who has always operated since I have had charge of the case, states that he is not aware of a similar case being on record.

The dropsy is now confined chiefly to the abdomen, the legs, feet, hands, and arms having become almost normal, though the thighs are distended at times. All the organs have improved in their action, but the improvement in the heart's action is the most marked. The exhibition of cactus has been continued throughout, but other drugs have been given freely as occasion has required, in order to meet the disordered condition of other organs; for instance, for a lengthened period constipation has been a very persistent symptom, refusing to yield alike to pil. hydrarg. and mist. sennæ co., belladonna or cascara, but latterly even this symptom has materially lessened.

A fourth case was that of a young woman, about 20 years of age, who suffered from a very severe attack of rheumatic fever, when, towards the end of the fever, a loud mitral murmur developed. The exhibition of cactus and alkalies resulted in recovery so far that she has been able to resume her work.

Other cases might be brought forward, but these will perhaps suffice to suggest that cactus grandiflorus offers an interesting and valuable field for research, especially in the treatment of asthenic conditions of the heart.

NEW AURAL INJECTOR AND EVACUATOR, WITH A FLEXIBLE EUSTACHIAN CATHETER.¹

By JOHN WARD COUSINS, M.D.LOND., F.R.C.S.,

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SINCE the publication of my paper in the JOURNAL² on Tinnitus Aurium, and its Treatment by a New Method of Alternate Injection and Evacuation of Air, I have considerably modified my apparatus, and have now adapted it for self-application. It consists of one hand ball fitted with a recoil spring, which increases the force and rapidity of its expansion (Fig. 1). The injecting

Fig. 1.

and evacuating tubes both terminate in a vulcanite joint, to which a nasal piece of soft rubber can be attached. The nasal pieces are made in different sizes, and several of them are supplied with each instrument. When medicated air is to be used, the volatile substance must be dropped upon a pledget of cotton wool placed in the vulcanite box, which is fixed on the injecting tube. In this way I use chloroform, ether, creasote, pinol, and many other remedies. For the successful application of the treatment it is essential that the patient should be instructed to practise injection and evacuation of the tympanum in the following manner:

The nasal orifices must first of all be carefully wiped dry, and the nose pieces adjusted, so as to securely and completely plug the nostrils. The nasal tubes are now held in position by the forefinger and thumb of the left hand, and the hand ball is elevated and compressed by the right, and then allowed to ex-

pand by its own elasticity. During the steady performance of these movements the patient should take a full inspiration, and while holding the breath and pressing the lips together he should make an expiratory effort, just as if he were in the act of blowing through a tube. With many patients the entrance of air into the tympanic cavity is rendered easy by the act of deglutition, for the muscular movements of the pharynx act directly upon the open ends of the Eustachian tubes. As a general rule, my patients require very little instruction, and soon become very skilful with the instrument. The alternate method presents many advantages over other forms of tubal inflation. It promotes the drainage of the tympanum and the discharge of pent-up fluid into the pharynx. It also proves of material assistance in cases of collapsed and adherent membrane. Its daily application is especially useful in the treatment of tinnitus aurium caused by abnormal tension, and also in other forms of chronic middle ear disease.

The apparatus for alternate injection and evacuation with the Eustachian catheter is represented in Fig. 2. The tubes are

Fig. 2.

joined together, and near their junction a vulcanite terminal is fixed for the insertion of the catheter. The flexible catheter is a flattened tube of soft metal, and it can be readily bent to any shape by protecting the bore with the stilette (Fig. 2). For the successful application of the Eustachian catheter, it is often necessary to adapt the instrument to the curvatures of the nose and pharynx. Sometimes the nasal passages are by conformation irregular, or they become tortuous and obstructed by morbid changes in the bone or lining membrane; in other cases the position of the tubal orifices and mucous folds of the pharynx require a special flexion of the beak. For some patients I keep a catheter always bent and ready. The instrument must be carefully washed and deodorised after each operation.

In performing the operation of alternate injection and evacuation of the tympanic cavity, the hand ball must always be attached to the catheter after its introduction. The surgeon should elevate and compress the hand ball with the right hand, and hold the catheter and close the nostrils with the left; at the same time, he must direct the patient to practise the movements already described. During the expansion of the hand ball, the catheter should be drawn outwards for half an inch, for by this manoeuvre the evacuating power will be increased. Special care must be taken to prevent twisting or kinking of the india-rubber tubes. Sometimes the point of the catheter gets lodged in the folds of the pharynx, so that the injection of air is obstructed. When this occurs, the instrument should be rotated a little, and then replaced over the Eustachian orifice. If from any cause considerable difficulty is experienced in passing the flexible metallic catheter through the nasal meatus, I substitute for it a fine vulcanite instrument, which can be bent to any curve by gentle heat.

In conclusion, I desire to mention that all the instruments described in this paper have been made for me by Messrs. Maw, Son, and Thompson, of London.

THE ACTION OF POTABLE WATERS ON LEAD

By SURGEON GILBERT KIRKER, M.D., R.N.

[Communicated by THE DIRECTOR-GENERAL OF THE MEDICAL DEPARTMENT OF THE NAVY.]

WHILE engaged in some investigations in connection with the bacteriology of drinking water last summer, I read Mr. Power's memorandum on Lead Poisoning by Certain Public Water Supplies, etc., which is contained in the report of the medical officer of the Local Government Board for 1887. My interest was particularly aroused by Mr. Power's suggestion that the seasonal variations in the action of water on lead, which had been observed by Dr. Sinclair White at Sheffield, might be owing to low organic life;

¹ Exhibited in the Section of Otolaryngology at the Annual Meeting of the British Medical Association, held in Leeds, August, 1889.

² See JOURNALS of February 26th and March 26th, 1887.