

SUBNORMAL TEMPERATURES OF THE BLOOD.

BY TOM ROBINSON, M.D. BRUX, L.R.C.P. LOND.,  
M.R.C.S. ENG.

THE introduction of the clinical thermometer has not been without its evil as well as its good effects. Those who are in the habit of mixing with the younger members of the profession must be impressed by the fact that they lean too much upon modern scientific instruments for assistance in diagnosis and as guides to treatment, and the clinical thermometer is pre-eminent amongst these "crutches." Its habitual use has caused a corresponding deterioration of the sense of touch, and now we seldom read or hear such terms as the "pungent heat" of pneumonia or the "dry, hot skin" of other maladies. This may be an advantage, because the sense of touch is not a scientific test, the appreciation of heat and cold varying with each organism. But can the thermometer be trusted? Of course in a well-made heat-estimator the mercury will not lie, nor will the markings deceive, but where a mistake is apt to be made is in not recognising the fact that there is no accurate standard for the temperature of the human blood. I will illustrate the remark by the recital of a case.

A woman aged thirty came under observation for ulcerating chilblains of the hands, feet, and pinnae. She complained of "habitually cold feet." Often in summer her feet and legs were so cold that she could not go to sleep, whilst in winter she used a hot bottle in bed and wore sleeping-socks. She suffered acutely from neuralgic headaches, which were always induced after exposure to cold east winds, and especially if the air was damp. Her mucous membranes were often irritable and she was subject to paroxysmal catarrh of the nose, the secretion from which organ would sometimes saturate three pocket-handkerchiefs in an hour. Any exercise fatigued her and she often had "fidgets," and could truly say that when she was tired she ached from head to foot. Her emotions were singularly varied. At times she would cry at the least thing, such as a kind word or an angry one, a disappointment or a success, and she was quite sure that the colder she was the more emotional she became. Her nervous system was unstable—that is, she would start at any sound, was always timid, and acknowledged to an irritability which troubled her much. She was, as she expressed it, "always on edge." An examination did not reveal any pathological change in any part of the organism. Her pulse was 80, and the temperature in the mouth only registered 96° F. The result was taken several times, and as a practical fact it rose about two-tenths in the evening. There was nothing unusual in the habits of the patient. She lived the life of a country gentlewoman and ate fairly well, but did not like fat. During the autumn of 1892 she was seized suddenly with the symptoms of influenza—i.e., successive chills, frontal headache, backache, and pink eye. Her temperature was taken and only rose to 100°. This was not alarming, but if the fact was taken into consideration that the habitual temperature of her blood was only 96° there was an actual rise of four degrees, which in an individual with a temperature of 98·5° would have sent it up to 102·5°, giving a warning result.

*Remarks*—In a case such as this it can easily be imagined that a serious error might have been made by any one who was not conversant with the whole of the thermometric facts. And does not the recognition of the subnormal temperature enable the practitioner to find the key to the cause of the neuralgias, the back-aches, and the thousand-and-one manifestations which come under the term "neurotic"? Is not also light obtained as regards treatment? It seems to be the very fundamental law of such cases that one should, by exercise, warm clothing, and good heat-producing food, raise the temperature of the blood, and for this reason phosphorus and cod-liver oil are found to be the best drugs. Age is not only a hindering process, but it is also a cooling one, so that no surprise need be felt when the "lean and slipped pantaloon" is found with cold hands and cold feet and an actual temperature of 95° or 96°. Nor is it to be wondered at when cases of pneumonia are met with in the aged where the thermometer does not rise to more than 100°.

The main object in writing this short paper has been

to call attention to the importance of recognising that the supposition that the temperature of the human race, whether in summer or winter, is in all latitudes 98° to 99° is not justified. The temperature of such persons as labourers, sailors, or of anyone whose life is spent in the open air, will up to middle life seldom be found to be below 98°, whilst in large towns, where life is spent indoors, and where the consumption of food is scanty and fanciful, it is surprising to find how many there are whose temperature is as low as 96°. Whilst writing this paper on Dec. 11th at 9 A.M. I placed the thermometer in my own mouth, kept it there for five minutes, and was surprised to find that it had risen only to 96·4°, and, as a contrast, I saw about one hour afterwards a farmer from the country, and he had a temperature of 98·6°. It would be of great use and interest if anyone with a large number of men and women under observation would publish the daily result of readings of temperature in those who were free from illness during the year. Common sense would indicate that there would be a higher temperature during the summer than during the winter months, and that is what is actually observed, but the difference is not great. The young have also a good range of temperature, the natural fatness of their bodies, if in health, retaining the heat, as if to compensate for their inability to generate it by movement.

Prince's-street, Cavendish-square, W.

CLINICAL ANÆSTHETIC STATISTICS FOR  
SEPTEMBER, 1893: AFZULGUNJ  
HOSPITAL.<sup>1</sup>

BY SURGEON-LIEUTENANT-COLONEL E. LAWRIE,  
RESIDENCY SURGEON, HYDERABAD, DECCAN.

THIS paper was read before the Deputy-Surgeon-General of the Secunderabad District, Surgeon-Colonel Sibthorpe, and the officers of the Army Medical Staff and Indian Medical Service, on Oct. 2nd last:—

1. Total number of cases of complete anæsthesia, 202.
2. Cases in which complete anæsthesia was not induced, on account of dyspnoea, 3.
3. Average time to produce full anæsthesia in 202 cases, 3 min. 26 sec.
4. Average amount of chloroform required to produce full anæsthesia, 2·95 drachms.
5. Average duration of operation, 13 min. 36 sec.
6. Average total amount of chloroform per operation, 3·77 drachms.
7. After-effects: vomiting occurred in 28 cases, or 13·6 per cent. :—

—	No.	No. who vomited.	No. who did not vomit.
Patients who took food within six hours before the administration of the anæsthetic. . . . .	88	{ 16 or 18·1 % (12, bile; 4, food). }	72 or 81·8 %
Patients who took food between six and twelve hours before the administration of the anæsthetic. . . . .	20	{ 5 or 25 % (4, bile; 1, food). }	15 or 75 %
Patients who took food between twelve and twenty-four hours before the administration of the anæsthetic. . . . .	97	{ 7 or 7·2 % (6, bile; 1, food). }	90 or 92·7 %
Total . . . . .	205	20 or 13·6 %.	177 or 92·7 %.

8. Number of cases in which struggling occurred, 144 or 71·28 %.  
(a) Resistance, from fear, was the cause of struggling in 51 or 35·4 % of these cases.  
(b) Choking was the cause in 6 or 4·16 %.
- (c) Intoxication was the cause in 87 cases or 60·41 %.
9. The average duration of the struggling stage (c) was 1 min. 9 sec.

Careful notes were taken of the struggling stage in chloroformisation during August and September. I have found,

<sup>1</sup> Duncan and Flockhart's methylated chloroform was employed.  
<sup>2</sup> A word of explanation is necessary regarding choking. I always make an entry in the notes that the patient is "choked" if the cap is put down over the face so suddenly as to cause struggling. This form of choking, I need hardly add, is never allowed to continue for an instant.

as is well known, that struggling under chloroform is produced by three principal causes: (1) by fright, leading to resistance; (2) by choking or asphyxia from over-concentration owing generally to the cap being held too close to the face at first, or afterwards when the chloroform is renewed; and (3) by intoxication. The latter constitutes the form of struggling which is commonly called the "struggling stage." The struggling of fright occurs at the commencement of the administration and does not as a rule produce irregularity of the respiration. This form of struggling terminates as the patient becomes unconscious, and is rarely followed by the customary stage of struggling which is due to intoxication. For example, during September there were twenty-five administrations in children. All but one of these children cried and screamed violently at first. In those that cried there was no subsequent struggling, but the one child that did not cry went through the usual struggling stage. The crying and screaming of children ensure regular respiration and regular in-take of the chloroform, and I never attempt to discourage it. The statistics for the last three years prove that not only is the in-take regular at first in children who scream and cry, but, as there is no subsequent struggling, the crying at the beginning conduces to regularity of inhalation and, therefore, to safety throughout the administration. For this reason the struggling of fright is not a source of danger. Undoubtedly fright causes acceleration of the pulse and of the respiration, and consequently a more rapid in-take and a more rapid conveyance of the chloroform to the nerve centres; but the effect of chloroform, if asphyxia and irregular breathing are avoided, is to soothe fright, and as there is no subsequent struggling the remainder of the inhalation is regular. The struggling of intoxication is more likely to lead to danger than that of fright, as the breathing is frequently irregular in this stage, and it occurs when the anaesthesia is nearing completion. But irregularity of the breathing can be very easily checked during the intoxication stage by removing the cap and giving the patient a breath or two of air; and it can therefore never furnish the chloroformist with an excuse for allowing the in-take to be irregular. The effect of giving the patient air at this stage is not to delay anaesthesia, as there is most probably a small amount of residual chloroform in the lungs, but to restore regularity of the breathing and to avert the possibility of risk. The struggling of choking or asphyxia, which is generally produced by the pungency, or, in other words, by insufficient dilution, of the vapour of chloroform, or by deprivation of air, is excessively dangerous and ought never to be allowed to take place. It leads to gasping or deep inspirations and is the most frequent cause of accidental overdosing. The antidote for simple overdosing is to cause oxygen to reach the respiratory centre, either by pulling forward the tongue so as to stimulate the respiratory movements or by artificial respiration. But when a patient is cyanosed and asphyxiated as well as overdosed everything is against him. It takes time, when every movement is precious, to oxygenate the blood; there is a quantity of residual chloroform in the pulmonary vesicles which the most vigorous artificial respiration may altogether fail to get rid of quickly enough to save the patient's life; and, lastly, it has always appeared to me that the respiratory centre, when it is asphyxiated, is peculiarly susceptible to, and difficult to rouse from, the narcosis of chloroform. If cyanosis is ever allowed to take place under chloroform, thus showing positively that the patient is accidentally asphyxiated, it is imperative on the chloroformist not only to remove the chloroform cap and give air, but not to dare to reapply it until all traces of cyanosis have entirely passed off. It is not a question of how much air the patient is to get: the point to bear in mind is that it will not be safe to continue the administration while any sign whatsoever of asphyxia remains.

The above remarks have reference to the clinical aspects of the various forms of struggling under chloroform. It is to be hoped that the analysis of the gases of the blood, which is at present being carried out by Dr. T. Oliver and Mr. F. C. Garrett<sup>3</sup> will clear up much that is still obscure in the physiology of these incidental and accidental phases of chloroform narcosis. There must be important differences in the gases of the blood in such widely diverse conditions as normal anaesthesia where the breathing is natural and regular, anaesthesia promoted with irregular respiration, simple overdosing with chloroform, and overdosing combined with asphyxia.

Hyderabad, Deccan, India.

<sup>3</sup> THE LANCET, Sept. 9th, 1893.

## Clinical Notes: MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CHOREA; RHEUMATISM; MANY LARGE SUBCUTANEOUS NODULES; MITRAL REFLUX;  
GOOD RECOVERY.

BY EDWARD MACKEY, M.D., M.R.C.P. LOND.

A BOY aged nine years was admitted to the Royal Alexandra Hospital for Sick Children, Brighton, under the care of Mr. Morgan, on Sept. 1st, 1893, and was transferred to me on Sept. 8th. In July he had pain in the joints after "paddling" in the sea; on July 6th he could scarcely walk home from a school treat, and he had been more or less in pain since. His aunts suffer from rheumatism. He was thin and looked delicate, but was not markedly anæmic; he had choreic movements of the head, arm, and tongue. Respiration was irregular, but the lungs were normal, except for a few râles. The heart's apex was in the nipple line (fifth interspace); a loud systolic bruit was heard there and also at the scapular angle; the second sound was accentuated at the base. The special point was a remarkable development of large subcutaneous nodules, as shown—perhaps rather overdrawn—in the engraving, which is from a photograph kindly taken by Mr. Hillier. The

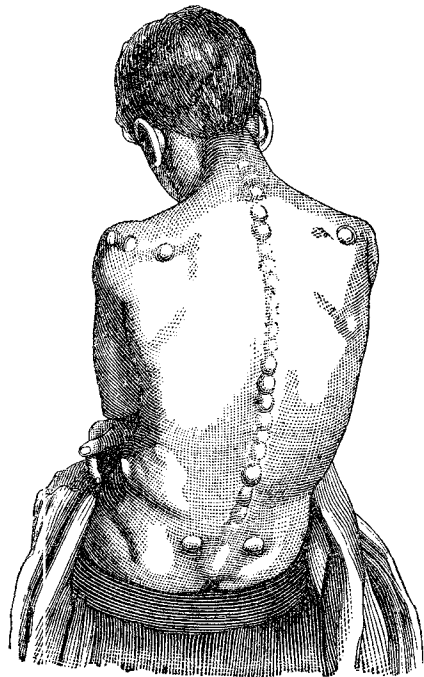


plate referring to a similar case published by Dr. Cheadle in THE LANCET of May 4th, 1889, is almost a facsimile of this boy's appearance. Between thirty and forty nodules were counted, including three on a scapula spine, two on its inner border, eight or ten on spinous processes, several on the iliac crests (some so hard as almost to resemble bony growths), and several on the condyles, on the extensor tendons, on the patella, and on the dorsum of the hands and feet. Mr. Morgan showed the case at a meeting of the Brighton Medico-Chirurgical Society, where it excited much interest as being unique in the experience of the members. Arsenic in from four to six minim doses was ordered, and iodide of potassium in two-grain doses thrice daily was added on Sept. 8th. The temperature never rose above 100° F.; the urine was moderately acid and contained urates, but was free from albumen. The boy was kept quiet in bed, on light food, continuing the above remedies with occasional intermissions, and progressed to recovery without any serious symptom. On Oct. 10th no bruit could be heard, and such nodules as had not disappeared were smaller. On Nov. 8th they were all gone, and he was discharged well and shown so at the Society on Dec. 7th. This good recovery leads me to record the case, inasmuch as the prognosis in