diaphragm seemed first to be increased; then the lower ribs, in most of the cases examined, seemed to have the precedence in rising, and were straightened at the angle between them and the costal cartilages; the spinal column was curved backwards; and finally there was a forced raising of the whole bony cage. In expiration after this effort the phenomena were reversed in order.

This account differs in some respects from that of several authors, who, however, differ among themselves, probably in consequence of the control which the will can exercise over the several motions. The order of movement of the ribs was examined, both by means of tapes and by Dr. Sanderson's stethograph, and the different types of breathing were observed in males and females by the same method.

The differences in the rates of motion forward and upward were accounted for partly by the mechanical conditions of the action, the ribs being considered as rigid bones, partly by other considerations.

The chief regions examined were the sternum, at its upper, middle, and lower portions, the clavicles, and the third and fifth ribs.

Tables showing the extent of motion in these parts in adult males and females, in childhood and old age, and in different positions were drawn up, and a want of perfect parallelism in the sternal movement was shown to exist in some cases.

The sternum moves usually more than the clavicle, and the ratio of the forward to the upward motion is somewhat greater; the lower end moves slightly more than the upper, but there is evidence of some retarding influence from the action of the diaphragm, a conclusion supported by Traube's experiments.

The clavicles move most in the final effort of breathing—they have no outward motion,—and this movement only grows distinct on the second and third ribs, increasing as we descend.

The forward push of the ribs is very remarkable. The fifth and seventh, and sometimes the second and third, have more forward movement than the sternum, and this dimension of the motion often equals the upward rise. There is much evidence of independent movement in the several ribs.

In women and children the ordinarily high ratio of the forward to the upward dimension is still further increased, but in old age it is diminished to the lowest point compatible with any rise of the ribs.

In most of the women examined the motions on the left side exceeded those on the right, in men the contrary was the case.

Position materially influences the movements, and muscular strength is also an important element. In disease the motions are naturally less extensive than in health, but there were several cases of pleurisy and phthisis in which there was evidence of an exaggeration of motion over sound parts to compensate for loss of motion elsewhere. Loss of movement was chiefly conspicuous in emphysema and asthma, but also in chronic bronchitis, although the proportions of the several dimensions of the movement were but little altered.

In phthisis it was remarkable usually how small was the extent of motion even on the healthy side, and in both males and females one of the earliest indications of disease was diminution of movement over the part immediately affected. The ratio of the forward to the upward motion was much lessened, except in some very chronic cases, in which large, dry vomicae existed, and the disease was for the time quiescent.

Practical deductions may often be made from these records, and they are useful both in tracing the course of disease and in estimating its virulence.

PROGRESSIVE MUSCULAR ATROPHY, ACCOMPANIED BY MUSCULAR RIGIDITY AND CONTRACTION OF JOINTS, WITH EXAMINATION OF THE BRAIN AND SPINAL CORD.

BY J. LOCKHART CLARKE, M.D., F.R.S.

(Communicated by Sir WILLIAM GULL, Bart., M.D.)

A man at the age of thirty became affected with frequent vertigo, which lasted for three years. From this period he found that he was obliged to be very slow in all his movements, and that if he attempted to move his limbs quickly they trembled very much. Subsequently he felt weakness in the left leg, so that he would suddenly fall down, without

feeling giddy, and the calf of that leg began to waste. Then the muscles of the right leg wasted, and four months later he noticed wasting of the muscles of the left shoulder. He complained of severe dragging pain in the arms and legs. These symptoms gradually increased through a number of years, so that at the age of fifty-eight he was quite unable to stand, or even turn in bed, or feed himself. There was great muscular rigidity. Almost all the muscles of his body were much wasted, especially those of the upper extremities. The respiratory movements were very feeble. There was no trouble with his bladder, nor any noticeable alteration of cutaneous sensibility, but electric sensibility was almost abolished. His speech was indistinct and nasal. Deglutition became difficult, and at last almost impossible, and saliva ran from his mouth. The fibrillar tremors and rigidity of the muscles wholly disappeared during the last week of his life.

Parts of the cerebral convolutions were thickly interspersed with corpora amylacea, and many of the blood-cells of the white substance were enlarged. The cells of the grey substance were not altogether healthy. The pons Varolii was somewhat below the average size; its bloodvessels were much dilated, and in some instances had partially or wholly undergone disintegration at particular spots, leaving empty tubular spaces. The corpora amylacea were thickly interspersed. The medulla oblongata was about one-fifth below the average size in the adult. All its nuclei were decidedly smaller than usual, and their cells were more or less affected by pigmentary degeneration. The diameter of the spinal cord was at least one-fourth less than the average in the adult. The grey substance, from one end to the other, was severely damaged by a variety of lesions and degenerations. In all regions of the cord the nerve-cells of the anterior grey substance had undergone considerable degeneration. Some of them had wholly disappeared by gradual pigmentary wasting, or by falling into heaps of granules. Of those that remained the processes were either lost or reduced considerably in size.

OBSTETRICAL SOCIETY OF LONDON.

WEDNESDAY, NOV. 6TH, 1872.

DR. BRAXTON HICKS, F.R.S., PRESIDENT, IN THE CHAIR.

THE following gentlemen were elected Fellows of the Society:—A. H. W. Ayling, Esq., A. F. Field, Esq., Henry Harris, M.D., Geo. Mendenhall, M.D., and Joseph Szygrelski, M.D.

MR. WORSHIP showed a Fibro-cystic Tumour of the Uterus, complicated by pregnancy. The patient was thirty-five years of age, married two years and a half. During life she suffered acute pain over the abdomen, which had increased rapidly in size, and there was obstinate sickness during the last few weeks of life.

THE PRESIDENT referred to a case of fibroid complicating pregnancy attended by Mr. D. Taylor, in which the labour was quite natural.

DR. PHILLIPS said that large fibroid masses at the fundus uteri generally interfered materially with efficient uterine action during labour. The case was interesting as a further illustration of the difficulty of diagnosing fibro-cystic disease of the uterus from ovarian tumour. He asked whether fibro-cystic tumours of the uterus had ever been noticed to suppurate and discharge at irregular intervals. He had now at Guy's a case of uterine tumour extending high above the umbilicus, but every four or six months there was a profuse discharge of blood, and then of pus, with great diminution in the size of the growth, which again gradually increased. The patient had been under notice at intervals for five or six years.

DR. PROTHEROE SMITH said, in reference to the probable escape per vaginam of the fluid contents of fibro-cystic growths, he would refer to three cases. The first case was one of a large abdominal tumour which became diminished in size and tension after the escape of considerable quantities of watery discharge per vaginam, at irregular intervals. In another the symptoms had existed for seventeen years. A tumour, continuous with the uterus, and extending to the umbilicus, becomes at times greatly diminished in size after a profuse discharge. A third case presented the same characters in a less marked degree.

DR. WYNN WILLIAMS exhibited a Hodge's Pessary with