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although dumb, was not deaf, but of this there is no proof, and it is very unlikely; for whenever we read of the dumb, either in classical or other history, we may reasonably infer that deafness is understood to exist. This is exemplified in the Bible, where, in Mark vii. 32-37 and ix. 25, the deafness of the deaf and dumb men whom Christ cured is spoken of; while, in other Gospels which relate the same story, they are mentioned as being only dumb. This is probably owing to the fact that the Greek equivalent *κωφος* means both deaf and dumb. Dr Kitto believes, on this ground, that Croesus' son was deaf and dumb, but that he had gradually been recovering his hearing, and had—as is always the case with the deaf who do so, because they have first to learn to understand speech before learning to articulate themselves—been gradually acquiring some words, and came out with some of them under the influence of strong emotion.

The instances in which those born deaf have, after many years, recovered their hearing, as in the case just cited, are very rare; but some few have been collected by Dr Kitto, and they are recorded in his book. One of these was the son of a tradesman of Chartres (A.D. 1703), who was deaf and dumb up to about 24 years old, when, to the surprise of all, he began to speak. He stated that his first time of hearing was on the occasion of the ringing of all the bells of the town one cloudy day, according to the prevalent custom, to dispel the storm. He then heard for the first time, but he never spoke at all until three or four months afterwards, in the meantime occupying his time in picking up both the understanding and knowledge of articulate language, of both of which he was formerly, of course, quite ignorant.

Another case of a similar nature was that of one David Fraser, who was born deaf, and remained so until he was 17 years of age, when he took a fever, and, some weeks afterwards, had what he described as "a kind of motion in his brain;" immediately afterwards he began to hear, and in time came to understand speech.

Before entering into any description of the means which are employed to educate the deaf, or of the history of the develop-

DEAF MUTES AND THEIR EDUCATION. BY CHARLES MACALISTER, M.B., *Hon. Medical Officer to the Liverpool School for the Deaf and Dumb.*

IN October 1889 I brought before the Medical Institution some points bearing upon the education of deaf mutes, my object then being to show that, for the masses of the deaf, the pure oral system (as recommended by the Royal Commission on the Deaf and Dumb and the Blind, the report of which had just been issued) is not so satisfactory as is the combined method. The time at my disposal being very limited on the above occasion, it was impossible for me to give more than a brief description of the various methods employed for conveying knowledge into the minds of the deaf; but so much interest was evinced, that I venture to think a short account of the history of deaf mutes, and of the way in which they came to be educated, may not prove unacceptable.

There have been many interesting cases of deafness recorded, of which the earliest was probably that of the son of Croesus, whose father, after vainly trying all human means for his relief, at last consulted the Oracle at Delphi; but he does not appear to have received much comfort from Pythia, the priestess who was supposed to convey the answers of Apollo to such as came there to ask favours of him, for, to his inquiries, she, in reply, advised him not to desire to hear his son speak, because some evil would surely befall him were his powers of articulation to be awakened; and her prophecy appears to have been fulfilled, for, "when the fortifications of Sardis (his capital city) were taken, a Persian, not knowing Croesus, was about to kill him and he, seeing himself invaded, and not caring to survive his misfortunes, would have met the stroke of death. But his speechless son, seeing the Persian approach, and moved with agony and fear, cried out: 'Man, kill not Croesus!' These were his first words, and from that time forward he continued to speak."¹ It has been suggested that the son of Croesus,

¹ *Vide* Dr Kitto on *Deafness*.

ment of these means, it may be well to give some idea regarding the mental condition of such a one before he has received any instruction.

The deaf child is, of course, entirely unaware of the existence of sound; it is a sensation which he cannot understand, and all the knowledge which a hearing child gets through the ear, the deaf child is innocent of. He, in fact, is only in possession of such information as is by others purely acquired through the eye and the other special senses. He sometimes evidently concludes that there is such a thing as sound, owing to the impression which it produces upon others, but he cannot think what sound is like. He recognises various things which he sees around him simply by his memory of their forms and appearances, but has no names whereby to distinguish them. He learns to know individuals, places, colours, &c., simply by sight, and can refer to them by natural signs. The deaf mute from at least seven years of age is very different from others in his mental condition; being uninstructed, his mind is far behind in its development. It remains more or less infantile, although the emotions and other feelings are as advanced as those of his hearing brethren. He thinks about things evidently, but arrives at wrong conclusions, and is often led into error in his actions in consequence. It was, perhaps, owing to this puerile condition of the adult deaf that, before the 17th century, these unfortunate individuals were regarded as and treated in the same way as imbeciles and lunatics. The absence of speech was considered to liken them to and to degrade them to the rank of the lower animal. They were supposed to be inaccessible to reason, and were worse off than the brutes, through being removed from social intercourse with their fellow-men. From the above it will be evident that the uneducated deaf person depends chiefly upon ocular impressions for understanding what is going on around him. He has no other means of making known his wants or of understanding what others require of him; and, just as the blind have their tactile sensibilities sharpened to compensate for the absence of sight, so the deaf become able to interpret rapidly the meanings

of facial and other gesticulations. As an example of this, suppose you wish to order a deaf mute (who has not been taught) to go to a certain part of the room you point, and expressing with the face determination, indicate your desire; whereas, by assuming an expression of inquiry, you can ask him if he wishes to go to that part of the room. By such signs the deaf and dumb, without being specially educated, become rapidly able to communicate with each other, and even with those who are able to hear. They constitute the natural language of the deaf mute, and all other means of communication are to them more or less artificial. They are called the *natural signs*, and by them these people learn to distinguish actions, places, people, and even abstract ideas. They quickly hit upon some peculiarity of place or person whereby to distinguish them; if a person has a scar on his face for instance, they would indicate him to others by signing the peculiar mark, and that arbitrary sign in future would stand for the proper name of that individual; and I read that it used sometimes to be very confusing if the distinguishing mark was not permanent, as when a gentleman who was in the habit of wearing a patch over one eye for a time, left it off, and continued to be known among his deaf friends by the sign that something covered his eye.

The amount of information which a deaf person had, then, before the 17th century must have been very limited, considering that they had to depend upon their own powers of observation for their education. Being but little understood, and, indeed, the cause of the dumbness being incomprehensible to most, they were thought to be organically deficient in mind, and not only functionally unable to speak, as we know them to be, which idea naturally explains why so little effort seems to have been made to instil knowledge into them by other channels than the ear.

It is, perhaps, not surprising that the earliest attempts at educating the deaf should have been made by endeavouring to make them understand spoken language and use the same themselves. The recognition that dumbness is only the result

of deafness, and that, therefore, the voice apparatus is intact, would lead to this idea, and so it was, for the first published account of importance, to show that the deaf were rational beings and capable of education, was written in 1620 by a Spanish priest called Bonet, who was secretary to the Constable of Castile. This man had a younger brother, who became deaf when aged ten years, and, of course, his education came to a stand-still, and speech began to be forgotten. Bonet, being a man of learning, undertook his education, and succeeded in maintaining his power of speech; and he afterwards educated several other deaf mutes in the same way. But although Bonet was the first author upon this subject, he was not the first to practise the art; for systematic attempts had been made by another Benedictine monk in Spain, named Pedro de Ponce, to instruct the deaf, in 1570. Pedro de Ponce, like Bonet, adopted articulate speech as his means of education, and his example was followed by Van Helmont, a German, who, in one of his works, published in 1657, records the teaching of a deaf man Hebrew by speech.

In this country, between 1650 and 1698, Wallis, who was professor of mathematics in the University of Oxford, openly speculated that the deaf and dumb could readily be taught to speak; and, in proof of his theory, he experimented upon a gentleman who had been deaf and dumb since birth, and he met with such encouragement that he taught many others in the same way; but it would appear that his later pupils were instructed without being taught to speak, although I conjecture that he taught them to read the lips of others.

At this time, also, Dr Amman, a Swiss physician, had taken up the question earnestly in Holland, and instructed several, afterwards publishing a couple of pamphlets concerning the matter; and his method was perfected in Germany, which is the home of the "lip language," by the great Heinicke, who died in 1790, aged 65 years, after practically founding what is now known as the German or Continental system.

Other isolated attempts were made by various philanthropic individuals during the 17th century, and they all of them were

attempts to obtain speech for the dumb. Dr Holder, in London (1669), published his kind of instruction in his book, *The Elements of Speech*. A Dr Bulwer specified his particular method in the *Deaf and Dumb Man's Friend* (1648); and another treatise concerning those that are deaf and dumb was written in 1670, by one George Sibscota. But a great reform took place, and one which led to a vast advance in the mental condition of the deaf mutes, when the Abbé de l'Épée introduced his manual alphabet and language of signs for their education in the year 1760. This constitutes the most important era in the annals of deaf-mutism, for since then this language has been proved by the test of time to be the one most suited to their requirements, and the one by which the largest amount of education can be obtained in the shortest possible amount of time.

The history of this benevolent Abbé is one full of interest, and is characterised by such an earnestness in the work to which he devoted his life, that I venture to tell something of him and of the circumstances which led to his inventing and publishing the description of this important system.

Towards the end of the 18th century a Parisian priest, called Father Vanin, had under his tuition two ladies—twin sisters—who were deaf and dumb, but their teacher, shortly after the commencement of his work, died; and the Abbé de l'Épée had his attention directed towards them, and thinking of the condition of spiritual darkness in which they must necessarily have existed unless instructed, he undertook to teach them, and at length became so absorbed in this work that he determined to dedicate his life entirely to it. His fame soon became known, and a little school which he established shortly came to contain about sixty scholars, and he there also instructed teachers to go to distant parts. People came from almost every country to learn this new art and take it back with them. He attained to an eminence in this particular kind of education never before reached, inasmuch that in his language by signs he was able to express almost any term or idea which the voice was capable of. It, for practical purposes, was as useful

as spoken speech. His book describing his new method was published in 1776, and was entitled *Education of the Deaf and Dumb, by the way of Methodical Signs*.

The Abbé de l'Epeé was a true enthusiast in the work which he undertook. The little institution which he conducted was entirely supported by himself out of a private income of about £600 per year which he had inherited, and of this he only allowed himself about £85 per year whereby to live and keep himself; the remainder was entirely devoted to the maintenance of his school and pupils. And he evidently was of an independent spirit, for we are told that when the Russian ambassador at Paris paid him a visit in 1780, and offered him a handsome present in money from the Empress, he graciously declined it, saying that he "never received gold from any one; but that, since his labours had gained him the esteem of the Empress, he begged she would send a deaf and dumb person to him to be educated, which he would deem a more flattering mark of her distinction." It is said that the Abbé was most particular to apply the sum he had apportioned for the uses of the school to that purpose, and that in consequence he was sometimes very ill off himself, especially when old age and infirmity came upon him. In 1788, when 65 years of age, during a severe winter, he denied himself to such an extent that he became ill; and a deputation of forty of his pupils, headed by his housekeeper, waited upon him to ask him to take more care of himself for their sakes,—a petition which he acceded to by allowing himself an extra few pounds in the year. The life of this benevolent Abbé was one of entire unselfishness and charity, for he devoted all his intellect and well-nigh all that he had in worldly goods to mitigate the misfortunes of his fellows, and his earnestness of purpose is evidenced by his own words. He says, in the preface to his book, "Religion and humanity inspire in me so great an interest for a deplorable class of beings, who, although of the same species as ourselves, are reduced in some sort to the condition of brutes as long as no attempts are made to rescue them from the shades of thick darkness with which they are encompassed, that I consider it as an

indispensable obligation upon me to bring all my exertions to their relief."

De l'Epeé's system, despite many adverse criticisms which were passed upon it by the contemporary authorities on this particular subject and by the philosophers of the time, spread slowly but surely into many lands, and the deaf began to be systematically instructed, and so gradually to be raised towards the intellectual level of the hearing. Among other schools which became established, one of much importance, which had been originally started on the oral system in 1760 (the year the Abbé began his method) in Edinburgh, was removed to London in 1783; and the combined system, *i.e.*, the teaching of both signs and lip language was attempted. In 1790 one of the first asylums for teaching the poor deaf and dumb was founded in London, and Dr Watson, the nephew of Braidwood of Edinburgh, was its principal. Here, after attempting oral teaching for a time, the manual and sign language was entirely substituted, and so it came about at last that the national system of educating the deaf and dumb in Great Britain, as in France, came to be the Abbé de l'Epeé's sign and manual method.

I have already mentioned that, while de l'Epeé was finishing his method in France, Heinicke was working away at the pure oral system in Germany, and he developed it with such an amount of success that it became the national system in that country. In America the sign and manual system has always been the one most extensively taught. It was first introduced there by Dr Gallaudet, who came to England late in the last century to gain information regarding the instruction of deaf mutes. He visited various institutions and schools,—Braidwood's among others; but in this country the methods (mostly on the oral system) were considered secret, so he had to go to France to learn what he wanted. There he was instructed by the Abbé Sicard (de l'Epeé's successor), and he returned to America, taking with him a deaf and dumb pupil of Sicard's, called Clerc, and opened the first of the American schools at Hartford. The Gallaudets still are teachers of the deaf and dumb, and they, with all their experience of all methods, I

believe, still maintain the superiority of the sign and manual, or combined methods, over the pure oral system of education.

Having thus given a short account of the way in which the deaf came to be educated, I shall very briefly mention what will probably be of greater interest, viz., the means taken to educate the deaf; and since there are no less than three of them, each of which has its advantages and disadvantages, I propose to describe them separately, and afterwards to compare the results of their use.

The three systems of education are—

- (1) The sign and manual system.
- (2) The pure oral system.
- (3) The combined method.

The *sign and manual system* is comprised of two distinct parts, viz., a system of signs pure and simple—each having a distinctive meaning which may express an action, person, place, idea, or train of ideas; the other factor being the manual alphabet, by means of which the deaf mute is able to spell out his words. The signs are perfectly simple to anyone who will give them a little study; they are natural signs, and do not constitute an artificial language to the deaf and dumb, as is evidenced by the fact that in school they practically do not require to be taught to sign, for they acquire this language from one another, exactly in the same way that the hearing child learns to speak by hearing other people.

The manual alphabet is utilised in conjunction with the signs, and the two together are capable of being used and of being understood as quickly as articulate speech can be employed. It is very exceptional to see a deaf mute require any repetition who is taught in this way. The alphabet and signs combined constitute an eloquent means of expression—the signs being the element which gives the eloquence.

When taught by the *pure oral system* the deaf learn to express themselves by articulate speech and to read the lips of others. In the schools in which this method is adopted the children are not allowed to sign, under pain of punishment. It must be understood that when they speak they have not

the faintest idea of what sound they are producing; in the majority of cases they have no conception of what sound is like, and consequently the production of an articulate sound by one of them is entirely a mechanical matter; in other words, the child knows that by putting his mouth, tongue, and throat into certain positions, and by breathing in a certain way, he produces a sensation which conveys a meaning to those about him, and consequently he makes use of an artificial sign with the voice apparatus. If he makes a mistake, he is not able to tell where or how, having no "ear" wherewith to correct himself. Similarly he has to learn to tell what is meant when the lips and other muscles of articulation of others are moved. It is quite conceivable that a pupil so taught might consider those around him to be very proficient lip-readers, since he is unaware that they are producing sound at all. From this it will be readily understood that the child taught on the pure oral system has a difficult task to overcome: he has to think out at first the mechanical means of producing every sound he utters, although doubtless this becomes more reflex in its performance as he becomes more and more practised; but, in order to speak at all fluently, he has to learn a large vocabulary, and to have the muscular actions necessary for each word at command for production as required.

The *combined method*, as its name implies, combines the oral system with the use of signs,—either natural signs alone, or together with the manual alphabet. The child, for the most part, is taught on the oral system, but is *allowed* to sign in addition—a special education in signing being little required, as before explained.

In considering the question as to which of these three systems is most suitable as a general means of education for the deaf, we have to take into account that there are two classes of deaf people to deal with, viz., those who are totally deaf and have been so since birth, and those who were once able to hear and speak, or who remain still susceptible to loud sounds. And, again, we must distinguish very importantly between the rich and the poor, for the means taken to educate the one must be

recognised as being sometimes unsuited for the other. It is not my wish to define which method should be adopted in the case of those who are well-to-do—they can get the advantage of private tuition, and the amount of time spent over their education is not of importance; and I have no doubt that for them, as well as for those who can hear a little, or who were once able to speak, the pure oral system is worthy of adoption, and has met with much success.

The point which those who are interested in the deaf and dumb are anxious to arrive at is, the determination of that method which will do most to benefit the masses of the deaf (so many of whom are miserably poor), and which will enable them to obtain the largest amount of knowledge in the time they are at school.

Let us then compare the three systems from this standpoint. I have already hinted that in the sign and manual system we are dealing with a natural language of the deaf, and that the pure oral system is acquired with difficulty. Even among those cases which I have named as being suitable ones for the adoption of the oral teaching the results are frequently disappointing, and even the best of the pure lip-readers are in a very poor position as compared with their brethren taught on the combined method. Their speaking vocabulary is usually limited, whatever the reading and writing ones may be; and I never met with an example in which frequent repetition was not necessary. They are seldom able to carry on a conversation with a stranger, and certainly cannot read the lips of anybody who speaks with average speed. Their voices are monotonous, and in many cases disagreeable, and it is worthy of especial remark that, in consequence of the purely mechanical nature of this means of expression, the pure oralists are sadly wanting in eloquence. Contrast this with the real and natural eloquence of those who are educated on either of the other methods; observe how they are able to appreciate a joke, or what to us is implied by the lights and shades of speech, and I think few will admit that it is proper to deprive the masses of the deaf of the use of their natural language of signs.

It is universally recognised, even on the Continent, that those who are taught in the pure oral schools begin to sign after they leave school, and the tendency then is to become less and less able to speak and to compensate for this by the adoption of signs; and in the meantime they have remained in ignorance of much information which they would have acquired had they been taught in part by signs, because so much energy and time is required to teach the pupils to articulate that much general education is consequently lost to them; and experience has shown that children taught on the combined system obtain a better and sounder education during the time they are at school than those taught orally alone, and they consequently become more useful members of society.

One great objection to the lip language as a means of educating the masses of the deaf is owing to the fact that the lip-reader is only taught to understand a certain dialect, and consequently, when he leaves school and mixes with the particular class of society to which he may belong, or others, he is often quite incapable of knowing what is said, owing to the difference of speech and different modes of expression. The orally taught pupil therefore possesses only a local language, whereas one who can sign as well as speak is practically in possession of a universal language, which, as a matter of fact, is understood not only all over this country, but also on the Continent. This is practically illustrated by the following incident which occurred to a teacher of deaf mutes who visited the pure oral schools in Germany last year. After seeing over one of these institutions, he happened to be leaving just as the school was over, and meeting one of the boys outside, he signed to him: "I am a teacher from over the sea; can you tell me my way to ——— Street?" The boy at once understood, and directed him; then, looking cautiously up and down the street, he signed, "Do they box your ears when you sign in England?" and he evidently thought the English deaf mutes well off to escape such penalties.

When taught on the combined system the deaf are able easily to take advantage of lectures and sermons which can be interpreted

as fast as they are delivered; their capacity for their social intercourse, too, is much enhanced. The pure lip-reader, on the other hand, cannot understand the meaning of eloquence; and the statement made in the Report of the Royal Commission, that interpretation can be made to them by silent word of mouth by a friend seated near, must be admitted to be impossible, because, as before remarked, they invariably require repetition, and, moreover, while the interpreter is explaining one sentence the following one must of necessity be lost, and so the train of ideas is broken.

It is not my wish in any way to depreciate the pure oral system of teaching, where the subjects are suitable ones; but most emphatically do I advocate for the poor and the masses of the deaf the combined method as being most advantageous and most humane.

The Rev. Dr Kitto, who lost his hearing when aged twelve years, but was able to retain and cultivate his power of speech throughout life, says, in speaking of the deaf: "Signs will be their means of expression among themselves, writing (including reading and the fingers) their instrument for acquiring knowledge and for intercourse with those beyond their own class, but speech—learned with so much difficulty and used with so much effort and reluctance—can never be of much, if any, use to them. I am thoroughly convinced that writing and signs are abundantly sufficient for all the intercourse to which a deaf mute is equal."

There is just one other matter to which I should like to refer before concluding. It is commonly supposed that when marriages take place between people who are deaf mutes, the children are sometimes congenitally deaf, and this is put forward as an additional reason why signs should be prevented (*i.e.*, in order that the social intercourse between the deaf may be in some measure prevented). I have ascertained that during the past fifteen years there has not been a single instance in the Liverpool School for the Deaf and Dumb in which a child has been the offspring of deaf parents; and, furthermore, there are at present in our city sixty-two deaf-mute couples, who have among them 219 children and very many grandchildren, and not any of them deaf and dumb.