down and against the corresponding surface. A bayonet-pointed curvature may be given to the sound.

The sinus pyriformis, vallecula, and other parts may be similarly treated. Such applications are given every second or third day. The only reaction caused appears to be dysphagia, on which account they should not be made just before the principal meal time. Hæmorrhage can only occur from too forcible pressure of the sound. The cases which Laker details at the close of his work are somewhat remarkable. Thus by what other means could cure be obtained of atrophic rhinitis, pharyngitis, and laryngitis in five weeks? And, though recurrence occurred, this was cured in three weeks, and the patient had been for three months completely free from her troubles. Simple medical treatment by any local measures employed up to now could scarcely attain this result.

Of the applications of massage to disorders of the ears we have not spoken here, but its use in otology appears to be quite as important and effective as in the disorders we have dealt with.

VOICE TRAINING.

A VERY interesting series of (three) papers written by our colleague, Dr. Joal, upon the mechanism of respiration in singers, which has just appeared in the "Revue de Laryngologie," gives us the opportunity to devote some remarks to this subject. Moreover, at the last meeting of the British Laryngological Association a discussion upon the same subject was started, which led to no other practical result than the adoption of a somewhat bald resolution to the effect that vocal training in public speakers was a neglected branch of education. If the Society had carried its discussion so far as to formulate some plan by which this important fact could be brought home to those entrusted with the care of young persons, and some scheme for remedying this undoubted defect, its deliberations would have had more value than could be accorded to them by the adoption of a self-evident proposition. There were several aspects of this discussion to which adverse criticism might be directed. It was scarcely a very dignified proceeding for a presumably serious Society to so openly identify itself with the methods of one particular voice trainer, and he a layman. An interesting essay might be written upon the ethical question of the alliance of the specialist with the non-professional man in voice training as in other matters concerning the treatment of patients. It is not a very edifying spectacle to see a scientific Society giving an open testimonial to a teacher of elocution, be his methods of voice training right or wrong, and the only creditable explanation of the occurrence in this instance is that the Society was unprepared for the turn the discussion took.

What is the correct method of breathing for those who use the voice? Three types of breathing are generally recognised: (1) the superior costal, or clavicular; (2) the inferior costal; (3) the abdominal, or as it is often called the diaphragmatic. In the first, or clavicular type, the

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inspiratory capacity of the chest is increased by the upward and forward movement of the upper ribs, the clavicle and sternum, a method against which, since Mandl openly condemned it, most medical writers have combined. But this applies particularly to the male subject. The female is supposed to breathe normally by the superior costal type. Though accepted as a physiological fact, it is worthy of remark that in non-civilized tribes the researches of Mayo and Kellog show clearly that these females breathe naturally by the "abdominal" method, and it is only the intervention of the corset which has led to the superior costal type of respiration. This method of breathing is therefore to be regarded as an artificial one, induced by the circumstances of civilization. The more we approach the type of the natural woman, as she is found untrammelled by the dictates of fashion or even civilization, the closer does the mechanism of breathing resemble that of the ordinary male.

Certain pneumographic researches undertaken by Bergonié and Viault tend to prove that the normal man presents a pneumographic curve of greatest intensity at the level of the lower ribs, the curve taken at the umbilicus being less, and that taken at the upper ribs the least. Joal endorses the statement made by Beau and Massiat in 1842 as correct, viz.: "According as individuals advance in age, the predominance of "the superior costal type is manifested in the feminine sex, and there is "a nearly equal employment of the two other types in the male sex."

In young girls, whose figures have never been constricted by corsets, it is not difficult to assimilate their breathing to the male type; in others, whose vocal training does not commence until later in life, or in whom corsets have become a necessity, the breathing cannot assume a perfect abdominal type. It may even be doubted whether this assimilation of the two types is a necessity, or even always wise, since many fine singers yet employ the now much-blamed clavicular type.

When Mandl revolutionized the prevailing methods of teaching at the Paris Conservatoire, he taught that the descent of the diaphragm and the pushing forward of the abdominal walls was the correct method of inflating the chest. This so-called "diaphragmatic" breathing is the method largely taught by singing-masters in this country and elsewhere at the present time, but that it is manifestly wrong is the task which Dr. Joal sets himself successfully to prove. "We cannot sufficiently," says he, "raise our voices against the doctrine of Mandl, which is "founded upon false anatomical and physiological data, upon theory, "and upon facts badly observed, or wrongly interpreted." Mandl enumerated a striking catalogue of evils which followed as a consequence of clavicular breathing, but quite as severe a condemnation may be stated against the exaggeration of abdominal breathing which Mandl originated, and whose teaching many now follow. To many teachers the use of the ribs and the chest muscles in expanding the thorax is a "negligible quantity," and the pupil is taught that to fill his chest with as much air as possible by extreme descent of the diaphragm and protrusion of the abdomen is the aim to be attained.

Certainly, so far as we know them, this is the direct opposite of all the teachings of the old Italian masters, who taught their pupils to sing with

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the abdomen flattened, and not pushed out to its extreme limits, and as Gottfried Weber said, "It is impossible to explain why it is so, but undoubtedly the old Italian method is the best." Even physiologically the "abdominal method"—we prefer this term to the other—is proved not to be the correct one. If the object desired is the complete inflation of the chest, it is not arrived at by this method so successfully as by what is known as the "lower costal" method. Slight compression even of the abdomen, by belts or bandages, has been found very frequently to add to the singer's power, just as it has to those who require "wind" for athletic exercises. It is of great interest to note the results of the examination of artists of note by Dr. Joal. Of eighty-five individuals, he found that in twenty-three females nine employed the clavicular method, and fourteen the costal type; while in sixty-two men eleven employed the clavicular type, nineteen the abdominal type, and thirty-two the costal type. He did not meet with a single cantatrice who used the abdominal type, and the proportion of male singers using that method was comparatively small.

The correct way of breathing for singing is the physiological method of ordinary breathing, viz., the inferior costal type, in which the chest cavity is enlarged at its base, with a moderate and normal degree of descent of the diaphragm, and it must be conceded that physiologically the doctrine of exaggerated descent of the diaphragm and pushing out the abdominal walls is pernicious. Indeed, the less the pupil thinks about his diaphragm, the better for himself. The spirometer is often appealed to as indicating that the air-contents of the chest can best be augmented by extreme descent of the diaphragm. Even if this extreme inflation were necessary, it is not true that it can be obtained more perfectly by abdominal than by costal breathing. In support of this contention may be cited an experiment (amongst many other spirometric observations), conducted by Dr. Joal, upon three singers who possessed perfect control over their respiratory movements. The vital capacity in the three methods of breathing was found to be as follows:—

Clavicular respiration. Cubic ctms.		Abdominal respiration. Cubic ctms.		Costal respiration. Cubic ctms.
4,600	.....	5,200	.....	5,300
4,000	.....	4,300	.....	4,800
3,700	.....	4,000	.....	4,300

which shows a considerable degree in favour of costal over abdominal respiration. Considered physiologically, "diaphragmatic" breathing is therefore wrong; pathologically, it is vicious, and it only remains to show that in an æsthetic sense it has nothing to recommend it. The thorax is admittedly the chief "resonator," and "diminution in the vertical "diameter of the chest, and increase in the transverse diameter, have "the effect of heightening the fundamental tone of the thoracic resonator, "whilst the diminution of the transverse diameter and increase of the "vertical diameter lower this same tone," facts which clearly result from the experiments of Sewal and Pollard, and from pneumographic researches. Dr. Joal's own experiments lead him to the conclusion, with which no one can fail to agree, "that the volume and form of the thorax

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" vary according to the height of the sound, and that the chest deserves " to be considered as the most perfect resonator" ; but, in order that this function may be perfectly accomplished, it is essential "that the thorax " may have the power of dilating or contracting in its upper and middle " parts, at the level of the eighth and fourth ribs, conditions which cannot " be fulfilled when the singer employs the abdominal type with isolated " contraction of the diaphragm and complete inactivity of the thoracic " muscles."

The whole case for " costal " as against " diaphragmatic " breathing is thus admirably summed up by Dr. Joal :—(1) It dilates the chest in its three diameters, transverse, vertical, antero-posterior, and permits the filling of the thorax with a greater volume of air than the clavicular and abdominal types ; (2) it favours the production of thoracic vibrations, and increases the power of the pectoral harmonics ; (3) it extends to the whole of the thoracic cavity, utilizing the different muscular forces of respiration, and dividing the total work over a great number of agents, giving greater power of resistance to fatigue ; (4) it permits of graduation of the exit of air and economizing of the wind, from the antagonism of the inspiratory and external expiratory muscles ; (5) it is based upon the physiological laws, according to which thoracic effort is produced ; (6) it is employed by the majority of singers, advised by the most celebrated artists, and recommended by the old Italian masters of singing, who carried the perfection of the art to such a high degree.

Dr. Joal's conclusions are not founded upon mere opinion, but upon direct experiments, the conduct of which has occupied him for several years, and the subjects of which have been singers of renown. The perusal of his interesting papers should be the duty of everyone who aspires to teach the correct method of breathing. It is to be hoped that they will do something to correct the pernicious teaching, so fashionable nowadays, of " diaphragmatic breathing," which some eminent teachers of singing, with little knowledge of anatomy or physiology, still press upon their pupils, in blind advocacy of Mandl's doctrines. And why, may we ask, are these matters left in the hands of lay teachers ?

We have referred previously to the discussion on " Voice Training " at the British Laryngological Association. A portion of this debate turned upon the treatment of stammering, and in this we are in entire agreement with those speakers who maintained that the treatment by the teacher of elocution should be prefaced by thorough examination of the upper respiratory passages by the surgeon, and appropriate surgical intervention where requisite. But we would guard against the too close alliance of the surgeon and the elocutionary teacher, just as we would guard against unnecessary surgical intervention. We are quite certain that this is often undertaken. It is a thousand pities that the training of the voice and of speech is not taken out of the hands of laymen by professional men, and undertaken by their own craft. This would mean the creation of a new class of specialists, for the ordinary physician or surgeon could not give the requisite time or attention to such a special branch of medical training ; but it is not right that it should be undertaken by non-professional men, when its very basis should be the

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possession of a competent knowledge of anatomy and physiology. It is pitiable also to see how little is really known of the culture of the voice and the correction of its defects by the intelligent practitioner, and even the throat specialist, unless his musical tastes have led him to give more than ordinary attention to the subject. This is not as it should be, and the consequence is that such training is left to non-professional men, whose theories and practice are often the reverse of correct. It can only be hoped that more attention will be given to these matters in the future by specialists themselves, and it would be equally beneficial to the public at large if vocal training were made a necessary part of the education of every boy and girl, and that professional men should study these very important questions for themselves, so that they may become competent to advise correct training for young subjects, instead of, as at present, leaving it to be dealt with by persons outside the profession, whose efforts may be commendable enough, but whose methods are often questionable.

NEW INSTRUMENTS, THERAPEUTICS, &c.

Hewitt, Frederic (London).—*A Modification in Junker's Chloroform Inhaler.* "Lancet," April 30, 1892.

THE efferent tube containing the chloroform-laden air is conducted *inside* the afferent tube, which is of necessity much thicker than in the original. There is, therefore, no chance of attaching the conducting tubes to the wrong pipes, as is possible in the latter. The large tube is passed round the administrator's neck, and kept securely by means of a chain. The chloroform bottle is thus suspended, as from a collar, and there is, therefore, little or no danger of it being upset. Mr. Hewitt recommends his modification on the strength of nine months' use. *Dundas Grant.*

White, J. Blake (New York). — *A Double Nasal Spray and Vapourizer.* "Med. Rec.," March 26, 1892.

THERE are two tips, one fitting into each nostril. The author thinks that a spray thus introduced while the patient inspires strongly can enter the pulmonary tubes much further than any mouth spray can do.

Dundas Grant.

Knight, Charles H. (New York).—*An Electric Tonsil Snare.* "Med. Rec.," May 14, 1892.

A FIRM metal ring of oval shape with a metal shaft has attached to it such a pair of hollow tubes as are usual in galvano-caustic snares. The platinum wire of the snare is formed into a loop corresponding to the ring, and is attached to it by a single fine thread. It will be easily seen that, the loop being placed round the tonsil, the thread is burnt through when

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