administer the treatments under the direction and supervision of these qualified specialists. The cost of such treatments will be only one-tenth that of those administered in private practices, and will be often ten times as efficient.

It is thus that I forecast the future of electrotherapy. Golding Bird said, "Electricity has been by no means fairly treated," but I am confident that, as we become more fully acquainted with Nature's basic principles in health and disease, so we shall tend more and more to utilize her most fundamental, powerful, readily controlled, and most universally called for agent, namely electricity.

"*Naturam expellas furca, tamen usque recurret.*" Attempts have been made in the past to expel electrotherapy with the pitchforks of prejudice, ignorance, indifference, or even of ridicule, but nevertheless this form of treatment has always returned with renewed vigour. At the present time it occupies a firmer position in the healing art than ever before in its 200 years of history. Its future, however, rests very largely in the hands of those who direct medical education and research.

REDUCTION OF SICK WASTAGE AFTER ATHLETIC INJURIES

BY

R. SALISBURY WOODS, M.D., F.R.C.S.

CAMBRIDGE

(Formerly M.O. in charge, Fracture Centre, 4th London General Hospital)

In the care of sports injuries, unnecessarily prolonged sick wastage and expense to the patient will continue until the treatment of injured muscles and joints is put on the same functional basis as the modern (Böhler) methods for the treatment of broken bones. Practically all injuries to muscles and ligaments—for example, "pooped" thighs, sprained ankles, etc.—thrive best on firm support and immediate use, even where this involves weight-bearing. I have proved this in seventeen years' practice amongst undergraduates whose athletic ambitions demand a return to the competitive arena in the shortest possible time. Indeed, with the co-operation of a pioneer patient, it was discovered some four years ago that even the knee-joint, hitherto sacrosanct when afflicted with severe traumatic synovitis, really benefits equally strikingly by application of these principles. Thus, one patient gained his rugger blue within fourteen days of sustaining a "ballooned" knee-joint; other cases have responded equally well to this treatment.¹ Correct treatment promptly carried out will:

1. Shorten sick wastage.
2. Obviate many of the indications for massage and other forms of physiotherapy.
3. Avoid the atony and atrophy of disuse, and keep the patient in comparative training, so important for early competition.
4. Maintain his general health and morale on a much higher plane.

Böhler's Methods

In treating injuries of bone, the essential features responsible for Böhler's success are:

1. Accurate reduction.
2. Complete immobilization of the fractured fragments by non-padded plaster splints until union has occurred.
3. Natural use of the injured part—for example, weight-bearing where possible—from the beginning.

Considerable experience in fracture work is necessary for the assurance of uniformly good results and the avoidance of risks in the early stages, when much swelling is present.

¹ *Injuries of Athletes*, by R. Salisbury Woods; *Modern Treatment*, vol. ii, edited by C. P. G. Wakeley.

When revisiting Mr. K. H. Pridie's fracture clinic at Bristol recently, I was fortunate enough to see a pregnant woman brought in at full term from a street accident with comminuted fractures of the tibia and fibula. She refused admission as she was anxious to return to her own accoucheur at Cheddar. The fractures were forthwith reduced, immobilized by suitable light plaster-of-Paris splinting, the toes being free to move; and she was sent home in comfort for her imminent confinement. Contrast this with the agony and clumsy impediment of the old "back splint and foot-piece," which would have allowed considerable movement of the fragments in the course of labour.

As another graphic instance, mention may be made of a 12-stone Cambridge resident, aged 29, who broke her leg by torsion while skating last February.

There were six oblique spiral fragments in the middle third of the tibia, one piercing the skin and causing external haemorrhage; the fibula was also fractured in its upper third. The skin edges were excised under novocain, and "primary suture" carried out. The fractures were reduced by manual traction, and the leg was "put up" in a non-padded plaster splint with a "window" for the wound. The latter healed by first intention, but the position of the fragments was imperfect, and, moreover, it was desirable to make ambulatory treatment possible. Therefore, under a general anaesthetic the leg was suspended in a Böhler extension frame, and traction up to 45 lb. exerted from an ice-tong calliper gripping the os calcis. Two stout transfixion pins were then bored through the tibia just above the ankle-joint and below the tibial tubercle respectively, and left with their ends projecting. The traction (and thereby the reposition of the fragments) being maintained, the limb was now stoutly encased in a non-padded plaster splint in the ordinary way, from the sole to the mid-thigh. The pins were thus embedded in an irregular cylinder of rigid plaster, which made approximation and "telescoping" of the oblique fragments impossible. A walking stirrup was applied, and *two days later the patient bore weight and walked three times round her bed with sticks*. In four days she was able to walk about thirty yards thrice daily, and she left the nursing home in six days. Meanwhile, she had been made to move her toes, to contract her quadriceps femoris, and to carry out "rowing exercises" regularly. She never used crutches at all. The splint and pins were removed after eight weeks, and an ordinary plaster splint was reapplied for a further fortnight, during which time she was walking about two miles a day. When this splint was finally removed and an "Elastoplast" "puttee" substituted she walked with confidence, no pain, and *no oedema*. Moreover, she has full, free, and painless movement of the knee-joints and ankle-joints, and, of course, no shortening.

It may fairly be claimed that Böhler's principles saved her about ten weeks in bed, an incalculable degree of disuse atrophy of her muscles, prolonged sick wastage and tedious training back to proper strength, and a staggering bill for months of massage, which her own function obviated almost entirely, for oedema disappeared in a few days on carrying the "Elastoplast" "puttee" well above the knee.

It is also probable that the essential object of any treatment—namely, a perfect result—would not have been achieved in a limb so severely injured except by using Böhler's technique of screw traction and absolute retention of the accurately reduced fragments.

Permanent Disability

Anyone interested in fracture work must be appalled from time to time by the cases he sees in which the fragments have never been properly reduced, and where after prolonged disuse and long-continued massage a high percentage of permanent disability results.

The following is perhaps an extreme, but is nevertheless a true example of a report upon a man who had sustained comminuted fractures of the tibia and fibula.

Although an "open" fracture of the tibia, it had been fixed with a steel band and silver wire, with the inevitable result that osteomyelitis was established, and profuse discharge persisted long after a second operation for the removal of these foreign bodies. The limb had originally been fixed in plaster, more or less after the fashion of Böhler, but secondary haemorrhage had necessitated a hurried return to the theatre, where the plaster had been removed; the patient was then returned to the ward in a Thomas splint, with less complete control of the fragments. Some weeks later another surgeon operated in the presence of (?laudable) pus, hoping to fix the shaft by an intramedullary peg; this failed to help. Later on, with a large granulating wound and a discharging sinus, the man was readmitted for a severe attack of erysipelas, ran a high temperature, and became very ill. In short, *after eighteen months he has non-union of the tibia*, the opposed fragments being now cone-shaped, separated by over a centimetre, and held rigidly apart by the unaffected fibula; pus is still discharging from a sinus, and naturally he has not yet borne weight on the injured limb. The knee-joint has been immobile for one and a half years. The prognosis is none too good, for if we reject the idea of immediate amputation, he is faced with a long "sentence" while sepsis subsides before any further operation could be safely undertaken to square off the conical "stumps" and adjust the length of the fibula to that of the shortened tibia. If there is no "flare-up" there would still be a further period of prolonged immobilization while delayed union is awaited. Finally, the limb would have to be trained up to weight-bearing—in all, a matter of about a year or two from now—and then he would have a limb markedly impaired by shortening, and by a knee fixed in extension.

This unfortunate case contrasts extremely with the modern teaching and results of Lorenz Böhler, whereby the man would have returned to work in as many months as actually in years, and with *no* permanent disability.

Conclusion

It may well be emphasized that the introduction of internal splints, such as plates and screws, bands, etc., has been rendered almost entirely obsolete nowadays. With very few exceptions such foreign bodies are indicated only in fractures of the olecranon with separation, and in the view of some, in fractures of the patella. It has always been thought bad to "plate" open fractures.

Apart from contraindicated operations upon fractures, which are happily becoming more rare, an enormous amount of avoidable sick wastage still occurs from failure to effect accurate reduction before the limb is immobilized. Where there is overlapping and bad alignment of the bones it must be remembered that there is also kinking and distortion of the blood vessels and channels of venous and lymphatic return; and this is responsible for the marked oedema which persists so long, and for which an indefinite amount of massage has to be ordered. Faulty position, such as recurvation of the tibia, should be obvious, and there is really little excuse for allowing it to go uncorrected; but of course the "good old-fashioned" back splint and foot-piece, upon which most of us were brought up, encourages backward sagging, just as the Thomas splint is liable to allow this to happen in the case of a fracture of the middle third of the femur unless an upward—that is, anterior—pull is exerted from an axial bar above.

It is therefore important to emphasize Böhler's conclusion that it is not enough to *obtain* correct alignment; it must be secured by complete control until union is complete.

In the care of severe injuries, whether of bones or joints, it is still insufficiently realized that unnecessary sick wastage and lasting disabilities result from delayed or obsolete treatment. Though less dramatic in point of immediate danger, they may be considered as much a "surgical emergency" as the acute abdomen.

THE INCIDENCE OF MONILETHRIX

BY

J. GOODWIN TOMKINSON, M.D.

HONORARY CONSULTING DERMATOLOGIST, WESTERN INFIRMARY,
GLASGOW; DERMATOLOGIST, EDUCATION HEALTH SERVICE,
HEALTH DEPARTMENT OF GLASGOW; DERMATOLOGIST,
EDUCATION AUTHORITY, COUNTY OF
DUMBARTON

Typical monilethrix is a rare affection, but it is not improbable that cases presenting less diagnostic features may be more frequent than is generally believed, as the following familial group might suggest.

On June 28th, 1935, I saw three patients affected with this disease belonging to a family of ten persons. Subsequently I saw five other members of the family. Of the total number seen, four males and four females—two of the latter were twins—seven had the disease; the unaffected member was the mother. The condition had evidently originated paternally. There was a very suggestive history on the male side of the family—the paternal grandfather, the paternal grand-uncle, and two paternal uncles had or have scanty hair or are bald. This family is not related to the two families previously reported by me in the *Journal* (December 3rd, 1932, p. 1009; and March 16th, 1935, p. 526). The grandfather, a tailor, appears to have been born in Argyllshire. The father and one of his brothers are miners, while a second brother is a plasterer; they were born in Glasgow. The following is a brief history of the affected members.

History of Affected Persons

1. Father, aged 57, miner; born in Glasgow. At 17 years of age his hair began to fall. The hairs microscopically examined show very rare swellings.

2. Daughter, aged 20. Her hair up to about the age of 12 years was very thin at the back. In front and at the sides "it stood out; it would not lie down." Oil was rubbed into the scalp and hair growth improved. Fusiform nodes are present. Twisting of the hair at the atrophic portions is noticed microscopically, doubtless causing the spiral appearance detected in some hairs; brushing might have contributed to this phenomenon. Fracture is observed not only inter-nodally but in some instances of the node itself. The latter is a definitely atypical feature. Short nodes with abrupt borders are also seen—two in close juxtaposition with slightly diminished pigmentation and corresponding increase in inter-nodal area were observed. Marked longitudinal splitting of the hair is noticed in various parts of the shaft which I cannot recall ever having seen in hairs of either of the groups previously reported. Externally the eyebrows are thin. Many freckles are present.

3. Son, aged 18. In this patient the nodes are short, and in some of them diminution of pigment is detected.

4. Son, aged 13. The nodes are short and the spindles not well defined.

5. Son, aged 10. The nodes are of smaller diameter.

6. Daughter, aged 5, a twin. Her hair is very fine; it is short at the back and in a restricted frontal region. It tends "not to lie down." There are many short nodes; longer ones are also seen but not well defined. Spiral hairs are very frequent, and longitudinal fissuring of the shaft is present. The eyebrows are thin externally. A very few lichen pilaris lesions are present in the suboccipital region. There is naevus araneus of the right side of the nose.

7. Daughter, aged 5, a twin. Her hair is fine; posteriorly short, anteriorly slightly so. It tends "not to lie down." Fusiform nodes and also short nodes are present. Her eyebrows are thin externally. There are verrucae planae on the right half of the forehead.

Some Modifications and Variations

It will be seen that in this group there is definite variation in the degree of development of the nodes. In the father's case they are more of the nature of very rare