In the "alimentary" type of the disease the sugar is susceptible of being very speedily and markedly influenced by food. The cases upon which reliance has been placed by assuming that sugar is not an essential factor in connexion with the production of neuritis may be taken, I consider, from my experience, to be cases in which the recorded state of the urine failed to represent the state existing at the time the production of the nerve lesion occurred. The nerve lesion having become established it cannot undergo a sudden subsidence but the condition of the urine may be rapidly altered and therefore when the analytical examination is made it may simply through the instrumentality of food contain only a little or even no sugar, whilst previously there may have been a large amount. In the presence of these circumstances it is easy for an erroneous conclusion to be arrived at unless the observer should be specially on his guard against it.

Whilst writing these remarks a case in point has happened to fall under my notice. The patient, a man, 63 years of age, had been the subject of diabetes for nine years. The onset of the disease was somewhat sharp and severe but by treatment the symptoms became subdued and the patient afterwards continued in a fairly satisfactory state till about a year ago when he began to grow thinner and subsequently noticed, according to his statement to me, that he was at one period passing about a gallon of urine a day. He afterwards became the subject of distressing pains and sought medical advice. Dieting was resorted to and opium was administered. The diabetic symptoms subsided but the pains continued and at this stage I saw the patient through an appointment made by his medical attendant. I found that pronounced and very characteristic symptoms of peripheral neuritis existed. Night and morning specimens of urine were brought for examination and on these being tested the night specimen gave only a traceable indication of the presence of sugar and the morning specimen none. This is by no means the only instance I could relate where diabetic neuritis has existed and adequate sugar has failed to be found in the urine at the time of consultation to account for it. From what has preceded it is easy to understand that the event is not an unlikely one to happen.

As regards the continuance of symptoms after the sugar has been made to disappear from the urine by the restricted diet—a point advanced against the proposition ascribing the neuritis to the sugar—there is really nothing observable but what might be naturally looked for under the view that the sugar is the causative medium and therefore no necessity to bring into the question the effect of an unknown agent. As I have already stated, neuritis does not occur in cases where the sugar is kept under by treatment. In cases in which it does occur it goes hand in hand with the sugar but a certain time is necessarily needed when the nerve lesion has become established for it to subside after the disappearance of sugar has been effected. The more fixed or deeply rooted the condition the longer it may reasonably be expected will be the time required. For relief the getting down of the sugar constitutes an essential matter and when the latter is attained the former may be predicted more or less speedily to follow. Recovery having taken place the maintenance of a satisfactory state may be looked for as long as things are kept right as regards the sugar but if the sugar should be allowed to return a relapse is not unlikely to occur. A close parallelism exists between alcoholic and diabetic neuritis, and in the latter sugar, I consider, may be looked upon as holding the position held by alcohol in connexion with the former.

Diabetic neuritis is satisfactorily amenable to treatment if the requisite measures are fully carried out. The first and chief point to be attended to is by appropriate dieting to remove or reduce the sugar which is at the foundation of the abnormal nerve state. Without the accomplishment of this it is futile to expect that hopes can be entertained of any fruitful result occurring. Where, however, the desired object has been attained it is sometimes surprising to see the rapidity with which improvement sets in. Much, of course, depends upon the extent to which mischief has advanced and the length of time it has existed. Frequently I have noticed a few days suffice for comparative ease to take the place of a pre-existing state of painful distress. Usually in a week or two it may be reckoned that relief from actual bodily suffering will be obtained, but it may take time for the minor symptoms of the neuritis to disappear. Exceptionally it may be found that obstinate resistance of some duration is met with and great distress may meanwhile be

experienced. Conjoined with the dietetic and codeina or opium treatment for the diabetes I have been in the habit of administering with a beneficial effect five grains of the iodide of potassium and ten grains of bromide of ammonium in a suitable vehicle three times daily. In the few cases that have failed to yield to these measures I have had recourse with a satisfactory result to the galvanic continuous current. Where great superficial pain has existed I have seen benefit conferred by the cautious application of the linimentum aconiti.

PATHOLOGICAL SUGGESTIONS:

- (1) THE PREPARATION OF MICROSCOPIC SLIDES FOR BLOOD-FILMS; (2) THE POSSIBLE APPLICATION OF FORMALIN GELATIN AS AN ANTISEPTIC AND DISINFECTANT PROTECTIVE SKIN; AND (3) A TRYPANOSOME-LIKE ORGANISM FOUND IN ASSOCIATION WITH SOME CHRONIC PATHOLOGICAL AFFECTION OF THE MOUTH.

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1. *On a simple method of preparing microscopic slides for blood-films.*—The frequent disappointment, inconvenience, and loss of time entailed upon the microscopic workers by improperly prepared blood-films will perhaps justify the publication of a brief note upon a very simple method of getting over the difficulty which arises when the blood which has been spread out upon the slide runs together in such a manner as to leave a system of islands of piled-up corpuscles ringed round with spaces of uncovered glass. Such running together of the corpuscles, which is currently and superstitiously imputed to the grease on the slide, is simply referable to the smoothness of the surface. It can, as I have elsewhere taken the occasion to point out, be remedied by etching into the surface of the glass with a strong caustic alkali or other corrosive chemical.

This method of getting over the difficulty involves, however, access to chemicals, the use of a laboratory, and, above all, troublesome forethought. All this is unnecessary. I now find that the finely roughened surface which is required for the preparation of ideally perfect blood-films can be very simply and unlaboriously obtained by rubbing the surface of the slide with emery paper. I have employed the finest variety of emery paper and have, in order to obtain the necessary mechanical pressure, mounted the emery paper by means of a rubber ring upon a stout cylindrical ruler. In making a film a drop of blood is placed upon a slide thus prepared, another slide is brought down upon it, and as soon as the blood has spread out in the included angle the upper slide is gently drawn along the surface of the lower. The upper slide is held at an acute angle with the lower where a very thin film is to be obtained, at a larger angle where a thicker film is desired.

In view of the circumstance that the disc-shaped and smaller spherical elements—red corpuscles and lymphocytes respectively—slip easily under the slide when the larger spherical elements—mononuclear and polynuclear white corpuscles—are carried onwards and outwards to the edges and end of the preparation, films made as described are ill-adapted—unless where certain precautions are observed—for the purposes of a differential count of white corpuscles. Where such differential count is desired a line should be ruled with a needle longitudinally from end to end through the equatorial region of the film, and the count should proceed from one end of the equator to the other.

2. *On the possible application of formalin gelatin as an antiseptic and disinfectant protective skin.*—The fact that solutions of gelatin set into a firm, insoluble, and elastic jelly on the addition of formalin is, if I mistake not, capable of being turned to manifold practical account. Taking a 15 to 20 per cent. gelatin, liquefying it by the application of heat, making to it an addition of from 1 to 2 per cent. formalin and employing it immediately after mixture we obtain a preparation which, when painted over a moist surface, will adhere firmly to it forming a

tenacious, elastic, and insoluble skin. Such a skin is, I think, admirably adapted to the arrest of hæmorrhagic oozing. I have employed it for this purpose with very satisfactory results, painting it upon the gums in a case of hæmophilia where bleeding had persisted for weeks in spite of the local application of adrenalin chloride and ferric chloride.

The formalin gelatin finds, however, its most generally useful application when it furnishes a protective antiseptic skin to denuded surfaces. It furnishes here an antiseptic and insoluble coating which protects the underlying tissues and is not removed by ordinary washing.

Again, inasmuch as pyogenic micro-organisms (staphylococci) have in the experiments I have carried out been rapidly devitalised when imprisoned under a skin of formalin gelatin, it would seem possible that this material may render services to the operating surgeon. Painted upon the skin it might conceivably furnish the aseptic surface which is required. Conceivably the surgeon might carry his incisions through such a film. Again formalin gelatin might prove useful in sealing up operation wounds, especially operation wounds of mucous surfaces.

Where employing the formalin gelatin upon a denuded surface, pain is avoided by applying first a film of simple gelatin and coating this over when dry with the formalin gelatin. When proceeding thus a tube of sterilised gelatin is melted in hot water and applied to the wound with a brush. This done a volume of formalin equivalent to a twentieth of the bulk is added to the remaining liquid gelatin. The 2 per cent. formalin gelatin thus formed must be applied before it has time to set.

3. *On a trypanosoma-like organism found in association with some chronic pathological affections of the mouth.*—The attention of many pathological observers being for the moment focussed upon the study of the life-history and pathological significance of trypanosomata and allied forms it is perhaps opportune to point out that suitable material for the investigation of these problems may perhaps lie ready to hand. I have in view pyorrhœa alveolaris and other chronic affections of the mouth and the micro-organisms which have been described by French bacteriologists, and in particular by Vincent, under the names of bacillus fusiformis (or bastilis) and spirillum buccæ. The micro-organism denoted by the name of bacillus fusiformis is, I think, clearly not of bacillary nature. Judging from its size (ranging sometimes up to 20 μ), its staining reactions with Leishman's stain (blue staining of the protoplasm and development of three or four chromatin bodies stained red in a characteristic manner), and from the fact that it moves actively through a hanging-drop preparation with an eel-like undulatory movement, the micro-organism would, in spite of the apparent absence of undulatory membrane and flagellum, appear to have affinities with a trypanosome. The resemblance to a trypanosome is heightened when the organism is seen ploughing its way through the corpuscles of a drop of added blood. The micro-organism denoted by the name of the spirillum buccæ is practically always found in association with the above. I have, however, failed to find it in one of three cases of chronic mouth affections in which the so-called bacillus fusiformis has been present in large numbers. The spirillum buccæ as seen under the microscope in a moist film executes incessant whip-like movements which bring up vividly to mind the lashings of the flagellate body in malarial blood. The spirilla here in question do not take the stain deeply when treated with watery solutions of basic aniline dyes.

It may be stated that neither of the above-mentioned forms of micro-organisms has as yet been artificially cultivated.

It has been suggested with regard to them that they may be modifications of, or different stages of, one and the same type of micro-organism. This suggestion falls in with the fact that in one of the cases of pyorrhœa alveolaris which I have had under examination there were to be seen many forms transitional between the thicker and shorter form denoted the bacillus fusiformis and the thinner and longer form denoted the spirillum buccæ. It is hardly necessary to point out that the suggestion of a common origin for the two forms acquires particular interest in connexion with the suggestion of Schaudinn that there may be a trypanosoma stage in the life-history of many pathogenic spirilla.

Two further points may be briefly alluded to. (a) The first applies to a case where the pathological affection of the mouth takes the form of a chronic herpetiform eruption on

the lips and the development of plaques upon the inner surface of the cheek in the neighbourhood of the angle of the mouth and elsewhere. Here felted masses of the so-called bacillus fusiformis are found in preparations made by puncturing the plaques. This is of interest in connexion with the fact that the development of plaques is a characteristic feature in dourine, a form of trypanosoma invasion which affects in particular the genital system of the horse. (b) A condition of extreme anæmia which suggests a possible blood infection is often associated with pyorrhœa alveolaris. In the two cases I have had under observation I have in each case examined the blood films for parasites with negative results.

In conclusion, I desire to express my thanks and obligation to Captain S. R. Douglas, I.M.S., for valuable help and suggestion in connexion with the investigation of these cases.

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THE TREATMENT OF CONGENITAL EQUINO-VARUS DURING EARLY INFANCY.

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THE question of the treatment of congenital equino-varus during early infancy is not only of supreme importance to the patient but also of great interest to the surgeon because of the difficulty in obtaining consistently good results and of the divergence of opinion as to the methods to be adopted. Indeed, few surgical subjects of such antiquity possess so many different principles and multifarious practices at the present day; neither can it be claimed that the literature upon the subject is not full and exhaustive. It is this ambiguity upon the subject that leads to the number of incomplete corrections that present themselves to our hospitals and induces me to record my experience during the year 1903. During that period 53 cases of congenital equino-varus were treated by me. Two cases were so slight that they were treated solely by manipulation. Of the remaining 51 cases, 40 were of the nature of relapsed cases or incomplete corrections, or were primary cases neglected during early infancy. These were all treated as in-patients, some by tenotomy, fasciotomy, syndesmotomy, and manipulation; others by the more severe methods of tarsal osteotomy or subcartilaginous enucleation. The remaining 11 cases presented themselves during early infancy and were treated as out-patients. They represented varying severities of the so-called second degree; in no case could the inversion, adduction, or plantar flexion be temporarily corrected by manipulation, however forcible. The age varied from two weeks to six months, averaging eight weeks. Nine cases were males and two were females. 14 feet were affected, the right foot in nine cases and the left foot in five.

The method of treatment adopted in all these cases was a slight modification of that first introduced by Dr. W. T. Little and afterwards emphasised by Mr. W. Adams. It is usually ascribed to the latter on the continent. It is an amalgamation of the principles of the mechanical method of Scarpa with the practice of subcutaneous tenotomy of Stromeyer. It consists of two stages: (1) the correction of the varus and (2) the correction of the equinus. Stage 1 is commenced as early as possible, in this anticipating the original operation by a few months. It consists of the subcutaneous division of the tendons of the tibiales anticus and posticus and flexor longus digitorum above the ankle-joint with immediate rectification of the varus so far as possible with subsequent manipulation to complete the correction, and in the intervals of manipulation the retention of the foot in the improved position by means of a padded malleable-iron splint. Manipulation at this stage is directed entirely to the correction and over-correction of the varus at the mid-tarsal joint. So long as, at this stage, the tendo Achillis remains taut, all movements in the ankle and astragalo-calcaneal joints are prevented, and we are at a mechanical advantage in overcoming the adduction and inversion at the mid-tarsal joints by being able to manipulate the fore part of the foot upon, as it were, a solid bar of bone extending from that joint to the knee. The method of manipulation