gargle, and nose-douche. In cases in which there have been muscular and articular pains in addition to the catarrhal affection hot baths and massage have proved to be of great use. The best time for this sort of treatment, according to my experience, is during the months of May and June—that is to say, before the attacks of hay-fever have begun to show themselves. July I should not recommend; in August and September, however, I have treated cases with success. There are cases of hay-fever which do not respond to the treatment. These I have always found to be cases in which there was no history of gout, while in those cases in which the combination of gout and summer catarrh existed I have scarcely ever failed to obtain a good result. The following is the history of a few of my cases.

CASE 1.—The patient, a female, aged 19 years, had suffered from hay-fever for many years. There was a history of gout. The affection generally began towards the end of May. Hay, roses and other flowers, as well as heat and dust, immediately brought on an attack which began with sneezing and running at the eyes and nose, and which after a short time was followed by coughing. During June and July the attacks were of almost daily occurrence. In other respects the patient was perfectly well. There was some thickening of the mucous membrane of the nose, especially on the left side. Bleeding from the nose was easily brought on. The treatment as described above was carried out in April and May, 1897, with the result that there were no attacks of hay-fever during that summer. A second shorter course of treatment was thought advisable in April, 1898. There has been no recurrence of the attacks of hay-fever up to the present time (March, 1900).

CASE 2.—The patient, a female, aged 36 years, had suffered from hay-fever since the age of 15 years. Both her parents were gouty. The patient herself had suffered from rheumatic pains and articular swellings. She had severe attacks of hay-fever from May till August, recurring almost daily and much exhausting her. During the attacks there was great swelling of the upper part of the face, intense frontal headache, much secretion from the eyes and nose, together with coughing and a wheezing respiration. Local treatment of every description had been useless. Relief was only to be obtained by residing in a bracing place at the seaside. The patient was treated at Neuenahr during part of May and June, 1897, and though the attacks became less violent they did not entirely cease. The treatment was repeated in the following year with the result that no attacks of hay-fever occurred during that summer, nor has there been any recurrence since 1898, but I should mention that the patient has lately been more subject to rheumatic pains.

CASE 3.—In this case a history of gout was obtainable. The patient, a female, aged 42 years, was first treated for hay-fever at Neuenahr during 1895 with good results. She remained free from attacks during the following two years. In 1898 a relapse occurred which made her return to Neuenahr; she had after that no more attacks during 1898 and 1899.

CASE 4.—The patient, a girl, aged 10 years, came of a very gouty family and was herself a very delicate child. She has been suffering from severe attacks of hay-fever for the last four years. She was quite disfigured by the attacks. Her face was swollen and red, her eyes were inflamed, and there was constant running at the nose together with coughing and wheezing respiration. She contracted the attacks everywhere and from all sorts of causes, but especially from heat and dust. When she arrived at Neuenahr she was in the midst of one of her most severe attacks and was very prostrated. During the following four weeks she kept quite free from the attacks, nor did the long journey to St. Moritz affect her, although the weather was hot and dusty. She has since kept wonderfully well.

CASE 5.—This case is one of those treated without any success. The patient had suffered from hay-fever and asthma for several years. There was no history of gout. The attacks occurred almost daily during May and June. They began in the usual way with sneezing and increased nasal secretion, but their chief feature was violent coughing, a feeling of severe tightness round the chest, and a difficulty in breathing. The usual treatment was carried out but had to be given up after its ineffectiveness had been proved.

The following are the conclusions to which I am led. 1. There are cases of summer catarrh (so-called hay-fever) which can be cured, or at least relieved, by treatment with the waters of Neuenahr. 2. The cases especially suited for this treatment are those in which the affection is a part of

the gouty dyscrasia. 3. Cases without a history of gout do not seem to be benefited by the treatment.

Neuenahr, Germany.

EXERCISES IN THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

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THE beneficial influence of gymnastic exercises upon the general health of the body has been recognised for ages and it is needless, in discussing the present subject, to dwell upon this fact further than to state that in treating curvatures of the spine everything which benefits the general health will materially assist other treatment.

My present purpose is to consider the local effects which may be produced upon a crooked spine by specified muscular exercises, either by correcting the shape of and strengthening the joints, or by strengthening any particular set of muscles connected with the deformity. In the first place it should be noted that it is impossible to lay down any hard-and-fast rules for gymnastic exercises by which to deal with every instance of curvature, because cases differ to such an extent that what is suitable to one individual would be totally wrong for another. Moreover, patients differ as regards the muscles they bring into use in carrying out the same movements. I will in the first place describe briefly the various kinds of lateral curvature and the application of gymnastics to their peculiar requirements.

CLASS 1.—That in which the most notable condition is debility occurring after illness or from some other cause. In these cases the muscular system being especially affected the patient is unable to hold his spine erect except for short periods, but in the early stage there is not any well-marked bony deformity. For such a condition a course of general active and passive exercises of the trunk and neck, and also of the legs and arms, will have a beneficial effect. As a rule, these exercises should be carried out while the patient is in a recumbent position. The general health of these patients always requires treatment by means of a nutritious diet and tonic medicines, some form of lime being especially beneficial. Massage is also helpful. It is usually also advisable to limit the amount of voluntary active movements in order to avoid producing fatigue.

CLASS 2.—In this class we find, in addition to the above symptoms, laxity of the ligaments of the spinal joints. For these patients exercises will be beneficial, but greater care must be taken to prevent the spine from subsiding into curves during the intervals between the exercises.

CLASS 3.—In which alterations in the form of the bones has already occurred. In these cases the exercises must be directed not only generally, but specially, in order to overcome these curves. For instance, the special exercise to be presently described to correct rotation is one of the most important.

CLASS 4.—In which the curves are more severe. For these patients some good may be done doubtless by a course of exercises, but less permanent effect must be hoped for than in the less severe cases.

In Class 1 mentioned above it is nearly always desirable to commence treatment by exercises and in many cases with the addition of massage. In Class 2, also, exercises may be carried out, but the patient should be carefully watched to determine whether he is really recovering and to detect when the disappearance of curves is more apparent than real. In Class 3 and Class 4 a combination of methods must be brought to bear upon the case.

Description of exercises.—A great variety of complicated exercising machines have been devised and used from an early date in the study of this deformity, but although these apparatus are very beneficial under some circumstances, it should be the object of the surgeon to simplify as far as possible the various movements carried out, with the view of teaching the patient to continue the treatment by himself as far as possible subsequently.

In the early periods of treatment of any case, however, the knowledge of the surgeon and the efforts of the skilled teacher are both necessary, and unless the curvature be very

slight the medical supervision is required for a considerable time.

General exercises.—I have already stated that, as a rule, the patient should rest in the recumbent position whilst carrying out the general exercises. The object of the recumbency is to remove the weight of the body from influencing the curves.

We almost invariably find that where there is general debility and a weak muscular system there also exists laxity of the joints. Under such circumstances whenever the spine is in an upright position, whether the patient be standing or sitting, there is a certain deforming influence upon these lax joints caused by the superincumbent weight, and the spine consequently tends to give way in one or other direction.

The object of general exercises is to strengthen the muscles and also, by bringing more blood to the weak parts, to nourish and strengthen the whole spine. The test as to when a patient may safely undertake exercises in an upright or sitting position must be his ability to control his spine in a straight posture for a sufficient length of time. For instance, when we have first examined the case the patient,

FIG. 1.

Dorso-lumbar curvature, the dorsal curve being most prominent about the tenth dorsal vertebra.

FIG. 2.

The same patient as in Fig. 1 drawing back the elastic expander with the right arm, thus using the muscles between the shoulder and the spinous processes of the deflected dorsal vertebra, straightening the whole spine and un-rotating the vertebra. The vertical lines from the outer side of the pelvis show the relative positions of the side of the body, without and with the active exercise.

upon sitting in a chair, will, after a certain short period, have relapsed as regards his spine into one or other or several curves. When the time has arrived that he can sit up easily with the spine in a perfectly normal position not only as regards lateral but also in respect to antero-posterior posture for at least five minutes, then we need not restrict the exercises to the recumbent position.

FIG. 3.

The exercise for drawing back the prominent side of the thorax. Here the dorsal curve was to the left. The patient in Fig. 1 and Fig. 2 would have done this exercise with the left arm.

FIG. 4.

Arm extension, first position, with resistance by the patient. In the second position the arms are raised and the operator resists.

FIG. 5.

Arm extension, second position, in which the operator resists.

FIG. 6.

Arm extension without resistance, second position. In the first position the arms are flexed and the fingers touch the shoulders.

FIG. 7.

Arm extension, third position.

FIG. 8.

Simultaneous leg elevation. The arms are extended to balance the body. This exercise has a powerful effect upon the abdominal and lumbar muscles and has to be attained by gradual slighter movements.

FIG. 9.

Simultaneous leg and arm circling. The combination of these exercises is only carried out in exceptional cases and requires considerable strength.

FIG. 10.

This figure shows the first position for the exercises in Fig. 11 and Fig. 12.

FIG. 11.

• Body flexion backwards and forwards. This exercise requires considerable practice before it can be done *evenly* to the extent shown.

FIG. 12.

Kneeling body movement. It would require many figures to show the details of this exercise. Before it can be carried out satisfactorily more simple degrees of the position have to be practised.

FIG. 13.

Backward bending with legs fixed. If forward bending to a sitting position is required the patient must have the knees bent over the edge of a shorter couch and there fixed.