ON THE TREATMENT OF CHOREA.

SUMMARY.—Different Kinds of Chorea—Curability of Chorea—Pathogeny of Chorea—Divers Medications Proposed—Muscular Medicaments—Strychnine—Aniline—Eserine—Curare—Medullary Medicaments—Picrotoxine—Hyoscyamine—The Bromides—Electricity—Galvanic Baths—Ether Spray—Anæsthetic Medicaments—Morphine—Chloral—Chloroform—Medicaments that Act on the General Condition—Tartar Emetic—Blood-Letting—Hydrotherapy—Sulphur Baths—Gymnastics.

GENTLEMEN—From the standpoint of therapeutics, what distinguishes chorea from the other neuroses which we have been considering, is its spontaneous march toward recovery. This is a fact of capital importance and has a preponderant bearing on the discussion in which we are about to enter.

Chorea[1] in fact presents, like all the cyclical diseases, a period of increase

[1] Chorea (St. Vitus' dance, St. Guy's dance) is a disease of the second period of childhood and of puberty; its maximum frequency is from the age of 11 to 15, and 15 to 25. It may, however, show itself at all ages of life, and is more frequent in females than in males. It is acute or chronic, general or partial, continuous or intermittent, and may, in accordance with its causes, be divided into hysterical, rheumatic, saturnine, etc. The onset of the disease may be sudden and marked by an epileptiform or hysterical attack after a fright or a strong emotion, but almost always its development is slow and gradual, and it announces itself by a change in the character, the intelligence, and the habits of the patient; the child becomes ill-natured, impressionable and irritable, forgetful, inattentive and idle; its voluntary movements are jerky and incoördinate. When the disease is confirmed, involuntary movements make their appearance, commencing by the face, one of the arms or one hand (ordinarily the left), then they gain the trunk and the lower extremities; these choreic movements at first light, soon increase in intensity and become general, attack the muscles of the arms and legs.

In order to seize an object the patient executes a series of jerky movements, or projects vehemently his arms forward, over-reaching his end, or hits the object without being able to grasp it. He cannot grasp a small object or he lets it fall; he cannot carry his cup or his food to his mouth without spilling a portion. His manner of walking is uncouth and jerky; he walks zig zag, his legs cross each other and frequently a fall is the consequence. The face is the seat of irregular contractions, twitchings; the forehead wrinkles and again becomes smooth; the eyebrows corrugate spasmodically, the eyelids wink in a lively manner; the lips open and shut, the mouth is the seat of grimaces; the visage in a word, executes a series of movements, and expresses in a brief space of time sentiments the most diverse. The muscles of the tongue, of the larynx and of the pharynx are affected also. The tongue is thrust violently out of the mouth, executes divers movements which prevent the patient from speaking intelligibly; there are even children who are so conscious of their condition that they seem to hesitate before speaking, slowly meditating what they wish to say. The troubles of the tongue and pharynx impede deglutition; those of the larynx give a hoarseness to the voice. When the limbs are affected there is no rest; the child moves about from place to place; whether sitting or lying down, its members execute abrupt constant movements, so dangerous even, that it is often necessary to put on the strait-jacket, or to protect the bed on which the patient lies, and even the walls, with boards or cushions, so as to keep him from falling, or to deaden the effects of the blows. The movements are persistent and rapidly wear out the bed clothes, and cause irritation with excoriation of the skin. When the patient wills to execute a movement it seems that the very desire and attention are excit-

or "augment," a stationary period, "fastigium," and a period of decline; it passes through all these stages in an average time of two to three months, and you well understand that this spontaneous tendency toward cure modifies the results obtained by an appropriate treatment, according as such treatment is instituted at the beginning or decline of the disease. Therefore, whenever you would appreciate the value of any kind of internal medication directed against chorea, you should base your judgment, not on the duration of the treatment, but on the entire duration of the disease; and when the latter corresponds pretty closely with the normal and spontaneous evolution of the malady, you may conclude that the medicine has been of little utility.

From such considerations, moreover, we ought utterly to abjure all violent modes of treatment, which may become dangerous by the troubles which they are likely to occasion in the organism. Death is fortunately rare in chorea, but does sometimes happen in consequence of excoriations produced by the disorderly movements of the child.

What I have to say on this occasion will concern true chorea, that ordinary form of motor incoördination which affects childhood and develops, as Sée and Roger have shown, under the influence of rheumatism.[2] I leave, then,

ants of the inco-ordination, and develop an ataxic condition of the muscles (*folie musculaire*). The child executes a series of strange movements and contortions before being able to touch the object that it desires. Except in very violent cases of chorea these movements cease during sleep. The sphincters are affected in some cases. According to Spetzmuller and Benedekt, the heart muscle may also be affected. The sensibility is troubled in different ways; pains in the temples, the forehead, the back of the neck, the muscles, formications, numbness in the limbs or joints; anæsthesia and hyperæsthesia of the skin, and there are often painful points over certain nerves. In hemichorea, symptomatic of a cerebral lesion, hemi anæsthesia is frequently observed. The memory, attention, intelligence are all lost; the character is changed; the patient is indifferent, changeable, good natured or passionate, and becomes very timid. You also observe hallucinations, diurnal or nocturnal, sometimes even maniacal delirium. All these divers troubles have an influence on the general condition; there are palpitations of the heart, often intermittences, irregularity in the beats (chorea of the heart), cardiac pains; the digestive functions are disturbed; there is anorexia, flatulence, often constipation and anæmia, or chloro anæmia, develops rapidly. In young girls menstruation ceases or becomes very irregular. Chorea has an average duration of two to three months; it may last longer than this, rarely has a shorter run. Fatal terminations are quite infrequent, yet death may take place either suddenly by cerebral rheumatism, or slowly by nervous exhaustion as a consequence of insomnia, extreme agitation and delirium; the excoriations, the wounds and bruises, the phlegmons caused by the disordered movements of the little patient often induce prolonged suppurations which cause death. Ordinarily chorea gets well without passing to a state of chronicity, or leaves after it nothing but facial spasms (*tics de la face*, a sort of partial chorea). Relapses are frequent; they often break out in autumn, at the period of puberty, on the occasion of pregnancy, but the attacks become less and less long and less intense. Chorea of pregnancy develops especially in primiparæ and in the first four months of gestation; it predisposes to abortion or premature accouchement.

[2] The causes of chorea are predisposing and exciting. Among the former we reckon age, sex and heredity. The disease, rare in warm climates, is oftener seen in winter than in summer. Very frequent between the age of 15 and 20, it has been observed in very young children (Simon and Constant report cases in infants not a year old), nor is it rare between the ages of 35 and 50; Charcot has seen chorea at the age of 70 years, Roger at 83,

completely to one side those symptomatic choreas and all those disorders of movement which have been described under the name of "St. Wyt's dance" (dancing chorea), and all those partial choreas and rhythmical twitchings of muscles which are referred to athetosis, disseminated sclerosis, to paralysis agitans or simple nervous debility.

The causes of chorea are predisposing and determining. Among the first are age, sex and heredity. The disease, rare in warm climates, is more frequent in winter than in summer. It is observed between the ages of eleven and twenty, rarely between thirty-five and fifty, and occasionally in advanced life. It is much more frequent at the age of second dentition, or at the period of puberty. It is also more frequent in females than in males. Heredity plays an important part. Children inherit this neurosis from choreic parents, or it may be that epilepsy, hysteria, etc., are family diseases. Venereal excesses and masturbation predispose to chorea.

The determining causes are numerous: Strong emotions, fright, anger, may produce it. It is sometimes seen in the course of a protracted fever, or during convalescence. Pregnancy, menstrual irregularities, uterine affections, are causes of chorea.

Among the most powerful causes are articular rheumatism, endo-pericarditis, intestinal worms and anæmia.

The relation of rheumatism to chorea has long been noted. In France it has been studied by Germain Sée and H. Roger, who consider chorea a rheumatic affection. This opinion has been vehemently combated by Grisolle,

but its greatest frequency is at the time of second dentition, or at the period of puberty. It is more common in females than in males. Heredity plays an undoubted part, and children inherit this neurosis from parents that were choreic, hysteric, or epileptic. Venereal excesses, onanism, by the nervous exhaustion which they entail, predispose to this disease. The exciting causes are numerous; strong emotion, fright, anger may provoke the disease, and it is not rare to see it manifest itself during the course of continued fever or during convalescence. Pregnancy, menstrual troubles, uterine affections, are all causes of chorea. Among the most powerful causes we include articular rheumatism, intestinal worms and anæmia. The relation of rheumatism to chorea has been long remarked. In France it has been studied especially by Germain Sée (1850), and H. Roger, who consider true chorea as a rheumatic affection. This opinion, however, is not accepted by all; (for instance, by Rilliet and Barthez, Barrier, Grisolle, Monneret, Graves, Niemeyer, Empis). According to Sée the coincidence between chorea and rheumatism is so frequent that out of every two rheumatic children, one will be choreic. Chorea may, moreover, show itself in the course of rheumatism, precede it, or alternate with attacks of rheumatism. Roger has, moreover, shown that chorea may manifest itself in children that have had rheumatism, that it appears a little while after the rheumatism, or as a complication.

It may develop at the period of decline of rheumatic fever, or may attend the cardiac manifestations of rheumatism (pericarditis, endocarditis), when there are no joint manifestations. In these cases the chorea either precedes or succeeds the cardiopathy; it may, however, occur simultaneously.

Some authorities consider the cardiac lesions as the starting point of the neurosis, the disease having for origin irritation of the nerves of the heart (Bright and E. Cyon).

According to Hughlings Jackson, Tuckwell, and others, chorea is due in these cases to cerebral embolisms, caused by pre-existant endocarditis; these emboli occurring in the corpora striata.

Graves, Niemeyer and others. According to Professor Sée, the coincidence of chorea and rheumatism is so striking, that out of every two children affected with rheumatism, one of them becomes choreic. Roger also has shown that chorea manifests itself often in children who have had rheumatism; and that it accompanies or immediately succeeds that disease.

Its existence frequently coincides with the cardiac affections of rheumatism (endocarditis, pericarditis). Certain authorities consider the cardiac lesions as the point of departure of the neurosis. Bright and Cyon think that it is due to irritation of the nerves of the heart. Hughlings Jackson and Tuckwell trace its origin to cerebral embolisms caused by a preëxisting endocarditis; the em bolic infarctions being in the corpus striatum.

Like every disease which tends of itself toward recovery, chorea has received a variety of treatments; it has been natural to attribute to the medicine given the cure which one has observed. Therefore, in order to give system to the details into which I am about to enter, I shall have to range these treatments in different classes, and we will study them under four heads.

In the first group we shall examine muscular medicaments. Struck by the ataxia of movements characterizing the disease, certain physicians have essayed to cure chorea by means absolutely opposite; one class of remedies augmenting muscular contractility, like strychnia and aniline, another destroying it, like eserine and curare.

In the second group we place medicaments addressed directly to the spinal cord. Although the latest researches have attributed to a cerebral origin the clonic movements which are observed in chorea, a preponderating rôle in the production of this neurosis has always been assigned to the spinal cord and its membranes, and authorities have even gone so far as to pretend that it was only the result of a rheumatic affection of this part of the cerebro-spinal axis. You will not, then, be astonished to learn that medicines addressed particularly to this supposed medullary affection have been recommended, such as bromide of potassium, oxide of zinc, the ether spray and applications of ice along the spinal column.

It is upon an altogether different basis that is established our third class of medicaments. Noting that sleep arrests choreic movements, some have thought that by artificially producing sleep, they might stop the muscular disorder. Therefore chorea has been treated by soporifics, such as opium, chloroform and chloral.

Finally, in a fourth and last group, I place those medicaments which are directed to the state of the vital forces, and here, as in the case of the first class, we have two kinds of treatment diametrically opposed; in the one are the depressants, such as tartrate of antimony; in the other tonics, such as arsenic, hydrotherapy, sulphur baths and gymnastics.

Let us examine the first of these groups, the muscular medicaments. In this group we have the tetanizers and the paralyzers of muscles. It was Trousseau who first brought into vogue the treatment of chorea by strychnia, though this drug had previously been employed by Lejeune, Neumann and Cazenave of Bordeaux. Trousseau prescribed very large doses of strychnia, giving five

and even ten centigrams of strychnia daily (from one to two grains) to choreic patients, and determining tetanic contractures of the masseters. Despite the support which West has quite recently given to this treatment, and the favorable results cited by Lacaze Duthiers and others, notably by Hammond in America, I have not seen any benefit from such heroic medication, and cannot advise it, being persuaded of its inefficacy and its danger.[1]

I must say the same of aniline,[2] which is, as you know, a convulsivant poison, which Turnbull, Filiberti and Frazer have employed in chorea.

By the side of these convulsivant medicines I must place those which have an opposite action, namely, the paralyzers of muscle. I shall pass by curare and curarine, which have been employed by Drummond, Day and Fulton, remedies whose utility in chorea is still *sub judice*,[3] and shall make brief mention of the alkaloid of Calabar bean.[4]

[1] Instead of translating a long foot note of the author giving the French method of giving strychnia, popularized by Trousseau, I present Hammond's method, from his Treatise on Nervous Diseases. He makes a solution of strychnia one-half the strength of the liquor strychniæ of the P. Br.; thus: ℞ Strychniæ, gr. j.; aquæ, ʒ ss. Dose, five drops t. i. d. to a child from ten to fifteen years of age. The dose should be increased by one drop daily till the physiological effects of the medicine are manifested, as evidenced by stiffness of the legs and neck. When this takes place the dose should be reduced to five drops and increased as before.

[2] Aniline or phenylamine (C^6H^7N) is the first term of a series of aromatic alkaloids; it was formerly obtained from indigo. It is now obtained from coal-tar. In toxic doses aniline produces eclamptic attacks, and first excites, then paralyzes the nervous system.

Turnbull gives aniline in doses of from three to five grains, increasing gradually the dose up to fifteen grains. (*a*)

[3] In the London Lancet (reprint) for 1879, p. 352, is an interesting report of cases treated in the Samaritan Hospital by hypodermic injections of curare (service of Dr. Day). One-sixtieth, one-fortieth, then one-tenth of a grain, daily, was injected. The latter dose calmed and improved the patient in every way for thirty hours. Dr. Day followed up the benefit derived by giving sulphate of zinc, three grains, t. i. d. Dr. Drummond, of Newcastle-on-Tyne, had previously treated and cured an obstinate case of chorea by the subcutaneous injection of curare. (British Medical Journal, June 15, 1878, p. 857.) The curare was in small square discs of 1-60th grain, prepared by Savory & Moore; these discs were soluble in three or four drops of water. Dr. Day remarks that chorea, which has hitherto been regarded as a spinal disease, seems, in consequence of the association of mouth movements with movements of the limbs, to have a decided cerebral aspect. The experiments of Hitzig and of Ferrier show that the centres for movements of mouth and limbs lie close together in the motor area of the brain. The hypothesis then suggested itself that chorea might be the result of a rippling discharge from the motor centres lying around the fissure of Rolando. The possibility that this may be the case renders the therapeutics of this affection still unsettled and unsatisfactory.

[4] Bouchut has employed sulphate of eserine in 437 cases of chorea and of convulsive neuroses in infants from seven to twelve years of age. In 205 cases the medicament was introduced into the stomach in the form of pills of $\frac{1}{30}$ to $\frac{1}{12}$ of a grain. In 232 other cases it was administered hypodermically in the same doses. When sulphate of eserine is injected under the skin in doses varying from $\frac{1}{30}$ to $\frac{1}{12}$ of a grain, you first observe nausea and malaise, then sweat rolls from the face, there are cramps in the stomach, vomiting, and paralysis of the diaphragm. The action of eserine introduced into the stomach is much less marked than by subcutaneous injection, and $\frac{1}{12}$ of a grain by the mouth corresponds to $\frac{1}{30}$ of a grain under the skin. Bouchut has compared the results in animals and in men, and has shown that they do not agree. In the treatment of chorea by eserine, Bouchut obtained a cure in an average of ten days; should the eserine lose its effect, he caused the injection to be repeated three or four times a day, giving each time from $\frac{1}{20}$ to $\frac{1}{12}$ of a grain, so that every day the patient would receive $\frac{1}{4}$ to $\frac{1}{8}$ of a grain. Cadet de Gassicourt has repeated this experiment in four cases, and has obtained no result whatever, therefore he discards this treatment. (*a*)

(*a*) Turnbull, on the Physiological Properties of Sulphate of Aniline and its Use in the Treatment of Chorea (Lancet, 1861). Filiberti, on Aniline in Chorea (Gaz. Med. de Lyon, 1864). D. Beaumetz, Art., Aniline, in Dict. de Ther.

Eserine has been recommended in the treatment of chorea by Bouchut. It is to him that we owe the greatest number of observations, some 437 cases of chorea having been treated with eserine by this practitioner. Despite the advantageous results claimed for this method, since, according to Bouchut, an average of eight days of treatment suffices in the majority of cases for a cure, this medication has not been received with favor, and I know of no one at the present day who employs it. It is, in fact, a dangerous treatment, nausea and symptoms of paralysis of the diaphragm following the absorption of this alkaloid; and, although no grave accident was observed in the cases reported by Bouchut, serious evil is likely to result from the use of this powerful toxic agent.

The same dangers attend the use of hyoscyamine, the favorable effects of which in the treatment of tremblings in general, and of chorea in particular, Oulmont has taught us.[5] The danger results chiefly from the unreliability of the preparation; there exist, in fact, in commerce, hyoscyamines of variable intensity, and one obtains different effects according as he uses the preparations of different pharmacists. Recently, at the Societé des Hôpitaux, our colleague Empis reported grave toxic symptoms following doses of 5 milligrams of hyoscyamine.

All these alkloids, whose action is so energetic, ought to be discarded in chorea, for the risk attending their use is out of proportion to the problematical benefit derived from them, in the case of a disease which runs a definite course, with predominating tendencies toward recovery.

Our second class of medicaments is constituted of those which are addressed particularly to the spinal cord, whose excito-motor power they diminish. At their head is placed bromide of potassium, a precious medicament, which we have already seen employed with so much success in the treatment of

[5] Oulmont has treated five patients affected with chorea and aged from 20 to 36 years, by hyoscyamin, and has obtained favorable results. He administers hyoscyamin in pills of $\frac{1}{60}$ of a grain, until amelioration is produced, but never exceeds 10 pills a day. According to Oulmont, chorea is one of the neuroses which seems to be the most favorably influenced by this medicament. (*b*)

(*a*) Bouchut, Therapeutical Researches on the Action of Eserine in Chorea (Bull. de Ther., t. 88, 1875, p. 89, and t. 89, p. 541). Cadet de Gassicourt, note on the Employ of Sulphate of Eserine in Chorea, Jour. de Ther., 1875, p. 541).

(*b*) Oulmont, on Treatment of Chorea by Hyoscyamin, Bull. de Ther., t. 89, 1875, p. 145. Brochin. Treatment of Chorea by Hyoscyamin, (Gaz. des Hôp., 1875, p. 1018).

epilepsy and hysteria. It has also found a place in the treatment of chorea, and Kohn has shown us what to expect from the bromide in this affection.[1]

For my part, I believe it is in the hysterical choreas that the bromide treatment does the most good. You know, in fact, that chorea is often a manifestation of hysteria, and the happy influence of the bromide in these cases is easily understood. In the chorea of children, however, the bromide is very far from being as efficacious, and, notwithstanding the facts presented by Gubler, Gallard, Hough, Worms, and Tarchetti, I share the opinion expressed by Ziemssen, Steine, and Dally, and believe that bromide of potassium is not of utility in ordinary chorea, unless, indeed, administered in doses sufficient to produce bromism, and here the disadvantages are out of proportion to the advantages derived.

In England and the United States sulphate of zinc is much used in the treatment of chorea. Barlow at Guy's Hospital, West and Butlin, in England, and Hammond, of New York, speak highly of this medicament, which is given in doses of a grain or two, gradually increased till as much as fifteen or twenty grains are taken three times a day. As this salt is very irritating to the stomach, it has been proposed to give it largely diluted.[2]

In France we rarely use this medicament, which in many points bears a resemblance to internal metallotherapy; and just as to the treatment of certain hysterical symptoms it has been of late customary to apply magnets and metallic armatures, so also it has been proposed to treat chorea by this method, and Burq, in 1859, reported cases of St. Vitus' dance cured by metallotherapy. I refer to these facts without comment, for they are not yet sufficiently numerous to warrant us in drawing conclusions from them as to the utility of metallotherapy, or even of zinc sulphate in chorea.[3]

Picrotoxine, which we have already seen used in epilepsy by Planat, has

[1] Kohn in his treatise cites ten cases of chorea treated successfully by bromide of potassium. He urges the importance of giving large doses, and he himself gives from one to two drachms a day. These doses, he thinks, have no injurious effect. (*a*)

[2] *Vide* Wad. Clinical Lectures on Chorea and its Treatment. (British Medical Journal, 1827). Dr. Wad favors the large doses in chorea. Barlow, On the Treatment of Chorea by Zinc Sulph. (Medical Times and Gazette, 1857.) Butlin, Cases of Chorea Treated by Sulphate of Zinc. (Lancet, 1871.) West on Diseases of Children, article Chorea.

[3] It may be thought that the author, who is a recognized leader in therapeutics in the old world, is too much of a nihilist in treatment, and that he has rather summarily disposed of—as of little value—some of these medicaments, much employed in chorea. Certain it is that multitudes of practitioners all over this country, as well as elsewhere, are using bromides and zinc in this affection. It is always proper to ask the reasons for our cherished be-

(*a*) Kohn, on the Treatment of Chorea by Bromide of Potassium in Large Doses, Thése de Paris, 1870. Gubler, Chorea Treated by Bromide of Potassium (Gaz. Hebd., 1865). Dumont, Chorea in a Pregnant Female Cured by Bromide of Potassium (Bull. de Thér. Feb., 1865). Gallard, Rheumatic Chorea Treated and Cured by Bromide of Potassium (Bull. et Mem. de Soc. Med. des Hôp. de Paris, 1869). Worms, Intense Rheumatic Chorea Treated and Cured by Bromide of Potassim (Gaz. des Hop. 1869). Hough, Chorea of Thirty Years' Standing Cured in Six Weeks by Bromide of Potassium (Phil. Med. and Surg. Reporter, May, 1869). Axenfeld and Huchard, Traité des Neuroses, Paris, 1882.

also been tried in chorea; but these are trials which have not been repeated. I may say the same of nitrite of amyl, employed by Winfield–Ziegler.[4]

Electricity has been made use of under two forms, as galvanism and as galvanic baths. Remak and Onimus have recommended constant currents, applied along the spine; these, which ought to be descending currents, according to Onimus, diminish sensibly the motor incoördination and the duration of the disease.

Constantin Paul has eulogized the galvanic baths, which, if they do not give very positive results in chorea, seem at least to modify in a happy manner choreas of long standing, and choreic tremblings. You ought then to know how to give these baths, whose practical application is very simple. The electric bath is composed of three parts; a bath-tub, a battery, and an electric coil. The bath-tub ought to be insulated, and should rest on glass legs, or its inner surface should have an enamel coating of glass or some other non-conductor. The battery consists of a single Bunsen cell; as for the helix, it is furnished with an interrupter and a graduator which enable you to increase or diminish the intensity of the current; it is constituted by a single wire sixty meters long and three millimetres in diameter. This is the way you manage this apparatus: The positive and negative poles of the battery communicate with the helix; then after having formed part of the coil, they terminate in two stops destined to receive the two other wires. These last terminate in the bathing-tub, the one at the foot, the other near the head; they end in two carbon plates which are fixed to the two extremities of the tub. The tub being well filled with water at a temperature of 35° to 37° C. (95° to 98° F.), the patient immerses himself in the water, with his back against the carbon plate where ends the negative pole, while his feet rest on the plate that represents the posi-

liefs, and therefore it is proper to demand of those physicians who have the most faith in these remedies in chorea, if their faith is well grounded.

The darkness in which the etiology of this disease is enshrouded ought to lead us to hesitate before we treat chorea as a neurosis whose essence is spinal excitation, pouring in the bromides till reflex excitability is well-nigh abolished and the blood is seriously impoverished; this, too, in the case of a disease characterized by anæmia and debility.

As for sulphate of zinc, when it does good in chorea, I am persuaded that it benefits not as a spinal medicament but as a general tonic, and hence deserves to be placed by the side of iron and arsenic. Nor do I believe in the large doses advised, despite the high authority of the late Dr. Thomas Watson. (*Vide* Braithwaite's Retrospect, Part 80, page 54. TRANS.)

[4] Winfield-Ziegler has employed nitrite of amyl in chorea, and has thus effected cessation of movements after one or two weeks. This medicament is given by inhalation and the dose varies from three to ten drops, three times a day. The dose may be increased after several days; no harmful results have ever been observed. As for galvanic baths, Constantin Paul has applied them to the treatment of alcoholic trembling, of multiple sclerosis and chorea. In two cases of chorea he obtained in the one a rapid cure, in the other no result. These galvanic baths had a favorable effect on tremblings in general, from whatever cause.(*a*)

(*a*) Winfield Ziegler, on the use of Nitrite of Amyl, especially in Chorea (Phil. Med. Times, July, 1876). Constantin Paul, in Bull. de Ther., t. 99, p. 193, on the Treatment of Tremblings and Other Troubles of Coördination of Movement by Galvanic Baths.