ment. In such cases, gentlemen, that is to say, when a great number of true epileptic fits succeed each other, within a brief space the central temperature becomes remarkably augmented; and, most assuredly, this thermic increase cannot be attributed exclusively to the repetition, any more than to the intensity, of tonic muscular contractions, for the convulsions may completely cease for several days, whilst the temperature nevertheless persists, during this time, at a very high elevation.

We can observe and follow these peculiarities on the diagram which I place before you, and which represents the changes of central temperature in the patient Chevall—, during the course of the *epileptic acme* which she has recently experienced. (Fig. 25.)

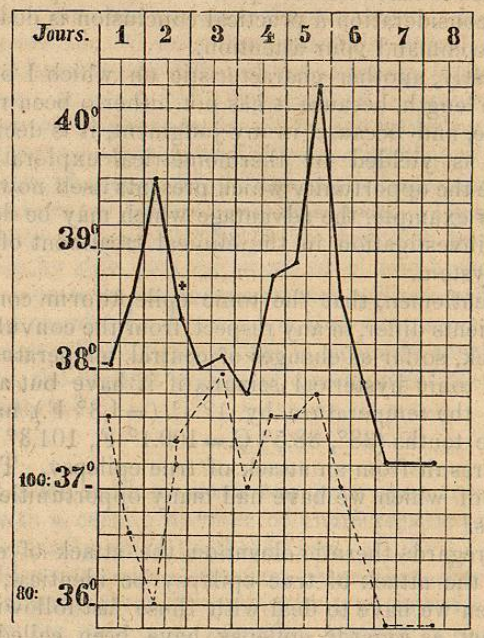

Fig. 25.—Temperature (C.) taken shortly after the eleventh fit. From the evening of the first day until the morning of the second, thirty-one fits occurred. + Temperature after a remission of four hours. After this the fits take place at greater intervals, and cease on the third day. The dotted line represents the state of the pulse.

It must be borne in mind that this elevation of temperature is, in the great majority of cases, even after complete cessation of the convulsions, an omen of the darkest significance. It is, besides, most frequently accompanied by a general state of the constitution which, of itself, gives much cause for apprehension. Thus, sometimes, a more or less marked delirium exists, which M. Delasiauve

attributes to *meningitic congestion;* sometimes, on the contrary, a more or less profound coma—the *apoplectiform congestion* of authors—is found. In both cases we observe great prostration, dryness of the tongue, tendency to rapid sloughing over the sacrum; lastly, occasional production of transient hemiplegia, the cause of which has not, as yet, been revealed by any post-mortem examination.

However, and this is a most important datum to note, this elevation of temperature, even when it exceeds 41° C. (=105.8° F.), and is accompanied by the grave symptoms just enumerated, is not to be regarded as a sign *necessarily* heralding a fatal termination. You perceive by the record of Chevall—, that a patient may still recover, even from the midst of all these grievous circumstances. Augmentation of temperature above 41° C. (=105.8° F.) is not, therefore, necessarily *terminal* in such cases; consequently, the assertions published by Herr Wunderlich, and after him by Herr Erb, in relation to this point, must be subjected to abatement.[1]

[1] The case of the patient Chevall— is related at full length, up to 26th March, 1872, in our 'Études Cliniques et Thermométriques sur les Maladies du Système Nerveux' (Obs. xxxiii, p. 285). Since that period, Chevall— Edmée has been seized with new accidents issuing in a fatal termination. We think it all the more useful to relate them here because, besides completing the former record, they supply additional proof in corroboration of the opinions stated by M. Charcot in the present lecture.

1873, *February* 9.—For about a week Chevall— has been tetchy and irritable; sometimes she has been so violent that constraint was necessary (maniacal excitement).

February 10.—Last night the agitation augmented; Chevall— prevented the other patients from sleeping, by her cries. She, however, became calm after three o'clock A. M. Three fits were noted during the night. From one o'clock P. M. till three o'clock P. M. the fits multiplied. At three o'clock: pulse 100; rectal temperature, 38.6° C. (=101.48° F.).

February 11.—Yesterday, from one o'clock till nine o'clock P. M., forty-three fits were counted; and from that until seven o'clock A. M., seventy fits; from seven o'clock till eleven o'clock A. M., when this note was taken, there occurred thirty-five fits. The following is a description of the fits:

Five or ten seconds before their occurrence, the pupils (especially the left) became widely dilated. Sometimes, in addition, we have little complainings, grinding of the teeth, and, exceptionally, a slight cry. The fit begins: the eyeballs are subjected to very marked convulsive movements (nystagmus); the face grows pallid, and is deviated to the left; the gaze, at first fixed and direct, is averted to the left. The left arm rises, and then stiffens, simultaneously with the right, which, however, rests upon the bed. The tetanic stiffness next invades the lower extremities. At the end of a few seconds, we notice semi-occlusion of the left eyelids, which are agitated, like the muscles on the same side of the face, by rapid convulsive movements.

Ten to fifteen seconds after, the face and eyes turn to the right; the body inclines to the right; the left eyelids open, and remain nearly motionless; but, to make up for this, the convulsions seize upon the right eyelids and the muscles of the right side of the face. The mouth, at first drawn to the left, is now drawn to the right. The clonic convulsions manifested during this phase, which had at first invaded the members of the left side, now predominate on the right.

Finally, the fit concludes by snoring, extreme lividness of the face, and foaming at the mouth. At the close of the fit, the pupils resume their normal dimensions.

During the remissions the patient is in complete resolution. When raised and let go the limbs fall inert. Energetic pinching provokes a slight raising of the left

I should remind you, in passing, that this rapid increase of temperature is far from being the exclusive appanage of the epileptic acme; it is likewise observed in the so-called congestive, apoplectiform, or epileptiform attacks of progressive general paralysis, as was first pointed out by Herr Westphal, who has, however, offered an interpretation of the fact which is little in conformity with the reality.[1] It is also observed in the very similar attacks which may

arm, but nothing in the right. When the soles of the feet are tickled, reflex movements are set up, which are more intense on the left than on the right. The right eye is not injected, whilst considerable hyperæmia of the lower half of the left eyeball and a lesser vascularization of the lower lid exist. The nostrils are pulverulent. The digestive tube presents no particular symptoms; there was a stool after enema yesterday; Ch— micturates in bed. Erythematous patch on the left gluteal region, profuse perspiration, augmented at intervals. At eleven o'clock: pulse 120: respiration 49, noisy; rectal temperature, 40.8° (=105.44° F.). At noon pulse 130; respiration 60

Six o'clock P. M.—Seventy-six fits have been noted since eleven o'clock A. M. of which thirteen occurred after half-past four o'clock P. M. Respiration 60; rectal temperature, 41.3° C. (=106.34° F.). Copious perspiration over the whole body, on both sides indifferently. The entire left side of the body (face, trunk, &c.) is plainly warmer than the right.

The eyelids are half open; the eyes turned up; the pupils are moderately dilated (the right still the more enlarged). Before every fit *dilatation of the pupils* augments in a remarkable manner. The *nystagmus* seems to appear almost simultaneously. Neither vomiting, nor stools, nor micturition. Same condition of right gluteal region. Coma. Stertorous breathing.

Eight o'clock P.M.—Pulse—; respiration 70; rectal temperature 41.2° C. Fourteen fits. From this time forth the patient had no more fits. She died at three o'clock in the morning. Vaginal temperature (taken by another) was 41.2° (=101.10° F.). At eleven o'clock in the morning on the 11th February, *i. e.*, eight hours after death, rectal temperature 40° (=104° F.) (the corpse remaining in the bed). The pupils are moderately dilated, and both equally. Numerous livid stripes or wheals on the belly, back, buttocks, and thighs.

Post-mortem, Feb. 18.—The bones, dura mater, and sinuses present nothing abnormal. The quantity of cephalo-rachidian liquid is not augmented. Sanguineous suffusion on the convex surface of the cerebral hemispheres, especially on the right. Arteries, at the base of brain, healthy. Weight of encephalon, 1360 grammes. The pia mater is very slightly injected at base of brain; most marked at the sphenoidal lobe. The pia mater is easily detached on both sides, and the brain is equally moist.

Right hemisphere.—It weighs 5 grammes (=77.17 grs.) more than left. On certain convolutions, chiefly those lying adjacent to the Sylvian fissure, we note a hortensia coloration, some little abrasions, and, on a few, a very fine red punctuation. The convolution of the cornu Ammonis presents a very evident induration. This induration, which ascends interiorly along the said convolution, predominates at its extremity.

Left hemisphere.—The cornu Ammonis presents an induration much less marked and circumscribed at its extremity.

Nothing notable in the cerebellum and isthmus.

Spinal cord.—The gray substance, viewed with the naked eye, seems a little deformed.

Thorax.—Considerable congestion of the lower half of the lungs. There is, moreover, a focus of red, recent hepatization in the lower lobe.

Heart, stomach, spleen.—Healthy; no ecchymoses. *Liver*, not congested. *Kidneys*, anæmia of cortical substance; pyramids distinct. *Bladder*, nothing. *Uterus*, fair size; recent corpus luteum on one of the *ovaries*: small cysts on the other (B.).

[1] Westphal, *loc. cit.*

supervene in the course of disseminated sclerosis,[1] and, lastly, in the attacks accompanied or not by convulsions which take place in cases of old cerebral foci (hemorrhage or ramollissement) or of cerebral tumors, whatever their origin. This thermic increase contrasts, in a remarkable manner, with the initial decrease which almost always exists at the moment of the formation of a cerebral hemorrhagic focus,—and that, as I have demonstrated, is a characteristic which may be profitably used in making a diagnosis.

But it is time to return to epileptiform hysteria, from which this digression has somewhat separated us. Complex fits are observed in hystero-epilepsy precisely as in true epilepsy. Landouzy speaks of one hysterical patient who had up to 100 fits a day. The *hystero-epileptical acme* may, besides, be prolonged over a considerable space of time. Georget quotes the case of a woman who suffered from an almost continuous succession of fits extending over forty-five days.

In the case of our patient Co—, whose seizures bear such a predominant and strongly-marked epileptiform character, the *paroxysmal acme persisted over two months*, and, at times, the accidents attained the highest degree of intensity. Thus, to mention one instance, on the 22d of January, the epileptiform convulsions followed each other, without interruption, from nine o'clock in the morning until eight in the evening; from eight until nine o'clock there was a resting space, after which the atacks came on again, as though with renewed vigour, and persisted, without the least lucid interval, for about the same length of time. We may without any exaggeration calculate that in round numbers she experienced from 150 to 200 epileptiform fits in the space of a day at that period.

Does not the persistence of such a state, without a fatal termination, already indicate by what an abyss true epilepsy is separated from hystero epilepsy? "If that were not hysteria," said the experienced head nurses of these wards, speaking of Co—, whose seizures they watched, "if it were really epilepsy, the woman would have succumbed long ago." This remark is thoroughly well-founded and perfectly correct.

Well, gentlemen, here is the point upon which, especially, I wish to lay stress,—never, during that long convulsive period, was the *rectal temperature* modified in a perceptible manner, in the case of Co—; on an average it stood at 37.8° C. (= 100.4°F.), it only rose to 38.5° C. (= 101.3° F.), in a quite exceptional and transient manner. (Fig. 26.)

I should add that, during all this time, the general condition of the patient never gave us the least uneasiness, in spite of the insufficiency of her alimentation and the enormous amount of mus-

[1] V. *antè*, Lecture VIII.

cular force she must have expended. Again her mental condition was, by no means, so deeply modified as it would necessarily have been if the disease had been true epilepsy. At no period was there involuntary evacuation of urine or feces. In the brief respites allowed her by the fits, the patient rose to satisfy the requirements of nature. In these intervals, also, which were in truth very brief, the hysterical character of the disease showed itself in all its fulness, especially during the first weeks. A flower twined in her hair, fantastic curls, an old bit of mirror attached to the bed-post, —these things sufficiently attested the favourite occupations of this woman during her intervals of ease.

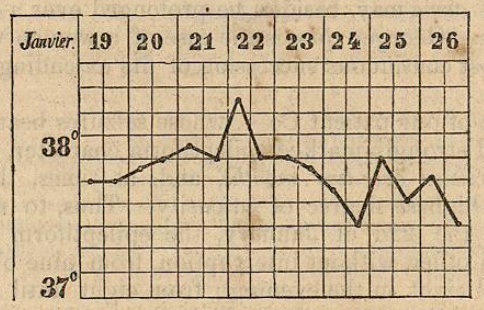

Fig. 26.

But I desire, above all, to call your attention to the thermal state which careful investigation enables us to discover. It would, in short, follow from what precedes that, whilst, in the *major acme of epilepsy*, the temperature rises very rapidly to a high degree, and the position of affairs becomes extremely critical,—in the *major acme of hystero-epilepsy* on the contrary, the temperature rarely exceeds the normal standard, whilst the concomitant general state of the patient is not of a kind to inspire uneasiness. It is not necessary, I think, to dwell at any length upon this topic in order to emphasize so striking a contrast.

I do not, however, gentlemen, want you to take in its strictly literal meaning the last term of the proposition which I have just enunciated; it undoubtedly applies accurately to the great majority of cases, but the chapter of exceptions exists. It would not, in fact, be unexampled to find hysteria terminating in death during the convulsive phase. It is true that this sad result is nearly always owing to a peculiar kind of attack, the *dyspnœic seizure*.[1] But I repeat, the convulsive fits may themselves be the cause. As an example, I may remind you of a case of this character pub-

[1] Briquet, *loc. cit.*, pp. 383 et 538

lished by Herr .Wunderlich.[1] It relates to a case of hystero-epilepsy, comparable in many respects to that which I have just described.

[1] The following is a translation (after M. Teinturier) of Wunderlich's case to which M. Charcot alludes:

Note.—*Eight weeks of apyretic hysteriform convulsions, without apparent danger. Sudden and deplorable change, without augmentation of paroxysmal intensity. Death in the course of a few hours, with a temperature of* 43° C. (=109·4°F.)

Anna Vogel, æt. 19, servant, had twice menstruated in the fortnight before falling ill, but otherwise in good health, was taken with convulsions, for the first time, on the 13th August, 1855, after a severe scolding, according to her own account. The convulsions came on again, in the evening of the 17th, and in the morning of the 18th, and continued almost uninterruptedly throughout the night, from the 18th to the 19th. Admitted at noon on the 19th. She presented at midnight slight subsultus in the left arm, in which the presence of paralysis without insensibility had been noted. Then she experienced a feeling of anguish (constriction in the epigastrium), gave a slight cry, and had convulsions, first in the left half of the face, and then in the right also; the mouth was open, the eyelids were alternately opened and closed, the eyeballs turned greatly upwards. Then supervened violent and rapid clonic convulsions in the lower extremities and pelvis, by which these parts were projected forward, backward, and sideways. The face was cyanosed, and foam flowed from the mouth. At the end of a minute, deep and superior breathing; relaxation of the limbs and face. Afterwards sleep, apparently peaceful; lastly, yawning, opening of the eyes, and return to consciousness after six minutes.

The patient is in good condition, her tongue is little loaded; the temperature is 38.12°C.(=100,6° F.), the pulse 140 (after the fit); nothing abnormal. She says, however, that she cannot move her left arm, and requests that it shall not be touched, because otherwise she will get convulsions. Nevertheless, she can grasp strongly with the left hand.

In the night of the 19-20th six seizures; and in the day following, seven seizures. No albumen in the urine; considerable uric sediment. Tongue loaded. Temperature, morning and evening, 38.12° C. (=100.6° F.); pulse 132; respiration 24—32. In the night of the 20-21st, seven seizures; thirteen seizures till the morning of the 22d. Temperature, 37.76° (=99.96°F.); stools normal; urine slightly turbid from the presence of albumen.

From eight to sixteen fits a day, in the following days. Condition otherwise tolerable; no marked elevation of temperature, which is generally normal, never above 38.12° C. (=100.6° F.), except one evening, when it reached 38.75° (=101.75° F.); pulse usually above 112; tongue loaded. On the 16th, confluent vesicular miliary eruption on the finger tips. Urine charged with phosphates, without albumen. During the seizures she sometimes loses consciousness, sometimes not; occasionally shrieks greatly. Sensibility persists in the left arm and leg.

7th September.—The fits become more frequent, last several days without interruption; during the seizures she often talks and shrieks. Frequent evacuations of urine and feces in bed. Improvement, then stationary condition until the evening of the 2d October, when the patient presents a marked attack of collapse. In the night of the 3d no particular seizures. In the morning agitation of the arms and divergent strabismus. The head inclined forward and to the left; consciousness preserved; slight cyanosis. From ten o'clock forth, deglutition impossible; at noon, trismus; at a quarter to two o'clock, strong convulsions, not affecting the head; pulse extremely frequent; temperature, 41.87°; intense cyanosis, foaming at the mouth; tracheal râle. Died at a quarter past two o'clock; temperature, 43.1° C. (=109.58° F.). A quarter of an hour afterwards, temperature 42.75° C. (=108 95° F.).

Post-mortem.—Body in good condition; large cadaveric spots in the lower part; no muscular rigidity. The cranium and its contents gorged with blood; posterior convolutions slightly flattened; cerebral substance rather hard. Slight turbid

The patient in question experienced epileptiform attacks for more than eight weeks, though in number they were somewhat limited, and not accompanied by any marked augmentation of temperature when suddenly—without known cause, without the intervention of new accidents—the scene changed two days before death; the patient fell into collapse, and in a short space of time the temperature rose to 43° (=109·4° F.).

This example, gentlemen, will suffice to show you that, in presence of a case of hystero-epileptic acme, whatever be its intensity, or however great the chances of a favorable issue, it would be imprudent to abandon ourselves to a feeling of complete and absolute security.

thickening of the *pia mater* at the base of brain. Capacity of cerebral cavities nearly normal, parietes usual consistence. *Pons* and *medulla* injected with blood, dirty grayish red. *Lungs* congested and œdematous. *Heart* normal. *Liver* fatty here and there, exsanguine; bile, clear and dark brown. *Spleen*, small, soft, pale brown, exsanguine. *Stomach* dilated, otherwise normal, as were the intestines. *Kidneys* greatly gorged with blood: concretion size of half a pea in calyx of left kidney. *Uterus* normal. *Ovaries* containing numerous cysts, as large as peas (Wunderlich, 'Archiv der Heilkunde,'t. v, p. 210).

APPENDIX.

CASE OF PARALYSIS AGITANS.

Antecedents.—Probable cause of disease. Commencement; the members successively invaded by debility. Tremor of the head, then of the limbs.

State of the patient in 1874; *general attitude. Tremor. Gait: propulsion and retropulsion. Temperature, pulse, etc.*

Modifications supervening in the disease, from July, 1874, *until July,* 1875.

Gav— Annie Marie, æt. 62, was admitted to La Salpêtrié, December 31st, 1872; came under M. Charcot's charge (Salle St. Alexandre, No. 3), on the 12th November, 1873.

Antecedents.—Her father, a carpenter, died of an accident when she was only twelve years of age. Her mother, who succumbed at the age of seventy-four, was of a nervous disposition, easily moved to passion, but had been affected neither by tremor nor by paralysis. Her only sister died of pleurisy at forty. None of her relations, so far as she was aware, suffered from nervous affections nor, particularly, from tremor.

Gav— arrived in Paris at the age of four. Her childhood and youth passed without the occurrence of any incident worth noticing. From the age of fourteen she menstruated regularly. Having married at the age of twenty-eight, she has had five children. Pregnancy and confinement generally favorable. Of the five children, the eldest (a boy), died during the Commune, aged 35; the second and third (boys also) enjoy good health; the fourth, a female, aged 28, is subject to nervous attacks at long intervals; the fifth died at birth.

The patient assures us that she has never had any serious illness; never, for instance, was affected by rheumatism or chorea. Although she had been a costermonger for thirteen years, she never gave way to excess in drink. She has always lived in healthy lodgings, well exposed to the sunshine; she was happy in her home, and never suffered from any privations.

Invasion of the disease.—Her affection first showed itself in 1868, under the following circumstances. Her third son, of whom she