lowed by hemorrhage, and the eye shrank. The gentleman who had operated asked me to operate on the other eye. The patient stated she was in fair health; but she appeared much older than her years, was rather feeble, very thin and much wrinkled. There was mature cataract; the pupil was fairly active; tension normal; projection somewhat doubtful. She was quite desirous to have the operation performed.

January 8, 1897. Simple extraction under cocaine. The pupil dilated rather slowly to admit the passage of a fairly good sized nucleus; a small amount of cortical was coaxed out. After extraction of the lens the eye seemed softer than usual. The iris returned to place readily. Eserine, one-tenth per cent. The bandage was maintained for four days. The pupil was small, round, central.

She returned home January 26th, sooner than I advised. The eye quiet, a little cortical in the upper part of the pupil. Vision .4.

A STUDY OF MEASUREMENTS IN CURVATURE OF THE SPINE.¹

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DURING the past six years measurements and strength tests² have been made upon curvature cases in the Out-patient Department of the Boston Children's Hospital to determine the factors instrumental in the production of curvatures of the spine.

The strength tests taken are as follows: of the back, of the right and left side, and of the muscles moving the arms in the cardinal directions. The purpose was to measure the strength of the trunk muscles which had influence upon the postures of the spine, shoulders and arms, and to determine whether any unilateral weakness existed which could account for the curves. Cases in which the curvature was secondary to a paralysis have not been included in this study. In paralytic curvature there is weakness of the convex side, but in some paralytic cases there is marked asymmetry of strength without coincident curvature.

The back strength was taken with the back well bent and the legs straight by means of an ordinary dynamometer fastened to the floor. For the reason that varying age and gymnastic training produce great inequality in its value, it has not been included in this study: only those bilateral tests have been included which check each other regardless of the total strength of the individual.

The side strength was tested by the same dynamometer, and measured the ability of the individual to pull up with one hand, the body being bent side-wise and legs straight.

The tests named deltoid, scapular, latissimus dorsi and pectoral measured the pull made by the arms extended laterally at right angles to the body, in the general direction of these muscles. In each case the feet were placed widely apart to give full support, and in most cases several tests were made and the maximum recorded. In order to get a satisfactory test of

the forward and back pull (pectoral and scapular) and to avoid the slipping of the feet upon the floor, it was found necessary for the operator to press upon the back of the shoulder for the pectoral test and upon the front for the scapular. This tended to localize the effort in the muscles immediately about the shoulder. Undoubtedly a better way to test the trunk muscles would be to fix the pelvis firmly and to allow the subject to make the effort unassisted; it was found difficult, however, to arrange the necessary apparatus and the other test was fairly satisfactory.

AVERAGE STRENGTH TESTS IN RELATION TO CHARACTER OF CURVE.

	Side.		Deltoid.		Scapular.		Lat. Dorsi.		Pectoral.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
Rt. dorsal.	53.9	53.0	8.4	8.1	8.2	8.0	11.6	11.1	8.4	8.6
No. obs.	(22)	(22)	(41)	(41)	(40)	(40)	(41)	(41)	(41)	(41)
Left dorsal.	53.0	49.0	8.3	7.6	7.7	7.3	10.4	10.2	7.6	7.7
No. obs.	(12)	(12)	(21)	(21)	(21)	(21)	(21)	(21)	(21)	(21)
Rd. shoulders.	45.3	44.9	6.6	6.5	7.3	6.7	9.0	8.8	6.9	6.2
No. obs.	(13)	(13)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)
Miscellaneous.	55.7	51.3	7.4	7.4	7.1	6.5	9.4	9.1	7.3	7.1
No. obs.	(20)	(20)	(29)	(29)	(29)	(29)	(29)	(29)	(29)	(29)

It will be seen by reference to the table that the curvature cases are divided into two groups with right and left dorsal convexity respectively. A preliminary examination of the records failed to show evidence of consistent unilateral variation in strength. It was thought that a combination of all the observations would bring out in the averages any latent inequality of strength; therefore in the table are given the average lateral strengths for the number of observations indicated. These averages were obtained by adding together all the strength tests for each group of individuals and by dividing the resultant sums by the number in the group. A comparison of the numbers so obtained shows remarkable equality in strength between the two sides and suggests that there is no unilateral weakness to account for the curves. It will be noticed that there is a slight superiority of the right over the left in all the groups.

CONCLUSIONS.

(1) The cases of right dorsal curvature show no evidence of unilateral weakness.

(2) The cases of left dorsal curvature also show no evidence of unilateral weakness.

(3) The cases of round shoulders show similar equality between the strength of the two sides.

(4) The miscellaneous cases, including wry neck and other deformities, show bilateral equality in the strength of trunk muscles.

These cases of spinal curvature suggest that unilateral muscular weakness does not enter as an etiological factor in idiopathic curvature of the spine.

It may be added that in nearly all the cases of curvature studied a detailed history of deforming posture in sitting, standing, or more especially sleeping, was obtained, and seems to suggest an essential etiology of the trouble.

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² These observations are reported through the courtesy of Dr. E. G. Brackett, who has charge of the Curvature Clinic.