absence of mucus. In children the danger of accident is very slight.

I have not yet used the old-fashioned silver plates advocated by Dr. Fillebrown. However, I can understand that in certain cases they may be of advantage.

The after-treatment of cases operated upon, has, I fear, been too much neglected. Adhesions about the palate should be divided, where present, and the soft palate exercised, massaged and made movable by voluntary contractions in adult cases, and by passive motion and stretching with the finger, in children. The power of speaking properly, in spite of a good technical result after operation, is almost always in direct ratio to the time spent in instruction and the intelligent effort of the patient.

One other consideration arises in regard to the question of the removal of enlarged tonsils and adenoids, previously mentioned. It seems not unlikely that they may, in certain cases, aid in closing the nasopharynx, and may thus be of definite advantage in speech. It occurs to me also, though I have had no experience, that submucous injection of paraffin, or white vaseline, as advocated by Gersuny of Vienna, may be of advantage in diminishing the nasopharyngeal space at a point opposite the soft palate.

THE TREATMENT OF CONGENITAL CLEFT PALATE BY MECHANICAL APPLIANCES.¹

BY DR. GEORGE A. RAYMOND, BOSTON.

IN presenting this subject, I shall try to omit some of the material which I have given before other medical societies, including one which I read before the Boston Society for Medical Improvement, which was published in the *Boston Medical and Surgical Journal* Dec. 9, 1897. And yet I find it necessary to retrace my steps to a certain extent. In my former papers I have demonstrated that there is but one function impaired by the deformity of cleft palate which justifies any attempt in its restoration, namely, the restoration of the normal voice. The inability of the infant to swallow may for a very short period seem to demand some attention, but long before a child is old enough for either an operation or an appliance (unless you operate at once) the nimble tongue has overcome the difficulty, and it has adapted itself to the conditions.

In order to have a good speech, there must be a roomy oral vault without obstructions. For the production of all the open vowels and all the consonants save the nasals, there must be perfect closure of the post-nasal space.

When the vault of the pharynx is shut off, the velum is so raised that it extends for a little space directly backward on a level with the palate bones, and then curves gradually downward and backward, its posterior surface striking the

posterior wall of the pharynx, which process you are familiar with; therefore it is unnecessary for me to take your valuable time to explain those physiological functions.

In my former declaration I stated that I had been unable to find a single case where a perfect speech ever resulted from a surgical operation. Notwithstanding all that is claimed by the men who advocate the surgical treatment, I am obliged to declare that I cannot find any trace of a case where a perfect speech has resulted. I have seen them stand up and say "mamma" and "papa," and a few such words, but one of the worst cases I ever saw was a child who could say "mamma" and "papa" as distinctly as you and I can, but in every other way you could scarcely understand anything she said. There are certain known elements of speech, giving sounds and combinations of sounds that, if the speech be perfect, they must be able to articulate distinctly. In the onward march of progress a few zealous operators during the past few years have taken up the work with renewed interest, and now we are confronted with their claims of success in attaining to a perfect speech by some new methods of procedure in the operation. I will admit that with care any careful operator can close the cleft and make it a surgical success, but after years of investigation, and having examined a large number of cases, I will say that in no case have I found anything with even a resemblance to a physiological palate; hence their failure in producing a good speech.

During the past two or three years I have had cases presented to me where they thought they had seen the fruition of their hopes, and made the operation as successful as other operations of equal importance.

When we consider, however, that the great body of physicians and surgeons fail to find an improved speech, we are led to feel that there is something mysterious about such claims. Why, gentlemen, we even hear of faith cures and of Christian Scientists doing those things, and louder claims than this are in the air today; but I fear that they will always remain in the air. Some time ago a young lady from Portland, Me., whose case had been brought to my notice by her Christian Endeavor friends who wanted me to make her an appliance to correct her very bad speech, as the result of a cleft palate. Imagine my surprise when she wrote me that "She had asked the Lord to heal her speech, and she believed he had done so, although she herself had not received the full consciousness of it." Someone is to blame! With the mechanical appliance carefully fitted and adapted with the greatest possible accuracy, I find no difficulty whatever in having even a child become so accustomed to it that it is worn with as much ease and comfort as a set of teeth is worn by an adult.

I presented a case before the Improvement Society,—that of a child fitted to an appliance at the age of eight years, during the summer of 1895. She has worn the same appliance ever since, and her speech became so perfect that

¹ Read before the Surgical Section, Suffolk District Medical Society, Nov. 6, 1901.

every one pronounced it about perfect. She has now reached the age where the further development of the mouth and other organs makes it necessary to make a new appliance, as the limitations are now so great that the speech would very soon become impaired unless we fit the second appliance.

This is one of the advantages of the appliance, for you can at any time meet the requirements made necessary by the development. With the operation, what you may gain in childhood is lost when they arrive at an adult age. Realizing that the only hope of an operation being anything like a success, it has been done in very early childhood, but in after years we have found that the limitations brought about by the development of the surgical palate not being commensurate with the other organs of the mouth and throat, the last condition was worse than the first. To illustrate this fact I presented a case before the South District Medical Society at Cambridge some two or three years ago. A young lady who has grown to womanhood was operated on in Boston by one of our most distinguished surgeons. The operation was done in early childhood, and what she seemed to gain by the early operation was entirely lost when she reached an adult age. Her speech is now even worse than it would have been had she been left alone. Her name is Jennie, but if she speaks her name she will say "Yennie." This young lady has kindly consented to be here tonight so that you can hear her speech in person. I have also a model of her mouth, which you can see at the close of the meeting.

Another case, of a young man, son of a Boston barber, who was operated on some time ago at one of our hospitals in Boston, has many of the same defects; for instance, he will say "heam" for steam.

The only thing we can do now is to undo the operation, and fit appliances.

Mrs. C., 28 years old, was fitted to an appliance by a dentist when a young girl, but by its improper adjustment to the conditions she was unable to wear it. I fitted her to a new appliance in 1894, which she has been wearing ever since, and she can clearly articulate any and all the elements of speech. Dr. Richardson has seen this lady and heard her speak.

Miss W., 21 years old, with a wide congenital cleft of the soft palate reaching forward a little way into the hard palate, and including hare-lip. I fitted her to an appliance in 1897. She has since cultivated her voice in singing, and her speech is so perfect that she can pronounce any word or sentence in the English language, giving every element of articulate speech as perfectly as I can myself. Dr. Richardson also saw this young lady while she was here on a recent visit from her home in the West.

Miss F., 32 years old, sent to me from Pennsylvania, was fitted to an appliance by a prominent specialist in this department, some 10 years ago, in New York City. The appliance used was what is known as the soft-rubber velum, which is

supposed to be flexible enough to allow the required amount of flexibility to the palate in the mechanism of speech. But in the wearing of such an appliance I found that the muscles were sort of cramped, as it were, and therefore was a hindrance to a clear articulation. I fitted her to an appliance, about a year ago, and in this case there was a marked improvement in the speech at once,—that is, I should say, as to quality of tone. She has done so well in the use of her appliance that I expect to make similar appliances this winter for a younger sister, and also a cousin, having the same trouble. As a matter of speech, we do not look for perfection at once, but if the former limitations are removed, I find that, just as soon as they become accustomed to the use of the appliance, the tone is changed in quality as much as the tone of a violin with the sounding-post put back in position after having been taken out, or the bridge changed from the wrong to the right position.

I have several times demonstrated the quality of speech on the phonograph, as well as by allowing you to hear them speak in person.

Miss D., aged 15 years, came to me 4 years ago this last summer through Dr. Richardson. The cleft was not large, but let me say right here, that some of the worst cases of speech I have ever seen have been cases where the cleft was small. This young lady is now attending one of our suburban schools for young ladies, and you will hear her speak in person tonight, that you may notice the improved speech brought about by the wearing of such a mechanical device. Of course, from 15 to 19 has brought some slight change in development, but still, the speech is very satisfactory indeed, and at such times as the limitations become greater by development we will make the necessary changes.

Mr. W., 23 years old, was fitted to an appliance 2 years ago. He has an exceedingly large cleft covering the whole roof of the mouth, the opening being about 2 inches wide at the back and reaching forward to within less than half an inch of the front teeth. You will see that formerly the cleft extended through the alveolus, terminating with the hare-lip. The lip was closed in Edinburgh, Scotland, and an attempt was made, I think, to close the cleft, but was given up.

I did not know as I could retain a plate in the mouth firm enough to carry an obturator of such magnitude, but he has tolerated it with quite a degree of comfort. I am thinking of some little changes of adaptation, but consider the case one of interest, great enough to warrant presenting him to you tonight. I think he will be willing to let you hear his speech without the appliance.

The claim has been made by the advocates of the surgical treatment that neither the appliance nor the surgical treatment will give a good speech after one arrives to an advanced age. I find, however, that I can improve the speech very greatly at any age, but of course the younger the child the more nimble will be the tongue to imitate sounds. I could recite many other cases, and some even

more interesting, perhaps, than these, but will not trespass any further on your time.

Dr. Raymond exhibited the following cases:

(I) Miss H., 28 years old, operated on by one of Boston's renowned surgeons in her early childhood. She was asked to read the announcement of the meeting. Very few of her words, however, could be even understood, her speech being very defective. Dr. Raymond presented this case to prove his assertion that even an early surgical operation does not result in a good speech. This young lady had all the special instruction that could be given her by the best teachers in Boston, but her speech is now even worse than it would have been had she been left alone.

(II) Miss D., now 19 years old, with a congenital cleft in the soft palate, who was fitted to her appliance 4 years ago, came before the meeting and recited a selection showing her greatly improved speech by the mechanical appliance. Every element was so clearly uttered that no one would know that she had any defect whatever. In the young ladies' seminary where she is studying, even her teachers do not recognize anything out of the ordinary. Dr. Raymond had some ladies come from Pennsylvania, and while waiting in the office to see an appliance in the mouth of an older lady who was engaged to come in, this same young lady was present talking all the while, and they were more than surprised when they learned that she had a cleft palate.

(III) Mr. W., 25 years old, with a very wide cleft extending through both hard and soft palate, the opening reaching to within less than half an inch of the front teeth, at the back the opening being 2 inches wide. He has worn an appliance 2 years, and it was here shown that his speech was almost faultless. He is now filling a position which it would have been impossible for him to have filled without his appliance.

RABIES: REPORT OF CASES.

BY CHARLES J. PATTON, M.D., CHICAGO, ILL.

Late Resident Physician Cook County Hospital, Chicago.

L. F., a French Canadian, age 46, a carpenter by occupation, was admitted to Cook County Hospital at 12.35 p.m. on the 23d of November, 1899. Patient said that he was bitten on the thumb of the right hand 11 weeks before by his own dog, which had been poisoned. The animal was chained up, and in its dying condition was in a highly excited state; he was trying to quiet it when it snapped at him, fastening its teeth just below the base of thumbnail. The dog had shown no dangerous symptoms before the poisoning.

The wound was cankerized and attended to by a physician, but suppuration set in, continuing for some weeks; the nail sloughed off; there was considerable localized pain, and the patient was unable to work during this period. Finally, suppuration ceased, the wound healed, the nail began to grow again, and he returned to work.

About 6 days prior to admission to the hospital he began to have a feeling of uneasiness, was nervous, had chilly sensation, with shooting pains in the body and to a lesser degree in the extremities; he experienced peculiar fits of depression; had to give up his work, but continued to do chores about his house. Following soon after these symptoms recited he complained of difficulty in breathing, a feeling of weight upon the chest with a catching sensation in larynx, a most uncomfortable suffocating symptom, producing a kind of spasm to overcome it. He noted, also, a numbness, beginning first in the hands, extending then to the arms, and gradually over the whole body. For 5 or 6 nights he had been unable to sleep, restless; for about the same length of time he had had difficulty in drinking water if given to him hurriedly, but could take solids; he had, in fact, partaken freely of a supper of meat, potatoes etc., the night before he entered the hospital, and also some bread and cheese the morning of entrance. Bowel movements and urination have been regular.

The patient's wife, who accompanied him, stated that she had been bitten about the same time by the same dog, but had had no abnormal symptoms. A nephew stated that the wife and neighbors had been almost continually talking to, or in the presence of, the patient of the possibilities of what might happen from the bite of a mad dog, until finally the man became so nervous that he could think of nothing else; that when he could be drawn away from these influences and his mind diverted, he acted and talked quite rationally. The patient walked into the hospital; was extremely nervous but fairly rational. His expression denoted great anxiety and fear at times, accompanied by a strange restless motion of eyes. The pupils were somewhat contracted, but responded to light and accommodation. The sclerotics were injected. The mouth was held open and the lips, tongue and pharynx were very dry. The skin was of a dirty straw color, poorly nourished, wrinkled and dry. There was a restless moving about of the arms and legs most of the time. The arms were weak, fingers of right hand could not be flexed or extended; he had more power in the left hand, but this was also weak. He said this condition of the hands had been gradually getting worse. The right thumb—distal phalanx—showed a cicatrix from the bite; he had also two cicatrices upon the back of the right hand which he thought were also result of the dog bite.

Abdominal muscles were tense. Superficial and deep reflexes were markedly impaired. Heat and touch senses were much diminished.

Systolic murmurs in the heart were heard best at apex; first sound hammer-like, pulmonic second sound accentuated; regularity of sounds.

Pulse 96, irregular, compressible but strong; temperature 100.2°; respiration 26; lungs, liver and spleen negative.

Liquids were offered him; if presented quite slowly, and after assuring him that they would