ing was very low; with normal urines only 2.5 c.cm. could be used on account of the size of the only available burette. The same measuring cylinder was used throughout, and after draining it was rinsed out with water into the testing tube to avoid loss. Temperature correction to 50° F. and 37.1 c.cm. nitrogen taken as equivalent to 0.1 g. of urea.

Kreatinin.—400 c.cm. of urine were treated after S. Johnson's method, about a teaspoonful of potassic acetate and 100 c.cm. of saturated corrosive sublimate being used. After the immediate filtration the mixture was stood for forty-eight hours and filtered; after this period a precipitation of crystalline flakes occurred. The figures under kreatinin (or better perhaps "Johnson precipitate") are reckoned at 19 per cent. of the mercury compound. It should be added that the figures quoted from Schäfer are the absolute kreatinin estimated by more exacting methods.

Uric acid was precipitated by Hopkins's method with excess of ammoniac chloride which itself had been recrystallized to remove particulate matters; the precipitate was taken direct upon a tarred asbestos wool filter by a suction pump or syringe. After washing with saturated ammoniac chloride and a little spirit, the tubes were left to stand with a few drops of 10 per cent. HCl in spirit, whereby the uric acid was liberated in crystalline form. Later the uric acid was washed with a little water and spirit, and dried eventually in partial vacuum over CaCl₂ and quicklime to constant weight; 100 c.cm. were used for each titration. There did not appear to be any loss in the wash filtrates, as judged by the murexide reaction.

Phosphoric Acid.—The only available mode of estimation was as magnesium pyro-phosphate. A sulphate of magnesia mixture was used, the precipitate being taken up with dilute sulphuric acid, and reprecipitated with ammonia; 200 c.cm. of urine were used in the determinations.

Sulphuric acid was taken with samples of 100 c.cm., which were boiled respectively with 5 c.cm. of acetic or hydrochloric acid (the former subsequently with HCl), and precipitated with barium chloride. The weighings were direct without incineration.

Oxidation for the *neutral sulphur* was done by cautiously adding excess of permanganate day by day until a permanent pink colour was obtained.

The *purin bodies* were doubly precipitated with ammoniacal silver nitrate after removal of phosphates and intermediate removal of uric acid with dilute sulphuric. After reduction of the silver compounds with H₂S they were classified into ammonia soluble and insoluble.

The estimation of sodium, potassium chlorides, etc., was not attempted.

My thanks are due to Drs. Travers, Gimlette and McClosky, of the Malay States Service, for the use of their cases and other help. I am also indebted to the Government of the Malay States for the use of the laboratory at Kuala Lumpur, until they behaved with such discourtesy that it was not possible to remain as a guest of such inhospitable hosts; Captain Rost kindly offered facilities in Rangoon, but unfortunately the season was not favourable for the study of beri-beri. I must also express my gratitude to Dr. F. Gowland Hopkins for much advice.

SUMMARY.

Curtly put, the above notes show that the metabolism in beri-beri is seriously diminished. The amounts of urea, phosphoric, and sulphuric acids may be very greatly reduced; it is suggested that the contributing organs, for example, liver, are seriously disturbed in their output, which is in accordance with the fact that patients complain of illness before the onset of marked symptoms of the involvement of the peripheral nerves.

The conjugated sulphuric acids and the neutral sulphur do not appear to be proportionately diminished.

The purin bodies do not seem to be of great interest in beri-beri; as might be anticipated, they were abundant in the critical urination of a highly oedematous case.

In a number of Tamils, on comparatively liberal diet, in whom no beri-beric symptoms were detected, the excretion of urea and phosphoric acid was found to be remarkably low, though their uric acid was high.

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MYCOSIS FUNGOIDES OR ALIBERT'S DISEASE.

By JOHN REID, B.A., M.D.,
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Mycosis fungoides, which was described by Alibert in 1814, is extremely rare in Ireland. The following case may therefore be considered to have special interest:

CLINICAL HISTORY.

The patient was 38 years old, small, stout, and fair-haired. Family history: All healthy and long-lived, but one uncle

suffered from pityriasis rubra. Prior to the first stages her illness she suffered from absolute amenorrhoea for three years. By trade she was a dressmaker, and accustomed to sit sewing for hours at a time—in fact, used to spend almost twelve hours daily plying her needle. Constipation and amenorrhoea, I wish to point out, were well-marked symptoms before the disease manifested itself. When I was asked to see her she presented the following phenomena of the pre-mycotic stage: Round, sharply-defined erythematous patches, with scaling, about 3 in. wide, on both cheeks, and covering anterior tragus of the ear. These patches healed in a couple of weeks. I regarded them at the time as purely eczematous. They left no marks, but shortly broke out again, and also on front of the chest, healing in the centre, and extending at the periphery, and so assuming irregular shapes which are almost characteristic of the disease. Strange to say, there was no pruritus in the area of face affected. This stage lasted three months.

The second stage next came on, and the patches became infiltrated plaques, with nodules over the face, head, back, and chest; they had a reddish-brown colour, and were only slightly scaled. After changing shape for about three months a condition of infiltration of the entire skin took place, from the level of the nipples down the skin became greatly thickened, but not excoriated or fissured. Above the level of the nipples the skin of the chest became fissured, and well-developed nodules soon appeared on face, scalp, and back of neck. The fungoid stage very quickly came on.

The characteristic tomato-like tumours appeared on the face and scalp only. As may be seen from the photograph they vary in size from a bean to a small orange, and are sessile, lobulated, and distinctly circumscribed, flat and ulcerated on the surfaces, and also on the edges where they rub together. I noticed also that a few growths disappeared by cicatrization, the process being helped by pressure of surrounding growing tumours. Pus was common between the tumours. One on upper lid closed the eye, and one on lower lip enlarged it in width to 2½ in. The photographs are absolutely characteristic. The tumours on the face show an almost lepra-like deformity, closing the eyes with their size and weight, producing the leonine brow and the elephantiasis ear.

The variety of ways in which tumours come and go was not apparent here. None of these large tumours disappeared spontaneously, some ulcerated till they became mushroom-like growths, only two or three contracted to a smaller size from pressure, but never absolutely disappearing, and all articulating I might almost say, on the patient moving the muscles of the head and face.

The rest of the body was covered over with an exfoliative dermatitis showing great thickening of the skin and a generalized redness. The pruritus was confined to the lower limbs. There was no enlargement of spleen or lymphatic glands; urine, normal; appetite, poor.

MICROSCOPIC EXAMINATION.

My friend, Professor McWeeny, of Dublin, carefully examined sections of the growth, and his report is as follows:

The piece of tissue was sent in formalin, and consisted of a subcutaneous nodule about the size of a pea, covered with skin, which was ulcerated towards one end of the mass. The piece was embedded in paraffin and a series of thin sections cut, stained by various methods and microscopically examined with the following result:

The tissue consists of a mass of round and oval cells very closely packed and so obscuring the details of the original structure that no trace of it is now discernible. The cells consist almost entirely of nucleus, but little protoplasm being visible. The nucleus of some is round, of others oval. They take the nuclear stain rather deeply, as a rule, so that one might almost term the cells with round nuclei "lymphocytes," whilst the oval nuclei look as if they belonged to fibroblasts at an early stage of development. There are, however, no traces of any tendency to formation of fibrous tissue. At no place is there any tendency to necrosis or caseation. Blood vessels are scanty—scarcely to be found at all towards the centre of the cell mass. Scattered through it are patches of somewhat different looking cells, surrounded by a hyaline, structureless investment not unlike a basement-membrane. These cells bear a certain resemblance to altered, so to speak "undifferentiated" cells of the deeper layers of the overlying epidermis. I look upon them (the cell groups) as appearances caused by oblique section of deeply penetrating downgrowths of the epithelium. At one end of the surface a very distinct swelling and proliferation of the epithelium exists, with formation of many anastomosing cylindrical downgrowths, which become fused together so as to form three superposed layers of cubical and columnar cells corresponding to the rete Malpighi, and separated by oedematous tissue more or less infiltrated with round cells. There are one or two masses of laminated appearance resembling cell nests in this neighbourhood, and the aspect of this part of the tissue strongly suggests squamous epithelioma. Careful study of the downgrowths, however, does not confirm this view. The nuclei of the rete Malpighi are in the resting stage, and present no suggestion of mitotic activity. There are no isolated islands of epithelium, and the depth of penetration of the downgrowths is not great enough to support the view that the process is a malignant one. About 1 mm. from this point the epidermis presents a totally different aspect, being raised up into a sort of minute vesicle containing clouds of cocci, prominent amongst which are beautiful long chains of streptococci. There are also some pus cells here and structureless debris. Another millimetre or two farther on the epidermis is partly destroyed by ulceration and covered with a crust of necrotic material (inspissated secretion?), which is simply swarming with cocci, so numerous as to form streaks visible to the naked eye when stained by Gram's method. They lie on the surface and between the layers of the crust. Beyond this again the surface epithelium gradually dies away, being replaced by a layer of granulation tissue abounding in micro-organisms (cocci). This corresponds to the ulcerated part of the nodule.

The cellular tissue which formed the main mass of the nodule seemed quite free from micro-organisms. Not a trace of leprosy or other bacilli could be detected even with the highest powers usually employed. It is conceivable that cultural methods might be more effective. They were, of course, inapplicable in the present case.

I cannot regard the micrococci found on the surface of the ulcer and beneath the up-raised epidermis as responsible for the subcutaneous nodule (from the interior of which they are absent). They are to be looked upon as mere secondary intruders that have settled upon the undermined and devitalized epidermis, and have, no doubt, tended to accentuate the ulcerative process.

The film preparations sent along with the tissue represent the secretion that might be collected from such a surface. They show pus cells, red blood corpuscles, and a most various collection of micro-organisms. It seems clear to me that, taking the microscopical appearances, and the excellent photographs and lantern slides that have been enclosed that this is a beautifully-marked case of mycosis fungoides. There were no areas of anaesthesia, but the tumours were absolutely painless, and no bacilli present showing tuberculosis.

REMARKS.

The four features to which I wish to call attention are:

1. Intense perspirations and exudations of a serous nature from the body. I have seen the counterpane quite stiff in the morning, and a white frost deposit on its surface after a winter's night. Flannel nightgowns after being worn for two days became so stiffened that on washing they tore in pieces and were useless for wear.

2. The appearance of the patient was repulsive, and the exhalations in the highest degree fetid, notwithstanding the great care taken in dressing the patient with different antiseptic dressings. She occupied a room on the third story, but the odour pervaded the whole house, and it was quite apparent on entering the front door.

3. There was an almost entire absence of itchiness, except on the legs; the face and scalp were never itchy. There was feeling in the tumours, as, on touching with a feather, the patient could always point out the contact spot.

4. These tumours were permanent, the microscopical report shows absence of fibrous tissue.

I need hardly say that with such extensive lesions this patient's life was a short one. This enormous discharging and fetid growth produced cachexia, on which coma supervened, followed by death.

Treatment in these cases is very unsatisfactory. I prescribed up to 15 mins. of Fowler's solution three times a day, for some months, which was exceedingly well borne; the result, nil. I also gave iodide of potash in the later stages, and various antiseptic dressings. I did not use the anti-streptococcus injections, as I considered them useless.

If it had been possible at the time, I should most certainly have tried the x-rays or the high frequency currents. I regret that a necropsy was not allowed.

INJURIES TO THE EYES IN RELATION TO THE WORKMEN'S COMPENSATION ACT.*

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SINCE the Workmen's Compensation Act has been in force, claims for compensation for injuries to the eyes have been numerous. In many cases the advice of a medical man—expert or otherwise—has been requisitioned in order to arrive at a proper estimate of the amount of injury done and, coincidentally, of the compensation due.

Any practitioner may be called upon to render his services on behalf of respondent or applicant, and it is my purpose this evening to consider what may be expected of him under such circumstances.

In the first place he should understand the main principle underlying the Workmen's Compensation Act. The Act was made so that those who receive injuries whilst at work might be compensated for the diminution in their wage-earning capacity resulting from such injuries. It follows, therefore, that the workman is allowed compensation for injury only in the event of that injury having caused a diminution in his wage-earning capacity. If a man loses one eye, and can do his work equally well and can earn the same amount of money as he did with two eyes, he can lay no claim to compensation beyond the half of his weekly wages payable during the time he is away from work. It is also necessary that the expert should have some knowledge of the trades in which the workmen are employed. It is only with the aid of such knowledge that he can form a just estimate of the vision required for the satisfactory performance of the work.

In addition to such extra-professional knowledge, the expert will naturally be expected to be thoroughly acquainted with his own professional work, that is, he must understand the value of the various functions which go to make up perfect vision, and must appreciate the effect of their limitations. It is to the consideration of these limitations that I wish to direct your attention. In the first place, I wish to state that, in my opinion, it is impossible to estimate the amount of loss of earning ability by means of mathematical formulae. Whenever such formulae are used, certain factors are arbitrarily fixed and the whole fabric is therefore indefinite and uncertain. It is therefore preferable to decide each case on its merits, giving due consideration to all that concerns the earning ability of the workman.

The workman's earning ability may be said to be dependent upon—

- I. His vision—in a broad sense.
- II. His knowledge of his craft or trade.
- III. His ability to compete with others in his work.

I.—THE ESSENTIALS OF USEFUL VISION.

Adequate Vision.

Adequate vision, which here includes central visual acuity, visual fields, light and colour senses, and musculature and varies according to the trade in which the workman is employed. It is hardly necessary to point out that what is recognized in ophthalmology as full vision (§ Snellen's types) is not demanded for the average workman's occupation. Indeed, such a high standard is seldom demanded of anybody in the strictest of

* Read before the Birmingham Branch of the British Medical Association.