a tedious recovery took place, and on the 28th the temperature became normal, but his convalescence was very prolonged.

The first three cases seemed to indicate that the salicin treatment was the true desideratum in this affection; but in the last case, the absence of any relief whatever, the supervention of a very acute pericarditis, the powerlessness of the remedy against this complication and the attendant fever, must make us hesitate before we finally accept Dr. MacLagan's dictum—"that it (salicin) seems to arrest the course of the malady as effectually as quinine cures an ague or ipecacuanha a dysentery; that, given sufficiently early and in sufficient dose, it prevents these (cardiac) complications; and that its free administration is the best means of staying their progress after they have occurred."* No objection can be taken as to the sufficiency of the dose, for the salicin had been so freely administered that the patient had taken over 800 grains in the five days before the friction-sound appeared, and his heart was most carefully examined two or three times daily. I would incidentally point out that the urine became alkaline after the illness had existed for some days; and I have noticed a similar condition in other cases of acute rheumatism even when treated by mineral acids or by expectants. This must make us cautious in any inferences into which we may be led as to the effect of our drugs upon the urine in this disease.

Warwick-street, S.W.

GUNSHOT INJURY TO THE MUSCULO-SPIRAL NERVE.

By EDMUND OWEN, F.R.C.S.,

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In the summer of 1875 a gentleman was returning after a shooting excursion in a bay off the coast of Nova Scotia. On account of the lowness of the tide, the boat grounded about twenty yards from shore; so, stepping on to one of the bow thwarts, he tried with a heavy oar to shove the boat out into deeper water. He had, for what he considered to be safety, previously placed his gun in the bows of the boat with the muzzle pointed skywards. From some cause or other the gun went off, and the charge of shot entered the inner side of the uplifted and half-bent arm. The charge passed in its course the ball of the thumb, which was thus charred, and then grazed and burnt a great part of the radial border of the forearm, and, having gone through the lower part of the biceps, effected its exit a few inches above the outer elbow. The arm at once dropped helplessly. It seems that a considerable quantity of blood was lost. The wounds themselves were comparatively painless, and the only suffering appears to have been caused by the energetic application of compresses above and below the wound.

As the station in which the accident occurred was very out of the way, it was not until the evening of the following day that a surgeon, Dr. G. E. Buckley, arrived, and he, after a slight examination, thought it advisable to do nothing until the next morning. He then advised amputation; but the patient being strongly opposed to this, Dr. Buckley administered an anæsthetic and cleaned and dressed the wound, cutting away the damaged skin and muscle. After this, dressings were daily applied, and the patient informs me, in the graphic notes of his case with which I have been furnished, that there was a wound above the elbow large enough to receive the fist, and that the (arterial) pulsations could be marked. The patient was on his back for four weeks, and at one visit Dr. Buckley extracted nineteen flattened shot-corns.

The first wound to heal was that of the thumb, then that of the forearm. At about the tenth week the wound of exit had closed, and much later on that of entrance of the charge; one sinus remained open until last March. The limb was kept lying across the chest.

In June last the patient came to England for further

advice, and at this time the only movement of which the injured limb was capable was flexion of the metacarpal bone of the thumb, every office which was formerly discharged by the right hand devolving upon the left.

At the end of July he was fortunate enough to come under the care of Dr. Kellgreen, of 85, St. George's-road, Pimlico, who is the director of the Swedish Institution for the Cure of Disease by Manual Treatment.

My connexion with the patient is merely this: he had a letter of introduction to Dr. Broadbent, who sent him on to me, knowing that I should be interested in the case. I carefully examined him on October 11th, and took the following notes:—

The extremity is much wasted. The forearm and hand are ever in the prone position, and the fingers are almost straight. There is a small scar over the ball of the thumb, and a large jagged one along the radial side of the forearm. The middle of the bicipital region is occupied by an exten-pas-sed through the limb, destroying in its course the chief sive and irregular puckering, the scarred surface in places being red and hard. It showed where the charge had part of the biceps. Some of the deepest fibres of this muscle still remain, and have an evident connexion with the tendon and the semilunar fascia. The chief part of the muscle stands out prominently above the laceration, and there the arm measures nine and a half inches in girth, whilst immediately below—that is, around the cicatrix—the circumference is only seven inches. Fair pulsation can be made out in the brachial artery as far as the wound, but under the scar the pulsation is much diminished, and not much greater than that in the inferior profunda whose course can be clearly traced out. (As the patient is very thin, the course of the inferior profunda can also be followed in the sound limb.) The circumference of the left forearm just below the middle exceeds that of the damaged arm in the corresponding situation by three-quarters of an inch. The girth of the limb at the seat of the large scar is two inches and a half less than that of the opposite side in the corresponding situation.

The musculo-spiral nerve has evidently been lacerated; the mass of supinator longus cannot be detected, nor is there any power whatever of supination of the hand nor extension of the wrist. There is the scar of an old sinus at the situation of the musculo-spiral nerve, where it winds around the outside of the humerus; there the bone is only covered by integument and a cluster of shot-corns, and when these hard bodies are pressed towards the bone, the patient volunteers the information that he feels pain over the back of the hand and fingers. For some time after the accident there was no sensation over the back and outer side of the forearm, but now he there feels a pinch like the sensation that would be caused by a red-hot iron. Gentle friction is agreeable. There is still numbness over the back of the hand; he has no power over the extensors of the thumb or fingers; he has great strength in the pronator radii teres and the flexors of the wrist and fingers. The median nerve lying alongside of the brachial artery seems to have escaped injury.

Lastly, I must refer to the method of treatment to which he is submitting himself. Every week-day he attends Dr. Kellgreen for an hour, and this gentleman puts the damaged limb through all kinds of well-directed gymnastic exercises. By the courtesy of Dr. Kellgreen I was enabled to watch the course of treatment adopted. When the patient first attended he had no power or use in the limb whatever; now he can perform certain movements with it, and is steadily improving. The Doctor says that if—as regards extension of the wrist—he were to take the hand and flex and extend it rapidly he might keep on at it for an indefinite time, but that the hand would still remain "lame." So he bends the wrist, and exerting slight resistance, instructs his pupil to try to extend. This he does slowly, so that the patient may bring all his strength of will to act through the medium of the nerve which supplies the muscles. After spending some time in this exercise he places a book in the damaged hand, and he himself holds up the wrist in a vertical position. Then, having fixed all the patient's attention on the book, he says, "Lower the book slowly." So the book and hand bend slowly forwards, till, with a trembling at the back of the wrist, it seems as if the extensors can no longer struggle against the weight. Then he stamps on the floor, and making use of some

* THE LANCET, Oct. 28th, 1876.

strong Scandinavian words (the meaning of which I can only imagine), I could see the muscles struggling against the weight to bring up the hand again. After a few minutes, the muscles, which are thus undergoing a course of fresh education, give way through sheer exhaustion, and the patient, by a seemingly fearful effort of the will, has gained a step on the road to recovery. Then the Doctor works over the course of the nerves with the nail of his thumb or finger, and seems to find them out with unerring precision; the result of this manipulation being the feeling, as it were, of an electrical shock through the different series of muscles to which the nerve is distributed. It is worthy of remark that, since this patient has been under Dr. Kellgreen's manipulative and educational treatment, about twenty-four shot-corns have worked their way up to the skin out of the deeper tissues. From September, 1875, to March, 1876, surgeons had sought constantly for them, but without success. Exercise has evidently brought them out. Whether galvanism could have brought about such a result or not I cannot say; but of this I am sure, that no other method of treatment than that which has been adopted could have been attended with better results.

I saw other cases during my visit which are of great interest as regards treatment and result, but it is impossible to speak of them here. I came to the conclusion that Dr. Kellgreen's method of treatment must be in certain cases of extreme value; and I feel sure that many a busy practitioner would be glad to know where such honest and skilful manipulative treatment may be obtained, and where nerves and muscles which have from any cause been thrown out of working order may obtain a course of education which may restore them once more to their sphere of usefulness.

Cleveland-square, W.

ON THE EXPECTANT TREATMENT OF CHOREA.

By E. B. GRAY, M.D.; AND H. M. TUCKWELL, M.D.,
PHYSICIANS TO THE RADCLIFFE INFIRMARY, OXFORD.

NEARLY five years have elapsed since we published in this journal* a series of cases of chorea, in the treatment of which all medicines had been withheld, and reliance had been placed solely on nursing and good diet. We then showed by a comparison of the average duration of our cases with the average duration of cases treated with arsenic and other routine drugs, that the expectant treatment was at least as successful as the treatment by medicine. Since that time we have continued to work in the same direction, and are now able to record twenty more cases, in which the whole natural duration of the disease uninfluenced by medicine has been accurately estimated. In every instance the parents or friends were closely questioned as to the earliest appearance of twitching, and the patient was kept under observation till all irregular movements had ceased. We propose to give, as before, only a brief *résumé* of the clinical history of each case; and, in order to avoid repetition, we would state at the outset that the best diet of the hospital was given to all alike, and, in place of medicine, an occasional dose of sugared water or carraway water, as a placebo.

(Under the care of Dr. GRAY.)

1. Girl, aged fifteen. First attack, bilateral, mild. For the first ten days after admission high temperature (100°—102°); basic systolic murmur, which ceased to be heard as the chorea got well. Duration before admission, four weeks; movements ceased five weeks after admission: total duration, nine weeks.

2. Boy, aged fourteen. First attack, bilateral, mild, supervening upon a fortnight's attack of subacute rheumatism in knees, ankles, and loins. Father said to have had rheumatic fever, and one sister said to be epileptic. No cardiac murmur. Duration before admission, three weeks;

movements ceased eight weeks after admission: total duration, eleven weeks.

3. Girl, aged nine. First attack, bilateral, mild. Mother had had rheumatic fever, and an aunt had been choreic at the same age. No cardiac murmur. Duration before admission, three weeks; movements ceased six weeks after admission. The child was still, however, kept under observation. For the next fortnight she had, together with a systolic murmur at the apex (constant in the recumbent, but disappearing in the erect position), an attack of erythema papulatum, very symmetrical, first on the legs, then on the arms; also a whitlow on one thumb. At the end of three weeks, the erythema having subsided, chorea returned sharply, with a rise in the temperature, excited action of the heart, and a systolic murmur at apex and base, audible in the recumbent, doubtfully audible in the erect posture. At the end of another nine days this second attack of chorea had quite subsided, the murmur remaining much as before, and still dependent on posture. Total duration, including the relapse, thirteen weeks.

4. Boy, aged sixteen. First attack, moderately severe, affecting chiefly the facial and respiratory muscles, and the right limbs more than the left. No history of rheumatism. On admission, a slight basic, systolic, cardiac murmur was heard, which ceased to be audible after a few days. Duration before admission four weeks; movements ceased six weeks after admission: total duration, ten weeks.

5. Girl, aged twelve. First attack, bilateral, mild. A brother had been choreic. Mitral systolic murmur for several days after admission. Duration before admission, three weeks; movements ceased six weeks after admission: total duration, nine weeks.

6. Boy, aged nine. First attack, bilateral, mild. No history of rheumatism, no cardiac murmur. Duration before admission, two weeks; movements ceased four weeks after admission: total duration, six weeks.

7. Boy, aged seven. First attack, left hemichorea, mild. No history of rheumatism. For several days the heart's action was excited, and the impulse increased, but no murmur was heard. Duration before admission, two weeks; movements ceased three weeks after admission: total duration, five weeks.

8. Woman, aged twenty-six; married four years; never pregnant, and still menstruating regularly. First attack, general, moderately severe. No history of rheumatism, but the chorea was attributed to fright. On admission a systolic murmur was heard at the apex, but was scarcely audible when she was discharged cured. No albumen in the urine. Duration before admission, five months; movements ceased one month after admission: total duration, twenty-four weeks.

9. Boy, aged eleven. First attack, bilateral, rather severe; supervening on an attack of acute rheumatism. Mitral systolic murmur heard throughout. Duration before admission, three weeks; movements ceased ten weeks after admission: total duration, thirteen weeks.

(Under the care of Dr. TUCKWELL.)

10. Girl, aged twelve. First attack; left hemichorea, moderately severe. She had had at times pains in the joints, and her mother had had rheumatic fever. No cardiac murmur. Duration before admission, four days; movements ceased in from seven to eight weeks after admission: total duration, eight weeks.

11. Girl, aged four. First attack, general, moderately severe. No history of rheumatism in the child or her parents, but her aunt had had chorea when young. Loud systolic mitral murmur, heard plainly beneath the scapula, becoming less loud as the chorea abated, but not disappearing after recovery. Duration before admission, ten days; movements ceased twenty-five days after admission: total duration, five weeks.

12. Girl, aged eleven. Third attack, general, mild. She had suffered repeatedly from severe pain in the joints. No cardiac murmur. Duration before admission, four weeks; movements ceased five weeks after admission: total duration, nine weeks.

13. Girl, aged nine. First attack, general, moderately severe; began with pains in the wrists and ankles. Loud mitral systolic murmur heard beneath the scapula, distinctly lessening in intensity as the chorea abated, but not disappearing after recovery. Duration before admission,

* THE LANCET, 1871, vol. ii., pp. 778, 814.