A Fœtus with Congenital Hereditary Graves's Disease.

By Clifford White, F.R.C.S.

The thyroid gland was shown at the March meeting of the Obstetrical and Gynæcological Section of the Royal Society of Medicine.

The mother of the child was a primipara who was admitted in labour to University College Hospital on November 10 1910. Her history was as follows: She was aged 23 and had been married ten months. The symptoms of Graves's disease were first noticed when she was five months' pregnant and rapidly became so marked that in September, 1910, she was admitted to a medical ward with all the classical signs of Graves's disease—exophthalmos, thyroid enlargement, nervousness, tremor and tachycardia. All these symptoms progressively increased as pregnancy advanced. When I saw her the pulse was 120 and the blood-pressure 142 mm. of mercury. The uterus appeared to be at the full term of pregnancy. The child was lying with the vertex presenting in the right occipito-posterior position. The fœtal heart was uncountable, but was well over 200 per minute, and a discussion arose whether this was due to the fœtus being affected by the maternal thyroid toxæmia or whether the disease was actually present in the fœtus. When labour had lasted eight hours the cervix was fully dilated and the head on the perineum, but the child was passing meconium. Its heart was slower than before but was still over 200 per minute. Forceps were applied under chloroform anæsthesia and the child delivered at 11.45 p.m. It was a male child weighing 4 lbs. 6 oz. There was no post-partum hæmorrhage.

The note made by the house-surgeon immediately after delivery was: "The child presents all the features of the disease present in the mother. The eyes are prominent and staring, the thyroid shows well-marked uniform enlargement. The heart-beats are uncountable and only a loud murmur is heard over the præcordium. There is also a fine tremor of the hands. Pupils medium size. Temperature 99° F." The next day the pulse dropped to 150 for a short time but later rose to 200 again. The child remained very cyanosed. The day after, November 6, the child died, having lived thirty-five hours.

The puerperium was normal; the mother's pulse varied between 120 on the second day after delivery to 100 on the eleventh day. During the puerperium the symptoms of Graves's disease became less and a diminution of ½ in. was noted in the circumference of the neck. The urine was normal. After delivery she did well for some

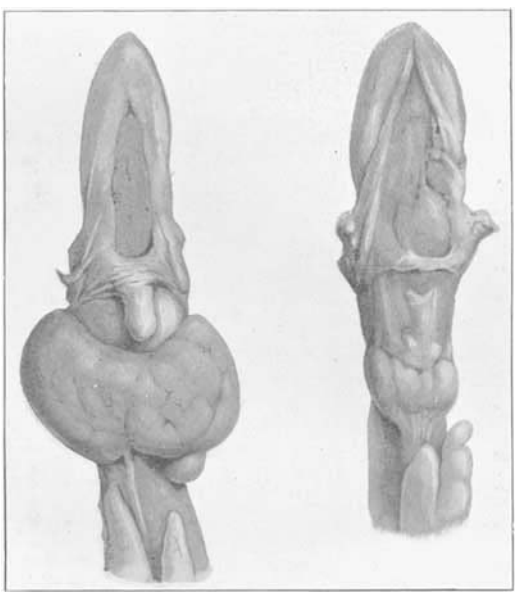
months but became pregnant again in April, and soon afterwards her symptoms became worse again. In December 1911, she was delivered in the Middlesex Hospital of a stillborn premature child that showed no abnormalities. The mother again improved after delivery.

The report of the post-mortem made on the infant two hours after death is as follows:—The skin is cyanosed. There is no rigor mortis present. The eyes are protruding, especially on the right side, so that neither eyelid is quite closed. The pupils are equal and are half dilated. On opening the skull, the caput is large and hæmorrhagic, the dura mater is hyperæmic. There is a large subdural hæmorrhage extending over the right parietal region and going down over the temporo-sphenoidal lobe. The ventricles are healthy. The pituitary is normal. The peritoneum, stomach, intestines, gall-bladder, liver, kidneys, ureters, bladder and pancreas are normal. The suprarenals are rather large considering the weight of the child, but are normal on microscopic examination. The lungs show atelectasis. The heart is normal. Thymus normal. The thyroid, after hardening, measures 3·5 cm. transversely, 2·9 cm. from above down, and 2·1 cm. from before back. An accessory thyroid measuring 8 mm. by 7 mm. by 5 mm. lies on the thyroid cartilage under the root of the tongue. A culture was taken from the thyroid with the usual precautions, but no growth of organisms was obtained.

Microscopic sections of the thyroid show glands lined by high columnar cells. These cells are larger than those lining the alveoli of the thyroid from a normal fœtus. These cells enclose spaces which are devoid of colloid, but which contain mucinous material. The quantity of mucin present varies—some acini are almost filled, others merely contain a small amount adherent to the surrounding cells. There is marked proliferation of the epithelium so that solid columns of cells spread from one acinus to another. In places the proliferation has extended into the lumen of the acini so that the spaces can only be recognized, as such, with difficulty. The cells are for the most part healthy, but in places there is definite evidence that the cells are degenerating. There is no lymphoid hyperplasia present.

The child therefore presented all the usual symptoms of Graves's disease and as regards the pathological condition present the thyroid shows the usual fœtal absence of colloid with well-marked epithelial proliferation both intra-alveolar and extra-alveolar. In addition to this there are areas of degeneration present such as are found in some adult cases, and also the increased height of the columnar cells.

I think the clinical and pathological evidence leaves no doubt that this is an example of a child affected *in utero* with exophthalmic goitre and born of a mother suffering from the same complaint. The only atypical symptom present in the child was the asymmetry of the exophthalmos, but this is explained by the presence of the



cerebral hæmorrhage on the right side which was also, no doubt, the cause of death.

The case is of interest from several points of view:—

First, as regards the mother. It again shows how pregnancy acts as a factor in the production of Graves's disease which progresses until delivery and then improves. Delivery was uneventful and puerperal super-involution, which has been so often described as a complication, did not occur as the patient subsequently became pregnant again.

Secondly, as regards the hereditary nature of the disease. Although not very common, there are many cases on record of Graves's disease affecting mother and child. Mackenzie [1] publishes a case where eight out of ten sisters were affected and one of these eight had four children who developed the disease.

Thirdly, as regards the existence of the disease at birth. I have been able to find no case like this one recorded in the literature and believe it to be a unique specimen. Ochsner and Thompson's [2] case in a child, aged 5 months, is the youngest case I have heard of. Berry [3] states that the disease is "almost if not quite unknown before the age of $2\frac{1}{2}$ years." Steiner [4] thought a case at the age of 5 years worth recording. Although the child did not live long enough for a full observation to be made yet the persistence of the tachycardia throws doubt on Svehla's [5] statement that the fœtal thyroid contains no cardio-accelerator substance. Lastly, it is of interest as being one of the very few cases in which it is possible to make the diagnosis of a fœtal disease (as opposed to a malformation) before the birth of the child.

References.

1. Mackenzie. *Lancet*, September 1890.
2. Ochsner and Thompson. "Surgery and Pathology of the Thyroid and Parathyroid Glands."
3. Berry. "Diseases of the Thyroid Gland."
4. Steiner. *Arch. f. Kinderheilk.*, 1897.
5. Svehla. *Arch. f. exper. Path. u. Pharm.*, 1900.