

THE BENT BACK OF SOLDIERS.

[WITH SPECIAL PLATE.]

BY

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THE soldier, walking slowly and painfully with the aid of two sticks, bending far forward, his arms and legs often shaking with the effort, for all the world like the stage octogenarian, is becoming a more and more common sight. Though a large literature has grown up around him in France, where each author has amused himself by inventing a new name for him, such as *plicature vertébrale*, *campto-cornie* (Souques and Mdle. Rosanoff-Saloff¹), *campto-rachis* (Laignel-Lavastine and Courbon²), and *spondylose antalgique* (Sicard³), it is a curious fact that he has not yet formed the subject of a paper in English. This might be regarded as a matter for congratulation were it not for the fact that the true nature of the condition is only rarely recognized, with the result that many men who should be cured in a few minutes with psychotherapy drift from one hospital to another, receive treatment with electrical appliances of different kinds, spend many weeks undergoing hydrotherapy at various spas, and end by being invalided from the army as totally incapacitated, and convinced from the failure of treatment whilst in the army that treatment after their discharge will be equally unsuccessful. Considerable experience of the condition since I saw my first case at Lemnos in November, 1915, has convinced me that the bent back of soldiers, however variable its etiology, is constant in its pathology, being always hysterical in nature, and consequently always curable by psychotherapy.

Etiology.

The most common cause is a blow in the back, either due to the explosion of a shell hurling a man against the side of a trench or causing the parapet to fall on him, or to some accident which might equally well have occurred in civil life, such as being jammed against a wall by a lorry. Occasionally an actual wound is present, but this is always superficial, the spine itself having escaped. A history of "muscular rheumatism" is obtained almost as frequently, pain in the back having followed exposure to cold and damp, generally in the trenches, but occasionally at the base or even in English camps. In one case the condition followed the injection of antitetanic serum under the skin of the abdomen in a patient with localized tetanus, which never spread beyond the right arm, and in another it was first observed after an attack of malaria, in which the patient had been semicomatose for a week. Lastly, one patient developed it after an operation for acute appendicitis. Several of our patients appeared to be predisposed by having always walked with a slight stoop or by having had previous attacks of lumbago. The father of the boy I saw at Lemnos was a "martyr to rheumatism" and walked with a bent back, but this probably predisposed more by the mental association than by any inherited physical condition.

Pathogenesis.

The one common factor in these various causes is pain, generally in the back, but occasionally in the abdomen (as in the case of tetanus and that of appendicitis), which is relieved by bending far forward. The patient finds he can only stand and walk with some degree of comfort in this position, and at first he generally lies in bed curled on his side. After a time the pain caused by the blow on the back, the rheumatism or other exciting cause, diminishes or disappears. The patient can now often rest comfortably lying flat on his back, but he continues to stand or walk in the same bent position. He does not realize that this posture was originally adopted voluntarily in order to relieve his pain, and he regards both the posture and the pain as direct and independent results of the injury or disease which they followed. The pain has gone, but the posture, adopted with the object of relieving it, remains. Unfortunately the medical officer frequently makes the same mistake as the patient, and prescribes treatment with kataphoresis, diathermy, radiant heat, whirlpool

baths, massage, or other elaborate method in an electro- or hydro-therapeutic institute, with the result that the notion of some serious disease is still further impressed upon the patient's mind, the original auto-suggestion being thus reinforced by hetero-suggestion. How little benefit follows such treatment unless it is given as a form of suggestion is proved by the fact that the spa physicians with whom I have discussed the question tell me that they do not know of a single soldier with a bent back who has been cured as a result of spa treatment.

Numerous investigations with the *x* rays have shown that there is no organic spinal lesion, even in those cases which follow a severe blow on the back. Unfortunately, however, the spine is not easy to skiagraph satisfactorily, and an indifferent plate requires exceptionally skilful interpretation. I have seen several cases, in which the radiographer has reported a "doubtful" spinal deformity, fracture or other pathological condition, which further examination and the course of the disease have proved to be non-existent. But the patient often sees or hears the report, with the result that the difficulties in the way of successful psychotherapy are much increased.

The bruising which results from an injury and the obscure pathological process, whether a nodular fibrositis or interstitial myositis, which is the basis of so-called muscular rheumatism, myalgia, and lumbago, are true organic lesions, but they quickly disappear, and the condition which persists for weeks or months afterwards is either entirely hysterical, or in rare cases is hysterical with a small but more or less permanent organic element in addition.

It is true that the patient generally complains of more or less pain in his back, but though very prone to exaggerate his symptoms, he is generally ready to admit that the pain is less severe than it was at the onset of his illness. Whatever part of it is genuine is probably the result of constantly stretching the small muscles and ligaments of the spine, which in normal individuals is bent for a few minutes at the most instead of for the greater part of each day. That this is true is shown by the immediate improvement or even disappearance of the pain when the patient is taught to assume a correct attitude.

Symptoms and Diagnosis.

The appearance of the patient is so characteristic that the diagnosis is at once obvious, as there is no organic condition which in any way resembles it except spondylitis deformans, which, however, never affects young men. Moreover, the position assumed in the latter is the same whether the patient lies down or stands, whereas the bent back of soldiers almost invariably disappears entirely, or almost entirely, on lying down. Other diseases of the vertebra are excluded by the absence of tenderness over the spine though the muscles may be sensitive to pressure. French writers have described in detail the folds which are observed in the skin of the abdomen and back of the neck, but these do not differ in any way from those which develop when a normal individual acts the part of a very old man—bending forward, and throwing his head back so that he can look straight ahead.

In the large majority of cases uncomplicated kyphosis is present, but we have also seen cases of lordosis, lateral curvature, and of combined kyphosis and lateral curvature of similar origin. The following case, under the care of Captain G. McGregor, was the best example of the latter condition which I have seen.

Combined Antero-posterior and Lateral Curvature of Twenty Months' Duration Cured by Re-education in an Hour and a Half.

Pte. D., a New Zealander, aged 30, with over two years' service, was digging a trench in April, 1917, when he "felt something give" in his back. He has had pain there and his back has been bent ever since. He carried on until June, 1917, when he was partly buried by a shell. He was sent to the base, where he remained until July, when he was transferred to England for discharge. Captain H. A. Davies, recognizing the hysterical nature of his condition, sent him from the New Zealand Discharge Dépôt to the Seale Hayne Hospital. On admission there was a lateral curvature of the spine to the left in the dorsal region and to the right in the lumbar region, with corresponding prominence of the left shoulder and right hip; very marked lordosis was also present. He swayed violently backwards and forwards when standing with his feet together. The faulty position disappeared on lying down and was easily corrected by manipulation on standing. After an hour and a half's re-education under Captain McGregor he had

no further difficulty in keeping his spine in a position free from curvature, both when standing and walking, and was discharged from hospital a fortnight later.

In the following case, under Captain C. H. Ripman, in which recovery followed treatment by persuasion, the kyphosis was associated with curvature in a horizontal plane, the shoulders being thrown far forward, an appearance of severe pigeon-breast resulting.

Hysterical Kyphosis Associated with Curvature in a Horizontal Plane.

Pte. B. was wounded on March 21st, 1918. On admission in August he had a superficial scar three inches long, running diagonally across his back opposite the third dorsal vertebra. He showed very marked kyphosis, which produced two deep horizontal folds across his epigastrium, below which the abdomen was round and prominent. His chest was also hollow from side to side, with very marked prominence of the points of his shoulders. He breathed very badly, with no abdominal movement and very little expansion of the lower part of his thorax. He looked so pigeon-breasted that the deformity was considered by some observers to be organic and due to adenoids, though he himself said he was absolutely straight until he was wounded. Unlike the majority of cases, the curvature did not disappear on lying down. But with persuasion his body was gradually straightened out, his shoulders being pressed back until both the kyphosis and the side to side curvature, together with the hollowing of his chest, had disappeared. After prolonged persuasion he was able to move freely, and the depression of his epigastrium and the prominence of his abdomen with the horizontal furrows across his epigastrium disappeared. Three weeks later, being quite fit, he was sent back to duty.

In the following case, under Lieutenant S. H. Wilkinson, lordosis instead of kyphosis followed burial. The patient's posture and gait closely simulated that of pseudo-hypertrophic paralysis.

A Case of Pseudo-pseudo-hypertrophic Paralysis Cured by Persuasion after lasting for Ten Months.

Rfm. P., aged 20, had had six months' active service in France when he was buried by a shell in September, 1917. He was not dug out until four hours had elapsed. He felt none the worse for it, except for a slight pain in the back, but he was sent to hospital the following day with a diagnosis of trench feet, his feet being very blue and cold. He was kept in bed for a month and then transferred as a cot case to a hospital in England, where he remained for two months. He was kept in bed the whole time, the only treatment given being for his feet. He was then sent to an auxiliary hospital. At the end of a week he was allowed out of bed for the first time, when he found that he could only walk with difficulty. In spite of treatment with electricity and massage, his gait became more and more difficult. He was transferred to Seale Hayne Military Hospital on July 15th, 1918. On admission he presented many of the characteristics of pseudo-hypertrophic paralysis. His gait was slightly waddling, very marked lordosis was present; he was unable to bend forward, sit or lie down without help, and if he lay flat on his back he was unable to get up. As there was no atrophy of any of his muscles, and no family history of paralysis, it was recognized that the condition was hysterical. After continuous treatment for two hours by persuasion he had greatly improved, and with further persuasion during the following three days he completely recovered.

In some cases, especially when the exciting cause is a blow on the back, the gait is stiff, each step requiring a great effort, and a generalized tremor may be present; the patient sweats excessively, and has an anxious and haggard expression.

Treatment.

All forms of treatment except psychotherapy are useless. Thus electricity, unless employed as a means of suggestion, massage, and fixation in a plaster jacket after straightening the spine under an anaesthetic, as recommended by certain French writers, do no good, and may do harm, by fixing the idea of disease more firmly in the patient's head.

Any form of psychotherapy is likely to be efficacious. I hypnotized my first patient, a 19-year-old soldier, whose back had been bent for two months after rheumatism contracted at Gallipoli. He walked quite erect whilst hypnotized, and I woke him up whilst he was still walking. Though it had been arranged for him to embark for England the next day, he asked to be allowed to stay at Lemnos, as he was now cured, and a week later he returned to the peninsula at his own request. In spite of this success I have not again employed hypnotism in such cases, as I prefer to use simpler methods, which are just as effective. Until recently we had never failed to obtain a very rapid cure by means of persuasion and re-education, in most cases very rapidly. We explain to the patient how the position he assumes on standing and walking is simply a bad habit, contracted when the originally severe

pain in his back could only be relieved by bending forward. He is made to realize that the fact that he can lie down with his back straight proves that there is nothing serious the matter with his spine, and that he would in fact lose such pain as he has on standing, if he were to relax his muscles and stand erect. He stands with his back to a wall with his heels touching it, and his shoulders are then gently but firmly and persistently pushed back till they also touch the wall. He is told that the pain he feels whilst this is being done will disappear directly he is erect, and the less resistance he offers the quicker he will be cured. In most cases relaxation rapidly follows, and in a few minutes he finds he can stand erect without support. He is then taught to walk in the same position, and recovery is complete. I cured a discharged soldier in this way in a quarter of an hour without admitting him to hospital; he was to return to his home in Australia a few days later, and the condition had existed for eleven months in spite of all kinds of treatment. The following is the only case in which simple persuasion and re-education failed, but a cure resulted from treatment with a back-board.

Hysterical Kyphosis of Five Months' Duration Cured by Back-board.

A man, aged 31, who had always stooped slightly and had suffered from lumbago for twelve years, developed a very severe degree of kyphosis (Special plate, Fig. A) as a result of falling out of a buggy whilst home on leave. He was treated by massage, blistering, and immobilization for two and a half months, and then by thermal baths and massage for two months at Bath without any benefit. After this he was admitted to Seale Hayne Hospital, but resisted our ordinary methods of treatment by persuasion and re-education for five weeks. He refused to believe that his condition was curable, and disciplinary measures, such as the strictest isolation without receiving or sending letters, with nothing to read and nothing to smoke, and a limited and monotonous diet, only rendered him more stubborn and resistant to treatment. I therefore had a board made with a footpiece fixed at right angles to its lower end. He lay flat on the board with his feet on the footpiece without difficulty, as he had all along been able to lie down with his spine fully extended. The upper end of the board was then very slowly raised, the lower end resting on the floor (Fig. B). He was encouraged to remain lying on the board with his muscles relaxed and his arms lying loosely by his sides. The upper end of the board was raised higher and higher, until at length the board was perpendicular and the footpiece was resting on the floor. As he did not alter his position in relation to the board, he was now standing quite erect. He was told to walk off the footpiece, which he proceeded to do without bending his back (Fig. C), and he was delighted to find that at last he was cured by an absolute painless method after the complete failure of all previous attempts, many of which had caused him severe pain. There was no relapse, and the cure of his physical condition was immediately followed by a complete change in his mental outlook; instead of being morose, depressed, and disagreeable, he became cheerful, happy, and grateful for all that had been done for him.

The rapidity and painlessness of the cure in this case suggest that the same method should often be adopted for soldiers with bent backs. If it meets with equal success it would not only save the patient needless pain, but would save the medical officer both time and the expenditure of much physical energy in the more resistant cases. After the preliminary explanation has been given to the patient, the duration of treatment would rarely exceed a quarter of an hour.

Bent Back in Civil Life.

The following case, for the description of which I am indebted to Dr. W. Gordon and Mr. E. J. Domville of Exeter, shows that some, at any rate, of the cases of bent back in middle-aged and elderly people, which have hitherto been regarded as due to spondylitis deformans, and consequently as incurable, are really examples of hysterical postures.

Louisa C., aged 49, had been in bed all the winter with her "back bowed," her head bent on her chest, and her arms and legs firmly flexed. She had been unable to use her hands for twelve months. On July 3rd, 1918, she was admitted into the Devon and Exeter Hospital under Dr. Gordon and Mr. Domville. The next day, with gentle persuasion and firm pressure, the legs and arms were straightened, but the head remained flexed on the chest. On the third day the same treatment was applied to the head, and the neck was straightened. The patient then dressed herself and walked about the ward, and began to occupy herself with knitting. By August 12th her condition was still improving; she now helps in laying the table for the other patients, and is always knitting or doing other work, but she still has a tendency to keep her head bent forward, although she raises it well when she has her daily drill.

I understand that similar cases of bent back are not very rare in workmen after accidents, but they have always proved very resistant to treatment. Perhaps the use of the board described in this paper will in the future afford a rapid means of curing civilians as well as soldiers.

REFERENCES.

- ¹ Souques and Mdle. Rosanoff-Saloff: *Rev. Neur.*, xxii, 937, 1915.
² Laignel-Lavastine and P. Courbon: *Revue Générale de Pathologie de Guerre*, p. 1, Paris 1918. ³ J. A. Sicard: *Bull. et mém. de la Soc. Méd. des Hôp. de Paris*, xxxix, 582, 1915.

Some Remarks

ON THE

MORBID ANATOMY AND HISTOLOGY OF RHEUMATOID ARTHRITIS.*

[WITH SPECIAL PLATE.]

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THE following is a summary of a report giving a detailed description of the changes found in joints of patients suffering from that form of chronic arthritis at present recognized clinically as rheumatoid arthritis. The report referred to was submitted to the Medical Research Committee, which made a generous grant in aid of the work from the funds at their disposal.

Most of the specimens which furnished the material for the report were obtained during *post mortem* examination of over 2,000 joints of patients suffering from one or the other of the following forms of chronic arthritis—namely, rheumatoid arthritis, osteo-arthritis, chronic gout, or Charcot's disease. I am indebted to a large number of doctors in practice in Great Britain and Ireland for the clinical and pathological material from which this report was prepared, and I wish to express my gratitude to them for allowing me to conduct the necessary *post mortem* examinations. The anatomical and microscopical specimens prepared to demonstrate the various changes in such joints are preserved at the Cambridge Research Hospital, where they are accessible for inspection to any interested. The revised summary here given has been written in the form of categorical statements.

The term "rheumatoid arthritis" as at present used includes several forms of arthritis which are clearly due to different causes, although clinically they may show several points of similarity.

The crippling and deformity associated with rheumatoid arthritis, or what is taken as such, are largely of muscular origin, which may be (a) of the nature of an involuntary contraction brought about by pain referred to the joint of the crippled limb; (b) due to an involuntary muscular spasm caused by pain on movement of the damaged joint; (c) due to actual atrophy and shortening of some of the muscles connected with the diseased joint. This atrophy is usually associated with disuse and long-continued muscular spasm.

In other cases the deformity is due to changes in the joint itself, such as (a) distension of the capsule by an excess of synovial fluid; (b) dislocation of the bones of the articulation; (c) changes in the shape of the articular surfaces owing to formation of new bone or to erosion of the original.

Some joints which clinically appear to be damaged show very little morbid change on *post-mortem* examination, although symptoms of arthritis with crippling deformity have been present for many years.

Cases are observed in which the capsule of the joint has been distended for a long period by an excess of synovial fluid, accompanied by more or less deformity, but in which on *post-mortem* examination no marked changes are discovered. In some examples of this type the fluid ultimately diminishes. Fibrotic changes may then be present in the capsule, and the articular cartilages may have undergone fibrillation or atrophy.

A considerable proportion of the joints show distinct inflammatory changes in the synovial membrane, in the capsule, or in the bones of the articulation; in any joint

the articular cartilage may be also involved. These inflammatory lesions may be present in one or all of the above mentioned structures, and be either acute, subacute, or chronic.

In a few cases the processes are obviously of infective origin, and are associated with marked inflammatory changes in the synovial membrane and the formation of thick fleshy villi, and vascular adhesions. Microscopically the inflamed tissues show large collections of inflammatory cells and new capillaries. Erosion of the articular cartilage and bones may also be present.

The changes found in a joint affected with what is termed rheumatoid arthritis are usually of an inflammatory nature, but their severity and extent vary considerably in different cases and in different joints from the same case. The changes may be present in a part only of the articulation.

The inflammatory process may originate either in the synovial membrane, in the capsule, or in the superficial cancellous spaces of the epiphysis, or in all three of these structures.

The inflammatory process, if severe, is associated with proliferation of the connective tissue cells, the development of new blood vessels, the accumulation of leucocytes, and sometimes with the extravasation of red blood corpuscles. The inflammatory tissue may originate in the synovial membrane or in the capsule and invade the articular cartilage and bone, or lead to the formation of inflammatory adhesions in the joint cavity. This inflammatory tissue tends in the course of time to become organized and converted into fibrous tissue and may bring about fibrous ankylosis either between the adjacent surfaces of the capsule or between the cartilage, or even between the bones of the articulation if the original cartilage has been destroyed.

In some cases the arthritis is of a subacute type from the onset and the inflammatory changes, although often progressive, are not so marked. In this type the changes may originate in the synovial membrane (Fig. 1), the capsule or the superficial marrow spaces of the epiphysis, from any of which they may spread to the articular cartilage; the process leads to the formation of fibrosing tissue in the affected areas, and this, when present in the capsule, causes the latter to contract. The movements of the limb are in consequence restricted, and the articular cavity decreased in size. Fibrous adhesions also develop in these joints, and in some cases fibrous, cartilaginous (Fig. 6), or bony ankylosis.

The changes in the superficial marrow spaces lead to resorption or erosion of the osseous trabeculae, which may be associated with the invasion and replacement of the articular cartilage by the inflammatory tissue (Fig. 5).

Other joints show a slowly progressive inflammatory fibrosis of the capsule often associated with degenerative changes in the cartilage and proliferative changes in some of the superficial marrow spaces. In these joints areas of cartilage may be invaded, either superficially from the capsule, or from beneath from the superficial marrow spaces.

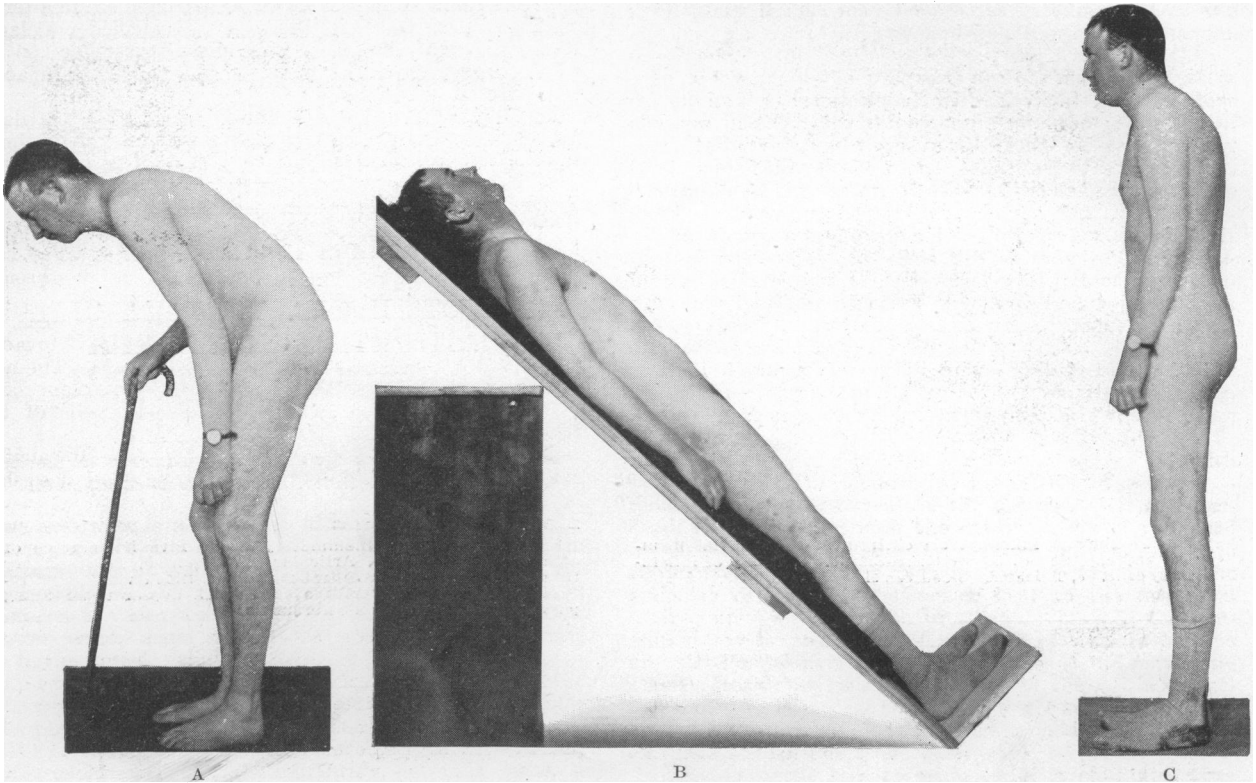
The inflammatory reaction of the marrow of the superficial cancellous spaces of the epiphysis may be of an acute, subacute, or chronic type. In any type the connective tissue cells of the marrow proliferate and new blood vessels form. In many specimens the new connective tissue cells are of stellate form. In other specimens the connective tissue cells appear more fibroblastic, especially such as be near the edges of the bone trabeculae, but in all cases these cells show a tendency to form adipose tissue as the inflammatory process subsides. In those cases where the superficial osseous trabeculae are eroded and the zone of calcified cartilage invaded, the connective tissue cells and vessels form a definitely organized fibrotic tissue, the cells of which do not show the same tendency to form adipose tissue.

In no instance has it been possible to demonstrate periarticular changes of an inflammatory nature around the affected joints, and it is doubtful if there is such a condition as periarticular rheumatoid arthritis.

The changes in the cartilage vary considerably in different joints from the same case, and even in the same joint.

The articular cartilage may show signs of atrophy accompanied by modifications in the staining reaction of the matrix.

* Read at a meeting of the Medical Society of London, October 28th, 1918.



Bent Back of Five Months' Duration. A. Before treatment. B. Under treatment with "back-board." C. After treatment.

MAJOR W. F. BROOK: VANGHETTI'S OPERATION.

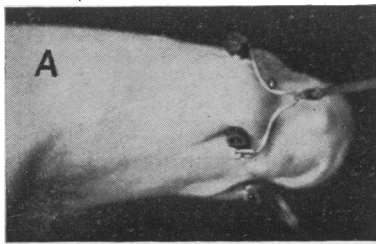


FIG. 1.

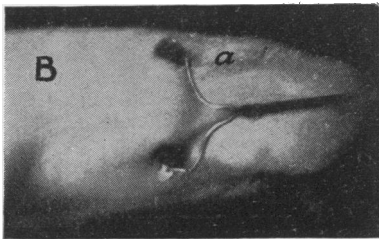


FIG. 2.

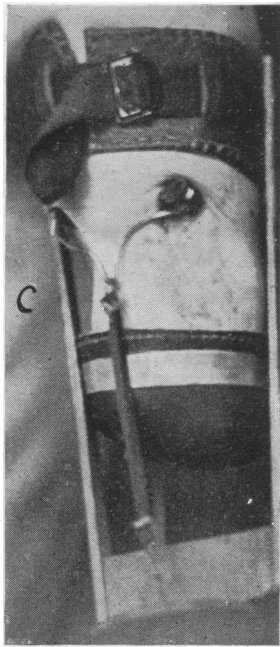


FIG. 3.

D. NOËL PATON, L. FINDLAY, A. WATSON: THE CAUSE OF RICKETS.



A



B

X-ray photographs of wrist-joints of A, pup kept in the country and free of rickets, and B, kept in laboratory and markedly rachitic.