structure and organization of the fair sex, but that art, and irrational attempts to improve the figure bestowed on them by Providence have worked the mischief observable in their physical constitution. Nature has imposed laws on organized beings which cannot be violated with impunity. The mutual relation between the intellectual, automatic, and mechanical functions is such, that the over-exercise of any one of these entails injurious effects on the rest. Abstract studies, and all mental exertion, ought to be followed by mechanical exercises. Walking, running, and leaping are within the reach of all ranks, yet even these are denied to the progeny of the wealthy, and carriage exercise is substituted for them. The delicate, pale, and unhealthy chlorotic countenances of most persons thus circumstanced, sufficiently indicate the baneful effects of such a system.

Delpach has strongly insisted on the necessity of gymnastic exercises, and in his excellent work has given numerous illustrations of various kinds of attitudes and movements which tend to bring the different muscles of the body into action, to improve the figure, and to strengthen the constitution. In France, Germany, and Piedmont, gymnastic establishments are under the patronage of government. In England, they are introduced into some of the military schools; and there has lately been erected a gymnasium for the use of civilians in the neighbourhood of Primrose-hill. At University College, London, the gymnasium is under the superintendence of Mr. Chiosso; and gymnastic exercises are enjoyed at some of the ladies' boarding schools about the metropolis; nevertheless, there is much need of some other establishments of this kind, which might be erected either by government, or by private subscription, and which should be placed under the superintendence of persons competent to direct the nature and amount of the exercises in individual cases. When any person undertakes the study of the anatomical and mechanical functions of the organs of locomotion in man, he soon perceives that the subject opens to his view a mechanism consisting of a large number of parts connected together, and made more or less dependent on each other in a very beautiful manner.

The bones, the joints, the ligaments, and the muscles, are all adapted to each other for one common end; namely, the preservation and enjoyment of the whole body. So exquisitely are the several parts adjusted, that the smallest mechanical derangement of any one entails corresponding changes in the rest. There are two methods of inquiring into the nature of these corresponding changes of attitude; namely, the inductive and the deductive. By the former method we are able to observe experimentally what changes actually take place in the body, and trace these effects to their causes; and by the latter, we may state each particular case either as a problem for solution, or a theorem for demonstration; but whichever method is adopted, or if they are combined to suit particular cases, the student will find in human mechanics enough to engage a large portion of his life. We have had physico-mathematical problems solved by Mayo, Borelli, D. Bernouilli, Barthez, W. and E. Weber, and others. He who desires to attain a knowledge of the human body, viewed as a moving machine, will be amply repaid his labour by studying MM. Webers' "Mechanik der menschlichen Gehwerkzeuge," which gives an excellent idea of the nature of these subjects. In some cases the analytical method requires to be verified by experiment; such, for example, as the swinging of the leg in walking, inasmuch as there are powerful muscles adapted to draw the leg forwards, and the presumption was that they did do so, until the Webers demonstrated analytically that it was impelled forwards like a pendulum, by the force of gravity alone; and perhaps the demonstration would not have been sufficient to establish the truth in the minds of mere anatomists, if they had not shown that the leg of a dead man, placed under proper circumstances, swung rather faster than that of a living one. Few who are ignorant of dynamics can be made to believe that, in walking, the forces which propel the body forwards are not greater than those which drive it back; yet such must be the case in all bodies moving uniformly. Inquiries like these awaken attention to a higher and more philosophical method of inquiry into the theory of animal mechanics, more especially with reference to the human race; and such a knowledge of this subject is of paramount importance in the study of those cases where changes of attitudes lead to distortion of figure.

In these papers the author has attempted to trace to their sources the failure of the various methods in use, to expose the empirical state of the practice both abroad and at home, and to lay down some rules founded on established premises as guides for future treatment. When we take a

survey of the vile machines that have been invented, and consider the amount of torment inflicted by them for no useful end; that patients have been subjected, often for years, to painful restraint, have incurred expense and lost much precious time, all which has been borne with fortitude by the young and delicate, buoyed up by the fallacious hope of a happy result; and that muscles and tendons have been cut, and various other mutilations inflicted on a mechanism so beautiful and so perfect as that of the human body, in order to attain objects which such means could never accomplish, it must be acknowledged that this branch of surgery is in a most deplorable state. Almost every orthopedic practitioner has hitherto employed some favourite machine for the treatment of distortion. The author of these papers does not intend to propose any new machinery, either for stretching, pulling, pushing, or propping the body; his aim being to dispel the illusion that such machines possess any value, by demonstrating their inefficiency in the majority of cases, and thus to pave the way for a more scientific and rational practice in this branch of surgery.

It is to be hoped that henceforth surgeons will not be content to transfer their distorted patients to the care of surgical instrument makers. In all the ordinary affairs of life, a person who finds that his steam-engine, his carriage, or his watch, has got out of order, applies to the engineer, the coachmaker, or the watchmaker, to get it repaired. Who would employ a blacksmith to repair his chronometer? And yet surgeons send the human frame, vastly more delicate, more elaborate, and more complex than any piece of artificial machinery, to be repaired by an instrument-maker, whose knowledge of its physico-mathematical constitution is incomparably less than that which the blacksmith has of the chronometer. A case affording a striking illustration of the bad effects of this mistake has been recently placed under the author's care, where stays furnished with crutches had been worn by a young lady three years; during which time, the patient grew every day worse and worse, until the failure of the plan became too apparent for its longer continuance. The body is now dreadfully distorted, and the opportunity has been lost for effecting a cure; which might have easily been accomplished, had proper treatment been applied in the earlier stage, instead of trying the experiments of an unprofessional empiric. It would be easy to prolong the discussion of the subject of these papers almost indefinitely, by entering into matters of detail; but the object throughout has been to establish a few general scientific principles in orthopedic surgery, on which the practice might be established; for the specific treatment of each case must depend on its own peculiarities, which are only to be detected by the skill of the surgeon.

In conclusion, the author must observe that he has endeavoured to avoid giving offence to any one. It has been his desire to deal impartially with each system of treatment, upon its own merits, without imputing motives to any person, or calling in question the fidelity of any statement.* Names have only been mentioned in connexion with some machine, or peculiar method of practice, where the mention of them seemed necessary. It is, however, not improbable that cases illustrative of the principles contained in these papers may occasionally appear in the columns of this journal.

SUGGESTIONS FOR THE TREATMENT OF HYDROPHOBIA.

By MARSHALL HALL, M.D., F.R.S., &c.

If a frog be subjected to the influence of strychnine, two events may take place:—

1st. If it be continually excited to spasm by the irritation of a probe, life becomes extinct in a very few minutes.

2nd. If, instead of being so irritated, it be placed in a cool place, as a cellar, all excitation being avoided, it as certainly recovers!

A third order of facts is one of extreme importance. The effect of strychnine is *not* one of a spasmodic condition, *but* of extreme *susceptibility* to spasm. This susceptibility is

* With reference to some strictures on his last paper, published in THE LANCET of July 15th, the author will only observe that, as his motives and veracity have been impugned, the facts of the case in question can be proved by testimonies of the late and the present house-surgeons of the Northern Dispensary, by the gentleman who took the minutes of the case, by the person who made the drawing, and by the patient herself and her relatives. The author finds, on referring to the books of the Institution, that the girl was first admitted into the Northern Dispensary in 1839, and was finally discharged in 1844, having, during some period between these two dates, been under the care of Dr. Verral, as stated in the paper.

seated in the *centre* of the spinal system; but each and every spasm is an excited reflex action.

In this *last* respect hydrophobia accurately resembles the effects of strychnine. May it not in the *first* and *second*?

But in hydrophobia the patient dies of *asphyxia*, arising from repeated paroxysmal closure of the larynx.

Imagine this asphyxia and all excitement of reflex action avoided. Of what, then, would the patient die? and why should he necessarily die?

I have often thought of a prompt mode of performing the operation of tracheotomy. This I will describe in an early number of THE LANCET. This being accomplished, whatever spasm of the larynx there might be, there could be no asphyxia.

The patient should then be carefully placed on a *spring-bed*, and surrounded by ranges of curtains of lace or "*net*," and every *current* of air, every *shake* of the *bed*, or of the *floor*; in a word, every excitation or cause of *reflex action* and of *emotion*, (for these generally go together, the same *spinal centre* and *system* being the seat of both,) should be absolutely avoided.

The patient could not, as I have said, die of asphyxia; he would not die of the nervous exhaustion induced by the continual excitement of emotional and reflex actions. Why, then, should he die? Why should he not survive, until the poison should be eliminated from the system?

Tetanus differs from hydrophobia in being a disease of *reflex*, not *direct origin*, and, perhaps, in being more or less persistent; but it is equally *paroxysmal* in its aggravations, if not in its actual existence, and requires in its treatment the same measures to avoid excitation.

Many other fatal diseases, besides hydrophobia, might be treated, with the hope of saving life, by the simple mode of performing tracheotomy which I have proposed, if *perfected*.

Manchester-square, July, 1848.

P.S.—I wish to add a brief remark or two, to my note at p. 101. Has any one of the Physiological Committee at the Royal Society—any one of the *judges* of my paper—ever *seen*, much less ever *made*, an experiment of the kind described in it? Had they ever *thought* of the difference of effect arising from the difference of power in the agent employed? Had they, and have they to this day, distinguished between the physiology and the pathology of the question? Have they not rather, like Signor Matteucci himself, mistaken the one for the other? Do they know *anything* about the electrogenic states of *incident nerves*, and of the *spinal centre*? Did the idea ever occur to them that these experiments might, like those with which this "suggestion" begins, throw a ray of light on pathology, and the art of medicine and surgery?

I appeal to my readers, and I ask them, whether, in their judgment, these gentlemen, thus ignorant, *could be competent* judges of my paper? and I ask the profession in what estimation can the decisions of the Royal Society be held under such circumstances?

One word more. These things are done in *SECRECY*, in a manner which belongs more to the dark ages and the countries and people where assassination is rife, than to the nineteenth century and to England and Englishmen.

Is not the idea of judging of a paper filled with the details of most delicate experiments, without ever witnessing one of those experiments, absolutely preposterous—honour, delicacy, truth, and every high and good and noble motive out of the question? Did my judges *read* my paper and that of Signor Matteucci, or not? If the former, did they, *knowing* the fact, reject my paper, which had the priority, and insert that of Signor Matteucci, which was sent in later, both containing absolutely the *same* facts? And where there was a difference, did they take the pains to determine which author was in the right and which in the wrong?

I know what the noble-minded philosopher of Pisa will think of all this. And I believe I know what the profession think of men who can judge and adjudicate in regard to others' labours, without seeing—yea, and carefully and repeatedly seeing—dissection or experiment. Well, indeed, has Archbishop Whately said, "Our posterity, five centuries hence, will look back on us as semi-barbarians."

THE POPULATION OF FLANDERS.—If we are to judge by the returns of certain districts of Flanders, concerning births and deaths, there is no risk of that country getting overpopulated. In the first months of 1848, there have been in the district of Roulers 500 births and 1504 deaths; during the same period there are recorded in the district of Thielt 414 births and 1712 deaths.

ON A

NEW MODE OF TREATING DEAFNESS,

ATTENDED BY LOSS OF THE MEMBRANA TYMPANI, ASSOCIATED, OR NOT, WITH DISCHARGE FROM THE EAR.

By JAMES YEARSLEY, Esq., M.R.C.S.,

SURGEON TO THE METROPOLITAN EAR INSTITUTION.

(Continued from p. 66.)

My last communication chiefly consisted of observations on partial or complete loss of the membrana tympani—a condition of the ear indispensable for the successful application of the cotton wool. Internal otorrhœa, or discharge from the cavity of the tympanum through the passage of the ear, is another indication of the appropriateness of the remedy, and upon this subject, therefore, I will also proceed to offer a few remarks.

Internal otorrhœa may appear as the sequela of either acute or chronic inflammation of the mucous membrane of the tympanum. The seat of the discharge is generally the mucous lining of the tympanum, but occasionally it is produced by the deeper-seated structures of the ear, or the ear may be merely the channel by which matter escapes from the brain or spinal cord, and it has even been known to come from the parotid gland, or the muscles in the vicinity of the ear. In the great majority of cases the discharge escapes by way of the external meatus, but it sometimes passes from the ear through the Eustachian tube into the pharynx, or by ulceration through the mastoid process.

The term otorrhœa is generally limited to discharges by way of the external meatus; but there seems to me to be no valid reason against applying it to all discharges having their origin in the ear itself, whatever may be the channel through which they may obtain their exit. This difficulty, if any, is, however, lessened by the fact, that though discharges may, in the first instance, make their way through the Eustachian tubes or the mastoid bones, these channels rarely, if ever, continue, the membrana tympani becoming affected, and the discharge then establishing itself through the external meatus. Respecting the nature of otorrhœal discharges, I consider that no definite classifications of disease can be drawn from the different kinds of matter which escape from the ear, neither do I approve of the division into mucous and purulent otorrhœa which has been commonly made. Almost all cases of otorrhœa supervening on acute inflammation, are at first purulent, but as they proceed and acquire a chronic character, the discharge generally becomes muciform, and sometimes appears to consist of pure mucus. On the other hand, otorrhœa, which attends chronic inflammation, and which comes on very gradually, is almost always of a mucous or muco-purulent kind at first; but if its progress be watched, it will be found that as it goes on the matter becomes puriform. These changes from one kind of discharge to another are so constant, that no arbitrary division of otorrhœa can be fairly made. When we see a case for the first time, and find it discharging either pure pus, or mucus, or a thin serous fluid, we cannot adopt a separate mode of treatment to the different states for a few days after the nature of the discharge may be entirely reversed, either from external causes, or the state of the patient's health. In all ordinary cases, the discharge is secreted from the mucous membrane of the tympanum, or the degenerated cuticular lining of the meatus, in the same manner as any other discharge from a mucous surface—bronchorrhœa, or bronchitis, for examples. There is not necessarily nor even generally, any ulceration of the secreting surface. These conditions explain the variable nature of the discharge, it being well known that the mucous membranes may, without solution of their continuity, secrete every variety of matter, from pus to ordinary mucus.

The state of the membrana tympani and of the ossicula is always a matter of importance in ear-discharges. Kramer thought that the membrana tympani never ulcerated, unless from independent disease of the membrane itself; but to me this opinion is very questionable. In a great many cases the perforation of the tympanum simply results from the presence of pus, or some other accumulation of matter, in the cavity of the drum, just as perforation of the skin attends the presence of pus or any foreign body beneath the cutaneous tissues. In otorrhœa we may find the tympanum either perforated or entirely destroyed by the same amount of internal disease. As I have already stated, the membrane, according to my experience, may cicatrize when even large portions have ulcerated. The state of the membrane necessarily exerts considerable influence over the ossicula, as, when wholly destroyed, they lose the support derived from the