Observations on the temperature of the body in the insane / by T. S. Clouston.

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OBSERVATIONS

ON THE

TEMPERATURE OF THE BODY IN THE INSANE,

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When I was engaged a short time ago in trying to determine accurately the effects of certain medicines on maniacal and epileptic patients, the temperature of the body in those patients was one of the things noted by me; and being unable to find in any book the normal standard in the insane, I made and analysed 2000 observations of temperature, so that I might have a standard with which to compare my cases. I examined and noted the temperature of all the patients in this asylum, using the thermometer recommended by Dr. Aitken. I took the temperature in the axilla, and my object being a practical one, instead of examining the patients at the times when the maximum and minimum heat is usually found, viz., immediately after waking, and at midnight, I did so between ten and 12 o'clock in the morning, and between nine and ten o'clock at night. The patients here all get up at 6.15 a.m., and go to bed at 8 p.m. Perhaps those hours will, on the whole, be found more useful and convenient than any others for the medical officers of most asylums, if any of them should ever refer to those observations for a standard of insane temperature. In my preliminary observations, I

found that to get the temperature of the body in the insane perfectly accurate, the thermometer had to be kept in the axilla in many cases for seven or eight minutes, the time varying exceedingly in different cases, but that in most cases the mercury had risen nearly to its maximum at the end of four minutes. Knowing that the general use of such an instrument in the wards of an asylum must depend chiefly on the facility and speed with which it can be used, and wishing to produce a useful standard rather than an absolutely accurate one, I fixed on four minutes as the time during which to leave the instrument in the axilla in every case. The observations were made in the winter months.

I am aware that the numbers examined, especially in the case of some of the forms of insanity, are too small to give a correct average, but they were all I had the means of observing, and even in the case of those forms of insanity of which there are fewest patients in this asylum, there is always a "fair selection" of cases. The results may serve to indicate the direction of the truth, if they are not quite conclusive.

I took the temperatures of 305 patients in all, making two observations each day a patient was examined—one in the morning, another in the evening. On the days in which I was from home, or otherwise engaged, the temperatures were taken by my assistant, Dr. Campbell, but the great majority I took myself. Some of the patients I examined as many as thirty-five times within a period of five months. Such were usually excited patients, or those passing from one state into another, general paralytics, epileptics, and phthisical patients. Only by such frequent examinations can a good average be got in such cases.

In many patients taking the temperatures was a most formidable business indeed. Many of the maniacal patients resisted most violently, and had to be held by force while it was being done. The destruction of thermometers has been considerable. The uses and effects of putting the instrument under the arm were the subject of many and strange speculations among the patients. The favourite theory among the women was that I was finding out the amount of ill-temper in each of them, and many a sly inuendo was put forth as to the quantity that would be found in certain of the touchy and irascible. Great anxiety was usually manifested to know at the conclusion if there was much ill-temper found.

On the other hand many terrible effects were attributed to the harmless bit of glass. It sucked the blood out of some, and the spirit out of others; it made some cold in that side for days, and others hot as long; while in one happy case it killed some rats which had been feasting on the woman's entrails for years!

In examining the patients, I soon found that while there was considerable difference between patients labouring under different forms of insanity, there were also great differences between patients who laboured under the same form of insanity. I found some demented patients to have a high temperature, and others a low temperature; some general paralytics to be high, and others to be low. Certain cases I found to be above the limits of the healthy state, and I shall afterwards refer to these separately. But in the majority of the patients it was evident that all the cases of the various forms of insanity would have to be added together, and the average temperature taken, in order to get an accurate result; and that this result would have a physiological and pathological rather than a clinical value, showing the upward or downward tendencies of the vital force, or the presence of latent but fatal disease in each *class*, rather than giving indications for treatment in each *case*. When acute disease of any kind is present in the insane the thermometer is a most useful, and in some cases indispensable, aid to diagnosis.

In Table I. I have given the results of all the observations I made. I first ascertained the average temperature of each case, and this was used in ascertaining the averages of the different forms of insanity. Instead of taking the usual standard of sane temperature at 98.4°, I examined all the officers attendants and servants employed in the asylum at the same time in the morning as I had examined the patients, and again at night after they had been in bed from one to two hours, as in the case of the patients. I cannot explain the difference between my results and those of Dr. Davy, except that his were scientifically accurate, while mine were only practically so, and that all my observations were made in winter, at a lower temperature of the air than his, and at different times of the day. All the persons so examined were living in pretty much the same hygienic conditions as the patients.

It is seen from this table that the mean temperature is highest in general paralysis (98°), gradually falling in acute mania (97.6°) (the acute and chronic mania includes all the patients who were labouring under attacks of excitement at

TABLE I.

Form of Insanity.	No. of cases examined.			Morning Temperature			Evening Temperature.			Mean Temperature.			Difference between Morning and Evening.			Per centage of the cases in which Evening Temperatures were higher than Morning Temperatures.
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	
				deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	
Acute and Chronic Mania	7	21	28	97·44	97·73	97·66	97·25	97·65	97·55	97·34	97·69	97·6	·19	·08	·11	41 per cent.
Mania	46	45	91	97·2	97·2	97·21	97·1	97	97·07	97·16	97·1	97·13	·1	·2	·14	38 ,,
Melancholia	9	8	17	97·33	97·46	97·39	97·22	96·8	97·03	97·27	97·13	97·21	·11	·66	·36	31 ,,
Dementia (mild)	30	14	44	97·23	97·5	97·32	96·79	96·79	96·79	97	97·15	97·05	·44	·71	·53	35 ,,
Dementia (complete) ...	24	21	45	97	96·88	96·96	97·04	96·97	97	97·03	96·92	96·98	·04	·09	·04	9 ,,
Epilepsy	29	9	38	97·48	97·62	97·52	97·38	97·12	97·32	97·43	97·38	97·42	·1	·5	·2	39 ,,
General Paralysis	14	...	14	97·37	...	...	98·	...	...	98·	...	...	·7	...	...	100 ,,
Phthisical	5	4	9	97·69	99·16	98·35	97·95	99·39	98·59	97·82	99·28	98·47	·26	·27	·42	56 ,,
Convalescent	11	8	19	97·23	97·57	97·37	96·84	97·3	97·02	97·03	97·43	97·2	·39	·27	·35	31 ,,
Totals and Averages	175	130	305	97·3	97·32	97·31	97·21	97·17	97·19	97·25	97·25	97 25	·09	·15	·12	41 ,,
Sane persons in good health	19	21	40	97·47	97·52	97·5	96·47	96·9	96·7	96·97	97·21	97·09	1	·62	·8	27 ,,

the time of examination), epilepsy, (97.42°); melancholia, (97.21°); convalescence, (97.2°); mania, (97.13°); and mild dementia,)97.05°;) until we reach the lowest temperature of all in complete dementia, (96.98°). But when we examine the actual decrease we find that after all complete dementia is only 1.02° below general paralysis; and that the latter is only .91° above the temperature of the 40 sane persons examined, while the former is only .11° below it. There were nine patients in the house who had phthisis pulmonalis, and their average temperature was highest of all, being 98.47°. The mean temperature of all the patients examined was 97.25°, which is .14° above the healthy standard. Every form of insanity, except dementia, was above the healthy standard.

Differences between the Morning and Evening Temperature.—A very remarkable difference is noticed between the morning and evening temperatures in some of the forms of insanity, as compared with others, and between all the forms of insanity, as compared with sanity. In the healthy the average evening temperature was .8° lower than the morning temperature, and this agrees very nearly with what Dr. Davy says has been found to be the difference in temperate climates (.82°). In mild dementia the difference is seen to be only .53°; in melancholia it falls to .36°; in epilepsy to .2°; in mania to .14°; in acute excitement to .11°; in complete dementia the evening begins to be higher than the morning temperature by .04°; in the phthisical this difference mounts up to .24°; and in general paralysis we find that the difference is .77°, being nearly as great on the side of the evening temperature as we find in health on the side of the morning temperature.

This is a striking fact, when we consider that in acute fevers, and indeed in nearly all bodily disorders, a rise in the evening temperature is always looked on as a bad sign. It is a sign of *progressive disease* in fact, and when we look at the sequence of the forms of insanity, when arranged according to their differences of morning and evening temperature, beginning with that in which it is nearest to the healthy state, we have an exact scale of the death rate among the insane. Mild dementia is unquestionably the form of insanity most like sanity, both in its psychical characteristics and in its freedom from an active tendency to death; while general paralysis, at the other end of the scale, is the most fatal by far.

An examination of the temperatures of the individual cases of general paralysis shows a still more striking fact in reference to the increase of the evening temperature. (See table II.)

TABLE II.

	Average Temperature.	
	Morning.	Evening
	Degrees.	Degrees.
D. M. (end of 1st stage—excited) ...	98.01	98.14
J W. (1st stage—slightly excited) ...	96.4	97.2
W. B (end of 1st stage)	97.15	98.16
F. L. (1st stage—quiet, rational)	96.5	97.52
M. B. (end of 1st stage)	97.84	98.
H. P. (1st stage—a little excited) ...	97.5	98.42
T. T. (2nd stage)	97.18	97.5
J. W. (2nd stage)	96.44	97.05
R. T. (2nd stage)	96.4	96.56
W. L. (2nd stage—depressed)	95.14	96.38
A. K. (2nd stage)	97.2	98.2
J. C. (3rd stage)	98.5	100.7
G. R. (3rd stage)	99 6	99.9
G. E. (3rd stage—moribund)	102.5	103.5
	97.6	98.37
Mean temperature	98.	

Among those fourteen general paralytics there are patients in every stage of the disease, from the beginning of the first, when there seems scarcely anything wrong at all with the patient, to the end of the last stage, when death is daily expected. Some of them have passed from one stage of the disease into another while the observations were being made on them, and the average temperature of each was determined by ten observations.

In every case, without exception, the evening temperature is higher than the morning. This affords a most valuable indication in the diagnosis of doubtful cases of the disease. What would the physician not give sometimes to be able to pronounce certainly that a case is *not* one of hopeless brain disease? And how much mischief might be prevented, and property saved, and danger and annoyance to relations avoided, if the disease could be more certainly diagnosed in its early stages? It seems probable that this constant rise in the evening temperature will be found to exist in all progressive brain diseases, and may be found as useful in the diagnosis of other obscure organic affections of the brain as

in general paralysis. To know in many cases whether the brain is affected with the beginning of organic disease is one of the most difficult problems the physician ever has to solve. This constant increase of evening temperature in general paralysis seems to confirm Bayle's original theory, that the disease is of an inflammatory nature.

One day's observation is not at all sufficient to determine that the increase of temperature does or does not exist in the evening in general paralysis. On some days I found the evening temperature lower, especially in the second stage of the disease. It is necessary to take the average of a number of observations.

The difference between the evening temperature of this disease and the morning temperature of complete dementia is 1.41°. The temperature is high in the first stage of general paralysis, lower in the second stage, and again very high in the third. (See Table II). The evening temperature is most increased as compared with the morning temperature in the third stage, and least in the second.

In the phthisical cases the evening temperature was higher than the morning, but not so much so as in general paralysis. It depended entirely on the stage of the disease, whether in any one case the evening temperature was higher. If the disease was active and the temperature increased much above the normal standard of health, then it was always higher in the evening. If the disease was not active it was not so increased. Out of the nine cases there were four in which it was increased and five in which it was not; but the increase was so great in those four that it brought up the average. On the whole the temperature in the phthisical tends to be high, whether the tuberculisation is active or not. It was never below 97° in any of them; never went above 98.5° where the disease was not active; but was seldom below 99°, when it was active, and sometimes rising to 101.3°. These observations refer to the *average* temperature, for I have found it to be only 96° at times in such cases, and I one evening found the temperature of a woman, who had acute tuberculosis, and who was never under 100° at any other time, to be only 98.6 . The difference between the evening temperature of phthisis and the morning temperature of complete dementia is 2.51°, which is the greatest difference in any of the averages.

If we compare the average morning temperature of all the

patients examined with the average morning temperature of the sane, we find that in the sane it is .19° higher, while the evening temperature of the insane is .49° higher than that of the sane. This proves that the increase of the evening insane temperature is an absolute increase over what is normal, and not a mere relative increase over a low morning temperature, as might be the case if it was due merely to a languid circulation and weak vital energy. In that case the temperature would be low through the day, while the patients were up, and would be more near the normal standard when they were warm in bed, but it would never go beyond the normal standard. In the morning, only epileptics, acutely excited patients, general paralytics, and the phthisical come up to the sane standard; in the evening they *all* go above it, mild dementia making the nearest approach to it, and complete dementia, which is .56° lower in the morning, rising .3° above it at night.

If a slight difference from the ordinary rule of health in regard to the rising of the evening temperature has such a fatal significance in general paralysis, I think we may conclude that the same tendency in a lesser degree points in the same direction in the other forms of insanity, confirmed as it is by our experience of the death rate in them. It is a sure index of the tendency to death—in other words, it expresses all the latent disease, and the inability of the vital forces to resist disease, which exist. Unfortunately, we find that in a certain proportion of the sane and healthy, the usual rule of health as to the fall of the evening temperature is reversed; so that we cannot take this as a sure diagnostic sign in individual cases. But on looking over a list of the names of all my patients, whose evening temperatures are higher than their morning temperatures, while many of them seem quite healthy, yet I find in it nearly all those whom I suspect of having brain disease, and most of those whom I imagine to be predisposed to phthisis. In the sane (see Table I), I found that 27 per cent. had this peculiarity, while in the insane there were 41 per cent. Doubtless this extra 14 per cent. all represents *progressive disease;* but inasmuch as in many of them the increase was very slight indeed, I think the average temperatures are a more sure criterion. Looked at in this light of the significance of small variations of the morning and evening temperature, we can see better the meaning of the slight

differences in the *mean* temperature of the various forms of insanity. A small part of a degree of difference in the animal heat when it is a constant concomitant of a certain form of insanity, as shown by the average of a large number of cases, seems to have as definite a meaning as the difference of three degrees in a case of acute febrile disorder. In the one case, it enables us to tell the strength of the tendency to death in the class; in the other case it enables us to predict life or death to the individual. The thermometer has first been applied for the latter purpose, and its indications studied; but I should not be surprised if it gave most interesting and important results, if applied in the former way also. Would it not tell, if applied in the case of a large number of people living in the neglect of proper hygienic conditions, that the laws of nature were being broken? Might it not give indications if unwholesome, or insufficient, or too abundant diet were eaten? And might it not in many cases give the very first warning that some insidious disease was coming on? I confess I should be very uncomfortable if I found my evening temperature getting higher than the morning temperature, and if this was accompanied by any rise over the normal standard.

Differences of Temperature between various individuals labouring under the same form of insanity.—Such differences prevail most in epileptics, general paralytics, and acutely excited patients, but they exist in all the forms of insanity. Between different epileptics, I have found an average difference of 3°, while taking the highest observation of epileptic temperature I ever observed, without any actual disease being present (101.2°), and comparing it with the lowest, (94.8°,) there is a difference of 6.4°. In general paralysis the greatest difference of average temperature I have observed was 7.24°, between a man in the second stage, quiet and stupid, whose temperature was 95.76°, and another moribund patient who was 103°. This patient died, and the congested, almost pneumonic, state of the posterior part of the lungs, may have caused increased heat; I have, however, found the temperature to be 102.6° twenty-four hours after an epileptiform attack, which is an increase of 6.84° over the low temperature referred to. The greatest difference between any two single observations in general paralysis was 8.7°. In only five instances have I met with a temperature below 95°; one of these was an epileptic, one a general paralytic in the second stage, one laboured under mania, and two were demented. I was often surprised by finding a few

of the most completely demented persons to have an average or high temperature. There is an idiot here who is 98. 4°. A weak circulation at the extremities is by no means always accompanied by a low temperature. One woman, whose hands used to get quite purple and swollen, and as cold as lead if she were away from the fire for half an hour, had a temperature of 98.5° in the axilla at the time. It is not uncommon to find the temperature in the insane between 95° and 96°; but I found among the attendants here two men and one woman, strong and perfectly healthy, whose temperatures were under 96°, two of them being so both in the morning and evening, and the third in the evening. I was most particular too, in taking those cases, and the mercury would not go above 96°, however long the thermometer was left under the arm. The greatest difference noticed between any two of the sane persons was 3.6°. I found two of them had an evening temperature 1.5° above their day temperature. The highest sane temperature was 99.2°.

Differences in the same person at different times and in different mental states.—I examined twelve patients in all the gradations of mental state, from depression up to acute excitement. The general result was that the temperature was decidedly higher in acute excitement than in depression or quiescence. Where short attacks of mania rapidly succeed each other periodically, the difference is not so marked as in the case of periodic mania coming on at long intervals. In four of the latter cases the difference between the average temperature taken in the slightly depressed state and in acute excitement, was 2.2°; while the average difference between excitement and depression in the twelve cases was 1.1°. The exact periods of the highest temperature varied greatly; in five of the twelve cases it coincided with the acme of the excitement, in two cases it preceded this, in two cases it followed it and existed in the subacute stage, in one it was quite variable, and in two this period of the most acute excitement was the time of the lowest temperature. The greatest difference I observed in the same person, excited and quiet, was 3.6° in mania, 4.7° in epilepsy, and 5.8° in general paralysis. In the latter disease I found that in two of the patients, in whom the fits had existed almost since birth, the very lowest temperatures existed at times, while at other times the very highest temperatures existed. The effect of epileptic fits on the temperature is a very interesting and complicated subject. I do not propose to go fully

into it here, not having determined all the points connected with it. The immediate effect of an epileptic fit is to depress the temperature, and if the patient is in bed and goes to sleep after the fit, it will sometimes go down for three hours at the rate of .75° per hour. A fit taken during the day depresses, and afterwards slightly raises the temperature. Two fits taken during the night almost always raise the temperature 1.5° in the morning. Two fits taken during the day depress slightly, and then nearly always raise the temperature 1.2° in from one hour to five from the time of taking the last fit. If one or two fits produce a stupified, confused state lasting for many hours, the temperature is sometimes raised 3° or even higher; but this is rare, and even when it is the case it always falls again within twelve hours. I have only observed it three times in over 500 observations on epileptics.

One of the most interesting facts observed by me was the effect of an epileptiform fit in general paralysis. I found that the temperature was always much raised after such an attack. After sinking slightly for an hour or two, it began to rise, and went up in twenty-four hours 2.5°, and in thirty-six hours 6.6°, in one case after two such attacks. Even one such fit—not very severe, and passing off at once, and the patient getting up in the morning as if nothing had happened—caused an increase of 3° in three days; and this is the peculiarity of those attacks, that the patient's temperature is left for some time higher than it had previously been. It is often exceedingly difficult to tell such fits from true epileptic fits in the beginning of disease. When, as I have known to happen, a man about whom nothing had previously been noticed wrong mentally, falls down in "a fit," from the description of which, by the relatives, no medical man could well distinguish it from epilepsy—in such a case, if the temperature was found to rise up to 99° or 100° steadily for two days; and if the temperature was higher at night than during the day, I should have but little hesitation in pronouncing the case to be one of general paralysis, though no other symptoms were present. In the ordinary forms of insanity, I have found masturbation to cause an increase of temperature almost equal to an epileptiform fit in general paralysis.

Temperature in the different periods of life in the insane.—When all the cases examined (except those under twenty, they being too few to give any trust-worthy result) are analysed and arranged into three periods of life, viz., from

TABLE III.

Ages.	No. of cases examined.			Morning Temperature.			Evening Temperature.			Mean Temperature.			Difference between Morning and Evening.			Per centage of cases in which Evening Temperature was higher than Morning Temperature.
	M.	F.	T.	M.	F.	T.	M.	F	T.	M.	F.	T.	M.	F.	T.	
				deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	
Between 20 and 40 ...	76	41	117	97·42	97·7	97·51	96·9	97·42	97·07	97·16	97·56	97·29	·52	·28	·44	32 per cent.
,, 40 and 60 ...	71	56	127	97·34	97 25	97·3	97·11	97·02	97·08	97·23	97 14	97·19	·23	·23	·22	42 ,,
Over 60	25	28	53	96·72	97·01	96·88	97·09	96·79	96·93	96·91	96·9	96·9	·37	·22	·05	57 ,,

twenty to forty, from forty to sixty, and over sixty years of age, and then the averages taken, as in Table III., no regard being paid to the forms of insanity, the following results are obtained:

The morning temperatures get lower each twenty years, being .63° lower in the patients over sixty than in those above forty.

The evening temperatures get lower also, but not to such an extent, being only .14° lower over sixty than above forty.

The difference between the morning and evening temperature therefore increases, being .49° more over sixty, than under forty. Over sixty, the evening temperature is higher than the morning temperature.

The per centage of cases in which the evening temperatures are higher than the morning temperatures, rise from 32 per cent. under forty, to 57 per cent. over sixty.

The morning temperature of those under forty, nearly corresponds with the sane morning temperature, the morning temperature of the older patients being below this, while all the evening temperatures are considerably above it.

The general lowering of the temperatures is, no doubt, owing to the diminished vital power as life advances, while the slow rate of decrease of the evening, as compared with the morning, is, no doubt, explained by the larger proportion of organic brain disease among the older patients keeping up the average evening temperature, thereby showing the greater tendency there is to death at the more advanced ages. As we saw from Table I., that when the average evening temperature gets considerably above the morning temperature, in any form of insanity, as in the phthisical and general paralytics, it indicates a very high death rate; so we find here that this law holds good, for over sixty the death rate is very high from organic affections of the brain, especially among males, and among the men over sixty the evening temperature is much above the morning. Anyone who has performed many *post mortem* examinations among the insane knows how often softenings from atheromatous arteries, &c., are found in patients above sixty.

TABLE IV.

Form of Insanity.	Morning Pulse.			Evening Pulse.			Mean Pulse.			Difference between morning & evening pulse.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Mania	81	89	84	71	82	76	76	85	81	10	7	8
Melancholia	78	82	80	71	74	72	74	78	76	7	8	8
Dementia (mild).....	81	79	80	75	75	75	78	77	78	6	4	5
Dementia (complete) ...	73	86	80	71	77	74	72	81	77	2	9	6
General Paralysis	92	...	...	83	...	...	88	...	...	9	...	..
Phthisical	88	105	96	78	100	88	83	103	92	10	5	8
Convalescent	81	79	80	72	73	72	76	76	76	9	6	8
Averages	82	87	84	74	80	77	78	83	80	8	6	7
Healthy Persons	77	84	80	70	78	74	74	81	77	7	6	6

Temperature in relation to the pulse.—In Table IV., the average frequency of the pulse is given in the different forms of insanity. We see that while the mean frequency of the pulse corresponds almost exactly to the temperature, rising and falling with it in the different forms of insanity, being highest among the phthisical (92), the general paralytics coming next (88), the rate gradually falling in mania (81), mild dementia (78), complete dementia (77), and melancholia and the convalescent (76), the rate in healthy persons being 77. Mania, general paralysis, and phthisical mania are the only forms in which the mean pulse is markedly higher than in health, while the general frequency of the pulse among all classes of the insane is somewhat higher than in the healthy, just as the temperature was found to be. The *mean* rate of frequency corresponds very closely with the usual rule in regard to individuals suffering from disease, viz., that ten beats of the pulse correspond to a degree of temperature.

We do not find that in any form of insanity the average frequency of the pulse is greater in the evening than in the morning. In this respect it does not correspond to the temperature, and the rule mentioned above is actually reversed. Even among the phthisical, this tendency, which was present among those suffering from the acute forms of the disease, was quite counterbalanced by the opposite tendency among those who had the less rapid forms of consumption.

In dementia there is a tendency for the evening pulse to rise, the morning remaining at about the average, so that the difference between the morning and evening becomes lessened. On the whole, the difference between the evening and morning pulses among the insane is greater than among the sane.

I noticed a very curious fact in respect to temperature in inflammation: four of the patients, whose temperatures I had previously taken, happened to have inflammations—two of them of the leg below the knee, one of the groin, and one of the foot. During the course of the inflammations, the temperature in all of them was increased, and was higher in the evening than in the morning; the pulse, too, being higher in the evening, as is usual in inflammatory and febrile affections. But after the inflammation had disappeared, and the parts healed, when the morning temperature and pulse were down to their normal standard, and when the evening pulse had sunk below the morning pulse in frequency, yet *for many weeks the evening temperature remained higher than the morning temperature.* In all of them I had ascertained that this was contrary to their usual state in health. In three of them it gradually got lower, till it reached its normal state; while in the other it yet remains higher in the evening. This would seem to show that the rising of the evening temperature is a far more delicate test of latent disease and its effects, than the pulse or any other test known to us. Or is it that when the system gets into the feverish habit, as it were, it retains it for some time after the actual disease has disappeared? At all events, it is a phenomenon well worth attention and study in a larger number of cases.

The general results of my observations may be thus summed up:—

1. The temperature of the body is higher in the insane than in the sane.

2. The temperature is highest in phthisical mania, gradually falling in the following order:—General paralysis, acute mania, epilepsy, melancholia, mania, mild dementia, and complete dementia.

3. Dementia is the only form of insanity whose average temperature is below health.

4. The great characteristic of all the forms of insanity, is that the difference between the morning and evening temperature is much less than in health, and this is owing to

the rising of the evening temperature, and not to the lowering of the morning temperature as compared with the healthy standard.

5. This rising of the evening temperature as compared with the morning is in the exact ratio of the death rate among the various forms of insanity, finding its acme in general paralysis.

6. In general paralysis, the average evening temperature is higher in every case than the morning temperature (the observations being taken over a sufficient period).

7. In phthisical patients the temperature is high, and is especially high in the acute forms of the disease, but the latent forms cannot be certainly diagnosed by thermometric observation.

8. The evening temperature of *every* form of insanity (even complete dementia) is higher than the evening temperature of health.

9. The greatest differences in different individuals labouring under the same form of insanity are found in general paralysis, epilepsy, and acute mania. In the first named a difference of 8.7° has been found.

10. Excitement in a patient is almost always attended by an increased temperature as compared with depression or quiescence. This difference averages 2·2° in periodic mania with long periods, and 1·1° in periodic mania coming at shorter intervals. In general paralysis there may be a difference of 5·8° in the same individual in different stages of the disease.

11. An epileptic fit depresses the temperature at first, and then tends to raise it a little, but it makes a difference whether the patient sleeps or wakes after the fit.

12. The epileptiform fits of general paralysis are always followed by a greatly increased temperature, lasting for several days, and they may in this way be distinguished from ordinary epileptic fits.

13. The average temperature falls as the patients get older, but the fall takes place chiefly in the morning temperature.

14. The *average* frequency of the pulse in the various forms of insanity corresponds with the *mean* temperature, but the rise in the evening temperature has no corresponding rise in the evening pulse.