galvanization of the sympathetic. In 1867 we performed our first experiments on this subject, and found that, on using a very weak ascending current of only 6-8 elements, the frequency of the pulse fell from 120 to 90 per minute.

More lately Chvostek,* M. Meyer,† and others, got good results by galvanizing the sympathetic, especially as regards the exophthalmos and the goître, whilst the influence on the heart was but slight and transitory. The improvement in the goître and the exophthalmos, which was permanent, was also accompanied by improved general health, showing itself in abatement of the chlorotic symptoms, and reappearance of normal menstruation.

On Thought without Words, and the Relation of Words to Thought. By William W. Ireland.

(Continued from page 224.)

Naturally, if a child be dull or stupid, he will be slower to learn the use of the senses or the muscles, and, accordingly, we find that some idiots of the lowest type are not able to learn to walk or grasp. I remember one case distinctly where the only acquired motions were receiving food into the mouth, and following with the eyes the spoon with which he was fed.

Imbecile children are slower in learning to walk or execute other movements than those of normal intelligence, even after they have learned to walk, their gait is slow, uncertain, and awkward, they are clumsy in the use of the hands, and it is difficult to teach them any exercise or handicraft requiring method and dexterity. An easy but superficial way of explaining this deficiency, is to say that it is owing to want of nervous power, deficient sensation, to weakness, or to want of motor capacity. This may hold good in some cases, but in many it is simply owing to the want of the guiding power of the intellect. It would be difficult to say how far idiots are deficient in the proper estimation of size and distance, as their answers to questions are little to be depended on; but I have seen instances in those of a low type, where they grasp at objects obviously beyond their reach. Even imbeciles who can speak, and have a decent degree of intelligence, are generally very inexpert at such exercises as catching a ball, or aiming at anything, and it is difficult to teach them greater

* Chvostek, "Wiener med. Presse," 1869, No. 19; 1871, No. 41; 1872, No. 23.
† M Meyer, "Berliner klin. Wochenschrift," 1872, No. 39.

dexterity. Their awkwardness at any unaccustomed movement is sometimes very striking.

No one is likely to deny that in insanity the power of recognising and interpreting phenomena are much injured; but very little enquiry has been made into the question: Whether, since the intellectual processes by which we arrive at the perception of size and distance, and the use of our muscles, are very slowly learned, or imperfectly performed in idiocy, are they ever deranged in insanity? Amidst their wild reasonings and false inferences have lunatics false ideas of distance or size, and in the obliteration of the mental faculties, which takes place in dementia, do they lose their estimate of distance, or their notion of the proper size of objects? How far is the play of inference and causation that accompanies our sensual life disturbed in mental derangement? or can the extraordinary perversity in the notions of the insane be occasionally put down to the loss of mental guidance?

As already said, there is no doubt that in insanity the capacity of interpreting our sensations is much deranged. Some lunatics lose, as it were, the power of interrogating the impression of the senses, selecting those impressions to which they are wont to pay attention, and correctly judging of their real import. The power of the will is lost, while the conscious mind is the witness of the passage of a procession of wandering ideas, no longer under the control of the judgment, and which it can neither guide nor check. In fact, insanity has often a strong resemblance to the ordinary state of dreaming, in which outward feelings excite ideas, uncontrolled by the parallel acts of consciousness, which accompany us in the waking state, and which keep us informed of our real situation. Many of the delusions of the insane are perverted sensations, and, not unfrequently, their origin is explained by lesions found after death. Lunatics assign pain or uneasiness really felt to rats or snakes, or other imaginary animals within them, to little men, who creep under the bedclothes, and tear or pinch them, or to the malign influence of magnetisers, poisoners, or other tormentors. The patient may talk composedly, and will often argue gravely and plausibly in support of the most monstrous delusions. In insanity the power of imagination or the anticipation of sensations is very strong. He will mistake one of his family for an enemy come to injure him, or a fiend to torment him, and murders are sometimes committed under such false impressions. In

the following instance we have a delusion reduced to its simplest elements :—"An insane person refused to drink, assigning as a reason that there certainly was a person in the bottle containing the water offered to him. The physician, during the patient's meal, observed that the light fell on the bottle in such a manner, that he could see his own likeness in it; but on changing its position, the patient (not seeing his likeness) no longer refused to drink."*

We are well accustomed to deduce from our sensations the objective nature of external objects, but in general we are completely unused to observe our sensations themselves, especially in cases where we cannot assign them to external objects, and this proclivity to refer our sensations to external objects often hinders us from having an exact consciousness of these sensations. In some abnormal mental conditions where the patient is much given to the introspection of objective states, the result of external impressions are sometimes mistaken for subjective changes: for example, I knew of a patient who was subject to alarming fainting fits, which were preceded by a sudden feeling of cold. He was very apprehensive and watchful of these fits coming on, and for years after an unexpected current of air gave him a fearful start as he instantly interpreted the sudden cold sensation as a return of the faintness.

The history of hysteria is full of these instances where subjective phenomena are interpreted as objective ones. I have not been able to collect many instances where there were illusions with regard to size and distance, but it appears that they may occur where there is no mental derangement whatever.

A member of the medical profession informed me that some years before, being in weak health, objects appeared to him to be smaller than usual, just as if they were looked at through the big end of a telescope. This produced the notion that near objects were at a distance, but on his putting out his hands to touch them the illusion immediately disappeared. He found that he could bring on and dispel the illusion at will; but getting into better health it finally disappeared. This is interesting as coming from a trustworthy observer. He seemed disposed to attribute the appearances to a change in the shape and position of the crystalline lens; but

* See Lectures on Insanity, by Sir Alexander Morison, M.D. London, 1848, p. 129.

though it is no longer disputed that a power of accommodation to distant objects resides in the crystalline lens which can change its degree of convexity, in ordinary physiological states at least there is no such amount of adjustment as to explain the effect. Moreover, in a mere change such as would be produced by diminished convexity in the lenses of the eye, the contact of the hand would not readily destroy the illusion, for the hand as well as the object would appear smaller and therefore more distant.

Dr. Grierson, of the Roxburgh Asylum, told me of a lady who, in her last illness, saw her husband and children smaller than usual, and regretted that they always appeared to be so far off.

The condition following the use of Cannabis, or Indian Hemp, closely resembles the delirium of insanity. The alteration of our notions of time and space has been remarked by most writers on the subject.* "Time appears of an immeasurable length. Between two ideas clearly conceived, there are an infinity of others, ill-determined and incomplete, of which we have a vague consciousness, but which fill you with wonder at their number and at their extent. It seems, then, that these ideas are innumerable, and as time is only measured by the remembrance of ideas, it appears prodigiously long. For example, let us imagine, as is the case with hachisch, that in the space of a minute we have fifty different thoughts, since, in general, it requires several minutes to have fifty different thoughts, it will appear to us that several minutes are passed, and it is only by going to the inflexible clock, which marks for us the regular passage of time, that we perceive our error. With hachisch the notion of time is completely overthrown, the moments are years, and the minutes centuries; but I feel the insufficiency of language to express this illusion, and, I believe, that one can only understand it by feeling it for himself." The author illustrates this by the rapidity of thoughts which is noticed in dreams.

Quite as astonishing is the illusion of sight, which makes short distances appear immense. I do not know if this appearance has been observed in other conditions than in poisoning by hachisch, nor can I give a rational explanation. The description is difficult. In this illusion a bridge or an avenue appears to have no end, and to be prolonged to un-

* The following description of the effects of this drug has been translated from an article in the "Revue des Deux Mondes," Mars, 1877. Les Poisons de l' Intelligence, par M. Charles Richet.

heard of improbable distances. When one ascends a staircase the steps seem to rise to heaven; a river, whose opposite bank we see, appears as large as an arm of the sea. Vainly one notices the error of which he is the victim. The judgment cannot rectify this appearance, and we say, "Here is a bridge which has a hundred mêtres, but it appears to be as long as if it were 100,000 mêtres." The author says that these two delusions are very persistent, and often last more than twenty-four hours after the injection of the poison.

I have not been successful in collecting many cases of such illusions in insanity. The subject has been little studied, and several eminent physicians, experienced in the treatment of the insane, have frankly confessed that they have paid very little attention to the question started by me. Possibly an intelligent observer, with good opportunities, might succeed in reaching some interesting results. The following notes will, at any rate, show that the subject has not been entirely overlooked.

Dr. W. A. F. Browne* tells us that Saussure, the celebrated Swiss geologist and physicist, was possessed with the idea that he had grown to an enormous size, and although he knew this notion to be unreal, he ordered doors and partitions in his house to be removed, or enlarged, to facilitate free passage for himself. Saussure had three attacks of paralysis, of which he died, after four years of suffering.

Dr. Browne had a patient who imagined that he did not exceed the size of a barley-corn, and that he was in imminent danger of being carried away by the sparrows, and who would not enter the airing court for fear of being trodden under foot.

Dr. D. Hack Tuke in his new work, "Insanity in Ancient and Modern Life,"† tells us of an insane gentleman whom he knew who believed that he was the man of sin spoken of in the Bible. Speaking of outward nature he said, "Everything has changed its aspect. Objects around me are no longer seen in perspective, but appear flat and raised above one another like a Chinese drawing. Spring will return no more."

Dr. Frederick Skae once told me of a patient seized with sudden insanity, which was cut short by timely treatment, where the man said that objects appeared to him to be larger

* See his pamphlet on "Anæsthesia, Hyperæsthesia, Pseudo-æsthesia. Chiefly as met with among the Insane," 1873.

† Chap. viii., p. 155.

than usual. A young man, who describes his own mental derangement, called Grübelsucht*, or the metaphysical mania, remarks: "What is singular, often all things round about me appear small, so that, in relation to them, I seem larger, or the reverse. It is also astonishing that my taste for a particular pitch of the notes is often changed; for example, sometimes the middle octaves in the piano appear to me the most agreeable, and the higher notes affect my irritable condition in an unpleasant manner. At a later time the high notes please me, and I like best to hear tunes played on the middle octaves." I do not clearly understand how a man can see things larger or smaller without any change in the lenses of the eye, or in their adjustment, and it is difficult to conceive by what perversion of intellect one could estimate things smaller and larger than they really are. If we saw everything half as large, would the horizon not be doubled? and would it not be contracted when we saw things bigger? or do certain objects appear larger or smaller, while the ground upon which they stand or move, retains its usual apparent dimensions? The magnifying influence following intoxication through Cannabis, upon the distance of visible objects, is only a part of a general exaggeration of impressions, mental as well as sensual. Some writers call it Hyperæsthesia of vision. Dr. Moreau† would give to the increased sense of distance the same explanation which Richet restricts to that of the duration of time. Distance is measured by the number of intervening points between us and the extreme point seen: the attention runs from one point to another, and the number of these points being increased, the distance thus seems greater. There are instances on record‡ where the power of vision is much increased, but, on the other hand, it might be contended that in accordance with the principles already laid down, increased clearness in seeing distant objects would have the effect of making them appear to the mind to be

* Die Grübelsucht, ein psychopathisches Symptom von Dr. Oscar Berger, Archiv. für Psychiatrie, vi. Band, 1 Heft.

† Du Hachisch et de l'Aliénation Mentale. Études psychologiques, par. J. Moreau. Paris, 1845, § iv., p. 69.

‡ See one in Dr. Forbes Winslow's "Obscure Diseases of the Brain and Mind." London, 1863, p. 471. Dr. Brachet tells of a man who found that his vision had acquired astonishing capacity since the previous day. He could distinguish the most minute objects at an enormous distance. Five hours afterwards he felt a slight headache, and in a few hours more was seized with apoplexy, and died the next night. A recent coagulum of blood was found in the right optic thalamus. The inflammation which had preceded this effusion had affected a part of the brain immediately concerned in vision.

nearer rather than farther off. The causes of this affection are, probably, rather to be sought for in the hemispheres of the brain, than in the optic tract; they are mental, rather than sensory.

Seeing double, which sometimes comes on in the advanced stage of drunkenness and after the use of opium, is probably owing to the loss of mutual accommodation of the muscles of the eyeballs, and this explanation sometimes holds good where the same appearance occurs with lunatics; but it is evident that it cannot always do so, since there are cases where a single object is seen multiplied three or fourfold. Brierre de Boismont, in his well-known work on Hallucinations,* reproduces from a German writer a curious instance, which I translate without being clearly able to understand his explanations:— "Madame N., a washerwoman, tormented by violent rheumatismal pains, left her trade and took to sewing. Having little practice in this kind of work, she sat up far into the night to gain enough to live upon. This did not save her from being very poor, and she was seized with severe ophthalmia, which soon became chronic. As she continued to work, she saw at the same time four hands, four needles, and four seams. There was double diplopia in consequence of a slight divergence of the visual axes. At first Madame N. took a reasonable view of this appearance, but some days after, her destitution having increased, and making a lively impression upon her mind, she imagined that God, pitying her misfortune, performed a miracle in her favour, and that she really sewed four seams at once."

Since our notions of size and distance, and our power of directing the muscular system being the very basis of all our knowledge, are the first of our acquirements, it is likely that they would be the last that we should lose; hence it is only in the closing stages of dementia or general paralysis that one might expect to find them seriously impaired or totally wanting, Naturally such cases are not favourable for study or analysis, they either do not respond at all to our questions or experiments, or give random, variable, and perplexing answers; hence great caution must be used in our search for examples. Not unfrequently general paralytics seem to lose their sense of weight and size: they try to lift things which their strength is insufficient to move, or they

* Paris, 1852, p. 130.

try to leap over obstacles which are quite insuperable. We also know that, as a general rule, dements lose all the manual dexterity and muscular adjustment which they had acquired; they gaze around in a bewildered manner; they fumble uselessly with their hands; they stagger in their gait; when they try to pick up their food with a fork, they sometimes miss the bit aimed at several times. Finally they give up feeding themselves, and cease to attend to the ordinary decencies of life. Is this owing to paresis, or a loss of sensory power, or ataxic conditions of the muscles; or is it at least, now and then, owing to the loss of the ruling intellect, to inability from sheer want of mind to guide the machinery of the body, and suit it to the changes in the world of sense? No doubt there are cases where the mal-nutrition or disease is confined to the brain, and where no fault can be found with the conducting cord or peripheral nerves.

On the other hand, instances are by no means uncommon where the reasoning faculties are much deranged, as evinced by extravagance in speech, but where the power of doing complicated work and estimating weight and distance are well preserved.

A patient once at Musselburgh, and now in the Roxburgh District Asylum, has often struck me as exemplifying this in a remarkable degree. The man pours forth a torrent of words, sometimes stating the wildest delusions, sometimes giving vent to the most uncouth combination of words in astonishing variety where one can perceive no connection, or a strange association between the words or the words and the ideas, often, in an excited or frenzied manner, and in the midst of all this mad talk he will go on working in a calm methodical way; for example, he will plant out leeks, tracing the lines regularly, and putting in each plant at an equal distance from the other. I do not remember ever to have heard this man make a coherent remark, but I saw an ingenious snare for birds which he had made, and he once showed me two blackbirds which he had caught.

In this case we may suppose that the convolutions in which the movements leading to speech are inaugurated, are the seat of an irritation which arouses these movements, without waiting for the behests of the reason and the will; a flood of words is let loose, many of which have no associated thoughts, whereas those portions of the nervous substance of the hemispheres which have to do with the direction of adapted motions, are at least comparatively healthy, and

their communications with the voluntary muscles (save those of voice) unimpaired. The man can therefore act reasonably, though he cannot talk reasonably.

In some of these cases of verbigeration the sounds uttered by the patients are ordinary words, though having little or no connected meaning; in other instances they are a mere chatter of diversified sounds, bearing a delusive resemblance to some foreign language. The "unknown tongues," spoken by the Irvingites or other visionaries, are probably the mixed result of religious faith and pretension, acting upon a brain disordered by pious frenzies.

I do not think many cases have been observed where insanity has been accompanied by the absolute misdirection of the muscles, so that the lunatic executes motions different from what he purposes, as in the patient described by Dr. Meschede,* of Konigsberg, who, when he tried to execute any motion, either by his own desire, or at the direction of somebody else, always did the very contrary. If he wished to cast his glance to the left the eyes were turned to the right, and *vice versâ*. When he wished to look up, his eyes were cast down. In all the voluntary motions of the body the man assured his physician that the execution was exactly the opposite of what he had conceived and intended. It is difficult to explain this singularity in which the mind seems to have lost the proper direction of the machinery of the human body.

In some instances on record the patients used words in a wrong sense, or substituted one word for another in copying writing. Occasionally they go on blundering in this way without being aware of it, as in the case of the lady mentioned by Trousseau.† She was the mother-in-law of a French physician. "A visitor comes in, she rises to receive him with a gracious manner, and motioning him to take a seat, says 'pig, animal, sorry brute.' 'Madame desires you to be seated,' added her son-in-law, interpreting the meaning of the patient so strangely expressed." Trousseau observes that "the actions of this lady seemed to be sensible enough, and what was wonderful and not usual with aphasiacs, she did not appear to be put about, or to understand the offensive nature of the words which she used."

* "Correspondenz-Blatt der Deutschen Gesellschaft für Psychiatrie und gerichtliche Psychologie," November, 1874.

† "Clinique Médicale," Tome deuxième. Paris, 1868, p. 644.

The Relation of Words to Thought.

Man is not only distinguished from other animals, as *μέροψ* or voice-dividing, but his superior intelligence is shown by the discriminating way in which he uses and reasons from the impression of his senses as well as by the astonishing complexity of the muscular motions which he learns to execute. In fact the human frame would be much too refined and complicated an instrument for a creature of inferior intelligence. The hand alone, without the capacity of using tools, would be, in many respects, an inferior possession to the claw of a wild animal.

But even the most skilful exercises of the human frame are the repetition of processes done by others, or the result of imitations of existing models. It is not man alone that does great things, it is men acting together, and this is done through speech. What we see in language is the tendency or habit of associating our ideas with certain sounds or other symbols in obedience to a powerful impulse, and for this purpose the voice is used as naturally as the arm for striking or the feet for walking. Had man not been furnished with a voice, or been unable to hear, we should no doubt have had some such contrivance as a figurative language like that of the deaf and dumb. There is no difficulty in seeing that the sounds agreed upon to symbolise certain meanings have no natural relation to these meanings. Sounds quite different are used by people of foreign speech, and the construction of languages, though always bearing a necessary relation to human thought is very various.

"Such in truth," says Renan,* "is the richness of the resources of the human mind that there is absolutely nothing in common between Chinese and Sanscrit, the two languages which differ most savè one thing, the end to be attained, that is the expression of thought. Chinese attains this end as well as the grammatical languages, but by entirely different means."

But although a word has no necessary relation to a thought when we have once learnt to associate them together, the connection appears inseparable. When we hear the word the thought comes, when the word arises in the mind the thought follows, so that it is scarcely to be wondered at that a philologist like Max Müller, who has spent his life in examining words, should believe that they could never be dissociated from

* "Origine du Langage." Paris, 1858, p. 217.

ideas, and that a man cannot reason without words. When one takes up this view it must be very difficult to make him part with it. To find thoughts in the mind without words requires a subtle mental examination; and how can we show this to another mind save by presenting the thought in words? How much people could think without words on subjects in which we are wont to use words, is impossible to say, because the experiment has never been tried, at least under conditions in which we could learn the result. If a man existed alone and solitary interpreting his sensations without seeking to communicate his thoughts or his feelings, battling with the powers of nature, and contending with inferior animals, he might then use reason without language; he would no doubt gain experience, and show sagacity in providing for his wants or avoiding hurt and danger. But this is a pure speculation. Such a man is unknown, and the moment he would be found by another man language would begin. Speech is, if not an indispensable method of arriving at any high mental endowment, at least too direct and obvious a one ever to be dispensed with, and it is only in the lowest grades of human intelligence, or in those rare cases where sight and hearing are destroyed from infancy, that we find it wanting.

As a general rule idiots of low intelligence cannot speak. They may possess ideas sufficient to allow them to use a few words, but as we see in normal children, intelligence must be somewhat more matured than this before the gift of speech appears. With this limitation it may be said that these idiots remain mute because they have no ideas which demand expression, and that they speak in proportion to their intelligence. Where the intelligence is feeble, the desire to speak is small, and where the intelligence declines, as in dementia, speech is sometimes given up long before the diminution of the intelligence seems to warrant its cessation. There is a large proportion of imbeciles who can understand what is said to them without being able to say anything. Out of the imbecile children admitted into the Larbert Institution, about 20 per cent. understand speech more or less, but do not speak. Occasionally idiots who cannot speak can hum tunes correctly. Though they do not know the relation of words to their thoughts, they have seized upon the harmonious relation of sounds to one another. This confirms the view that the word centre in the brain is different from the sound centre. Occasionally it happens that imbecile children

who can understand speech, but who have never uttered a word, have a good deal more intelligence than those who can speak. In these aphasic idiots words must exist as remembered sounds.

Sometimes under unusual stimulus or emotion, these mutes utter a few words; but the power of speech dies away with the momentary impulse that called it into play. Sometimes the approach of death causes a few words to be uttered. Of this there is a new example in the 19th Report of the Eastern Counties Asylum for Idiots and Imbeciles. Mr. Millard writes —"A boy was here for several years who had not been known to speak until a few hours before his death, when he uttered several intelligent sentences; another was suddenly roused to speech by an unexpected circumstance, and afterwards he continued to speak."

Dr. Adriani* tells us of a case which was recently verified. An idiot of eighteen years of age had remained depressed, and, as it were, stupefied from infancy, and who uttered no other word than "mamma." Having taken typhoid fever, his look became more lively; the expression of his physiognomy changed, and his mind expressed an unaccustomed vivacity. He spoke in an animated manner of what he suffered, and after recovering from the fever, from being sad he became gay, and he was able to express his ideas in varied words, to learn and sing songs, and to keep in remembrance the names of things and of persons.

Dr. Adriani cites a number of instances where insanity disappeared after typhoid fever. He considers that by the excitation of a new morbid process, the blood supply and nutrition of the brain are probably modified.

Dr. Wigan† gives a case of the sudden excitation of speech almost as wonderful as the well-known story of the son of Crœsus:—"An export merchant in the present day, whose immense establishment is one of the most conspicuous and remarkable in the city of London (and who consulted me professionally, many years), had a son, about eight years of age, perfectly dumb, and the family had abandoned the hope that he would ever be endowed with the gift of speech. There was no defect in intellect, nor lesion of any other faculty. In a water party on the Thames, the father fell overboard, when the dumb boy called out aloud, 'Oh, save him! save him!'

* "Relazione Statistica Clinica del Frenocomio," di S. Margherita di Perugia per gli Anni, 1874-1875-1876, del Medico Direttore Roberto Adriani.

† "The Duality of the Mind," London: 1844, p. 377.

and from that moment spoke with almost as much ease as his brothers. Two of my intimate friends were present at the miracle which was the subject of unbounded joy and congratulation. The young gentleman is now one of the most active and intelligent members of his father's firm."

Wiedemeister* cites the instance of a bride who, on rising from the wedding breakfast to go away with her husband, became speechless, and remained so till she was moved by the sight of a burning church to call out "fire," and from that time she again had the use of words. So few of these stories are recorded, that one feels tempted to believe the desire of exciting wonder must have coloured the narrative, but such cases have their analogies in sudden recoveries from paralysis of the limbs. Probably the injured nervous centres or conducting tracts have for some time recovered their lost capacity, but through disuse and wasting do not resume their functional activity till stimulated by some sudden mental excitement or electric shock, when they respond with a start, and afterwards continue to act.

(To be continued.)

A Case of Microcephalic Imbecility, with Remarks. By G. E. Shuttleworth, B.A., M.D., &c., Medical Superintendent, Royal Albert Asylum, Lancaster.

The following account of a case of microcephalic imbecility, for three years under observation in the Royal Albert Asylum, Lancaster, may be of interest, both on account of the family history and of certain abnormalities in the structure of the brain and heart observed at the autopsy.

Mary X— was admitted into the institution in April, 1874, being then twelve years of age. She was at that time noted to be a girl of slender build, but fairly well developed in external physique, with the exception of a remarkably small head. With a stature of 61½ inches and a weight of 87lbs., the head measured in its greatest circumference rather less than 17 inches. Its outline was somewhat oxycephalic, though this was disguised by a profusion of dark-brown hair. The features were regular, the nose aquiline, the eyes large and lustrous, and the dentition good,

* "Die Störungen der Sprache: Versuch einer Pathologie der Sprache," von Dr. Adolf Kussmaul. Leipzig: 1877, p. 201.