition of these drugs usually leads to impairment of the general health. I have found the occasional use of Blue Pill and saline purgatives of real service. The writer in the Encyclopaedia Medica[1] says "treatment directed to the bowels and liver is of primary importance, and is more likely to be attended by success than treatment directed specially to nerve tonics and the like". Whitehead[2] says he has "never failed to treat successfully the most inveterate and severe cases of migraine by the introduction of an ordinary tape seton at the back of the neck". One of my cases had immunity from attacks while suffering from a large patch of ringworm of the scalp:

1. Ency: Med: (Edin) vol 8 p. 93..1901.
2. Brt: Med: Journ: 1901 vol I p: 335
4 Fenton in Brt: Med: Journ: 1902 vol I p. 587.

With regard to the treatment of the paroxysms, one of the most successful measures, when the patient is young and robust, is physical Exercise. This has also been observed in gout[1] and asthma.[2] Where the patient has sufficient resolution, an hour's ~~daily~~ daily violent Exercise, especially if carried to the point of perspiration, will shorten the attack and diminish the resulting malaise. Such a measure is only applicable as a rule in the case of young and healthy Subjects. Probably the stimulation of the circulation and increased metabolism results in the speedier elimination of the materies morbi. I frequently advise this Course in suitable Cases, generally

1. Balfour. The senile Heart 1894 p. 171
2. Ewing p. 453

with favourable results where there is courage to adopt it. The most intractable cases are those where the sensory symptoms are pronounced, and those in which sickness and vomiting are features. In neither of these types have I found drugs of much benefit except a large dose of alcohol at the beginning of the attack. The synthetic coal tar products are generally useless here. In cases, however, where headache is the only marked symptom, those with Bromides and Caffeine, taken early are often Efficacious for a time, but gradually one by one lose their Effect. Haig[1], in consonance with his theory of causation, advises clearing the uric acid out of the blood by means of

1. Haig. uric acid in causation of disease 2nd Ed. p. 130

some of the drugs which he says have this effect. Hewes calmel gr ¼ every half hour for 3 or 4 doses with Sinapisms to the stomach and morphia subcutaneously.[2] Galvanism[3] is said to be of service, but such measures, as also Lavage of the Stomach, Emetics, Compression of the Carotids, are either quite impracticable or as bad as the disease.

1. Haig. Uric acid in causation of disease p. 24
2. Osler p. 130.
3. Kovalevski - De la migraine p. 196. | Syers. Theory & Pract: of Med 1902. vol II. p. 309.
Pepper's System of Pract: med 1886 p. 406. Smith
Osler - System of Pract. med 2nd Ed. p. 611.

Cases.

I.

J. L. male 31, single; attacks commenced at 10, at 25 had reached their acme, thereafter decreasing in violence and frequency. Father, mother and paternal grandfather had migraine. Father died of angina pectoris. Chronic rheumatism and phthisis in family history. Patient has icteric tinge of conjunctivae: Extremely healthy in other respects. Has tortuous temporal arteries. Attacks at first consisted of headache only; about puberty, eye symptoms began to evolve in the attacks, consisting of hemiopia and zig zag spectra. These lasted as a rule for 20 minutes to half an hour, the headache appearing before they passed off, beginning over the left orbit, and gradually extending over the frontal region, with nausea, aphasia and numbness and tingling in right hand and sometimes in left. During attack face is pale and drawn, the pulse and temporal artery normal.

attacks very irregular, more frequent when sedentary. Can assign no exciting cause. Sometimes has foreboding of attack, generally not. Severity of attack lasted 5–7 hours and considerable headache and malaise for 48 hours. If he gave in to attack and went to bed the symptoms were more severe and the resulting malaise greater than if he kept about. A loose motion generally followed. After the age of 25 the attacks diminished in number and severity and now often only consist of a transient hemiopia and a slight attack of diarrhoea. Icteric tinge of conjunctiva more marked after an attack. During the violent period of attacks tried in turn most of the drugs recommended but with no benefit either in curing or preventing. A smart walk of 5–10 miles, commenced when the ocular symptoms appeared,

shortened and diminished the severity of the attacks, and greatly reduced the resulting malaise.

Case II.

W. McC. male. 40. single. Has had attacks since he can remember. Mother had periodical headaches and died of cerebral haemorrhage. A brother and sister also have migraine. Another brother has epileptic attacks but probably of traumatic origin. Violence of attacks has not diminished with advancing years. Can assign no exciting cause, but has presentiment of attack chiefly he thinks from the time elapsed since the last. Begins suddenly, with "dizziness and spots before the eyes", which lasts for half an hour, then headache ~~which lasts for half~~ beginning over left frontal region and gradually extending to the other side. The headache is much

worse when he shakes his head – it feels
" "
as if his brain was loose" in the cranium –
and in left fingers.
occasionally numbness in right hand,
Vomiting is a signal that attack is passing
off. During attack face is pale, and the
pulse slow and of average tension. Last.
about 12 hours and leave little headache or
malaise. Sometimes has attacks during
sleep, waking with a slight headache which
soon passes off. Drugs have occasionally
been of service, especially the Coal-tar series,
but vigorous exercise during attack is most
serviceable

Case III.

C. D. 31 male, single, Attacks commenced
about 15 or 16 and are continuing unabated.
Father had similar headaches, and suf-

ferred from "rheumatic gout". A brother died in status epilepticus, but epilepsy was probably traumatic in origin; knows no special exciting cause but believes his stomach has something to do with it. Attacks begin gradually, on rising in the morning, with slight frontal headache. Nausea comes on by degrees and violent retching and vomiting follow but afford no relief. After 9-12 hours he falls asleep and wakes fairly well. Face pale during attack, pulse slow and soft. Attacks more frequent in spring and winter. Treatment during attack of little avail as stomach rejects everything. Arsenic given once, nearly continuously for 6 months, diminished the frequency. A large patch of ringworm developed a year ago on his scalp and lasted for 4 or 5 months.

during which time he had comparatively few headaches. When it healed they returned as before.

Case IV.

K. B. 22. F. Single. Has had headaches since puberty. Father died of General Paralysis of the Insane. Mother has headaches and chronic muscular Rheumatism. Patient is slightly anaemic. Catamenia most frequent exciting cause, but occur at other times from trivial causes. Begin suddenly with "partial blindness," bilateral frontal headache follows with slight temporary aphasia, no vomiting and but little nausea. Last abut 12 hrs, and leave her prostrated. During attack face is pale, the eyes sunken, the pulse slow and of average tension. Attacks

occur quite irregularly except at the catamenia, and are more frequent in Spring and late winter. Occasionally, Phen-acetin, Antipyrin and Caffeine at commence-ment of attack give some relief. Between the attacks Iron, Arsenic and Strychnine in-crease the intervals but do not affect the intensity of the attacks.

Case V.

Mrs. L. 44. Has had headaches "since she can remember". Father died of "heart disease". Mother had acute rheumatism several times. Patient is very nervous and excitable, and suffers from floating kidney. Worry or fatigue invariably cause an attack, but they frequently occur without known cause. Begin suddenly with "dizziness", then headache at first, frontal, bilateral, later occipital as well.

a good deal of nausea but no vomiting. Duration 8–10 hours and slight residual headache for next day. During attack face is pale, and the pulse slow and of high tension, as it is normally. At height of headache her ideas are confused and she is unable to work. She also occasionally suffers from facial neuralgia but readily recognises the difference. The attacks have lately (menopause) been more frequent but less severe. Prophylactic treatment has not been of any avail. Bromide and Antipyrin given early mitigate the attack somewhat.

Case VI.

C. M. L. 12. F. daughter of Case VI. Mother says her headaches commenced about 7 and at first were not frequent or severe. Now

they occur about once a month. Pale nervous child: had rheumatic fever at 10. Headaches frontal and apparently bilateral: no sensory symptoms otherwise, but refuses bread when suffering. Spectacles have been tried but without benefit. Drugs have not had a fair trial.

Case VII.

F. A. C. 41. M. married. Mother had periodical headaches, and father was "rheumatic". Attacks commenced after he left school about the age of 17. Doesn't know any special cause nor when the attack is impending. Onset sudden with inability to see properly owing to "mist before his eyes", then bilateral frontal headache and nausea. Thinks he has sometimes difficulty in articulating, and has to speak deliberately.

Numbness in right arm and hand very marked with pins and needles in fingers. This latter symptom commenced four years ago and caused him some alarm. It occurs at the height of the attack and its disappearance is a signal that attack is passing off. Face is pale and pulse slow and of high tension. Attacks last 5-8 hours and leave little malaise or headache. In early days he tried many drugs, but had little benefit. He thinks an occasional blue pill and Seidlitz powder prolong the intervals between the attacks, and occasionally avert one impending.

Case VIII.

T. G. W. 38 M. married. Father suffered from regular gout and died of pectoral cancer.

Paternal grandmother had periodical headaches. Phthisis in mother's family. Attacks commenced about puberty. Begin gradually on rising with a sense of weight and fullness in head; bilateral frontal headache gradually comes on, with great prostration and depression. No other sensory symptoms. Face ashen during attack. pulse slow and hard and temporal arteries (tortuous) small and hard. Never has attack in warm weather. In winter they occur about once a fortnight. Duration 6-12 hours. Health between attacks normal. Has always muddy sclerotics, and more so after attacks. Not much residual malaise or headache. His sheet-anchor is half a tumbler of whiskey or brandy taken before the headache.

appears. Two years ago he went to
live in the Cairo Tropics, since when he
has not had a single attack.

Case IX.

F. 60. 33. F. single, Sister of case VIII.
Slightly anaemic, very nervous temperament.
Attacks began about puberty and have continued unabated since. They differ from her brothers, in that she has some well-defined ocular symptoms preceding the headache, and occasionally nausea and vomiting. The attacks accompany the catamenia, but occur also at other times: they last 6-9 hours and leave considerable headache during next 24 hours. The face is pale during the attack but the radial pulse shows no alteration. Only occur in winter and Spring. Change of air gives immunity

for a time. Iron, Arsenic and Strychnine seems to diminish the violence of the attacks, but not the frequency.

Case X.

Mrs. B: 36 married. Father had asthma and chronic rheumatism: She herself used to suffer from leucorrhoea. Had no headaches to speak of till about 25, when an adverse change in her circumstances took place, and since then they have been very frequent, occurring nearly always at the catamenia, and occasionally at other times from any worry, emotion or fatigue. Headaches have been nearly absent during three pregnancies, but commence again directly she is able to get up. She often has facial neuralgia as well. Onset gradual on rising with slight head-

-ache chiefly frontal and bilateral, but occasionally occipital as well. Sometimes nausea and vomiting which gives relief. No other Sensory symptoms. Face pale and haggard, pulse slow and soft. Only gets relief by sleep. Not much malaise or headache next day. General tonic treatment has diminished the frequency of the attacks except at the Catamenia. A large dose of Bromide and Antipyrin early in the morning seems to diminish the violence of an attack.

Case XI.

S. J. 37. M. Suffers from Spasmodic asthma, and chronic rheumatism. says his father and mother were both very nervous people, but does not know if they had headaches. Attacks commenced about 21 when he took

up a sedentary employment: since then his asthma has troubled him much less. Attacks very irregular, five or six times a year. They are followed sometimes by profuse salivation lasting for several days. Has no warning of attack nor any eye symptoms. Sudden headache, frontal, beginning on left side and becoming bilateral. Nosiekness, but great mental confusion and inability to arrange his ideas. Attack lasts 8-12 hours, passes off gradually, and in about half the attacks is followed by salivation. The face is pale: nothing characteristic in the pulse. Large doses of alkalies sometimes probably prevent the succeeding salivation, which is very exhausting when it occurs.

Case XII.

D. E. F. 21. Has had 2 or 3 Epileptic attacks each year for the last 4 years: suffers from most obstinate constipation: robust and full-blooded. Her mother was subject to headaches: no history of epilepsy. Headaches commenced about puberty and occur at each menstrual period, commencing just before the flow and lasting for about 12 hours. Bilateral frontal. Seldom occur at other times. Have no obvious relation to the Epilepsy. Right arm is almost paralysed as a result of early Infantile Paralysis. There are no other sensory phenomena. During attack the face is pale and drawn and the pulse slow and of markedly high tension. Relief of the constipation does not influence the headaches. Bromides have been given for protracted periods, but with no benefit

either as regards the Epilepsy or the migraine. She became a vegetarian six months ago, since when she has not had an epileptic attack; she thinks too the headaches have been less severe.

Case XIII.

Miss A. 38 single, robust. Father suffered from rheumatic gout: Two sisters are hysterical but free from migraine. Does not remember when she had not headaches. At first she thinks they were one-sided, now they are bilateral, frontal, and very often occipital as well. Onset gradual usually from some trivial cause such as emotion, shopping, railway journey, irregularity in meals, and increase in violence for 5 or 6 hours when vomiting gives relief. Sometimes has "mist before

the Eyes" preceding an attack, but it is evidently not pronounced. Is prostrated completely for the time being but there is not much residual headache or malaise. During attack face is pale, the pulse slow, but not marked in character. Attacks occur about once in 3 weeks, and only occasionally at the menstrual period. Has taken enormous quantities of Bromide antipyrin, phenacetin &c: with relief at first, but has now abandoned them. A change of air and surroundings gives complete immunity for the time. Before her annual holiday the attacks are more frequent.

Case XIV.

Mrs. T. 44. obese, Nothing of note in family history. Lived in West Indies till 4 years ago, when she married for the second time.

and came to live in this country. She is childless. The attacks invariably follow sexual excitement. They commence gradually in the morning, bilateral frontal and occipital and last till night with considerable nausea but no vomiting. They are sometimes accompanied by distressing yawning. Did not have headaches before her second marriage. Face is pale during attacks, pulse slow and compressible. No albumen in urine Is quite well when the cause is removed. Bromide of Potassium has been of some benefit in diminishing the severity of the attacks.

Case XV.

Miss G. 21 single, a healthy but very nervous girl. Her father has some nervous affection of the throat. Her mother used to have

frequent headaches and now at 47 suffers from attacks of numbness in both hands. one of her brothers was a hydrocephalic idiot, and a sister aged 11 has headaches. Patient like most migrainous people I have seen has a very unstable vaso-motor system, flushing easily from slight causes. Her manner is rather hysterical. Her health between the attacks is good but the frequency with which they occur have rendered her rather despondent. They occur more frequently in winter, sometimes twice in one week. No known exciting cause. Do not occur specially at the Catamenia. Onset gradual, beginning on rising, with ill defined ocular symptoms, going on to bilateral frontal headache, severe nausea and vomiting. Last all day; relief only comes with sleep.

Face is pale during attack: Eyes sunken and whole expression one of great misery. She shows no craving for sympathy. Pulse is slow, otherwise normal. She was found to be astigmatic, but spectacles have not affected the headaches. Bromide antipyrin, phenacetin, caffeine have each in turn been of benefit for a time. Frequent holidays and change of air have proved most serviceable.

Case XVI.

A. P. 3. Male. a healthy looking child. His mother has had slight periodical headaches for many years. He was breast-fed. At 18 months began to have bilious attacks, and has had them every 2 or 3 months since. They consist of attacks of vomiting lasting 6 to 18 hours

sometimes slight, sometimes severe, without obvious cause or relation to food. The tongue is slightly coated during an attack, the bowels act as usual, and the stools are normal. For some hours beforehand, the child is listless and irritable. He recovers quickly when the vomiting stops. and next day is in his usual good health. He complains of no pain. His mother knows by his listless appearance when an attack is threatening and attempts have been made to avert it by means of aperients but unsuccessfully so far.

Case ~~XVII~~.

M. C. 7. a pale delicate girl: She suffers from night-terrors and enuresis. Father and mother alcoholic. She had Scarlet Fever at 4, and since has had irregularly

recurring attacks of vomiting (two during last year) without obvious cause. For a short time before each attack she looks out of sorts and complains of discomfort in the region of the stomach. Duration 6-24 hours. There is some constipation, the tongue is fairly clean, there is no increase in pulse rate or rise in temperature. Anorexia complete during attack. Complains of no headache. Recovery very quick when the vomiting stops. She has only had two attacks for the last 12 months: formerly they were more frequent, occurring every 2 or 3 months. This result is probably due to her taking Syrupus Ferri Iodidi. During the attack Tincture of Iodine, in drop doses frequently, helps to keep the vomiting in check.

Case XVIII.

M A. F. 10. a thin, nervous girl. Her father is a healthy but very excitable man; migraine is prevalent in her mother's family. She suffers from habitual constipation. The attacks commence gradually, with loss of appetite for a day beforehand, gradually increasing nausea, which culminates in vomiting: the stomach rejects everything and especially ~~and especially~~, the drugs that are used to allay sickness. The pulse is slow at the beginning of an attack but becomes quick towards the end and is feeble throughout. The tongue is clean, and there are no symptoms of digestive derangement, except tenderness over the stomach, and then only when vomiting has continued for some time. The other systems are all apparently normal.

The attack lasts now about 12 hours, but has lasted over 48 hours. She never has an attack in warm weather but each winter since the age of 6 she has had two or three attacks until this winter when she has been immune. There is no known exciting cause except the fact that the attacks always occur in cold weather. Careful attention to diet and the condition of the bowels did not seem to make the slightest impression on the attacks. During the last year she has been leading an easy out-of-door life and to this I attribute her immunity during that time.

Dr. Gee's cases. *

I.

Oswald A. 6. Has been subject for 4 years to fits of vomiting. Each attacks lasts 10 hours or so. At first brings up the food in the stomach, later mucus only. Pain in left hypochondrium attends and sometimes precedes the vomiting. No error in diet to account for attacks. After measles attacks became more frequent, occurring every week. Then, during stay at seaside, had only one attack in 3 months. Bowels costive at time of vomiting, not at other times. No headache; no sign of organic disease. Father is subject to headaches.

II.

B. male 5. vomited excessively as a baby, though well nursed. Is still subject to attacks lasting a whole day though not so frequent. Later attacks have taken on the form of retching

* St: Bartholemew's Hospital Reports vol. XVIII. Reprint.

without vomiting. No pain. Exciting causes are Extreme Excitement, and travelling inside a vehicle.

Case III.

Donald C. 4½. For 12 months has had attacks of vomiting followed by diarrhoea. the whole lasting about 12 hours. Shortly before and during attacks, the stools are wanting in colour. He is sleepy before attack, and is weak for a few days after. Fatigue, E.g. a railway journey, is likely to bring on an attack. No headache or other signs of disease.

Case IV.

C. F. 4 Since she was 18 months old she has had 4 attacks of vomiting, Each preceded for a week by a furred tongue; Attack last a few days, is attended by constip-

-ation and leaves her very weak. No headache or fever or other sign of disease.

Case V.

Percy G. 5. For last 2 years has had 5 or 6 attacks of vomiting. For 48 hours from beginning of attack, vomiting is so frequent and severe as to induce dangerous weakness and faintness. There is some fever. They last altogether a week or 10 days. Bowels are unaffected: there is no pain; is quite well in intervals. Urine normal. His father and father's father subject to megrim.

Case VI.

Helen V. H. 6½. From age of 14 months has had attacks, about once in 6 months, of vomiting lasting for a day or two. Besides the vomiting there was pain in the Epigastrium, drowsiness, and white motions. The vomiting

causes were cold and indigestible food.

Case VII.

Gertrude L. b. For 18 months has been subject to feverish attacks, with violent vomiting, lasting sometimes two days, never less than 5 or 6 hours. No headache; sometimes has nightmare. Both parents subject to headache: the mother is liable to perfect megrim, temporary aphasia and numbness in the right side of the face and right limbs.

Case VIII.

Grahame R. 5. all his life has had attacks of great pain in the belly, lasting several days, accompanied by vomiting sometimes by diarrhoea, never by headache. No cause known; no signs of organic disease.

Migraine Ophthalmoplégique

Saundby – Lancet 2nd Sept: 1882.

I.

Maria S. 19. suffered from age of 12 at intervals of 6–9 months from attacks of ~~left~~ right-sided frontal headache, nausea, vomiting and vertigo, followed by ptosis: He found complete paralysis of the right internal muscles of the eye, with ptosis, dilatation of the pupil, and paralysis of accomodation. After 6 days, improvement both place, the pain and vomiting ceased, and the ptosis diminished. At the end of three weeks, the muscles had recovered except the right superior: there was still a trace of ptosis. Two years later Saundby observed a similar attach in same patient and 8 weeks after the paralysis was still persisting.

II.

Saundby: Lancet 10th Jan: 1885.

Wm P. 7. admitted to hospital with malaise and pain over the right eye. A year before he had been admitted with pain over the right ear, a degree of ptosis of the right pupil, diplopia. There had been a discharge from the left eye and some paresis of the facial nerve on that side. Three days after his second admission there was right sided ptosis, paresis of the rectus internus. He saw double and when he walked covered up his right eye. The lower part of his face was not quite symmetrical, the mouth being drawn a little to the right. No other signs of disease.

III. & IV.

Snell. Lancet 1885 vol I p. 938.

a little girl of 8 had from the age of 16 months attacks of headache with vomiting

with pronounced ptosis of the left eye. One of the attacks occurred in hospital when there was acute pain over the left eye-brow, complete paralysis of the 3rd nerve on the left side, and of the muscles supplied by the left facial nerve. Two months later the movements of the eye-ball were still imperfect, and the pupil scarcely reacted to light.

Ernest Clarke observed a case of Recurring oculo motor paralysis in a girl of 12 subject to attacks of migraine every 6 weeks after which divergent strabesmus, ptosis and dilatation of the pupil occurred and lasted several days.

IV & VI.

Snell. ~~Lancet~~ British Medical Journal July 15th 1893.

Mar. 27. Migraine had existed since age of

10 but only for the last 7 years had the Eye been closed with the attacks. The attacks, at first at intervals of about 8 weeks, now occurred every 2 or 3 weeks: they lasted 3 or 4 days. The palsy of the 3rd nerve was practically complete: ptosis and paralysis of the ocular muscles including dilated pupil and palsy of accomodation. The attacks commenced with vomiting and headache. The ocular palsy in the interval did not completely pass off, and the latest accounts, two years after, indicated that the drooping of the lid was becoming more permanent.

Girl. 18. She had two attacks at intervals of four years though migraine outbreaks continued in the interval. Each time she had made a perfect recovery

though the 3rd. nerve was not, at the worst as completely involved as in the last case. Recovery was much longer in taking place. Mr. Snell remarks that the shorter the interval between the attacks, the more rapid appeared to be the recovery.

VII.

Dec. 21, 1895.

Ormerod & Holmes Spicer. British Med. Journ: ~~July 15 1893~~.

A boy aged 15 had complete paralysis of the left 3rd. nerve when a year old: recovery took place. Had a second attack at 7 years. Since then had had an attack every 9 or 10 months. He was subject to bilious attacks with intense headache in the left side and paralysis always came on during a bad attack. There was some atrophy of the left optic nerve, and some of the paralysed

muscles now never recovered. The present attack was passing off, but there was still slight ptosis, a dilated pupil and complete paralysis of the external muscles of the eye supplied by the 3rd nerve.

VIII.

Mason. Lancet Feb 28th 1891.

George C. 12½. Has suffered for last 5 years from recurrent attacks of migraine consisting of left sided frontal, and slightly occipital headache with nausea and vomiting, slow feeble pulse, and great prostration; also increased lachrymation, discharge of watery mucus from the left nostril, great intolerance of light, prominence of left eyeball and increase of intra ocular tension Gradually increasing paralysis of the third nerve then follows, the various

branches being affected in the following order of severity: the levator palpebrae superioris rectus superior and obliquus inferior are completely paralysed. The rectus inferior is almost completely paralysed and the rectus internus partially. The pupil remains halfway between contraction and dilatation and reacts but slightly to light and distance. Marked diplopia. During height of attack child seems extremely ill: face pallid, expression anxious, tongue furred, bowels confined, urine scanty and high coloured: complete anorexia. After a variable time pain and sickness cease almost suddenly. The paralysis remains for a day or two but gradually passes off. Lately attacks have been more frequent and severe and have left more and more

residual paralysis, till at the present time there is almost as much paralysis between the attacks as during one. Vision in the left eye is much impaired. He has had attacks every 3 or 4 weeks since the age of seven, and if he goes 4 weeks without an attack the next is proportionately severe. His health is good between the attacks. No family history of migraine.