

anaemia. The younger child died at the age of three months from myeloid leukaemia, but further particulars could not be obtained.

A post-mortem examination was performed by Dr. S. T. Crowther, to whom we are indebted for the following report.

Post-mortem report

There was extensive necrosis of the gums, tonsils and pharyngeal tissues. There were numerous punctate haemorrhages throughout the brain substance. The heart showed no abnormalities. The right lung was adherent to the chest wall and showed evidence of a healed tuberculosis lesion at the apex. Both lungs had large infarcted areas at the bases. The liver was considerably enlarged, was greasy to the touch and appeared pale and fatty. The spleen was much enlarged and contained numerous small infarcts. Both kidneys showed some degree of cloudy swelling, but otherwise appeared normal. The mucous membrane of the stomach was swollen and there were many small haemorrhages in it. Small haemorrhages were also present in the mucous membrane of the small intestine throughout its length. The mesenteric glands were enlarged.

There was a bruise on each thigh and in the region of both shoulders. The arms, legs and abdominal wall were covered with minute petechial haemorrhages.

Microscopical examination

Liver.—All the cells of the liver were turbid and cloudy and showed accumulation of fat. The nuclei stained badly and were ill defined. These changes were very much more marked around the efferent vein than around the portal vein.

Bone marrow.—This showed an almost complete absence of myelocytes. Erythroblasts were present in normal numbers.

Kidneys.—The epithelium of the renal tubules was swollen. The nuclei of the epithelial cells were degenerate and in many cells had disappeared completely. Many of the tubules contained casts and a few contained red blood cells.

Stomach.—The superficial layer of the gastric mucosa was necrotic.

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ANNOTATION

THE JARISCH-HERXHEIMER REACTION

The occasional occurrence of an intensification of the symptoms and signs of syphilis soon after the commencement of specific treatment was commented upon by Jarisch as long ago as 1895. This effect was more fully described in 1902 by Herxheimer, who reported an increase of general constitutional disturbance, such as fever and malaise, in addition to the aggravation of the superficial lesions of the secondary stage, some few hours after the first inunction or injection of a mercurial compound. Attention was drawn to the more frequent occurrence of the same syndrome after the initial injection of salvarsan by Finger in 1902, since when the phenomenon has become widely known and usually termed the Jarisch-Herxheimer reaction. The universal use of the arsphenamines, not only in early syphilis but also for the lesions of the later stages of this infection, has given rise to many reports in the medical literature of untoward manifestations, which have been classified as Jarisch-Herxheimer reactions, ensuing shortly after an injection of one of the arsphenamines in various tertiary syphilitic conditions.

Although much controversy has taken place about the exact cause of this effect of treatment, its nature and significance remain obscure. The reaction has been thought to be due to a sublethal and irritative action of the drug resulting in a stimulation of spirochaetal activity, as a result of which these organisms undergo a considerable increase in their number and virulence. On the other hand it has been said by some authors to be the result of a sudden production and release of a large amount of toxic substances, caused by mass destruction and dissolution of spirochaetes by the arsphenamine compound. Because of the scarcity of histological reports, little is known of the pathological changes that take place in the lesions which are affected by the Jarisch-Herxheimer reaction. According to Kolmer there is an increase in intensity of the inflammatory changes, including hyperaemia, serious exudation and infiltration of the tissues with lymphocytes and plasma cells.

ANNOTATION

The postulation of the existence of this reaction in early syphilitic rashes or lesions of mucous membranes rests on secure foundations but the concept of a similar effect in the late stages of the disease is not so well supported. Most authorities, when dealing with the treatment of cardiovascular syphilis, advise preliminary treatment with iodides or bismuth or with both these remedies for some weeks or even months before arsphenamine can be used without risk of a Jarisch-Herxheimer reaction, which, we are warned, in cases of extensive disease of the cerebral vessels or of aneurysm, may produce an exacerbation of the symptoms with a fatal outcome. Although such warnings in general terms are frequently given, there seems to be a paucity of factual reports in the literature especially pertaining to cardiovascular syphilitic lesions. There also appears to be some confusion between the possible aggravation of an inflammatory lesion and the too sudden absorptive effect of arsphenamine therapy, which may enhance to a dangerous degree the existing weakness of the walls of an aortic aneurysm.

In neurosyphilitic conditions there is perhaps less confusion, although it is only during recent years that the suspicion of a Jarisch-Herxheimer reaction has been entirely discarded in cases in which the cerebral emergency which is now termed toxic encephalopathy develops. Neuro-recurrences are well known to occur much later in the course of treatment and usually do so during an interval if treatment has ceased prematurely.

The neurological manifestations of syphilis which appear during the first few weeks of treatment with arsphenamines are, however, less thoroughly understood. It is thought that the sudden onset of a persistent headache or the rapid deterioration in function of one of the cranial nerves, such as the auditory, oculomotor or facial nerve, shortly after the injection of an organic arsenical compound is due to an aggravation by this compound of a pre-existing oedema of the meninges, together with a mild affection, probably a pressure effect, of the cranial nerve involved. For example, slight impairment of hearing may progress suddenly to a severe degree of deafness or a slight ptosis may be followed by a more extensive oculomotor paresis. Such neurological complications are rare events in the treatment of syphilis except in its later stages. Examination of the cerebrospinal fluid usually reveals evidence which indicates meningitis but even then the nature of the process is not invariably clear cut. Thus in toxic encephalopathy the cerebrospinal fluid contains a marked excess of protein and the number of cells may also be increased; the Wassermann reaction and the Lange test, however, are negative in arsenical encephalopathy in cases of early syphilis.

The relation of the so-called provocative serological test to the Jarisch-Herxheimer effect—it has been termed a "serological Herxheimer reaction"—need not concern us here, for the insecurity of this "provocative" test and the many fallacies interwoven with its performances have been thoroughly exposed by the work of Barnett, Kulchan and Jones.

In contrast with the great concern about the various toxic effects which accompany intensive arsenotherapy, the occurrence of the Jarisch-Herxheimer reaction during this treatment has aroused little interest. The many reports on the clinical effects of arsenotherapy make few references to this reaction, but it is evident that the incidence is much greater than among cases under treatment by the customary leisurely method. Chargin, Leifer and Hyman, in their preliminary account of intensive arsenotherapy, reported the appearance of a Jarisch-Herxheimer reaction in the majority of patients who had a secondary syphilitic eruption. Prats, Varas and Haraszti note an incidence of 12.5 per cent in 111 cases during the first 24 hours. Details of the extent or severity of the reaction are not given.

Syphilologists in general appear to have been particularly incurious as to the significance, if any, of the clinical features of the Jarisch-Herxheimer reaction. There does not seem to have been any suggestion that this reaction, more particularly in early syphilis, is capable of throwing light upon the immediate or ultimate prognosis of the individual case. Does the occurrence of the reaction after the initial treatment of a case of secondary syphilis, for example, indicate some future

disadvantage or benefit to the patient? Does it imply that a very large proportion of the organisms present are destroyed within a few hours? Or does its occurrence merely suggest that one individual harbours many more organisms than another, or that the individual is more reactive? We cannot tell. We do know however that the occurrence of this reaction in the course of standard syphilis therapy has a capricious incidence and that it is sometimes absent in cases in which, with some little confidence, we had expected it to occur.

Among the features of special interest in the reports of the use of penicillin in the treatment of early syphilis is the occurrence of the familiar type of Jarisch-Herxheimer reaction in an astoundingly large proportion of the cases so treated. In a series of 100 cases reported upon by Mahoney, Arnold, Sterner, Harris and Zwally, 87 per cent of the patients responded with this reaction. In a recent publication Moore and his colleagues report a Jarisch-Herxheimer reaction in 846 out of 1,418 cases (59 per cent) within the first 24 hours of penicillin therapy. In 685 cases the reaction consisted of pyrexia only; in 161 cases there was an exacerbation of the secondary syphilitic lesions with or without fever.

This frequent occurrence in treatment with penicillin—a compound which is itself devoid of toxic reactions—will certainly have the effect of stimulating a wider interest in the meaning of the Jarisch-Herxheimer reaction. No doubt a deeper understanding of its rationale will develop before long. It is not unlikely that careful records of the character and extent of the reaction may eventually be of some considerable value in the assessment of the response of syphilitic infection to treatment and perhaps in arriving at an ultimate prognosis.

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REVIEWS OF BOOKS

Sex Education. Cyril Bibby, M.A., M.Sc., F.L.S. 290 pp. Macmillan & Co., Ltd., London, 1944. Price 7s. 6d.

The author of this book is the Education Officer of the Central Council of Health Education and has a wide experience and practical knowledge of the many problems involved in this important and previously neglected branch of education. The book is written as "A Guide for Parents, Teachers and Youth Leaders" and fulfils its purpose admirably. Parents are rightly placed first, since theirs is the responsibility of laying sound foundations for all future building. If there are any who doubt this, the chapter which deals with questions in the home put by young children will do much to convince them. It is emphasized that accurate answers according to the child's understanding at each stage of development are not in themselves sufficient to ensure a right attitude towards sex. Children absorb more from the happy atmosphere in a united family—or the reverse—and from the example of parents than from the spoken word.

The book is divided into eight chapters: The Problem Posed, The Social Setting, The Parent's Part, The School Curriculum, Sex Problems in the School, In the Service of Youth, In Search of Knowledge, Educating the Educators. This last is most topical and deals with present needs in a realistic and constructive manner.

There is inevitably some degree of repetition as the various stages of educating the young are considered. The essential need for factual information to have been given before the sometimes turbulent emotions disturb the adolescent is rightly emphasized. Greater stress might have been laid on the harnessing of the adolescent sex energy into other channels, and on the way in which the high ideals of this stage may be preserved and expanded as part of a practical religion.

As venereologists we should agree with the author that, as an introduction, it is desirable to include mention of gonorrhoea and syphilis when dealing with other infections in the biology course, rather than to bring them into school lessons on reproduction. Another early opportunity occurs in talks on health and hygiene when the venereal diseases may be included with other communicable diseases. Later still comes the need for full talks on venereal diseases.

The appendices contain much useful material and suggestions, including a tentative scheme in tabulated form for sex education from infancy to parenthood. There are also four specimen