

lism of the body at large, it follows that such metabolism is largely responsible for the cœnæsthesia.

8. Inasmuch as the cœnæsthesia influences emotions, conduct, thought, it follows that the *ego* which is a trinity of feeling, will, and thought, is largely determined by the metabolism of the body at large.

(¹) It is convenient to make the feelings embrace both the sensations and the emotions, although all psychologists do not do so.—(²) Owing to the equivocal meaning attaching to the term "ill-feeling"—which naturally suggests itself as the opposite of "well-feeling"—I am obliged to substitute the term "malaise," by which I mean to express a widely diffused feeling of unwell-ness, no matter whether this occurs in connection with well-marked disease or not.—(³) Some, indeed, appear to think that all associations take place through the feelings. See Ribot, *The Psychology of the Emotions*, p. 173.—(⁴) This restraining power itself constitutes an impulse, and is of the nature of a feeling.—(⁵) I say nothing of "muscular sense."

On Epileptic Speech. By A. CAMPBELL CLARK, M.D.,
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THE speech faculty of the epileptic has hitherto received very little attention, though passing references to it have been made from time to time by several writers, viz. Kussmaul, Ross, Wylie, and others. Wylie has stated the well-known fact that temporary aphasia appears sometimes as the "aura," sometimes as an immediate consequence of a fit. Kussmaul confirms this, and Ross writes, "In some cases the warning of an epileptic attack consists of a sudden inability to speak, and it is very probable that word-deafness and word-blindness are by no means uncommon auræ." While saying so much, Ross admits what is certainly true, that motor aphasia is the more readily noticed, and, as obscuring the question of aphasic auræ, he admits the mental confusion attending the onset of unconsciousness, a factor of some importance. Bradylalia (slow speech) and echolalia (echo speech) have also been noticed by observers at home and abroad. They are, however, so frequently observed in developmental speech, and in other nervous and mental diseases, that too much may be made of their significance.

The relation of emotion to speech is well illustrated in Bastian's work on *Aphasia* (p. 5), where there is described the case of a boy, the son of a leading barrister, who had been subject to "fits" at intervals during his early childhood. The first occurred at the age of nine months. They ceased at the age of two years, and the child appeared to be all right, intellectually and otherwise, except that he could not talk. Before he was six years old, when an accident happened to one of his favourite toys, he exclaimed "What a pity," although he had never previously spoken a word. In the case of children of backward speech this has frequently been observed, and such must have come under the notice of not a few family physicians. The point is that the tardy mechanism which may have been making abortive attempts at speech for some time previously, succeeds at last owing to an accession of vocal energy. This accession of vocal energy is due to emotional excitement acting upon the respiratory centre, and exciting a deeper respiratory movement, which during expiration gives the larynx the necessary blast of air at the precise moment when the emissive energy of motor speech is discharged.

The innervation of the vocal speech mechanism requires to be allowed for, if we could adequately comprehend the physiology of the production of words and sentences, but this I pass by, merely observing that it is a factor of considerable importance in our study of epileptic speech. This innervation will be regarded here also in relation to emotional states, for the epileptic is a creature of moods and tenses in the highest degree, and his speech is thereby affected. It has been stated that aphasia is the condition which some observers have noted as the most usual speech affection of the epileptic; but aphasia is now a term of very comprehensive meaning, and the modern conception of the term holds within its limits certain varieties which we do not find associated with epilepsy. Moreover, dysphasia is a term which includes more of the speech affections of the epileptic than does aphasia. The distinctions which will be recognised here are—

- (a) *Aphemia*—inability to speak, depending on affection of the co-ordinating centre for the muscles producing articulate sound.
- (b) *Annesia*—loss of the memory of words.
- (c) *Agraphia*—inability to write.

In the examination of the cases to be immediately referred to, the outlook for word-deafness and word-blindness was negative in its results, but I do not dispute Ross's proposition, though when one considers the mental equation before and after seizures, his statement must be regarded as a difficult one to prove. The clinical study of the following cases was conducted while their intelligence was unclouded by the shadow of a seizure or its after stupor. They are men and women who have been insane for varying periods, some two or three years, others fifteen to twenty years. Naturally, we look for mental deterioration in the older cases, just as we see it in chronic mania or dementia, but in the latter the speech deterioration is mental rather than motor, the emissive or co-ordinating faculty is not impaired to anything like the same degree as in epilepsy. In the early stages of epilepsy—apart from insanity altogether—the speech affections are less marked, though early evidence of them may in some cases be manifest, especially bradylalia.

In considering the matter systematically the following points were kept in view :—(1) the mental state, distinguishing the emotional and the intellectual ; (2) the receptive or subjective function of speech ; (3) the expressive or objective function ; (4) the vocal mechanism and its innervation ; (5) the oral mechanism and its innervation ; (6) variations in the individual. The patients were each interviewed on two separate occasions.

CASE 1.—M. B—, æt. 47, insane eight years, education poor, memory for past and recent events impaired. She is capricious, easily roused, emotional instability is very marked, and her speech, which in her placid moods is low, slow, stuttering, and slurred, when her temper is roused becomes suddenly loud, fierce, denunciatory, and free from stuttering, with staccato pauses. Then her attitude is tragic, her arms are raised with threatening gesture, her face is flushed, her chest heaves, and her voice is loud and resonant.

To every patient the first question was, Have you ever noticed any trouble with your speech? Some resented the idea ; most of them at first denied the imputation. Epileptics usually deny that they have had a fit, and are very intolerant of the suggestion that anything is the matter. With this explanation in view, the answers will speak for themselves. Letters, syllables, or words are spaced according to their cohesion to each other or want of cohesion. *Question* : Have

you ever noticed any trouble with your speech? The answer comes in a jerky, spluttering stream of broken talk. Sometimes she stops short with a sudden "catch in her breath." Her reply to the question was as follows:—"Quite so—I de be—," then, as if to excuse her faulty speech, "Thir's yin o' my teeth kin' o' slack." Here she does not stop, but dribbles away in slow monotone, "doon to mel—ans—field—so will—be coming on—for—my—age just now,—my faither—would be coming to, so—came for him and my mother going together forty-four."

While speaking in this strain, it was noticed that the apparent incoherence was due to amnesia. She had a difficulty in getting hold of the right word, and, like a person who stutters and introduces irrelevant sentences to get out of a difficulty, she introduces words to excuse herself, and often makes confusion worse confounded.

The amnesia is not marked except when a proposition is made to her, or when a question is asked which requires the construction of sentences. If shown a key, watch, or knife she names them correctly enough, but always cautiously, as if conscious that she might trip in with the wrong word, thus:—"Well—I would call it—a key," or, "Well, I would say it is ca'd the knife—thing," or "It's a watch—if I would say it." She repeats the 23rd Psalm (metric version) correctly, and with very little trouble; but here the mental effort is less and the words do not need to be made up in sentences; these are ready made for her. When she is excited the voice is raised, and the words come more trippingly, though irregularly, the rhythm reminding one of the pulse beats of an irregular heart. At such times the end of the sentence is cut short from failure of breath owing to faulty vocal innervation. To sum up this case, there is (1) amnesia—her vocabulary is very limited, and she very frequently puts in the wrong word. (2) Defect of articulation, stuttering, and explosive speech. The mouth in quiet speech, which is her usual when not excited, is almost closed, the action of the jaws being feeble; this may be said also of the lips and tongue, which are by no means mobile, and which with the supra-oral muscles are tremulous. (3) Deficient phonation; the respiration is shallow, and this may account for it, as, when she gets excited and the chest heaves the voice is much louder and articulation is more distinct.

(4) There is marked bradylalia. Echolalia is sometimes present. There is considerable gesticulation when excited.

CASE 2.—W. J—, æt. 30. Has taken fits since the age of 18, the exciting cause of the first being the passage of a tape-worm. His expression is quiet and sad, but he is intelligent, and by no means devoid of humour. He is when free from fits quite reliable, and quite capable of giving intelligent answers to questions.

To the question, "Have you ever noticed any trouble with your speech?" he replied, "I've felt pretty far back in speech this time back: the language that comes from me is rather short of grammatical—feels as if there was a weight keeping back the words." All this is said very slowly and with apparent deliberation. "Do you feel a difficulty in getting the right word?" "It takes a long time to compose it," meaning the sentences. If excited, *i.e.* if there is any emotional disturbance, his reply is not quite so intelligible, as when the same question was repeated some days later, he thus replied, "For a long time——education also to bring me up to satisfaction, so as that I wanted to keep myself as I intended at first." His voice breaks, there being vocal tremor, especially when he is emotionally roused. Before and after fits he is quite conscious of the fact that speech is more difficult. He observed, "Half an hour after when I come out of a fit, if any one spoke to me couldn't answer them." When asked if he was ever altogether speechless, he answered, "Well, I can't consider for that;" then a pause, as if for breath, then the echo, "altogether speechless." There is no agraphia, no word-blindness or word-deafness, and he has no recollection of either of the two latter occurring as an "aura." His invariable "aura" is a sensation in the left arm and side.

Inspiration, even when asked to take a deep breath, is rather shallow, but during emotional stress his respiration is more active, and his voice is louder. We may therefore say that here there is (1) partial amnesia, (2) diminished phonation, (3) weak articulation, with tremors, and that according to his emotional state these vary. The labio-dental movements are certainly rather inert. In this case there is very little gesture; but that is exceptional, and even this man when excited buttonholes one in a confidential way, rather usual with epileptics in their quiet moods.

CASE 3.—P. H—, æt. 31. Insane five years. Ascribes first fit at the age of 15 to a fright. Had taken to smoking before then. The degeneration in this case is marked; he has shown considerable nervous failure in the last three years. It was noticed on admission that his speech was slow, thick, and indistinct, with an appearance as if he was swallowing some obstacle after speaking each word. In his stuporose states swallowing is difficult, and he is very liable to choke. His vocabulary is very limited. Like not a few epileptics, he has stereotyped phrases which he invariably employs in certain given circumstances. His consciousness of amnesia has led him to adopt them rather than struggle to compose fresh sentences. Thus every morning and evening at the medical visit he receives the superintendent and others with these words, holding out at the same time his right hand for a shake, "How—do—you do—Dr.—Clark—and Dr.—Kerr—and Mr.—Campbell—and Nurse—Thomson—and—my respects—and—I'm quite well."

He frequently repeats the words of questions put to him, as if to give him time to jog his memory and stimulate recollection. Instinctively he seems to feel that echolalia by its sensory stimulation of the auditory centre may rouse recollection. Bradylalia here is very marked, but much less noticeable under emotional excitement. When asked if he had any difficulty of speech, he replied, "Sometimes—I am—very well at it (*i. e.* getting the right word) some days I am—not very sure—of myself—and I stop—but if—word is ready—and if—difficulty is in mouth—big—words—I can't say." There is not merely amnesia, but aphemia. Even when he knows what he wants to say there is a difficulty owing to obstruction in the speech mechanism. He explains this by speech and action—"There is" (as he puts his hand to his throat) "a difficulty as if stopped in the throat."

He explains further that crabbedness (rise of temper) sometimes makes him use the wrong words, and here again emotional disturbance shows its effect not merely on the speech mechanism but on memory itself.

There is slowness in answering, when questioned as to the names of objects, his explanation being that he is afraid of saying the wrong word. Feeling his ankle, which has been sprained, and is still swollen and stiff, he says, "It's more

stronger,—it's more stronger" (echolalia). He seems to feel that pantomime helps him along, and probably this is why epileptics are often demonstrative and gesticulate so much.

As regards oral and vocal speech, there is the same lack of innervation, the same drawling, stuttering speech already described, and the voice is low and respiration shallow. Not only is there interruption of the speech current, but there is inco-ordination of the laryngeal (vocal) and oral mechanism. There is frequent tremor of the lips when speaking.

CASE 4.—R. N—, æt. 60. Insane twenty-two years. Epileptic for forty years, due to injury in a mine (wound on temple) and probably fright. A hypochondriac, but a most violent patient at times. There is less to notice about his speech than in some more recent cases. There is no agraphia, word-blindness or word-deafness, but there is amnesia, and his speech is sometimes slow, hesitating, and tremulous. He is very emotional, and this affects his voice. Asked if he ever noticed anything wrong with his speech, he replied, "Ne—ver noticed anything wrong with my speech" (echolalia), but later admitted when "ag—it—kin—a—tation" (in a state of agitation). He is very earnest and demonstrative with his hands, which fly all over his body when telling his story of the pit accident. Attention is at once drawn to the feebleness of the labio-dental movement in speaking.

His vocabulary is very limited and his sentences inappropriate to his purpose, his words clumsy in their application, not incisive or explicit. This voluminous, almost meaningless, speech is very characteristic. Talks in a monotonous, very confidential tone of voice, also characteristic of many epileptics. The following is an extract from a letter written to "Mr. the Governor Inspector of Scotland:" "When I write to the Governor Inspector in 1881 and the answer that I got back on Christmas morning was my dead letter that I was to come out through death into life under her Magast serves and now the time that I have been in I would like you to judge my case in a medium way according to the rules of the Scriptures, and the rules of the laws," etc.

CASE 5.—A. F—, æt. 24, of dark strumous type, with bad family history of strumous character. She is weak-minded and childish, and has had no education.

Her imbecile condition is rather a hindrance to our obtain-

ing a correct conception of the mental side of her speech faculty, for she is weak of understanding, illiterate, and incapable of any subjective study of memory or recollection. Her utterance is slow, thick, and, except when excited, anergic and muttering in character. Certain conjunctions of syllables she is unable to bring out, such as "br" in February; she says "Fetherwary." Her memory is weak. She says she is four months here, whereas she has been four years. Echolalia is at times very marked, *e.g.* she repeats in reply to questions, "a' thegither, I wish—I wish—my airm—was better a' thegither;—I wish—I was a wee better—a' thegither;—I wish I hadna been here—a' thegither." Addressing the nurse, she says, "My granny stays at Kilmarnock—she's a puir auld woman—my granny—a puir auld woman—I cam—tae stay here—tae bide—afore ma puir auld mither deed—ay, ma puir mither deed—I used—tae wash—ma puir mither's hearth stane—Is your puir mither no deed?" A negative reply. "When are ye—gaun tae see her—wull ye—tell your puir mither—that A. F— was speerin'—for her—wull ye—tell her that puir Agnes—has got a sair airm?" There is bradylalia noticeable as well as echolalia, a limited, very limited, vocabulary, shallow respiration, and feebleness in the oral mechanism. The strain of the foregoing speech indicates, what is more noticeable in the tone of the voice, the emotional character of the patient. The simple statement, "Is this Monday?—then yesterday—would be—the Sabbath day;" the last words uttered with reverence, shows her religious emotionalism; it cannot be called in her case intellectualism.

Imperfect as this case is from the clinical student's point of view, because of her weak intellect, it is in some degree a contribution to the subject of undoubted value.

CASE 6.—R. B. L—, æt. 22. Insane at age of eighteen. Is rather dull intellectually, religious emotionalism marked, and religious delusions scarcely absent at any time. He takes few seizures of *grand mal* or *petit mal* types. They are more frequently mental and automatic in character, and he has no recollection of them afterwards. The hypochondriacal element is here very prominent. He has a dazed, far-away expression, with a tinge of sadness in it, an expression as being "not of this world."

Asked regarding his speech, and what difficulties he noticed,

he replied in halting speech and evidently with some mental confusion, "When—I have come—the right way—to a speech—I know very well how to speak to any person." He can repeat verses of psalms and hymns with fair promptitude, but intellectual operations are slow, and he puts in wrong words, so that the meaning is confused. Innervation of vocal and oral mechanisms is fairly good, the speech defect being more mental and amnesic than motor. There is very little muscular tremor, no agraphia, word-blindness, or word-deafness. Asked if he ever took a fit, he replied, "I would count the darkness for the fit," meaning that his sight failing was the first sign, and then he added, "I knew myself—I would do better every day if—I was within the fresh air." His memory is best when talking of religious matters, the text or heads of last Sunday's sermon, etc. He is demonstrative in his speech, points with his hand all the time, says "praised" for praying, "meals meat" for meal of meat.

CASE 7.—E. F. D— has been subject to fits for years, exact period unknown. She has had several severe illnesses during the last few years, *e.g.* an attack of coma with high temperature for several days at one time, and acute bed sore at another. She has been much reduced in strength. The majority of her fits come on at night, and if she has a night fit she is usually excited till she has two more. She is amnesic. As I look at her she holds out her right hand, which is trembling, and says, "I—don't—don't," and then there is a long pause, and when I fill in what I think is the rest of her sentence by saying, "you don't feel power in your right hand," she promptly replies, "No, I don't." When I remark, "You seem to have a difficulty in remembering words," she replies, "Weel—I just be—no—kind—o'—," a long pause as if paralysed, and then the end of the sentence is uttered, "the rale thing just." Questioned "Do you sometimes say the wrong word—the word you don't mean to say?" she answers promptly, "I do." There is no word-deafness, and if she could read there might probably be evidence that there is no word-blindness, though her sight is affected after fits. There is at times distinct echolalia. To the question, "How old were you when you took the first fit?" she replied, "My—my—mither—mith—no—that—I ken o'—I dinna ken o'—I had—to—go—to—work—I had to go to work when I was ten years old.

—I had—to—I had—to—I had to work that's—just—the—truth. She doesna ken what she's—talkin'—aboot—ma mither said—ma mither said—ma mither said—there was ane—o'—thae—kin o'—catch—thae fits—and—." As here indicated, bradylalia is well marked. Asked her age, she answered, 'I'm older than thirty years of age now.' Speaking immediately after of her husband's pay, she said, "He had mair than thirty years," meaning thirty shillings a week. Her memory generally is impaired. She cannot tell at what hour she gets breakfast, dinner, or tea. When excited, amnesia and aphemia are less noticeable. She is only slightly demonstrative when speaking, except when excited. She talks in her quiet moods in a confidential manner, hesitating very much at times, and in a low voice, the lips and jaws parting slightly and the respiration being very quiet and feeble. Tremors of all the facial muscles are noticed, and still more so tremors of the hands, especially the right. She puts her fingers to her lips when trying to speak, as if conscious of muscular inertia, and from a desire to help her utterance. The speech defects in this case, memorial as well as motor, are more marked probably than in any of those previously quoted, though M. B— and P. H— are both very bad. These three are amnesic and dysphasic in a marked degree.

CASE 8.—D. R—, æt. 25, a miner. Has taken fits at varying intervals from the age of eighteen. When asked if he has noticed any difficulty with his speech, he replies, "There is something away from my speaks—and my—memory." There is no agraphia; he understands what is said to him. He reads correctly, but in a somewhat sing-song tone, raising his voice at the end of every sentence, and pronouncing his words in rather a snappish manner. There are no tremors. When shown a sheet of foolscap, and asked to give it a name, answers, "Well—it's—a"—pause—"you can't say it's a book—but—it's a pretty tidy book it—would—do—a grocer," meaning doubtless that it would do for wrapping-paper. When shown an envelope, he replies, "That is a tidy—envelope;" shown a watch, answers, "Well—it—will—be—an English—lever." Here there is again the redundancy already noticed, to cover amnesic difficulties, and bradylalia is quite noticeable. There is undoubtedly motor difficulty in this case also.

CASE 9.—B. C.— This patient is an old asylum resident, and was regarded as an epileptic twenty-five years ago. She has of late years been much less subject to fits, and has not had one for nearly a year. She is bright, active, and fairly intelligent, considering her long residence in an asylum. She can give a fairly correct account of her own case. When asked, "Have you ever any difficulty with your speech?" she answered, "Not this long time. I had when I used to take fits—it was next morning—I couldna speak right. The attendants knew from my speech in the morning when I had taken fits. I couldna get the *full* word out. I knew what I was going to say, but I couldna get the *full* word out." Here there was dysphasia, but no amnesia.

Many more cases might be cited in detail, all confirming those which have just been described, and before summing up I will merely give brief statements regarding a few.

CASE 10.—A male patient illustrates redundancy of speech, as if conscious of amnesic defect, by answering the question, "What's this?" (book) thus—"A sort of library book."

CASE 11.—A male patient illustrates various defects of articulate speech. He has noticed after fits that his speech wanted strength. The emissive energy is spent before the sentence is finished, and it dies away in inaudible words. There is aphonia therefore. The muscular energy is feeble, and the respiratory movements restricted. In his own words he adds, "I have many many times noticed a difficulty in finding words to express myself." There is, therefore, amnesia also.

CASE 12.—A male patient has thick, hesitating, drawling speech.

CASE 13.—A male patient says he is an elegant speller, and is confused because he has not used the right word, which should be "excellent."

CASE 14.—A female patient says she and her brother were both stutterers when they were young. Her sentences are broken, and there is a circumlocution in describing events and circumstances. Her memory for words fails at times, especially after fits, and when trying to speak she feels as if her tongue were paralysed.

CASE 15.—A male patient describes his speech defect thus: "I feel a little now—not able to come to the point—have the

word ready—but I can't get it out—tongue would not come forward at the proper moment." After fits he is always at a loss for words.

CONCLUSION.

To sum up, I think it will be generally accepted that a considerable range of speech disturbance is to be found in epilepsy, that there is much resemblance in the cases, and yet individual diversities, and that when the normal mental habit is resumed after one of those periodic outbursts of motor mental excitement which characterise epileptic insanity, the power of speech is diminished. It is established (1) that before and after fits amnesia and dysphasia are marked, (2) that when there is emotional excitement these conditions are altered according to the degree of the emotional excitement, (3) that when the ordinary mental habit is resumed, and nervous tension has disappeared, the patient suffers from reaction, which tells on his speech faculty by reducing the energy of the memorial and motor centres.

The Patients' Consciousness of Speech Defect.—Although, as already observed, they incline at first to denial, they usually admit it when their own stumblings find them out. Their facial expression is quite sufficient to demonstrate that they are anxious and disturbed when their speech is being tested, and there is manifest effort, in the halting yet deliberate speech, which reveals that the patient is anxious not to make mistakes. This is seen also in the careful answers to such question as, "What is this?" (a key, *e.g.*), answers characterised by apologetic introductions, or qualified by unnecessary adjectives. The tremors are often worse, and the break in the voice worse, when consciousness of a difficulty renders the patient emotional.

Emotions as affecting Speech.—This is true of most people, but emotional speech is rarely excited in ordinary circumstances, just because emotions are not so acute and are more under control. Just as we may have hysterical aphonia the result of emotional disturbance, so there may be in the epileptic respiratory spasm from a like cause. Undoubtedly the emotional element must be taken into account in considering the different speech abilities of the epileptic at different times. While this

applies to human speech generally, it applies in a marked degree to the epileptic. The pantomime of the epileptic is sometimes vivid, frequently profuse and redundant, like his speech, and indicates the emotional nature of the man.

Amnesia.—It will not be considered beyond a few words how much this is due merely to the defect of recollection, but it may be said in passing, that, as the amnesic state is at times more marked than at others, the *retentum* may be in memory, though not always forthcoming. It depends on special sensations, and the particular emotional state, happiness, anger, rage, etc., and on the degree, whether the faculty of recollection is stimulated or inhibited. I have already pointed out that the range of vocabulary is more or less limited with most epileptics, and this is probably due to failure of memory (loss of retention) apart from failure of reproduction (recollection).

Aphemia and Dysphasia.—Extreme aphemia is rarely observed, and then only for a time, usually before and after fits. Dysphasia best describes the articulate speech of the epileptic. Here we have to take account of the vocal mechanism, taking along with it the respiratory mechanism. It may be taken, speaking generally, that there is usually a reduction of emissive energy of all these mechanisms from faulty innervation, and that there is want of synchronous co-ordination. Hence we may have feeble, stuttering, or staccato speech, and weak or spasmodic glosso-labio-dental movements. We have also sensations of "a catch in the breath," loss of phonation, or reduction of it, as seen in the growing weakness of voice at the end of a sentence. This points to nervous spasm or reduced innervation of the vocal and respiratory mechanisms. Tremors of the facial muscles, of the labial in particular, and tremor of voice indicate unstable innervation.

I need only mention in a few words *Bradylalia*, which has been abundantly demonstrated, and *Echolalia*, which is less common, but sufficiently frequent to call for notice here. *Agraphia* has not been noticed, but those patients who could write were asked to sign their names, and there was found a tremor, sometimes continuous, but mostly interrupted, in their writing, suggestive of alcoholism.