The puerperium was uneventful. She got up on the twelfth day and went home 2 days later.

Post-natal Vaginal Examination.—The smooth regular cervical stump was palpated. It felt very like a normal short post-natal cervix. A speculum examination was not performed, as the patient would not co-operate. To all appearances the pain of this examination was as great as that experienced at any time during labour. The detached portion of the cervix was sent to the museum of the Royal College of Obstetricians and Gynaecologists. It was shaped like a quoit or a pineapple ring $3\frac{1}{2}$ to 4 inches in diameter, with the centrally placed external os about two-fingers dilated. The anterior two-thirds was purple and oedematous, the posterior third pink and thin.

Commentary

Looking back on the case it is considered that the rising pulse rate was caused by the "shock" attendant on the detachment of the cervix, but it is surprising that the pulse volume and general condition of the patient were consistently so good. Had the nature of the condition been recognized earlier, would interference have been indicated or justifiable? It is probable that a live baby would so have been obtained; though an explanation for the stillbirth has not been found. As for the mother, it is hoped that, after the good termination, she will become pregnant again and have a normal labour, as was the end-result of the case reported by Epstein (1941). I should add that the maternal and foetal mortality rates in recorded cases of this complication are very high.

I wish to thank Dr. G. W. H. Townsend, medical officer of health for Buckinghamshire, and Miss Beatrice Turner, obstetrician in charge of Shardeloes Emergency Maternity Hospital, for permission to publish this case.

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Medical Memoranda

Riboflavin Deficiency: With a Case Report

Thiamin, nicotinic acid, and riboflavin are the three main factors in the vitamin B complex. They are necessary for the formation of coenzymes concerned in carbohydrate metabolism and are closely related. A deficiency in any one affects the function of the other two. Riboflavin forms a phosphoric acid ester which combines with protein to produce the yellow oxidation enzyme of Warburg and Christian, an essential part of one of the oxidation-reduction systems of the body, associated with respiration and other basic cell functions. The most readily available sources are liver, muscle meats, cheese, yeast, and most green vegetables. The physiology of the absorption, storage, and excretion of riboflavin is not clearly known. The optimum daily requirement for adults is estimated at 1 to 2 mg.

Ill-health caused by lack of a single food factor is uncommon. One syndrome may predominate, but search generally reveals other deficiencies. It is especially noticeable in hypovitaminosis of the B group, many cases of pellagra presenting signs of ariboflavinosis. Sebrell and Butler (1938) showed that certain characteristic lesions, thought to be part of the pellagra symptom-complex, were due to riboflavin deficiency. Sydenstricker (1941) suggests that beriberi, pellagra, and endemic ariboflavinosis are major syndromes of B group avitaminosis resulting from prolonged subtotal deficiency of the whole B complex.

The syndrome of riboflavin deficiency (Sebrell and Butler) consists of angular stomatitis, tongue changes, corneal vascularization and other eye changes, seborrhoeic dermatitis, and general debility. Few instances of the condition have been described, and of these some lack definition.

CASE REPORT

A farmer's widow aged 75 had been in "poor health" for eight or nine years. Two years ago she came under my care, complaining of digestive disturbances, weakness, "neuritis" pains, failing sight, and inflamed eyes. She was emaciated and had many small punctate haemorrhages under the skin of the arms and legs. The heart was weak and fast, and the blood pressure 110/60. There was some anaemia (Hb 9 g.). The eyes showed marked chronic inflammation of conjunctiva and margins of lids, with constant copious purulent exudation. There were early cataracts in both lenses and

marked photophobia. Conjunctival vessels in the palpebral aperture were dilated. Deep, raw, and slightly painful fissures persisted for years, and extended from the corners of the mouth for about an inch. Her tongue was swollen, sore, and fissured. Patellar and ankle reflexes were diminished. She was treated with improved diet, large quantities of thiamin, HaliBut-liver oil, and vitamin C (redoxon). She improved considerably, but the eyes, the angular stomatitis, and the sore mouth were not helped. In the spring of 1941 she relapsed and had severe continuous diarrhoea, associated with dermatitis of the legs and again a sore tongue. Nicotinic acid cleared up the diarrhoea and dermatitis but not the tongue. Eye symptoms were not improved. Her case was described in a paper on pellagra (Deeny, 1942). This spring she became weak and debilitated and lost weight. Her eyes were still affected as described above, and a few tiny leashes of capillaries had invaded the sub-epithelial region of the cornea. Photophobia was especially marked. The tongue was pale, flabby, clean, moist, burning, and sore, with several deep fissures and enlarged and flattened papillae. Two deep fissures ran from the corners of the mouth, both over an inch in length, with granulating surfaces. The nose and the neighbouring cheek surfaces showed follicular hyperkeratosis, giving a swollen "doughy" appearance. The lips were redder than normal and the line of junction of the mucous membrane and skin was irregular. Nicotinic acid was given without result, and later a 2-mg. injection of riboflavin (B. W. & Co.) three times a week for three weeks, followed by 4 mg. of riboflavin daily in 1-mg. tablets (Roche). In four weeks the angular stomatitis was healed, the eyes were no longer inflamed, the photophobia had gone, and the general health was improved. Her sight remained unchanged. Dr. V. P. Sydenstricker, who saw the case later, suggested large doses of riboflavin (12 mg. daily for two weeks) in the hope that the cataract might improve, but without result.

COMMENT

A feature of interest is that, while the patient suffered from a multiple deficiency, the syndrome of ariboflavinosis was present from the beginning, was unaffected by any treatment, and cleared up only when riboflavin was given. In some cases I have seen bluish patches on the tongue, usually near the margin, contrasting with the colour of the surrounding tissues. disappear with riboflavin treatment. In Northern Ireland riboflavin deficiency is fairly prevalent among elderly persons living on a poor diet. When it occurs in young persons it does not seem to be related so closely to diet, but more to lack of sleep or overwork, or as a complication of illness. I have found "poor" general health an important feature of the syndrome.

I wish to thank the Medical Research Council of Ireland; Dr. Sydenstricker; and Burroughs Wellcome and Co. and Roche Products, Ltd., for their generous gifts of riboflavin.

Lurgan.

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Convulsions under Trilene Anaesthesia

This case of convulsions occurring under trilene anaesthesia is of interest not only because I can find no other case reported in the recent literature on trilene, but because several of the factors usually seen when convulsions occur under anaesthesia are absent.

CASE RECORD

The patient was a pale nervous youth aged 17, and the operation to be performed was for cure of a right hydrocele. Routine examination of the chest revealed no abnormality. He had undergone two operations previously—one for an acute mastoid when 3 years old, following which he had pneumonia; the second for hernia when he was 12. There was no history of epilepsy.

The premedication given was omnopon gr. 1/3 and scopolamine gr. 1/300 one hour before operation; 0.5 g. of hexobarbitone was given intravenously, followed by nitrous oxide, oxygen, and trilene (using a Boyle's apparatus with the trilene in the chloroform bottle). No carbon dioxide was used. Anaesthesia was smooth and the patient's colour good; about 18% oxygen was given most of the time. No pulse irregularity was noticed, and the respiration rate was slightly raised. Twenty minutes after induction had started, and with the patient in the first plane of third-stage anaesthesia, dissection of the hydrocele sac was proceeding when the respirations rather abruptly became irregular and shallow, then ceased. No twitching of the face was noticed, but contraction of the neck muscles was felt at the same time. The patient became cyanosed, and clonic convulsions supervened, involving the whole body, so that the patient had to be held down on the table. These continued for about one minute. The anaesthetic was discontinued

immediately and oxygen and carbon dioxide were administered, with rhythmic pressure on the bag, as, although the airway was clear, there was complete cessation of respiration. The pulse remained regular throughout, though the rate increased during the convulsions. The latter ceased, the patient's colour improved, and respiration recommenced in about three minutes. The operation was concluded under nitrous oxide and oxygen with no recurrence of the fits. The patient's condition seemed satisfactory on leaving the theatre, but he became cyanosed on return to the ward, where he was given oxygen intranasally. His recovery since then has been normal, and his condition now (a week later) is satisfactory. Morning and evening temperatures on the day of operation, and also the temperature taken immediately after the operation was completed, were normal. The temperature of the theatre was 74°.

The patient was never deeper than the first plane of anaesthesia, and only about 2 drachms of trilene was employed. This was taken from a newly opened bottle, some of which had already been used on other patients without ill effects.

COMMENT

If it may be assumed that convulsions occurring under anaesthesia are not specific to any particular anaesthetic, then this case is unusual in that pyrexia and infection, which so often are predisposing conditions, were absent. Another point to note is that no atropine had been given, and only a small dose of scopolamine. Barbiturates and possibly morphine are regarded as inhibiting factors, and the patient had been given both. The airway was clear and there was no element of anoxia up to the onset of muscular contractions. I do not think that the sensory stimuli being produced at the time of onset were strong enough to initiate the convulsions. It has been suggested that convulsions can be caused by carbon dioxide imbalance, and it seems possible that in this case the slight hyperpnoea caused by the trilene may have resulted in a low alveolar concentration of carbon dioxide, following which came the period of apnoea with spasms. In favour of this was the speedy recovery when carbon dioxide with oxygen was administered.

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Adder Bite

In view of the renewed interest taken in adder bite in Great Britain the following case may be worthy of record.

A W.A.A.F. patient aged 23 was admitted at 3.15 p.m. on July 6, 1942, to the medical department of the Newcastle General Hospital under the care of Prof. Hume. She gave a history of having been bitten by an adder in the region of the left internal malleolus at 4.30 p.m. the day before. A few minutes after the bite she noticed a swelling of her tongue and some difficulty in swallowing, swelling of the eyelids, and a gradually increasing swelling of the left leg. The swelling of the tongue lasted three hours, that of the eyelids five hours. She vomited a few times and had some abdominal pain at midnight.

On admission her general condition was good. There was a slight pyrexia of 99° F. The left leg showed a marked swelling up to the inguinal region. The skin temperature of the swollen leg was increased, and there was an erythematous rash on the medial side of the calf extending to the knee-joint. Two minute marks of fangs were seen in the region of the internal malleolus, and according to the patient these marks corresponded to the seat of the snake bite. No other abnormalities were found. The patient had complete bed-rest and no other treatment. The temperature returned to normal next day, and the swelling of the leg gradually subsided. In about two weeks the oedema had completely disappeared and the patient was allowed to get up. After three weeks she was discharged from the hospital, the bitten limb being normal in every respect.

I would like to take the opportunity of raising the question of serum treatment of adder bite. Is there any specific or satisfactory polyvalent serum against adder bite in Great Britain, and, if so, is the serum to be administered in every instance? In our case, though the patient's general condition was not much affected, there were pronounced toxic (allergic) signs, which cleared up spontaneously within two weeks.

I wish to express my thanks to Prof. Hume for his help and suggestions, and to Dr. J. A. Charles, medical officer of health, Newcastle-upon-Tyne, and Dr. G. P. Harlan, medical superintendent of the Newcastle General Hospital, for permission to publish this case.

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Reviews

EVOLUTION

Evolution: The Modern Synthesis. By Julian Huxley, M.A., D.Sc., F.R.S. (Pp. 645. 25s.) London: George Allen and Unwin. 1942.

A book on evolution may be concerned with whether it happened, what happened, and how and why it happened. whilst a preface by Shaw on the subject describes how it ought to have happened. Huxley's book is mainly concerned with how and why. He is certainly better equipped than any other British zoologist to answer these questions, for he has made personal contributions to genetics and natural history which allow him to write with authority on both topics, and has discovered quantitative laws of growth which apply both in the development of the individual and the evolution of species. His knowledge of the literature is most impressive; indeed, no writer on the subject since Darwin has produced such a body of facts from different sources in support of his standpoint.

Huxley is a Darwinist in the sense that he believes that the main trends of evolution were determined by natural selection, and not by inheritance of the effects of use and disuse, by an inner urge, or by supernatural guidance. And he holds that the steps have generally been small. But he admits that some species have arisen by sudden leaps, and that the evolutionary paths possible for a species are more limited than Darwin seems to have thought, among other things by the gene mutations available.

A large part of the book deals with the different ways in which species may originate. Where the barrier is spatial—for example, a mountain range—they may hybridize readily on meeting. Where it is one of habit—for example, a difference of flowering time or mating instincts—the hybrids may be quite fertile when formed. But, especially in higher plants, a re-organization of the nucleus may give fairly complete intersterility in a single step.

Medical readers will perhaps be disappointed that Huxley has not dealt in more detail with man. A good deal of human mortality is selective, apparently against predisposition to disease. And since men began to acquire skill with their right hands, human evolution has probably centred round the development of the left cerebral cortex. However, he deals vigorously with the fallacy which one still finds in some medical writings, that natural selection necessarily makes for progress. This is particularly far from the truth in a dominant species such as man, whose members, as a result of selection, may become better equipped for overcoming one another, and worse so for overcoming their environment.

In spite of this every reader who has kept an interest in zoology, and particularly in natural history, will find *Evolution* a unique storehouse of information; and for many years to come it will be absolutely indispensable for any serious study of the questions with which it deals.

J. B. S. HALDANE.

SUBACUTE BACTERIAL ENDOCARDITIS

Subacute Bacterial Endocarditis. By Emanuel Libman, M.D., and Charles K. Friedberg. Reprinted from Oxford Loose-Leaf Medicine. (Pp. 108. 15s.) London, New York, Toronto: Oxford University Press. 1942.

While the new chemotherapeutic agents have given striking results in the treatment of certain infections, bacterial endocarditis remains one of those which are usually uninfluenced by these drugs. Drs. E. Libman and C. K. Friedberg have written this monograph on subacute bacterial endocarditis in the hope that wider knowledge of the malady may lead to earlier diagnosis and more successful treatment. Among predisposing factors are mentioned previous valvular disease or defects, physical and mental strain, influenzal infection, operative procedures (notably dental extractions), and pregnancy and the puerperium. The section on symptomatology contains a useful survey of skin lesions, including petechiae, subungual splinter haemorrhages, Osler lesions (which are attributed to arteriolitis rather than embolism), and the less common Janeway lesions.

That subacute bacterial endocarditis may develop in many guises is shown by the authors' list of syndromes, in which