chondrium due to perisplenitis (of which the patient complained) is, apart from cyanosis and splenomegaly, one of the commonest symptoms of the disease. Three years ago I investigated¹³ the relative frequency of the signs and symptoms of erythraemia in 58 cases, and found pain in the left side present in 50 per cent. Albuminuria, which I found in 60.3 per cent. of cases, was never present in the patient under consideration. Vertigo and obstinate constipation are usually marked features, yet this patient was free from them.

The blood in this case was extremely typical. Notable features were the high degree of leucocytosis and the high percentage of mast cells. The absolute increase in the polynuclears and in the eosinophiles is, of course, present in nearly all cases. The great increase in the blood viscosity in the presence of what is, after all, when we consider the extremely high counts found in this condition, only a moderate polycythaemia, must be partly explained by the large number of white cells present. I have found in a case of myelogenous leukaemia with a red count of 3,300,000, and a leucocyte count of 388,000, a viscosity value which, if the leucocytes were normal in number, would be equivalent to about five and a half million erythrocytes. An analogous case is reported by Denning and Watson¹⁴ which makes it clear that the leucocytes have relatively a greater effect on the viscosity than on the erythrocytes.

No factor could be ascertained in the case here described which seemed to throw any light on the etiology of the condition.

The occurrence of influenza (which Saundby¹⁵ considers important) was, even if one accepts his views, too remote to have any bearing on the case. Symptoms referable to the intestinal tract were vague and ill-defined, and were only mentioned by the patient when leading questions were asked. It certainly cannot be said that there was any definite evidence of the absorption of toxins from the bowel, although this possibility cannot be ignored. From the experience gained in this case, it would appear that operation in order to obtain bone marrow ought not to be lightly undertaken. True, moderate haemorrhage may be actually beneficial; but it seems that, as occurred in this case, the healing of the wound may be greatly delayed, owing perhaps to the sluggish circulation in the peripheral vessels.

My best thanks are due to Dr. John Eason, who was at the time in temporary charge of the ward, for giving me every facility for examining the patient and for permission to publish the case.

REFERENCES.

- ¹ F. Parkes Weber, *Quart. Journ. Med.*, 1908, October, vol. ii, No. 5.
- ² H. L. Watson-Wemyss, *Edin. Med. Journ.*, 1911, N.S., vol. vi, No. 2, 129.
- ³ H. Senator, *Polyzythämie und Plethora*, Berlin, 1911.
- ⁴ W. Hale White, *Lancet*, London, 1912, i, 7.
- ⁵ Emanuel, *Birm. Med. Rev.*, 1912, vol. xix, N.S., 39.
- ⁶ E. P. Isaacs Coke, *Lancet*, London, 1912, ii, 1373.
- ⁷ J. Parkinson, *Ibid.*, 1925.
- ⁸ L. Kuttner, *Berl. klin. Woch.*, 1912, xlix, 150.
- ⁹ Hamilton and Morse, *Boston Med. and Surg. Journ.*, 1912, vol. cxlvi, 963.
- ¹⁰ G. A. Gibson, *BRITISH MEDICAL JOURNAL*, 1908, vol. ii, 1155.
- ¹¹ J. Bence, *Deut. med. Woch.*, Berlin, 1906, xxxii, 1451.
- ¹² W. L. Pethybridge, *BRITISH MEDICAL JOURNAL*, 1907, ii, 20.
- ¹³ H. L. Watson-Wemyss, M.D. Thesis, Edinburgh, 1910.
- ¹⁴ Denning and Watson, *Proc. Roy. Soc. Lond.*, 1906, Series B., lxxviii, 328.
- ¹⁵ R. Saundby, *BRITISH MEDICAL JOURNAL*, 1907, i, 1165.

A LABORATORY for cancer research is to be erected at Columbia University. The endowment is provided by the George Croker research fund of about £300,000, the income of which must be used solely for research.

THE personal estate of the late Dr. Edward Henderson, who died at his residence in Kensington on February 27th, has been declared at a net value of £44,241. Dr. Henderson, who became M.D. Edin. in 1864, passed most of his life in China, where he was medical officer of health and Surgeon-General of the European Hospital, and held an appointment also in connexion with the British Consulate.

THE Internationale Komitee für das aerztliche Fortbildungswesen (International Committee for Post-Graduate Medical Education) desires it to be known that it has no connexion with the Association Internationale de Perfectionnement Scientifique et Médical. The next meeting of the Internationale Komitee für das aerztliche Fortbildungswesen will be held during the International Medical Congress in London in August next. The International Committee is composed of delegates appointed by national organizations or by the Governments of the participating countries, and its object is the furtherance of medical education and mutual instruction based on experience reaped in different countries.

TUBERCULOMA OF THE LARYNX.

BY

WILLIAM SANDERSON, M.B., CH.B. EDIN.,

SURGEON TO THE LIVERPOOL EAR, NOSE, AND THROAT CLINIC.

TUBERCULOUS growths in the larynx were suspected as far back as the Sixties of last century by Tobold, and again in the Seventies by Ariza and E. F. Ingals. J. N. Mackenzie, however, claims to have been the first to demonstrate, in 1882, the existence of tuberculous disease as a definite tumour occurring in the windpipe. His two first cases were observed *post mortem*, and were proved to be tuberculous by histological examination. A number of cases have been collected and published since then by Avellis, and Payson Clark, and others.

Mackenzie classifies tuberculous outgrowths in this region in three groups: (1) Granular hyperplasias in connexion with tuberculous ulcers; (2) papillomatous excrescences, vegetations, and tumours, probably papillomatous tissue infected with tubercle, and sometimes the only visible sign of tuberculosis for a considerable period; (3) true tuberculous tumours—extremely rare—composed of masses of closely aggregated miliary tuberculous nodules, and occurring independently of infiltration and ulceration of the mucous membrane. The majority of reported cases are considered to belong to the first two groups.

In an examination of recorded cases I find that true tuberculous tumours are situated as a rule in the larynx, the usual sites being the ventricular bands, vocal cords, and ventricles, but they may also be found on the arytenoids, aryepiglottic folds, epiglottis, and in the trachea.

An interesting case was shown a few years ago by P. H. Abercrombie of tuberculoma of the naso-pharynx in a man, which resembled clinically an adenoid mass or lympho-adenoma. Microscopic examination demonstrated its real nature. As a rule, lung changes are present or show themselves sooner or later; but in this case, as also in some of those in which the larynx has been involved, there were no other apparent symptoms of tuberculous disease. The fact, however, that such symptoms are not discoverable during life does not negative the existence of tuberculous lesions in the lungs, such being frequently found in a quiescent or healed state *post mortem*. One is therefore chary in regarding these growths as primary, and particularly so when it is known that they are usually covered with intact mucous membrane. Apart from the fact that tuberculoma of the larynx is rare, the following case is of interest in that the site was unusual and the disease had developed in a man of advanced years.

S. C., aged 69, was first seen by Mr. Bark and myself in September, 1908. He complained of a feeling of choking, especially on lying down at night, and of difficulty in swallowing food. These symptoms had lasted for a period of over three years and were becoming more aggravated in spite of the treatment that he had already undergone. There was nothing to note in his own or his family history with regard to tubercle. He was well nourished, had led a healthy outdoor life, and only of late years had been treated by his medical attendant for some "heart weakness." There was occasional cough but no expectoration. Owing to irritability of the throat examination was not easy, but the laryngoscope showed a pale greyish growth with a broad base and irregular surface extending from the posterior surface of the right arytenoid cartilage downwards into the hypopharynx towards the oesophagus. The right vocal cord and the right arytenoid cartilage were somewhat impeded in their movements. There was no ulceration in the larynx and no enlarged glands were to be felt in the neck. A portion of the growth was removed. Microscopical examination of a section showed a considerable number of giant cells, epithelioid cells, and lymphocytes, and a diagnosis of tuberculoma was made. This was confirmed by an opinion from Sir Felix Semon and Mr. Shattock, who later examined both the patient and the tumour section. There were no signs of tubercle elsewhere.

Removal of the growth was attempted with the wire snare, but the manipulation caused so severe and distressing a cough with spasms of the glottis that a more rapidly-acting instrument had to be used—namely, laryngeal cutting forceps. With this as much of the growth was removed as possible. Several remaining fragments were punctured with the galvano-cautery and the raw surface rubbed with lactic acid. The patient was practically relieved from his dysphagia for five months (October, 1908, to March, 1909), when there was some recurrence and the punch was again used, but, owing to the severe spasmodic cough, with less effect than on the first occasion. So acute was the distress from coughing caused by the introduction of the forceps that the attempt had to be abandoned. Two months later the tumour had grown to its former size and dysphagia

was troublesome. The introduction of forceps again brought on symptoms as described above, so severe that the patient dreaded any further attempts at removal, but he was able to tolerate galvano-cautery puncture.

Repeated and frequent applications of the cautery brought about alleviation of the dysphagic symptoms for the next twelve months. Swallowing then became painful as well as difficult, and the patient died from exhaustion some three months later (September, 1910).

As stated above, a tuberculoma is generally covered with smooth intact mucous membrane of a pale grey to a dark red colour. The surface was irregular and scarred in this case when we saw it, but this may have been due to some attempts at removal that had already been made. The disease is usually found between the ages of 20 and 45, and, as in this case, is of slow growth. As is the case with other forms of laryngeal tubercle it is more frequent in males, and is generally associated with a primary focus in the lungs. The results of treatment in a few cases of true tuberculous intralaryngeal tumour in the absence of any demonstrable lung changes have been excellent; this was no doubt due to the fact that operative interference and topical applications could be followed by more or less complete rest of the parts. The latter factor is of the greatest value in tuberculous lesions of the larynx, and as an example of this the following case may be cited:

A young lady, aged 23, was seen twelve months ago for hoarseness; the right ventricular band was found to be swollen and infiltrated and to cover the right cord, the left ventricular band to a less extent, but two months later the left cord was also hidden from view, and the epiglottis was slightly affected. Clinically the appearances were tuberculous. Von Pirquet's test was negative, lung changes were absent, and there was no cough or expectoration. Tubercle bacilli were discovered some months later. Besides using an antiseptic spray and attending to her general bodily health the patient carried out the somewhat depressing treatment of absolute voice rest for ten months. The right cord was the first to appear, and was slightly ulcerated, but gradually the larynx assumed its normal state, a certain amount of paresis of the adductors remaining.

Complete rest was the main object of this long silence, and, as in ordinary tuberculous laryngeal lesions, so in other forms, rest is essential. This is obviously what could not be obtained in the case of tuberculoma I have described, as the situation of the growth on the posterior aspect of the arytenoid and cricoid cartilages rendered the prognosis as regards cure unfavourable on account of the irritation produced by the passage of food and saliva.

AN ACCOUNT OF A TERATOMA OF UNUSUAL SIZE AFFECTING THE TESTICLE OF A HORSE.

By H. BLAKEWAY, M.S. LOND., F.R.C.S. ENG.,
DEMONSTRATOR OF ANATOMY, ST. BARTHOLOMEW'S HOSPITAL;
ASSISTANT SURGEON TO THE CITY OF LONDON TRUSS
SOCIETY.

THE following case appears to me to throw some light upon the nature of certain tumours of the testicle which occur in man, and to be worth recording on that account.

On September 22nd, 1910, there was removed *post-mortem* from the abdomen of a bay cart-colt 2½ years old a tumour of the left testicle, which was imperfectly descended; the tumour had caused no symptoms during life. The right testicle, normally descended, had been removed when the colt was a yearling, and the animal died during an operation performed with the object of removing the gland on the left side.

Description.

The specimen removed consisted of the testicle, epididymis, and part of the spermatic cord (Fig. 1).

The pampiniform plexus was very large and the epididymis widely separated from the tumour, which appeared at first sight to have originated in the body of the testicle; but careful inspection showed, at the point where the epididymis joined the tumour, a flattened structure of a reddish colour, and about 1 in. thick at its middle, spread out over an area of 6 in. by 4 in. Microscopic examination proved this to be the testicle; its deep surface was separated from the tumour by a well-marked capsule of fibrous tissue, but its superficial aspect was invested by a grey shining membrane absolutely continuous with that covering the surface of the tumour in its neighbourhood. I think it probable, therefore, that the tumour arose in the

mediastinum testis, that is, within the tunica albuginea, but not in connexion with the seminiferous portion of the testicle.

The dimensions of the tumour were: Length, 16½ in.; breadth, 10½ in.; thickness, 8½ in. It weighed, in the fresh

Fig. 1.—External appearance of tumour. A, Vas deferens; B, coiled portion of vas; C, epididymis; D, position of flattened testis proper; E, pampiniform plexus.

state, exactly 30 lb. The surface showed a division by a shallow groove into two approximately equal lobes, each of which was nodular, grey or pink in colour, with large veins running over it.

On section there was a much more obvious division into two lobes, separated from one another by a fibrous septum (Fig. 2). Each half consisted, for the most part, of a collection of cysts varying from a microscopic size to that of an orange. Most of the cysts were filled with a yellow mucinoid fluid, but some contained brown jelly; each cyst had a firm, shining lining membrane, and the walls of some of them contained tissue resembling cartilage; there were numerous intracystic growths which were themselves cystic.

Two of the smaller cysts, however, contained sebaceous material and numerous stiff, curly hairs (Fig. 2, A and B). In

Fig. 2. Photograph of a section through the tumour. A and B, Cysts containing sebaceous material and hair; C, masses of solid vascular growth.

the cyst marked A the hairs were white; in that labelled B they were black. This point is of interest in view of the statement which is usually made, that the hair contained in a dermoid cyst is of the same colour as the hair of the individual bearing the cyst.

The stroma consisted largely of fat, with, in addition, fibrous tissue, numerous deposits of calcareous material, and a few small masses of cartilage. Scattered in this stroma were several circumscribed masses of soft, solid, vascular growth (Fig. 2, C).

The microscopic examination of the tumour revealed a structure even more complex than the naked-eye appearance had suggested.

The cysts were not all of the same nature. Those which contained sebaceous material and hair were lined by stratified squamous epithelium, and contained in their walls numerous sebaceous glands and hair follicles (Fig. 3); but others in addition were lined by stratified epithelium, with neither hair follicles nor sebaceous glands. The cysts which contained mucinoid fluid showed a lining of tall columnar cells, with very numerous goblet cells; these cysts were of very variable size, and all stages in the formation of the larger cysts from the smaller ones could easily be traced. Even in the large cysts the columnar epithelial lining was usually well marked (Fig. 4). A third variety of cyst, also numerous, contained granular