observations, when over a century ago he attributed this form of disease to 'the want of a due proportion of animal food.' His summary of the medical investigations shows the sex incidence similar to that of the majority of observers in other countries. Average weights and heights in the phlyctenular children examined show no gross deviation from the normal, apart from a greater deviation in the male, both in weight and height, than in females. The diet was mainly cereals, a low milk consumption and green vegetables were used by only 50 per cent. Apart from milk, in over 50 per cent. cereals were the only source from which proteins could be obtained. There is an almost complete absence of eggs, cheese and fish, and a complete absence of bacon, from the diet.

There was a deficiency of vitamin C in 28.57 per cent. of the group investigated but no deficiency in vitamins A and B₂. There was radiological evidence of rickets in 36 per cent. of the group investigated. Associated illnesses showed a high incidence of measles and whooping cough, a lower incidence of pediculosis than the Dublin school children and a high incidence of cutaneous infections, tonsillar sepsis, dental caries and gland infection. The evidence of tuberculous infection is given under such headings as positive tuberculin tests, radiological evidence, contact and sanatoria.

"The nature of the tissue reaction of the phlycten points to an allergic reaction. The high proportion of positive tuberculin reactions points to the tubercle bacillus or its products as the most possible source of the antyin."

Those who are interested should read the full paper which will be found in the July No. of the *Irish Journal of Medical Science*, 1944.

Dr. McArevey's condemnation of the cereal diet would hardly have commended itself to the Rev. Patrick Brontë, who, we are told, had grown to heroic proportions on potatoes and saw no reason why his children should fare differently, so they always had potatoes for their dinner; but he was not born and bred in an overcrowded slum in Dublin but in the country and perhaps got more milk, eggs and even bacon than the children of this investigation."

We commend this admirable paper to our readers.

ABSTRACTS

MISCELLANEOUS

(1) **Julianelle, L. A. (New York).**—Biomicroscopy in trachoma. *Amer. Jl. Ophthal.*, May 1944, p. 540.

(1) In a discussion at the New York Society for Clinical Ophthalmology **Julianelle** emphasized the stages of hyperaemia, neovascularization, follicle formation and papillary hypertrophy as merely

the result of a prolonged low-grade stimulus. Consequently the diagnosis of trachoma before pannus or scar formation is difficult. The cause of trachoma is a virus, although it differs in incubation period, course and immunity from the usual virus diseases. The detection of the inclusion or mass of virus particles within epithelial cells of the conjunctiva after staining permits early diagnosis. Most viruses have high tissue selectivity and, regardless of their mode of entering the body, invade a particular tissue. Trachoma, showing the greatest selectivity, enters the eye only by way of the eye and can affect only the epithelial cells of the anterior segment. When clinical signs or symptoms appear a full-blown case of virus infection is already present. The sulphonamides have had no success in the author's hands and he is not convinced that they are effective in trachoma, therein his experience coincides with that of the reviewer. Julianelle is the author of "The Etiology of Trachoma" (Oxford Univ. Press, 1938).

A. F. MACCALLAN.

- (2) **Elwyn, Herman, M.D. (New York).**—Changes in the Fundus of the Eye in Various Forms of Arterial Hypertension. *Arch. of Ophthalm.*, Vol. XXXI (old series Vol. LXXXVIII), No. 5, p. 376, May, 1944.

(2) **Elwyn's** paper is of particular value to ophthalmic surgeons because through routine fundus examination they are often the first to detect arterial disease. There are six main changes:—

(1) Oedema of the retina and disc, due to transudation from the capillaries.

(2) Cotton wool patches, made up of accumulations of precipitated fibrin and serum.

(3) Haemorrhages.

(4) Sharply defined white spots, made up of deposits of hyaline mixed with lipoids and with lipoid-containing fat granule cells, and in the more superficial layers of the retina by ganglio-form swellings of the nerve fibres.

(5) Glistening white spots, from deposits of lipoids and a macular star from deposits of hyaline and lipoids along the lines of the nerve fibres.

(6) Changes in the vessels which are functional, resulting in contraction of the arteries, or organic (a) due to ageing in which the elasticity of the vessel wall is diminished bringing about lengthening and widening, producing irregular tortuosity and widening of the light streak (b) due to sclerosis in which the essential change is irregular thickening, producing apparent irregularities in lumen of

the vessel and apparent compression of veins at the crossings. The so-called silver wire appearance is due to deposits of hyaline beneath the endothelium of the intima. Some or all of these six changes may be present in any one case. It has been shown experimentally that contraction of a small artery causes dilatation of its distal branches—the precapillary arterioles, the capillaries and the post-capillary venules—with resultant slowing of circulation and lack of oxygen. In consequence, the capillary wall softens and permits passage of its fluid contents into the tissues. Later, small temporary openings develop and allow red blood corpuscles to pass through. These observations account for the development in the retina of oedema, cotton wool patches and haemorrhages, which disappear if the artery regains its normal calibre, as occurs, for example, in recovery from acute glomerulo-nephritis. If the arterial contraction persists, there is then chronic anoxaemia, and deposition of hyaline and lipoids occurs with production of a macular star, of sharply defined and of glistening white spots, also of ganglio-form swelling of the nerve fibres. The various forms of hypertension comprise:—

1. Essential. 2. Malignant. 3. Of renal origin. 4. Pre- and eclamptic. 5. Associated with tumours of the supra-renal and pituitary glands.

1. Essential hypertension is regarded as due to breakdown, for hereditary reasons, of an inherently weak central mechanism for regulation of the blood pressure. It is the form most commonly encountered and starts as an increase in the ordinary diurnal variations of blood pressure. It may take 10-20 years before the pressure remains permanently high (at 200 mm. or more) and in the early stages the arteries show no changes. This is because at this time it is only in the vascular bed of the splanchnic region that arterial contraction occurs. In the later stages, the small arteries of the kidneys develop internal thickening with focal deposits of lipoids and hyaline, and in the retina the arteries show the signs of ageing and sclerosis with only occasional development of silver wire appearance. Complications such as venous or arterial obstruction may occur and there may be occasional small cotton wool patches or areas of oedema. In the later stages, papilloedema may develop owing to oedema of the brain consequent on contraction of the cerebral arteries, also arterio-spastic retinopathy. Diagnosis at this stage from malignant hypertension can be made only by the response to treatment.

- (2) Malignant hypertension develops in the course of the benign variety, and is characterised by acceleration in the renal arterio-sclerotic process and by general arterial contraction. The fundi, in addition to the changes of ageing, show narrowed arteries, retinal oedema, cotton wool patches, haemorrhages, hyaline and lipid

deposits and a star figure. Papilloedema may also occur and there may be silver wire arteries.

(3) Hypertension of renal origin. In various forms of kidney disease the normal glomerular filtration pressure of 40mm. Hg becomes diminished and the general blood pressure is raised by arterial contraction in order to compensate for this. In acute diffuse glomerulo-nephritis, the retinae show contracted arteries, oedema, cotton wool patches and haemorrhages. If recovery occurs, there is complete regression of all the retinal signs; if this be delayed, however, the secondary lipid and hyaline changes occur, but even these may disappear with eventual recovery. In chronic glomerulo-nephritis, all possible combinations of acute and chronic arterio-spastic retinopathy may be seen. In the advanced stage, diagnosis from the malignant stage of essential hypertension may be difficult. Chronic, diffuse glomerulo-nephritis unassociated with arterial hypertension produces no fundus changes.

(4) Hypertension of eclamptic origin is due to increased irritability of the centre for regulating blood pressure, bringing about acute spastic contraction of the small arteries in many organs. In the retina this contraction may affect the whole length or only segments of arteries, with resulting oedema, cotton wool patches and haemorrhages. The oedema may be extreme and result in transudation of fluid into the subretinal space, and apparent detachment of the retina. With complete involution of the arteries, the signs disappear.

(5) Arterio-spastic retinopathy resembling the malignant type is seen in cases of supra-renal tumour and in some of basophil pituitary adenoma.

In conclusion, it should be emphasised that acute cases are characterised by retinal oedema, cotton wool patches, and haemorrhages; chronic ones, by deposits of hyaline and lipoids and by a star figure at the macula.

F. A. W-N.

- (3) **Walsh, Frank B. and Dandy, Walter E. (Baltimore).—Pathogenesis of intermittent exophthalmos.** *Arch. of Ophthalmol.* Vol. XXXII (old series, Vol. LXXXIX), No. 1, p. 1, July, 1944.

(3) Intermittent exophthalmos is a rare condition, occurring about once in 150,000 cases, the left eye being affected much more frequently than the right. Walsh and Dandy's patient was a girl, aged 18 years, who had known of the defect since the age of 10 years. When standing, the left eye showed 3 mm. of enophthalmos, when recumbent, it showed 6 mm. of protrusion, 11 mm. when the head was tilted forwards or the jugular vein compressed, and 18

mm. when expiration was forced with the nostrils closed. Visual acuity was 20/30 and the fundus normal except for slight venous congestion when the eye was maximally protruded. There was throbbing pain, the throbs coinciding with pulsations of the eyeball, and there was occasional diplopia. The left external and inferior recti muscles were weak, and there was no bruit on auscultation. Operation through a transfrontal approach disclosed a large arterio-venous aneurysm made up of masses of coiled vessels, lying in and behind the left sphenoid fissure. The vessels could be compressed like a sponge and returned to their original size on release of the pressure. They were coagulated by the electro-cautery, and as the feeding vessel appeared to be the middle meningeal artery, this was isolated and coagulated at the foramen spinosum. The result of the operation was to cure the exophthalmos, but although the optic nerve did not appear to be injured at any time, the eye was blind and the disc atrophic. There was also some limitation of movement. The patient, however, was quite satisfied to be relieved of her pain and disfigurement. In a review of the literature, it appears that the age of onset varies from infancy to the sixth decade of life, the symptoms gradually increasing in severity owing to progressive enlargement of the angioma—proptosis up to 29 mm. has been recorded. Various methods of treatment have been tried, the most successful being ligation of the ophthalmic vein through a supra-orbital incision, a procedure which the authors feel inclined to try in their next case, even though it would mean leaving the aneurysm in situ.

F. A. W-N.

BOOK NOTICE

Biomicroscopy of the Eye. By M. L. BERLINER and PAUL HOEBER, New York. Vol. I, pp. 709, 286 test illustrations, 40 coloured plates.

This excellent publication is outstanding from two points of view. In the first place, to English readers accustomed by now to the war time paper, cramped type and lack of illustrations imposed on much of the technical literature in this country, the make-up of the book alone strongly predisposes in its favour. This appears to have been the case even in the land of its production, since it was the only medical book ever included (in 22 years) in the annual exhibit of the Fifty Books of the Year held under the auspices of the American Institute of Graphic Arts. This speaks for itself. The high quality of the paper, the clarity of the type and the brilliance