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PART 1.—ORIGINAL ARTICLES.

Alcoholic Epilepsy. By M. G. ECHEVERRIA, M.D., late Physician in Chief to the Hospital for Epileptics and Paralytics and to the City Asylum for the Insane, New York, &c.

Alcoholic excess is associated with epilepsy in two different ways, as cause or as an effect of it. In the first instance, intemperance may appear as a hurtful habit of the individual favouring the development of the spasmodic neurosis, or again, as a constitutional tendency entailed by parent on offspring with similar dreadful consequences. In the second instance, the moral perversion ordinarily wrought by their disease on the character and conduct of several epileptics, drives them to vicious indulgence in drinking, which aggravates and changes the original character of their fits. The majority of writers have not distinguished in estimating the relationship of intemperance to epilepsy, or insanity, the number of cases immediately ascribable to vice from those in which the uncontrollable passion, or craving for drink, is, as it also happens with masturbation, merely the sign of the outbreak of an inherited predisposition to insanity, or epilepsy, or of the early stages in the evolution of either of these maladies as consequence of accidental causes. Nor has the influence which traumatic injuries to the head, syphilis, or other derangements possibly coincident with the abuse of alcoholics, by themselves exert, been taken into proper account in calculating the part of the latter in the spread, on a wide and increasing scale, of mental and nervous affections. Although this discrimination is by no means always practicable, we may yet arrive at it by diligent inquiry and with a material change in the results, as evinced by the cases we pass on to analyse.

Let us briefly remark, that whisky, brandy, rum, gin, and beer were the liquors principally drunk by the individuals here referred to, and who used whisky more generally than any other spirits, or wines. In no instance have we met in America with absinthic epilepsy.

We will confine our study to 572 individuals—307 males and 265 females—affected with alcoholic epilepsy. Of the entire number, 212 belonged to the middle and upper classes, and 306 to the lower; among these latter 108 had never been taught how to read and write, and 37—15 males and 22 females—were outcasts not knowing their father or mother. We have generically grouped together all these cases under the head of alcoholic epilepsy, because they did not symptomatically differ from one another, although etiologically we have separately classed those in which drinking lies at the root as the inciting cause of epilepsy, from those in which it operated conjointly with other equally powerful and pernicious agencies, or where, on the contrary, it displayed itself as an effect of the epileptic malady exerting a specific influence upon its manifestations—which in this way run a course like that in the preceding cases.

These three divisions are respectively composed :—

First—of 257 cases, 140 males and 117 females, with alcoholism and epilepsy in plain sequential relationship.

Second—of 126 cases in which epilepsy resulted from alcoholic excess associated with the following agencies :—

Syphilis in 67 cases, 39 males and 28 females.

Traumatic head injuries in 42 cases, 31 males and 11 females.

Ague fever in two males.

Insolation in nine cases, seven males and two females.

Excessive chewing tobacco in one male.

Mental anxiety in five males.

Third—of 189 cases, 92 males and 97 females, in whom drinking was a consequence of the epileptic neurosis, contributing to its aggravation, and to induce the same symptoms as in the two other divisions.

We have been able to obtain the particulars of the habits and nervous affections of the parents of 139 patients, 75 males and 64 females, in the first division, and of 86 patients, 47 males and 39 females, from the third division. Both series offer an interesting family history; that of 139 cases comprised 92 in which intemperance, either alone or associated with epilepsy, existed among the parents. In the

remaining 42 cases the tendency to alcoholic excess, with resultant epilepsy, was inherited from insane or epileptic parents, themselves free from alcoholic complications, but who sprung, some of them—seven fathers and nine mothers—from hard-drinking fathers, to which failing the nervous maladies of their descendants were attributed; it being no less worthy of account that in five of these families other individuals were congenital idiots. Leaving for the moment the remainder of these cases out of consideration, we only wish to point out now the presumed intemperance in the grandparents as a cause of ordinary epilepsy, or insanity, in the next generation, succeeded by the occurrence of one or the other, with reappearance of the intemperate instincts in the grandchildren. These, and similar instances of hysteria, paralysis, or neuralgia, that we could still cite, indicate that in the hereditary history of drink, parental intemperance is not invariably transmitted as such to offspring, but that connected with insanity, epilepsy, neuralgia, paralysis, or hysteria may alternate with them in successive generations. We say connected with these nervous disorders, because, when not occasioning idiocy, we have never seen the hereditary tendency of drunkenness to manifest itself in any other form; and by insanity we mean imbecility, weakness of mind, or eccentricity, indicative of an abnormal and defective cerebral organisation. The extensive and dangerous class of instinctive lunatics of this special sort afford most of the examples of moral insanity, and of the so-called epileptoid psychical states, in their sudden paroxysms of irritability and violence with uncontrollable impulses.

The following table shows the direct heredity in the 225 epileptics from the two above-noticed series :—

FIRST SERIES.

1st Class.	Males.	Females.	Total.
Father intemperate	13	7	20
Mother intemperate	6	9	15
Father and mother intemperate . .	8	5	13
Father intemperate, mother epileptic .	4	5	9
Father intemperate and epileptic . .	6	4	10
Mother intemperate and epileptic . .	9	12	21
Father intemperate and insane . .	3	1	4
Mother intemperate and insane . .	2	3	5
Total	51	46	97

2nd Class.			
Father insane	8	4	12
Mother insane	6	5	11
Grandparents insane	3	4	7
Father epileptic	2	1	3
Mother epileptic	5	2	7
Grandparents epileptic	0	2	2
Total	24	18	42

SECOND SERIES.

Father intemperate	6	7	13
Mother intemperate	9	6	15
Father and mother intemperate . .	14	9	23
Father intemperate, mother epileptic .	8	4	12
Father intemperate and epileptic . .	3	2	5
Mother intemperate and epileptic . .	5	11	16
Father intemperate and insane . .	1	0	1
Mother intemperate and insane . .	1	0	1
Total	47	39	86

The preceding inquiry has not been in every case carried beyond the fathers and mothers because the grandparents' history has been ignored, or uncertainly given, by the larger number of patients belonging to the lower classes. We refer, however, under the 2nd Class of the first series to epileptic and insane grandparents of patients, all proceeding from the middle and upper classes. It is, therefore, legitimate to assume, that had it been possible to take more extensively into account the grandparents' history, percentages would have been higher with our cases than as they stand in the above table.

From it, and considering the total, 572 epileptics, it appears that—

(1.) In 122, or 39·73 per cent., of the males, and in 103, or 38·18 per cent., of the females, making a net total of 39·33 per cent., there was a hereditary taint received directly from the parents.

(2.) Parental intemperance originated the predisposition to epilepsy in 56, or 18·24 per cent., of the males, and in 43, or 16·22, of the females; amounting to a net total of 17·30 per cent. of the whole aggregate of cases.

(3.) Parental intemperance, associated with epilepsy or insanity, existed in 49, or 15·96 per cent., of the males, and

in 51, or 19·24 per cent., of the females; making a net total of 17·48 per cent. of the entire number of patients. As to parental epilepsy, it stands in 39, or 12·70 per cent., of the males, and in 42, or 15·84 per cent., of the females; amounting to a net total of 15·73 per cent.

(4.) Classing together the two preceding kinds of cases of intemperance in the parents, we obtain respectively a proportion of 20·10 per cent. in the males and 35·47 per cent. in the females, or a net total of 36·53 per cent. of the whole cases.

(5.) Parental insanity or epilepsy, without any family history of intemperance, was met with in 17, or 5·53 per cent., of the males, and in 9, or 3·39 per cent. of the females, or in a net total of 4·54 per cent. of the whole epileptics.

The differences in the percentages between males and females is worthy of notice; parental intemperance not ingrafted into epilepsy or insanity, and the existence of these in the parents without any family antecedent of drink, being both two per cent. lower in the females than in the males. But on referring to the aggregate number of cases of intemperance in the parents, irrespectively put together, the results quite change, showing an increase of 16·43 per cent. on the females over the males. A preponderance of 3·28 per cent. results again on the female side when intemperance associated with epilepsy or with insanity appears as hereditary cause, and this difference in favour of the females does not alter, keeping almost the same—3·24 per cent.—in relation to patients sprung from parents tainted with epilepsy, the number amounting, then, as just set down, to 15·73 per cent. of the general total. This preponderance of hereditary epilepsy among females rises to a considerably greater degree as a predisposing cause of epilepsy and crime, the rates being under such circumstances 66·7 among females, against 38·1 among males, as shown by the valuable researches of Henry Clarke on Heredity and Crime in Epileptic Criminals.* He has equally observed among 119 epileptic prisoners—89 males and 30 females—at Wakefield Gaol, family history of drink in 50·5 per cent. of those with idiopathic epilepsy, and in 30·7 per cent. of those with traumatic epilepsy, their net total being 46·2 per cent. Direct hereditary history of fits, insanity, drink, or crime existed in 73·1 per cent. of the former and 34·6 per cent. of the latter; net total, 64·7 per cent.

* "Brain," Part VIII., January, 1880, pp. 514 and 524.

There are, says Clarke, more drunkards among the epileptics than among the non-epileptics, the proportion of temperate to intemperate prisoners among the latter being as two to one, and among the former as three to one. Among the epileptics the percentage of drunken fathers is greater, both for temperate and intemperate prisoners, than it is for the intemperate non-epileptic. With regard to the epileptic females, the case is a little different; the number of drunkards among them is even still greater than among the men. It is the exception to meet with an epileptic female criminal who is not at the same time intemperate. Among these intemperate epileptic women the percentage of sober fathers is greater than the percentage of drunken fathers. It is probable that a more perfect acquaintance with their family history would show a larger proportion of drunkards among the mothers; but making allowance for this, there is little doubt that the amount of hereditary alcoholism is considerably less with the women than it is with the men. On the other hand, we find that the amount of nervous and mental disease in the family is greater at least 20 per cent. Whereas, then, epilepsy in men is associated especially with alcoholism in the parents, in women it is found more frequently in connection with epilepsy and insanity in other members of the family.

Our own experience goes in support of the intemperate habits of female epileptic criminals, not one of the several who have come under our care having been of temperate habits; but among these low women, we have met, in addition, with a considerable number of drunken fathers, as shown by the preceding table. Counting the intemperate fathers in the female column, we get 20 per cent., as against 21·82 per cent. on the male side. In regard to intemperate mothers, the proportion is greater among the females than among the males, it being 20·75 with the former and 17·26 with the latter, making a net total of 18·88 per cent. These results do not bear out Clarke's assertion that the amount of hereditary alcoholism is considerably less with the women than it is with the men, nor that epilepsy in men is associated especially with alcoholism in the parents, whereas in women it is found more frequently with mental and nervous disease in the family. Clarke's own Table X. shows, under the head of idiopathic epilepsy, 57·1 per cent. of the males and 36·6 per cent. of the females with family history of drink, and 74·6 per cent. of the former against 70·0 of the latter with direct hereditary history of fits, insanity, drink, or crime. Considering the small number of women (30) in Clarke's statistics, these second percentages do not set forth much difference between

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the sexes, while they seem to carry a refutation of the above conclusions in regard to hereditary alcoholism and epilepsy in females. We may further add, contrary to what one might expect to find, that there is scarcely any difference between the amount already noticed of 18·88 per cent. of intemperate parents among the alcoholic epileptics here analysed and the proportion of 17·71 per cent. (134) with a history of parental alcoholism which, on the other hand, we have met with among 700 ordinary epileptics without drinking instincts. And here, again, the relative proportions, instead of lowering, increase by over 2 per cent. with the females, it being 19·0 per cent. (61 out of 321), as against 16·62 per cent. (73 out of 379) with the males. This observation agrees with Clarke's conclusion, that the percentage of drunken fathers is practically the same for temperate and intemperate epileptic criminals.

Our statistics exhibit a much higher percentage than those of Voisin,* who found 12·63 per cent. with ancestors who died from alcoholic excess out of 95 ordinary epileptics. Scarcely, however, could such small numbers suffice to make a reliable computation. Lanceraux † asserts that 83 families, in which one or more members suffered from diseases of alcoholic origin, had 410 children, and of this number 108 (more than one-fourth) have had convulsions, and, in 1874, 169 were dead, but 83 (more than one-third) of the survivors were epileptic.

Referring to histories of the descent of 115 individuals, 68 males and 47 females, who have exhibited symptoms of alcoholism cropped up in various forms, we notice that the aggregate of children in their respective families amounts to 476—namely, 282 males and 194 females. Of this total

23 were stillborn,
107 died from convulsions in infancy,
37 died from other maladies,
3 committed suicide,
96 are epileptic,
13 are congenital idiots,
19 are maniacal or hypochondriacal,
7 with general paralysis,
5 with locomotor ataxy,
26 with hysteria,
23 with paralysis,
9 with chorea,
7 with strabismus,
19 are scrofulous and crippled,
3 are deaf,

And 79 adults, between 20 and 47, are healthy. Of the 227

* "London Med. Record," 1878, p. 9.
† "Gazette des Hôpitaux," 29 April, 1879, p. 377.

who are not sound, 137 have also had convulsions in infancy, and 53 exhibit their respective maladies, accompanied with symptoms of phthisis. Lastly, drinking instincts have manifested themselves in 205 of the above descendants, 28 of whom correspond to the healthy catagory.

In some of the instances the hereditary connection can be traced through three generations. Thus, one of the females, intemperate and epileptic, gave birth only to two children, carried away by fits in infancy, and she herself was offspring of an intemperate mother, who died demented. Another female, epileptic and phthisical, was daughter of a dipsomaniac, and married a hard-drinking man. They begot three children: two died from convulsions in early infancy, and the third, a daughter, was an epileptic idiot. The genealogy of two other congenital idiots discloses hereditary drunkenness running from their grandfathers to their fathers, and one of these died of general paralysis. Dipsomania has existed through four consecutive generations in the cases of two males and one female, all three of very intemperate habits. One of the males and the female are paretic, both with epileptic attacks. The other male is hypochondriacal, and has one surviving healthy son out of a family of four children, the remainder having died in early infancy of brain affections and fits. All the three children of the other male, and the two children of the female, died also of tuberculous meningitis and convulsions in infancy. In another case the grandfather was dipsomaniac, his two daughters intemperate; and one of them, hysterical and eccentric, has had a family of five children: two died in early infancy from cerebral affections. Of the surviving, one girl is an imbecile; another, with a choreic affection and *petit-mal*, is weak-minded; and one young boy is healthy, but subject to sudden paroxysms of blind fury, in which he breaks up everything, and which probably are forerunners of genuine epilepsy at some future time. Finally, insanity, dipsomania, and epilepsy follow each other through three successive generations in the paternal ancestors of one young male epileptic, who murdered his father during one of his fits.

In respect to congenital idiocy, deducting from the total 476 descendants those stillborn or who died in infancy, there are 13 congenital idiots, or 4·20 per cent. out of 309 surviving offspring. In one case both parents were intemperate, in three others only the mothers, and in the remaining the fathers. On the other hand, as we shall presently

point out, 27, or just 12 per cent. of the 225 epileptic-from the first and third divisions, with hereditary anteces dents of epilepsy, insanity, or intemperance, either alone or associated with one another, had brothers or sisters idiotic. Moreover, seven of the 13 patients belonging to the former category had also grandparents intemperate, habitual intemperance having existed in the families of two of them for three previous generations consecutively on the paternal side. In three of the 27 cases from the latter category, congenital idiocy and alcoholic epilepsy were related to intemperance, not of parents, but of grandparents. Dr. Langdon Down believes that intemperance in the parents produces only two per cent. of idiocy in offspring, which is by one-half lower than the results of our estimates. Dr. Fletcher Beach,* of Darenth Asylum, has found the history of parental intemperance on an average of 31·6 per cent. out of 430 patients, while Dr. L. N. Kerlin, of the Institution for Feeble-minded Children, Media, Pennsylvania, taking into account the history of parents or grandparents, has discovered that 38 out of 100 idiotic children had intemperate progenitors. We may further state, that we have met with parental alcoholism in 34·59 per cent., or in 73 out of 211 cases of simple and epileptic congenital idiocy, and in seven of them, or in 9·58 per cent. of the cases, the parents and grandparents were intemperate. In 17 instances the father and mother were habitually given up to drink; in 44 instances only the fathers; and in five others only the mothers, whose idiotic children, except in one case, were all females. Lastly, we have reason to believe that three of these idiots were conceived whilst their respective fathers displayed manifest signs of alcoholism.

Certainly, the great amount of epilepsy in the progeny of intemperate individuals—which from the foregoing estimate and exclusive of convulsions in infancy, reaches 20·25 per cent.—affords a definite point for comparison in our computation of the hereditary causes of epilepsy, when the inquiry has to be carried out in an inverse manner, *i.e.*, from offspring to parent. One process may serve to rectify the other, for both lead to results not dissimilar and differing only in a slight degree, as we have shown with the heredity of epilepsy and insanity, and is still evinced by the above percentage, which is not much beyond the ratio of 17·23 intemperate parents among ordinary epileptics. Therefore, con-

* "British Med. Journal," Sept. 4, 1880, p. 377. Proceedings of the Annual Meeting of the British Medical Association, Cambridge.

sidering the impossibility of acquainting ourselves with the family history of every individual, and the large scale of our reckonings, it is fair to regard 18 per cent. as very near the real proportion, in round figures, of cases of epilepsy arising from intemperance in the parents, not accompanied with mental or nervous disease.

Of the 225 epileptics tainted with a hereditary predisposition, 17 males and 12 females were the only surviving offspring in their respective families; 18, 7 males and 11 females, had all their living brothers and sisters sound, and the remaining 178 had either brothers or sisters who were

	Males.	Females.	Total.
Idiotic	7	5	12
Epileptic	18	14	32
Some epileptic, others idiotic	9	6	15
Some epileptic, others insane	8	12	20
Some epileptic, others paralytic	7	5	12
Insane	13	10	23
Weak-minded	6	4	10
Some insane, others paralytic	5	4	9
Paralytics	8	6	14
Blind	3	5	8
Scrofulous and crippled	14	9	23
Total	98	80	178

Furthermore, other brothers and sisters were also intemperate in the families of 68 males and 59 females, and phthisis existed in the families of 32 males and 41 females. Finally, 3 males and 1 female had brothers who committed suicide, and 1 male and 2 females had criminal brothers guilty of murder.

Of the 139 epileptics from the first division, 48 males and 53 females had suffered from convulsions in childhood, but remained free from fits until the supervention of the alcoholic excess. The explosion of epilepsy in these 139 cases occurred at the following ages:—

	Males.	Females.	Total.
From 18 to 25	36	23	59
„ 25 to 35	17	10	27
„ 35 to 40	11	9	20
„ 40 to 45	5	7	12
Over 45	6	15	21
Total	75	64	139

Reasoning from these records it is apparent that the larger proportionate number of cases occurred at the period from 18 to 25, during the prime of life, the age when the sexual passion, which then comes into activity, helps to bring forth the distressing consequences of hereditary predisposition. Thus, 48 per cent. of the males and 35·93 per cent. of the females displayed at such age the baneful effects of their inherited epileptic diathesis. On the other hand, and in further corroboration both of this latter, which seldom fails to reveal itself in infancy, and of the pernicious influence of parental alcoholism on offspring, we repeat, as just pointed out, the outbreak of convulsions at childhood in 48, or 64 per cent. of the males, and in 53, or 82·21 per cent. of the females. This higher proportion on the female side is not accidental, for, as we have shown,* it equally exists with epilepsy and insanity irrespective of alcoholism, while the amount of children with convulsions or who die in early infancy, is proportionately much greater, and the sound surviving progeny in much lesser number, when the mother has been the parent tainted with either of these affections. Lastly, in this series of 139 cases there were: 59 paralysed since infancy, namely, 10 males and 5 females with left hemiplegia, and 3 males and 2 females with right hemiplegia, these three latter being also imbeciles; 5 males and 4 females had infantile paralysis of one arm; 1 male and 3 females, wasting and infantile paralysis of one leg; 2 males facial paralysis; 7 males and 4 females strabismus: 2 males ptosis; and 3 males and 5 females deafness with otorrhœa.

In the 86 patients corresponding to the third division, epilepsy was developed in childhood, or before the age of 15, excepting in the instances to be presently noted. It is remarkable that every one of these patients suffered from convulsions in infancy, while, in addition, 9 males and 5 females had left hemiplegia; 1 male and 2 females right hemiplegia and idiocy; 3 males and 1 female, wasting palsy of one arm; 1 male and 4 females paralysis of one leg; 3 males and 1 female deformity of the spine from Pott's disease; 3 males and 1 female facial paralysis; 2 males and 3 females strabismus; and 1 male and 4 females deafness and otorrhœa. In all these foregoing instances the affection dated also from infancy. Among those who

* "American Journal of Insanity," Oct., 1880, vol. xxxvii, No. 11.

assigned an inciting accidental cause to their fits, there appears to have been—

	Males.	Females.	Total.
Fright	3	5	8
Dentition	2	6	8
Indigestion	2	1	3
Dysentery	1	0	1
Scarlet fever	2	1	3
Brain fever	3	4	7
Insolation	2	0	2
Onanism	5	0	5
Head injuries	3	1	4
Difficult establishment of menstruation	0	7	7
Post-partum hemorrhage	0	1	1

The last female, native of New York, presented almost every cause of degeneracy combined in her case. Her father and mother were first cousins; a great uncle, an uncle, and a cousin on the paternal side, and a great aunt, an aunt, and several cousins on the maternal side were epileptics. Her father, an inveterate drunkard, was very passionate, and, under liquor, murdered two of his own children, which were quite infants and twins. One of his brothers was also very intemperate. The patient, as already noted, became epileptic upon severe post-partum hemorrhage, at the age of 30, and her nocturnal attacks always preceded the most violent paroxysms of furious mania, lasting two or three days. She took to drinking promiscuously after becoming epileptic; her brother and sister were irredeemable drunkards, and another brother and sister had died phthisical. Her head, of very small dimensions, and extremely misshapen, presented a very conspicuous bulging of the left temporo-parietal region.

We have previously remarked that 37 of our patients—15 males and 22 females—were illegitimate children, without knowledge whatever of their parents. All had been, on several occasions, imprisoned at the workhouse in Blackwell's Island, for misdemeanours, disorderly conduct, and as drunken vagabonds. Most of the females were common prostitutes, and, one male, aged 19, an insane epileptic, committed murder, and had been transferred from the Penitentiary to the Asylum. The proportion of illegitimate children to the total of alcoholic epileptic was, therefore, 6·46 per cent., it being respectively 4·88 per cent. among males, and almost double, 8·30 per cent., among females. This result is not very far from the occurrence of illegitimacy in epilepsy generally,

for we have met with 38 out of 700 ordinary epileptics, or 5·42 per cent. who were illegitimate children. It is true, however, that, under such circumstances, the difference between the sexes diminishes considerably, for we find 17 out of 379 males, or 4·48 per cent., as against 21 out of 321 females, or 5·42 per cent.

I am indebted to my learned friend Dr. A. Motet, Physician to the Maison d' Education Correctionnelle (Petite Roquette) at Paris, for the following interesting information concerning epilepsy, parental alcoholism, and illegitimacy among the criminal children. There have passed though the Petite Roquette, during the five years from 1874 to '78, 1,763 boys, of whom 164, or 9·30 per cent., were illegitimate children. During ten years of careful inquiry into the subject, Dr. Motet has only met with seven epileptics and four insane among the boys sent to the Petite Roquette. It has been impossible to obtain any family history concerning these juvenile offenders; most of them sprung from the lowest classes. Several of these boys, arrested as vagabonds and for having run away from their homes, have declared that they had been compelled to do it, because their drunken fathers had beaten and ill-treated them. Another great number again of depraved and cruel boys, owing their corruption to instinctive rather than to intellectual perversion, have likewise stated that their fathers, and, in some cases, their mothers also, were habitual drunkards. But there have been no means to verify such assertions, parents not caring, in the majority of instances, about visiting their criminal children. All the epileptic boys were affected since infancy. None were detained longer than two months at the Petite Roquette previous to his transfer to some of the agricultural colonies. Only one of them died in a series of cumulative fits, during his arrest while awaiting trial; having all the time protested that he was innocent of the theft for which he had been indicted, and earnestly begging to see his feelingless mother, who, deaf to the information about the grave condition and desire of her son, did not come near him.

There are still other considerations to be made in reference to the two kinds of patients tainted with hereditary predisposition, which we have been examining. In the 97 epileptics, offspring of parents who had been themselves victims of intemperance alone, or accompanied with epilepsy or insanity, the evolution of epilepsy took place, apparently, as the result of excessive drinking attended with acute or chronic alco-

holism. Yet, looking at the pathogeny of these cases in its proper light, we discover at once that, notwithstanding the manifest existing influence that the tendency to drinking has had in inducing epilepsy, both conditions are actually allied manifestations originated from one single inherited neurotic predisposition, and successively reacting on each other. The craving for drink appeared in these instances as forerunner of the convulsive seizures; but, beyond this fact, there was in reality no clinical or cadaveric distinction between such cases and those of the second kind, in which, the order of phenomena being reversed, the fits initiated a state attended with the same craving for drink and other symptoms observed in the former instance. In both, consequently, there is a tare of insanity that is quite obvious, whilst a close inquiry into the etiological antecedents of this extensive class of patients, has convinced us, that neurotic heredity contributes to a larger extent than vice itself and misery to the widespread of drinking. It is needless to add, that by heredity we do not exclusively understand the direct transmission of the intemperate habits from ancestors to descendants, but also the tendency to drinking as one of the metamorphoses that often accompanies the inheritance of mental and nervous diseases, without necessary existence of alcoholism in the parental stock. Confining ourselves to the patients under consideration, and having previously alluded to 16 with intemperate grandparents among the 42 corresponding to the second class in those from the first division, we will now refer to the remainder, composed of 17 males and nine females, who descended from parents affected with epilepsy or insanity, but of strict sober habits, and with no evidence of intemperance in any of their ancestors or blood relations. These epileptics belonged to the middle and upper classes, and their family history is as follows:—

	Males.	Females.	Total.
Father insane	5	1	6
Mother insane	2	5	7
Grandparents insane . . .	3	1	4
Father epileptic	4	0	4
Mother epileptic	1	2	3
Grandparents epileptic . . .	2	0	2
Total . . .	17	9	26

The tendency to drinking was in all these patients suddenly displayed, without any other evidence of insanity, prior to the

explosion of epilepsy at the age of puberty, excepting in two females, not married, in whom the passion for drink, soon followed by fits, burst forth at the climacteric period. Another female, epileptic and dipsomaniac since the age of 19, belongs to a family of seven children—five males and two females. Her mother, subject to nocturnal fits since the age of 13, died after a series of seizures, having long been bedridden, with contractions of the limbs and paralytic dementia. Four brothers and one sister of this patient are married: the brothers have all begotten sound though still young children, but the sister has two daughters—one of them epileptic; and there is no antecedent of insanity or epilepsy in her husband's family. We have no doubt that in these foregoing instances, the tendency to drink that immediately preceded the epileptic paroxysms, was the result of the neurotic inheritance. We might still cite similar examples of this singular change in which, instead of epilepsy, insanity, hysteria, neuralgia, or paralysis, was the inherited affection. On adducing such proofs of this important phenomenon we do not forget that Anstie* regarded it as one of the most momentous and weighty factors in the majority of hopeless cases of alcoholic excess among the higher classes. Savage,† in his interesting researches on the Relation of Mental Disease to Inheritance, has also particularly pointed out drinking as the result of nervous disease in one or other parent. But such hereditary influence has been overlooked in the etiology of alcoholism among the lower classes, its agency operating then to a greater extent than we might suppose. Clarke has been led to the same belief from his experience with prisoners, and cannot help thinking that at the extreme lower end the amount of hereditary nervous disease is much greater than is usually supposed.

It would be difficult to explain the constitutional circumstances for the development of this morbid appetite, which, judging from our own experience, is displayed to a greater extent among females than among males, but not always, as generally supposed, allied to a state of weakness and depression. This powerful instinct breaks suddenly out like that of masturbation, and we have seen it fully developed at the age of thirteen, in a girl with epileptic insanity, who secretly

* "Alcoholism," in Reynolds' "System of Medicine." London, 1877. Vol. ii., p. 58.

† "Guy's Hosp. Reports, 1877," vol. xxii., 3rd s., p. 68.

gave herself up to drink Cologne water, and other liquid perfumes, to quench the irresistible desire for alcoholics.

The second division of cases comprises, as already set down, 126 epileptics in whom the malady, acknowledging a mixed etiology, was the out-growth from alcoholic excess together with other agencies. We need not dilate on the increased energy acquired by such an assemblage of causes in the development of epilepsy, and although collectively they bring about the same result, yet, looked at singly, the combination of syphilis, or traumatic head injuries, with drinking, modifies the evolution of epilepsy in a manner worthy of particular remark. Syphilis appears in 39 males and 28 females, or 67, *i.e.*, 11·71 per cent. of the total cases, it having been further associated with head injuries, thus giving triple origin to the fits, in 4 males and 1 female. In 23 of this class of patients, 14 males and 9 females, the intemperate habits, though excessive, had not induced any physical or mental derangement prior to the syphilitic infection, and in 7 females the epileptic fits burst forth during the secondary stage of the constitutional accidents. Five males and three females had been at times inebriated after drinking more heavily than usual, but none of these 23 patients had ever manifested any symptoms of delirium tremens.

The fits, in 3 females, showed from the beginning a nocturnal character, and, with most of the other cases, though at first diurnal, they subsequently occurred both by day and night. They were in 30 males and 19 females, followed by paralysis, confined to the right limbs with aphasia in 6 males and 3 females; and in 2 males and 1 female only involving the arms, the remainder being instances of left hemiplegia. One female had transient aphasia, without paralysis, after her fits. Paralysis of the third or sixth nerve existed in 9 males and 4 females, complicated, except in 2 males, with optic neuritis.

In many of this kind of patients the paroxysms had a tendency to recur in a cumulative manner, with deep stupor and symptoms of cerebral congestion; or again, in a series of abortive fits, preceded by a severe one, and usually bursting out or increasing during the night, attended with boisterous and restless mania. Not uncommonly the attack, then single, initiated a depressed sullen condition, with uncontrollable impulse to automatic dangerous acts, prompted by hallucinations of sight or hearing of a terrifying character.

The distressing nature of these sensorial phenomena appears more conspicuously in these mixed cases than in those of simple syphilitic epilepsy, as also the stupor that usually alternates with fleeting flashes of unclouded intelligence, and coherence, soon replaced by the primitive confusion of delusional ideas overwhelmed with terror. This condition may lead to paralytic dementia, which was displayed by eight males and one female, besides affected with retraction of the limbs. The most distinctive sign in this form of epilepsy is the common existence of paralysis associated with the just noticed stupor and sensorial disorders. There is no doubt that paralysis ordinarily betrays a complicated etiology of alcoholic epilepsy, which may, in simple cases, be followed by paresis in greater or less degree, but without complete inability to move the limbs. Moreover, the concurrence of such mental and paralytic symptoms at no time happens in ordinary Jacksonian epilepsy, nor in hystero-epilepsy. Not only are vertigo and *petit-mal* never allied to hystero-epileptic attacks, but these are also free from the pernicious influence of the epileptic neurosis on the intellectual faculties, which fact draws a broad distinction between them, the Jacksonian attacks, and genuine epilepsy.

There are, indeed, instances of epileptic hemiplegia, with rapid dementia supervening simultaneously with a return of muscular power in the upper limb as the lower continues paralysed, with persisting pain in the head. Such cases, however, are always free from the delusional trouble and sudden impulsive paroxysms characteristic of epileptic insanity, and they are besides of short continuance. Their speedy fatal issue, pointed out by Trousseau, has been also remarked by Dr. Jackson, and we have equally observed it, with the opportunity of making four autopsies, in which we met with the following cerebral conditions: softening from plugging of the Sylvian artery, a tumour (sarcoma) of the dura-mater originating softening, tubercular deposits, and the cicatrix of an old fracture of the parietal, with an extensive ischæmic yellow patch underneath. These different lesions were situated respectively on the right fronto-parietal convolutions in the first case, and, in the three others, over the same region of the left cerebral hemisphere.

We have noticed paralysis less frequently when, instead of syphilis, traumatic head injuries have been the agency joined to alcoholism for the production of epilepsy. In all

but two of the eleven cases in which paralytic symptoms exhibited such relation, their onset coincided with the supervention of the cranial injury, located in five males and two females over the left parietal region, in one male over the right parietal, and in one male and two females over the occipital. Four males and two females had right hemiplegia and aphasia, and the remainder left hemiplegia. Transient aphasia, without paralysis, lasting from a few hours to two or three days, or even much longer, followed the fits in three males and one female. Finally, a ship master, aged 37, received a blow on the head, and two months after was seized with epileptic vertigo and *grand mal.* He used to drink excessively, and the first seizure was induced by his having become intoxicated. A very short time after the irruption of the attacks, and as he was greatly distressed by vertiginous fits and paroxysms, in which there was mere loss of consciousness without convulsions, and with considerable psychic excitement, he began to lose the hair on his head, and subsequently on the face and other parts of his body, the alopecia being general four months after the outbreak of epilepsy. We have only found with two instances, reported by Gowers,* in which universal alopecia was associated with epilepsy. Both were males; in one the fits began a month after an injury to the head, and in both the fits occurred long after the alopecia was complete. We may further add that no syphilitic antecedents existed in our case. The maniacal attacks increased in severity, attended with œsophagical spasms, and the patient died from meningitic congestion, alopecia having, like his attacks, resisted treatment.

The most remarkable feature in the above traumatic patients was that their paroxysms, chiefly vertiginous or nocturnal, were attended with impulsive explosions of the most dangerous character. The combined influence of intemperance, traumatic injury to the head, and hereditariness are strikingly illustrated in two of the following instructive examples, the constitutional predisposition being doubtful in the third, which offers, however, no less medico-legal interest than the others.

A very intemperate carriage driver, whose maternal grandfather was insane, and whose mother was phthisical, became affected with epileptic vertigo and violent mania from severe contusion to the head. There was no paralysis, nor any cicatrix at the site of injury over the

* "Medical Times and Gazette," Sept., 1878, p. 379.

postero-superior angle of the left parietal bone, but the scalp and bone underneath were very sensitive to pressure. We trephined the skull and removed a portion of the parietal, which was thick and hardened by inflammation. Thereupon the maniacal excitement gradually disappeared, and, entirely recovered from his insanity and fits: this patient left the hospital about four months after his admission. Having, however, resumed his former occupation and drinking habits, he died five months later, with peri-encephalitis. This epileptic came near killing one of his attendants, who was kindly dressing his wounds a few days after the operation. The attack broke out suddenly, while he was apparently calm, without the attendant having spoken a word to him, and just as he began to loosen the bandage around the head. After the impulsive fit of furor, the patient acknowledged that he was aware of doing wrong, but that it was beyond his power to avoid such an act, to which he yielded to relieve his nerves.

A printer, aged 25, intemperate without habitually getting drunk, enjoyed good health till July, 1864. His father was intemperate, his mother phthisical, and one of his brothers also epileptic. He received, at the date just mentioned, a blow from a cog-wheel of a printing press upon the right parietal bone, which only caused a linear wound of the scalp. The accident rendered him insensible for about ten minutes, but did not prevent his resuming his work. He subsequently suffered from slight frequent headache, which was aggravated by drink, until a fit occurred one morning, four months after the blow, and was preceded by more than usual potations the night before. He had a second seizure, during the night, three months later, and afterwards continued subject to nocturnal fits, which gradually increased in frequency, until they recurred every two weeks, at the time of his admission into the hospital, October 1869. This patient exhibited the most irritable temper. For two nights before the 30th March, 1870, he was discovered by the watchman going slyly to tumble a helpless paralytic out of bed, "for the sake of fun." Probably he had then had a fit, as further betrayed on the morning of the above day, when he burst into a furious paroxysm upon being quietly addressed by a harmless companion, whom he fiercely assaulted and severely wounded. He regained self control upon this violent impulsive explosion, and continued his work of setting the table for the other patients' breakfast. He accounted for the savage assault on his companion by saying: "That he could not help being provoked by his remark."

A sailor of intemperate habits, aged 31, and whose father was paralysed, became epileptic after an injury to the skull by falling from the top of a mast. He was also troubled with polyuria. The fits displayed usually a nocturnal character, returning many times in succession and followed the next day by a stupid condition, which changed after some hours into a wild talkative and incoherent state. One morning, as he rose from breakfast, and after several fits the night

before, on being spoken to by another patient he rushed at him furiously, and, seizing a knife near, would have stabbed him but for the prompt interference of the attendants. This epileptic, of a reserved, silent disposition, was subject to sudden impulsive outbursts, when he would attack any person near him. He felt very much harassed by dreadful hallucinations of hearing, which he concealed, and which caused his retirement from the other patients. He had, also, been arrested several times for drunkenness and disorderly conduct.

The third division is altogether composed of cases which not infrequently swell the number of those where the mental or nervous disorder is primarily ascribed to the morbid tendency to drink that is its consequence. We have previously referred to 86 patients from this division, tainted with hereditary predisposition, and we will now briefly allude to the remaining 103—45 males and 58 females—in whom epilepsy was presumed to have originated from the following causes :—

	Males.	Females.	Total.
Fright	2	3	5
Mental anxiety	7	5	12
Grief	0	4	4
Disappointment	0	3	3
Injury to the head	18	9	27
Severe punishment	1	0	1
Insolation	5	2	7
Venereal excess	3	0	3
Onanism	2	0	2
Establishment of menstruation	0	6	6
Menstrual derangement	0	4	4
Protracted lactation	0	2	2
Climacteric change	0	10	10
Unknown	6	8	14

Head injuries and the climacteric change stand in the first rank in the foregoing table. The neurotic derangements of all kinds with irresistible cravings for alcoholics, brought about in many women by the climacteric change, are too well known. Not so, however, with the intemperate instincts developed, as we have pointed out, among the premonitory symptoms of the convulsive seizures in cases of traumatic injuries to the head.* Thus, in 27 out of 63 cases of this nature, intemperance, entirely unnatural to the patient, was fairly clear as one of the moral changes which foreboded the spasmodic fits. The

* "Archives Générales de Médecine." Paris, Nov. and Dec., 1878.

importance of this fact could not be exaggerated, for it becomes, mainly among the lower classes, an active determining cause hitherto greatly overlooked from want of inquiry into the antecedents of individuals, who often bear manifest signs of the cranial injury originating the intemperate and other evil instincts symptomatic of their epileptic malady.

The ætiological considerations into which we have entered with so much detail, indicate that intemperance has acted alone as a cause of alcoholic epilepsy in 30·80 per cent. of the cases, in which this latter distinctly broke out as its immediate consequence, whereas heredity and the accidental agencies already described have most efficiently co-operated with the alcoholic excess in the much larger number of remaining cases. Unnecessary to remark, that this reckoning does not include the third division of patients in whom the drinking tendency was first the effect and then the cause of a transformation, if we may so say, of the disease into alcoholic epilepsy.

On making this discrimination, of obvious necessity to estimate the direct primitive influence of alcoholism in developing the kind of epilepsy here considered, we do not recede from the position we have taken in regarding all cases as clinically alike. They all present the same peculiar delusions and psychical symptoms, the same sudden instinctive explosions as incidents, the same rise of temperature, soft, rapid, dicrotous pulse, and dyspeptic derangement, along with their frequent attacks, and, in one word, they all require the same management. And, such being the fact, the point we chiefly wish to make manifest is, that in the majority of cases a deep cerebral disturbance derived either from hereditary influences, or from accidental encephalic lesions of various sorts, can be found at the root of the disease. As for the rest, whether in the habitual drunkard who becomes seized with fits, or in the epileptic who, from extrinsic conditions, sometimes the effect of his own malady, takes to drinking, the essential manifestations do not vary, whichever may be the manner in which alcoholism becomes the original factor of that form of the convulsive neurosis called alcoholic epilepsy. Lasègue* says: "Every patient who, after an epileptic attack provoked by drink, continues epileptic, has been epileptic previously, only the inquiry has been insufficiently or badly conducted." This is quite true, but not in every

* De l'epilepsie par Malformation du Crâne, p. 4, Rep. from Annales Méd. Psych. 5c. s. Tome xviii. Paris, 1877.

instance, and, for the reasons which have been here exposed, we would think it more accurate to state, that such person has been previously an epileptic, or belongs to the class of *cérébraux,* availing ourselves of this happy expression, used by Lasègue, to designate the individuals with a vicious or defective brain organization, either originally related to congenital influences, or to accidental lesions that upset in a latent manner the normal cerebral functioning.

We have described in 1862* thehistological changes undergone by the brain in chronic alcoholism, and the dry tough aspect, and resistance to putrefaction of the cerebral tissue, together with the fatty degeneration of the neuroglia and of the cortical cells and blood-vessels, which have been subsequently noticed also by Wilks, Voisin, and other writers. Identical alterations occur in alcoholic epilepsy, and, succinctly stated, they principally consist in the above fatty changes diffused through the cerebral cortex and medulla oblongata, and sometimes accompanied with amyloid corpuscles abundantly developed in the nervous centres. The same fatty metamorphosis, with great amount of pigmentary deposits in the cells, appears simultaneously in the sympathetic, these anatomical changes being not exclusively confined to the nervous system, for they likewise extend to the thoracic and abdominal viscera. Not seldom, when syphilis and alcoholism originate the spasmodic malady, there is a relative increase of size in circumscribed regions of the cerebral hemispheres, or of their whole mass, caused by a hypertrophy of connective elements with a considerable but less uniform hyperplasia than in simple syphilitic epilepsy. Moreover, we usually meet in alcoholic epilepsy with extensive neo-membranes in the dura-mater, which we have seen once lining it over the entire surface of the hemispheres. In the majority of cases the meninges are primarily involved and the brain circulation deranged, occasioning local infarctus and ischæmic patches from atheromatous degeneration with plugging of the arteries.

The cerebral sinus and veins participate in no less degree in the retrograde morbid process, becoming thereby thickened, impervious and irregularly distended. Generally, we have found the longitudinal sinus mainly affected in such a way. In one female epileptic the straight sinus, thickened and firm, was completely obliterated by a thrombus extending into the

*"American Medical Times," May 10, 1862.

inferior longitudinal sinus and venæ Galeni, while in another female the right vena Galeni, occluded by the thickening of its walls, had determined a circulatory impediment with considerable dilatation of the veins in the choroid plexus. In our "Clinical Researches on Epilepsy" we have minutely detailed this latter and other curious examples, with illustrations of the lesions displayed by the brain and meninges in alcoholic epilepsy, for which reason we shall no longer dilate here upon the subject.

The special ætiology of alcoholic epilepsy does not give rise to any characteristic signs in its convulsive paroxysms, which are distinguishable in no particular way and manifest the same generic features and mode of explosion of nearly all falling fits. But the vertiginous and maniacal seizures, on the contrary, display, as we shall endeavour to show presently, a wilder, more stupid, and more dangerous form than usual, which, though not altogether exclusive to this kind of epilepsy, may yet warrant a strong presumption of its existence. Legrand du Saulle* writes: "Alcoholic epilepsy exhibits itself either by vertigo with sudden impulsive outbursts, or by convulsive fits and furor, and never, at least as I have observed it, induces incomplete seizures. Generally its progress is rather marked by single or a small number of attacks, that cease of themselves, without treatment, merely by the effect of sobriety, though ready to re-appear at every renewed alcoholic excess." As a rule, certainly, incomplete attacks are uncommon with simple alcoholic epilepsy, but when syphilis operates in relationship with intemperance, their occurrence, as previously asserted, is not infrequent. Then, again, abortive fits not seldom appear throughout the ultimate stages of epilepsy, when the malady reaches that well-known condition of paralytic dementia, into which many patients rapidly fall after the sudden explosion of the first convulsive seizure, attended with boisterous mania, delusional phenomena of a terrifying nature, and wild impulsive violences. We need only observe that, as manifested by Lasègue in his classical description of sub-acute alcoholism, this is never quite free from frequent semi-attacks.

Nor could it in reality be said that the fits are generally single, or in small number in alcoholic epilepsy. In connection with this matter our own experience is, that the fits are more likely to occur several in succession, or rather in

* "Etude Médico Légale sur les Epileptiques," Paris, 1877, p. 126.

a cumulative manner, when they break out with delirium tremens, or in the midst of sub-acute alcoholism, and, above all, when the intemperate excess superinduces an epileptic condition in every respect similar to general paralysis. On the contrary, single spasmodic seizures, alternating with the vertiginous, and along with insanity, are commonly the outcome of inveterate drinking without habitual inebriety, or of intemperance rooted in hereditary predisposition. But the former are no more frequent than the latter conditions, which could not, therefore, be interpreted as indicating the principal kind of paroxysms in alcoholic epilepsy.

The vertiginous attacks present, as we have advanced, peculiar features. They always manifest some visual trouble, such as the reeling or circular turning and false perception of objects around the patient, with a feeling of faintness, usually attended with fearful distress in the precordial region. The patient thus seized may even fall, without convulsions, entirely lost for a few seconds. In some instances we have seen the precordial distress causing real paroxysms of angina pectoris. At this stage the pupils, ordinarily very enlarged, display successive contractions and dilatations, at short irregular intervals, and which become more conspicuous as the patient makes efforts to arise from his stupor, or is seized by any violent impulse. And, what most strikes one immediately after these phenomena, is the patient's stupor and bewilderment, and his prompt return to himself, very often with a clear recollection of the reckless conduct to which he has been driven by his dreadful feelings and hallucinations. There is, indeed, something singular in the cold perverseness and feelingless nature of such misdeeds, that may be even planned with deliberation, while the delusional ideas keep the ascendancy during the automatic state caused by the vertiginous fits. These attacks, as pointed out by Morel, and as we have noticed on repeated occasions, persist with equal severity after the individual has for long time refrained from drinking. Perhaps their most prominent accompaniment and distinctive sign is the sensorial morbid phenomena which always exist in relation to sight, and very generally also to hearing. They are of the most terrifying and distressing nature, either as every sort of hideous and fantastic animals, or as voices and sounds that haunt and torment the patient incessantly. The following is an interesting illustration of the dangerous irritability coupled with such sensorial affections :—

A malé, who was a hard drinker, became subject to fits of *grand mal*, every five or six weeks. He manifested, for a day or two before, the most extraordinary ill-temper and sensitiveness, with a sad expression of countenance, and would assault or insult the bystanders without any provocation. These propensities and periods of unnatural excitement were displayed in relation with his drinking bouts, before but never after the fits; and as these broke out he always saw, with his left eye, a hideous black and red human figure, which slowly magnified as it approached him. His head perspired profusely after the attacks, and no perceptible difference had been detected with the ophthalmoscope between the right and left optic nerve. This patient, during one of these premonitory stages, assaulted his attendant with a chair, and gave him a blow on the head, which left him senseless, because the attendant asked him how he was feeling. Then he ran to his sister in a frantic condition, told her he had killed the attendant, and dropped in a fit. This epileptic is perfectly rational at other times, when he can render a circumstantial account of his distressing feelings. During the temporary disorder of action preceding the fits, his eyes and cheeks become flushed, the pupils abnormally dilated, there is a perceptible rise of temperature of the skin with sudden jerkings of the limbs, and, on account of his excitement, he has to be kept in seclusion.

Changes in the optic disc have been observed principally in alcoholic epilepsy, complicated with syphilis or traumatic head injury. The fundus has not infrequently exhibited a normal aspect in cases of sub-acute alcoholism, even when there existed marked amblyopia, or loss of vision for certain colours, which generally were green or red, and this visual trouble has not unusually been conspicuous prior to the other morbid phenomena. The ophthalmoscopic changes have not always appeared equal in both eyes: being at the earliest stages, congestion, or œdema around the disc, and at a later period white atrophy of the optic nerve, which we have often arrested by hypodermic injections of strychnia around the eye. Curiously enough, optic neuritis, with complete blindness, has not prevented the occurrence of vivid hallucinations of sight. The pupils, besides the spasmodic movements already noted in relation with the fits, have often appeared almost reduced to a point, in inveterate topers who live upon whisky, habitually imbibing large quantities of it without experiencing its intoxicating effects, although plainly exhibiting the other derangements of chronic alcoholism. In these instances, the conjunctiva commonly has a dead pearly colour, and the face shows also a peculiar waxy pallor.

Suicidal tendencies are comparatively less frequent in

ordinary epilepsy than when alcoholism enters into its ætiology, and when they also become often associated with homicidal impulses. Legrand du Saulle* looks at this association as a differential characteristic of alcoholic epilepsy; but we believe these views rather exaggerated, since homicidal and suicidal impulses have by no means been rarely displayed by several of our own ordinary epileptics, while they appear conspicuously in the case of the student at Angoulême, in that reported by Marandon de Montyel, and others free from alcoholic complications, cited by Legrand du Saulle in the medico-legal work previously mentioned. We fully concur, however, with his remarks on the difficulties surrounding the appreciation of these cases, and the consequent necessity of always proceeding to the medical examination of the prisoner within twenty-four hours after commission of the crime to avoid mistakes in regard to his true mental condition, which one is naturally inclined to judge with greater suspicion from the very fact of the suicidal attempt.

Suicidal tendencies were remarked in 31 males and 22 females, of the patients here analysed, the following being a painful example, in which they accompanied the vertiginous attacks—

We were consulted in 1874, by a merchant, 36 years old, who, after a heavy loss in business, took to drinking promiscuously rum and gin, without the quieting effects sought thereby, but, on the contrary, becoming sleepless at night and more depressed, until he had a nocturnal fit, in February, 1873. He remained very stupid and somnolent the morning after this attack, having suffered for some time previously to it of daily spells of fainting, which he tried to oppose, as his brother stated, by more drinking. He kept on subject, every two or three weeks, to nocturnal fits, besides the above vertiginous seizures which distressed him very much. They caused a momentary faintness and whirling in the head, always initiated by horrible visions of strange animals, and of ominous words traced before his eyes, otherwise blind to all surrounding objects. Once the fit over, he would continue stupified, in a sort of ecstatic condition, from which he would soon come out, sullenly looking, with unclouded mind, and brooding over a desire to end his life. We advised to have him placed under treatment and close watching at some private institution, but his family disliked it, and was not done. The correctness of our prevision was soon confirmed, for, about a month after our consultation, he shot himself while under the influence of a vertiginous attack.

* *Op. cit.*, p. 129.

The maniacal excitement and furor consecutive to the convulsive attacks are analogous to those of delirium tremens, and it would, therefore, be superfluous to discuss them. There is, however, a mental state full of interest, related as much to the spasmodic as to the vertiginous attacks. This insanity displays the peculiar unconsciousness and all the singular conditions that we associate with psychical or mental attacks in ordinary epilepsy; and it either precedes convulsive fits, ending in maniacal delirium tremens, or may be the sequel of spasmodic seizures, then generally nocturnal, and without complication of delirium tremens. Finally, the mental attack may set out together with the vertiginous, but generally terminating by a maniacal or convulsive paroxysm, with more or less characters of delirium tremens. This kind of fits ordinarily occur in individuals who drink excessively without generally getting completely inebriated, or who fall into a state of sub-acute alcoholism, with marked elevation of temperature and roving of the mind, that last several days before arriving at the complete delirium tremens, which, in the former case, may also suddenly explode, with a convulsive paroxysm upon promiscuously drinking beyond the usual habit. However, the convulsive fits, under these circumstances, exhibit a greater tendency to break out singly, favoured by restlessness and insomnia during the night. Such epileptics ordinarily suffer from headache, nausea with morning vomiting of thick mucus, dyspeptic troubles, and wakefulness, accompanied with quivering of the tongue, unsteadiness of the hands, and numbness, often with sudden jerkings of the limbs. These phenomena show increased intensity in the morning, and lull by the stimulus of fresh drinking. The automatic unconscious manifestations that may originate throughout this stage continue for several hours or days, and, besides the occasional sudden jerking of the limbs and shivering or convulsive trembling, the patient exhibits a quivering of the lips and eyelids, with irregular contraction and dilatation of the pupils (the epileptic pupil), which, in the intervals, keep on very much dilated, although we have not rarely seen them contracted to a point, the patient's stupor seeming then most profound.

The pulse is soft, rapid, and dicrotous. In the majority of cases there is a marked rise of temperature with more or less profuse sweating; the urine becomes scanty, increased in gravity, and in rare instances albuminous; while the penis remains, during the attack, extremely retracted, and the

testicles drawn up. Seldom have we noted the menstrual flow arrested by the attacks.

A long, profound sleep establishes the transition from the above state to sanity. This sleep is the natural termination of mental epilepsy, and could not be related to the narcotic influence of alcohol, for it equally exists, in every respect, when the paroxysms supervene after the individual has entirely ceased drinking for some time. After these mental attacks the epileptic exhibits complete oblivion of what he has done automatically during them. This symptom distinguishes this state from the very analogous but shorter one accompanying the vertiginous attacks, in which the patient seldom loses consciousness completely, and, therefore, retains a more or less clear recollection of his morbid sensorial feelings and acts of violence connected therewith. Let us finally remark, that although epilepsy may occur in acute alcoholism entirely irrespective of the motory derangement, it never takes place, however, without being preceded by the characteristic sensorial morbid phenomena we have already pointed out. Chronic alcoholism, on the contrary, may run its course for a long while without any premonitory sensorial disturbance to the sudden irruption of the spasmodic fits, or merely giving rise to the mental attacks just described, and generally having a violent maniacal or convulsive termination, as in the case of Whalley, which we analysed in a preceding article.

We have noticed the worst forms of epilepsy among those who used no other intoxicating liquor than whisky. In several of these cases the fit exploded while the patient was completely intoxicated, or as he awoke from his drunkenness. Sometimes the convulsive seizures have occurred in repeated succession, with deep coma between them, and often having a fatal termination. The maniacal paroxysms connected with the disease under such circumstances have been of the most violent and turbulent character, requiring seclusion of the patient. Many had rapidly become demented, and were in a true state of mental paresis. Several showed a very deficient activity in their capillary circulation, and had atonic ulcers in the legs, or large ecchymotic patches over the nates and lower limbs. Others, again, had swollen ears.

When drinking was related to heredity, the vertiginous attacks prevailed among the manifestations of the epileptic malady. These were, indeed, the most abject and dangerous class of patients. They seemed comparatively free from

delirium tremens, though frequently becoming drunk, and mainly having nocturnal fits. Driven to instinctive acts of depravity, they were entirely destitute of all feeling and moral sense, indifferently yielding to their impulses without the least dread of consequences. One of the most remarkable features with these patients was the perversion of their sexual instincts and beastly lewdness. Many were sodomists; one of them masturbated himself constantly without the least regard to those surrounding him. After his fits he would fall into a violent satyriasis, and one of the fiercest of these attacks broke out while he was, after prolonged use of large doses of bromide of potassium, in a condition of complete bromism, which we induced, expecting thereby to avert his symptoms. A female, subject to vertiginous fits and nocturnal attacks, offspring of an intemperate father, had been in the habit of secretly practising, during the night, the filthiest acts on her daughter, four years old. When surprised at it, and removed from her child, she became furious. This woman was very weak-minded; treatment hardly improved her condition, and in a very short time she became paretic.

These observations agree with those of Taquet and Henry Clarke. The former states that "sexual desires show themselves early in children of drunkards, and are associated with an absence of moral sense."* And Clarke remarks "that the percentage of convictions for bastardy is three times as great among the epileptics as it is among the non-epileptics;" it being further stated, that epilepsy owed its origin to the hereditary alcoholism which existed in all these prisoners.†

As a matter of fact, epilepsy, whatever its kind, is almost always incurable. This circumstance, coupled with our baffled attempts to eradicate intemperance both as a moral evil and as a disease, will easily account for the negative results met with in the treatment of alcoholic epilepsy. This may seem, perhaps, an unwarrantable statement, although it is what we actually achieve as much with private as with hospital patients, for after a more or less prolonged remission in the physical and mental manifestations of alcoholism, the individual remains morally unchanged, and returns to drinking as soon as he regains his liberty.

* "On Hereditary Alcoholism." "London Med. Record," 1878, p. 8.
† *Loc. cit.*, p. 519.

We know that the largest proportion of dangerous lunatics, and the most difficult to deal with, belong to the class of the alcoholic insane, mainly composed of instinctive lunatics and epileptics. Short-sighted benevolence may regard as an unjust punishment to keep them under custody after they recover from their paroxysms; but taught, as we are, by daily experience of the inevitable tendency of these latter to recur, the safety of society requires that such chronic patients should be prevented from doing injury to others and to themselves. Cases are cited of dipsomaniacs and alcoholic epileptics rendered to all appearances healthy and morally reformed by treatment. Their number, however, is so insignificant compared with the immense majority in which recurrence takes place as soon as they are under no systematic discipline, that nobody would set them forth as representing the real issue of any curative plan.

It is not rare to see mental deterioration progressing in a slow but steady manner, notwithstanding the abeyance of the fits by hospital regimen and confinement. Chambers, tried for homicide in Brooklyn in 1871, affords a fair illustration of this phenomenon. His mother was insane, and he was born after her admission at the Cork Lunatic Asylum. He was an habitual drinker, had been severely wounded at the forehead, and laboured under the delusion that he saw balls of fire before his eyes, and people, who watched and followed him, making faces and spitting at him. From the facts in evidence and the examination we made of Chambers the day before his trial, we expressed the opinion, in court, that he was subject to epileptic insanity. The Court, satisfied of it, ordered that he should be sent to the Utica Asylum, and after fourteen months he was transferred thence to the Asylum for Insane Criminals at Auburn. At the former place he looked morose and reticent, with pearly appearance of the eye, puffy lips, dull expression, and intense lividity of the hands and feet, but had no manifest attack of epilepsy. We saw him, two years after the murder, at the Auburn Asylum; he then exhibited a strong demented look, and the late Dr. J. W. Wilkie, superintendent of the asylum, informed us that he had been subject to nervous attacks, attended with excitement and his former delusions; but it had not been possible to ascertain if he had nocturnal fits.

One of the most remarkable instances of the suspension of alcoholic epilepsy by abstinence is that of William Comstock, who, in

1858, murdered his father and mother at Hamilton, Maddison County, New York. He had become subject to fits upon the excessive drinking of whisky. One morning, during one of his attacks, he killed his two aged parents, and was found soundly asleep on a sofa by the corpses of his two victims. Both showed a ghastly opening of the chest, and their hearts, roasted and partly devoured, were found by the stove in the middle of the room. He was tried, and sentenced to be confined for life in the prison at Auburn. The fits, from his incarceration, ceased altogether. By request of one of the Inspectors of State Prisons we examined Comstock in the autumn of 1873, it being then intended to recommend him for pardon to the Governor of the State on account of his good behaviour and submission. At our examination we did not discover any sign of epilepsy or insanity; there was no tremor or paralysis, nor trouble of vision, and Comstock only complained of occasional headache. He owned to have been very intemperate, drinking large quantities of whisky, which superinduced epileptic attacks, chiefly occurring at night. He remembered that before the murder of his parents he was harassed by messages he received through a wire traversing the window of the room, and telling him to kill them; but he had no knowledge whatever of how he accomplished it, nor of having roasted or eaten off their hearts. He seemed deeply affected at the recollection of the event, and said that if he would ever regain his liberty he should go to live with his sister, and would never drink any spirits. He was not aware of the Inspector's intention, nor did we acquaint him with it. We reported that the danger of a relapse was altogether dependent on Comstock's power to break off the habits of abstinence into which he had been forced by his imprisonment; and we believe that he was pardoned.

In conclusion, we could not praise any special remedies for alcoholic epilepsy, abstinence and the ordinary treatment serving to arrest the fits in most cases where syphilis, traumatic head injuries, or any other special complication does not require the use of specific means. We cited one instance of traumatic injury to the skull in which we trephined the patient, but although the fits ceased after the operation, a return to the primitive intemperate habits brought about fatal peri-encephalitis. We have sufficiently demonstrated here that degeneracy and cerebral traumatism, in its broadest sense, are in the majority of cases the essential elements of alcoholic epilepsy. This fact would account not only for its difficult cure, but also why it should be such a dangerous variety of the spasmodic neurosis.