On Intermittent Fever

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The respiration continues to be hurried and oppressed the mind is dejected and harrassed - occasionally there is delirium In a debilitated constitution drowsiness and sometimes deep coma supervenes the mouth and fauces are dry and clammy - the thirst urgent - the urine clear copious and colorless and does not deposit a sediment on cooling - the dejections are dark and bilious and at the conclusion of the attack nausea and sometimes vomiting are experienced After this state has continued for a time the chilliness abates - the shiverings alternating with flushes of heat - the skin recovers its proper color and the features their ordinary expression the heat gradually advances until it entirely predominates the average duration of the cold stage is from half an hour to four hours.

The Hot Stage

By degrees succeeds the cold the reaction continuing the face becomes hot flushed and turgid - the skin dry the temples throb - the pulse is full strong and rapid and the temperature much above the natural standard it has been observed as high as 110° or 112° F. The breathing is deep but oppressed the urine scanty and high colored -

the tongue dry and parched and excessive thirst is present the patient is feverish and restless the senses except in delirium being very acute The hot stage varies from three to twelve hours in duration —

The Sweating Stage

The skin recovers its natural softness — the forehead breast arms and legs become moist and the patient feelings are soon relieved by a copious and universal sweat the pulse though full loses its hardness and frequency the breathing is free — the thirst ceases the tongue is moist and the urine plentiful but turbid depositing a light red lateritious sediment the other feverish symptoms abate — the appetite returns and a perfect state of apyrexia is established after a time the sweating ceases and the patient feels nearly well though much debilitated — — — —

It will not be necessary here to enter into the various anomalies that may be caused by difference of constitution climate or locality these are briefly the ordinary symptoms in the three stages of Intermittent.

The early symptoms all indicate nervous debility as evinced by the sighing yawning &c As a consequence of the retirement of the blood

from the superficial Capillaries the Skin becomes cold The difficult breathing may be accounted for by the State of Congestion of the Larger and internal vessels caused by the accumulation of blood in them The hot may bring on the sweating stage from the stronger action of the heart the more forcible propulsion of blood filling the superficial vessels A curious property of this disease is that the interval between the paroxysms is usually constant and regular differing in duration in certain cases and giving rise to each variety -

The Quotidian - occurring every day or every twenty-four hours - this is the most exhausting form

The Tertian Every other day or every forty eight hours - It is the mildest form -.

The Quartan Every third day or every seventy two hours - this is the longest in duration.

1. The Quotidian

The intermissions are shorter in this variety and the paroxysms of longer duration Continuing occasionally for eighteen hours They Commence usually in the morning with a feeling of chilliness Nausea and abdominal uneasiness Continuing for about three hours In the hot stage there is thirst headache lasting for about two hours when a gentle

perspiration commences the freezing stage
the whole lasting usually from ten to twelve
hours. the succeeding intermission lasts the
same time except in severe cases when
it may not be more than six hours.
The Autumnal and Winter attacks are more
severe than those which occur in Spring
There are many minor divisions as Intermittent
approaches the form of Remittent but these
are unnecessary complications

2. The Tertian

This is the form most frequently
met with the paroxysm begins at noon and
lasts from six to eight hours In the Tertian
type the rigors are usually very severe
attended by acute lumbar pains and the
cold stage terminating by vomiting. it is
not often more than from half an hour to an
hour in duration
This is the mildest form of Intermittent especially
so during Spring it may subside after
the fourth paroxysm or from the 15th to
the ninth A vesicular eruption occasionally
precedes its departure Any slight cutaneous
affection about the mouth and nose is a
critical sign This type more frequently
affects adults and persons of robust sanguine

disposition than others Sometimes it is complicated with diseases of the Stomach Liver and Intestines

3 The Quartan

There is in this form an intermission every two hours - the paroxysm lasting from five to nine often beginning between two and five in the afternoon The cold Stage is longer in proportion in this than in the other forms but not so severe as in the Tertian - the Shivering sometimes does not occur until after the first and second paroxysms The cold Stage may last two hours but is not often attended with Diarrhoea or sickness In the heat Stage there is not so much an intense as a disagreeably dry heat nor in the concluding one any great amount of perspiration It does not often appear in Spring but generally in Autumn Attacking those chiefly who are advanced in years and of a melancholic habit It is the most unmanageable of all the types of Intermittents Sometimes remaining thro the Winter until the following Spring but is not often fatal

Thus the Quotidian usually begins in the morning - The Tertian

at noon and the Quartan in the afternoon
The duration of the paroxysm in the Quotidian
is ten or twelve hours In the Tertian six
or eight hours and in the Quartan four or
six hours The length of the paroxysm in
these cases varying inversely to the length
of the cold stage also inversely to the
length of the interval
Besides varieties in type there are other
deviations from the normal paroxysm
It may be incomplete Short of one or
more of its stages or one type may be
transformed into another It may assume
an erratic form evincing no determinate
type or order of succession in the paroxysms
The hysteric tetanic or other paroxysmal
complaints may be combined with it
assuming a periodic character from the
same exciting causes - Agues are most
common in Spring or Autumn the Quotidian
in Spring the Quartan in Autumn the
Tertian met with at both periods
Persons of all ages are liable to them
though they may not be equally subject
Those of middle life more frequently
than others and men than women probably
from being more exposed to the exciting causes

Of the modifications of Intermittent the most important are 1. The Inflammatory 2 The Congestive & 3 The malignant forms.

1. The Inflammatory Intermittent.

The intermissions are attended by febrile symptoms although the sweating stage may have been complete - the pulse is quick and tense - the thirst constant - the skin dry and heated - the system irritable the temper peevish and fretful there is headache also aching pains often affecting the extremities and sometimes short cough and pain in the chest - the rigors are strong and frequently attended with vomiting - the paroxysms protracted and the intermissions shortened

2. The Congestive form.

Is adynamic in its character the cold stage is protracted and introduced by vertigo - there is deep seated pain in the head and general trembling - the pulse is small and weak - often fainting and coma supervene. The hot stage is slowly and imperfectly developed - the surface of the body cold and the internal parts heated and irritable This modification of ague does not occur often except in hot climates It is extremely fatal

3. The malignant form

After the second third or fourth paroxysm the cold stage becomes shorter or more intense or very prolonged the phenomena attending the febrile accession are not so apparent but symptoms of local irritation not before perceived are now developed - there is no distinct perspiration but a fetid odor exhales from the body - the patient recovers his appetite and does not complain of much uneasiness but on the succeeding paroxysm colliquative hemorrhages and petechiæ appear. Death frequently takes place at this period or is protracted to the third fourth or fifth paroxysm

Local complications with Intermittent often occur from some peculiar state of the atmosphere or character of the local miasmata or else it is modified by individual idiosyncrasies - Persons of Plethoric habit being liable to have the brain affected with a disposition to delirium those of a nervous temperament are subject to spasm twitching of the tendons &c others predisposed to Rheumatism are affected with arthritic pains. Very often gastric symptoms are observed caused by inflammation

of the mucous membrane of the stomach supervening after a short shivering fit and at the commencement of the hot stage This is accompanied especially if the liver is affected with prostration of strength feeble pulse - shrill voice and cold extremities When Cerebral disease attends intermittent Acute pains are felt over the frontal region and orbits there is a great sensibility to light and the retina is irritable - there is also intolerance of sound and tinnitus aurium present which distress the patient greatly If Coma comes on there is drowsiness towards the end of the cold and beginning of the hot stage - the pulse irregular - eyes fixed and immoveable and the countenance cadaverous with low muttering delirium generally this state continues for one or two hours and then passes away until the next paroxysm Sometimes Cerebral intermittents are attended with convulsions - epileptic fit - Spasm of glottis - loss of voice and by Paralysis - When the brain and its membranes are affected the symptoms may be resolved into those of Spasm and Coma - occasionally the patient has either of these sets of symptoms but more frequently both at the same time -

When disease of the Pulmonary organs accompanies intermittent there is during the paroxysm great pain in the Chest - Dyspnoea Cough - Thirst - Dry tongue - variable pulse and general feebleness and Delirium When the fever is combined with Pneumonia and Hydrothorax it is most dangerous - If complicated with Catarrh the difference will be that the Cough is not dry the eyes more suffused and the face red and swelled If with Asthma respiration is often so difficult as to threaten suffocation If with disease of the heart - there is palpitation and the senses except that of hearing are deadened - the pulse and respiration appear almost to have ceased & the pulsations of the heart are much diminished - This state may last from a quarter to an hour or two -

In a variety termed Syncopal all knowledge of impressions for a short time are lost - this is followed by Langour and debility on recovery The symptoms of the paroxysms of a Fainting ague are a small quick pulse - the eye dim and sunken and profuse perspiration over the head and neck - This form is often fatal in five or six weeks

The Spleen is frequently diseased in Intermittent
One species of its enlargement and congestion
is vulgarly termed ague cake - sometimes
remaining after the disease has subsided
There is a tumefaction in the left hypochondrium
the skin is of a dull clay colr - the face
bloated - debility and distresses pervade the
whole body and the feverish accessions
are hectic in their character -

Diagnosis

The only disease liable to be
mistaken for Intermittent are Ephemera
Remittent and Hectic fevers -
The first known by the mildness of its character
and speedy resolution In Remittent there is
at no time complete Apyrexia nor are the
cold and sweating stages distinctly announced
In Hectic the feverish accession takes place
daily and in the afternoon or towards night
the sweating stage is more prolonged and
the pulse is small and rapid during the
Intermission

Prognosis

In this Country when uncomplicated
with local diseases it is usually favourable
to persons of previously tolerable health
and strength In warm Countries it is

much more dangerous and sometimes rapidly fatal often accompanied by severe affections of the head - stupor - delirium and convulsions Also of the alimentary canal with Diarrhoea sickness and sometimes black vomit. When fatal - Intermittents are generally so in the cold stage. Cerebral congestion supervening it terminates in Coma or Apoplexy
Tertians are the easiest to cure
Quartans the most obstinate and least dangerous And Quotidians the most fatal.
The favourable indications are regularity in the progress and recurrence of the paroxysms or in their being retarded. Complete reaction after the cold stage during intermission the organs of digestion unimpaired and the Stomach and Intestines free from any appearance of inflammation The return of discharges which may have been interrupted and a humid eruption about the mouth and nose The Prognosis is unfavourable when the paroxysms occur irregularly or have a tendency to assume the remittent or the continued form this being often caused by the supervention of some general or local inflammation - General debility - hiccup sighing - Coma & delirium are also very

unfavourable indications

The Terminations

Depend much on the strength and constitution of the patient - the duration of the disease and the malignancy and violence of the exciting cause Intermittents have a tendency of themselves to a favourable termination Tertians on the seventh and Quotidians on the fourteenth day Quartans often extend to the sixth week Sometimes an obstinate and Autumnal ague is superseded by a dysentery The appearance of a scaly or vesicular eruption about the nose and lips is considered critical If the disease be protracted the appearance of those under its sequelæ is well marked The face is pale and ædematous the skin unelastic sallow and flabby the eye yellowed - the Tongue furred and white in the Centre - the pulse feeble quick and small The appetite capricious the stools very offensive either clay like or of a dark liquid color the urine scanty and tinged with bile The perspirations of a fetid character the abdomen tumid and intolerant of pressure and the respiration short with a general appearance of debility

In hot climates death often takes place during the paroxysm. in temperate ones if the Intermittent is obstinate and prolonged it is apt to give rise to visceral disease. when death ensues it is either from the severity of the disease extinguishing the vital powers or from their being exhausted by the effects of some local lesion
In the Quartan type this occurs during the cold stage in the others during the hot stage or the period of intermission
The morbid appearances after death are Inflammation of the serous membranes and of the substance of the brain Hepatic alterations Inflammation and ulceration of the mucous membrane of the Alimentary Canal and enlargement of the Spleen
Dr. Bailly found in most of those he examined who had died of Intermittent Inflammation of the Arachnoid and undue vascularity of the substance of the brain. Red spots were frequent and ramollissement was occasionally met with the vessels of the brain were often gorged with blood And serous effusions were frequent among the Convolutions and sometimes were found in the ventricles
The lungs were generally healthy and the heart occasionally dilated and flaccid

The Liver and Spleen are the organs most commonly affected

The Liver sometimes greatly enlarged having been known to weigh nearly eleven pounds It has been found covering the stomach and intestines extending into the left hypochondrium and adhering to the Spleen Its density is either increased or diminished having usually a purple or black appearance and gorged with blood Sometimes purulent deposits are seen in its structure The hepatic ducts are often injected thickened and filled with dense dark colored bile as is also the gall bladder its inner surface is occasionally ulcerated and inflamed

The Spleen lesions of this organ are most frequently met with in fatal cases of Intermittent The consistence and size is increased - its structure easily torn the interior composed of a blackish red pulpy mass About six years since Dr Bennett met with a case in the Infirmary of a man who had died of Intermittent whose Liver and Spleen each weighed eight or nine pounds the structure was healthy and the vessels full of white blood corpuscles Morgagni mentions having in a similar instance seen the Spleen to weigh eight pounds Sometimes it is ruptured by a longitudinal

fissure and the Broken down tissue has been
found in the abdominal cavity
The Pancreas is often hardened so as to
resemble schirrus
The Stomach is frequently inflamed especially
about the pyloric orifice and greater curvature
In the Duodenum there are sometimes appearances
of inflammation.

Influences of Age Sex. Climate Season &c

All ages except Infancy seem to be subject to the attacks of Intermittents. The Quotidian most frequently attacking persons of advanced life The Tertian Adults. And the Quartan Adults and aged people. Sex is not considered generally to have any particular influence though during an epidemic in the Fens of Lincolnshire in 1788 the female servants were nearly exempt I have frequently observed the same of late years in the houses of farmers situated in the midst of the fens
Climate exerts great influence. In hot climates Intermittents are more fatal Life being endangered by the violence of the symptoms during a paroxysm In Cold Climates it is of longer duration and more obstinate occasioning visceral derangement and debility

Sir John Pringle observes that Ague is more regular where the exhalations arise merely from aqueous evaporation than when mixed with those of decomposing organic matter

Season has also a considerable influence In Britain during the Winter and Spring quarters the disease is somewhat rare but increases towards the Summer Solstice after which it decreases for a short time then increases and continues during the autumnal equinox it again subsides during Winter

Pathology

Dr. Christison — It is a true idiopathic fever having no local seat.

Broussais — Some believe it to depend on a local inflammation of an intermitting character. As inflammation

Boisseau — of the mucous membrane of the digestive canal or of any of the abdominal organs

Rivri — A late opinion is that it is caused by congestive irritation of the liver and Spleen —

No doubt during the paroxysm congestion takes place but this is more probably the effect than the cause Though we often find during and after intermittent congestive enlargement of the liver and Spleen in very many cases there is nothing of the kind to be detected

Others believe that the phenomena are

induced by the influence of specific causes on the nervous system

Another view that they depend on congestion of the capillary system

It is obvious from these conflicting opinions that the proximate causes are still obscure and that the nature of Intermittents and the laws which govern them are not yet clearly understood

Predisposing Causes

Debility is one well known predisposing cause persons of robust constitution and active habits being frequently exempt The strongest of all is that of former attacks of Intermittent upon the system.

Perhaps I may be permitted to mention my own case in illustration of this -

During the vacation of 1848 I returned to my native town in the Isle of Ely situated in what was formerly the heart of the Fens of Cambridgeshire - That year the Intermittent was very prevalent - the majority of the Inhabitants suffered from it and I had two different attacks of the Tertian variety

After my return to Edinburgh early in the Summer of 1849 I took a bathing at Portobello during the prevalence of an

Easterly wind and was immediately attacked by a severe fit of Tertian ague at that time I could not hear of a single case of Intermittent in the neighbourhood At the end of the Summer Session I travelled from here by sea to London The passage was stormy and by remaining most of one night on deck I exposed myself to fresh cold - on reaching London my old enemy again returned. These several sejures soon yielded to Manifest doses of Sulphate of Quina -

Among the predisposing Causes then may be mentioned exposure to Cold and the prevalence of an East wind -

Exciting Causes

It is generally admitted that Intermittents owe their origin to a certain morbific agent or invisible effluvia arising from the surface of the earth now termed Malaria or Marsh miasmata from their constant location in swampy districts giving rise when in a mild form to Intermittent but in climates where they are more abundant to Remittent and Continued fevers

Of the physical or chemical properties of the malaria little is known they are most likely gaseous - A certain temperature is necessary for the production of this agent - it is not

found within the Arctic circle now in colder regions of Temperate Climates - seldom beyond the 36th degree of North Latitude requiring a Temperature higher than that of 60° F.
The nearer we approach the equator the more frequent and virulent it becomes In this Country giving rise to Intermittents In Spain and on the Shores of the Mediterranean to Remittents And under tropical heat as in the West Indies to fevers of the Continued form It also requires a certain degree of moisture for its development in England being most common in Kent - Essex - East Riding of Yorks Lincolnshire Cambridgeshire and Huntingdonshire where the Marshes and fens are often overflowed with water In the Fens of Lincolnshire Huntingdonshire and Cambridgeshire a few years since Ague was so common that at certain seasons of the year chiefly in the Autumn and Spring few persons escaped being attacked Strangers visiting these parts of the Country from a distance were almost sure to experience the effects of a "Fen Ague"
In addition to the rivers and inland waters which there abound after heavy falls of rain or snow causing a large accumulation of water inland the outfall at the mouth of the rivers becomes nearly blocked up with

see or the tides being unusually high causing
an obstruction to the egress of the upland waters
the country is overflowed for a distance of many
miles appearing with the exception of a few
elevated spots like one vast lake - the course
of the roads being marked out by poles on either
side for those who wish to ford them
On the subsidence of these floods and as the
warmth of the weather increases the malarious
exhalations extending over a considerable tract
of country produce a wide spread epidemic
I have observed the Bargemen who live almost
entirely on the Canals. Cuts and branches of Rivers
passing through these marshes as well as
fowlers who gain their livelihood on the Meres
and in the fens are generally exempt from
Intermittent - it being chiefly confined to those
living on the borders of the low lands that have
been flooded in Winter since the carrying out
of an extensive system of drainage by which
most of the Meres have been emptied and the
swamps rendered fertile Intermittent for a
long time almost entirely disappeared - The
mortality has been less than in almost any other
part of England & the inhabitants of many
fen towns are noted for their longevity -
Within the last two years the ague has

returned spreading very extensively over its former haunts - this may perhaps be due to the fall of an unusual quantity of rain causing land which for a long time had been dry to be again inundated - The cattle sympathise very much with these changes A wet season invariably causing rot and other epidemics - In London Ague is now rare tho formerly it prevailed there extensively James the First and Oliver Cromwell both died of it -
Other localities of Intermittent are the Coast of Holland the Pontine Marshes near Rome The District called the Maremma on the Mediterranean Shores - Formerly among the rice grounds of Italy they are now abolished by government on this account - Some parts of America - China especially among the paddy grounds - and India during the extreme heat immediately after the rains -
It is not until the Margin of Swamps Marshes and banks of large rivers become dry that the poison is given off Air. Water Earth and heat seem necessary for the production of malaria the decomposition of vegetable substances is an accidental though frequent accompaniment of the miasm and not by any means an essential condition for its production

It is frequently produced at Estuaries and the Mouths of Rivers where the salt water comes in contact with the fresh the sulphates of the salt water decomposing the vegetable matters brought down by the rivers and setting free Sulphuretted hydrogen This is more the case with the Malaria produced on the African Coast and at the mouths of rivers in Tropical Climates than in our own Country Dr. Wm Ferguson has proved that vegetation even is not necessary for its production

In Holland and at Walcheren our army suffered in an unprecedented degree from Intermittent where the soil consisted only of a fine white sand In Spain in 1809 several regiments took the fever from encamping in a rocky ravine that had been lately a watercourse Again in the dry and arid plains of Estramadura after the battle of Talavera the army suffered greatly Also in many part of Spain one of the driest Countries in Europe and in Portugal during the peninsular war intermittents and remittents were rife Sardoal and Vasterbansar mention several similar cases all tending to prove "that healthy soil percolated with water gives out fever poison under heat."

The higher the temperature and the quicker the drying process the more virulent the poison

Low lands which have previously been very dangerous may become healthy when flooded over and high lands which are made wet and rapidly dry again produce malaria abundantly In malarious districts agues and remittents abound more in hot and dry than in cold and wet seasons hence the difference to be observed in fevers at different elevations and seasons of the year. Are the fever poisons all of one kind? The common opinion is that periodic fevers of every type arise from the same poison in different degrees of concentration.

In the higher grounds of the West Indies agues occur as in this country As you descend and the atmospheric temperature increases Remittents are met with and in the hottest and lowest parts the fever is Continued. X The inhabitants find that the lower the house and the nearer the marsh the greater danger there is Persons living in the higher Stories of houses have been known to be affected whilst those on the ground floor have escaped - Fort Augusta in the West Indies is situated in the middle of a marsh while Stoney Hill Barracks are 1500 feet above the level of the sea and far from any marsh or swamp yet those living at Fort Augusta escaped and Stoney Hill was visited by many

severe epidemics Again Dr Ferguson mentions that in 1816 The garrison of English Harbour in Antigua was disposed in three separate Barracks on hills surrounding the dockyard One on an eminence named Monk's hill 600 feet above the level of the sea the other two on an eminence called the Ridge One at the height of 500 the other at 300 feet Those at Monks hill entirely escaped at least while staying there Those at 500 feet had scarcely any fever but at the Barrack at the height of 300 feet every one of the men was attacked with remittent fever.

Character of the Inhabitants of Malarious districts. The men are of small stature deformed and pale. the hair lank and lanyard. the countenance sallow and sickly. they are feeble in body and shrivelled in mind The inhabitants of Brest are an example of this description An exception may be found in the peasantry of the Jersey parts of England who are in general robust strong and healthy. this may perhaps be due to their superior comforts and good living together with a fair allowance of excellent ale with which their masters supply them when at work

The <u>period of incubation</u> may be very short as in the cases of sailors in the West Indies

who having gone on shore for a single night have been attacked before they could reach their ship &c it may extend to many months Irish labourers who have been working during the harvest in Lincolnshire &c being often attacked after their return home on exposure to wet and cold Dr. Henderson mentions having seen the Guzerat fever in this Country in a person who had been affected with it in India It came on once a month and bleeding would convert it into a mild continued fever -

Sometimes these fevers are of the most deadly character yet some persons are so little affected as scarcely to be obliged to keep their beds a day or two - There are no doubt diversities of miasmata capable of giving rise to diversities of disease though they may assume a similarity of appearances - It occurs in the West Indies in periodical visitations the character of the season appearing to have little or no effect upon it There is not much known as to the essential nature of the gasses which cause malaria the principal ones most likely are Carbonic acid. Nitrogen. Phosphuretted hydrogen Sulphuretted hydrogen hydrosulphuric acid &c It is a singular fact with respect to the malaria on individuals that strangers are

Dr. Henderson

more liable to be affected than natives and in the case of the negro he appears to be proof against epidemic fevers - this may perhaps be owing to the different texture of the skin Those tracts of marsh abounding in peat moss are entirely exempt as on the frontiers of Virginia and North Carolina and many parts of Scotland and Ireland -

Periodicity

There are many different views held with regard to their periodicity I will briefly state two or three -

Willis - That the intermission is due to a periodic development of fermentable matter in the blood

M. Bailly. That it is due to the modification produced in the function of circulation by the alternate change of position from the upright to the recumbent

M. Roche - That they are periodic because the causes of them are periodic -

Cullen - That it is owing to a diurnal revolution producing a habit - _____

The Malaria is moveable by the wind

This is often observed in Tropical Climates where the wind blows for a long time continuously from the same quarter -

The miasmata lose their noxious properties by passing over even a small surface of water

Most likely absorbed by it This has been noticed by Sailors when anchored even a short distance from an infected coast

Another property of the poison is its attraction and adherence to lofty umbrageous trees

It is very dangerous in malarious countries to go under and sleep under them In Guiana settlers live peculiarly to the lee of small wood close to the most pestiferous marshes. New Amsterdam in Berbice lies to the lee side of an immense swampy forest in the track of a strong trade wind yet the inhabitants fear no fever.

Culture of the soil seems to have an important effect on the generation of malaria as has been observed in East Lothian in Scotland and in many of the fenny districts of England The fever has also been observed to decrease in proportion to the increase of the population

Treatment

In the cold Stage -

The efforts of nature should be aided by inducing a quick reaction thus bringing on the hot stage which must next be converted into the sweating. Warm diluent and acidic drinks should be given and external warmth

applied in a variety of ways A hot bath or a pediluvium is very useful - the patient should be placed in a warm bed with a hot bottle or Brick wrapped in flannel at his feet Friction with a stimulating liniment along the spine has been found serviceable An opiate administered at the first approach of the cold stage assists much in abridging it not less than 30 drops of Laudanum or Solution of Morphia should be given and if warmth does not come on in about a quarter of an hour from 12 to 20 drops more Blood letting in this stage has of late years been much recommended Among the advocates for this treatment are Dr Mackintosh and Dr Graves But bleeding continued until the patient feels relieved will usually suffice this often shortens the paroxysm and mitigates its severity An ounce and a half are generally enough rarely so much as twenty ounces is required to be taken away I may perhaps be permitted to quote a case given by Dr Graves illustrative of the advantage of blood letting in this kind of fever -
"Mary Gannon Age 44. Was in the Meath Hospital under Dr Stokes on the 10th Oct. Small doses of Salph. Quinæ reduced the Remittent from the Tertian to the Quotidian form

She then came under the Care of Dr. Graves on the 1st Nov: He ordered large doses of Sulph. Quinine the disease assumed the Tertian form Continuing to the 17th though the dose had been increased to a scruple and a half daily - She was then bled to ℥xvij after this the interval between the Paroxysms increased to twelve hours. Again she was bled and the fit became Quartan V.S. being repeated three times the duration of the Paroxysm was shortened her strength becoming reduced she was ordered gtt iv Liq: Arsenicalis in ℥ss Aq: Menthæ three times a day. The Paroxysms are gradually subsiding the pulse being scarcely more than a slight shivering" We may consider the benefit derived from Venesection in this case as probably due to its energetic action on the nervous system thus stopping the rigor and lengthening the intermissions - This is perhaps an extreme instance in few would it be advisable or necessary to abstract so large a quantity of blood from the patient - By small bleedings in the Cold Stage as doubt the internal oppression is relieved and the other efforts to promote an increase in the circulation thereby assisted -

The Hot Stage

Opium during the hot Stage abates the fever and produces a copious sweat - it is better in combination with a Diaphoretic as in Dovers Powder or along with James' Powder Cold acidulous drinks may be given to allay thirst If severe local pain supervene blood letting will be advantageous but this must be resorted to early in the disease

In the Sweating Stage

To a certain point the perspiration may be encouraged - by Spirituous drinks &c - If it become excessive dry rubbing - Change of Linen and getting up out of bed will check it -

This treatment will be applicable to most cases of Simple Intermittent - In the Inflammatory forms more active treatment must be resorted to

When the ague is simple after evacuation of the prima viae, Three grains of Calomel with about eight of Rhubarb generally answers very well Antiperiodics should be administered - An emetic may be given about an hour before the expected attack - The Specific remedies are Bark and Arsenic - Arsenic has been objected to on the ground of its unsafeness in the hands of the inexperienced

but this objection if it holds good at all will apply equally to many other of our most invaluable remedies I have seen the Liq. Arsenicalis given with much advantage in Cambridgeshire in doses of 5 or 6 drops every four or five hours during the intermission It often checks or entirely arrests the attack The principal advantage of arsenic is as a reserve force in case of a relapse after Quina has been tried or where from a peculiar idiosyncrasy of the patient Quina cannot be used Among other remedies that have been tried with more or less success are the Sulphate of Zinc the Artemesia Absinthium the Acetate and Citrate of Ammonia the salts of Iron. the bitter astringent woods Charcoal. Piperine. Salycine. Berberine the Cask though an infusion bitter and perhaps endowed with some tonic properties does not appear to have the slightest effect as an antiperiodic Colchicum and Narcotine have also been tried but the only rival of any importance to Quina is Cinconia But this has not yet been sufficiently employed to enable us to form a decisive opinion. The dis-covery of Quina and its salts forms a great Era in the history of Materia medica It has been the custom to refer the peculiar periodic effects of Cinchona to its tonic action but this is without reason tonic remedies only having

their effects developed by degrees whilst those of Cinchona may be evinced in a single dose It is no true febrifuge but possesses periodic powers in Intermittent and other periodic diseases The Sulphate of Quina and the Compounds of Cinchona are absorbed in the course of their action being found both in the urine and sweat

Dr Christison says he has never known Intermittents resist the effects of Sulphate of Quina and very seldom has it failed in cutting it short when exhibited in large doses It acts in a peculiar manner upon the nervous system its subordinate properties as a tonic are not necessary for its peculiar antiperiodic effects The ordinary doses are from three to five grains every two three or four hours during the intermission but this mode of treatment will ere long yield to the superior effects of large and full doses It may be given with Sulphuric acid and Syrup of Oranges or in a more elegant form with Infusion of Roses - Or in the form of pill The dose from Thirty to Thirty six grains this will usually cut short the periodic paroxysm at once Dr Allen in Intermittent fever on the African Coast gave it to the extent of ninety grains and with perfect success

Two cases were lately admitted into the Edinburgh Infirmary A man and a woman they had

both brought the Intermittent from the Fens of Lincolnshire
The man had it in the Quotidian form - he was given
twenty four grains for the first dose but this did not
check the fever - he next received a dose of thirty-six
grains which entirely cut short the attack Two others
doses of twenty four grains were given him and he
is now quite well - The other case that of
the woman was of the Tertian type - Two
doses of Eighteen grains were given here which
completely cured her -
Other modes of administering Quinine are by
the Rectum and the Endermic method
The latter is spoken of highly by some as
obtaining by means of Two grains of Sulphate
of Quina the same effect as a with a Large
dose by the mouth this however is not yet
sufficiently well proved -

In Conclusion Sir me state that I have
chosen the subject of Intermittent Fever for
my Thesis not from the expectation of throwing
any new light upon it from the small experience
a Student can offer the Path having been
often trod before and well explored by men of
science and experience So that little can
be advanced but a recitation of what others
have previously stated - Within the last

few years great additions have been made to our knowledge of the Origin and mode of treating this disease - It is now known that the miasm giving rise to it is not caused by decomposing animal and vegetable substances as was supposed to be the case but "from a porous soil percolated with water which is afterwards evaporated by heat" The treatment since the discovery of Quina every one believes to be simple enough but the method of giving it in heroic doses with I conceive be an unmistakable improvement on the former mode of treatment for which however some practitioners in the Country will hardly be grateful as with small doses the disease is generally unmanageable and a medical harvest is not the more abundant for being made in a day -

In the wide field of investigation there are many more novel and apparently more important, but subjects a student has little more to offer than a few vague theories on the former and as for the latter coming from a part of the Country where Ague is looked upon as a natural fact I lost sight of other considerations in the desire to have a hit at a personal enemy - If with borrowed weapons that they are effectual when used with vigor the experience in the Peninsula Calley has well proved -

William Marshall Holmes March 1860 -