allowed perfect motility of the organ. The abdomen was closed, the rectocele reduced and repaired, and the prolapsed anal mucous membrane resected.

Postoperative history.—The patient reacted well and without nausea, and with the exception of a small rectovaginal fistula which developed between the rectocele wound and the site of the resected anal prolapse, made a perfect recovery. The fistula healed up after readjustment of the anal flap, without any further trouble. The patient was kept on her back for ten days, on a restricted assimilable fluid diet, and her bowels not allowed to move during that time. On the eleventh day she was given an oil enema, preceded by a small dose of compound licorice powder, given the night before, and she had an easy movement. She was allowed to turn on either side, supported by pillows, and at the end of the fourth week was allowed to walk and partake of full diet. She left for home at the end of six weeks, having good daily evacuations of the bowels without cathartics or enema.

Subsequent History.—Five months after the operation she called at my office, while on a visit to the city, and I had an opportunity of examining her. Everything was in perfect shape; she had daily stools without any assistance (after thirty years of constipation), and stated that her health in every way was perfect.

CASE 2.—Operation.—The patient entered Harper Hospital, Feb. 16, 1907. Laparotomy revealed a similar condition to that in Case 1, except that in this case two adhesive bands about three inches long extended from the sigmoid to the old abdominal scar, holding the sigmoid in a position of acute angulation. The large part of the rest of the sigmoid filled the space formerly occupied by the uterus. Adhesions were broken up, the sigmoid drawn up out of the pelvis, mesosigmoidopexy performed by the method described in Case 1. A cicatricial contraction of the anus—the result of the Whitehead operation done for prolapse the preceding year—was excised, and the anal orifice restored to its normal size by a plastic operation.

Postoperative History.—The patient made an uninterrupted recovery, being kept in bed for three weeks. She was put on an absorbable liquid diet until after her first movement, on the eighth day; then she was gradually allowed full diet. The bowels were emptied every other day by oil enemata, and she had her first natural movement unassisted on the twenty-second day after the operation. The patient was last seen Feb. 8, 1908, when examination showed no evidences of prolapse after severe straining; the bowels were moving regularly.

This last case is of particular interest because the patient had been operated on twice before for the same condition without success, both amputation of the prolapsed bowel below and suspension to the abdominal wall having failed of their purpose. The technic referred to in this paper brings the prolapsed portion up and holds it there by its natural support, the mesosigmoid, which, being stitched to itself, becomes twice as thick and twice as strong.

By not causing any adhesion of the bowel itself to any fixed surface the natural mobility of the bowel is not interfered with in any way.

CONCLUSIONS.

From these two cases I draw the following conclusions:

1. In patients requiring hysterectomy who give a history of chronic constipation, the possibility of postoperative prolapse of the rectum and sigmoid should be borne in mind.

2. In patients with a history of chronic constipation who require hysterectomy it must be remembered that the removal of the uterus deprives the rectum of an important anterior support and the broad ligaments should be brought together whenever possible.

3. In these cases, perineorrhaphy and posterior col-

porrhaphy should be performed when laceration or rectocele exists.

4. When any tendency to prolapse of the rectum or sigmoid is observed mesosigmoidopexy should be done as a prophylactic measure.

5. Mesosigmoidopexy should be the operation of choice in every case of complete prolapse of the rectum and sigmoid, whether following hysterectomy or from other causes, as it holds the sigmoid in place by its natural support, its own mesentery; which being double its original thickness becomes twice as strong a support. By not causing a fixation of the bowel to the abdominal or pelvic wall, its natural mobility is not interfered with, and the normal peristaltic movements are not interfered with.

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ABSTRACT OF DISCUSSION.

DR. WALTER B. DORSETT, St. Louis: At the meeting of the American Association and Gynecologists and Obstetricians at Cincinnati I read a paper on the utilization of the broad and round ligaments following hysterectomy. In this paper I directed attention to the fact that cicatrices as a result of large denuded surfaces brought the rectum down into such a position that constipation frequently followed and also that some cases of enuresis due to prolapse of the bladder were caused by the fact that no attention had been paid to the restoration of the broad and round ligaments as supports of the uterus. While it may be a question whether round and broad ligaments are natural supports to the uterus, as a matter of fact when they are severed and brought down into the stump they hold up the rectum and the bladder.

DR. L. J. HIRSCHMAN, Detroit: In answer the sutures were introduced crosswise of the vessels, and I was careful to avoid including the vessels in the sutures.

THE SURGICAL IMPORTANCE OF CERVICAL RIBS TO THE GENERAL PRACTITIONER.*

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I should scarcely venture to present this topic here, were it not that the general medical profession has not yet become familiar with it. Surgeons and neurologists have in recent years awakened to the great value of studies in embryology, comparative anatomy and pathology. The results of such studies are, however, more or less unknown to the bulk of practitioners, because they are published chiefly in journals devoted to the specialties of medical science. The surgical importance of vestigial structures, like the omphalomesenteric duct, the thyroglossal duct and the branchial clefts, and the relations of bony and other structural anomalies have a place, therefore, in the discussions of this Section.

A few years ago a distinguished surgeon remarked in a formal address that accurate anatomic knowledge was now hardly an essential in the training of a surgeon. Such an opinion is invalidated by a brief reference to the development of the surgery of cervical ribs. Most of us who spent the early days of our training in dissecting room study and teaching have been familiar with skeletal anomalies found in the vertebral column and ribs. Lumbar ribs, cervical ribs and supernumerary vertebrae are recognized as occasional evidences of the relation of the human vertebrate to other animals pos-

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

sessed of a back bone. The anterior tubercle on the transverse process of the cervical vertebra of man has long been known to represent the cervical ribs of certain vertebrates. In my own case such topics interested me so much that my graduation thesis was entitled "The Mechanical Construction of the Spinal Column."

Notwithstanding the recognized occasional occurrence of cervical ribs in man, Coote¹ reported in 1861 a successful operation for the removal of "an exostosis of the left transverse process of the seventh cervical vertebra, surrounded by blood vessels and nerves." In his article he refers to a case of supernumerary rib without symptoms reported by Willshire² the year before. He describes his own case as an exostosis, although he attributes the bony process to a development of the costal element or rib of the seventh cervical vertebra.

Another interesting illustration of our failure to appreciate the relations of facts is that given by H. Lewis Jones.³ In 1893 he published⁴ a short paper on "Symmetrical Atrophy Affecting the Hands in Young People," recording six instances of the disease, the cause of which he was unable to explain. In 1902 Buzzard⁵ showed that these cases should be regarded as due to a lesion of the first dorsal nerve root. Notwithstanding the study given the affection by these neurologists, it was not until 1904 that it was suggested by Thorburn⁶ that the palsy and atrophy of the intrinsic muscles of the hand in such patients was caused by pressure from a cervical rib. Jones then searched for and found a number of the patients previously described and proved the existence of the unsuspected cervical rib by x-ray examination. These historical allusions show how little appreciation surgeons and neurologists had until recently of the importance of the anomalous cervical rib as an etiologic factor in vascular and nervous lesions of the neck and upper extremity.⁷

AN ILLUSTRATIVE CASE.

History.—A few months ago a woman, aged 32, applied to me for surgical advice regarding a supposed aneurism at the base of the neck on the right side. She had observed a swelling there when a young girl, but had given no special atten-

tion to it, because it caused no inconvenience. About ten years ago she had called the attention of a medical man to the existence of this swelling, and an x-ray examination was made. No diagnosis was given her, however, and she apparently allowed the decision to remain undetermined. About four months prior to her consultation with me she became annoyed at the existence of the swelling and pulsation at the base of the neck and consulted a local physician. He suggested the possibility of aneurism or some disease of the blood vessels and considered a surgical opinion desirable.

Examination.—I found the subclavian artery higher than usual and very visible as a pulsating vessel under the integument. There was no change in radial pulse, and no numbness, coldness, anemia, or pain in the arm, hand or fingers. The right hand showed no atrophy or paresis. The patient suffered no pain in the neck. Palpation disclosed a cervical rib on both sides. The diagnosis was confirmed by an x-ray plate. (Fig. 1.) As the patient suffered no inconvenience other than that caused by anxiety regarding the nature of the pulsating swelling I advised that no surgical or medical treatment be adopted.

This case is on a line with those just mentioned; which show that cervical ribs deserve serious consideration as a possible cause of a number of vascular and nervous symptoms pertaining to the neck and upper extremity.

The correlation of exact biologic knowledge with the practice of medicine has been quite characteristic of the last fifteen years. Such investigations, combined with the use of the x-ray in diagnosis, have shown that cervical ribs are not uncommon in the human skeleton. It therefore behooves physicians, surgeons and specialists

Fig. 1.—Skliagram of Dr. Roberts's cases of bilateral seventh cervical rib. The shadows of the cervical ribs were "inked in" before the reproduction was made. The outlines of the first and second dorsal have been marked with ink.

1. Lancet, April 13, 1861, p. 360.
2. Lancet, 1860, li, p. 633.
3. Cervical Ribs and their Relation to Atrophy of the Intrinsic Muscles of the Hand, Quart. Jour. Med., January, 1908, p. 187.
4. St. Bartholomew Hos. Rep., 1893, p. 308.
5. Uniradicular Palsies of the Brachial Plexus, Brain, London, 1902, xxv, 209.
6. Med. Chir. Tr., 1905, lxxvii, 109.
7. For those who may care to look further into the historical phase of the subject, the following additional references are given:
Williams: Ann. Surg., October, 1898, p. 512.
Lloyd: Ann. Surg., October, 1898, 513.
Blanchard: Revue Scient., 1885, i, 724.
Warren: Boston Med. and Surg. Jour., 1896, xi, 258.
Riesman: University of Penn. Med. Bull., March 1, 1904.
Grissom: Fortsch. a. d. Geb. d. Röntgenstrahlen, 1898 9, ii.
Elsendath: Am. Med., Aug. 20, 1904.
Hessert: Ann. Surg., October, 1906, p. 630.
Murphy: Ann. Surg., March, 1905.
Kammerer: Ann. Surg., November, 1901, p. 642.
Lillenthal: Ann. Surg., May, 1905, p. 766.
Whitman: Ann. Surg., July, 1905, p. 123.
Ehrlich: Beitr. z. klin. Chir., xiv, No. 1.
Phillips: Proc. Anat. Soc. Great Britain and Ireland, 1900.
v. Rutkowski: Ztschr. f. klin. Med., 1906, ix., 267.
Russell: Med. Rec., Feb. 16, 1907.
Editorial, THE JOURNAL A. M. A., March 9, 1907, 878.
Pancoast: Univ. Penn. Med. Bull., xiv, 394.
Howell: Lancet, June 22, 1907, p. 1703.
Beck: THE JOURNAL A. M. A., June 17, 1905, p. 1914.
Babcock: Am. Med., Oct. 7, 1905.
Broadbent: Brit. Med. Jour., May 5, 1906.
Murphy: Surg. Gynec. and Obstet., October, 1906, p. 514.
Keen: Am. Jour. Med. Sc., February, 1907.

always to recall that pain, anesthesia, muscular spasm, defective circulation, or atrophy in arm or hand may be due to pressure, in the supraclavicular triangle of the neck, from increase in size or a change in relative position of an anomalous rib connected with the seventh or the sixth cervical vertebra. Supposed bony tumors in this part of the neck may be the rib itself or an outgrowth from it.

Other anomalies require like attention on the part of practitioners. One need only mention lumbar ribs, fused long bones, ossa triquetra, sesamoid bones, ossific plates in the pelvic ligaments, supernumerary digits, accessory thyroid and mammary glands, double arteries, multiple ureters, aberrant kidneys, and other anatomic variations to enforce the opinion that successful operative surgery needs the aid of morphology and descriptive anatomy.

VARIOUS FORMS OF CERVICAL RIB.

The usual cervical rib is attached to the transverse process and perhaps the body of the seventh cervical vertebra (Fig. 2) and may be found on both sides of the neck. When the condition is bilateral, one rib is frequently longer and better developed than the other.

Occasionally both the sixth and seventh vertebræ are furnished with these irregularly shaped costal appendages. A cervical rib generally approaches in some degree the outline of a dorsal rib. Its attachment to the spinal column, if it be so attached, is also like that of dorsal ribs. It is, however, quite often a very distorted representation of a rib. Its anterior end may be attached to the sternum (Fig. 2), may articulate with the upper surface of the first dorsal rib (Fig. 3), or may lie in the soft tissues without any other osseous connection than that which it has with the spine (Fig. 4).

Sometimes the middle of the rib is a fibrous cord uniting a posterior, or vertebral, bony segment with an anterior bony segment, which may be fastened to either the sternum or the first dorsal rib. In other cases there may be a posterior and an anterior bony segment with no intervening fibrous or bony tissue to represent the shaft or body of the rib. The irregularity of the curves of and the knobs on the anomalous rib may be extreme.

The anomalous rib occupies a position in the neck

Fig. 2.—[From Hunauld.] Showing seventh cervical rib (R) and its cartilage (C).

considerably above the clavicle and broadens the base of the neck. The knobiness, irregular thickening, or angularity of the rib may make a marked prominence, quite distinctly seen in the supraclavicular triangle, just behind the sternomastoid muscle. The resistance detected by palpation or the discovery of a hard mass or tumor buried in the muscles may lead to a correct diagnosis. If the anomalous rib extends to the sternum or is attached to the first dorsal rib near the sternum, the roots of the brachial plexus, the subclavian artery and the subclavian vein may be expected to pass over its superior surface. If the rib is two or three inches long, though incomplete in front, the roots of the plexus and the artery usually cross its upper surface in their course to the arm, but the vein does not, because it is situated too far forward (Fig. 5). The anterior scalene muscle is often fastened on the cervical rib (Fig. 3); the middle and posterior scalene muscles are sometimes attached to it. The artery usually lies between the rib and the anterior scalene muscle; that is, behind the

muscle (Fig. 4). It may, however, lie in front of the anterior scalene muscle (Fig. 3, one side). In the latter event it is not so likely to suffer pressure from the anomalous rib. This artery may, however, take its course from the thorax to the arm through the space between the cervical rib and the first dorsal; it then has the usual relation to the first dorsal rib. It and the roots of the brachial plexus may pass through clefts in the anterior scalene muscle (Fig. 3, one side). Pancoast says that Turner speaks of a cadaver with bilateral cervical ribs, in which the right subclavian artery arose from the aorta and passed behind the trachea and esophagus to reach the right side of the neck. The eighth cervical and first dorsal nerves, which are the lowest roots or components of the brachial plexus, run, as a rule, across the rib, just behind the artery, and are quite liable to suffer compression.

The subclavius muscle may have an attachment to the cervical rib as well as to the first dorsal rib. The rhomboid ligament may be attached to the cervical rib, if the latter extends far enough forward. Sometimes the space between the cervical and the first dorsal ribs is spanned by fibers of the scalene muscles, representing an intercostal muscle. A perfect sheet of intercostal muscle may be found in this situation.

Cervical ribs are congenital anomalies and have been detected in young children. It is said that the peculiar-

Fig. 3.—X, X, seventh cervical rib; A, subclavian artery; B, B, cervical nerves; C, anterior scalene muscle. On the left side the artery crosses the cervical rib in front of the anterior scalene muscle; on the right side it perforates the muscle. These relations are unusual. The nerves perforate the muscle on both sides. [Modified somewhat from Pilling.]

ity has been seen in a six months embryo. The so-called two-headed, or bicipital, ribs described by anatomists are composed of the shafts of two adjacent ribs, which have been congenitally fused. The first dorsal rib and an anomalous seventh cervical rib sometimes display this error in development. The apex of the pleural sac is not distant from a cervical rib and may be attached to it.

A critical study of the anatomic relations of the condition is scarcely germane to this paper, and I shall therefore now discuss the symptomatology.

SYMPTOMS OF CERVICAL RIB.

Many persons with cervical ribs suffer no discomfort from them; and their existence is unknown unless discovered by some chance clinical investigation. The symptoms are due to pressure on vessels and nerves.

The determining cause of the advent of symptoms is obscure. It has been supposed that there is a tendency toward the third decade of life for cervical ribs to grow in length, or to increase in size by the development of exostoses. Those ribs which extend directly outward from the spine appear to cause less trouble than those which project downward and forward. The short stumpy bones (Fig. 6) seem, according to Howell, to produce symptoms more readily than the longer ribs. This is perhaps due to the fact that the more perfect the shape of the rib, the more it and adjacent structures conform to physiologic standards and needs.

Symptoms have developed suddenly in children as well as in adults. A boy of thirteen years, for example, experienced the pressure symptoms first after a long swim. The advent of pain in numerous cases has been attributed to violent exercise or to a blow or injury. It is possible that the nerves have sustained injury by such accidents and therefore first gave the signal for investigating the skeletal details of the region above the clavicle.

The rigidity of increasing age has perhaps an influence, because the soft springy bones, ligaments and cartilages of children and young adults lessen the shock of blows. Cervical ribs are at times slightly movable. This mobility may act as a safeguard until it is lessened in middle age by increasing ossification of the

Fig. 4.—U, seventh cervical rib; V, abnormal position of subclavian artery; W indicates normal relation of subclavian artery to first dorsal rib when no cervical rib is present. M, anterior scalene muscle. [Modified somewhat from Keen.]

fibrocartilaginous portions of the cervical anomaly. Absorption of subcutaneous and intermuscular fat may lessen the protection offered to the nerves and blood vessels; and thereby conduce to circulatory changes in the upper extremity as persons with congenital ribs in the neck emaciate from ill health or senility.

The symptoms are chiefly those due to pressure interfering with the blood current in the subclavian artery and sometimes in the vein, and those resulting from irritation or inflammation of the last cervical and first dorsal nerves. These nerves enter into the composition of the brachial plexus. The rib itself or a knob-like process or exostosis on it may give the physical signs of a tumor on inspection and palpation. The width of the base of the neck may be increased, especially if cervical ribs exist on both sides. Two cervical ribs (sixth and seventh) on each side—a very rare anomaly—would probably be very conspicuous in this respect. Keen states that the clavicle may be bent, or even dislocated, by the pressure exerted by the anomalous rib during the growth of the structures of the neck. Scoliosis may be induced, with the convex curve of the

spinal column toward the side on which the anomalous rib exists.

The vascular symptoms pertain especially to the arterial circulation. Edema of the arm and hand from pressure on the subclavian vein or lymph vessels is rare. Some writers doubt its occurrence. The high position in the neck of the subclavian artery makes its pulsation visible and the artery easily palpable. The artery sometimes becomes dilated and has a murmur, thereby resembling a fusiform aneurism. It is not a true aneurism, however; and the dilatation is distal to the point of pressure, which is where the artery passes between the cervical rib and the anterior scalene muscle. Endarteritis, thrombosis and embolism may occur, lead-

Fig. 5.—X, irregularly shaped cervical rib articulating with first dorsal rib; VS, vertebral spines; S, subclavian artery passing over cervical rib behind anterior scalene muscle; V, subclavian vein; J, jugular vein; P, cervical nerves; M, anterior scalene muscle. [Modified somewhat from Weissenstein.]

Fig. 6.—Rudimentary cervical ribs are shown in black. They are very dissimilar in shape. [From Howell.]

ing to deficient circulation of the hand and arm. This circulatory disturbance is made evident by local anemia and coldness, and occasionally by gangrene of the finger tips.

Depressing the shoulder may increase the compression on the artery and obliterate a previously feeble radial pulse. Deep inspiration may obliterate the pulse in a similar way and cause disappearance of the arterial murmur. After holding the breath, the murmur may reappear with increased loudness on resumption of respiration. A gradual development of the collateral cir-

ulation may take place because of prolonged arterial compression, and a corresponding change in the vascular symptoms result.

The disturbances of innervation of the hand and arm are said to be more frequent than those connected with the blood supply. Sensory symptoms are more evident than motor, though spasm like writer's cramp, inability to extend the elbow, and muscular atrophy from degeneration of nerve supply do occur.

The numbness, formication, tingling, hyperesthesia and other evidences of nerve irritation or inflammation are referred especially to the ulnar side of the forearm. If a greater number of nerve fibers are subjected to pressure, or suffer from its secondary results, this area will be much increased and may involve the whole or nearly the whole of the upper extremity. The shoulder and chest may be the seat of pain. The neuralgic pain may be exceedingly severe; and may be intermittent or continuous. It is not certain that the sympathetic nerve is ever involved. Proptosis, dilated pupil, unilateral sweating and other supposed evidences of pressure on the ganglia of the sympathetic in the neck have been mentioned as possible symptoms due to cervical rib. The muscular symptoms are spasm and atrophy.

A study of the symptomatology reveals the reason for physicians making diagnoses of writer's cramp and palsy, rheumatism, neuralgia, muscular atrophy, aneurism, etc., of unknown origin. The possible existence of cervical ribs beginning to cause pressure symptoms should ever be present in the practitioner's mind. The recollection of this possibility will lead to a correct understanding of many heretofore obscure cases. The x-ray makes the diagnosis easy.

TREATMENT.

The treatment is excision of the anomalous cervical rib in all cases of severity. The operation, if done well, is practically free from danger, though it naturally varies in its surgical importance in each case. The entire rib should, as a rule, be removed. Subperiosteal resection is not wise, as a regenerated rib may exert pressure again. Injury to vessels, nerves and pleura is to be deprecated and may usually be avoided by the common expedients available to operators. Pneumothorax, local and general palsy of the extremity and troublesome bleeding have been caused in some operations. These mishaps are unusual.

The palliative treatment in mild cases consists in rest of the arm, suspension of the patient, local counter-irritation, liniments and massage. The constant electrical current (8 to 10 milliamperes) may be employed, with the anode used as the active electrode. The combined faradic and galvanic current may be found useful.

ABSTRACT OF DISCUSSION.

DR. J. CLARK STEWART, Minneapolis: The advantage of such papers as this is that they familiarize the profession with a clinical entity, which, while it may be rare, is of the greatest importance, especially from a diagnostic standpoint. No one can make a diagnosis of a condition with which he is absolutely unfamiliar. A study of the subject shows that cervical ribs are very common, probably very much more so than even a study of the literature would show, because the condition has hitherto been so seldom recognized.

Cervical ribs which cause symptoms are rare, but it is imperative that if the signs of the condition which Dr. Roberts has so briefly gone over are to be recognized and treated everyone should recognize the possibility of this condition

causing these symptoms. I think that the great bulk of these cases which are noted and described have been discovered on account of the deformity, the broadening of the lower part of the neck on one side, accompanied by an elevation of the scapula on that side. The x-ray, of course, demonstrates the character of these ribs. The lesson to be learned from the paper is the necessity for careful examination of every case of brachial neuralgia, whether accompanied by atrophy of the muscles or not. Every such case should be submitted to x-ray examination, and in a number of cases you will be rewarded by finding an extra cervical rib. Of course, its surgical removal is indicated.

RACHITIC EROSIONS OF THE PERMANENT TEETH ASSOCIATED WITH LAMELLAR CATARACT.*

I. A. ABT, M.D. AND MORTIMER FRANK, M.D.
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The occurrence of lamellar cataract is so frequently associated with erosions of the teeth and the history of some early nutritional disturbance, that an inquiry as to the relationship of these two conditions must be of some interest. The following case, which is the subject of this report, illustrates the association of these conditions:

History.—C. W., male, aged 12, was first seen Feb. 19, 1908, brought to us because he was mentally backward. The father said that the boy was willing and obedient but that he made poor progress at school and was the object of derision on the playground. He had been removed from one school to another, but found great difficulty in keeping up with his classes. Incidentally we learned that his vision was defective. The family history was negative. The conditions of his birth were normal. At the end of the second month maternal nursing was no longer possible and artificial food was substituted. From this time on his feeding was a very difficult problem, a great variety of foods were tried and he had more or less continuous disturbances of digestion. His progress was very slow. The anterior fontanelle closed at the fourteenth month, though the teeth did not erupt until the second year. It is important to note that he had frequent convulsive seizures during the first year of his life, perspired excessively, was fretful day and night, and cried when he was handled. He did not stand or walk until his second year.

Examination.—The patient was a large well-developed boy of 12 years. He was not of prepossessing appearance and his facial expression was that of a dull child. The mouth remained open owing to malocclusion of the teeth. His skull was large and massive, square-shaped, and presents the evidence of an old rickets. His chest was well formed and showed no deformity. His extremities were normal. The chest and abdomen presented nothing abnormal.

Eye Examination (Dr. Mortimer Frank).—R. E. V., 6/15; L. E. V., 6/15. Under atropin retinoscopy gave:

$$R. E., 6/0 + 5.00 \text{ } \bigcirc + 0.50 \times 105 = 6.9 +.$$

$$L. E., 6/0 + 4.75 \text{ } \bigcirc + 0.37 \times 60 = 6.9 +.$$

This correction was ordered for constant use. The fundus showed a marked absence of pigment; otherwise normal. The interesting feature was the transparent condition of both crystalline lenses, while at the equator placed at irregular intervals are seen the opaque short striæ or "riders" of lamellar cataract (Fig. 1).

The Teeth.—The changes in the permanent teeth showed typical malformation of the enamel, especially of the six-year-old molars. The incisors and all the anterior teeth also had defects of the enamel. The remaining permanent teeth, such as the twelve-years molars and bicuspid (which erupt after

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.