CONGENITAL WORD-DEAFNESS, WITH SOME OBSERVATIONS ON THE ACCOMPANYING IDIOGLOSSIA.*

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I EXAMINED Wilfred C., age 13 years, at a routine school medical inspection. His speech had always been most indistinct; and he had been thought to be very deaf. Such had been the excuse for his scholastic backwardness, for his attainments in school subjects are most limited—practically entirely to arithmetic and to writing and drawing from copy. He quickly informs me, 'I cannot read.' Yet he is recognised as one of the most observant boys in the class; his conduct is perfect; and he acts as the class monitor—indeed, is one of the best the teacher has had.

He had been thought to be very deaf. It has always been noted that he will pay no heed to conversation unless his attention is attracted very forcibly. At the examination a watch was held at the usual distance from his ear, and he was asked 'do you hear that?' The lad seemed only to mutter something. He was then tested by the spoken voice, when facing at right angles to the observer. He did not answer such questions as 'what is your name?' 'what school do you attend?' nor did he obey such commands as 'point to the door.'

He cannot go errands because 'he cannot pronounce words correctly.' His teacher admits that she always has the greatest difficulty in following his speech, and very often finds it quite impossible to do so. Examination revealed indeed a strange kind of language.

This patient has been more thoroughly investigated. It is to be noted at once that the observations have been difficult to make. For example, it was found necessary to use his ability to copy in order to test visual acuity by Snellen's types; and much repetition of simple sentences has been necessary for the boy to comprehend the meaning of the examiner, and often much repetition has been demanded from the boy for the examiner in turn to comprehend him.

(1) He hears many, if not all, sounds with normal acuteness. When blindfolded he named correctly the number of soft peals made with a hand bell, and the number of snaps made with the fingers. He repeated after the examiner, one by one, the letters of the alphabet and such familiar words as 'mother,' 'father,' 'me,' 'pen,' and it was the recognition of the fact that he reproduced some of the sounds in some of the words spoken to him

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when his hearing was being tested, that suggested a 'word-deafness' to the examiner. He recognised and named the mew of the cat, the bark of the dog, and the low of the cow. He was also able (when made to understand what was required of him) to add and subtract in units, and to solve such simple addition as 3s.+4d.+2d. But with the eyes covered he was evidently quite unaware that he was being asked a question, or being requested to perform any action, e.g., 'what is your name?' 'who is your teacher?' point to the door.' He only repeated a few sounds bearing, on occasion, a resemblance to the sounds spoken to him. He did not understand even his mother and his teacher.

When however the eyes were freed, and he was allowed to observe our faces, he comprehended to a degree. He understood his younger brother, who is in the same class at school, most easily and best, and his teacher better than the examiner. He answered correctly simple questions as 'where do you live?' 'can you read?' and recited in his own sounds the days of the week and the months of the year; and on request pointed out, in a picture, a basket and a windmill, mewed like the cat, barked like the dog, and lowed like the cow. Indeed, it had been only by freeing the eyes, explaining what was required, and blind-folding again that the observations recorded above concerning acuity of hearing were made.

(2) He quickly stated, 'I cannot read.' He did read correctly 'A,' 'B,' and 'the'; 'C' was called 'T'; 'HOME' was 'TONG'; 'CAT' was 'AS'; and nothing was made of 'DOG' or of 'MY MOTHER.' But '184,' '263,' '1,843' were read correctly and quickly—e.g., the last as 'one thousand eight hundred and forty-three,' and '£384 10s. 9d.' was read as 'three hundred and eighty-four pounds ten shillings and nine pence'—*after he was told it was 'money.'* He read correctly the time from a watch.

(3) When asked to repeat¹: (i) 'In summer the sun is hot'; (ii) 'I have a little dog'; (iii) 'The dog runs after the cat,' he said, with the eyes open, (i) 'In tummer der doo doh'; (ii) 'I have e u doze'; (iii) 'The don run haffy'; and when blindfolded (i) 'In tummer'; (ii) 'I have e eum don'; (iii) 'To don one tat.' (The question arises whether he was saying in his own way 'two dogs, one cat'). He repeated correctly in order five numbers², both with the eyes open and closed.

(4) He named at sight such objects as a knife, pen, pencil, and in a picture a basket and a teapot. He named too, from memory, some of the boys in his class.

(5) He is very quiet—practically never talks unless he has been addressed, and when he does talk all have the greatest difficulty in following him. Often his utterances are quite unintelligible.

(6) He transcribed correctly with correct punctuation marks in a very good cursive hand the following printed passage³: 'I have something in my pocket which I use to tell the time, do not say what it is called; but tell me how many hands you think it has.' But neither could he read it aloud, nor did he understand the passage. He could not write to dictation. He was asked to write, 'get me a pen.' He was allowed to lip-read; he repeated the sentence aloud; he performed the act and then wrote only something like 'men B.' He never writes composition at school, but is allowed to set himself sums or to draw from copy. When requested to write something he asked, 'sums?' and then 'money sums?' and wrote the following:—

£	s.	d.
16	7	8
16	1	9
19	6	9
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51	16	2

(7) He is said to be fond of music. He recognised the examiner's whistling of 'God save the King.' He sang on request the hymn with which the school is opened daily.

(8) He named correctly a knife, penny, shilling, key, and indicated by gesture that he recognised a rubber name-stamp, when these were placed in his hand.

In the above description, only in (3) and (5) has any notice been taken of the speech. But the boy has a language of his very own. I have heard the following: 'Saturday night' is 'Tatur nigh'; 'two comics' is 'two commas'; 'July' is 'Julyk'; 'August' is 'Angus'; 'September' is 'Temtember'; 'quarter-past' is 'tarter tast'; 'basket' is 'bassie.' Of the letters, 'C,' 'H,' 'J,' 'Q,' 'W,' 'X,' 'Z,' are pronounced as 'T,' 'S,' 'Tae,' 'Jew,' 'Dub,' 'S,' 'Shade.' His recitation of 'God save the King' was a true idioglossia, commencing something in this wise 'God tave on able it, Bot tave ta ti.' His singing of the morning hymn and his description of a scene at the pictures (a fight with a boy and a girl) seemed to be a conglomeration of gibberish. But certainly he remembered the movements of the picture perfectly well, for his accompanying gestures proved an orderly sequence of thought, although his language was indescribable.

On routine clinical examination, the heart and palpable blood-vessels are found to be normal, as are both ear-drums. The nervous system is normal. He is right-handed; the eyes externally, fundi, optic discs, visual fields and acuity of vision, superficial and deep reflexes, co-ordination, and sensation to touch cotton wool and pin prick are all natural. He is neither feeble-minded nor antisocial. The expression is intelligent, his conduct is excellent; he is happy and contented and a favourite in the class. He understands the value of money. He quickly solved simple zig-zag puzzles, and was as smart as the examiner at the game of 'snap.'

DISCUSSION.

Thus there is described the case of a boy who hears although he does not comprehend the meaning of words by hearing—a boy, it seems, who comprehends spoken language only to a degree, and only by lip-reading or by accompanying gesture. Though he understands through the auditory channels music (admittedly only roughly tested), familiar animal calls, and numbers, yet the simplest sentences of the simplest words are not comprehended through the unaided auditory sense; nevertheless the acuity of hearing seems itself not at all defective.

Sight and visual memory seem to be normal. For we have found that acuity of vision is normal, that he names objects at sight and from memory, and further that it is only when he is allowed the use of his eyes that he understands the speech of another. His inability to read anything but numbers need not be due to any inherent defect in a visual memory sense, for he can copy from print to cursive handwriting, he can name objects at sight, and (this is most pertinent) he enjoys and remembers the cinema (a marked contrast to his indifference to a 'speech' or a 'story'). He buys children's comics too, and follows their little stories from their numerous illustrations. This inability to read is probably due to the fact that any attempt to teach him reading has been through the auditory sense—a sense through which we have seen comprehension of words entirely fails. (From an experiment just begun upon normal school children it almost seems possible to make a comparative measurement of a visual memory alone (for letters), and Wilfred's attainment corresponds to a normal average as found so far.)

I suggest that the condition revealed in this boy is explained by postulating a marked defect, or, best of all, an absence, of an auditory word-memory,

while there is present an auditory memory for numbers and for some other sounds, at any rate. The defect seems pure, for examination reveals a normal 'make-up' in all other ways except that there has been educated by self-training a new memory (say 'centre') as named recently by Worster-Drought and Allen⁴ 'the lip-reading word-memory centre.' That this 'memory' is still incomplete and slow of function is obvious because of his failure to comprehend much of, and his difficulty to comprehend at all from, the speech of others, and from a few mistakes the boy made. He was set this adding sum :—

$$\begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 6 \quad 8 \quad 10 \\ 248 \quad 16 \quad 4 \\ \hline \hline \end{array}$$

and he wrote as his answer 254 25 4. He insisted he was correct until with difficulty he was brought to understand it was a 'money sum,' when he quickly altered his denominators and gave the result as £255 5s. 2d. Again he was heard to say 'seven and four leaves eleven' when it was quite appropriate for him to make eleven by the addition of seven and four. His scholastic achievement is arithmetic; he can add, subtract, multiply and divide in numbers; he can add in money but not in avoirdupois, and he cannot do the simplest problem because, apparently, of the incompleteness of this lip-reading word-memory. His strange speech, too, seems to provide evidence of the incompleteness or slovenliness of its education. These points seem to be proved later by consideration of the state in which we found the 'lip-reading word-memory' of his brother Tom.

ETIOLOGY.

Let us now consider the etiology of this auditory word-memory defect of Wilfred C.

We have seen the parents and all five sons of this family. The parents are of normal intelligence for the labouring class to which they belong. Of their own family histories they will admit nothing abnormal. They both attended ordinary schools and can converse normally. The eldest son progressed normally at school, as the fourth is now doing. The second son, Tom, attended a deaf school for seven years. Wilfred is the third son. The fifth boy, James, is now six years old, and had an indistinct speech on entering school.

During the pregnancy his mother was perfectly well and had no accident. The birth was at full term, a midwife was in attendance, there being 'no need for a doctor,' and Wilfred was a big fine baby. He seemed to his mother to develop normally—sitting up at six months, walking at 18 months (he was very fat) and saying 'Dad,' 'Ma-ma,' and 'butty' ('bread and butter') at two years. But he was a quiet infant and did not cry much, although the cry was not noted as exceptional in character. As he grew older, he "would not bother

with other children," but would be always with his mother, who came to think of him as just "so very quiet," but always as "sharp enough," until she was told the teacher "could not make him understand at school." He has always liked running about in and about the home, has been fond of boyish mischief, and now likes to make things. He makes boxes for his mother, and 'bicycles' from old wheels for the boys of his street. He enjoys very much going to the pictures. Apart from diphtheria at 14 months and two operations for the removal of adenoids he has had uninterrupted good health.

His brother Tom was sent to a deaf school when eight years of age. Tom is more easily examined than is Wilfred, for he understands the examiner more quickly and his language is more easy to follow. But his general intelligence is not so good as that of Wilfred. He did not score well in his efforts at zig-zag puzzles, nor did he comprehend so smartly a card game of 'snap.'

He heard the watch at four inches right and left ears, both with eyes open and closed.

He can read; he tried all the words up to age 12⁵. He read aloud in a monotone, and understood the passage 'I have something in my pocket' already given to Wilfred, for he answered 'two hands' and later said 'clock.' He repeated the test sentences as (i) 'In tummer the ton is tot'; (ii) 'I have the dog'; (iii) 'The dog ran after cat.' He named familiar objects at sight. He can copy. He wrote to dictation for (i) 'I live with mother and father,' (ii) 'I like the pictures,' (i) 'I live which mother and father' and (ii) 'I like to picture.' His speech is of more ordinary pattern than is that of Wilfred. It is best described as very marked lalling—e.g., his repetition of 'in summer the sun is hot'; his addition of 'two and six and a penny' was 'two tix an penny two teven,' and a 'key' was named a 'king.' But when Tom was blindfolded or the examiner went behind him, he did not understand what was said to him. He was asked to sit down on a chair and he answered by pointing to his father. He did not understand 'take off your cap,' or 'stand up,' or 'are you going to the pictures?' But such requests were promptly executed when he was allowed lip-reading. Tom, too, then, has very little, if any, auditory word-memory. I tried to teach him the meaning of the words 'stand up.' By much repetition of the sounds and action he seemed to have learned it. I then asked him, when his eyes were closed, to point to the door, then to put his cap on the floor, then to 'stand up,' and he failed completely. Again, when he was blindfolded 'I like the pictures' was said to him. On the eyes being freed he wrote 'I like to six.'

Tom was taught by the ordinary routine methods of a deaf school—by lip-reading. The result has been to develop in him a 'lip-reading word-memory' much in advance of that developed in Wilfred, who has had no such educational advantages. Because of this new memory he can talk in a way much more intelligible to others, and he has been taught to read; but still he has a defective auditory word-memory, although he has acuity of hearing practically normal. His auditory word-memory is not defective because of any lack of its education; it has been bombarded by every known means, and it has not responded. It must be inherently defective if not entirely absent, a condition of affairs similar to that revealed in Wilfred. His only illnesses have been two operations for the removal of tonsils and adenoids.

DISCUSSION.

In one family then, we have found two brothers suffering from a congenital absence or grave defect of an auditory word-memory. There is no other defect or lesion which can be demonstrated; indeed, in Wilfred the lesion is singularly pure for words. There is neither intra-uterine condition nor birth

injury nor early illness to account for the condition ; and even were there some such unrecognised cause, it seems reasonable still to believe that there must be an inherent familial weakness in this ' memory,' for it alone, from any cause, to have thus suffered in two members of one family.

Any cerebral localisation of this word-memory defect, from a consideration of the cases of these two boys, has been impossible, if the defect be indeed a local one. Tredgold⁶ writes : " Considered psychologically, both word-blindness and -deafness are probably due to particular defects in the capacity for symbolic imagery. The patients are neither blind nor deaf in the ordinary sense, but something is lacking in consequence of which the *meaning* of certain characters, the idea they stand for (alphabetical or numeral) or, in the case of the word-deaf the meaning of particular sounds, fails to be apprehended. Doubtless this has a material basis in the imperfect development, or inborn deficiency, of certain groups of neurones, but the actual site of this has not yet been determined." Our two cases take us no further than this as regards any definite ' localisation.' The condition may perhaps be due to some ' departure from the normal ' either in the function of some specialised cerebral cells, or of the brain's general intricate and harmonious working as a whole.

But consideration of these two cases throws some light on the condition of idioglossia as found in Wilfred. He has always been quiet, would as soon not talk as talk, indeed he seldom does speak unless first spoken to. But he is an intelligent and observant boy. He has all his life been hearing his associates accompany their actions and exchange their thoughts by sounds. He has found it expedient in his life amongst others at home and at school to develop and to use a lip-reading word-memory and he, too, has come to clothe his thoughts, as others do, in words. But his lip-reading word-memory is, in development, still far behind his capacity for rational sequence of thought. It seems to be just so far behind as his idioglossia is different from the glossia of his normal associates. For as he educates this memory of his, his own sound-cloak for thoughts, he will be wise enough, according to his intelligence, to replace it by a cloak which will be as similar as he can make it to that used by those by whom he wishes to be understood. The idioglossia as we have found it, then, would appear to be the result of a partially developed lip-reading word-memory being accompanied by a normal acuity of hearing.

The speech of these two boys is not at all like that of the ' congenitally deaf ' seen in deaf schools. In such children there is no idioglossia, but only a mechanical reproduction (in monotone) and use of the teacher's words according to the completeness of the speech education obtained—and there is no more. Tom's reading is of this same character and is in monotone. Wilfred, however, is continually hearing sounds made by others, sounds which he has found he can reproduce ; but he has taken to sounding his thoughts in his very own way, for he has not word-memory enough with which to come to understand the meaning others give to any particular words. As we have

said, the purity of his idioglossia will remain until it is replaced by the fuller education of his lip-reading word-memory—for then he will realise he will possess ‘counters’ for the exchange of thought of considerably more value to himself. On the other hand, Tom has had educated, to a marked degree, this lip-reading word-memory and through it he can read (like the deaf in a monotonous speech); but he has acuity of hearing which gave him at first an idioglossia, an individual language which he has gradually replaced as he has benefited, according to his general intelligence, by his special educational advantages. This would explain the observation of Tom’s teacher at the deaf school—“We got him to talk much better, for at first his words were a jumble, but if only he had not talked by himself but left us to teach him, he would have learned to talk much more distinctly.”

The headmistress reports it has been most difficult to teach James to read, but success has now come after much individual and oft-repeated tuition, and he now talks more distinctly. On examination, he follows language spoken from behind. He is not, then, word-deaf, but it seems that he has had a relative difficulty in learning the meanings of sounds, and that he has had a relative ‘idioglossia’ which he is now losing as his education is advancing.

Finally, it is striking how happy and contented these two boys appear to be. Wilfred, it is true, cried the first time he was blindfolded, but it was not clear whether this was not from apprehension rather than from any sense of inferiority. Later, he seemed only pleasantly amused at the examination, which gradually revealed his affliction. Neither of the boys seems to be aware of any gravity in their disability. Wilfred tells quite with satisfaction that he is going to work in a mill when he leaves school—‘work for money.’ Any thought of handicap evidently has not struck him at all. Perhaps this is because he has not lost something; rather, he has gradually been adding to his accomplishments. At any rate handicapped these boys will certainly be in their common association with others—handicapped, misunderstood and ill-understood probably more than if they had been deaf-and-dumb, for though hearing they will be found not to comprehend, since to hear aright they always must see.

SUMMARY.

(1) A case has been described, similar to those which have on rare occasions been reported as of ‘congenital word-deafness.’

(2) In this instance the condition has been found to be familial—two brothers of one family being so afflicted, and a third relatively so.

(3) If this condition be due to a lesion of some anatomical entity—an auditory word-centre—the usual methods of examination as have been employed in these two cases do not shed light on the cerebral localisation of such a centre. All that can be said is, that, if there be such a centre, it must be of very great specialisation.

(4) It is suggested as possible that the condition may be due to an unusual form of the functional harmony (as an intelligent whole) of the cerebral 'make-up' of the individual.

(5) The results of, or social handicap due to, such a grave inherent abnormal condition appear to depend for the great part on the general intelligence of the afflicted, as measured by his capacity to respond to the educational advantages he may have had.

(6) The fact that one brother has been taught in a deaf school by methods similar to those used in the education of the congenitally deaf allows certain observations to be made which seem to shed light on the phenomenon of idioglossia.

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