

for this group is 71,383,800. In the 1,176 hospitals which have been accepted as approved there are 191,042 beds caring for approximately 3,820,840 patients with an estimated days' treatment of 57,312,600 for the year. During the survey work the visitors travelled approximately 75,000 miles. Follow-up letters from headquarters numbered over 3,500. In addition to all this thirty-four sectional meetings of the Clinical Congress of the American College of Surgeons were held in various parts of the United States and Canada. At each meeting an interesting two-day programme was provided. A considerable portion of this programme on each occasion was devoted to hospital standardization. These meetings throughout were largely attended and fruitful of good results. All the above indicates the opportunity the hospital standardization movement has for extending its beneficial influence.

### Reports of Cases.

#### AN UNUSUAL CASE OF FILARIASIS WITH POST-OPERATIVE TETANUS.

By R. W. CILENTO, M.D., B.S. (Adelaide),  
D.T.M. & H. (London),

Director Tropical Institute, Townsville;

AND

V. F. O'NEILL, M.B., Ch.M. (Sydney),  
Medical Superintendent, Charters Towers District Hospital.

#### Clinical History.

In May, 1923, Mrs. X.Y., aged thirty years, married, was sent to one of us (R.W.C.) for consultation owing to filariasis of the right leg of fifteen years' duration. The patient gave a history of the appearance of the disease during adolescence in Charters Towers, North Queensland. She had for some time suffered from typical filarial fever with continued enlargement of the leg after each exacerbation. These attacks had now ceased for some years. For five years, however, subsequent to the birth of a child she had suffered acutely with bearing-down pains, worse near the periods, and frequent backache. Coitus was extremely painful. Otherwise her health appeared good. There was no history of gonorrhoea and infection was denied, but a slight vaginal discharge had persisted for some time.

On examination the right leg showed a definite filarial enlargement. The foot was not included for it had been kept practically normal by the pressure of the shoe, as is commonly the case in these cases in Australia. Pelvic examination demonstrated a narrow elongated vagina. The cervix of the uterus, pointing forward, seemed irritated and had a laceration on the left side. The uterine appendages were tender to pressure, boggy and gave the impression of chronic salpingitis.

The whole of the symptoms and findings indicated the misplacement of the uterus and probably a chronic salpingitis as being the essential factors requiring treatment. Filariasis of the broad ligament was considered, but on account of the quiescence of the leg was deemed possible, but improbable. The patient was advised to return to Charters Towers for operation.

The patient did not present herself for operation until August 31, 1923. On that date she was operated upon at the Charters Towers District Hospital by one of us (V.F.O.N.) for retroversion of the uterus with chronic salpingitis. The abdomen was opened by a transverse incision through skin and subcutaneous tissues and a vertical incision through the rectus sheath and peritoneum.

The uterus was found in position of retroflexion with a large mass wormy to feel on the left hand side. On investigation a chronically thickened tube was traced over the summit of mass with the ovary enlarged and cystic in appearance. The mass consisted of dilated blood vessels and lymphatic varices with the anterior and posterior layers of broad ligament slightly thickened and much separated. The mass measured five centimetres long and three-fifths of a centimetre broad, gradually tapering off to the base of the broad ligament. The varicosities of the lymphatics varied in size from two millimetres to one and a quarter centimetre in diameter and on pricking exuded chylous fluid. The ovary was found to contain the same fluid. The lymphatics from the *corpus uteri* in the upper portion of the broad ligament seemed most affected as the lymphangiectasis was more pronounced in this region. Uterine lymphatic glands in the region of the uterus were enlarged, also the lumbar glands. Left salpingo-oophorectomy, a large wedge-shaped resection of the broad ligament and external shortening of the round ligaments was performed and the operation completed.

Twelve hours after the operation the patient developed an acute catarrhal bronchitis and included in the treatment for this complication was a linseed meal poultice applied to the back and front of the chest every four hours.

On September 2 it was noticed that portions of the linseed meal had become scattered through the bed-clothes and between the dressing and the wound, though broad strips of adhesive plaster were in position and had not been moved. The patient made an uneventful post-operative recovery and sutures were removed on the eighth day, September 7, 1923, the wound appearing healed by first intention without inflammatory reaction or exudate.

On the evening of the eighth day the patient had slight stiffness of the jaws, but otherwise felt well. It was considered that this was probably due to the holding forward of the jaw during the recovery stage of the anaesthesia. On the morning of the ninth day the patient showed signs of definite tetanus. Anti-tetanic serum was immediately injected, as shown in the accompanying table.

#### Progress Notes.

The progress on subsequent days was as follows:

On the first day, September 8, 1923, there was soreness of jaws, the wound was healed, cold sweating was present and 0.01 gramme (one-sixth grain) morphine was given.

On the second day, September 9, 1923, 28,500 units of anti-tetanic serum were given (subcutaneously 4,500 units, intra-muscularly 9,000, intravenously 12,000, intra-theccally 3,000). The spinal fluid was clear and under slightly increased pressure. Five injections of 0.01 gramme morphine were given and the following mixture was given by the rectum: Chlorotone 1.8 grammes (thirty grains), potassium bromide 2.4 grammes (forty grains), chloral 1.2 grammes (twenty grains). There was trismus as well as *risus sardonius*, orthotonus, twitchings of the mouth, mental anxiety, cold sweats, adduction of the left leg with painful spasm on eighteen occasions. There was generalized hypertonus. The general condition was much relieved after the administration of the serum.

On the third day, September 10, 1923, a total of 50,000 units was given (subcutaneously 10,000, intra-muscularly 10,000, intravenously 20,000, intra-theccally 10,000). The spinal fluid was slightly turbid and definitely under increased pressure. The fluid was sterile to culture and the turbidity was due to polymorpho-nuclear leucocytes. Three injections of 0.01 gramme morphine were given and the rectal injection of chlorotone in accordance with the above prescription was continued. The wound opened and about 30 cubic centimetres (an ounce) of purulent discharge appeared. It was swabbed with pure carbolic acid followed by spirit. The trismus was more pronounced, opisthotonus, mental irritability, twitchings, generalized spasms on ten occasions, generalized hypertonus and dysphagia were present. The general condition was much relieved after the administration of serum. Painful starts occurred in the leg about every fifteen minutes.

On the fourth day, September 11, 1923, 40,000 units of antitetanic serum were given (subcutaneously 10,000,

intra-muscularly 20,000, intra-theccally 10,000). The spinal fluid was very turbid and definitely under increased pressure. It was sterile to culture and showed a great increase of polymorpho-nuclear leucocytes. Two injections of morphine 0.015 gramme (grain one-quarter) were given and the rectal injections as above. The wound was irrigated half-hourly with Dakin's solution and there was less discharge. The trismus was less marked, there was no opisthotonus, the patient was mentally calm, three generalized spasms only occurred, hypertonus was lessened, there was no dysphagia and the patient felt better.

On the fifth day, September 12, 1923, 20,000 units of anti-tetanic serum were given (10,000 intravenously, 10,000 intra-theccally). The spinal fluid was slightly turbid, there was slight increase of pressure, the fluid sterile and showed definite increase of polymorpho-nuclear leucocytes. Two injections were given of morphine 0.015 gramme (grain one-quarter) and the rectal injection as before. The irrigation of the wound was continued, the discharge lessened. There was a generalized subsidence of symptoms except a pain in the leg and occasional startings. An urticarial rash appeared on the face and extremities.

On the sixth day, September 13, 1923, 43,500 units of serum were given (subcutaneously 3,000, intra-muscularly 24,000, intravenously 7,500, intra-theccally 9,000). The cerebro-spinal fluid was less turbid and the pressure was reduced. One injection of morphine was given and the rectal injection of chloretone used as before. Irrigation with Dakin's solution was continued, the general condition was unchanged. The patient's condition under chloroform during the intra-theccal injection was unsatisfactory.

On the seventh day, September 14, 1923, 36,000 units of serum were administered (18,000 intra-muscularly and 18,000 intravenously). One injection of morphine and two rectal injections of chloretone were given. Irrigation with Dakin's solution was continued, there being from this date no discharge. Trismus and *risus sardonius* were present to a slight degree. Painful leg startings were still apparent. Serum was administered under "Apothesine"; no spasm was provoked.

On the eighth day, September 15, 1923, 13,000 units of serum were given (4,500 intra-muscularly and 9,000 intra-theccally). The spinal fluid was practically normal. Morphine 0.015 gramme (grain one-quarter) was given and one hundred and twenty cubic centimetres (four ounces) of brandy. The rectal injection was omitted. There were trismus and frequent painful starts of the legs; the rash was still apparent.

On the ninth day, September 16, 1923, no serum was administered. Four tablets of "Dial Ciba" were given and one hundred and twenty cubic centimetres (four ounces) of brandy. The patient was very drowsy and showed Cheyne Stokes respiration. Chloretone poisoning was suspected. A high rectal enema was given and camphor and oil were administered hypodermically. Black coffee was also given.

On the tenth day, September 17, 1923, two tablets of "Dial Ciba" and one hundred and twenty cubic centimetres (four ounces) of brandy were given. The half-hourly irrigation with Dakin's solution was reduced to two hourly irrigation. The patient was brighter, the painful starts were less frequent and orthotonus was diminished.

On the eleventh day, September 18, 1923, two tablets of "Dial Ciba" and one hundred and twenty cubic centimetres of brandy were given and Dakin's solution was used as on the tenth day. Trismus disappeared. There was no *risus sardonius*, hypertonus was disappearing, the patient had voluntary movement of the leg.

On the twelfth day, September 19, 1923, no treatment was administered except the two hourly irrigation with Dakin's solution. The patient was able to open the mouth about three-quarter of the normal extent. No hypertonus was present except in the leg which was improving.

On the thirteenth day, September 20, 1923, the leg was still stiff and soreness was present in the jaws.

On the fourteenth day, September 21, 1923, the leg was still stiff and soreness was present in the jaws.

On the fifteenth day, September 22, 1923, the leg was stiff, slightly adducted and voluntary movement was not so painful. Soreness was present in the jaws.

On the sixteenth day, September 23, 1923, the leg was still hypertonic, voluntary movements were freer, the

mouth could be opened for five-sixths of its normal extent and soreness was present in the jaws.

On the seventeenth day, September 24, 1923, the leg was improving and soreness in the jaw was diminishing.

On the twentieth day, September 27, 1923, the patient was walking and felt excellent except for weakness in the back.

On the twenty-fifth day, October 2, 1923, the patient was quite recovered, slight soreness was present in the jaws on movement.

On the twenty-eighth day, October 5, 1923, the patient was quite cured.

#### Comment.

The total quantity of anti-tetanic serum given was 231,000 units. The serum was obtained from the stock of Commonwealth Serum Laboratories' products held at the Australian Institute of Tropical Medicine, excepting the first 28,500 units which were held at the hospital.

The focus of infection was in the left extremity of the subcutaneous layer of the wound, where a small puffy swelling appeared on September 10, the eleventh day after the operation. All suture material could be absolutely vouched for. The question arises as to whether the infection was air-borne or contained in the linseed meal. As regards the effect of serum in this case, its efficiency was undoubted and there was evidence of a definite relation in the subsidence of all active phases of the disease for about eighteen hours following its use.

On all occasions serum was given at 9.30 p.m. under chloroform, excepting on the seventh and eighth day, when owing to the weakness of the patient and her general behaviour under chloroform anaesthesia "Apothesine" was used locally. The rectal injection of chloretone, potassium bromide and chloral was given in olive oil and the morphine was injected once or twice to ensure rest. The improvement was always manifested in the mornings and continued throughout the day until 5.30 p.m. Thence onward neither the morphine nor the rectal injection appeared to ease the pain and, although the patient became drowsy, the orthotonus and trismus and the painful spasms were uninfluenced by the hypnotics exhibited. Within twelve hours of the exhibition of serum there was always a definite muscular relaxation, a diminution of the trismus and the temporary disappearance of the *risus sardonius*.

Best results were obtained when the drug was administered by the intra-theccal route. Intravenous administration held next place, though the improvement which resulted from this method, was more transient except where it was used in conjunction with the intra-theccal method.

While admitting that the hypnotics cloud the picture it is believed that in the case under discussion they quietened the patient and reduced the reflex excitability though they did not in any way influence the hypertonus or orthotonus.

A handicap which was noted, was the absence of concentrated serum and where massive doses are indicated this is a serious disadvantage. The experience gained in this case seems to indicate the desirability of using massive doses of the concentrated serum at the earliest possible date, for example, a daily average of 60,000 to 100,000 units for the first three days (20,000 intravenously, 20,000 intra-theccally, 20,000 intra-muscularly) with subsequent doses in accordance with indications.

In view of the fact that the benefits of the intravenous route have been debated, it is interesting to note that on the seventh day, 18,000 units given intra-muscularly and 18,000 given intravenously produced a decided improvement, whereas for the previous twelve hours rectal injections of chloretone and hypodermic injections of morphine had been ineffective. As regards the intra-muscular route, the rate of absorption is definitely slower and approximates twenty-four hours. The improvement was manifested in about twelve hours and diminished "palpably" in eighteen hours after the injection.

#### Points of Interest.

The points of interest in this particular case are:

1. The interesting condition of filariasis in the broad ligament.

2. The suggestion whether the vaginal discharge was suggestive of lymphorrhagia.

3. The fact that this is the first case of tetanus in over two thousand major operations performed in the Charters Towers District Hospital during four and a half years under identical conditions and technique.

4. That the case was one of four performed the same day and one of eighteen performed the same week all others of which had an uneventful post-operative course.

5. That this was the only case on which linseed meal was used and that the linseed meal was definitely traced to a shipment from India.

Linseed, of course, is subject to extensive and detrimental adulterations, not only from careless harvesting and cleaning, whereby seeds of the flax dodder and other weeds and grasses are mixed with it, but also from the direct admixture of cheaper and inferior oil seeds such as wild grape, mustard, sesame, poppy *et cetera*, the latter adulterants being known in the trade under the generic name of "buffum." Taken into consideration with the fact that the seed came direct from India where tetanus is rife and where the conditions of its preparation are extremely insanitary, it is regarded as probable that this was the source of infection.

#### AN UNUSUAL CASE OF FUNCTIONAL PARALYSIS.

By A. HOLMES A COURT, M.D.  
(Sydney), M.R.C.P.  
(London),

Honorary Physician, Sydney Hospital.

THE case herein recorded is of unusual clinical interest as a vivid illustration of functional disability engrafted on a basis of organic disease. After a bed-ridden existence extending over a period of ten years, a few weeks in hospital enabled the patient to recover the power of walking and altered her condition to such an extraordinary degree that a detailed report of the illness appears worthy of record.

#### Clinical History.

V.G., female, *ætatis* thirty-four years, was admitted to hospital on May 18, 1923, complaining of loss of power in lower limbs and pain in right hip and left knee. The history was devoid of interest until the age of twenty-two years. Thence after four attacks of "pleurisy" (two of which were accompanied by effusion) the patient developed a persistent cough with scanty expectoration. Soon after this pain in right renal region appeared with frequency of micturition and pyuria. The patient was admitted to an hospital where the diagnosis of renal tuberculosis was made. Further investiga-

tion revealed physical signs of involvement of the right lung and the patient was considered unfit for operation and was sent to Waterfall Sanatorium. Here she is said to have remained for a period of nearly four and a half years, at the end of which time she showed some improvement and was taken home where she remained in bed. The history of the next six years is indefinite, but the essential fact is that she remained in bed continuously. The tuberculous process in the lungs had apparently

undergone spontaneous cure by fibrosis and the renal lesion had become inactive during this period. Foot-drop developed in both legs together with pain and stiffness of the right hip and partial fibrous ankylosis of the left knee in a semi-flexed position. On examination on May 5, 1924 (nearly eleven years from the onset of illness), the patient did not appear grievously ill. Signs of an arrested tuberculous lesion were demonstrable at the upper lobe of the right lung. The cardio-vascular system appeared healthy. There was observed some tenderness on deep palpation in the right iliac region and a mass could be felt in the position of the right kidney. The specific gravity of the urine was 1030. The urine was acid in reaction and contained neither albumin nor sugar. Microscopical examination revealed the presence of occasional pus cells and one granular cast.

Movement at the right hip was restricted and caused pain. The left knee was semi-flexed and fixed by fibrous ankylosis. Foot-drop was present in both lower limbs, particularly on the left side in which the foot was in the position of *pes cavus* (see Figures I. and II.) Muscular wasting was present, the right gluteal region, extensors of thighs and dorsiflexor muscles of both ankles were the sites of well marked atrophic change. No gross organic change was detected on the examination of the nervous system. Skiagrams showed "osteo-arthritis" of right hip joint and rarefaction of bones of left knee, the latter changes probably resulting from disease. The patient was afebrile and otherwise apparently normal.

Under anaesthesia the fibrous adhesions of left knee were readily broken down and the limb straightened. The right hip joint was examined and movement was found restricted to a minor degree only. The left knee

was maintained in position of extension by splinting and the foot-drop gradually corrected by plaster. Massage and daily movement were applied. Treatment by psychotherapy in its simplest form of logical explanation was instituted, the patient being made to understand the sequence of events which had produced her disability and being encouraged to concentrate on muscular re-



FIGURE I.  
Showing deformity produced in feet.



FIGURE II.  
Showing deformity produced in feet.

education. The daily administration of morphine which had been rendered necessary for a long period by the pain in the hip and knee was gradually discontinued.

With the intelligent cooperation of the patient, recovery proceeded rapidly, so that at the end of four months she was able to walk well with a stick and her general condition of health was excellent.

The actual disability which resulted from osteo-arthritis of the right hip remained only as a minor impediment to walking. The accompanying illustrations show clearly the condition of muscular wasting with resulting deformity.

#### Comment.

The case serves to demonstrate the degree to which functional disability may persist, long after the original organic disease has become arrested.

Considering that the patient had been practically bed-ridden for ten years, her immediate cooperation and her acceptance of the logical explanation of her inability to walk was truly remarkable, lacking as there was any atmosphere of religious fanaticism or similar psychic stimulus!

#### Acknowledgement.

My indebtedness is due to Dr. L. Bamber, of Lithgow, who, having recognized the co-existence of functional with organic disease, referred the patient to hospital.

## Reviews.

### PRACTICAL ANATOMY.

THAT a second edition of Professor R. J. A. Berry's "Practical Anatomy" should be called for within such a comparatively short time is evidence of the success which has attended its publication and must be a source of satisfaction to the author.<sup>1</sup> The work is one of considerable magnitude and is one of the largest and most important in the list of Australian text-books in the medical curriculum.

There are two schools of thought in regard to the teaching of anatomy. The supporters of the older method hold that this science should be taught in its abstract form on the basis of structure and relationship. It is possible for a teacher of anatomy to hold the attention of his students and even fill some of them with enthusiasm. This subject need be neither dry nor obscure, but its teaching must necessarily be more difficult to assimilate because the student has no knowledge of the significance of these purely morphological facts. Professor Berry has adopted the method which has been frequently advocated in the columns of this journal. He has combined clinical considerations with structural details. The application of a fundamental science is all important and the teaching given to a medical student should be planned from the outset with this object in view. Not only is this combination the correct method in that it gives the student the proper outlook, but it renders facts more easy of assimilation. For instance, the wide range of mobility which is possible at the shoulder joint, the arrangement of muscles and tendons around it and the size of the articular capsule assume quite a different significance when attention is drawn, as is done by Professor Berry, to the liability of the shoulder joint to dislocation and to the fact that the position of the branches of the brachial plexus exposes them to the possibility of injury in this accident. Throughout the book the description of the anatomical structure of a part generally concludes with a short account of practical application to clinical work.

It would perhaps be better if the clinical portions of the work were printed in a smaller or distinctive type. This would facilitate reference by the post-graduate student and practitioner.

In the first volume Professor Berry deals with the superior and inferior extremities. Volume II. is devoted to the thorax and abdomen and the first part of Volume III. to the head, neck and the organs of special sense. The nervous system is dealt with in the second part of Volume III. The treatment of the subject in this volume agrees with that adopted for other systems in that clinical and physiological facts are incorporated with descriptive anatomy. This volume is more than a guide to dissection and the directions indicate that microscopical sections must also be studied to follow the text. Almost the whole of the first fourteen pages are devoted to the minute structure of the neurone including a summary of the methods employed to trace fibre-tracts. This is, of course, necessary to render intelligible the detailed structure of the nervous system subsequently described. In consequence this work serves to emphasize the recent tendency to convert manuals of practical anatomy into larger works of reference. The student is apt therefore to neglect study of the systematic treatises upon the subject. The practitioners and students in their later years of medicine will find such a full treatment of the subject accompanied by directions for dissection useful.

The description of the structure of the spinal cord involves reference, often somewhat of a detailed character, to parts of the brain-stem and cerebral hemisphere not yet dissected by the student. The author is at his best as a clear teacher in the description of various parts of the brain-stem. Here anatomical, physiological and clinical facts are welded together in convincing fashion. Evolutionary data are also handled to advantage. The statements are on the whole didactic. While this is justifiable in such a book and indeed is advantageous in the purely descriptive part of the work, it leads to difficulties when physiological and clinical material are incorporated owing to the incompleteness of knowledge and the rapid changes which take place in ideas upon the subject. In this connexion there is, in this volume, too great a tendency to quote extracts from current text-books rather than from original articles. This tendency must impress upon the student the view that the former works are the sources in which he must ultimately seek authority for his knowledge. In this way views which are already modified have crept in, as on page 33, where Campbell Thompson's "Diseases of the Nervous System" is quoted in support of Bastion's view that flaccid paralysis follows complete transverse lesions of the spinal cord, no mention being made that this is only a passing phase in the symptomatology of such a condition. The explanation of the Argyll-Robertson pupil (page 109) is not made sufficiently clear to the reader and more convincing alternative explanations have been put forward. It is unfortunate that the autonomic nervous system is not dealt with till near the end of the book, as an understanding of this system is essential to the reading of the description of the spinal and cerebral nerves. Only by incorporating the description early in the text will the tendency on the part of the reader to regard the autonomic as an independent system be overcome.

It is interesting to find the original work of Berry and Porteus (page 170 *et sequela*) incorporated in the book.

The nomenclature throughout the work is based on that of the Basle International Commission. The author states in his preface that this nomenclature is in many respects out of date, especially as far as the nervous system is concerned. In the latter system it has been used as a basis only. The Latin names have been Anglicised and when the Basle anatomical nomenclature differs from that formerly used, both names have been given.

There are sixty-seven plates which are reproductions on a reduced scale of Ellis and Ford's well-known anatomical pictures. Unfortunately some of these have suffered in the reduction and they are not reproduced in the colours which make the originals so striking. The numerals and letters on some of the plates are not always legible. This is more than compensated for by the fact that throughout

<sup>1</sup>"Practical Anatomy," by Richard J. A. Berry, M.D. (Edin.), M.D. (Melb.), F.R.S.E., F.R.C.S. (Edin.); Second Revised and Illustrated Edition, 1922. Melbourne, Sydney, Adelaide and Brisbane: Robertson & Mullen's, Limited; Demy 8vo., Volume I.: Superior and Inferior Extremities, pp. 471, with 20 plates. Price: 22s. 6d. Volume II.: Thorax and Abdomen, pp. 430, with 16 plates. Price: 22s. 6d. Volume III.: Part I., Head and Neck and Organs of Special Sense, pp. 350, with 10 plates. Price: 20s. Part II.: Central Nervous System, pp. 256, with 22 figures. Price: 17s. 6d.