Thesis on

The treatment of Malarious Fevers:

with notes of illustrative Cases

by

Duncan MacDonald, B.Sc., M.B., C.M.

Introductory remarks

It is exceedingly unfortunate for medical men proceeding to India that there is so little done by their professional brethren to publish the results of their experience in that country. The present generation of Medical men in India, are, in this respect, far behind those of previous generations, for there are many noble works, which may even yet be read with profit, published between the beginning of the century and the year 1860, which testify to the professional enthusiasm and love of research, of Medical men, who lived in India twenty, thirty, forty, fifty or more years ago. Even in the case of those who pass the competitive examination for the India Medical Civil Service, and study for a time at the Netley Hospital, the time is so short, and the cases so different from those met with in actual practice in India, that it is almost

a waste of time. This may seem a strong statement, but I make it advisedly. The majority of cases, reckoned as specially Indian diseases, to be seen in the Netley Hospital are usually of a chronic character, whereas, if ~~at the outset of his career in India, and not after he has had to grope his way through many years of painful experience~~, a Medical man is to be of real service in India at the outset of his career, ~~in India~~, and not after he has had to grope his way through many years of painful experience, it is with acute cases, with the beginnings of disease, which it should be the aim of Medical Skill to prevent passing into a chronic form, that he should be made familiar with. For this purpose it would be far better to send successful candidates out to India to the Presidency towns, where there are large Hospitals in which acute cases of all kinds,

and the various forms of disease most likely to be met with in actual practice in that Country, could be seen and studied. In that way, Professional men would be far better fitted for entering on their work with a thorough practical acquaintance with Indian diseases. The existing literature too, does little to make up for this want of practical knowledge. Even now, with regard to the class of diseases - Malarious Fevers - the treatment of which I have selected as the subject of my Thesis, "Morehead's Researches on Diseases in India" is still the chief work for Consultation, although it was published twenty one years ago. It is a valuable book. No medical man who goes to India should be without it. But the observations on Fevers were all made at a time when the Clinical Thermometer was regarded as little more than a

physiological or physical toy!
And the result is that, compared with the actual knowledge of the medical men now in practice in India, Morehead's remarks on these fevers are vague and indefinite. Knowing that the period of remission was the proper time for the administration of Quinine, Morehead recommended it to be given then (in doses, by the way, far too small to produce all the good effects of which Quinine when given in sufficient doses is capable). But in only a small portion of Remittents is the remission of so marked a character as to be recognisable by the sense of touch, and the frequency of the pulse. And, not only are the subdivisions into which Morehead divides Remittents unnecessary but some of the diseases which he calls Continued Fevers, are nothing more than Remittents, in which either

the remission was not marked, or Remittent to occuring at some season of the year which Morehead very arbitrarily decided to be seasons in which Remittent Fever ought not to occur! The Clinical Thermometer is invaluable in the diagnosis of Remittent Fever: and as to the treatment, by the careful use of the Thermometer the Physician can tell exactly when the remission begins: and as that remission is the best if not the only proper time for exhibiting Quinine, the value of such knowledge will be understood.

It is true that there are isolated contributions - such as Professor Maclean's articles on Intermittent Fever, Remittent Fever, Dysentry &c. in Reynolds System of Medicine - which are written in

in the light of the present state of Medical Science, and which are of considerable value; but even these are too much condensed, or too sketchy, to supply the wants of the time.

During the eight years which I spent in India — chiefly in the city of Bombay — I was able to make observations on every variety of Malarious Fever. I intended to collate the results and, after using it as my Thesis, provided I got permission, to publish it as a contribution to the therapeutics of Malarious Fevers. But my departure from India was so abrupt that I had not even time to collect my materials, & was not able to do so when I had time. For a succession of severe illnesses — Neuralgia, Diphtheria, Enteritis — made me so weak, that I was sent off at twenty-four hours' notice so that I might have a chance of life. Through the kindness of the Medical Faculty, on application to the Dean, I was allowed till the end of June, so as to permit of the materials which I had in India being sent on to me. Some of

these have come, and I must now do my best with what I have beside me. I may at some future time, and when I have more leisure, make use of the permission accorded to me to use my Thesis as the basis of a Monograph. In this way I shall be discharging what seems to me to be a duty to my professional brethren: and if I am enabled to help anyone, even in a small degree, to attain to a more successful means of treating Malarious Fevers, and to save some from the same experience through which I had to pass in groping my way from comparative ignorance and timidity, to knowledge and a reasonable self-confidence, I shall feel that I am amply repaid for the labours of years, and shall be satisfied with my reward. Many weary hours of work, and many visits to the unwholesome and fearfully over crowded dwellings in which the poorest natives of Bombay live, have I had to go through before I felt that I was competent to deal with cases of Malarious Fever. And it is something to have

worked for when one is assured of victory, even before the conflict has begun, and can predict with certainty what the result of particular treatment will be.

I do not think many diseases have been the cause of so much speculation as Malarious Fevers. Occurring, in a marked degree, chiefly in certain parts of different countries, the cause was evidently a local one, and time and means have been spent by many professional men in trying to solve the mystery which shrouded the causation of the various abnormal conditions occurring in man, which are referred back to Malaria as a cause. I cannot take up time with reference to the quaint and interesting opinions of the ancients as to the nature of Malaria, but must say a few words as to the present views and theories on the subject, as one of these at least appears to me to throw considerable light

upon facts which daily come within the cognisance of medical men. At one time Malaria – and the very name shows that it is not a recent theory – was believed to depend on certain gaseous emanations from Organic, and especially vegetable Organic matters, in a state of decomposition. Oldham has published a book of two hundred pages in order to get the world to believe that Malaria was only another name for chill! But during the last fifteen years the general concensus of opinion has been in favour of the view that the Malarious poison is of a vegetable nature. Salisbury (America) declares that the materies morbi consist of the spores of the Palmella, or of the Algæ. Lanzi (Italy) after a long series of researches and experiments pronounces in favour of certain granules which develop in the cells of withering and decaying Algæ: and affirms these granules to be identical with Cohn's Sphaerobacteria, and Shroeder's Bacteridium brunneum. The most recent theory of all is that which is

sketched in the Practitioner for 1879, vol XXIII.
This sketch is the translation of an account of researches into the nature of Malaria made by Professor Klebs and Signor Tommasi-Crudeli reported in the Reale Academia dei Lincei
It may appear unnecessary for one who has chosen the treatment of Malarious Fevers as the subject of his Thesis to take up time in saying anything of the theories as to the nature of Malaria. But the theory in the paper which I have mentioned fits in with so many of the phenomena observed by Medical men, and throws so much light on the nature of the Fevers, that I need not apologise for giving a brief abstract of the views in question, as, I think, it will mark a new era in the Therapeutics of Malarious diseases.

The experiments made by the two Italians were carried on chiefly in the Campagna of Rome so famous as a hotbed of Malaria. And the result of their experiments apparently is to settle the vexed question of the origin and

nature of Malaria in favour of its being a vegetable organism of low organisation. The species Bacillus, which they discovered to be the cause of what we know as the manifestations of Malaria, is found extensively in the soil of malarious regions. When the poison enters the system — it is both inhaled and swallowed — it is believed (in accordance with the experiments of Lussana with vegetable and mineral poisons) to pass by absorption from the stomach, by means of the portal System, to the liver. As a rule it does not pass through the liver, but is removed from the blood, and excreted by the liver, along with the bile. After passing for some distance along the duodenum re-absorption takes place, and the poison is again carried back to the liver. Again it is excreted, and this circulation may go on for an indefinite time without any malarious phenomena being produced. Possibly the liver itself, and the organs, such as the spleen for instance, connected with the portal System, may be affected

by the presence of the poison, and secondary changes may be produced. Should the quantity of the poison be too much for the liver to secrete, then part of it will pass through the liver, into the the Systemic circulation. In this way the poison reaches the nervous System, and produces the various forms of Malarious disease. When the poison Sets into the system it may remain, as has been explained, for an indefinite time without manifesting its presence. When the tension of the vessels is high the tendency of the poison to pass through the liver is slight, for the portal vessels share in the general high tension. But when the conditions that have kept up, or raised the general tension are altered or removed, then the Malarious phenomena appear. It is quite a common experience in India for men to work in highly malarious districts without being attacked by Fever. When the stimulus of work is over, or the System Sets low, then Fever Sets in. In the same way those who have once had Fever, and who

have made a good recovery, are liable, even after considerable intervals, to have a return of Fever when they have been exposed to a chill, or have got "run down".

I believe that when the liver is interfered with, and does not do its work properly, as when it is congested, or when there is constipation, the same result is brought about. In some of the illustrative cases which I shall append to this Thesis the liver was very clearly an important factor in the production of the Fever, (See Chrystal's case, Chart 5) And when the liver was put to rights there was little difficulty in overcoming the Fever. And I think that we have a very clear indication that we should act on the liver when we have to deal with cases of Fever of a Malarious nature. As the result of many years' experience had already made that a rule of practice, and the reading of the paper in the Practitioner not only has confirmed me in the practice but has given me the rationale as well. I will not take up more

time with this interesting matter but must proceed to the subject proper of my Thesis.

I propose to divide my subject into six subdivisions or chapters, which are as follow:—

I Intermittent Fever—
Treatment

II Remittent Fever—
Treatment

III Alternative methods of Treatment—
Quinine by the Rectum:
Quinine subcutaneously:
Warburg's Tincture:
Arsenic

IV Chronic Malarious Fevers.-

Treatment

Quinine:

Arsenic:

Iron

V Prophylactic measures

VI Illustrative Cases.-

Brief notes, explaining the leading features of the Cases, and the Charts which are appended.

I Intermittent Fever

This exists in many varieties which have all the following general features by which they are readily distinguished:—

In a typical case, after the usual pro-dromata of Fever, three distinct stages occur:—

1. The Cold Stage, from which the name Ague is applied to the fever. It varies from a slight feeling of chilliness to a strong fit of shivering accompanied by chattering of the teeth. The temperature is always above the normal

2. The Hot Stage, in which the sensation of heat, a dry burning feeling, is very marked.

3. The Sweating Stage, in which the skin perspires, and the temperature of the body gradually becomes normal.

These three stages (which I merely name, as the signs and symptoms of Each are

given in all the text books) constitute the paroxysm or fit. Then follows the intermission, which may last until next day, or for two or more days. The length of the intermission determines the specific name of the Fever - Quotidian, Tertian, Quartan &c.

But many cases occur, distinctly intermittent in character, in which there is a considerable departure from the type. The Cold Stage is very frequently awanting, or may have appeared in the form of a slight feeling of chilliness at the commencement of first paroxysm, but never again being present. The Hot Stage, of course, is always present; but sometimes the patient cannot tell when it comes on, or goes off, and, occasionally the thermometer is required to determine whether or not Fever is present, as the patient is conscious of nothing more than a headache perhaps, and a feeling of malaise. The Sweating Stage is often only very slightly marked, and is sometimes absent. The intermission may last for a week, or a

fortnight, and, by some, is even stated to last a month; but these cases are not usually such as have been very accurately observed. It is not at all unusual for an intermission to vary in length in the course of an attack of intermittent Fever. In neglected cases, or cases badly treated, the tendency is for the intermission to shorten, and for the Fever to pass from the intermittent to the Remittent form. On the other hand, not uncommonly, Remittent Fevers when properly treated often pass into the intermittent form (Vide Charts Nos 2, 4, 6, 9). From these facts it would appear that Malarious Fevers are severe in proportion to the shortness of the intermission, and the transition from a Quotidian intermittent to a Remittent is very simple and natural. For the difference between the two is nothing more than a difference in degree.

The recognition of Intermittent Fever is an easy matter; but it is of importance to go on using the clinical thermometer during the treatment, for thermometric observations not only give

us information as to the best time for administering Quinine, but also enable us to measure accurately the influence of treatment upon the Fever.

Treatment. Intermittent Fever is most effectually and successfully treated by means of Sulphate of Quinine dissolved in a dilute mineral Acid and water. The Quinine, however, will act more rapidly if a purgative is first given. I have treated some thousands of cases, and tried various purgatives; but the most efficacious are Saline purgatives. Both for efficiency and convenience one of the purgative mineral waters - preferably Hunyadi Janos, which will often act in the course of an hour or two - is the best. For ~~Several~~ years past I have given a couple of pills at night, having the following composition:-

Euonymin. gr i
Pulv. Ipecac. gr ½
Ext. Hyoscyami gr i

m ft pil

and to be followed by a purgative draught early next morning. I shall speak further on of the success which is achieved by purgatives alone in cases of Intermittent Fever. Meanwhile let me here say that it is advantageous to give aperient before commencing the use of the Quinine, even when there is no constipation or irregularity in the action of the bowels. Both Euonymin and Ipecacuanha are well established cholagogues. I have used them separately, and alone in various Hepatic diseases with marked benefit. But the results seemed even better when the two were combined. Formerly I gave Ipecacuanha in combination with Podophyllin; but, as I found Podophyllin to be somewhat erratic in its action — sometimes producing very little effect, and at others, even when given in small doses, inducing griping and violent purgation — I have quite given up using it in cases of Fever. As a rule this preliminary purgation is sufficient: but in cases which

do not yield rapidly to treatment, it is often of advantage to repeat the Pills and draught.

This preliminary treatment — preliminary to the use of the Antiperiodic and Tonic — Quinine — I have adopted for several reasons. First of all, from learning by experience how beneficial early free purgation is in all cases of malarious Fever. Secondly because I have found sluggishness of the Liver often present in Intermittents, though not frequently as in Remittents. And thirdly because according to the theory above referred to (p.) the Liver is an important factor both in the production, and in the cure, of Malarious Fevers.

But Quinine must be given as soon as possible. The following is a convenient form in which to give it:-

Quiniae Sulphatis	℈ i.
Acidi Hydrobromici dil.	℥ ij
Syrupi Zingiberis	℥ vi
Aquae ad	℥ vi

m ft mx

Acid with part to be taken three a day, as directed.
Mr Kemp, a well-known Chemist in Bombay, made a dilute Hydrobromic Acid for me of the same strength as the dilute Hydrochloric Acid. I used it first in certain cases in which headache was very severe (more commonly in cases of Remittent Fever), and as a substitute for Bromide of Potassium which I had formerly used in such cases. I think that dilute Hydrobromic Acid is beneficial in modifying the headache which is so frequently present when Cinchonism is produced. Of course in the case of subjective things like pain, where Medical men have no means of gauging accurately the amount of pain or discomfort present, or the degree of relief obtained from the treatment, it is impossible to speak with certainty. But, as I have myself taken it in, I think I can say that this Acid does make the Cinchonism less marked or less disagreeable.

As to the proper time for giving the Quinine, there is no doubt that it should not be given in either the Cold Stage, or the Hot Stage. It may be

given, however, with advantage, whenever the Sweating Stage begins. If given then it seems to drive off the Fever more rapidly. The golden time for giving the Quinine is from the Commencement of the Sweating Stage on to the Commencement of the next Paroxysm.

In the case, say, of a Quotidian Intermittent a ten or twelve grain dose should be given at the Commencement of the Sweating Stage (which usually sets in in the afternoon or evening). A second dose may be given at bedtime – about ten o'clock. Early next morning two or three ten grain doses are to be given at intervals of an hour or two hours, until, say, thirty grains have been taken. If the Paroxysm is Expected Early, then it will be safer to given one Single dose, of perhaps, twenty-five grains, before the time at which the Paroxysm is expected; but I have more faith in the smaller doses, repeated, than in Single large doses, as the effect produced seems to be greater. The effect of the Quinine is, in some cases to prevent the recurrence of

another paroxysm. Even in these most favourable cases there is always ~~sooner or later~~ a slight elevation of temperature, showing the tendency for the paroxysm to recur, sooner or later. This is noticeable in the case of the boy Park (Chart I). Although the temperature rose, in the second paroxysm as high as 106·5°, yet, on the following day what may be taken to represent the paroxysm consisted in the temperature rising to 100°. I may here remark that this case was the one in which, in the course of eight years' practice, and out of several thousand cases, the highest temperature was reached. The text-books, I am convinced greatly overstate the temperature in Intermittent Fever.

When distinctly marked paroxysms do occur after Quinine has been administered in sufficient doses, they come on later and later in the day; they become shorter and shorter in duration; and the temperature becomes lower and lower. These are three good and reliable indications that the case is going on favourably.

When the paroxysms have ceased to return, it not unfrequently happens that the temperature of the body remains for a degree or more below the normal for one or two days. This is due to the influence of the Quinine. It must be kept in mind that the Quinine should not be abruptly stopped. Even after every trace of Fever has disappeared it is advisable to give a ten or twelve grain dose of Quinine every morning for several mornings. If this is not done a paroxysm of Fever is almost certain to occur in a day or two, and then we have to begin all over again.

These are the chief characteristics of the treatment which I should recommend in Intermittent Fever. But there are points of secondary importance which must be neglected. In the cold stage, for instance, when the Ague is severe, the patient will often call for more covering. This should be given, as it will diminish the rapidity with which the heat passes off from the body, and diminish the strangely anomalous Sensation of Cold at a

time when the temperature is really several degrees above the normal temperature. Warm drinks may also be given. In very severe cases a twenty-minim dose of Tincture of Opium, with half a dram of Spirit of Chloroform will do much to remove the restlessness and discomfort. In the Hot Stage a diaphoretic may be given. The Liquor Ammonia Acetatis with Spiritus Aetheris Nitrosi, in a mixture are simple diaphoretics which are readily taken, and which often make the skin act in a short time. When it is desired to bring on active diaphoresis in a short space of time, one of the most efficient means of doing so is to give an initial dose of ten grains of Nitrate of Potash, and then give grains, combined with a minim of Tincture of Aconite, every quarter of an hour, for two hours unless the diaphoresis comes on before the end of that time, which it almost invariably does. Sponging the body is always pleasant to the patient, and is always beneficial. It may be done with either cold or warm water, but cold water is of course best, if there is not the prejudice against it which

is so often met with in Europeans in India. And the benefit does not consist simply in the lowering of the temperature, for that is usually only a transient result of the sponging, but there is very likely a greater degree of activity in the skin, which serves to produce the feeling of comfort which continues for some time after the temperature has risen to its original height. Cold Effervescent, or saline drinks, ice water, or best of all, pieces of ice to suck, may all be freely given. In the Sweating Stage care must be taken against the risk of chill. Sponging, if adopted at all, must be now with warm water only. But all that is required is to use a towel to wipe away the profuse perspiration: and to change the clothing from time to time when that is excessive.

As to diet I need say very little here, as my remarks on that head in speaking of the Treatment of Remittent Fever are applicable, and I need not repeat them. It is very rarely that a patient will take any food during the paroxysm. Drink is what he craves for, and that,

as I have said, should be freely given.

The cases of Intermittents which do not yield to Quinine are very rare and always of long-standing. These I shall consider, along with others, in a separate Chapter. (III)

In speaking of purgation as a preliminary step in the treatment of Intermittents, I indicated that benefit is often derived, nay, a cure sometimes effected, by the use of aperient medicines alone.

Five or six years ago a small paragraph in the Lancet caught my attention. It mentioned that Sulphur had been used with success in the West Indies for Intermittent Fever. I at once set about experimenting with it. I used it in eighty cases, in half dram doses thrice a day. Nineteen of the cases I saw only once, and did not find out the results of the treatment. The remaining sixty-one cases gave the following results:-

Cured	33 Cases
Benefitted	11 "
Unaffected	17 "
Total	61 Cases.

Eight to ten days were allowed to the cases where either no effect was produced, or the benefit fell short of cure.

The results in this experiment are far from brilliant, as, even in the cases cured, the time required treatment nearly averaged five days: and the cases were mild ones, specially selected because the patients could come to the Dispensary. I have the notes of some of these cases beside me, but the Summary I have already given takes up as much space and time as I feel justified in giving when the results are of no great value.

Having been struck with the fact that occasionally cases which had been treated, as a preliminary measure with Sulphate of Magnesia (usually combined with Nitrate of Potash and Liquor Ammoniæ Acetatis) I proceeded to try the effects of Saline purgatives alone. I have not, unfortunately, been able, up to the present time, to receive my notes of these

cases (left behind in India) so I am obliged to speak from recollection, and only in general terms. Over three-hundred cases were treated in this way, and the percentage of cures was between seventy-five and eighty per cent — a better result than that which was obtained from the Sulphur experiment. Some of the cases cured were severe cases, in which the duration of the paroxysm, and the height of the paroxysmal temperature, were above the average of cases.

When I have considered Remittent Fever I shall notice experiments made with other drugs which have been proposed as Substitutes for Quinine.

Remittent Fever

II Remittent Fever.

In speaking in general terms of the varieties of Intermittent Fever, and the tendency I have so frequently noticed which an Intermittent Fever has to pass when neglected - that is when not firmly met at the outset, as for example when a person attacked takes a "pinch of quinine for a day or two - from the milder to the more severe types and from Intermittent into Remittent Fever I stated my belief that the difference between these two Fevers is nothing more than a difference in degree. This seems to be borne out not only by what I have now stated, but by the converse occuring as it often does in actual practice that is for a Remittent when under treatment to pass into an Intermittent. This is noticeable in the case of the boy Cochrane (Chart No) and the native Rama case No) both

Cases of distinct Remittent Fever.

As Treatment is the subject I have chosen for my Thesis I shall do nothing more than outline the general Characters of Remittent Fever as I did in the case of Intermittent Fever.

General Characters of Remittent Fever

The prodromata comprise two features which are marked — the gastric disturbance and irritation Anorexia being commonly present and the severity of the headache. The onset of the Fever is not marked by a Cold Stage as in Intermittents but there is usually a feeling of chilliness and occasionally distinct rigor. This last but a short time, and is followed by the Hot Stage or Fever proper in which the severity of the ~~Fever~~ headache becomes more marked and the temperature rises to between 102°

Fah^t and 106°. After continuing for from twelve, what is called the Remission takes place. This is nothing more than a slight decline of temperature varying from half a degree to two or three degrees, usually, but sometimes going down quite close to the normal line, as one would expect where it is often difficult to draw a line of demarcation which will separate the Remittents from the Intermittents. The boy Bunyer's Case (Chart No) is an example of an average attack.

At the outset, and for the first week, the diligent use of the thermometer will enable the practitioner to distinguish Remittent Fever. After that time, and specially where the Fever has not been treated at all, or where it has not been firmly grappled with, the remission may

disappear, and we then have a form of Fever presenting, as we might expect when a severe Fever has gone on for a number of days, signs of weakness and depression, and some of those conditions which unitedly are called "The Typhoid State." make their appearance. I do not know how it has come about, but in the city of Bombay one not unfrequently hears of Typhoid Fever (by which Enteric Fever is meant.) In my own experience I have never met with a single case of Enteric Fever, the only instance in which anything like Enteric Fever came under my observation was in the case of a native Christian girl (Chart No.) in whom a fatal result was at least precipitated by the carelessness of a nurse in using Tincture of Iodine to inject into the bowel instead of Tincture of Opium, which I had

ordered to be mixed with a small quantity of liquid starch and injected into the bowel, in order to check the diarrhea, which had become too frequent. My own opinion is that Enteric Fever if it occurs, occurs only as a very rare disease, and that what is commonly termed Typhoid Fever is nothing more than Remittent Fever which has run into a severe form, because it has not been met as it can be met and ought to be met at the beginning of its course. Fortunately some of the Fever Charts and Maps which have been forwarded from India are cases giving some proof of what I have written above but I must proceed to the

Treatment. Sulphate of Quinine is the remedy for Remittent Fever. If used in sufficient quantity, and

with judgement I believe it to be infallible when used at the commencement. During eight and a half years' practice I have had only one fatal case. It came into my hands before I had had much experience of Malarious Fevers, and was from Goja at which province has the reputation of giving rise to the most severe forms of Remittent Fever of any place in India. There was complete intolerance of the drug, and even when administered by Enema or Subcutaneous injection, the gastric irritation shewed itself.

Now invariably give Euonymin and Ipecacuanha in the form of pill at night and a draught of Hunyadi Janos water early in the morning as a first or preliminary step. The remission in most cases comes on in the early morning, and that is the time in which to give the Quinine. It is best given and produces Cinchonism

most rapidly, in solution, along with a mineral acid. I have already mentioned Dilute Hydrobromic Acid, and explained why I use it and recommend its use. Ten to twenty grains should be given at six in the morning and the dose repeated twice, after an hour's interval. I consider thirty or forty grains, for an adult, to be the minimum quantity for the first morning. If this quantity is given, and it is retained, we have gone a long way in the direction of subduing the obnoxious Fever. Occasionally I give, on the evening of the second or third day, a single dose - say fifteen grains - of Quinine the last thing at night, and have the three doses repeated again on the following morning. Chrystal's Case (Chart No) is an example of how easily and rapidly a Remittent Fever may be driven off. It is one of the last Cases which I treated and is of great interest for two reasons -

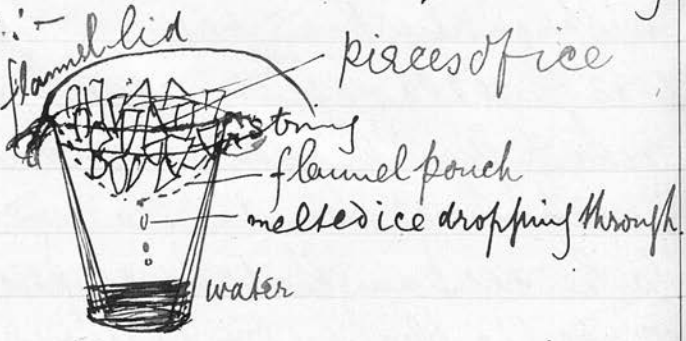
First of all, because at the outset the liver was congested, and that was supposed to be the chief, and only ailment; and, Secondly, because in March of this year he was attacked again, but was four weeks under treatment before the Fever was got under, and the name given to it was Typho-Remittent! — and this too while in the hands of one of the ablest Medical men in Bombay. The effect of the Quinine is to pull down the temperature, make the remission more marked and longer, and at last, either to drive off the Fever abruptly, or to make it pass into the Intermittent form, which is soon and easily expelled. Bunyer's Case (Chart N°) shews this latter tendency, as well as Cochrane's (Chart N°): whilst Chrystal's case already referred to is a good example of the former mode of termination. If it is necessary, as I believe it to be, in the

case of Intermittents, to continue giving Quinine for some days after the Fever has been got rid of, it is even more necessary in treating Remittent Fever. Ten or fifteen grains should be given every morning for a week after the Fever has disappeared. If this be not done the Fever is almost certain to reappear.

As to the general treatment attention should of course be given to the Hygienic Conditions. In a few cases the environment of the house was suspected of being the cause, not only of the Fever, but also of the progress towards recovery being slow. A change of residence led, in some instances, to a decided improvement in this respect. But as this change was generally from a low lying house, or a house away from the sea, to a house on one of the hills in Bombay, or to the seaside; it is impossible to be certain that the improvement was due to a removal out of malarious surroundings to some place free from these: and not to simply improved

Hygienic conditions independent of Malaria.
Post hoc ergo propter hoc is a fallacy into which medical men are very apt to fall!

During the Exacerbation sponging with cold water from time to time will not only bring down the temperature, but will often be a comfort to the patient: cold cloths may also be applied to the head. As the thirst is usually intense, cold drinks are to be freely allowed. Iced water, or iced Soda water or potash water, or a fresh lime squeezed into a tumbler of iced water, and sweetened slightly, are all grateful drinks. One of the best means of relieving thirst is to let the patient suck a piece of ice from time to time. The following device will keep ice from melting for several hours:-



a piece of flannel should be made to "bag" down

into a large tumbler, and the ends turned out over the rim of the tumbler and firmly tied with string, so as to keep the ~~bag~~ or pouch from slipping down to the bottom of the tumbler. The ice, broken into pieces of convenient size for putting into the mouth, should then be put into the pouch. It is best to have a lid or cover for throwing over the ice. Another piece of flannel serves the purpose best, as the ice will then be enveloped in flannel, which is a bad conductor of heat, and therefore a good maintainer of "cold" (if a negative can be maintained). One other point should be noted. Often the texture of the flannel is so close that water does not ooze through it. A few stabs with a penknife or pair of scissors through the floor of the flannel pouch will ensure the escape of the water. Now, as it is the water which causes ice to melt so quickly if placed in a plate, and the ice melting escape at once into the bottom of the tumbler, it is easy to understand how it is possible in this way for pieces

of ice to remain for hours without melting.

Sometimes it is desirable to get the skin to act, and the diaphoretics which I mentioned in the treatment of Intermittent Fever may be used for the same purpose in Remittents. (p. 25)

Should Hyperpyrexia occur, one or other of the usual methods for the external application of cold may be tried. I have most confidence however in the Antipyretic properties of Quinine however. At page an account is given of the treatment of a case of Hyperpyrexia by means of Enemata (Swallowing was out of the Question - the power was gone) of ice-cold water, Quinine, and Brandy, which was eminently successful. Indeed the case caused some sensation, as the extremely critical condition of the boy was well known, and the fact that on the following day he was almost well, taken along with the fact that the means adopted were new, gave rise to the notion that something miraculous had occurred!

As to diet, nothing very special need be said. Soups thickened with rice are easily taken, and can be made palatable. Arrow root, Sago, Indian corn Flour, well boiled, and taken with milk, are often readily taken, though patients soon tire of starchy food. Milk, either boiled or unboiled, may be given: and, in cases where there is much gastric irritation, milk and Soda water, iced are readily taken, and easily retained.

Occasionally Remittent Fever, even where the temperature is not at any time very high, reduces a patient to a state of weakness and depression of an alarming character. In such cases it will be necessary to give Stimulants freely. I prefer brandy to any other Stimulant; and it will be of additional advantage if we can induce the patient to take some nourishment along with the Stimulant — as in the form of egg-flip, for instance. The Mistura Spiritus Vini Gallici for an occasional Stimulant, is when freshly prepared, agreeable, and is readily

taken. As much as eight or ten ounces in the two-
-by-four hours may be given. This, however, need
not be continued for more than a day or two.
When a stimulant is considered advisable beyond
that time Burgundy wine is a form which seems
to do very well in India.

III Alternative methods of treatment

Quinine by the Rectum or hypodermically.

I am no favourite to the introduction of Quinine by the Rectum. It may be resorted to in order to allow gastric irritation to subside; but whenever the stomach is able to bear the Quinine it should be given by the mouth at once. Only in one case have I seen gastric irritation produced by Quinine. In such a case as that, even when the Rectum is resorted to, the gastric irritation is still produced. At least half as much again must be given by the Rectum that we would give by the mouth

As regards the hypodermic injection of Quinine, very few who have tried it often, get to prefer it to the ordinary methods of giving medicines. Indeed the more it has been tried the greater is disfavour which it meets with.

The fourth or at the most one third of the dose given by the mouth will produce the same result when given by the Skin. It certainly acts more

swiftly, and also with greater certainty than when given by the other ordinary methods. O'Connor's case (Chart 9) is an example of the benefit which may be derived from resorting to the Subcutaneous method. Warburg's Tincture had been innocent of the slightest benefit. Indeed during the two days when that preparation was resorted to the temperature rose to 105°, the highest point touched. The boy was by no means robust naturally, and the long continuance of the Fever was telling rapidly on the residue of strength. The indication was to reduce the temperature as rapidly as possible, and so I used the hypodermic syringe, and injected three grains of the neutral Sulphate of Quinine. But I went on administering Quinine by the mouth as well. The temperature rapidly came down about two degrees. But I was obliged to resort to Arsenic before the Fever could be expelled. In the only fatal case of Remittent Fever which it was my lot to treat, there was a remarkable intolerance of the drug. It brought on violent retching and vomiting,

Even when given by the Rectum. I injected
forty grains three times a day, and occasionally
more, but all to no purpose

There is a great liability for hypodermic
injections of Quinine to produce abscess;
there is always a painful hardness, surrounded
by an inflammatory zone, lasting for some
days after the injection. These abscesses, if
they occur, are very troublesome, and patients
grumble very much if they occur — a thing
which a practitioner should keep in mind!
But a little care and trouble will obviate
this tendency to lead to abscess, and will
make the disagreeable lumpiness much
less painful and annoying. The neutral Sul-
phate of Quinine should be used: and it should
be dissolved in a test tube (distilled water being
used) by means of a spirit-lamp, and with
the aid of a drop or two of Spirit, added
to ensure perfect solution. A convenient
strength for hypodermic injection is twenty
grains to the dram — that is, one grain of

Quinine in every three minims of Solution. Now if this Solution be injected lukewarm, the probability is that not only will no abscess form, but the painful hardness will be much less painful than if the Solution is injected cold. I have never seen anything approaching an abscess to follow a warm injection of the Solution. The probable explanation I think is this: that there is a deposit of Sulphate of Quinine in the tissues when the Solution is injected cold which is very much lessened when the Solution is first warmed and then injected.

However, I do not recommend the Subcutaneous injection of Quinine. And say in regard to it, what I say in regard to giving Quinine by enemata that it may be useful as a substitute for the administration of Quinine by the mouth; but that whenever that is feasible, we should at once return to the more natural channel. In

Bombay, about four years ago, one case of Subcutaneous injection of Quinine was followed by Tetanus, and since that time medical men have been chary of resorting to its use.

Warburg's Tincture. This very complicated and rather expensive Medicine had for many years the reputation of being a wonder-worker in cases of Remittent Fever. Its composition was kept a close secret until some years ago, when it was divulged to professor Maclean of Netley who published it in the "Lancet". Mr Kemp, a chemist in Bombay manufactured the Tincture and sent me several pounds of it for experimentation. Unfortunately I did not keep a complete record of all the cases in which I used it: and I have the notes of only a few cases beside me now: so that I cannot speak with the accuracy which is desirable in reporting the results of

a series of experiments. But the results, in my experience, were not sufficiently uniform to justify either an accurate record of all the cases in which it was tried: or a continuation of the experiments in order still further test its reputed virtues. Sometimes it produced no effect on the patient, and no effect on the Fever. The fatal case to which I have already referred (and in which Quinine brought on an attack of vomiting and retching) was an instance of the cases in which the tincture was useless for it did not do a bit of good, though I tried it several times. O'Connor's case also (Chart 9) is a case of the same kind. On the other hand the case of the native Pandoo Ramjee (Chart 11) is an example of what it occasionally succeeds in achieving. This man had been suffering from Remittent Fever for eight days before he came under treatment: and his temperature was 105°. Yet by means

of the Tincture in two days the Fever was practically cured. It is unfortunate that there should be this element of uncertainty: and that we know really nothing of the conditions upon which either its success or its failure depends. In my own experience in the cases in which Quinine properly administered has failed, no benefit has ever resulted from using Warburg's Tincture. And occasional successes, even though these may sometimes be remarkable, will never counterbalance such extraordinary uncertainty. I can certainly never recommend its being used in preference to Quinine for Quinine acts with so much certainty as to give confidence to any one who may be called upon to prescribe it in cases of Fever

Arsenic. I have no belief in the efficacy of Arsenic in Acute cases of Remittent or Intermittent Fever. Cacharane's case for example (Chart 6) is an instance in which

it was resorted to, in combination with Carbonate of Ammonia. The case was still an acute one, but I had become impatient at the measured deliberate progress which was being made towards recovery, and forgetting the important fact that progress was being made, I fancied that Arsenic, as in the cases of Millard, Mazeda, and O'Connor, would complete the work of cure. I was soon undeceived, and went back, a wiser man, to Quinine, which soon had the desired effect. When Quinine ceases to have effect, as in the three cases I have just referred to, then we may venture to use Arsenic with some hope of success. It may be given alone, in doses of from six to ten minims of the Liquor Arsenicalis three or four times a day. Combination with Carbonate of Ammonia seems to increase its action. If we are obliged to resort to it in acute cases we should give it in full doses - say in ten minim doses of the liquor three times a day, carefully watching

its effects. The addition of Bromide of Potassium in cases of severe gastric irritation, is a useful step. In another chapter I shall speak of the marked benefit derived from Arsenic in chronic cases.

Within the last ten or fifteen years a large number of preparations have been put forward as substitutes for Quinine. Some of these are fluid preparations — "residue liquors" obtained in the preparation of Quinine. Others are crystalline preparations such as the beautiful Sulphate of Quinoletum. I have used all these, at different times, and with very indifferent success. In severe cases, in order to produce any impression, the dose had to be very largely increased, and none of the preparations was sufficiently trustworthy to justify my recommending it, even on the plea of cheapness! One native drug, however, proved tolerably effectual. That was the bark of the Neem tree, common in India. I made the

bark into a Tincture, and used it both in combination with Arsenic, and also alone, in Chronic cases. Cases which had failed to cure by means of Sulphur, or Saline Purgatives, were speedily set to rights by the Neem Tincture and Arsenic, or by means of the Neem Tincture alone.

IV Chronic Cases

Under this head I must include cases in which the system seems to be saturated with Malaria, and in which attacks of Fever occur at the slightest provocation — as to chill, exposure to the Sun, after fatigue and so on: as well as cases which through neglect or ill-treatment have become Chronic. In this class of cases Quinine does not act with either the certainty or the efficiency which characterise its use in Acute cases. It may succeed in driving off the Fever, but its

actin is not of a curative kind, for it does not prevent the recurrence, even within a few days, similar attacks. Whenever the particular attack is repelled by Quinine, it should be followed up by the use of Arsenic. Here Arsenic is, as it has been called, a noble remedy: and it should be continued for weeks or even for months. About three years ago I met an American physician who spoke of a new method of using Arsenic in Intermittents of long standing. The plan was to begin with small doses and go on increasing these every few days, and then to come back to the starting point again. I tried the plan in several cases with success, but they were not very severe ones. Then a Station-Master, named Powell, came to Bombay from Sholapore, a Station over three hundred miles from Bombay, and one of the worst places in the Deccan for fever. Powell had suffered for several years from recurring attacks of Fever. And now (in the beginning of 1879) he was prostrated with it

when down for a few holidays in Bombay. The fever readily gave way to Quinine: and then I resolved to try the American method of Arsenic treatment. Powell however had to go back to his Station and I was obliged to give him minute directions as to the use of the Liquor Arsenicalis. I told him to begin with four minims and then to increase the dose every four or five days until he reached the seven minim dose (three times a day) from which point he was to return to the initial four minim dose. Ten months after this he was again in Bombay, and the change was surprising, for he was now stout and ruddy, instead of being pale and sickly. He told me that he had used the Arsenic drops for about two months: that he had gone on increasing the dose until he took ten minims three times a day as I had directed him! And that he had never had a day's Fever since! I do not know how the mistake arose as to the maximum dose; but I am certain that in this

case the treatment cured the man of fever. The story of this cure spread along the line, and I had applications from Railway engineers and others who wanted to be put on my Arsenic treatment! I was successful in three of those: two others were still under treatment when I was laid aside from active duty by illness, and the cases passed then out of my hands, for I was never afterwards able to resume practice and was sent home on sick leave. The plan of treatment is, of course, still on its trial yet; but so far as the trial has gone the results have been favourable.

Another remedy in which I have latterly placed considerable confidence is Iron. In old cases of Malarious Fever an acute observer will often detect some degree of Anæmia. In some such cases I used Perchloride of Iron along with the Liquor Arsenicalis, and the results were eminently satisfactory. Four years ago

a soldier's wife from Central India came to me for treatment. She had been a martyr to Fever for several years, and was then on her way home, waiting until a troop-ship should start from Bombay for England. She was anæmic: and had lost her appetite, so I put her on the following pills:-

℞

Pil. Fer. carb. Co. Gr. iij.
Quinia Sulph gr. i
Ext. Nucis Vom. gr. ½
Ext Gent q.s.

ft. pil.

One of these was to be taken three times a day. In a fortnight her health had greatly improved - her appetite having greatly improved, and there being no return of Fever. At the end of a month she was so well that she declared she would have gone back to Secunderabad (Central India) if she had not gone so far on her way to England. Up to the time she left Bombay there was no return of Fever.

I have since that time given pills more

or pill like the one above as a Tonic pill, sometimes whilst Arsenic is being taken, and at other times after a course of Arsenic. I am quite convinced that Iron as a therapeutic agent in Chronic Malarious dyscrasia does not receive sufficient attention

One other important measure often recommended in the case of patients who have not been able to get rid of occasional attacks of Fever, remains to be noticed. I mean a sea voyage. Myself have never needed to recommend it to any of my patients, but it is unquestionable that a Sea voyage is often successful in freeing those from Fever who have long been its victims. The value of such a measure is beyond dispute, and I need not take up time in discussing it.

V Prophylactic Measures

Much has been written about the various precautions which are deemed advisable on the part of those whose duty takes them into Malarious districts, if they wish to guard themselves against the possibility of becoming victims to Malarious influences. This a matter of considerable importance not only to individuals but also to the State, for her Soldiers are liable, when on the march, to be laid aside in considerable numbers, and are thus rendered for the time practically useless. Sufficient attention has not yet been given to this important subject. We are warned against living in houses situated in low lying sites: we must never pitch our tents in such and such places (no two persons agreeing as to the proper places to select, or the places to avoid!) One must not sleep in a room on the ground floor (although bungalows are almost invariably built of one story!) and so on.

My own opinion is that attention should be

given

to the General health: and that the bowels specially should be kept active regularly. I have already referred to the important part the liver plays in the Cessation and in the cure of malarious fever. And it will be obvious that if it is neglected, as it too often is, the liver will have its revenge. A chill, producing Congestion, or Constipation inducing sluggishness on the part of the liver, must both be guarded against. An occasional five grain dose of Specacuanha (Ipecac) is a new drug and not always to be got, but the other can be got anywhere) followed by a saline draught whenever there is need for it, will be a great safeguard.

VI Notes of Cases

I find, on looking over the Notes and cases beside me that I am able to give some of the most interesting and instructive, and that the principal points are illustrated in one or other of them

Commencing first with typical cases, I begin with that of the boy Parkes as an example of intermittent. This case is not only an example of the efficacy of Quinine, but is an instance of exceptionally high temperature. As I have already said the temperature during the paroxysm in which I first saw him is the highest which I have noted in a case of Intermittent.

I gave orders to have the child sponged from time to time: and a five grain dose of Quinine (in all in the case) whenever the skin commenced to act, and another the last thing at night. Next morning two other doses were to be given at six and eight A.M. By these means the child was quinquinised, and the Fever rapidly gave way.

Indeed, although there was a distinct elevation of temperature, no paroxysm occurred afterwards, and the child made a rapid recovery

Passing now to the Remittents, the first example (Chart 2) is that of a delicate boy of 8 years of age whom I saw on the third day of his attack. I prescribed four grains of Quinine three times a day the three doses to be given early in the morning. Even in cases in which the remission is not noticeable I make a point of administering the Quinine in the morning, as that is the time when the remissions usually occur. By keeping this fact in mind, and not wandering off into theories of "Typho-remittents" I have been able in a couple of days so to act on the Fever that the remission became quite marked, and proved that the diagnosis was correct. In Bunyer's case, however, the case, instead of improving, got worse, and delirium set in. I then doubled the dose of Quinine, making the quantity twenty-four grains in the 24 hours. And the sequel proved that I had used

the remedy with too timid a hand. It passed into the Intermittent form before disappearing. I never forgot the obvious lesson taught by my treatment of this case. I do not believe in the extraordinary doses sometimes given. I have never given more than Sixty grains in the twenty-four hours, and forty grains is the quantity which I use, even in Severe Remittents. But, on the other hand injury is often done and time wasted by giving Quinine in insufficient doses, or by giving it without reference to the Remission. Again the drug must be given in sufficient doses until the Fever is quite got under. Chart 10 is a good example of a case in which a too early diminution of the dose of Quinine led to a great prolongation of the attack. Chart 6 teaches the same lesson

The next case (Chart 3) illustrates the benefit of using purgatives as well as Quinine. The temperature fell rapidly after a purgative had acted on the bowels, and the exhibition of Quinine followed up this fall of

temperature so successfully that it was norma
on the following day. And there was no further ex
-acerbation. Any one looking at the Chart might
think it a case of Intermittent Fever; but the
history of the previous two days was unmistake
-bly one of Remittent Fever.

The next case (Chart 4) is one of ordinary
Remittent; but it shows how close the analogy
is between Remittent and Intermittent Fever.
If the undulations on the Chart were on a lower
plane (one degree lower) we should have an
Intermittent Fever instead of a Remittent.

The fifth case, and last of the typical
ones, (Chart 5) is that of Mr Chrystal. I was
summoned to see him in January of last year
when on a visit to Bombay. He was suffering
from Congestion of the Liver, and I ordered the usual
remedies. As Fever was present I prescribed also
a morning and evening dose of Quinine (ten grains).
In two days the Hepatic Congestion was greatly
better, but the Fever had now compelled attention.
This case was an instance of the advantage of

using the clinical thermometer. There was no suspicion that Remittent Fever was the chief ailment (though complicated with Hepatic Congestion) But the thermometer gave me early warning, and I was then enabled to bring pressure upon the Fever early. I prescribed full doses of Quinine – ten grains the last thing at night, and thirty grains in three doses early in the morning. The case ran its course rapidly and, within a week from the commencement of the attack, the case was practically well! I do not hope to obtain better results than in this case. It is one of the last cases which I treated of true Remittent Fever, and is, therefore, representative of the results which may be expected if the treatment is carried along the lines which I have laid down in this paper. Instead of being a Fever which "lasts from seven to fourteen days", as one eminent writer avers, when it is "properly treated", this case shows that there is no definite period of duration; but that what I think to be the most proper treatment

will cut a Remittent Fever wonderfully short. What makes this case so interesting, besides what I have said above, is the fact that in the March of this year he was again prostrated by an attack of Fever; but the treatment was different, and the Fever lasted for four weeks before it passed into the Intermittent form; and it was termed Typho-Remittent Fever. I shall notice presently this Kind of Fever, or rather, that which receives the name, for I think it has been applied to nothing more than a Remittent which has been permitted to run on longer than it ought to run.

I have already mentioned, when speaking of Remittent Fever, that the term Typhoid had come into unfortunate and misleading use. It is not uncommon to hear of cases of "Typhoid Fever", or to see a death announced as being caused by Typhoid Fever. Now I am exceedingly sceptical of the existence of true Enteric Fever in Bombay. The only case which I saw that ever bore any resemblance to Enteric Fever was that of a beautiful native Christian girl who was a pupil

in the Zenana Mission School. The case (Chart 7) did not come into my hands until the 5th day, and only then because the physician in attendance was going away for a holiday. The temperature had been taken regularly before I saw the case, but, unfortunately, had not been noted. Quinine was given from the first, and I continued the treatment until I saw the strange resemblance to the course of Enteric Fever; and that Quinine was making no impression. On the 12th day a decided fall of temperature occurred, and I thought it was going to turn out one of those mild cases of Enteric noticed by Murchison in which there is a sudden fall of temperature about the end of the second week. The diarrhoea however had become very marked, so I ordered Enemata of Starch and laudanum – thirty minims of the latter, twice or three times a day. But the nurse, by some strange mistake took a bottle of Tincture of Iodine instead of Tincture of Opium. The Enema was retained only a minute or two

occasions, and the nurse, using her own discretion immediately repeated the enema. This went on for a day and a half before it was discovered but the mischief had been done, and the poor girl sank rapidly.

But in Chart 8 there is an example of the kind of Fever called Typhoid, or Typho-Remittent: and also in Charts 9, 10.

Willard had been for fifteen days under treatment in the Railway Hospital. His strength was running down, and there seemed to be no progress towards recovery, so his friends became dissatisfied and had him taken home. I saw him next morning, and after careful examination, and careful inquiry, I made up my mind that the case was one of irregular and neglected Remittent, although there were certain things which gave a colouring to the view that it was Enteric Fever. The presence of Diarrhoea, and its character; the character of the pulse; the sordes on the teeth and gums — in fact there was "the Typhoid state". Skin markings are so unreliable in those in whom

there is a little dark blood that I could get
no help from the presence of some spots. But
I relied on the history of the case, and the sequel
showed that I was correct. Quinine had been
given for many days, so I determined to try
Arsenic, and prescribed six minim doses
of the Liquor Arsenicalis every six hours.
For the diarrhoea I gave twenty-grain doses
of the Tannate of Bismuth, twice a day. The
progress was very rapid. What looks like
an exacerbation on the 18th and 19th days was
owing to the indiscretion of friends allowing
the patient to sit up for several hours in
the evening!

The case of Mezda (Chart 10) was very
instructive. I saw it for the first time on the
thirteenth day in consultation with a practitioner
who was my assistant for some time, and who
has mastered the principles of correct treat-
ment in Remittent Fever. The Quinine,
which he had given from the first, soon

brought down the temperature, and then, unwisely, diminished the doses of Quinine, before the Fever had been expelled. Very soon the Fever regained its ascendency and then, though the doses were increased, it never afterwards was able to acquire the same power over the Fever. The history, and the chart, were to me conclusive proofs of the true nature of the Fever, and I dismissed from my mind the possibility of it being Enteric Fever. We tried still larger doses of Quinine for a couple of days, the effect of which was to produce a distinct remission. But as there was little progress I advised the abandonment of Quinine altogether, and that Arsenic should be used instead. The Arsenic soon told, and the case went on to a speedy termination. These two cases are useful examples of the Continuities in which Arsenic is invaluable. Cases in which the treatment has been in some respects inadequate, and they have been prolonged beyond a reasonable time, Quinine losing its power over the Fever

The third case (Chart 9) I also saw first in consultation — at the end of the first week. It had been for four days under treatment. The case had gone on unchecked for three days, and seemed to have got a firm hold; but it turned out, on enquiry, that the boy had been ill for a month of Typhoid Fever in Madras: and had made the journey to Bombay when convalescent. The journey was too much for him, and a relapse was the result. Quinine failed. We agreed to give Warburg's Tincture a trial. Two days' trial only allowed the fever to tighten its hold. We then resorted to Quinine hypodermically, and continued giving it by the mouth. This brought down the temperature a little. At last we resorted to the Arsenic: and that drug soon brought matters to a happy termination.

I now come to Cochrane's case (Chart 6) which taught me some valuable lessons. The boy was a boarder in my brother's School in Bombay, and I was able to make as many

observations as I wished. This will explain the unusually numerous points in the Chart. I saw the boy first on the third day of the attack and at once put him on Quinine — eight grains at 6, 8, & 10 A.M. He had complained of pain in his limbs, and on examination I found on the legs and arms large patches of Erysipelas. These were dusted with "puff" powder, and wrapped in Cotton wadding. The Erysipelas continued to give great pain, and I thought that perhaps the Fever was owing to the Erysipelas; so I put him on the treatment by per-chloride of Iron. The Fever however, increased. So on the night of the 7th day I gave ten grains of Quinine, repeating the dose next morning. This brought down the temperature again, and the Iron treatment was resumed. On the tenth day, finding the Fever again rising, I combined the Iron with the Quinine: and in a day or two we reduced the Fever to an intermittent. I was dissatisfied with the rate of progress, determined to try Quinine, thinking it would

Complete what the Quinine had commenced. In 2 or 3 days I had made a grave mistake, and on the fourteenth day the case became critical. Although the Fever was at its height I gave three large doses on the afternoon and evening of that day, and the same again on the following morning. The effect was remarkable. I continued giving, daily, from thirty to forty grains of Quinine, for a week. The Fever again became intermittent, and soon passed off. A remarkable thing was the fact that the Erysipelas became severe in proportion as the Temperature was high. Several years previously he had suffered from a similar attack, but it lasted for four months, and the Erysipelas led to abscess in the thigh, which had to be opened.

My mistake here was in resorting to the Arsenic whilst the Quinine was acting on the Fever. It was an unreasonable and unwise impatience which led to the mistake

Chart 11 is that of a case in which Warburg's Tincture was a great success. The Fever had continued for eight days without any treatment; but in a couple of days the Tincture set him to rights. I have already referred to the uncertainty of this Tincture, so I need not refer to the matter again.

Hyperpyrexia Case. In April, 1879 I was summoned one Evening to see a boy who was suffering from Fever. The practitioner in charge of the case declined to go out at night. I saw the boy, found him suffering from Remittent Fever, which was being treated by means of a diaphoretic mixture! I prescribed a Quinine mixture, and left. Four nights afterwards I was again summoned to see the boy who was now said to be dangerously ill. Only one dose of the Quinine mixture had been given, as the medical attendant had ordered Quinine powders, which were to be given "when the skin was cool"! I found

he indeed seriously ill. He was comatose: the power of swallowing was gone: the pulse — I had to use the stethoscope to the heart — was 192 per minute: and the temperature was 108.2° — the highest I have ever seen. The boy was moribund, and I felt quite powerless. The entreaties of the friends that I should do something set me thinking: and I then resolved to try Enemas, which I prepared in the following way: —

I poured a dose of the Quinine mixture (containing eight grains) into a bowl, added some water, and several lumps of ice, and then two ounces of brandy. This I slowly injected, and waited watching the effect. In half an hour the temperature had come down half a degree, which I took to be a favorable sign, so I repeated the injection. At the end of another half hour the temperature was 106°! An hour after the second injection I repeated the injection once more, diminishing the amount of brandy to an ounce. Before

I left the house the boy was conscious and able to take some Soup. I gave orders for a fourth Enema, two hours later, before leaving the house. How strange it was to see this boy passing from a state of complete Coma through the wild active delirium, in which he could with difficulty be kept from jumping out of bed, through the quieter, wandering delirium, to complete consciousness! I shall never forget the scene.

Next morning at Seven o'clock the temperature was down to 98°! A fall of fully ten degrees in nine hours! The case was put into my hands from that time: and I went on with Quinine by the mouth, and there was no further exacerbation!

On thinking over the treatment in this desperate case, I think there is soundness in the method, and in the different means. Unfortunately my time is now at an end (30th June) and I cannot enter on a consideration of the case here. But I should repeat the treat-

in another case of Hyperpyrexia

The great confidence which I have expressed in "the treatment of Malarious fevers" which I have endeavored to set forth in the foregoing pages, may be deemed too high; but I am not speaking from a brief and casual acquaintance with the diseases I have chosen as the subject for this Thesis. Indeed I have had exceptionable opportunities of studying the diseases and observing the effects of treatment in cases coming daily under observation. I have devoted considerable time and labor to the subject, though there may be little to indicate that in what I have here advanced.

I have specially tried to keep the remedies recommended few in number, and have at the same time noticed others at such length as their importance seemed to warrant.

I believe that every variety of

form which Malarious Fevers can assume, treated as I have here recommended, and by means of the few remedies which I have myself tested and proved, not only should never be fatal but should never pass into the Chronic form: and any one who knows how common broken-health occurs as a result of "Fever", will understand how strong such a statement is.

I am far from satisfied with the form in which I have presented my opinions. These are all formed, but I have been so pressed for time as to be unable to give such an expression to them as I would wish. But my meaning will still be discernible, through the hasty expression, in the main, and I must rest satisfied with that. I trust I have been able to show that my treatment has been justified by the cases which I have presented as illustrative cases: and also that a Medical man had within a very small compass the means of successfully treating every form of Fever to which

Malaria can give rise, provided he makes himself acquainted with the way in which and the time when he is to use these. He will then be an honour to his profession and a blessing to those who place [illegible] confidence in his skill, and trust themselves in his hands.

Chart No 1

July 15 16 17 18

Date	2nd day	3rd	4th																													
	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.
108°																																
107°																																
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99°																																
98°																																
97°																																
96°																																

Remarks

Case of Intermittent Fever showing unusually high Elevation of temperature

Mr. Edwards Park Occupation _____ Residence Bombay

Age 5 1/2 yrs Sex M Disease Intermittent Fever Termination Recovery

MACLACHLAN & STEWART 64 SOUTH BRIDGE EDINBURGH

1875 April

Chart No. 2

5th 6th 7th 8 9 10 11 12 13 14 15

Disease	DAY of Fever 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th														
F.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.
108°																									
107°																									
106°																									
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99°																									
98°																									
97°																									
96°																									

Name John Bunjer Occupation _____ Residence Bombay

Age 8½ Yrs Disease Remitted Fever Termination Recovery

MACLACHLAN & STEWART 64 SOUTH BRIDGE EDINBURGH

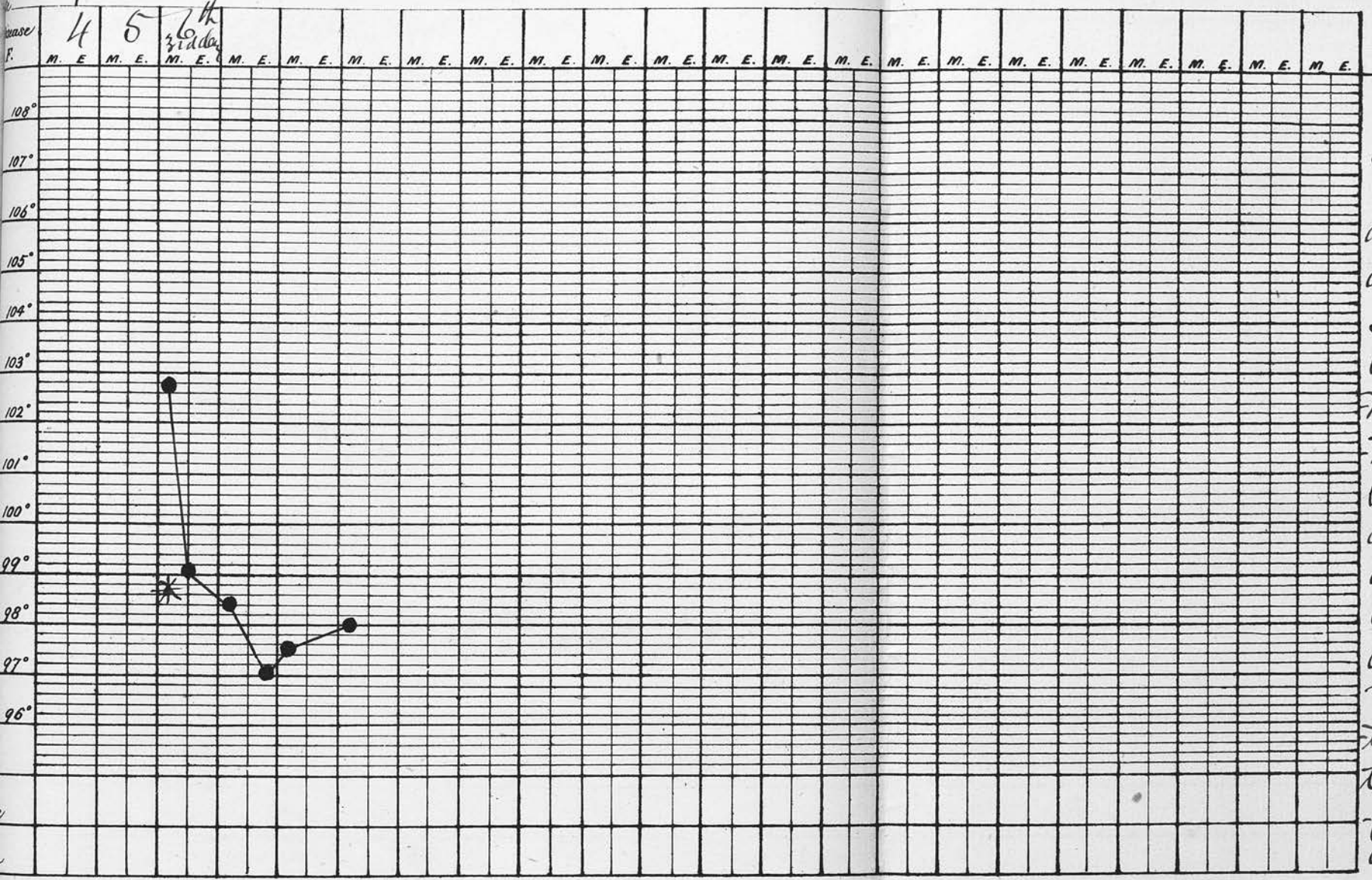
Remarks

Summoned to see this case on the 3rd day of the attack. Gave four grain doses, three times a day of Sulphate of Quinine, in a mixture containing dilute Nitric Acid, Syrup of Ginger & water. On the night of 7th April, and for several nights following, delirium came on for some hours. On 8th April increased the Quinine to twenty-four grains in the twenty four hours: eight grains given at night, and sixteen grains early in the morning. Progress rapid from that time. Passed into Intermittent form.

This case illustrates the kind of mistake one is liable to make at the beginning of one's practice — giving Quinine in insufficient quantities. The large doses told on the fever at once.

D. M.

September Remittent Fever Case. Chart No. 3



Remarks

This Case of ordinary Remittent Fever Came under my care on the morning of the third day. I at once ordered him a purgative draught containing Sulphate of Magnesia, Sulphate of Soda, and Liquor Ammoniae Acetatis. In the afternoon, after the bowels had been moved several times, and when the skin was acting freely the temperature was found to be nearly four degrees lower than in the morning. The Quinine mixture was ordered to be taken at once – two twelve-grain doses before bedtime, and the same at six and at eight in the morning. The cure was surprisingly rapid.

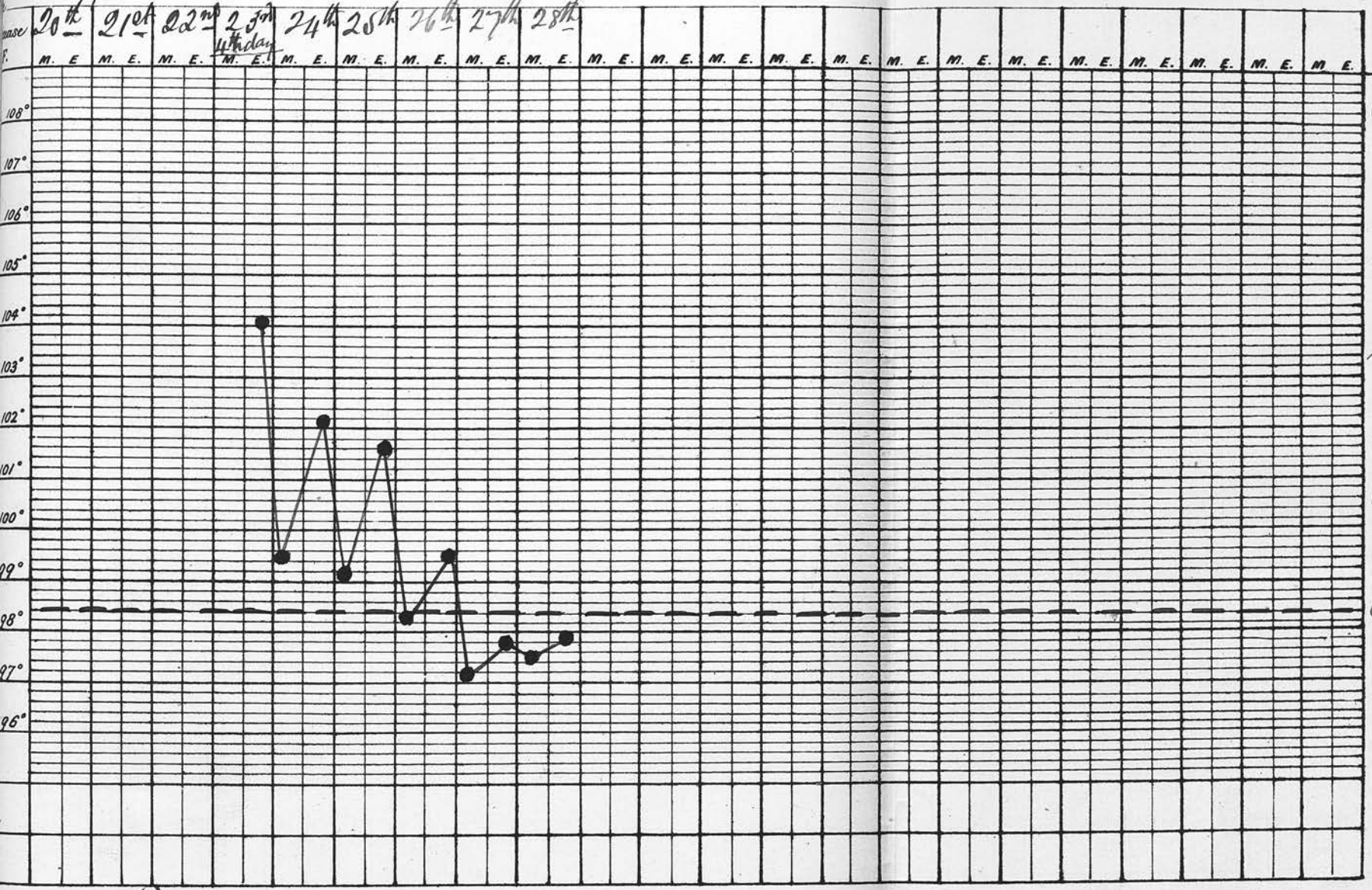
Name Dattatraja Ramsel Occupation Brahmin Residence Rombay

Age 28 S. M. Disease Remittent Fever Termination

* Temperature after free purgation, and during the sweating stage – if there can be said to be a sweating stage in Remittent Fever

Remittent Fever Case. Chart No. 4

July



Remarks

Case seen first on the fourth day of the attack. The remission under treatment became very marked. A chart like this shows how close the analogy is between a mild Remittent and an Intermittent Fever.

Normal temperature

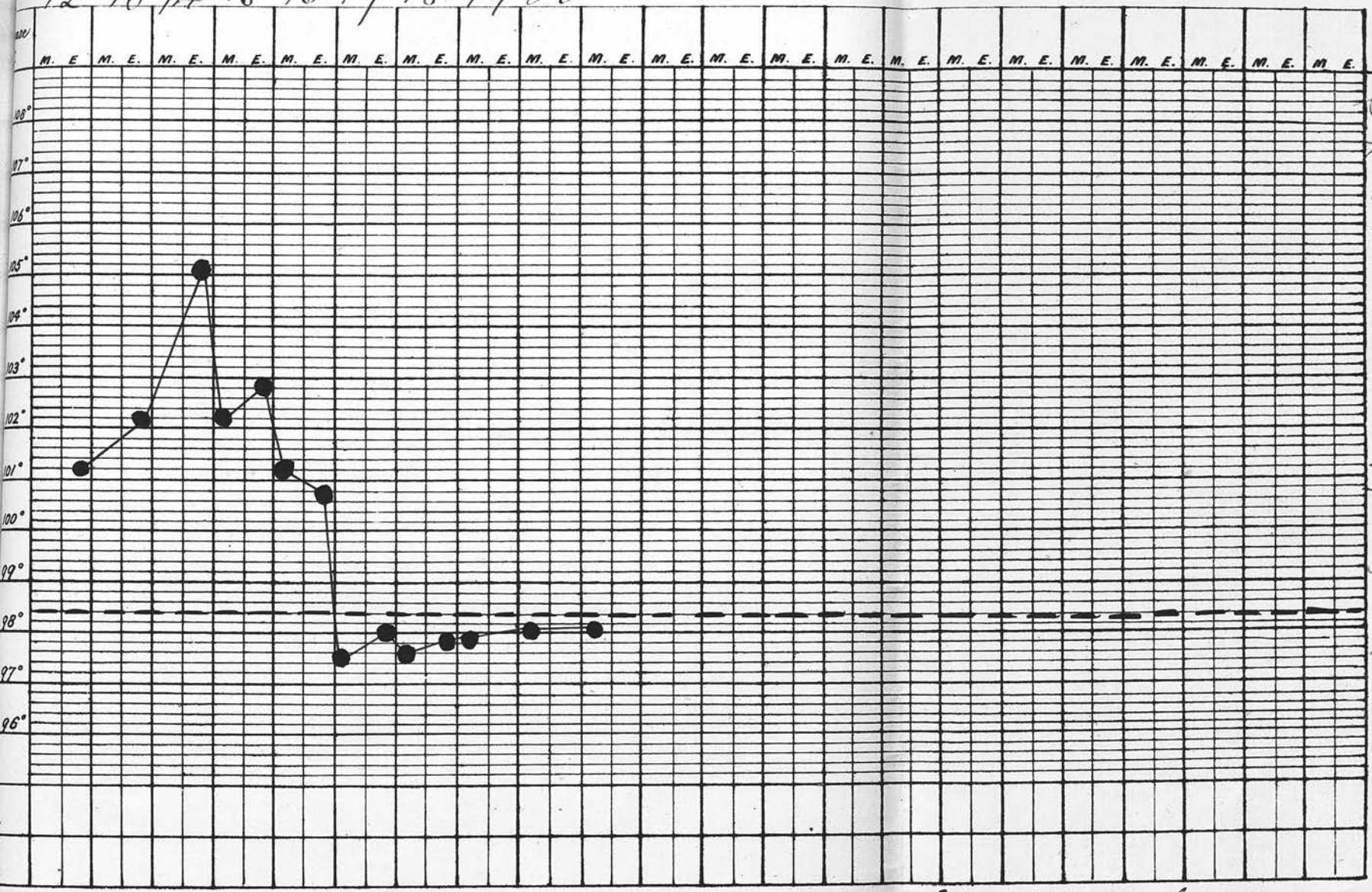
Suria Rama, Occupation Surtee Native Servant Residence Bombay

30 {S M Disease Remittent Fever Termination Recovery

80 January

Chart No 3

12 13 14 15 16 17 18 19 20



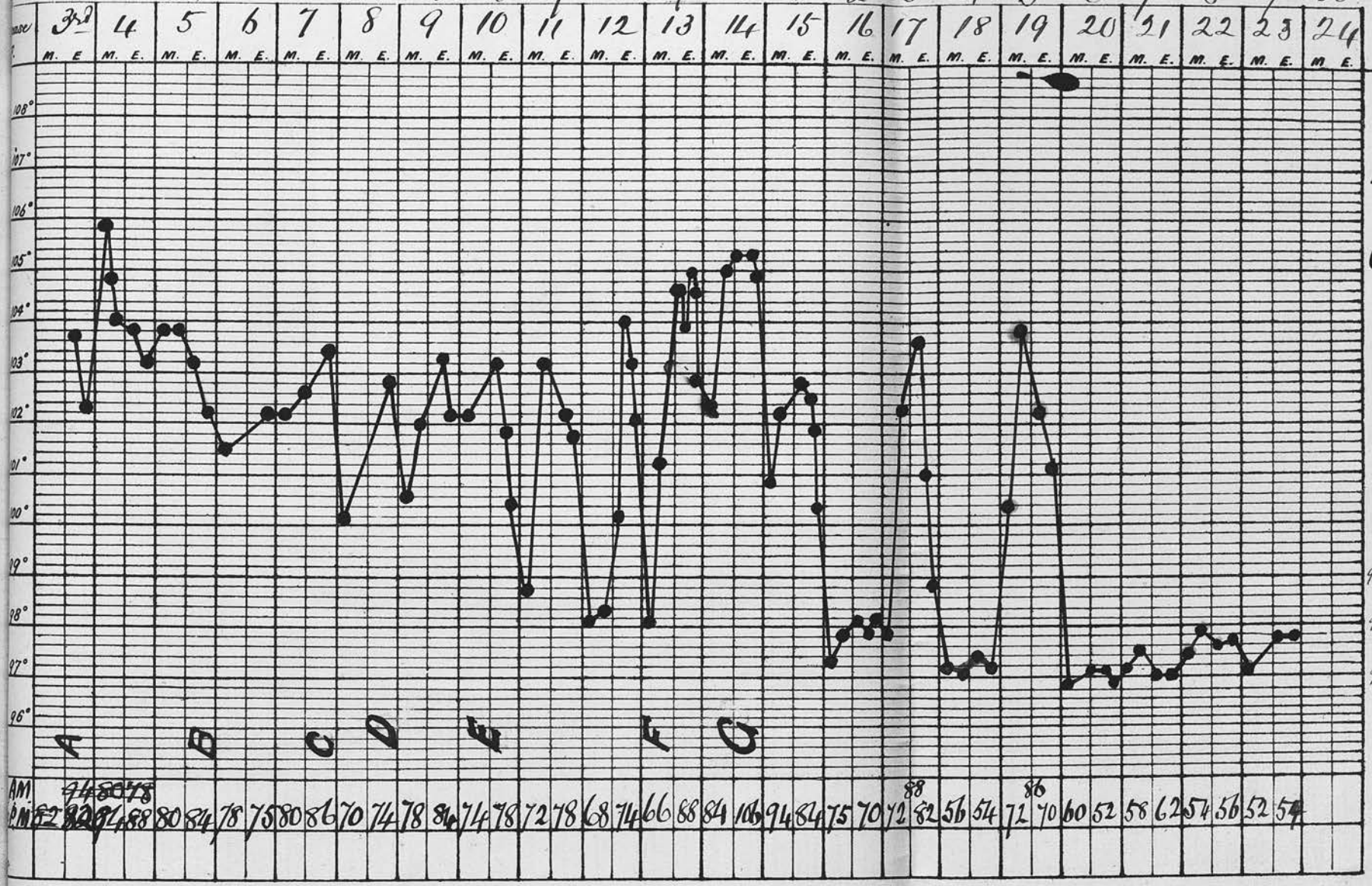
John A. Chrystal Esq. Occupation _____ Residence Carwar, & Bombay

35 {S M _____ Disease Remittent Fever with Hepatic Congestion Termination Cure

Remarks

Case of a Gentleman who came to Bombay from the Cotton districts of Dharwar, and who summoned me to attend him a few days after his arrival in Bombay. He complained very much of his Liver, and I found that organ in a State of Congestion. There was Fever present also. I prescribed Eucoymin and Ipecacuanha in pills to be taken at night, and a draught of Hunyadi Janos mineral water to be taken in the following morning: and also Quinine in Mixture — ten grains at night and the same dose early in the morning. The region of the Liver was to be fomented with Poppy head water. In two days the Hepatic trouble was nearly disposed of; but the Fever was now very pronounced. I increased the Quinine giving thirty grains, in doses of ten grains ~~at~~ every hour, for three doses, in the early morning, and a ten grain dose at night. The Fever was very soon got under

November Chart No. 6 December



Name Edward Cochrane Occupation Schoolboy Residence Byculla, Bombay

Age 13 {S M Disease Remittent Fever complicated with Erysipelas Termination Recovery

Remarks

A. Quinine mixture – 8 grain doses at 6, 8, 10 A.M. 4 9 p.m.

B. Teicture of the Perchloride of Iron given alone – for Erysipelas.

C. Ten grain dose of Quinine last thing on night of 7th day & morn. of 8th day. Distinct impression made on Fever.

D Tinct. Fer. Perchlor. continued alone again till 10th day, when

E Tinct. Fer. Perchlor. combined with Quinine Mixture – Fever passed into Intermittent form. Continued till 13th day

99 F When Arsenic was substituted 98 for Quinine – effect dis-astrous

97 G. Though Fever high, Quinine in three ten grain doses given on 14th day at 3, 6, & 9 p.m. On following day decided effect seen. Quinine Con-tinued all afterwards. Passed into Tertian Intermittent, then away altogether.

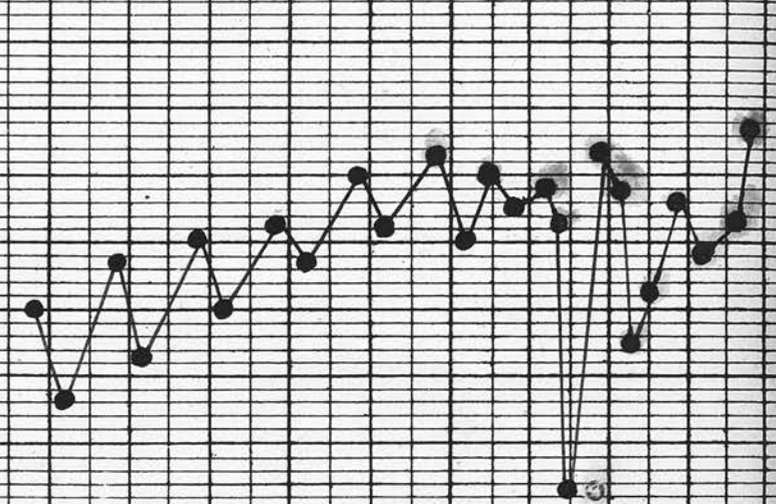
Chart No 7

79 February

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Case	1st Day	2nd Day	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.	M. E.

106° 107° 105° 104° 103° 102° 101° 100° 99° 98° 97° 96°



Name Sukoo Occupation Native School girl Residence Bombay

Age 17 {S M Disease ? Enteric Fever. Termination Death

Remarks

Case of probable Enteric Fever, the only instance out of many thousands of Fever cases, of all Kinds, which have been treated by me in the Course of eight Years of constant active practice.

Fatal result brought on, or hastened, by a mistake on the part of the nurse, who mistook a bottle of Tincture of Iodine, and used that, instead, for injecting into the rectum — the object being to arrest the diarrhoea.

Quinine made no impression on the Fever, though given in full doses.

1877 February

Chart No 8

5th 6 7 8 9 10 11 12 13 14

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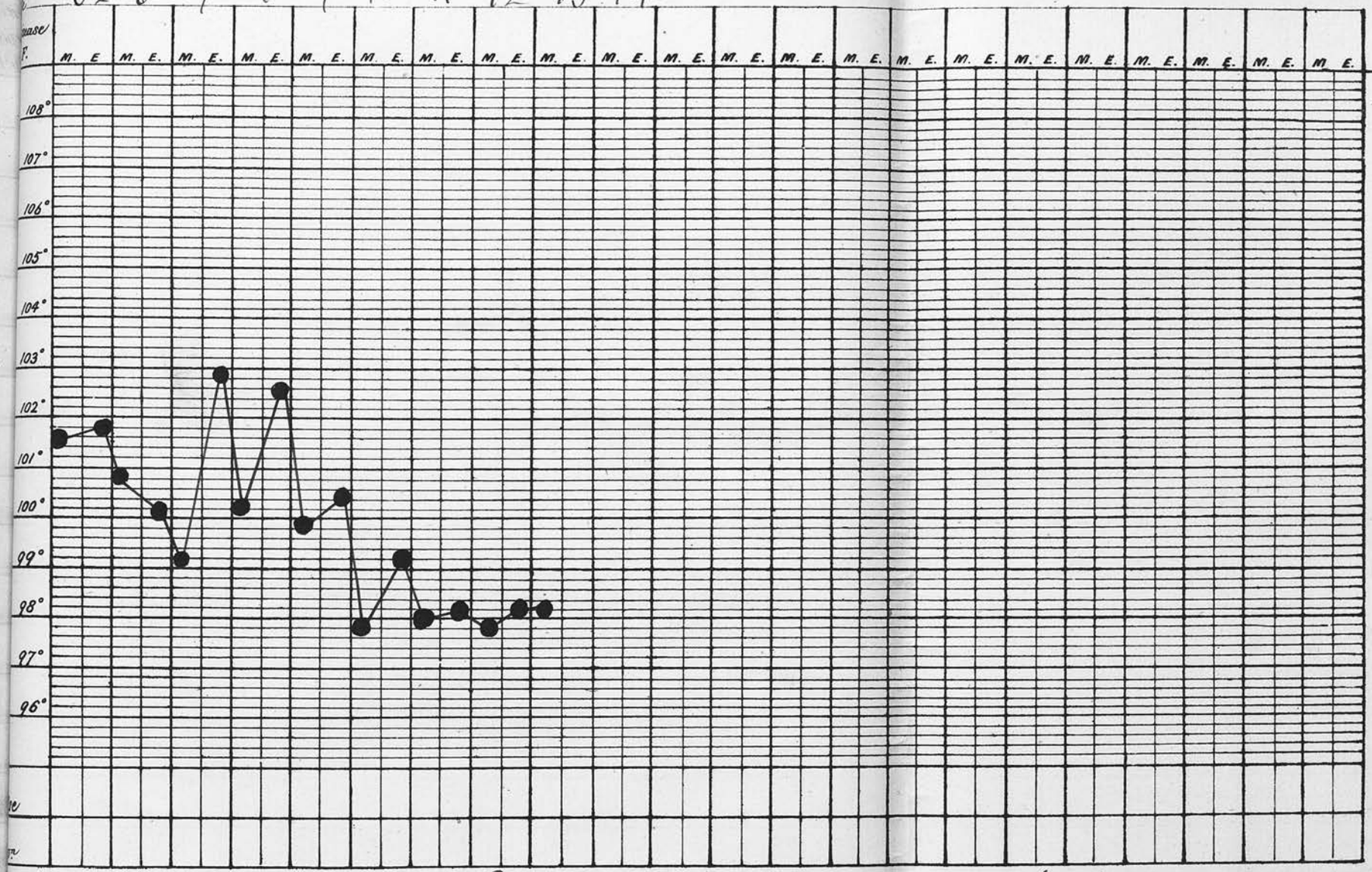
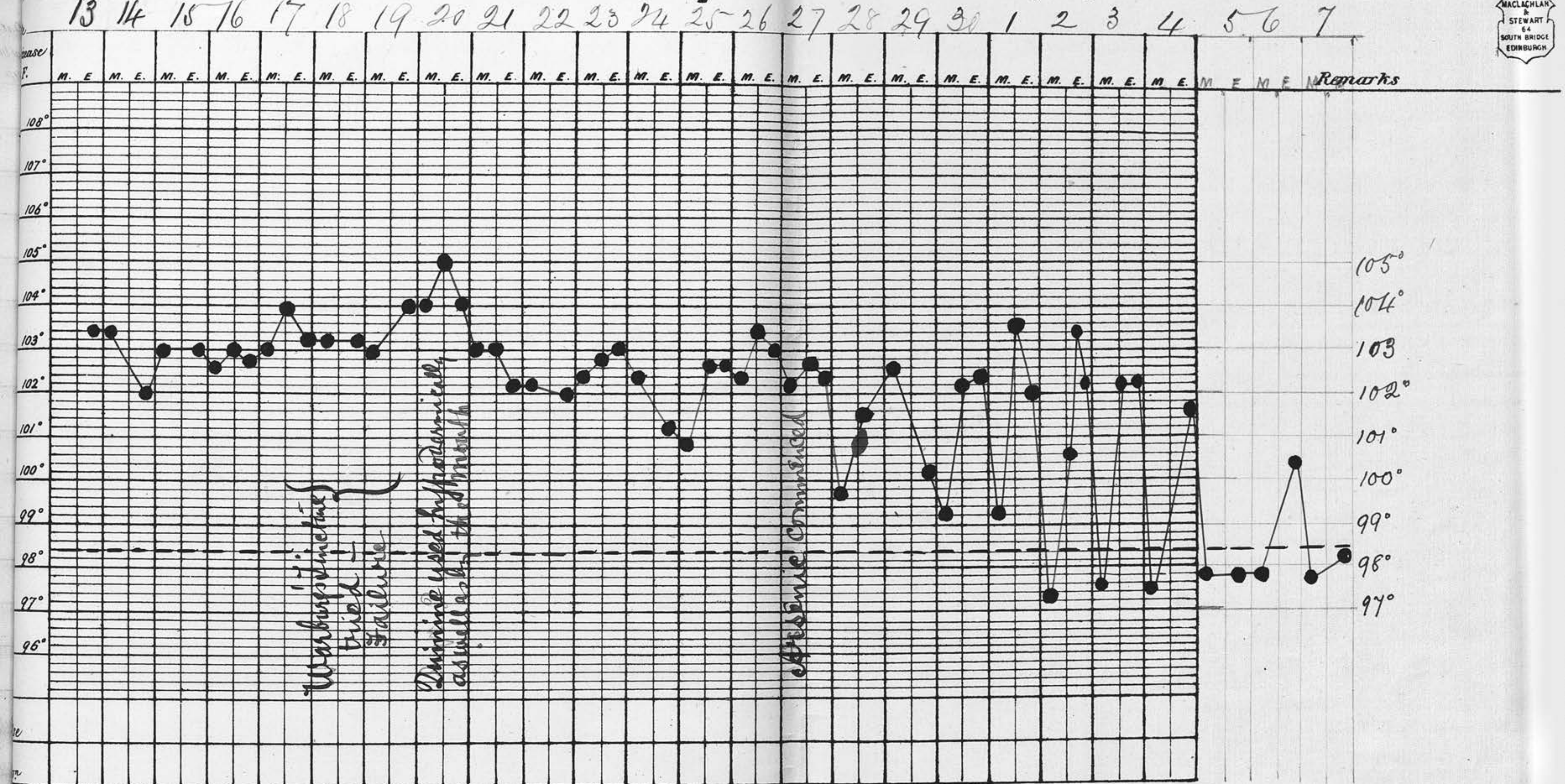


Remarks

Name C. Millard Occupation Railway guard Residence Bombay

Age 22 {S M Disease Termination

76 September Chart No 9 October



Name Edward O'Connor Occupation Residence Bombay

Age 18 years {S M Disease Remittent Fever Termination Recovery

17

Chart 10

May 31, June 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Disease 3rd day 4th 5th 6th 7th 8th 9th 10th 11th 12th 13th 14th 15th 16th 17th 18th 19th 20th 21st 22nd 23rd 24th

M. E. M. E.

108° 107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97° 96°

Normal temperature

Name John Mazda Occupation Residence Bombay

Age 6 Years S. M. Disease Remittent Fever Termination

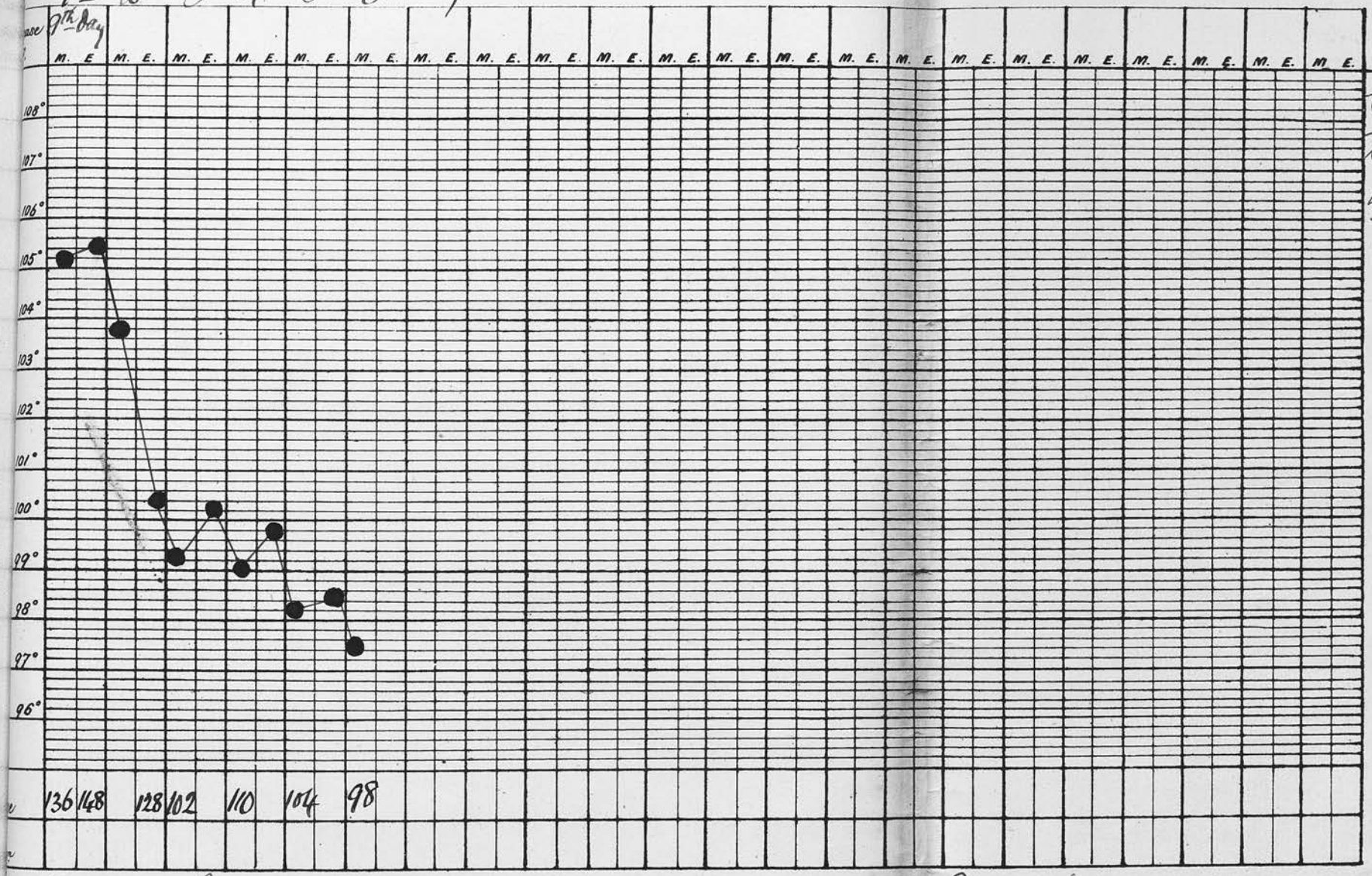
Remarks

This Case drew first in Consultation on 13th day of illness. The practitioner in whose care the case was, had, in the belief that the case was one of Remittent Fever, given Quinine in full doses at the outset, and the chart shows how beneficial the treatment was. When the treatment brought down the temperature to 100° the doses of Quinine were diminished, an unfortunate blunder, for although the full doses were given again, when the temperature began to rise, it never had the same effect again. I tried even larger doses for two days, & produced a decided remission, but not being satisfied with the results I strongly recommended that Arsenic should be used, and under its exhibition the case soon yielded. On the 20th & 21st days a slight rise in temperature occurred owing to the patient being allowed to sit up!

6 March

Chart II

1st 2 3 4 5 6 7



Remarks

Case which came under treatment on the ninth day. Decided to try the Waibrey's Tincture. This very speedily effected a cure

MACLACHLAN & STEWART 64 SOUTH BRIDGE EDINBURGH

Name Pandoo Ramjee Occupation Residence Bombay

28 {S M Disease Remittent Fever Termination Cure