and to these Darwin added his own. It was Weismann, however, who assigned to "germ plasm" the power of handing on the physical character of individuals along with their mental and other peculiarities. The theory of the germ plasm has thrown quite a new light upon the doctrine of inheritance and has shown the practical impossibility of the transmission of acquired characters. It is not for us at present to inquire into whether germ plasm is capable of being influenced by environment and nutrition. What is of interest to us is the bearing of this as seen in the readiness with which some persons succumb to certain diseases compared with other persons, or, in other words, the part played by idiosyncrasy. In 1902 Professor Charles Richet of Paris drew attention to the subject of anaphylaxis. When working at the physiology of actinia Richet noticed that certain animals, instead of being rendered immune by graduated doses of a poison extracted from actinia, developed an increasing sensibility to it. In the subsequent reactions of an organism to poison one of three things happens: (1) the effect may be less than on the previous occasion; (2) it may be the same; or (3) it may be greater. As medical men we are familiar with the lessening effects which follow subsequent doses of poisons, as in the case of morphine. In other instances once the poison has been eliminated from the body a second dose of the poison is followed by effects in no way different from those exhibited on the first occasion, while in yet other instances subsequent dosage only tends to increase the sensibility of the animal to the poison. It is this increased sensibility which Richet calls *anaphylaxis*. It is exactly the opposite of immunisation—the contrary of *phylaxis* or protection. An anaphylactised animal may be 80 times more sensitive to a particular poison than one in ordinary health and the peculiarity is that the anaphylaxis may continue for as long as five or six weeks. If four weeks after an animal has been anaphylactised some of its blood is injected into a healthy animal, the second animal will within the course of one or two days exhibit the phenomena of anaphylaxis. The serum evidently contains the anaphylactising substance, but this, whatever its nature, is not a toxin, for the animal is well, and remains well, until the merest trace of the original poison is introduced, when it very quickly exhibits the marked hypersensibility observed in anaphylaxis, or it may be new symptoms altogether develop. The bearing of this increased sensibility to poison is seen in the treatment of disease by sera, some of which are known to be antiphylactisant. This is said to be the case with the poison which is generated within the human body by the bacilli of tubercle, but it is not the case with the tuberculin of commerce. I have only touched the fringe of anaphylaxis, for the subject is a large one requiring further investigation before any absolute conclusions can be drawn; but if it helps us to formulate a working theory in regard to the idiosyncrasy of persons to disease something useful has already been gained.

The march of medicine is rapid and there is no halting by the way. With the frequent and irregular calls upon our leisure it is difficult to keep abreast of the times. Men in general practice have greater difficulty in doing so than hospital physicians and surgeons, but if by means of post-graduate courses of study your attention can be drawn, in the brief period you can be spared from work, to recent advances in medical thought and practice and to new methods of surgical diagnosis and treatment, the object sought by these courses is likely to be attained, and you will have the satisfaction of feeling that you are fitting yourselves to cope with the fresh duties and responsibilities which are sure to come in your practice.

SANITARY INSPECTORS' ASSOCIATION.—The north-eastern centre of this association held its annual general meeting at Sheffield on Sept. 11th. Nearly 100 members were present, including Mr. J. T. Quinton, chairman of the association; Mr. T. Pridgin Teale, President of the north-eastern centre; Dr. H. Scurfield, medical officer of health; and Dr. R. P. Williams, medical inspector of schools for Sheffield. Visits were paid to several important industrial premises, and the annual business meeting was held in the town hall. Dr. Scurfield read an instructive paper on Tuberculosis: the Soil and the Seed, and Mr. Gervas Abdy described the work of Tuberculosis Inspection in Sheffield.

THE TREATMENT OF LUPUS ERYTHEMATOSUS.*

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THE treatment of lupus erythematosus is unsatisfactory because so little is definitely known as to its etiology, and because of the confusion which still exists as to the nature of the disease. Many varieties have been described by different observers. It may be well for the sake of clearness to explain at the outset that I recognise two principal clinical types: (1) the *eruptive*, corresponding to Kaposi's "aggregate" or "discrete" form; and (2) the *slow-spreading*, corresponding to that dermatologist's "discoid" form. Kaposi's third variety, characterised by constitutional symptoms of intense severity and often ending in death, has never come under my notice, and only exceptionally have cases of the kind been recorded by English dermatologists. (Short¹ recorded such a case and MacLeod² reported a fatal case associated with nephritis.) The "erythematoïd" form of lupus vulgaris described in 1891 by Leloir seems to be a phase in what used to be called the "transformation" of lupus vulgaris into lupus erythematosus. The process seems in reality to be nothing more than the transformation of lupus vulgaris erythematoïdes into a nodular raised infiltration.

A few words must be said as to the etiology of the disease on account of its bearing on treatment. Several dermatologists, notably Sir Jonathan Hutchinson, hold that lupus erythematosus is essentially tuberculous in origin. Boeck has expressed the view that although the disease is certainly not due directly to the action of the tubercle bacillus on the skin, it is produced by the circulation in the blood of special toxins which are particularly apt to develop in persons of tuberculous constitution.³ According to him lupus erythematosus is "the expression of a marked tuberculosis of the skin." The weight of opinion is, however, against the doctrine that lupus erythematosus is of tuberculous origin. My own view is that there is no evidence, clinical or pathological, proving that the disease is tuberculous in the sense of a local bacillary infection. MacLeod⁴ says that he has never seen or heard of a case in which an injection of tuberculin has produced lupus erythematosus. The disease is, however, aggravated by association with tuberculosis which is not infrequent. The theory that it is a toxæmia of some kind is gaining ground. Sequeira and Balean,⁵ who made an exhaustive pathological examination of 71 cases, noted the frequent association of albuminuria with the more active forms of the disease. In one case they had an opportunity of making a post-mortem examination. The urine had been loaded with albumin and contained casts and blood; in the kidneys evidence of recent nephritis was found. From this fact the authors were inclined to believe that in such cases the inflammation of the kidneys is set up by the excretion of toxins, as happens in exanthematous fevers. Galloway and MacLeod⁶ also hold that there is some evidence showing an association of lupus erythematosus with chronic nephritic toxæmia. They suggest that underlying the disease as its cause are in all probability many forms of blood poisoning in susceptible subjects, of which perhaps not the least common is the absorption of poisons produced by pyogenic organisms. In addition to the vaso-motor disturbance caused by the toxin there may possibly be a tendency to the ready production of paralysis of the vaso-motor mechanism. In a large proportion of cases of lupus erythematosus the patient has presented circulatory anomalies of one kind or another, such as purple colour of the hands, a tendency to chilblains, "dead fingers," and Raynaud's disease. These conditions may actually develop into lupus erythematosus. The disease appears to be essentially a chronic inflammation of the skin, local in origin, prone to occur in parts, such as the hands,

* Read in the Section of Dermatology, International Medical Congress, Budapest, September, 1909.

¹ British Journal of Dermatology, 1907, vol. xix., p. 271.

² Ibid., 1908, vol. xx., p. 162.

³ Report of Vienna Congress, British Journal of Dermatology, vol. iv., 1892.

⁴ THE LANCET, Oct. 31st, 1908, p. 1271.

⁵ British Journal of Dermatology, 1902, vol. xiv., p. 267.

⁶ Ibid., 1903, vol. xv., p. 81.

feet, and nose, where the circulation is liable to be injuriously affected by exposure to cold; or in the so-called "flush area" of the face, where in many persons vaso-motor disturbance results from slight causes, hence the relative frequency with which women, subject as they are to circulatory disturbance at the menstrual periods and at the menopause, are attacked by lupus erythematosus.

Vaso-motor disturbance may cause a predisposition to toxic infection, but neither the fact of such infection nor its nature has been absolutely demonstrated. No specific micro-organism has been found to the action of which the origin of the disease can be traced. But it is not unlikely that acutely inflammatory manifestations may be due to the invasion of the streptococcus of erysipelas or some other organism.

Lupus erythematosus is sometimes associated with osteo-arthritis. I have at present a man under my care who, after suffering for many years from osteo-arthritis, has within the last few months become the subject of lupus erythematosus of both ears and the cheeks.

The obscurity which surrounds the etiology of the disease renders it difficult to lay down any general principles of treatment. The intensity of the disease varies in a cyclical manner, but after a more or less protracted period it tends to spontaneous recovery. In this the effect of treatment is not always distinctly traceable.

Before dealing with the therapeutic side of the question I wish to lay emphasis on a point which I think of great practical importance. This is that the word "lupus," which has a harmful effect on the mental state of patients and may be misleading to practitioners, should be eliminated from the name in general use. *Erythema atrophicans*, as proposed by me many years ago, or *ulerythema centrifugum*, which is the name given it by Unna, would have the practical advantage of dissociating it altogether from the more formidable and true tuberculous affection.

There is no specific for lupus erythematosus. Each case requires to be dealt with in accordance with its individual peculiarities. I can only indicate here the general lines which I follow. The guiding principle is that internal remedies should be used when the disease is associated with vaso-motor disturbance in the extremities, and where there is evidence of auto-intoxication by poisonous substances circulating in the blood. External applications are to be relied upon only when no signs of systemic disturbance exist. The treatment is therefore *constitutional* or *local*; often both may be required. Any disorder of metabolism, or disease of the kidney or liver, must be dealt with by appropriate measures. The bowels should be carefully regulated by means of saline aperients in the morning, together with occasional small doses of calomel. Antisepsis of the mouth and teeth is very important; I have seen cases in which toxæmic symptoms were distinctly benefited by attention to strict cleanliness of the mouth. Anything that is apt to give rise to flushing of the face is contra-indicated; for this reason alcohol should be absolutely forbidden; curry and other heating condiments should be forbidden. Coffee, tea, and tobacco should be avoided. Conditions indicative of lowered vitality should be treated on general medical and hygienic principles. Where the circulation is defective, as evidenced by liability to chilblains and the other conditions already enumerated, the patient should if possible spend the winter in a warm climate. The diet must be carefully regulated so as to minimise the risk of disordering the digestion or loading the intestine with materials that may form a favourable soil for infection. Salol in doses of 10 grains three times a day may be given after each meal; salicin and bismuth in tablet or in pill are often useful. They may be combined with quinine, but this drug should not be given in cases where there is a tendency to chilblain circulation. I have not observed any particular benefit from arsenic, which is recommended by some, or digitalis, which is also recommended. Belladonna is of use in middle-aged or elderly people. Ergotin I have not found serviceable. Where there is any abnormality of circulation I give ichthyol internally, as recommended by Unna; it not only regulates the circulation, but acts as an intestinal disinfectant and prevents the formation of gas. I begin with a dose of $2\frac{1}{2}$ grains after each meal, increasing it up to 10 or 15 grains; the administration of the drug should be stopped or diminished if it causes eructation, as this shows that the stomach is receiving more than it can digest. In certain

cases at the period of the menopause, when ichthyol has failed, I have given small doses of opium, beginning with $\frac{1}{10}$ th of a grain in pill three times a day and gradually increasing up to doses of one-fourth of a grain. I may remark that I have also found opium given in this way useful in regulating the circulation when there is a tendency to chilblains. Adrenalin may be of use for the same purpose. In some very acute cases of lupus erythematosus I have had good results from the use for short periods of exclusively meat diet washed down by copious draughts of hot water. This cleanses the intestinal tract by preventing the formation of gas which is produced by farinaceous substances, and promotes the elimination of waste products by flushing the kidneys. In acute cases the meat and hot water may be continued for ten days at a time. I have seen a case of Raynaud's disease cured entirely by this treatment combined with rest in bed for three weeks. Calcium chloride has been found by some beneficial in the treatment of chilblains, and on the ground of its alleged action on the circulation it might possibly be of advantage. The high-frequency current is often of service, chiefly in promoting metabolism and maintaining a healthy state of the intestine; I have sometimes used this method with advantage in subacute cases. In general terms it may be said that the patient should lead a healthy outdoor life as far as circumstances will allow.

In regard to local treatment, it may be said generally that in the early stages active interference often does harm. Here careful study of the idiosyncrasies of the patient and the peculiarities of the disease is especially necessary. In the hyperæmic stage, cooling lotions (calamine, subacetate of lead, &c.) should be applied. No ointments should be used as a rule. Hebra's soap (*sapo mollis virid.* $\mathfrak{Z}$ ii., *sp. vini* $\mathfrak{Z}$ i.) rubbed in with flannel or lint is useful for the removal of scales and the protection of the surface. Ichthyol in the form of a lotion has almost a specific action on the circulation, and in my experience is the most useful of local remedies. Among other topical applications which may be found beneficial in individual cases are resorcin (10 per cent. in collodion); salicylic acid (3 to 6 per cent. in collodion), and pyrogallol acid, applied in the form of a plaster. These applications should be used when the disease is very chronic. Resorcin in particular is apt to cause blistering if used in strength; it should therefore never be applied to inflammatory patches. In chronic cases also I have found the constant application of a strong solution of ichthyol the best remedy. Iodine liniment is also useful, especially when combined with quinine internally. Compression by collodion I have not found of much use. In the case of small patches, linear scarification or light touches of the thermo-cautery often give good results. A dressing of iodoform or a salicylic acid plaster mull should be applied afterwards. In one case, that of a woman aged 60 years who had a circumscribed patch on the bridge of the nose for four or five years, I excised the diseased part. A good scar was left and there was no recurrence. In chronic cases I have used the Finsen light with success. In acute cases the light treatment does harm, and its effects should always be carefully watched. These agents, which are apt to be injurious in the early stages, are particularly useful in the later stages, when there is thickening of the integument. Lassueur of Lausanne⁷ gives details of 17 cases which he has treated with the X rays. In only six was a cure effected. In two there was no result. In the rest there was more or less improvement, but in most of these relapse occurred. In my hands the X rays have proved uncertain.

Radium may be applied to limited areas. Wickham and Degrais,⁸ who seem to hold that lupus erythematosus is a form of tuberculosis, say that radium has in a certain number of cases "given very satisfactory results." Relatively high strengths are required and the application must be carried a considerable distance beyond the edge of the patch. The inflammatory reaction is described as "somewhat sharp." They say that recurrences and new developments occur always at the border of the diseased area. In one case they treated the disease on one side of the face by radium applied in the usual way; on the other by intradermic injections of radioferous water (*eau radifère*). On the side treated by the ordinary application there was intense reaction

⁷ Archives d'Électricité Médicale, April 10th, 1909.

⁸ Radiumthérapie, Paris, 1909, p. 268.

with destruction of tissues followed by repair. On Jan. 16th the scar was excellent, but on June 22nd there was recurrence at the circumference of the lesions. On the other side, after ten injections there was no visible reaction, but a fading, then disappearance of the patches; this was followed by the formation of a "whitish scarry tint." On June 22nd there was no sign of recurrence. But the authors admit that this observation requires to be confirmed by further experience. I have treated several cases in which old patches have been left after other treatments have failed. I have applied radium for periods of 15 minutes at a time, lightly screened with aluminium only. The results have been satisfactory. Certain obstinate cases are benefited by ionisation with zinc or copper.

To sum up: the object aimed at in using these agents is to set up a certain amount of local reaction. Hence they should never be used when there is acute inflammation. At present there are no rules to guide us in the selection of the particular agent; one will succeed where another fails. They must therefore be used more or less empirically.

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A STUDY OF SPINAL ANÆSTHESIA IN CHILDREN AND INFANTS.

FROM A SERIES OF 200 CASES.

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SINCE Bier in 1898 introduced spinal anæsthesia to the notice of the profession the subject has attracted considerable attention, especially on the continent, and more recently in this country. The technical methods have been greatly improved, and systematic study together with wider experience have increased the safety of the procedure. The relative value of spinal and general anæsthesia is still *sub judice*, though, from a theoretical aspect, the former is distinctly to be preferred in cases where it is applicable; for in the administration of spinal anæsthesia more of the nervous system is exempt from unnecessary paralysis, and there should be no involvement of the higher centres. In actual practice, while the younger method possesses undeniable and important advantages over general anæsthesia there are disadvantages in its application which will only be eliminated by a careful study of the principles on which depends the action of the drugs employed in the spinal theca. The safety of spinal anæsthesia seems to me to rest largely on the extent to which the surgeon can *control* and *limit* the action of the drugs employed. In this respect Mr. A. E. Barker's¹ methods are a great advance on those employed on the continent, for he has made a definite attempt to place the localisation of the anæsthesia in the hands of the surgeon by the employment of gravity, and it is this opinion which led me to adopt his methods in my first 100 cases.

Though spinal anæsthesia has been administered to children in isolated cases a systematic study of its effects on children and infants has not hitherto been made so far as I am aware. Deetz in Bier's clinic has had some success, while Preleitner in Professor Escherich's clinic² reports a trial of the method in 40 children. The experience at the latter clinic does not seem to have been very encouraging. There seems to be a general impression that children are bad subjects for spinal anæsthesia. Professor Fraenkel, speaking in the discussion on Preleitner's paper,³ emphasises the fact that in this method there was no elimination of the psychological factors tending to frighten the child and of the dread of the unpleasant situation, and that for this reason the method had already failed to obtain a foothold in the surgery of children. Other speakers also emphasised the satisfactory effects of general anæsthesia in children in whom, for this reason, spinal anæsthesia was, in their opinion, contra-indicated. Mr. Barker also states⁴ that this method should not be

employed in obviously nervous and excitable people or in *children*.

These views are entirely contradicted by my experience. From the psychological aspect no more suitable patients for spinal anæsthesia could be found, since ignorance is their safeguard against "panic," and it may be stated generally that the younger the children the more satisfactory are they in this respect. Exception may perhaps be made to this statement in the case of children between the ages of two and five years; it is at this age that trouble is most likely to be experienced in keeping the patient quiet, though in the whole series of 200 cases on one occasion only did I encounter this difficulty to any marked extent. In no instance was general anæsthesia resorted to on this account. Further, statements as to the satisfactory nature of general anæsthesia in children require qualification: for there are many operations—notably on the abdomen, bones, and the larger joints—the ultimate results of which, from their length and severity, have been greatly prejudiced by the additional strain and unpleasant sequelæ of general anæsthesia. It is in such cases that spinal anæsthesia is to be specially recommended. In the whole series there has been no selection of cases; spinal anæsthesia has been administered whenever the method was applicable, with a view to ascertaining indications or contra-indications for its use.

I.—A STUDY OF THE FIRST SERIES OF 100 CASES.

I have been personally responsible for the anæsthesia in every case reported, and Mr. Barker's stovaine-glucose solution was used throughout this series. The composition of the fluid is: Stovaine, 2½ per cent.; glucose, 2½ per cent.; and water to 100.

Technique.—A very great deal has been written about the technique of puncture and injection of the fluid, and numerous rules have been laid down as essential to success. As regards the lumbar puncture, very many authors have devoted pages to laying stress upon the necessity of keeping the needle straight and entering it exactly in the middle line. These rules are modelled on the precepts laid down by Bier⁵ and Donitz.⁶ I find, however, in a paper by Bier and Donitz⁷ that at this time they entered the needle one centimetre from the mid-line, directing it upwards and inwards, a custom which apparently they no longer follow. The dangers of puncturing in other than the mid-line are stated to be that of wounding the nerves of the cauda equina, hæmorrhage, and, if lumbar anæsthesia is the object, unilateral effects from the needle or cannula penetrating amongst the nerve-roots of one side. Kronig⁸ states that it is only after lateral puncture that cases of nervous affection due to injury of the nerve fibres are observed.

These dangers have, I am convinced, been greatly exaggerated, and in many accounts a simple procedure, easily carried out with the most ordinary care, has been converted into a major operation requiring special skill and practice. In some hundreds of lumbar punctures done for various objects on patients of all ages (most of these have, however, been on children) I have invariably adopted the same procedure. The site for puncture is chosen by placing the left forefinger between the two spinous processes at the level selected; the needle is then entered so that its shaft is just touching the pulp of the indicating finger (i.e., to one side of the spinous processes) and directed very slightly upwards and inwards. The needle is pushed smartly inwards, and in its course can be felt to penetrate two resistances: (1) the ligamentum subflavum; and (2) the dura mater. The stylette is withdrawn and a free flow of fluid practically always results then or on slightly rotating the needle.

By this means the needle, though entered laterally in the skin, punctures the dura in the midline. It has been a very unusual experience to see blood issuing from the needle, while the nerves have been touched by the needle or cannula on three occasions; once while performing a lumbar puncture on a man who had fractured the base of the skull, when respiration ceased for a considerable time, a phenomenon which could be reproduced by a suitable movement of the needle. The other two occasions when this accident occurred were in administering spinal anæsthesia to two children. In

¹ Brit. Med. Jour., March 23rd, 1907; and Feb. 1st and August 22nd, 1908.

² Münchener Medicinische Wochenschrift, vol. lii., 1905, p. 1368.

³ Loc. cit.

⁴ Brit. Med. Jour., March 23rd, 1907.

⁵ Bier: Centralblatt für Chirurgie, vol. xxxiv., 1907, p. 95.

⁶ Donitz: Ibid., and vol. xxxiii., 1906, p. 105.

⁷ Bier and Donitz: Münchener Medicinische Wochenschrift, vol. li., 1904, pp. 593-596.

⁸ Deutsche Medicinische Wochenschrift, 1906, p. 955.