

# THE LANCET.

LONDON: SATURDAY, MARCH 18, 1922.

## Medical Orthopædics.

ORTHOPÆDIC surgery has been long in finding its appointed place, partly no doubt for want of a proper definition. Recently its scope has been defined as the recognition and practice of definite principles and treatment—whether operative, manipulative, or educational—which lead to the restoration of function in nerves and muscles and in deformed or disabled limbs. Orthopædic centres, organised by Sir ROBERT JONES during the war, and later known as special military surgical hospitals, were largely occupied in remedying the after-effects of war injuries, many of which could have been prevented by knowledge of orthopædic principles. It is no reflection on the zeal and devotion of the staffs of the smaller V.A.D. hospitals to admit that they afforded a plentiful aftermath of secondary deformities and disabilities of joints when the primary injuries due to enemy action had been relieved. And the dropped foot, the everted hip, the flexed knee, the extended elbow-joint were often harder to cure than the original lesion.

But orthopædics have to overtake the results of medical as well as of surgical neglect, and the physician dare not point the accusing finger, for much of the crippling which follows painful affections of the joints could be foreseen and avoided, even if the progress of the arthritis cannot yet be prevented by early attention to its cause. So keen an observer as Mr. F. CALOT, of Berck-sur-Plage, has drawn a picture of what has happened in France since the treatment of orthopædic affections has become accessible to all practitioners. The practitioner, he writes, can treat and cure these conditions if, and only if, he tackles them at the early period of their existence. Rheumatoid arthritis and allied conditions, as Prof. ALAN H. TODD reminds us in the Hunterian lecture which we print on another page, are responsible for a very large amount of physical disability, patients of all ages and in all walks of life becoming crippled by the condition. The nomenclature of this deforming disease is still vague and unscientific, the various forms described possibly being only variants of what is fundamentally one disease. Affecting women more than men in the proportion of three to one, it occurs with distressing frequency in the middle-aged and even in the young. While we have little doubt that the disease is due to infection of the joints and is often associated with the presence of foci of infection in other parts of the body, we are far from being able to afford practical help to the sufferers from an application of this knowledge. And it is a regrettable fact, as Prof. TODD states, that an orthopædic surgeon seldom sees a case of rheumatoid arthritis free from deformity, whereas all deformity in rheumatoid arthritis is essentially preventable, arising as it does either from faulty posture or adaptive changes which can be foreseen and avoided. The nurse who supports the patient's knees with a well-meant pillow is leading up to flexional deformity for the sake of present comfort. The bedrid feet, unsupported by foot-rests or some form of bed-splint, will tire and drop, to become permanently fixed in the equinus position. The valgus posture, at first assumed by the person with rheumatoid disease of the ankle

bones in order to lock the joints and render them less painful, becomes organically fixed from periarticular adhesions. The condition has serious economic consequences for many working men and women in whom, when even single joints are affected, the disability is often so considerable as to interfere seriously or even entirely with remunerative occupation. In cases of multiple infection of joints a lamentable proportion of patients become sooner or later completely disabled and from the industrial view incapable of self-support.

Prof. R. W. LOVETT, of Boston, has already shown how much may be done to preserve or restore the functional ability of joints which have been damaged by this disease, and Prof. TODD's Hunterian lecture is a welcome addition to our knowledge of the detailed treatment of such disabilities. Undoubtedly this aspect of the treatment of rheumatoid arthritis has received insufficient attention, for it often happens that a patient in whom the arthritis is no longer active or progressive remains seriously crippled by the deformity which has arisen. Many such are to be found in infirmaries and institutions for incurables. With a more complete system of orthopædic treatment, such as might well be instituted in connexion with Poor-law infirmaries, much of this disability would be alleviated and much industrial capacity restored.

## The Kinematograph and Health Propaganda.

AMONG the various measures adopted, more particularly in America and France, for the purpose of warning the public against the cause and effect of communicable disease, the kinematograph has of recent years filled an important place. Considerable credit is due to the painstaking work and ingenious skill of those responsible for the production of the films, which deserve to be widely exhibited in the interests of the general welfare of the community. Hitherto the use of this up-to-date method of spreading the gospel of health has attracted comparatively little attention in this country, although it is one well worthy of prominence and would, with advantage, replace many of the sensational film-shows daily filling the halls in London and the provinces.

An exhibition of a propaganda film of great interest, produced by the Rockefeller Foundation in the campaign against hookworm disease in America, was recently given by Prof. R. T. LEIPER for the first time in England before the Section of Tropical Diseases of the Royal Society of Medicine, under the popular but appropriate title of Unhooking the Hookworm. The film, which was accompanied by a simple explanatory legend of the hookworm disease in terms easily to be comprehended by school-children, gave a vivid representation of the life-history of the parasite and of its harmful and debilitating effect, particularly in the case of young people. Infection was traced from its source in the insanitary conditions of defective latrines, which resulted in faecal contamination of the ground outside, and thence led to its dissemination by animals and the feet of human beings throughout and beyond the enclosing grass plot. Subsequent contact of children's bare feet with the polluted grass, bearing in the dewdrops the active living hookworm larvæ, showed how readily its transmission took place through the skin of the sole and between the toes of the victim. The actual process of penetration of the embryo through the pores of the skin was then displayed on an enlarged scale, and its subsequent passage through the circulation and respiratory system to reach the

stomach and intestines was graphically represented in a picture of the outlined human anatomy with a moving indicator recording the path of the larval worm. The stages of intestinal development from embryo to adult worm figured in moving microphotographs of remarkable detail, which also showed the implantation of the now full-grown worm by its armature to the mucous membrane of the bowel, and the effect of the numberless local lesions leading to intestinal hæmorrhage and ulceration.

The results of infection were given in a series of pictures, some showing the blood films of marked anæmia, in comparison with the healthy blood, others portraying the lassitude, stunted growth and development of the infected child in contrast to the good physique of a healthy child of the same age. The importance of parents realising the necessity of seeking medical advice, as soon as signs of ill-health and failing strength are manifest, was emphasised by scenes in the home, in the consulting room and laboratory, where the larval hookworm from a specimen of the child's fæces is discovered and shown as it appears under the microscope. There followed the prescription and administration of a capsule of oil of chenopodium succeeded by saline purgative, and the result—a mass of the dead hookworms. The rapid response to treatment and speedy restoration of the child to robust health and activity formed a fitting conclusion to a striking achievement in film production and health propaganda.

## Electrical Injuries.

THE advances in the use of electricity bring with them their own train of sacrifice of human life and limb, and with the ever-increasing sphere of electrical application it is only to be expected that the casualties produced by the electric current will be increased in proportion. It behoves us, therefore, not only to make ourselves familiar with the special characteristics, clinical and medico-legal, of the injuries so inflicted,<sup>1</sup> of the complications to be anticipated, and of their appropriate treatment, but also to study the best means of prophylaxis. In Switzerland it has been particularly easy to trace the increase in the number of electrical injuries, because since 1903 electrical accidents have been notifiable. The casualties have steadily increased (the war period being neglected), until in 1920 the number was more than double that for 1904—viz., 98 in 1920 and 46 in 1904. HANS JAEGER<sup>2</sup> has compared the number of casualties with the increase in electrical installations, and finds that, thanks to official control, the *relative* incidence has not increased; thus in 1904 the casualties, numbering 46 in all, were 8 to every 1000 kilometres of wiring. This number subsequently decreased to 3, 4, and 5, but rose again to 7 in 1920, when there was a great increase in installations, the total casualties amounting to 98. In legislating for the installation of electric power and the safeguarding of life, electrical currents have been divided into "strong" and "weak," according to their action on the human body, "strong" currents being those which have an injurious effect, while "weak" are those which are supposed to be harmless. JAEGER points out that the danger to life depends upon many other factors besides that of the strength of the current. The human body would be a good conductor of electricity,

owing to its fluid and salt content, if it were not for the isolation afforded by the skin. But the resistance of the skin varies with its thickness and its dryness. A man bathed in moisture should form a much better conductor than one with a dry skin, and this theoretical point is borne out by the observation that the number of accidents varies directly with the meteorological conditions. Nearly twice as many occur during the hot months of the year as during the cold, and, excluding those due to lightning, the explanation is apparently to be found in the increased formation of perspiration in the summer months. Unfortunately, even in the latest text-books it is set down that currents of 100 to 150 volts are harmless, while those of 200 and over are dangerous. This is incorrect; cases of death from currents of 50 volts, when acting under conditions of dampness, have been recorded. At a session of the Paris Academy of Medicine, held on Feb. 7th, it was pointed out that currents of low tension (200 volts or less) might cause cardiac arrest with fibrillary contractions. Two cases were quoted in which the victims while in a bath touched, in one case an electric radiator with faulty insulation, in the other a metal bell-pull into which there was a leakage of current. In a third case a workman was electrocuted by a current of 135 volts from a hand-lamp while working in a boiler. In Switzerland, during 1919, six deaths occurred from contact with ordinary hand lamps, and during the war period 11 fatal cases were reported in the German literature from the therapeutic application of a sinusoidal alternating current of 50 volts and under. Besides the strength, frequency, and nature of the current, and the resistance opposed to it, the danger of any particular current is influenced by the following factors: (a) the site of entrance into the body, (b) the duration of the contact, (c) the size of the area under contact, (d) the physical condition of the individual (status lymphaticus increases the susceptibility), and (e) the psychic component. Expectation of a current diminishes its effect, while surprise increases it. An example of this factor is afforded by an engine driver, who made a habit of catching hold of a 500 volt clamp with both hands, and letting go again, as a bet for a glass of beer. He repeated this game as often as the beer was forthcoming, until one day he accidentally came into contact with the lamp, under the same conditions, and collapsed dead on the floor.

The clinical aspects of electrical injuries are characterised by great variability in their immediate symptoms, in their course, and in their late effects. Their features are, however, as a rule so characteristic that it is possible, as in hardly any other form of injury, to reconstruct accurately the method of their causation. The immediate effects can be divided into general, local, and distant. Of the general, the most important is "electric shock," associated with unconsciousness of variable duration, which simulates concussion and is often followed by a maniacal stage of cerebral irritation. This condition may occur even when the current did not pass through the central nervous system, and is probably reflex in origin. The local effects consist chiefly in burns at the sites of entrance and exit of the current. The lesions are characterised by anæmia, dryness, and insensitiveness, due to massive coagulation necrosis. Subcutaneous emphysema has often been noted, but the cause of its production is not clear. Shedding of the superficial layers of the skin is common, but is not comparable with that produced by ordinary burns. The skin comes off as a complete layer, with the hair attached to it intact, and may be found attached to the conductor which produced the shock, or hanging to the clothes covering

<sup>1</sup> A discussion on the Pathological Changes produced in Subjects rendered Unconscious by Electric Shock will be opened by Dr. Morison Legge at the Section of Electro-Therapeutics, Royal Society of Medicine, to-night (Friday), at 8.30 p.m.

<sup>2</sup> Schweizerische Medizinische Wochenschrift, Dec. 29th, 1921.