Inaugural Dissertation

upon the Subject of

Tubercular Meningitis.

Contents.

Thesis for the Degree of M.D.

presented by

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Subject:- Tubercular Meningitis.

Introduction.

In selecting this Disease as the Subject of my Thesis, I do so, not from any feeling that I am capable of writing anything new concerning it, but from an inward conviction that has gradually grown, that I have diagnosed and treated, during the twelve years that have elapsed since I left College, more of these Cases than usually falls to the lot of the average General Practitioner.

I am under the impression that Tubercular Meningitis is more prevalent in the Town of Leith than elsewhere, and this I will endeavour to prove before I close.

The Subject is by no means an inviting one. In the whole Nosology I do not know a more hopeless Disease to treat; one where scope is so unlimited, but success so uncertain and so often denied.
While I may not be able to contribute any-

thing from a "Curative" point of view, I hope to be able to lay down certain general principles by which I am guided in "warding off" cases of this Disease, and which may be fitly described under the term "Preventive Measures".

I have carefully noted at the bedside the principal points and features in the case of 50 patients whom I considered to be suffering from undoubted Tubercular Meningitis, but as I have not been able in every case to verify by post mortem examination, the Diagnosis I had formed, and lest any objections should be raised on that point, I am willing that the following remarks be described as referring to cases, which presented during life, the Symptoms of Tubercular Meningitis.

History.

It has long been a disputed point whether the Disease, known as "Acute Hydrocephalus", was known to the Ancients. After a great deal of reading, my own opinion is, that it was not. It was almost impossible for cases of the external form of Hydrocephalus to escape their notice; but that they had any definite idea of the internal form, I do not hesitate for one moment, to form a negative opinion. I subjoin in tabular form the more prominent names of those who have done something for the elucidation of this disease, and as far as possible, have connected these names with dates and work done.

For much of the following information, I am indebted to an article in the British and Foreign Medico-Chirurgical Review for October 1854; to "Davis on Hydrocephalus" 1840; to "Maladies des Enfants" Vol. III. Rilliet & Barthez 1843; and to my own general reading.

Section I.

No definite theory as to the cause of the Disorder.

B.C. 420 Hippocrates in his second book "de morbis" enumerated the signs of water in the brain, probably the external form. (Whytt's Works p. 725. 1768 Ed.: Cyclopoedia of Practical Medicine Vol II. p 452.)

A.D 10 Celsus mentions "Hydrocephalus externus" (De Medicina lib. 24 Cap 72.)

520 Aetius and Paulus Aegineta mention water between the skull and membranes of the brain. (Whytt's works. p. 725. The Seven Books of Sydenham Society's Edition Vol II. p. 251.)

1530 Hieronymus Mercurialis mentions that water may possibly happen in the Ventricles of the Brain. (Whytt's Works p 725. Brit. & For. Med. Chir. Review Oct. 1854. Opuscula aurea lib. de morb. puerorum.)

1701 Duverney Jun. published an observation upon Acute Hydrocephalus. (Mal. des Enfants Vol III p. 348. Rilliet et Barthez. 1843)

1718 Petit published a short paper on the Hydrocephalon. (Memoires de l'Académie Royale des Sciences. Paris 1718)

1732 Andrew St. Clair, Professor of Medicine in Edinburgh, described "The Histories of a Fever and of an Epilepsy". His paper was very similar to that of Duverney Jun. mentioned above. St. Clair mentions "tubercles" in the Lungs, "bloodvessels of the Brain were all greatly distended with blood, and in the Ventricles, about six ounces of water were found." (Medical Essays and Observations by a Society in Edinburgh. Vol. II. p. 298. Edin. 1737.)

1733 John Paisley Surgeon of Glasgow recorded in the Edin. Medical Essays &c. Vol. III. p. 335. the case of a Hydrocephalon accompanied with remarkable Symptoms.

1734 M. le Dran is described by Whytt as giving a description of the Hydrocephalus Internus in such a manner as to lead one to suppose "he had never seen the Distemper." (Whytt. op. cit.)

1763 Sauvages was the first to describe Acute Hydrocephalus under the name of Eclampsia and to call attention to the coincidence of this Cerebral Affection with Scrofula and Tabes Mesenterica. (Mal. des Enfants Vol. III. p. 548. Rilliet & Barthez)

Section II.

Ventricular Effusion or Dropsy the essential element of the Disorder.

1768 - Dr. Robert Whytt, Professor of Medicine in Edinburgh University, published a work "Dropsy in the Brain." This is still a classical work and is the real starting point in the literature of the Subject. It shows remarkable descriptive talent, plainness, honesty, and accuracy of speech. (Whytt's Works 1768, pp. 725 – 743.)

1771 Drs. Fothergill & Watson read papers on "Hydrocephalus Internus" before a Society of Physicians in London. (Med. Obser. & Enq. Vol. IV pp. 40-78.

1774 Ludwig confirmed Whytt's description and conclusions. (Dissert. de hydro. cereb. puer. Leipsic 1774.)

1775- Dr. Dobson of Liverpool published a case of acute hydrocephalus cured by Mercury. (Med. Obser. & Enq. Vol. VI.)

1779 Odier along with Fothergill, Watson & Ludwig all mentioned above, confirmed Dr. Whytt's observations and conclusions. (Memoires de la Société Royale de Med. 1779.)

Section III.

Inflammation the essential or fundamental Element in producing the Disease.

1780 Dr. Charles Quinn of Dublin published in an inaugural dissertation "A New Theory of Water in the Brain". He was the first to show that water was not an essential phenomenon of Hydrocephalus Acutus, but that this malady had its origin

1st "in an increased determination of blood in the vessels of the brain".

2nd "in overfulness of those tissues in consequence, and, as an effect, of an increased force of action of the arteries which are employed to supply the brain with blood."

3rd "in an effusion", a result of the morbid overfulness, which the theory supposes "of an aqueous fluid into the brain". (Treatise of the Dropsy of the Brain. Dublin 1780.

1785 Dr. Edward Ford partly adopted the idea of Quinn. He affirmed that Acute Hydrocephalus depended on two Causes :- either on an inflammation of the Pia

Mater, or of a hardening (Tubercular?) of the Brain or Cerebellum. He also showed where Fothergill & Whytt differed as regards onset and duration of the Disease. (London Medical Journal. Part I. p. 5-6.)

1785- Cullen considered acute hydrocephalus to be an Apoplexy. (Synopsis Nosologiae Methodicae &c. Edin. 1785.)

1789 Dr. Rush of Philadelphia published a work confirming Quinn's views, and showing that death may take place and not more than a teaspoonful of fluid be found in the Ventricles. ("Medical Enquiries & Observations". Vol. II. p. 201. Rush.)

1791 Dr. Percival showed that Acute Hydrocephalus, though approaching true inflammation was not identical with it. He also showed its frequent connection with Scrofula. (Medical Facts & Observations Manchester 1791.)

1801 Dr. Garnet argued that the Disease depended on Congestion of the Cerebral Vessels, causing inflammation and extravasation of fluid before death. The fluid was the consequence, not the cause of the Disease. ("Obser.s on Hydrocephalus". 1801)

1808 Dr. John Cheyne of Dublin published an Essay in which he regarded the effusion as the principal phenomenon of the Disease. ("Essay on Hydrocaph. Acutus or Water in the Brain". Dublin. 1808.)

1812 M. M. Bricheteau & Mitivié agreed pretty much with Cheyne's views. (Mal. des Enf. Vol. III. p. 548. Rilliet et Barthez 1843.)

1815 Gölis of Vienna placed the inflammation in the Arachnoid, and the Ventricular dropsy secondary to a previous inflammation. (Practische Abhandlungen über die vorzüglicheren Krankheiten des Kindlichen alters. Erster Band. Von der hitzigen Gehirnhölen-Wassersucht. Von L. A. Gölis. Zweite Auflage. Wien 1820. Erster Auflage 1815.)

1817 Coindet placed the inflammation in the Cr. Ven.s.
1822 Brachet " " " " Lymphatics.
" Abercrombie " " " Brain lining Membrane of the Ventricles.
" M. Piorry placed the inflammation in the Arachnoid of the Base.

} "Mal. des Enfants" Vol. III. p. 548. Rilliet & Barthez.

1825 M. Lenn of Geneva applied to Acute Hydrocephalus the name of Meningitis. He showed that the inflammation resided in the meshes of the

Pia Mater, and he brings up the rear of authors who believed that the Meningeal Inflammation was the seat of the Disease. He published an able Monograph upon the subject. (Brit. & Foreign Medico-Chirurgical Review Oct. 1854. "Mal. des Enfants." Vol. III. p. 548. Rilliet et Barthez.)

Section IV.

A morbid deposit the primary cause of the Disorder, Inflammation subsidiary to the morbid deposit.

1827 M. Guersent adopted the name of "Granular Meningitis" in the Registers of the Hospital. He noted the presence of "Tubercle" in other organs of the body. He did not consider the granulations observed in the Cerebral Membranes as true "Tubercles". (Dictionaire de Médicine &c. Article. "Méningite" Vol. XIX. p. 387.)

1829 Charpentier spoke of certain "granulations", but did not associate them with true "Tubercle". (De la Nature et du Traitement de la Maladie dite Hydrocéphale-aigue (Meningo-céphalite des Enfants). Paris 1829.

1830 M. Papavoine was the first to establish the tubercular nature of the Meningitis. This he did by publishing two cases of "Tuberculous Arachnitis" in one of which there was effusion into the Ventricles. The Disease was now called "Tubercular Meningitis". (Journal Hebdomadaire de Médécine t. VI. p. 113.)

1833 Dr. W. W. Gerhard published an admirable paper on the Disease and described it as Tubercular Meningitis. (New American Journal of the Medical Sciences. Philadelphia. 1833. Vols. XIII. XIV.)

1835 M. M. Fabre et Constant further developed the tuberculous character of the Granular Meningitis. (Mémoire inédit sur la Méningite tuberculeuse couronné, par l'Institut. Paris 1835.)

" M. Rufz of Martinique wrote an inaugural dissertation under the name "tuberculous Meningitis" (Gazette Medicale de Paris. 1835.)

1836 M. Piet did the same as M. Rufz. (Thèse sur la Méningite - tuberculeuse.)

" Dr. Hennis Green contributed some valuable papers to the Lancet and introduced into this Country a new Medical term. Viz "Tuberculous Meningitis" (Lancet 1835 - 36. Vol II. p. 232.)

1839 M. Guersent who in 1827 was the first to introduce the phrase "Granular Meningitis" wrote another able and elaborate article on "Tuberculous Meningitis" and asserted that "this species of Meningitis presents constant alterations and anatomic characters very different from those

of ordinary Meningitis" (Dictionaire de Médecine, tom. XIX. p. 393.)

1840 Dr. Davis of University College Hospital, London published a book on acute Hydrocephalus. A pompous monograph in which it is stated that the Disease is easily amenable to Medicine. (Davis on Hydrocephalus. 1840)

Section V.

The morbid deposit or Tubercle invariably found in inflammations of the Membranes at the base of the Brain: inflammations of the membranes of the Convexity, as a rule, non-tubercular. A clear distinction drawn between Simple Meningitis, or Meningitis of the Convexity, and Tubercular Meningitis or Meningitis of the Base also called Basilar Meningitis.

1843 M. M. Rilliet et Barthez wrote a classical work on "Diseases of Children" in which the disease "Tubercular Meningitis" is described with the greatest minuteness and accuracy. ("Maladies des Enfants" Rilliet et Barthez. 1843.)

" Risdon Bennett published a monograph upon Acute Hydrocph. in which he argues that the Disease may arise in four different ways.

1st As a simple inflammation of the Brain and its membranes.

2nd As the result of Scrofulous action.

3rd From irritation of the nervous system.

4th From exhaustion. (The Cause, Nature,

Diagnosis, and Treatment of Acute Hydrocephalus. London 1843.)

1845 Dr. Thomas Smith published a work upon this Disease and "determined to try to lay down a beacon or two, by means of which even a few lives may be saved and much misery prevented" p. 5. (On the Nature, Causes, Prevention, and Treatment, of Acute Hydrocephalus or Water Brain Fever. London 1845.)

1846 M. M. Rilliet et Barthez in December of this year, and in January and February 1847, contributed a remarkable Essay, setting forth with almost mathematical accuracy, the distinctions between Simple and Tubercular Meningitis. (Archives Générales de Médecine. Dec. 1846. Jan. & Feb. 1847.)

1847 Dr. West, the author of the well known handbook on Diseases of Children, wrote and supported the opinions of the two Continental Physicians. (Med. Times & Gazette. July 1847.)

1849 Dr. Valentine Duke of Dublin showed that Acute Hydro. is tuberculous Meningitis, and separated the latter from Simple Meningitis. (An Essay on the Cerebral Affections occurring most commonly in Infancy & Childhood. Dublin 1849.)

1850 Dr. Churchill described the Disease under the names "Acute Meningitis," "Acute Arachnitis" "Acute Hydrocephalus". He included both acute & Tubercular Meningitis under one name. (The Diseases of Children. Dublin 1850.)

1852. M. Bouchut published a work on the Diseases of Children in which he held there were two forms of Meningitis. Simple and Granular. The Granular corresponding to the Tubercular form. (Traité Pratique des Maladies des Nouveaux-nes &c. par E. Bouchut. Paris 1852.)

1853 M. Henri Hahn held that nearly all cases registered in France, Germany & England as those of Acute Hydrocephalus are represented by "Tuberculous Meningitis". (De la Méningite Tuberculeuse Etudiée au Point de Vue Clinique. Par Henri Hahn. Paris 1853.)

" M. Rilliet wrote an Essay upon the Curability of Tubercular Meningitis, in which he showed that Cases of recovery were very few indeed, and hinted that those authors who published many Cases of Cure, had mistaken the Disease for something else. (Archives Générale de

Médecine. Dec. 1853.)

1868 M. Trousseau. In this year was published by the New Sydenham Society "Trousseau's Clinical Medecine", in which under the name of "Cerebral Fever" that great authority discusses the Disease which we term "Tubercular Meningitis. For 20 years previously, Trousseau had held to that term. (Trousseau's Clinical Medecine. New Sydenham Society.)

1870. M. Liouville. This French Pathologist contributed an Article which in my opinion, is of the most valuable description. Liouville showed that the inflammation was not confined to the Membranes at the base, which had all along been taught, but that it can be proved to run down the Membranes of the Spinal Cord and even attack the cord itself. That this inflammation is identical with the inflammation at the base, he proves by the presence of tubercle along the sheaths of the blood vessels, similar to that at the base, arranged similarly - similar in appearance & continuous all the way from the base and Cerebellum to the Cauda Equina. (Contribution a l'étude anatomo-pathologique de la Méningite Cérébro-spinale tuberculeuse. Archives de Physiologie

normale et pathologique. 1870. P. 490.)

It is almost impossible to single out the Writers and the Works which have appeared during the last 20 years. They are far too numerous for such a task. My main object in the foregoing sketch was to single out the Pioneers who laboured on, until the Disease was set upon a Scientific Basis. The authors following these could only confirm the opinions already published. Let me however, mention the name of M. Bouchut of Paris, who was undoubtedly the first to utilise the Ophthalmoscope, as an aid to the Diagnosis of Tubercular Meningitis, also the name of Dr. Clifford Albutt of Leeds who took a foremost place in this Country in the Same direction.

Nomenclature.

The various terms used to designate the Disease in the Course of its History, have been very numerous. Let me briefly ennumerate a few.

Hydrocephalus Internus.	Whytt. Fothergill
Dropsy of the Ventricles of the Brain.	& Ludwig
Eclampsia ab Hydrocephalo.	Sauvage.
Acute Hydrocephalus.	Brichetau.
Hydrocephalic Apoplexy.	Cullen.
Cerebral Fever.	Trousseau. Chardel &c.
Acute Meningitis of Children.	Senn.
Cephalic Meningitis.	Charpentier.
Encephalic Irritation of Children.	Piorry
Granular Meningitis.	Guersant.
Tubercular Meningitis.	Papavoine, Rufz. Gerhard, Piet, Green. &c. &c. &c.

One can easily imagine why Physicians of old would be most struck by the outward manifestations of a Disease where Convulsions not unfrequently

appeared, and would most readily seize upon this generic term to include all brain affections of which "Convulsion" was a symptom. The Anatomist on the other hand, would be most struck by finding fluid in the Ventricles of the Brain, and would most readily seize upon the name "Hydrocephalus" or "Dropsy of the Brain"

Then Whytt showed that cases occasionally occurred where on post mortem examination, fluid was found in the Ventricles, although the patient had been but a short time ill, but had suffered from undoubted hydrocephalic disease. Hence the phrase "Acute Hydrocephalus". Twelve years afterwards, Quinn showed that the Ventricular Dropsy was not an essential element of the disease, but that it was the result of a previous inflammation.

Then Guersant demonstrated that the inflammation attacked the Membranes of the Brain quite as much as the Brain itself. In other words that the Disease was as much a Meningitis as a Cerebritis. Then Papavoine demonstrated that this Meningitis was frequently the seat of Tubercle and hence a

Tubercular Meningitis. And, last of all, Rilliet and Barthez demonstrated to us that this deposit of Tubercle, is almost always confined to inflammations of the Membranes at the base of the Brain, and that inflammations of the membranes of the convexity of the Brain, are, as a rule non-tubercular or simple.
The foregoing terms have been used by the various authors to describe a series of symptoms which embraced what we now include under the name Tubercular Meningitis.

As Medical Science became more scientific, as Anatomy and Pathology became more accurate, so this large group of symptoms relating to an affection of the Brain and its Membranes, gradually became subdivided until we were left with a nosological picture which, on post mortem examination, always exhibited itself by an inflammation of the Membranes at the base of the Brain, these Membranes being always the seat of Tubercular Deposit. Hence the phrases, Basilar or Tubercular Meningitis, and Meningitis of the Con-

verity or Simple Meningitis.

It is then to "Basilar" or "Tubercular Meningitis" that the following remarks apply.

Detailed Reports of a few of the more interesting Cases, selected from the Fifty forming the groundwork of this Thesis.

Case 5.

(1888) July 1 L. W. aet. 3½ years. Female. She is the younger of two sisters who suffered from Scarlet Fever in May last. She made a good recovery and I have not seen her since her convalescence, until to-day. Her Mother informs me that for the previous 10 days, she has been dull and lethargic, easily put out of temper, refuses to play, & inclines to sit on the mother's knee. Her appetite is poor and she has lost flesh considerably. She complains of no pain. On auscultation, the Chest reveals nothing abnormal, and the pulse and temperature give no indications of anything special. The pupils are neither dilated nor contracted and respond readily to light. The tongue is clean, the bowels have been moved regularly, and altogether the only features about the case are, the loss of flesh, the dulness of spirits, and the want of appetite.

A very guarded diagnosis is given. The Child is ordered to bed, and to have an alterative powder each morn-

ing and a bitter tonic before meals.

July 2. She has vomited twice during the last 24 hours. She has been restless and drowsy alternately. She seems to shun interference and desires to be left alone. She lies on her left side with her back towards the light, evident Photophobia. Her pulse is 100, weak, regular, and easily counted. Her temperature in the rectum is 101°.2 F. No Headache. The respirations are about 30 per minute without irregularity of rhythm or in any way abnormal. The abdomen is flaccid but not full. The bowels have not moved during the last 24 hours. There is no Cough. Urine. Sp. Gr. 1028 after Cooling. No Albumen. Probable excess of Phosphates.

Same Treatment is continued.

July 3. The Patient is evidently not improved this morning. The tongue is of a dirty greyish-white colour & the bowels are still Constipated. Pulse is 120. Weak, but regular. Temp. 101.4. (Rectum.) There is no irregularity of the pupils, no ptosis, no dilatation or contraction. An ophthalmoscopic examination of the eyes was attempted today, but no definite information obtained, owing to the restlessness of the Patient.

Vomiting has been more frequent, although the patient "lives on nothing". Flushings of the face have been present now and again, and the "taches cérébrales" are very distinctly produced on the abdomen. No retraction of the head. Respiration regular. Full control over urine & faeces. The case is suspected to be one of (Tubercular?) Meningitis. The Parents desire a Consultation and an Edinburgh Consulting Physician sees the patient the same afternoon but considers the symptoms too indistinct for any definite diagnosis to be formed. Advises, however, to treat the patient with the Iodide & Bromide of Potassium & to well move the bowels.

July 4. Pupils dilated. Head slightly retracted. Flushings on the cheeks at intervals. Child does not complain. Ophthalmoscopic examination of eyes again tried to-day, but failed. There is no Strabismus or Ptosis. Photophobia continues.

July 8. Pulse and Temp. have not varied much. The vomiting is not so troublesome, but the head is much more retracted. The pupils are equally dilated and quite uniform. The abdomen is not retracted. The child has evidently all its faculties and there is no apparent paralysis. The appetite is poor. The bowels have moved voluntarily

The child seems drowsy, but the eyelids are only half shut. She answers questions when roused.

July 9. Passed a restless night. Seems more uneasy through the night than through the day. Medicine administered with more difficulty. No new symptoms.

July 10 Drowsiness more profound. The "cri hydrencéphalique" has been heard twice & muscular twitchings of the right arm and right side of the face have been distinctly visible. The pupils are not unequal & there is no squint.

July 11. The child is almost comatose. The urine & faeces are passed in bed for the first time.

July 14. The child has lain comatose for the last three days. Recognises no one. Food given by the mouth is not swallowed. Subsultus tendinum is present in the right hand, but there is no attempt at "picking the bedclothes" Navicular abdomen is very distinct.

July 16 The child has wakened up, spoken, recognised her mother and swallowed milk, after lying for five days in a comatose state. The mother is overjoyed. On examination, the pulse and temperature are

found unaltered. Pulse 120. regular and very weak. Temp. 101·5°. This is evidently the "lightning before death". Papils are unaltered. There is neither squint nor ptosis & the equally dilated pupils contract readily when exposed to light.

July 17. Patient quite sensible but more somnolent than yesterday. Has taken some milk but passes all motions in bed.

July 18 The somnolence noticed yesterday has passed into coma & the patient is in much the same condition as she was three days ago.

July 19 Patient died early this morning. There were neither delirium nor convulsions before death.

<u>Autopsy</u>. The body is very much emaciated. The lungs are non-adherent. Miliary tubercle found in the lungs and peritoneum. The veins of the dura mater and pia mater are much engorged with blood. There is a good quantity of exudation at the base of the brain. Miliary Tubercle found in the Sylvian fissure, but not in great abundance. Ventricles of the Brain slightly dilated. Fully 2 oz of serum found in the Ventricles. White substance in the

neighbourhood of the Ventricles not softened to any extent.

Remarks. This case is given in detail for the following reasons:-

1 The insidious nature of the onset.
2 The regularity of the rhythm of the pulse throughout.
3 The entire absence of squint and ptosis and the uniformity of the pupils.
4 The absence of delirium & Convulsions.

Treatment. The Iodide & Bromide of Potassium were given uninterruptedly from the 3rd July until the patient could not swallow. The Scalp was shaved & cold applications applied to the head night and day. Sweet milk, beef tea & brandy were given as nourishment.

Case 7.

C. R. Aet. 4 years. Male.

Family History. Both parents alive and well. Family consists of 3 girls and 1 Son. There have been no deaths.

(1881) Traces of Phthisis on the Mother's side.

May 12. This boy always enjoyed good health until six weeks ago. Since then there have been occasional headache and vomiting. Bowels irregular and inclined to be costive. Face flushes occasionally and he is easily tired. Temp. 99°. Pulse 98. Strong, bounding, and regular in rhythm. Tongue dirty white. Appetite moderately good. Lungs and other organs apparently healthy. Considered to be a case of gastro-intestinal catarrh & treated accordingly.

May 14. Patient is no better; has vomited frequently, especially the medicine. (A little grey Powder, Soda, & Bismuth.) Bowels constipated. Headache frontal & always present. Pupils dilated, but uniform. Pulse irregular & varies from 120 to 90 per minute. The skin is highly sensitive to irritation. The respirations are exceedingly slow, certainly not more than 12 per minute. One cannot say they are irregular. Cerebral symptoms are feared, and the patient is treated on that supposition. The head is ordered to be

shaved, and inunction of Ung't. Hyd. (15 grs.) to be carried out twice daily. Head and shoulders to be well elevated and an ice bag to be applied continuously to the head.

May 16 The patient is more somnolent and requires to be roused to take nourishment. The head is retracted. The muscles at the back of the head are rigid and contracted. External strabismus of the right eye is present but on closer and longer observation, the squint is seen to fluctuate and intermit. The pupils do not contract readily when exposed to light. Ptosis of the right side is present.

May 18. Somnolence much more profound. The abdominal walls are slightly excavated. The "Cri hydrencéphalique" is present. The temp. has continued normal. The pulse is very irregular and the respirations show that character known as the "Cheyne-Stokes".

May 20. Somnolence has deepened into Coma. There is no apparent paralysis, or rigidity, or convulsive movement of the limbs. There is no subsultus tendinum. There is no Carphology.

May 23. The Coma still continues. All motions are passed involuntarily in bed. The abdominal walls are

greatly retracted. The eye balls roll, occasionally, at other times, remain stationary as if fixed on some distant object. The eyelids are both partly open, or only half shut. There is consequently a good deal of inflammation of the Conjunctiva present. The eyes have a dazed appearance.

May 26. Patient died to-day at 4. P.M. having remained pretty much in the same condition since the 23rd. There were no Convulsions before death, and no paralysis or rigidity could be detected.

Autopsy. Body considerably emaciated. Left lung adherent. Lungs, on section, show miliary tubercles, but much more abundant in the left than the right. On removal of Calvarium the veins of dura mater are seen to be highly Congested, & tortuous. The base of the brain presents the usual symptoms seen in Tubercular Meningitis. There is a good deal of exudation and the lateral ventricles are distended with turbid serum. Miliary tubercles are found over the Cerebral Convolutions. The optic nerves are embedded in lymph. The pons, medulla, & under surface of Cerebellum are all involved. The sides of the Sylvian fissure are quite adherent, while the brain substance in both it & the longitudinal fissure

is very much softened.

Remarks.

1 This case is remarkable for the rapidity with which the disease marched. The impression made upon me was, that the Meningitis had been present for a considerable time before I was called to see him.

2. There was no apparent rallying from first to last, although the treatment by inunction of Mercurial Ointment was most assiduously carried out. The gums did not soften & no signs of salivation showed themselves.

3. The case is remarkable for the number of symptoms present.

4. Be always suspicious of gastric Catarrh. Persistent vomiting in Childhood is of grave importance, more especially if not accompanied by other very marked signs of gastric & intestinal Catarrh or other disorder.

Case 11.

C. K. aet. 3¾ years. Female.

Family History. The elder of a family of two. Parents alive and well. No History of Phthisis on either side. Parents have lost no children by death.

(1880)

July 3 This little girl has complained of feeling ill, vomiting occasionally, with slight headache, since the 25th ult. The vomiting still continues and the headache is worse. She is inclined to be drowsy. The bowels have not been moved for 48 hours. In auscultating the lungs, fine mucous râles are detected at each apex, with comparative dulness at the left apex. There is slight cough. The pulse is 110 regular in rhythm. The temp. in the rectum is 101°. The respirations are regular and 22 per minute. The pupils are normal. There is no strabismus.

July 6. The suspicion of cerebral affection is fully confirmed today. The medicine given has been vomited. She is restless and sleepless. Pulse is 130. Irregular according to position of patient or arm. The decubitus of the patient being dorsal, with arms lying along side

the body, the rhythm of the pulse is regular. On raising an arm to the perpendicular, it immediately becomes irregular falling as low as 84 beats per minute. The same happens if the child is made to stand erect in bed, or kneel. The "tache Cérébrale" is easily shown. There is no dilatation of the pupils. The Ophthalmoscope shows evident optic neuritis. The urine is 1018 Sp. Gr. No Albumen. Decided excess of Phosphates. She wanders at times. The Temp. is 102°.

9 July. The patient's expression is heavy. Headache still present. Neither flushing nor sighing. Occasional grinding of the teeth. The lips and nostrils are dry. The pupils are dilated, but contract on exposure to light. There is no heat of head. There is no congestion of the cervical vessels. The tongue is moist, but covered with a greyish white dirty fur.

July 12. The abdomen is excavated. Lung symptoms unchanged. Cough still present.

July 15. Pulse 110. feeble, thready, irregular in any position, especially on movement. Patient is very restless and cannot sleep. Eye sight fine. Has squealed several times. The face flushes at intervals.

July 18 Pulse very rapid, certainly not less than 140.

but so weak that it is very difficult to be exact. The head and feet are apparently cool when the hand is applied but the thermometer indicates a temper. of 102·2°. Delirium is present. The "Cri hydrencephalique" is very pitiful to listen to.

July 20. The patient has gradually sunk and died to-day without Convulsions.

Autopsy. The inferior longitudinal sinus is filled with dark coagulated blood. The Cerebral Convolutions are flattened and compressed looking. The vessels of the pia mater are distended and standing full of blood. Fluid, abnormal in quantity, is found in both Ventricles. The fornix and septum lucidum are free from softening. There is softening of the white substance between the posterior crura of the fornix. Red streaks and dots are visible in the softened brain substance. The small blood vessels are everywhere distended in the district of the brain immediately under review. The basilar membranes are tougher, more vascular, and thicker than normal, especially at the optic commissure and entrance to Sylvian fissure. Here the pia mater is studded with Miliary tubercles.

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Remarks.

1. The Diagnosis at the first visit lay between Catarrhal Pneumonia and Cerebral Affection.
2. Be suspicious of Cerebral affection when you have a comparatively low temperature with a high pulse. (Caeteris paribus). Here, the pulse was 110. The Temper. 101°.
3. Cerebral mischief only suspected, was fully confirmed by the irregularity of the pulse, and by the inequality in the force of its beats by change of position.
4. The treatment adopted in this case was the Iodide and Bromide of Potassium. Good feeding. Stimulants. Quietness. She seemed to rally a little about the end of the first week.

Case 14.

D. S. act. 9½ years. Male.

(1882)

Feb. 7. I was called in haste to see this boy who had suddenly fallen down on the kitchen floor "in a fit." He was partly recovered, and lying in bed before my arrival. He looked pale and emaciated and had a half-dazed appearance. He had been home from school for 2 days and had complained of headache for 2 months. There had been no Vomiting. The pulse and Temperature were not abnormal. I ordered him to be kept in bed and prescribed some Brom. of Potass.

Feb. 8. The boy has vomited once & the headache still continues. The bowels have not moved. There are no other leading symptoms to guide me in forming any Diagnosis. He is to have 3 grs. Calomel combined with 1 gr. Saccher. Lactis.

Feb. 9. The Headache and occasional vomiting are still present. There have been three evacuations of the bowels. The pupils are for the first time seen to be dilated. They are uniform & contract on exposure to light. The boy is taciturn but answers intelligently. He has had no more "fits" and the Bromide of Potassium is ordered to be discontinued. His pulse to day is 115. weak but regular. His temp. is 102°. His lungs show

nothing abnormal but he coughs occasionally. He complains of no pain except headache and there is no history of any fall or blow upon the head. There is apparent Photophobia as he inclines to lie with his back towards the window. He is not inclined to talk unless in answering his nurses. His urine is free from Albumen. There is no excess of Phosphates. It is of acid reaction & has a Sp. Gravity of 1020.

Feb. 10. There is great somnolence. Left Ptosis. The pupils are still dilated. There is great hyperaesthesia. The boy screams on the slightest movement. Auscultation of the chest is performed under great difficulties. The tongue is coated & the bowels are constipated. Cerebral Affection, which has been suspected for the last 2 days, is evidently present. He is ordered a mixture containing Hyd. Bi-Chlor. and Iodidum Potass. The scalp is shaved and the whole Calvarium blistered.

Feb. 13. As the Patient had not improved a consultation with a Consulting Physician is advised, and was held today. He confirms the Diagnosis of Tubercular Meningitis & advises the same treatment to be pursued.

Feb. 15 The pulse which has all along been regular in rhythm has fallen & become irregular. It varies between 80 and 115. The temp is unchanged. The respirations are regular.

and about 26 per minute. Stupor and lethargy very prominent.

Feb 17. There is evident paralysis of the 3rd Nerve of the left side. The patient has not at any time lost consciousness or been at all delirious.

Feb 19. The patient has squealed several times during the last 24 hours, but as I have not heard him I am unable to say with certainty whether the squeal corresponds with the "Cri hydrencéphalique" or not. He has never lost his intelligence. The cough is pretty troublesome but no lung symptoms can be discovered. Food and drink are only administered at rare intervals.

Feb. 21. The Patient's symptoms seem less prominent. He appears to be more sensible and more inclined to speak. He is less drowsy. Knowing the treacherous nature of the disease I am very careful not to be led astray. His abdomen today is boatshaped & the "taches cérébrales" are easily produced.

Feb. 22. I was sent for in the middle of the night as the patient had coughed incessantly for 2 hours. The cough is of a peculiar character. It resembles the rhythm of the heart sounds. There are two short coughs with a pause, two short coughs with a pause & so on. I stood by the bedside and

watched. There was no interval. I auscultated the lungs but found nothing new. I offered milk and the patient coughed while he drank and sputtered the milk out of his mouth. The head was greatly retracted. He seemed to have no time to speak and sleep was not to be had. He was most distressed looking and seemed inclined to sit up in bed. I examined the throat internally and externally with negative results. Hoarseness could gradually be detected in the voice. I was completely taken by surprise. I came to the conclusion that the cough must be neurotic in origin and that probably the Pneumogastric was irritated by the cerebral effusion. I tried Brom. of Potass in large doses. (20 grs.) Failure. Chloral Hydrate failed. Chloroform mixed with treacle failed. I then resorted to a hypodermic injection of Morph. I used the Bi-meconate combined with Atropia. It proved quite a success. The cough died down & the patient fell asleep after coughing without intermission for 2 days and 2 nights. I had not seen a similar case in all my experience and I would have resorted sooner to the needle but the age of the patient deterred me.

Feb. 26. I have been sent for twice to relieve the cough. I used the same hypodermic injection, and with success. The somnolence has gone. The pupils are still dilated & the head greatly retracted. He suffers both from Amblyopia and Diplopia. His pulse is irregular in rhythm & force of beat. His temp. is normal. He has a peculiar look.

March 10. The Patient has gone on improving since the 26 ult. He has been out of bed for a little today. He walks like a person looking for something in the dark. His head is pushed forward & his eyes and pupils wide & open. The eyes have been examined by the Ophthalmoscope today and the optic discs are found to be vascular, with large dilated veins, evident signs of recent optic Neuritis. No Tubercle can be detected in the Choroid.

March 27. The Patient has so far recovered as to be able to leave the room. He still suffers from Diplopia but the 2 objects are much nearer each other than at first.

March 31. I left the Patient convalescent today. His gait is a little unsteady but otherwise he is doing well.

<u>Treatment</u>. This Patient has been treated throughout with the Iodide of Potass. & the Bi Chloride of Mercury.

He had a large fly blister applied to the Cerebellum and a second to the Nape of the neck. His head immediately after the blistering, was constantly covered with an ice bag. He was fed on milk, beef tea, and brandy. His bowels were never allowed to be longer than 48 hours in moving.

Remarks.

This was my first case of recovery from suspected Tubercular Meningitis.

Was it Tubercular Meningitis?

It was not Typhoid Fever as evidenced by the retracted head, the excavated abdomen, the Constipation, the appearance of the stools, the Vomiting, the Strabismus, the double vision, the absence of abdominal pain, the absence of rose spots. The Pulse and Temp.e were also against Typhoid Fever. The highest recorded Temp. was 102°. I may perhaps be allowed to add a rather strange and startling statement. We have seldom a case of Typhoid Fever in Leith!!

It was not a simple case of infantile Convulsion. The boy was 9½ years of age and there was only one Convulsive fit. Therefore the Course of the Disease

the duration, the optic phenomena and the continued stupor were all against that idea.
It was not in my opinion a case of simple Meningitis. There was a previous history of 2 months of Headache. There was only one convulsive fit whilst the disease lasted several weeks. West says, in speaking of these two diseases, "75 out of 80, examined by him were tubercular." (P. 72. West, on Diseases of Infancy) Trousseau says "of 30 children who die of Cerebral Fever, dissection reveals the presence of tubercular deposits in 29." (Clinical Medicine Vol. I. P. 473.). Statistics are therefore against Simple Meningitis. The Age is against Simple Meningitis.
What about the Family History. The Father of the boy was at this time in South Africa. The Mother was a delicate looking woman and I learned that her Mother had died of Phthisis. Since this report was written, one child of the family, has died of undoubted Phthisis. Six years have now elapsed since the date of this report and the Patient is alive & though by no means robust, is able to be about daily.

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Case 19.

W. McC. aet. 4 years. Male.

A fair, plump, well nourished boy. No Family or hereditary predisposition to Phthisis.

(1886) Nov. 29. The Patient has been in indifferent health for a month or six weeks past. He has not been confined to bed or so ill that the Parents thought it necessary to seek medical advice. He Coughs pretty frequently and is "flushed looking". He breathes quickly and with a "grunt" which the ear at once suspects as the "Pneumonic grunt". Examination of the lungs dulness is detected at the base and apex of the right. There are fine crepitant râles over the right lung more audible at some places than others. The temp. is 103°. The pulse is 110, regular in rhythm and force of beat. His pupils are normal. His bowels are regular and not constipated. There has been no Vomiting. He complains of no pain. The Diagnosis is Catarrhal Pneumonia. He is ordered to be poulticed over the right lung; to have 2 grs. Sulphate of Quinine every 4 hours, & a Stimulating Cough Mixture every six hours.

Dec. 7. The Patient has been treated by constant poulticing of the right lung for the last 8 days. The Cough has been very troublesome and he has had a mixture containing Liquor. Opii Ammon ℥ss ℣ iii. Ipecac. ℥ii Liquor Scillae. ℥iii Syrupi Limonis ℥ss. Aquam ad ℥iv. ~~to~~ Liq. ℥i every six hours. His Temp. continues high, seldom under 103°. although the Sulph. Quin. has been given very regularly. His appetite is moderately good & he has only vomited occasionally & mostly with the Cough. He has had ice at intervals. Anxiety is beginning to be felt at the continued high temp & the unchanged condition of the Lung, notwithstanding the treatment. Dull patches are here and there detected over the right lung, especially at the apex and base at the back. The crepitant & crackling râles are still heard. The left lung exhibits no abnormal symptoms. The pulse is 120. and regular. The pupils are neither contracted nor dilated. The respirations are 36 per min. There is no symptom of Cerebral breathing. There is neither retraction of the head nor of the walls of the abdomen. His urine is non-albuminous. 1023. Sp. Gr. after cooling; shows the Chlorides in abundance & the Phosphates in excess. The Patient looks uncomfortable. He inclines

to be somnolent at times; at other times he is very restless.

Dec. 9. Patient's pulse and Temp. are quite as high both yesterday and to-day. He is evidently getting worse. A Consulting Physician from Edinburgh saw the Patient this afternoon. He confirms the Diagnosis of Catarrhal Pneumonia and considers that all the symptoms are accounted for by the lung affection. The Cough is pretty constant & troubles me. The Patient is quite intelligent. Somnolent at times. Restless at other times. The Poulticing is discontinued, and the upper half of the trunk is wrapped in cotton wool covered with "Macintosh." The Cough Mixture & Quinine are continued and Milk, soups, beef tea & Stimulants are relied on for nourishment.

Dec. 11. I was alarmed this evening while in the Patient's Bedroom by a peculiar squeal which I immediately recognised as the "Cri hydrencéphalique". The scales seemed to fall from my eyes and I immediately accounted for the continuous high temp.s and high pulse. Tubercular Meningitis had been present to my mind for the last fortnight, but

not one single symptom could be laid hold of with certainty. I had even mentioned it at the Consultation on the 9th. but it was overruled and it was considered that the Pneumonia sufficiently accounted for everything. The child has been decidedly more somnolent to-day and the pupils are dilated though uniform. There is no Strabismus. There has been a good deal of "grinding the teeth" for the first time to-day.

I determine to use very active measures and I chide myself for not having foreseen this disease sooner. Oleate of Mercury is ordered to be rubbed in to each groin night & morning. (ʒi. of the 5-%). An ice bag is to be kept continuously over the shaved head, and the child is to be well fed, the head & shoulders being well elevated, the light shaded from the eyes and perfect quietness to be observed in the Bedroom.

Dec. 13. The above treatment has been scrupulously carried out and with apparent success. The Temp.e has fallen to 101°. the lowest point it has ever reached during the present illness. The pulse is 98. regular in rhythm but very weak. The respirations are 26

and without any "Cheyne-Stokes" or other cerebral character. The lung symptoms remain unchanged. Vomiting is still occasionally present & the grinding of the teeth is pretty constant.

Dec. 16 The Patient is becoming very somnolent. Right Ptosis is observed to-day, evident paralysis of the right arm and external strabismus of the same eye. It is very questionable whether the Patient does not suffer from entire loss of vision. There are no bed sores although the child lies mostly on the left side & passes all motions involuntarily since the 12th. There is great emaciation and decided retraction both of the Head and abdominal walls. The pulse is unable to be counted, it is so rapid and so weak. The temp.e is now stationary at 102°. and there is almost constant grinding of the teeth and picking of the bed clothes.

Dec. 18. The Patient is comatose and has had two convulsions. There has been a great deal of delirium during the last 12 hours. There is paralysis of the right leg, evident paralysis of the 3rd Nerve of the right side & doubtful paralysis of the portio dura

Dec. 19. The Patient died to day at 2. a.m. having had a great many convulsions before death.

Autopsy.

On removing the Calvarium there was the usual turgescence of vessels of the Dura & Pia Mater. The mischief at the base of the brain was not so prominent as the symptoms would have led me to expect. The Membranes of the Sylvian fissure were agglutinated. So also were those of the longitudinal fissure, but the roots of the Cranial Nerves, the Optic Commissure and the Pons Varolii were not particularly involved. Miliary tubercle was found along the course of the vessels. The substance of the brain was much congested. The lateral ventricles were dilated but did not contain more than 2 oz of clear serum. Tubercle was found in both lungs and the recent inflammatory affection of the right lung was made apparent by the colour & feel of numerous patches along the lower border of the upper lobe.

Remarks. This was a most deceptive case. West (op. cit.) Page 131. says "that one is more apt to overlook the lung affection, so hidden is it by the Cerebral symptoms."

This case was the very opposite. Pneumonia was detected first and the Cerebral Symptoms first showed themselves by the "cri hydrencephalique" This was a case of "Cerebral Pneumonia" as Rilliet and Barthez so appropriately named it.

"These cases are all the more important since, though they are for the most part of a kind that does not admit of cure, slight indications still forewarn the experienced eye of the coming danger; while the absence of the customary signs of evil, lull the untaught Physician into a vain security from which he is not roused until death is actually on the threshold". (Med. Times & Gazette. Vol 4/61.)

Case 25.

J. B. Aet. 18. Male. Medical Student.

(1888.)
May 5 This is a young man who only commenced his medical studies three days ago. He is the only child of healthy parents. There have been no deaths in the Family and there is no history of Phthisis on either the Father or the Mother's side. He complains of slight pain in the abdominal region and has vomited several times. His pulse is 90 regular and full. His Temp is 100°. His tongue is clean and moist. He has slight headache. There is no tenderness nor fulness over the abdomen. His bowels are regularly moved daily. He is chatty and wants out of bed declaring there is nothing wrong with him. His breathing is regular and not hurried. There is nothing abnormal about the Lungs. He says he had a slight shiver 3 days ago which is the only premonitory symptom I can trace. He has always enjoyed good health. He is slender in make and stands 6 ft. high. He is positive he has told me everything and is only in his bed "to please his mother." A very favourable opinion was given of his present condition. The headache and abdominal

pain were attributed to biliousness as he had frequently had "bilious attacks" previously, though not to the extent of laying him aside from duty. A brisk purge was ordered & the patient to be kept in bed for the day.

May 6 The symptoms are almost unchanged with the exception of the Temp.ᵉ which is 102°. The pulse is only 78. Respirations 18. The bowels have acted twice. The Patient declares he is better. The urine reveals nothing. It is normal in quantity & appearance. It is acid in reaction & the Sp. Gr. after cooling is 1018. There is no excess of Phosphates.

May 7. Temperature is still keeping up. It is taken night & morning now, and last night it reached 103°. Patient has slept well. Takes food readily without vomiting. There is slight cough. Auscultation of the lungs reveals nothing. He says the abdominal pain is very slight. There is no Diarrhoea. He wants up.

May 8. There are a few doubtful rose spots seen over the abdomen and left side of chest. The splenic dulness is not enlarged. The tongue is clean & moist and without a trace of brown or anything similar in the very slightest degree to the Typhoid Fever tongue.

There have been 2 loose motions of the bowels. The morning Temp. is now 103° and the evening Temp half a degree more. The skin is moist, and there is quite a crop of Sudamina over the back. His intelligence is perfect. He has no headache, He has had no delirium. He sleeps moderately well and takes milk food readily. Typhoid Fever is suspected And an Edinburgh Consulting Physician is asked to see the Patient. He confirmed the Diagnosis of Typhoid Fever and the patient was put upon a purely milk diet with lime water.

May 11. Patient's Temp. varies between 102° & 104°. The morning temp. does not vary so much from the evening Temp. as one would expect in Typhoid Fever. His tongue is clean & moist & has no resemblance to any tongue I have ever seen in Typhoid Fever. Loud sonorous râles are heard all over the lungs, both back & front, but there is no dulness. There is slight Cough but no sputum. There is flushing of the face with heavy perspirations. There is no dilatation of the pupils, nor squint nor ptosis, nor diplopia, nor amblyopia, nor cerebral breathing nor anything to indicate formidable cerebral Affection. The abdomen is slightly full and there is gurgling in either iliac fossa. The "taches cérébrales are easily pro-

duced, but little importance is attached to this, as a symptom of Cerebral Affection.

May 18. The Patient has not exhibited any new symptoms calling for much attention. A fortnight has now elapsed and his tongue is still in the same clean and moist condition. His Temp.ᵉ has varied but little, 103° — 104° in the evening, and 102° — 103° in the morning. There is little cough but numerous, loud, sonorous râles all over both lungs. The rose spots have disappeared or become mixed up with the abundant crop of sudamina. He perspires very much, is quite intelligent, and declares he is free from pain. The abdomen is full, and the bowels are just to the loose side. The pulse is regular and about 120. There has been occasional wandering chiefly at night. A hopeful diagnosis is still given and the case is looked upon as a favourable one. It is anticipated that in about a week or ten days he will have reached the Crisis.

May 25. The Temp. shows no signs of falling and the morning is now quite as high as the evening Temp. His pupils are widely dilated and he is more somnolent than usual. He is generally lying with his eyes shut when

I make my visits. He requires to be wakened up. There is neither Diarrhoea nor Constipation. His pulse is about 120 and varies little from day to day. Its rhythm is not irregular. He is very intelligent and is always particularly anxious to know how the Thermometer stands, and the nature and frequency of the pulse, and the condition of his lungs &c &c. These questions are answered in such a manner as to give him the least possible concern. His abdomen is fuller than usual, tympanitic, and shows no rose spots. This is a most peculiar case of Typhoid fever differing in many particulars from the normal form of that disease. We have no great variations between the morning & evening temperatures, we have no dry brown tongue, with the central strip and moist edges. We have no increased splenic dulness. We have no pea soup stools. We had rose spots undoubtedly, we had gurgling in the iliac fossae & have so still, we had fever temper. We had typhoid stools once or twice at the end of the first week. We had and we have a large crop of sudamina, We have sonorous râles all over the lungs, slight cough, no sputum. The patient is certainly not improving.

June 1 The Patient has taken milk diet in fair quantity during the last week. He has become very delirious especially at night and has once or twice left his bed. He requires to be carefully watched. His temp. varies little either by night or by day. His pupils are widely dilated. He grinds his teeth at intervals while in apparent sleep. His flushings are very prominent especially the cheeks. There is no paralysis nor any derangement of the visual organs unless the dilatation of the pupils. But there are various symptoms which direct me's attention to Cerebral affection. There has been a considerable amount of squealing during the last 12 hours. It resembles nothing so much as the "cri hydrencéphalique". There is a great deal of delirium, there is great dilatation of the pupils, there is the unvarying temperature, the duration of the illness, the appearance of the tongue, & the stools. All these seem to me to militate against the idea of Typhoid Fever only. I have all along thought this case was peculiar and one out of the general run of Typhoid Fever cases. We are now at the end of our 4th week and there is no appearance of a Crisis.

June 4. The Patient died to-day at 1 P.M. His last three days have been most distressing. The delirium has been constant night and day. The urine and faeces have all been passed in bed. There has been grinding of the teeth, flushings of the face, and a pulse sometimes so quick as to be uncountable. The respirations as high as 46 per minute. No sign of irregularity of rhythm or force of beat could be detected in the pulse. There was no symptom of cerebral or other form of breathing resembling that known as the Cheyne-Stokes respiration. He simply died of exhaustion from constant tossing.

Autopsy. The body is greatly emaciated. Lungs are non-adherent. After removal, and on section, they are found packed with miliary tubercle. Heart cavity normal. On examination of the intestines, no sign of recent inflammation is met with, and the lower third of the small intestine is as healthy as the other parts. No ulcers or recent ulcers are visible over Peyer's Patches. The Peritoneum is red and injected looking, and shows numerous white looking spots of about the size of a pin's head which on examination are

found to be tubercle. The spleen weighs 3-3/4 ℥ and is flabby and pale looking.
The Calvarium having been removed the veins of the Dura Mater and Pia Mater are found swollen with dark fluid blood. Exudation is found at the base of the brain, involving the roots of the Cranial Nerves and extending into the Sylvian fissure on either side. Numerous tubercles are detected along the course of the blood vessels more especially in the Sylvian fissure. The membranes lining this fissure and those of the longitudinal fissure are glued together. The lateral ventricles are dilated and contain 4 ℥ of turbid serum. There is softening of the brain substance in the neighbourhood of the Ventricles, and the external Convolutions are flattened.

Remarks. This was a most peculiar case. The Diagnosis of Typhoid Fever made during the first week is one for which I will never blame myself. That we had

Some six or eight rose spots which were carefully marked with ink, is undoubted. That they had all the appearance and character of Typhoid Fever spots is also undoubted. We had distension of the abdomen, gurgling in the fossae, Vomiting, fever temperature, loose peasoup looking stools for 2 days. and a whole crop of sudamina. I had also the confirmation of my Diagnosis by the Consulting Physician. The suspicious signs have already been referred to.

Treatment. With the exception of Castor Oil once or twice, this Patient had no Medicine. He was fed on milk and animal soups from first to last. He could never stand alcoholic stimulants. They appeared to make him quite delirious even in very small doses.

Case 27.

J. M. Aet. 13 years. Female.

(1849) June 4

Patient is the youngest child of a decidedly phthisical family. Several members of the family have already died of that disease and a sister is at present suffering from strumous disease of the knee. The Patient is backward at School with her work. She has suffered for 2 years from Otitis & suppuration from both ears. She received punishment in School and it is alleged was struck on the side of the head by the Teacher with the palm of his hand. A few days afterwards severe pain was set up in the right ear and right temporal region. There is no discharge from the ear, but the girl is evidently in great pain and the Parents allege the Teacher is to blame. Her pulse is 110 regular in rhythm and full. Her temp.e is 103°. She has a dirty flabby tongue, dirty teeth, thick lips, flabby face and cheeks, and complains of severe pain in the right ear. The auditory canal seems, to the eye, clear, and free

from wax or other exudation. She refuses to eat and moans incessantly with the pain of the ear. The bowels were ordered to be moved with Calomel and Compound Jalap Powder, and warm poultices to be applied to the right side of the head.

June 7. The Patient has gradually become worse. The pain has not abated and Cerebral symptoms are not awanting. The pulse is irregular. The pupils are dilated. There is paralysis of the 3rd Nerve of the left side. There is complete ptosis on the left side and partial ptosis on the right. There has been occasional vomiting. The "taches cérébrales" are only imperfectly shown. There is no retraction of the head or abdomen. There is general hyperaesthesia but that is accounted for partly by the pain the patient is suffering. Meningitis is only too evident, but whether tubercular or suppurative remains to be seen.

I thought it best to stop poulticing in order to attract as little blood to the head as possible. I ordered oleate of Mercury (10%) to be well rubbed in to the groins twice a-day. Whilst I gave the Bromide and Iodide of Potassium internally. I ordered an ice bag for the head and ice internally for the vom-

iting.

June 10. There has been a good deal of delirium and the Patient is very reticent in answering questions. She is evidently in great pain and keeps constantly pointing to the right ear. The other cerebral symptoms are still as prominent. If the eyelids are held up the balls are seen to stare vacantly and occasionally roll. They have a dazed appearance and the Cornea of the right eye is inflamed. Food is only administered with the greatest difficulty so reticent is the patient. The hair has been cut entirely off the head and a hypodermic injection of Morphia Bi-Meconate and Atropia has been tried to relieve the pain.

June 13. Patient slept quietly for 3 hours after the administration of the Morphia hypodermically. She has gradually grown worse & is now quite comatose.

June 17. The Patient has lingered on until 3 P.M. today. Cerebral breathing has been present for the last three days. Convulsions have occurred at intervals for the last 24 hours. Rigidity of the right arm and leg has been present since the 13th inst. With the exception of the few hours after

the hypodermic injection, I think I am correct in saying this girl was never completely free from headache from the onset of the present disease until death put an end to her sufferings.

Autopsy. The Head alone was allowed to be examined. There is general venous congestion + tortuosity. Effusion over the convexity and right side. The membranes and vessels in the fissure of Sylvius matted together and presenting the usual nodular appearances of tubercle. The membranes at the base are much thickened and exhibit tubercles especially around the optic chiasma. Nothing abnormal is observed about the right ear or any abscess, or any pus. There are signs of old standing otitis and slight disease of the mastoid cells.

Remarks. This case caused a great sensation in public and was likely to lead to legal proceedings being taken against the Teacher. It was proved that the girl's ear had been

"boxed" and if the post mortem examination had not proved conclusively that Tubercular Meningitis was the proximate cause of Death, and that there was no sign of suppurative Meningitis or anything to lead me to suspect that the blow had brought on the present illness, the case might have turned out a very serious one for the Teacher. The girl was decidedly of strumous habit and therefore below the average level of healthy children. Then there had been frequent suppurations of the external ears and there was the danger of the discharge becoming obstructed in its exit. There was the backwardness of the girl with her school lessons, and the mental worry she would experience in preparing them, and if to all these we add a "boxing" of the ear, no one will be surprised if Otitis and suppuration followed. All this was established before the recent illness and there can be little surprise at cranial disease and especially Tubercular Meningitis following as a sequela. This case beautifully illustrates the rule I intend quoting

under the head of "Treatment" and ought to be a warning to all School Teachers never to strike a pupil on any part of the Head even with the hand.

Case 28.

(1884) J. K. aet. 17. Seaman.

Aug. 10. This Patient has suffered frequently from Gonorrhoea and leads me to understand that he now suffers from stricture and difficulty in passing water. He is not confined to bed and complains of nothing but what I have stated. I have carefully examined the Urethra and passed a No. 9 Catheter into the bladder thus showing there is no stricture. The urine is pure but albuminous. Its Sp. Gr. is 1026 after cooling. I imagine the Kidneys are the organs more immediately affected and order the patient to bed and prescribe some Pareira, Nux Vomica, and Uvae Ursi.

Aug 18. I have seen the patient daily during the past week. He is gradually becoming worse. He now suffers from headache, muttering delirium and is semi-comatose at times. His tongue is dirty, and covered with a brownish fur, and he has a vacant look. His pulse is 120, and

regular. His Temp. is 102°. His respirations 20. I am beginning to think the case is going to turn out one of uraemic poisoning, or some specific fever. I can find no definite symptoms to guide me in coming to a definite diagnosis. He has suffered from retention of urine for the last 48 hours.

Aug. 25. The urine is still albuminous and the inability to pass it still continues. His pupils are dilated. He protrudes his tongue with difficulty. The abdomen is flat and there are one or two spots resembling those of Typhus fever. His respirations are irregular and of the "Cheyne-Stokes" description, leading one to suspect Cerebral disease.

Aug. 26. The Patient is delirious at times, and suffers from subsultus tendinum. The pupils are widely dilated, but always contract when exposed to light. His pulse is remarkably quick, certainly not less than 140 per minute.

Aug. 27. The Patient died to day. Convulsions set in 12 hours before death. Retention of urine continued up to the last.

Autopsy.

The vessels of the Arachnoid are congested. This congestion is not so well marked behind as in

the front part of the brain. The convolutions are much flattened. The lateral ventricles are distended, and contain an abnormal quantity of cloudy serum. The lining of the Ventricles is somewhat thickened, tough, and presents a fairly granular appearance. The Anterior cornua of Ventricles are not softened, but there is much softening of brain substance about and around the posterior cornua. There are some minute tubercular granulations of arachnoid on the Convexity, and a similar and much more abundant deposit intermixed with hyaline matter about the Optic Commissure and extending along the fissure of Sylvius. There are some very minute, transparent, grey granulations in the lungs. The Bronchial glands are much enlarged.

Remarks.

This was one of those puzzling cases occasionally met with in this Disease. I was at no time certain of my Diagnosis. Although I had a leading symptom in one direction I had a still more leading one in quite a different direction.

Case 31.

W. P. aet. 10. years. Female.

(1883)

July 12. The Patient has a good Family History. She is a thin, Sallow-complexioned girl and looks weakly. She always enjoyed good health until two months ago, when she was attacked with "Bronchitis" She is to-day complaining of nothing special. She has a cool skin, a pulse regular in rhythm and beating at 88. Respirations 20. Temperature, Normal. She seeks advice because she is gradually losing flesh. She is ordered to be well clothed and fed on good liberal diet. A Tonic mixture containing Sulp. Quin. Iron & Nux Vomica is prescribed before, and Cod Liver Oil after, meals.

July 17. Patient seems not so well She has been sick & vomiting. Her Skin is hot. The Temp. is 101.5° pulse 100. Respir. 30. The Bowels are constipated, the tongue is dirty. The mixture was thought to have disagreed and to have brought on the Vomiting and the gastric derangement. Her bowels are ordered to be moved with Calomel & Compound Jalap. Powder and the mixture to be stopped for 2 days. She is to have ice occasionally and

a mustard cataplasm over the epigastrium and another to the back of the neck, to check the vomiting

July 18. The vomiting persists and the bowels remain obstinate. The Temp. is 102°, pulse 110, feeble & for the first time irregular. The tongue is moist, but still furred and dirty. The abdomen is not retracted. The Urine is not albuminous. Sp. Gr. 1025. The intellect is clear, but the manner is sluggish. The Pupils are regular and equal, but she sees "two chairs" where there is only one. There is evident diplopia. Cerebral Disease is suspected and inunction by the oleat of Mercury is commenced.

July 19. The pulse is very irregular, varying between 88 and 110. The other symptoms remain unchanged.

July 22. The vomiting has at last abated. The Patient has passed a good night, with occasional fits of wandering.

July 23 Internal Strabismus of left eye.

July 29 The Patient has been unconscious for the last four days and Carphology is almost constantly present. There is muttering delirium and occasional moaning. Urine and faeces are passed involuntarily. She is apparently quite blind with dilated pupils. There is nystagmus or rolling of the eyeballs slowly from side to side: These oscillatory movements goon sometimes for 15 min

utes uninterruptedly when there may be a pause for 30 minutes and so on. Sometimes the eyes, instead of swinging like a pendulum, will quiver upwards & downwards, quite quickly, for 10 minutes and then remain perfectly at rest. She appears quite unconscious to the outer world and recognises no voice or other sound. The swallowing of liquid food is quite accidental, as much escaping at the angles of the mouth as swallowed.

July 31. The temp. remains almost stationary but the pulse has risen to 140. and the respirations to 46. Her nostrils are dilated, her teeth and lips covered with sordes. She is evidently sinking.

Aug.t 1. We have had "the lightning before death" today. She has wakened up, recognised her mother, myself, and others. She has swallowed food and answered questions intelligently.

August 2. Coma set in today and she passed quietly away at 10 P.M.

Autopsy. Ordinary appearances of venous congestion seen in this Disease. At the base of the Brain we have the usual exudation of lymph, in which

the roots of the Cranial nerves, the pons, and the optic Commissure are involved. We have the usual matting of the membranes lining the fissure of Sylvius, and the nodular deposits of tubercle there. We have increased thickening of the membranes at the base, and flattening of the Convolutions of the brain. The ventricles are not much distended and there is little softening of brain substance in their neighbourhood. A Caseous tubercle about half the size of a pea was found in the Cerebellum.

Remarks.

The early appearance of Diplopia was a leading symptom in helping me to form a Diagnosis in this Case. With the exception of the remarkable "awakening" the day before she died, there does not seem to be anything calling for particular remark.

Case 32.

J. H. aet. 4 yrs. Female.

The Family History of this child is fairly healthy. There is a slight suspicion of the Mother being descended from Phthisical stock. The Patient is the elder of two children who have always enjoyed good health. There is no premonitory history to the present attack.

(1883) Nov: 10. The child is a fair, plump, well nourished girl. The symptoms of the present attack date back one week. They are vomiting, frequent complaint of head ache, listlessness, and constipation. To-day, the child looks heavy about the eyes, the abdomen is hollow, and the knees are drawn up. The head is not hot, to the feel. The temp. is 100°. Pulse 84 Respirs. 28. Examination of the chest reveals nothing abnormal. The urine is plentiful and 1024 in Sp. Gr. Free from Albumen and clear in Colour. The child's intelligence is perfect, and her vision is good. The pupils are large

but equal. The tongue is clean and moist. She is restless and fidgety, but otherwise looks well. The symptoms are very suspicious of cerebral affection and I determine to treat for Tubercular Meningitis. The head is ordered to be shaved and an ice bag to be applied constantly. The vomiting is to be combated by ice internally and mustard cataplasms externally; one over the epigastrium and one at the back of the neck. Plate of Mercury is to be rubbed into the Skin twice a day until symptoms appear of the gums having been "touched".

Nov. 13 The symptoms are now most marked. Her nights are restless. She shrieks out when disturbed. At other times she lies drowsy grinding her teeth. Her hands move with a tremor and she catches with a "Clutch". The pulse is irregular in rhythym.

Nov. 22. The Patient has not changed much during the last 8 or 9 days. The "cri hydrencephalique" appeared to-day. The Head is retracted and the abdomen navicular in shape. Vision seems entirely lost. Prof. Granger Stewart of Edinb. saw the patient to-day, confirms the Diagnosis and

advises the internal administration of Ext. Liq. Ergotae. with a view, I suppose, of contracting the blood vessels and limiting the supply of blood to the head. I have not tried this drug in this Disease before. The Patient is to be well fed.

Nov. 29. Emaciation is probably the only change since the last note was taken. The pulse intermits every 5th or 6th beat. The Temp. is about normal. Vision is still entirely lost. There is now no vomiting. She is very somnolent.

Dec. 5. Another week has passed and still the patient lies in bed and the symptoms remain unchanged. She takes milk, beef tea and brandy wonderfully well. The Ergot is still continued but I doubt whether any one could say that the child looks better.

Dec. 13. The Patient died today after being convulsed for two days. I have attended her for 33 days, the longest case as regards duration, in all my experience.

No. P. M. Examination was allowed but the Diagnosis was never in doubt.

Remarks.

1. There were few, if any, signs of Paralysis. especially of the 3rd 4th or 6th Nerves.
2. The Duration of the Disease was remarkable and the longest I had ever seen.
3. No bed sores formed during the whole Course of the Disease
4. The face partook in the general emaciation. In this Disease, I have often remarked emaciation takes place all over the body and, as a rule, exempts the Face.

Case 37.

C. S. aet. 3 years. Female.

(1881)

April 27. The Patient is the youngest child of a family of six. Both Parents are alive and well. They have lost no children in infancy and there is no history of Phthisis in the Pedigree of either. The child to-day looks feverish and flushed in the face. Her mother says she inclines to lie more than usual and that she has not "been herself" for two weeks. Her pulse is 100, regular but weak. Her Temperature is normal. Her respirations are not hurried and she does not seem to be in pain. The tongue is clean. The pupils are uniform and neither dilated nor contracted. Her bowels are regular and she has not vomited. A few alterative powders are prescribed and it is hoped the child suffers only from some slight indisposition.

April 29. The child is taciturn and heavy. Moist crackling râles are detected with diminished respiratory sounds, on examination of the lungs. The pulse is regular and only 98. The temp. is normal. There is no cough. The tongue is dirty and covered with a brownish white fur. The abdomen is natural in appearances. Poultices are ordered to the lungs and the previous Medicine continued.

May 1. The motions have been passed in bed and the child has been delirious through the night, starting up and apparently frightened. To-day she yawns a good deal. She seems to be pained in the head and the hypogastrium. Her hand trembles.

May 4. The child looks very heavy, bewildered, and seems to resist movement or interference in any way. There is neither cough nor vomiting, there is no retraction of the head or rigidity of any muscles, there is no paralysis of any limb or any cranial nerve. The tongue is still coated and there is a nasty odour in the breath. The urine is clear and not albuminous. Sp. Gr. after cooling 1020. The temp. is still normal and the pulse not over 80. The case is a most puzzling one but I am inclined to fear cerebral disease.

May 7. There is, if anything, a slight inequality in the size of the pupils. She has had a restless night and has vomited once or twice. Cerebral suspicion strengthening.

May 11. The child has wandered a good deal and talks incessantly. Food is taken. She looks dull and stupid. The pupils do not act readily when exposed to light, especially the right. She has vomited several times. Pulse and Temp. still normal.

May 14. Delirium has continued now for three or four days, the child chatting incessantly. The eyes sometimes gaze with a vacant stare, or pendulum-like, oscillate from side to side. Vision seems entirely gone.

May. 16. The child is restless and drowsy. There is apparent paralysis of the portio dura of the right side. The motions are always passed in bed.

May 18 Coma has now set in. The breathing is of that irregular form known as "cerebral". The respirations are much quicker than formerly. The child seems to have lost the power of deglutition. The temp is not above 99°. and the pulse at 80 cannot be said to be higher than normal in a child of this age.

May 19. The child passed away quietly today at 7 a.m. without any convulsions, or other symptoms calling for any particular remark.

<u>Autopsy.</u> The lungs are non adherent. On section, they present numerous granulations which are recognised as tubercle. Infiltrations of a small lobular nature are seen along the lower border of each lobe. The one lung shows these infiltrations as numerously

as the other. The brain shows turgescence of the vessels of the dura mater and pia mater. There is a good deal of exudation of a serous nature at the base. There is softening of the walls of the Ventricles and adjoining Cerebral substance. The Convolutions of the brain are slightly flattened and there is excess of serum in the Ventricles. There are numerous granulations along the course of the vessels especially of the Choroid plexus. There is exudation of lymph in the Sylvian fissure and matting of the membranes.

Remarks. 1. This case is quite unique for the lowness of the Temperature and pulse throughout.

2. It had a very insidious onset, and it was only by Careful observation and a gathering together of little facts that a Diagnosis was arrived at.

3 Loss of Vision was rather earlier than usual. It was suspected by the end of the 2nd week.

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Case 43.

H. N. aet. 12yrs. Male.

(1886)
Oct. 9. This boy is come of healthy parents and is the second oldest of a family of six. They are all alive and enjoying good health. He has suffered for the last 2 months from incontinence of Urine. It dribbles away drop by drop, night and day. He has not entirely lost the power of expelling, for he has passed in my presence about a tablespoonful of urine. He complains of great pain in the region of the bladder, and also pain at the point of the penis. The foreskin is particularly long, as if he had been in the habit of pulling it outwards. I suspect Calculus, but on exploring the bladder I can find no trace of such. He is ordered a mixture containing Iam., Nux Vomica, & Belladonna. He is to have warm sitz baths frequently, to be well clad and to have Cod liver oil after meals. Urine Sp. Gr. 1024. Excess of Phosphates. No Albumen. Large deposit of Urates.

Octr. 11. The urine contains stinking, ropy, mucus lying at the bottom of the Chamber-pot. I am afraid of Scrofulous Disease of the bladder and Kidneys.

Oct. 18. The Patient has not improved during the past week. He has vomited once or twice. He is anxious looking and restless. He is certainly passing less urine than he ought as evidenced by the water proof. The bladder on examination is found empty. There is not entire suppression of Urine but nearly so. Can he have Ischuria Renalis?

Oct. 21. The Patient is drowsy, vomiting occurring at intervals. He has had hiccough on two occasions for 3 or 4 hours each time. He wanders in his mind. There are no visual derangements.

Oct 22. The Patient is quite Comatose.

Oct. 23 The Patient died to day at 4. P.M. He remained Comatose till the last & died without any Convulsions.

<u>Autopsy</u>. There are the usual symptoms seen in encephalitis. There is effusion at the base of the brain. Softening of the Cerebral tissue. Effusion into the lateral ventricles. Matting

of the membranes in the Sylvian Fissure and numerous gray tubercles along the course of the blood vessels there..
The lungs are adherent, their substance is congested & tubercles are scattered through it.
The peritoneum is congested and shows the presence of tubercle.
The bladder and kidneys are congested and contain tubercles. The bladder especially shows the presence of inflammation & is very red and congested looking.

Remarks.

1 Could any one have diagnosed Tubercular Meningitis during life? We had almost none of the leading symptoms. I make no mention in the above report of the state of the lungs during life, but that is simply owing to the fact that they revealed nothing of consequence. The bladder symptoms were the only prominent symptoms during the first ten days, until symptoms of Ischuria Renalis set in. Then we had a few cerebral symptoms, but

they could be all accounted for by the supposition that the patient suffered from suppression of Urine. Another lesson showing this Disease arising in the most insidious ways.

Case 45

J. M. aet 7 years. Male.

(1885) Sep. 3 The Patient is a delicate looking little boy, whose father has died of Phthisis. He is one of a family of two. He has bright eyes, long sand-coloured hair and very appearance of belonging to the strumous diathesis. He suffers from posterior Curvature of the spine and has done so from infancy. There is evident ankylosis of the Cervical Vertebrae and especially of the atloido-axoidean articulation. His head and neck and shoulders all revolve together. There are signs of old abscesses along the course of the cervical glands, and on enquiry it is found that these discharged

for years. There has evidently been necrosis of the vertebrae. There is no paralysis of the limbs and the boy walks with ease and agility. His pulse and Temp.e are normal.
He has a poor appetite and is habitually Costive. There has been no vomiting. He has no Cough and examination of his lungs reveals nothing abnormal. He is ordered Syrup of the Iodide of Iron and Cod Liver Oil.

Sep. 6. The patient suffers from Diplopia, and there is external Strabismus of the right side. Ophthalmoscopic examination of the eyes reveals the presence of Optic Neuritis. His pulse has risen from 80 to 130 and is irregular in rhythm. His temp. is 101°.

Sep. 9. The Cerebral symptoms only too evident on the 6th. are still very prominent. The Cerebral macula is easily produced. Hyperaesthesia is present. He gives a loud cry at intervals which is easily recognised as the "Cri hydrencéphalique". He merely dozes, he does not sleep.

Sep. 12. Flushing of the Face alternates with pallor. The respiration is irregular. At times he answers

intelligently, at other times talks quite incoherently.

Sep. 13: The pupils are for the first time dilated. The right more so than the left. The intelligence has gone. Vision has apparently gone.

Sep. 18. He lies in a semi-comatose condition. There is evident paralysis, more marked on the right side of the body than the left.

Sep. 21. Delirium has been present for the last 24 hours. All motions have been passed involuntarily in bed for the last 3 days. There is evident rigidity of the lower jaw and it is absolutely impossible to administer anything by the mouth.

Sep. 19. Patient died to-day at 3 A. M. There were convulsions for 6 hours before death.

<u>Treatment</u>. From the moment that Cerebral Disease was diagnosed, this patient was treated by inunction of the Oleat of Mercury (10%). About a drachm was rubbed in twice a-day.

<u>Remarks</u>. The case calls for no remarks. It was easily diagnosed and the patient

was the likeliest of subjects to be attacked. There was no autopsy.

Case 48.

A. J. aet. 12 years. Female.

(1887) July 7 This girl is at school daily, but is retained at home to-day for examination of an elbow joint. She has complained of pain in her left elbow for the last 6 months. The girl is pale, has never menstruated and is tall for her age. She belongs to a healthy family of seven of which she is the youngest but one. They are all alive and there is no history of Phthisis on either the Father or the Mother's side. The joint in question on being examined is slightly swollen, glazed looking, and has all the appearance of a strumous joint. The arm is slightly atrophied and there is considerable pain on movement. Her general health is otherwise good. Perfect rest and Iodide of Iron and Cod liver Oil are prescribed.

21st July. The Patient has not been seen since the elbow

was prescribed for. Her appetite has failed. She suffers from pain in the forehead as well as pain in the elbow. Her eyes are heavy and dull and she sleeps badly. She has vomited once or twice a day for the last four or five days. The tongue is coated and the pupils are dilated. Pulse regular. 85. Temp. 98·6.

23rd July. The bowels have been constipated for the last two or three days. The pulse has fallen to 70 and is irregular. The vomiting is less frequent, but the headache is still very painful. She complains of indistinct vision and her eyes are glazed looking. Her pupils do not contract readily when exposed to light.

26 July. Cerebral Macula is easily produced today & is very distinct. The Patient is stupid, and her eyes stand gazing vacantly in her head.
She is evidently unconscious to all surroundings and she busies herself at times by picking the bed clothes or gathering them together in her hand, "fumbling" with them. Her Temp. is 100·6. Her pulse 68 and irregular every 3rd beat. The "cri hydrencéphalique" is present to day, and is at

times very distressing to listen to.

28 July. Somnolence has set in and she lies quite quiet with her eyes half shut. Her breathing has become irregular and quite "cerebral" in character. The bowels are still very obstinate and are only moved by Medicine.

31st July. The Patient is quite comatose. The pulse is remarkably weak and close upon 200 per minute. Retention of urine has been present for the last 24 hours.

2nd August. Convulsions set in at 4 a.m. and continued until 10 P.M. when death terminated the scene.

Treatment. This Patient was treated by inunction of Mercurial Ointment. Half a drachm daily from the 23rd July until 2 days before she died.

Autopsy. There was great thickening of the Meninges. Serous exudation at the base involving the optic Commissure and the fissure of Sylvius. Numerous granulations disseminated along the surface, more especially over

the right side of the brain. There was great softening of the fornix, septum lucidum and the posterior walls of the lateral ventricles. In short the usual symptoms of death from Tubercular Meningitis.

Remarks. 1. This was a case of Tubercular Meningitis following Scrofulous disease of a joint, just as Case 45 followed scrofulous disease of the cervical Vertebrae.

2. This case is remarkable for the absence of all paralysis of the visual apparatus. There was neither squint nor Ptosis.

Analysis of the 50 Cases;
1 Age. 2. Sex. 3 Duration. 4 Season.

Age. Sex.

	Males.	Females.	Total.
Under 1 Year.	1	0	1
From 1 to 3 "	1	2	3
" 3 " 6 "	14	12	26
" 6 " 10 "	8	6	14
" 10 " 15 "	1	3	4
Over 15 "	2	0	2
	27	23	50

Duration.

	Cases.
Under 7 Days	0
From 7 to 14 "	7
" 14 " 21 "	30
" 21 " 28 "	8
Over 28 "	5
Total	50

Average Duration
about 21 Days.

Season.

January	3	July	7
February	3	August	3
March	9	September	2
April	5	October	4
May	3	November	4
June	3	December.	4

Age. It is not my intention to draw any definite conclusions from these statistics. The number of Cases brought under review is far too limited for such purposes. Let me only add that these figures assist in establishing the fact that cases of Tubercular Meningitis are not very numerous in infants under 1 or even 2 years of age. This disease is undoubtedly most common in children over 3 years. After the age of 4 years or 5 years, the disease gradually becomes less frequent, and although I have only 2 cases over the age of 15 years, still I am inclined to believe that this Disease is not limited by any Age. I am under the impression that the Diagnosis becomes much more difficult as the age advances and the Physician more apt to be led astray by the insidious manner of the onset, or by some symptom pointing prominently to some complication.

Sex. Is Tubercular Meningitis more Common among Males than Females? These figures show the

ratio to be 27 : 23, but the numbers are far too small for any deductions. Nevertheless they bear out the fact, shown by the Registrar General's Returns, that the Males are more liable to this Disease than the Females.

Duration. Little need be added to the foregoing table. It shows the average duration of the Disease at about 3 weeks. Cases now and again crop up which last a much longer time although 35 days is the limit of my experience. I have never seen a patient die, during the first week of the Disease.

Season. March seems in my experience to have been the most prolific month of the year for these cases. I think this must be a mere coincidence and not referable to the cold and often tempestuous weather frequently experienced during this month. July comes next in order of frequency, and being one of our best summer months, proves conclusively that the season of the year or the temperature at all events, plays a very unimportant part in the

production of Tubercular Meningitis. In fact the three winter months, December, January, and February only produce 10 cases out of the total of 50.

Pathology.

It would be a waste of time and words for me to enter into a minute description of the Pathology of this Disease. I could not add anything new to what has already been published, and with reference to the cases which have been given in detail; in every instance where a post mortem examination was made, the notes taken at the autopsy have been given. Let me merely add that these cases sufficiently demonstrated the fact that by some means or other, whether hereditary, or constitutional or otherwise, miliary tubercles become gradually developed in the Pia Mater, more especially that lining the fissures and sulci at the base of the brain. In probably 45 out of the 50 cases, these tubercles were

found most abundantly in the Sylvian Fissure. On examination of an Artery, its sheath was found to be crowded with these particles. They seemed to form a roundish tumour or thickening, about a line in depth, sitting like a collar on the artery, more especially at a bifurcation. Gradually they seemed to have encroached upon the calibre of the Artery, narrowing its diameter and weakening the stability of its walls. Hence as soon as the pressure behind the point of obstruction became increased to any considerable extent, extravasation naturally followed. You have first then the deposit of tubercle and secondly an active congestion as its result. From these two causes follow all the morbid appearances observed in a case of Tubercular Meningitis.

Free fluid was occasionally found in the Cranial cavity on removing the brain. The base of the brain was often coated with a sticky, syrupy exudation, which, on examination was seen to infiltrate the

meshes of the Pia Mater. Serous effusion into the Ventricles was found in nearly every case. Softening of the Cerebral substance was seen in the fornix, corpus callosum, septum lucidum, thalami optici, and Corpora striata.
Yellowish and narrow streaks of pus were seen here and there, but nothing like that seen in suppurating Meningitis. Once or twice a massive Tubercle perhaps half the size of a pea was found in the substance of the brain.

I cannot conclude this brief and very general sketch of the Pathology of this Disease without referring to an article in the "Archives de Physiologie normale et Pathologique" 1870, P. 490. by M. Liouville entitled "Contribution a l'étude anatomo-pathologique de la méningite cérébro spinale tuberculeuse". So far as I know this is the first published contribution which directs the reader's attention, not merely to the inflammation of the membranes at the base of the brain and to the deposit of Tubercle there, but proves in the most definite manner that the same inflammation

and a similar deposit of Tubercle are to be found in the Cerebro Spinal membranes and even in the Spinal Cord itself. It may seem a little out of place in me referring merely to a published article without being able to confirm the same by positive proof from my own cases. My reply to that is, that the opportunities of a Private Medical Practitioner for making long and detailed post mortem examinations, are very limited.

Etiology.

Why is Tubercular Meningitis most prevalent in childhood? I confess I am unable to give a satisfactory answer to that question. There is one striking fact however in regard to tubercle and that is, that the various organs of the body in which it is most apt to deposit, become the receptacle of such deposit, most frequently, immediately they have attained their maturity. For instance, pulmonary phthisis shows itself oftenest about the age of twenty. This is just about the age when growth

passes into maturity. So with Brain Tubercle. We have seen that it is most common shortly after the age of three years, or just at the period when the brain has been fully matured, anatomically speaking. It would seem that the brain during the period of growth has a greater power of resistance to the inroad of the Bacillus, but as soon as this growth arrives at maturity this power of resistance becomes weaker and so the organ in question becomes less able to withstand attack. An argument is sometimes used that the first dentition extending over the first six years of life, may be a factor in producing this disease. I have never been able to connect in a satisfactory manner, the origin of many cases with a difficult dentition. Males undoubtedly are more liable to attack than females. Hereditary influence, in my opinion, is a most powerful agent in the production of Tubercular Meningitis. I am able to connect 29 of my cases with a history of Phthisis in the pedigree of either the Father or the Mother. Six cases oc-

curred in families where one or more children had already died from this Disease although both parents were healthy and robust, and no trace of Phthisis in the Family History of either. The remaining 15 occurred in families where no history of Phthisis or of Tubercular Meningitis could be traced. In my opinion it is untrue to say that the healthy and robust are seldom attacked; or that declining health always precedes the onset. This is a most insidious disease, and if one depended on any one symptom being always present he would be very often deceived. He would imagine he was dealing with some temporary ailment, until some prominent symptom made him think of this most insidious of insidious diseases and he would then feel chagrined, and chide himself for not having foreseen it. I can produce instance after instance of its onset in the midst of perfect health, of its onset in children most robust in appearance, and of its onset in children of enfeebled constitution

As a factor in producing Tubercular Meningitis, I attach a good deal of importance to the respiration of impure air, to the habitation of dwellings in which the light of the sun scarcely ever enters, to an ignorance, wilful or innocent, of all hygienic laws on the part of the guardian of the child, to the feeding of children habitually on food either deficient in nourishment, or totally unfit for digestion or assimilation, to a deficiency of clothing either in quality or quantity, and most of all, any one or all of these, combined with a strumous constitution.
In the detailed cases it was shown, frequently succeeding other affections, e.g. Scarlet Fever, Pneumonia, Typhoid Fever, Scrofulous Disease of Joints and so on.

Symptomotology.

Periods. Before saying any thing regarding the Semeiology of Tubercular Meningitis, I hope I will be excused if I depart from the mode usually adopted in text-books. I cannot convince myself that there is any advantage gained by the Physician who divides his symptoms into "Mental Phenomena," "Motorial Phenomena", "Sensorial Phenomena"; or groups his symptoms into classes so sharply defined that an exact number of days is allotted to each, and hence speaks of "1st Stage", "2nd Stage" and "3rd Stage" symptoms. Any intelligent Physician who has seen a dozen cases of Tubercular Meningitis, and who has studied these cases, and watched their progress from first to last, will very soon be convinced that there is not one single pathognomonic sign of this Disease; that the most characteristic symptoms of the one case, are often the least characteristic of the other; that whole groups of symptoms present in one case,

are entirely absent in another; that one patient may be carried off in 10 days while another lingers on for 30 days. To use the words of Trousseau "in order to know the drama well, the whole play must be seen, and not one scene alone." (Clinical Medicine Vol I)

Circulation. I have found the pulse remain regular throughout the disease. I have found it slightly more frequent during the first week, less frequent and irregular later on, and very much more frequent a few days before death. Scarcely two cases are alike. I can lay down no general rule. Irregularity of rhythm, no doubt is present in many cases, but, on the other hand absent in many others. We must never forget that the symptoms of this Disease are bound by no law.

As for Trousseau's "Cerebral Macula", I am prepared to show the "Tache Cérébrale" in as many patients who are not suffering from Tubercular Meningitis, as any Physician will show it to me in cases of that Disease.

I have this very day produced "Cerebral Macula" so called, in such a manner as would please its most fastidious worshipper; first, in a girl, aged 3 years, suffering from Diarrhoea; second, in a boy aged 12 years, suffering from pleuritic effusion. I do not deny its presence in many cases of Tubercular Meningitis. I deny that it is an infallible symptom of that disease, that it is pathognomonic of Tubercular Meningitis.

"Hectic Flush" is present in many cases, often alternating with "Pallor." Sweating, I have observed in very few cases.

The Temperature as a rule was never very high. It was always taken in the rectum in the case of children. It varied from normal to 102° or 103°.

Respiration. As a rule this has been slow. Occasionally "Cheyne-Stokes" rhythm has been observed. Sighing and yawning were pretty frequent. The patient sometimes appeared

"to forget to breathe" as Rilliet and Barthez put it. ("oublier de respirer")

Digestion. The appetite as a rule was poor. Sometimes it was almost impossible to coax the patients to take food. As a rule, there was little thirst. The tongue as a rule was moist, but coated with a dirty white fur. Vomiting, when present, was always among the earliest symptoms. It is a most suspicious symptom unless easily and otherwise accounted for. I have often attempted to lay down rules for distinguishing Cerebral Vomiting from Vomiting arising from other causes. Upright position is said to excite Cerebral Vomiting. This frequently happens but not always. Sometimes the child would sit perfectly erect without any emesis. Sometimes exactly the opposite would follow, frequent Vomiting ensuing when the child was in the recumbent position. Dyspeptic vomiting is frequently induced by the sudden removal from the recumbent to the upright position. I would advise one never to be led astray by the absence of a

feeling of Nausea as preparatory to emesis in Cerebral Disease. In short, over much dependence should not be placed upon any single symptom in the earlier stages of brain disease in Children. As for Constipation I should be inclined to say, it is as often absent as present. I have never seen very obstinate Constipation. Diarrhoea, and even, sometimes pretty severe, I have occasionally met with. Retraction of the abdomen, I never found an early symptom. It never aided me in forming a diagnosis. It may have assisted in confirming a diagnosis already formed.

Cerebral Functions. Change of manner, by which I mean mental irritability, restlessness, peevishness, &c, is a symptom upon which I place great reliance. It is among the earliest symptoms of this disease, and is often present for several weeks before the patient is bedridden. If accompanied by loss of flesh, slight frontal headache, and loss of appetite, it should never be overlooked. Headache is by no means a constant symptom. In my 4—

perience it is as often absent as present. In young children you cannot depend on their answering questions correctly, and great tact ought to be displayed in putting the questions, so as not to lead the patient to the answer. Headache when present has been frontal or over the convexity. I have never heard a patient complain of Headache in the occipital region. The intelligence I have scarcely ever found disturbed during the early days of the disease. Slowness in responding is soon observed. Then somnolence and despondency. The "cri hydrencéphalique" I have observed in about one half of my cases. I agree with those who do not consider it as an expression of suffering. It is never an early symptom in my experience and I am aware of only one instance in which I was assisted to form a diagnosis by hearing it. That was the case of the little boy W. McC. Case 19. seized with Catarrhal Pneumonia and who died of Tubercular Meningitis. Coma follows somnolence. Frequently, delirium follows the Coma, and convulsions the delirium. These are all very late

symptoms and far from being constant. Rigidity of an arm or leg or lower jaw I have seen pretty frequently, but rigidity of the whole trunk I have never seen. Subsultus Tendinum, Carphology or "Picking the bed clothes", muttering, trembling of an arm, and grinding of the teeth have all been observed shortly before death. I have seen paralysis of the muscles of the face, or of an arm, or leg, but I have never seen a case of general paralysis. Hyperaesthesia I have frequently found in the early days of the disease. Anaesthesia, of the skin especially, was always a late symptom.

Dilatation of one or both pupils I always found an early symptom. Contraction of the pupils I have seen in 2 Cases. Normal pupil, i.e. neither dilated nor contracted, I have observed in 12 Cases. Of 36 cases of dilatation of the pupil or pupils, nearly the whole of them were observed by the end of the 1st week. Strabismus was present in 15 Cases. Ptosis in 17 Cases. Imperfect closure of an eyelid in 12 Cases. Loss of Vision in 36 Cases. Contractility of pupil has

been frequently proved after dilatation had set in. This was easily tested by exposing the pupil to a lucifer match, lighted. I have seen inflammation of the conjunctiva & muco-pus in the angles of the eyelids, but ulceration of the cornea I have never seen. Retraction of the head I have found in 35 cases. Of all the signs of Tubercular Meningitis, no one is more deserving of the name of pathognomonic than retraction of the head. Unless present from some disease of the Cervical Vertebrae, which is easily diagnosed and probably accompanied by deformity of the spine I am not aware of any other disease likely to produce this symptom. It is a pretty early symptom. I have never seen simple rheumatism of the muscles at the back of the neck, or tender cervical glands or abdominal disturbance produce retraction of the head. It is somewhat strange that West never mentions this symptom and I am not aware that Rilliet & Barthez mention it. Trousseau mentions it.

Urine. Douglas Powell says that excess of Phosphates in the urine is an early sign and guide to the

diagnosis of Tubercular Meningitis. In this I am inclined to agree with him and in several cases I have pointed out the presence of that excess, very early in the disease. As complications I have had one instance of Aphasia, Bedsores in 2 or 3 cases, and incontinence of faeces and urine in several cases. Amongst the diseases from which I have had difficulty in distinguishing Tubercular Meningitis, I would mention, Gastro-intestinal Catarrh, Typhoid Fever, Intra-Cranial Tumour, Otitis, Marshall Hall's Hydrocephaloid, and Hysteria. I have often experienced great difficulty in reconciling the symptoms observed during life with the post mortem appearances. If one would remember that the disease is not only cerebral but also spinal, a good many of these difficulties would disappear. I have more than once referred to M. Liouville in the course of this Thesis, and if his views of the disease are accepted, we can explain in a manner much more rational, some of the symptoms.

Contradictions, which are so apparent in comparing the facts observed during life with the facts when in presence of the brain itself, gradually disappear. It is only when we take into consideration that the disease is cerebro-spinal that we can explain disorders of motion and of sensibility, rigidity of the neck and rigidity of the trunk, tetanic accessions, contractions, tossings, tremblings, functional paralysis, (bladder and rectum e.g.) hyperaesthesia and anaesthesia, and even the infirmities which follow a few cases of cure.

The Ophthalmoscope in Tubercular Meningitis.

This instrument was invented by Helmholtz, but Bouchut of Paris was undoubtedly the first to advocate its use in the diagnosis of Tubercular Meningitis. So far as my experience goes, I do not think it will ever take a leading place in the early diagnosis of this Disease. I have found it of more use as a confirmatory agent. It far oftener confirms

than leads to a diagnosis. In young children it is very often impossible to employ it. It requires great practice and tactus eruditus. I have looked for changes in the Optic Nerve, for Optic Neuritis. Optic Neuritis varies very much in intensity. Suppose you have Optic Neuritis as the result of Cerebral Tumour, you may find great difficulty in distinguishing it from Optic Neuritis as the result of Tubercular Meningitis. The intensity of the Neuritis would probably be the only guide apart of course from the history and other symptoms of the Patient. Cerebral Tumour as a rule, produces a much more intense Neuritis than Tubercular Meningitis. So that the presence of Optic Neuritis does not necessarily mean the presence of Tubercular Meningitis. Then you may have congestion of the optic disc and the blood vessels of the retina. These alone are not symptomatic of Tubercular Meningitis. You would require to have them accompanied by the ordinary signs of Tubercular Meningitis, before being justified in diagnosing the case as that disease. In other words, you

merely confirm your diagnosis. Lastly, you have sometimes a deposit of Tubercle in the Choroid. But you may have cases of Tubercular Meningitis without any deposit of Tubercle in the Choroid. I am of opinion that Bouchut made far too much of this symptom. He only found it absent in 3 cases out of 86. This has not been my experience, but I am quite willing that some allowance be made for want of skill. The absence of Tubercle in the Choroid is worth nothing from a diagnostic point of view. In examining a case of suspected Tubercular Meningitis with the Ophthalmoscope, I have looked for and frequently found a congested state of the papilla, a condition of congestion, tortuosity, and dilatation of the retinal veins, oedema of the papilla and retina, grey granulations and white spots upon the retina, atrophy of the papilla and Choroid, and a deposit of Tubercle in the Choroid. Of course, eye symptoms entirely depend upon the "locus" of the disease in the brain. The Cerebral changes must be anterior, or inferior; not posterior or superior.

The Tubercle-Bacillus and Tubercular Meningitis.

Perhaps I ought to have said what I had to say upon this subject under the head of Etiology. Had I been discussing lung tubercle I probably would have chosen Etiology as my heading, because the origin, life history and results of tubercle-bacilli in the lungs are much easier to explain than those of a local tuberculosis such as Tubercular Meningitis. I consider the statement will go unchallenged that the origin of all tubercle wherever situated is the tubercle-bacillus. In lung tubercle we can sometimes show by ocular demonstration the presence of this bacillus during the life of the patient. In Tubercular Meningitis we have no such opportunity. It has already been shown that the ophthalmoscope occasionally shows the deposit of tubercle in the Choroid and we are left to imagine that in this tubercle a bacillus will be found. We have no way of actually showing the tubercle-bacillus

itself. The discovery of the Tubercle-Bacillus, although of great use in clinching the diagnosis of pulmonary disease cannot, unfortunately, be utilised in Tubercular Meningitis and is only exhibited as a pathological fact after the death of the Patient. How does it happen that a local tuberculosis develops, such as Tubercular Meningitis, where the parts are quite inaccessible to a direct invasion from without? We may answer that a single bacillus may be inhaled and carried along by the blood current and deposited at the base of the brain. Such an explanation is most unlikely. The bacillus would be almost certain to find a "locus" long before it could possibly travel such a distance. Koch explains that possibly the starting point of the infection in Tubercular Meningitis, may be a caseous bronchial gland, which had been infected from the outside, became a "tubercular focus" and in turn supplied tubercle-bacilli to the blood current, and the blood current to the base of the brain.

If that be the explanation how does it happen that the Pia Mater at the base of the brain is invariably

singled out as the depôt for these bacilli? I confess I am unable to answer that question otherwise than that already given under the head of Etiology. That is to say the part infected must be in a state of nutrition below par before it can become a suitable "nidus" for the tubercle-bacilli.
Once deposited, this tubercle-bacillus is capable of germinating and producing local tubercular disease. Of course it must be remembered that this bacillus may remain for years incapable of doing mischief if the state of nutrition be good. This theory then depends entirely on the nutrition. If the tissue nutrition is impaired, evil will most likely follow. If the tissue-nutrition is good, its chance of withstanding attack from the bacillus is so much greater.

Insanity and Tubercular Meningitis.

Is there any connection between insanity and Tubercular Meningitis? In other words does Tubercular Meningitis ever give rise to insanity? That is a very difficult question to answer. The only positive way of proving such an assertion, would be to quote a certain number of cases where the patients, previous to the attack of suspected Tubercular Meningitis, were sane, and after the attack were insane. In addition, it would be necessary to have proof of the attack of Tubercular Meningitis gathered from post mortem examination. I have thought over this question for many years, and I have a number of cases in my mind where I attribute the onset of insanity to Tubercular Meningitis. The majority of these cases are at present in lunatic asylums. It would be interesting to have this question more thoroughly investigated by those who have special opportunities, e.g. the Medical Authorities of our lunatic Asylums. I once wrote Dr. Clouston of Morningside Asylum and asked him this very question. He replied "I cannot

say that I have seen any pathological facts to support the theory that Tubercular Meningitis has been the cause of Idiocy in any of my Cases. But unquestionably there are a few cases of Idiocy connected with ordinary inflammatory affections within the Cranium in Infancy, the "Inflammatory Idiocy" of Ireland."

Prognosis.

Of 50 Cases, my results have been 49 Deaths, and 1 Recovery. These facts speak for themselves as regards the gravity of the Disease. Others may have been more fortunate, but I never forget the Words quoted by Rilliet. "Frank, a qui l'on racontait un jour que Hiem avait guéri 30 Hydrocephales, Goelis, 41 sur 100, et Fermey, presque tous ceux pour lesquels il avait été appelé à temps, répondit. Et si viri graves de hoc sibi suaviter blanditi sint, absque ulla in istos injuria quae in nos ipsos non recaderet dubitare licebit."
(Archives Générales De Médecine. Dec. 1853)

Treatment.

In families where a predisposition to the disease is suspected, I forbid the mother to suckle the child, and where circumstances permit, I call in the assistance of a healthy wet nurse. I send such children to breathe fresh country air. I clothe them in flannel from head to heel. I put them on simple diet, and change their diet with great caution, at all times making milk the staple article of diet. I endeavour to impress upon parents the benefits of sanitary laws, of good ventilation, of good, substantial, and regular dieting, of properly clothing the body in keeping with the atmospheric conditions, of scrubbing the teeth, of washing the mouth, of rubbing the body and keeping up a healthy action of the skin. Although cases have come under my observation in which all of these requirements have been studied and attended to, still I cannot be blind to the fact that in carrying all these into actual practice, I am placing my patient in the best condition, either for escaping this disease or withstanding its attack.

By and bye as the child grows older I order Cod Oil

during 8 or 9 of the coldest months of the Year. I forbid excessive mental exertion and I lay down strict rules as to the necessity of regularity of the bowels.

In those cases where I have full control of the Patients, I have no difficulty in carrying out all these instructions and I am proud to say I have been very fortunate in escaping this Disease amongst that particular Class. I may mention, I am Medical Officer of the Parish of North Leith and as such, have exceptional opportunities for carrying out the instructions mentioned above.

As a Member of the Leith School Board, I have had enacted under the heading, "Regulations for the Infliction of Corporal Punishment", the following rule:- "Teachers are enjoined to exercise the utmost caution in inflicting punishment, so as never to strike a child on any part of the head, even with the hand" I consider this a safe rule and one which I would like to see adopted by every School Board, although I am unable to trace any of my cases to a direct blow

or injury to the Head.

The Curative treatment adopted by me has already been referred to more in detail, under each particular case. I will only add that I order perfect tranquility to the patient. I elevate his head and shoulders. I shave his head. I apply an ice bag or cold water irrigation to allay headache, and diminish the flow of blood to the head. I attempt to allay vomiting by ice, or by mustard internally or externally. I use Digitalis if the pulse is irregular or too frequent. I apply inunction of Mercury either in the form of Hyd. Unct. or Oleate of Mercury. I sometimes use Iodide of Potassium either alone or combined with Hyd. Perchlor. or Brom. Potass. Of all these I greatly prefer the inunction by Mercury.

Although I have had poor success I am cheered by the words of Louis, "the best founded hopes in appearance have, one after another, vanished before scrutiny." "This is, however, no reason that we should despair for the future, or adopt the opinion that we shall never succeed in discovering some agent or other, capable of effectually opposing the onward course ..... once developed. All that can

be said at present is, that redoubled vigour is called for, that greater accuracy in investigation is needed, and that Medical Men should undertake those joint labours of which I have spoken" &c.
(Louis on Phthisis p. 5-38.)

Tubercular Meningitis in Leith compared with Other Towns.

Table I.

Showing the number of Deaths from Tubercular Meningitis per 10,000 of the Inhabitants.

	1885	1886	1887	1888	Average
Leith	3·6	5·4	4·4	4·7	4·52
Edinburgh	4·2	4·3	3·7	3·3	3·87
Glasgow	4·3	3·8	3·3	3·9	3·82
Aberdeen	4·0	3·4	4·1	3·2	3·67
Paisley	2·0	3·8	2·1	3·2	2·77
Dundee	2·1	2·6	2·8	2·4	2·47
Perth	0·6	2·7	1·8	2·7	1·95
Greenock	2·5	1·6	2·1	1·4	1·90

Explanation of Table I.

The above Table is worked out from the Registrar General's Returns. It is intended to show the Mortality from Tubercular Meningitis in the eight Largest Towns regularly quoted by the Registrar General.

To take an example. Let us say Leith, 1885. The total number of Deaths from Tubercular Meningitis for the year 1885

recorded in Leith, were taken, and the Population of Leith for the year 1885 was taken, and then by simple Proportion

Pop. of Leith. 1885 : 10,000 :: Total Number of Deaths from T. M in Leith for 1885 : 3·6.

and so on for each of the other years, and each of the other towns. In this manner I was able to compare the Mortality from this Disease in the different towns and I have arranged them in the above Table in order of Frequency. The Table shows that this disease is more fatal in Leith or more frequent in Leith than in any other of the large towns. In my Introduction I explained that I was under the impression that Tubercular Meningitis was more prevalent in Leith than elsewhere and I promised to prove that statement. Table I proves it conclusively. Some objection may be taken to the very small number of years brought under review. For this I am very sorry myself, but the explanation is simple. The year 1885 is the first year in which the term "Tubercular Meningitis" appears in the Registrar General's Returns. Before that year a great many Cerebral affections seem to have been

"Slumped" under the term "Hydrocephalus". For the sake of Curiosity I assumed "Hydrocephalus" as synonymous with "Tubercular Meningitis" and worked the figures back as far as the year 1871 and I found that Leith still held the unenviable position of being at the head of the List. Of course I do not give these figures here as there is no comparison possible, between Deaths recorded under "Hydrocephalus" and Deaths from "Tubercular Meningitis".

I append one or two reasons why, in my opinion, Leith stands so high in the Mortality Returns of this Disease.

1 The peculiar situation of Leith. Leith is insulated so to speak. Roughly speaking, it is bounded by water on two sides, the North and East, and by the City of Edinburgh on the West and South. Between the Water and the town there are any number of Docks and Railways so that the town is entirely destitute of any sea beach nearer than a couple of Miles. To get into the open country by the West or South a greater number of miles must be travelled. Children consequently suffer, from being so heavily handicapped, in the matter of open, fresh,

Country air. They can only obtain such by traversing a considerable distance. The strength of this argument depends on the fact being recognised that Scrofula is a leading factor in the production of Tubercular Meningitis and that "the want of exercise for children in the open air or the constant keeping of them indoors, especially where the Ventilation is bad and the atmosphere charged with Organic effluvia" is a factor in producing Scrofula. (Hirsch. Geograph. & Histor. Pathol. Vol II. p. 630).

2 The Population of Leith. We have the large and extremely populous Village of Newhaven forming part of the Burgh of Leith. The people are almost exclusively engaged in the Fishing and form a community by themselves. They marry and intermarry with each other and are entirely ignorant of all hygienic laws in the houses which they occupy. We have consequently a vast amount of Scrofula and Idiocy and secondarily, Tubercular Meningitis.

We have a large immigrant population in Leith. These people are mostly of the poorer class

and come chiefly from Orkney, Shetland, Scandinavia, Denmark and Germany. Now these are just the Countries with the highest deathrate from Scrofula.

"In the Shetland Islands, Scrofula is said to be indigenous in almost every family." (Seeby in "Dobell's Reports" 1871. P. 22) quoted from Hirsch op. cit. Vol II. p. 615.

"Denmark, Norway and Sweden". "Accounts the same as these of the Common, or as it is called endemic occurrence of Scrofula, come to us from Denmark, Norway and Sweden." (Hirsch. op. cit. Vol. II p. 616.)

"Next we come upon a very extensive region of Scrofula in Germany" "According to information obtained by Phillips, two-thirds of all the children received into the Munich Orphanage suffer from Scrofula" (Hirsch. op. cit. Vol. II. p. 614.)

Then we have necessarily a good deal of Syphilis amongst the sea faring population. I believe there is some connection between Syphilis and Scrofula. (Hirsch. op. cit. Vol. II. p. 636). It is an undoubted fact, at least in my mind, that Scrofula may be

brought on by Cancerous disease in the progenitors, by drunkenness in the Parents, or by the marriage of near kin. We have all these Agents at work very prominently in this Town. It is known to every Medical Man in Leith that we have more than our due share of Cancer. Drunkenness is present here as elsewhere, only too prominently, and the marriage of near kin is too faithfully carried out amongst the inhabitants of Newhaven.

It is now necessary to show that although Leith has a high annual Mortality from Tubercular Meningitis when compared with other towns, yet if the Deaths from <u>all</u> causes be compared in a similar manner, it will be found that Leith holds a very good position indeed, and will also prove that the Mortality from Tubercular Meningitis is exceptional and not in accordance with the general Mortality of the Town. I append Table <u>II</u>. which will show this at a glance, and prove conclusively that Leith stands easily first as the healthiest of the large towns in Scotland.

Table II.

Showing the Annual Rate of Mortality per thousand Persons.

	1885	1886	1887	1888	Average
Leith	16·8	17·6	17·5	15·8	16·9
Perth	17·2	18·3	18·4	18·1	18·0
Greenock	21·0	17·3	19·8	15·9	18·5
Edinburgh	18·2	19·2	19·6	18·0	18·7
Aberdeen	17·9	19·4	21·7	18·2	19·3
Dundee	20·1	18·3	21·2	18·4	19·5
Glasgow	25·9	25·1	23·1	22·2	24·1
Paisley	24·9	22·7	26·0	25·8	24·8