OBSERVATIONS ON THE RECENT POLIOMYELITIS EPIDEMIC IN EAST LONDON.

By MISS PADDY CHATTERTON.

STATISTICS held by the Medical Officer of Health reveal that, in the 13 years preceding 1956, a total of 64 cases of poliomyelitis were notified in the East London area. This number was made up of 56 Europeans, 4 Natives, 3 Coloureds and 1 Asiatic.

In 1956, 2 European cases were notified before March 17th, after which date the numbers rose steadily to reach a total by the end of November of 64 Europeans, 167 Natives, 11 Coloureds and 2 Asiatics. In the European cases the ages ranged from 1 to 45 years, and in the non-Europeans the oldest patient was 9 years of age. In the non-European total of 180 cases, 137 were under the age of two years. These figures are in direct contrast to the figures quoted in a World Health Organisation Monograph issued in 1955 which states that the maximum attack rate is between the ages of 7—15 years, and even 15—25 years.

During 1956 there were 6 deaths among European cases, 14 deaths among non-European cases. Of the European cases, 5 died of respiratory failure and the 6th was a bulbar case. Of the non-European cases, 7 died of respiratory, failure and the others of pneumonia, some with underlying tuberculosis; 1 died of gastro-enteritis.

Of the types of cases, there were 2 pure bulbar, the second having made a complete recovery; 2 with pure facial paralysis; 2 with facial and limb paralysis, one having slight bulbar symptoms. The remainder of the paralytic cases suffered paralysis of one or more limbs in varying degrees of severity. The number of cases left with *extensive* paralysis is remarkably small in comparison with the great numbers contracting the disease.

The proportion of non-paralytic cases admitted to hospital was far greater among the Europeans than the non-Europeans. It is felt however that there were a large number of non-European cases, both paralytic and non-paralytic, which were never brought to the notice of a doctor, as several cases have since attended Orthopaedic Clinics, obviously having had poliomyelitis. The actual numbers therefore probably greatly exceed those quoted above.

The virus was isolated by Dr. Gear of the S.A. Poliomyelitis Research Foundation as being TYPE 1 VIRUS.

During April it became increasingly evident that the incidence of poliomyelitis in the area was reaching epidemic proportions. The Isolation Hospital has a normal capacity of 12 European and 8 non-European infectious diseases beds, in addition to the tuberculosis beds, which number close on 100. At this time the hospital was becoming crowded to capacity, especially the non-European section, where one whole block was given over to poliomyelitis patients, and two TB wards and a long enclosed verandah were cleared to accomodate a host of cots. As admissions continued at the rate of 1—4 cases a day (on one day there were 13 admissions), extra cots, mattresses, blankets, napkins, etc., had to be ordered, food supplies were increased, and the laundry problems with so many sick children were quite enormous. Extra trained and untrained staff were engaged by the Matron, who also had the responsibility of maintaining the rest of the hospital in good order.

Dr. van Heerden, deputy M.O.H. and Superintendent of the Isolation Hospital, and Dr. MacIldowie, Senior Medical Officer in charge of the Location Dispensary, who later assisted him fulltime, were on duty for exhaustingly long hours, examining and writing up each new case, keeping a check on those already in, many of whom were very ill, and discharging others with a full clinical report on the 21st day. Their trials in deciding on the stage at which to put a patient with respiratory failure into the iron lung, or when to do a tracheotomy on a bulbar case, and coping with the complications of pneumonia, tuberculosis, measles, diarrhoea, skin infections, etc., will fill many pages in their medical journal when they give their final report.

Up to this time, the question of physiotherapy treatment for the poliomyelitis patients in the Isolation Hospital had been discussed, but no arrangements had been made. When, on Saturday, 28th April, it was obvious that we were in the throes of an epidemic, I was asked by the Medical Officer of Health if I would undertake the physiotherapy care in the Isolation Hospital. In accepting this request, I felt quite horrified at what I had undertaken, but before I had had time to think much, I was in the thick of it too.

At 2 p.m. that afternoon, Dr. MacIldowie and I, accompanied by the Matron, met at the hospital to survey the situation. We examined every patient, making notes as we went, finishing at 6.30 p.m. Later in the evening we discussed the situation with Dr. van Heerden.

Next morning I made a resumé of our findings in order to decide upon a plan of action. In the non-European wards we found that there were over 50 patients, the oldest nine years and most under the age of 2 years, all in good condition, though many were very chesty. Every case was well examined and carefully written up. Nursing care consisted of feeding, cleaning, charting, etc., and attention to any complications. Most children had one or both legs paralysed, only two had arms affected, some had only slight weakness and there were a few non-paralytic. Most had some degree of neck rigidity, some were very rigid, and painful in the lumbar spine with considerable spasm in the limbs. Most children were lying with hips abducted and outwardly rotated, and feet dropped—an attempt at passive adduction, internal rotation and flexion of the hips, and dorsiflexion of the feet, was invariably painful, sometimes quite excruciating. Older children seemed to be in more pain than younger ones. The beds and cots varied, but most "dunked" in the middle, except the new ones. All the children had pillows under their heads and shoulders, and were covered by army blankets, doubled. There was no attempt at supporting the paralysed limbs—no one had time anyway! There were 8 European patients where the situation was similar, though better.

From these findings it was possible to decide upon the line of treatment to be adopted. In the acute stage of the disease the important considerations are:—

(1) Provision of complete rest.
(2) Relief of painful muscle spasm.
(3) Prevention of contracture.

It was obvious that boards must be put under all the mattresses to support the children's backs, that the large pillows must be removed, (except where there were chest complications), that every bed required a foot-board to keep the heavy bedclothes off the child's feet and that sandbags were needed to support the painful limbs. The question of hot-packs was considered but discarded in view of the tremendous amount of work this would entail. It was agreed that careful positioning and passive movements were all that could be considered at present. As every member of the staff was fully occupied in his or her own capacity, I had to cope with the physiotherapy alone. Therefore I had to decide upon a workable plan which,

though not perfect by any means, was at least a definite effort towards each of the three main aims of treatment.

So, on Monday morning 30th April, I saw the Medical Officer of Health, Dr. Sinclair Smith, who gave me carte blanche to go ahead and order whatever I thought necessary. Due to the kindly assistance of many friends, local firms and the hospital staff, all the requirements were soon assembled at the hospital. The boards were put under the mattresses, and the footboards placed in position. The footboards for beds were 21″ high × 18″ wide with 3″ square blocks at each side which kept the board 3″ away from the end of the mattress, thus allowing a gap for the patient's heels when lying supine, or forefoot when lying prone. In placing the footboards in the cots, (18″ × 15″ with 3″ blocks), it was soon found that restless little children pulled them over, and that untrained African nurses found it easier to tuck the blankets in flat than put them over the footboards! So the footboards were turned round with the 3″ blocks against the end of the cot, and the board against the mattress, thus making it easy for the end of the blanket to hang down over the end of the footboard within the cot. Two thin hardboard feet tacked onto the footboard lay under the mattress and kept the board firm. Dozens of small bunny blankets were ordered to tuck round the children's legs to keep them warm. With the bedboards and foot boards, army and bunny blankets in position, and no pillows except where necessary, adequate provision was then made for complete rest.

I then started positioning each child who had painful muscle spasm by endeavouring to place his body and limbs in the best possible anatomical position which yet was compatible with comfort. The tiny children, all with nappies, were difficult to control, but by placing the feet as near as possible to the footboard, and placing a sandbag under both knees, and another from hip to knee down the outer side of each leg, a reasonably comfortable and well-supported position was achieved. The nurses were encouraged to turn these children on their tummies at intervals. Attempts at placing painful arms in a position of abduction and slight outward rotation was seldom satisfactorily achieved with the native children, although all positioning and changing of positions was achieved with the European patients. Older children and adults were naturally co-operative in maintaining good positions.

The native children were so small, the bulk of the African nurses were untrained and the numbers of patients continued to increase so rapidly, that the positioning of these children was a perpetual headache to me. It was not infrequent for Dr. van Heerden to discover a small mite, apparently with no pain or paralysis, sitting on a pile of sandbags in his cot, or using one as a weapon, whilst in the next cot a little soul lay whimpering in pain with his legs completely unsupported. However, we gradually got the nurses trained, but it required much persistence and a sense of humour.

With each child I carried out as full a range of passive movements as was possible. Where there was painful spasm it became obvious that harsh or full movements increased the pain, and these movements therefore had to be done very gently, taking care not to stretch the muscles in spasm. With the great numbers of patients it was impossible to give the passive movements more than once a day, and also impossible under the circumstances to train the African nurses to give the passive movements. Most of the children had to have their nappies changed so frequently that that in itself was a form of passive movement!

I soon realised that I was unable to remember the individual patients, their cots were continually being changed, and in view of the tremendous numbers, I had to work fast and could not spend time re-assessing each patient each day. So, Physiotherapy Forms were roneoed and one was placed in each child's chart. I examined each child as soon after admission as was possible, making notes of the range of passive movements, amount of active movement, and presence of neck rigidity, back spasm and spasm or tightness in individual muscles, noting also the requirements of each individual child. Every few days I added progress notes. By this means I was able each day to glance quickly at the form and see what was required. At the height of the epidemic there were over 90 patients requiring daily attention.

TREATMENT IN WARD BATH.

The main thing that worried me all along was how to cope with spasm and tightness of the calf muscles, leading to contracture of the Tendo Achilles—it seemed so bad to send a patient out of the Isolation Hospital with a tightness of the Tendo Achilles—so I put some of the children into boots, connected at the heel by a bar, which kept the feet vertical and corrected the outward rotation of the hips. This certainly did to a large extent prevent actual contractures of the Tendo Achilles, but I soon discarded this practice as I became convinced that any posture in which the child is fixed is uncomfortable, and distressing to the child, and does little to relieve the painful muscle spasm. Splints were never used at any time.

Up to this stage I was still learning a considerable amount about poliomyelitis—and changing my ideas almost daily! I wrote to physiotherapists in this country and overseas for advice, I read every book I could lay my hands on, and talked a great deal with local doctors and physiotherapists. Dr. van Heerden and Dr. MacIldowie were always encouraging and helpful, and tolerant of my changing ideas, and the conclusions to which we came finally were the result of our own personal observations. I felt the responsibility of my task most acutely, and apart from being intensely interested in the work, I was anxious to achieve the most useful effects under circumstances which were far from ideal.

As the days progressed, more and more cases were admitted, and one had the opportunity of witnessing each child through the whole course of the acute stage of the disease. I became more and more obsessed with the idea that the only thing that really mattered as far as the physiotherapist was concerned in the acute stage of the disease was RELIEF OF PAINFUL MUSCLE SPASM. Spasm led to tightness, tightness to contracture, and contracture to deformity. The responsibility of the physiotherapist in treatment of poliomyelitis patients is, notwithstanding the damage done to the nerve cells by the virus itself, to rehabilitate the patient as fully as possible, without deformity.

Hot packing was still impossible, I tried radiant heat and even gentle massage on some patients—but nothing really seemed to *relieve* the painful spasm. Then we decided to put one little girl, whose temperature had just subsided, and was in tremendous pain and terrified of being touched, in a bath of warm water. It worked like a charm. Her mental and physical tension seemed soothed at once, and as we continued this daily, she was gradually encouraged to move a little in the water, sit up, turn over on her tummy, and before she left the Isolation Hospital she even wanted to stand.

Warm baths daily for all patients with painful spasm in back or limbs then became the order of the day. The patient was given confidence by lying in the water with his head supported in a sling, which was suspended from the framework of a bed-table, the wooden tray having been removed. This frame could easily be moved forward, back, from side to side, as the occasion demanded. We frequently had two children in the bath together, and they loved it. It took a little while to make this daily bath a routine procedure among the great numbers of native patients, but even that was achieved in time, with great co-operation from the native staff. There were no ill effects from this procedure, which was only commenced after the patient's temperature had become stabilised.

I found that, by giving gentle passive movements in the water, by playing games and encouraging active movements in the water, the spasm in every muscle seemed to relax. I no longer worried about contractures in the Tendo Achilles. With the encouragement of active dorsiflexion where this was possible, or assistance where it was not, the muscle gradually resumed its normal length without causing pain to the patient or harmful stretch to the muscle. The same was true of every muscle group. Bending the knees to the chest, singly or together, actively or assisted, aided back spasm, as also did a favourite game—sitting up and kissing the knees when flexed! Hamstring spasm was eased by a gradual effort to sit up and later to straighten the knees, all movements performed gently, with assistance, as a game.

As the children continued to improve, and wanted to move, we used to take them from their cots and lie them together on a rug with their toys in the sun. In no time these little black bodies were turning over, or crawling, or attempting to walk. We kept a very special eye on those to whom such movement would be harmful, and sitting up, crawling and walking were prevented in some, but definitely encouraged in others. In this way, many children were discharged home on the 21st day, quite fit. Severely paralysed patients and those with much spasm were naturally left in their beds. The children were far happier for this little play-time, and under constant observation they came to no harm at all. In the closing days of the epidemic, when everyone had more time and a great affection for these little mites, they enjoyed it, and it definitely helped their recovery, in that cases with slight back spasm seemed to loosen up much quicker than if they had been left lying in their beds all day.

It was interesting to note that most patient's temperatures had settled by the end of the first week, though some showed a slight rise during the second week. In many cases there was a spread of paralysis after admission, but seldom any spread in paralysis after the first week. In some cases, a flaccid limb on admission regained full function during the Isolation period. The relation between spasm and flaccidity was often most marked—where there was complete paralysis of the left leg, there was invariably very acute back spasm, more marked on the left side. As the back spasm improved, so very often, a certain amount of power, sometimes full power, returned to the leg. In some cases where the spasm was so acute as to give the whole body a board-like stiffness, an almost full recovery has been made with very little residual weakness, in a remarkably short time.

I had always been aware of the acute illness of poliomyelitis, but it is not until one witnesses an epidemic in the acute stage that one becomes fully aware of the inadequacy of medical science in treating poliomyelitis, and of the vital necessity of good nursing and physiotherapy care in alleviating the patient's suffering. This care in the acute stage influences considerably the patient's eventual recovery, and also his mental outlook. A young child usually does not even question what his illness is, but he is miserable and in pain, which is aggravated by every attempt at movement—he must feel terror at finding that he is totally unable to move one or more limbs—he cannot lie comfortably and he is amongst a whole group of complete strangers, all clad in white. It must be a terrifying experience in a young life which has probably always been surrounded by love and security. To an adult the shock of the full realisation of his predicament is an equally terrifying experience as to him his whole future is suddenly shattered—the dreaded word poliomyelitis now applies to him—apart from being ill, he is worried and insecure.

The physical and mental stress in the three weeks isolation period in hospital is a tremendous psychological experience in the patient's life, and when he is transferred to the general hospital, or home, he has undergone a change, which must be accepted by the staff and relations who are to care for him Their understanding, kindness and patience are essential in rebuilding the patient's confidence in himself and in his future. This was particularly noticeable in the European adults.

As these patients left the Isolation Hospital, most were admitted to the orthopaedic wards of the Frere Hospital. From here the majority of the native patients went to the Woodbrook Convalescent Home, an after-care home established and equipped at short notice to cope with the victims of the epidemic. Native patients who were apparently fit at the end of their isolation period were discharged home, to return at intervals to be examined at the Orthopaedic Outpatient's Clinic. Many European patients were discharged home, some quite fit, others to continue treatment with private practitioners at their rooms or in the patient's own home. Every available physiotherapist in East London has come forward to help in this great work—it has been most rewarding, and I feel sure that we have all learned a great deal, but the more one deals with these patients the more one realises how much there still is for us to know of this dread disease.

In the after-care of these patients I feel that the aims of the physiotherapist should be:—

(1) Elimination of "tightness" in every muscle.
(2) Restoration of as full muscle function as possible.
(3) Establishment of good posture despite muscle imbalances.

Passive movements should be continued, giving a very slight stretch to the tightened muscles. Exercises in water are invaluable in giving the child a sense of freedom, and thereby encouraging active movement. This free active movement, as well as restoring muscle function, is the easiest, most enjoyable and most effective way of eliminating tightness, and especially if the passive movements and gentle stretchings are done by the physiotherapist in the water as well.

Re-education in water, free exercises, exercises in slings using springs or weights for resistance, all contribute towards re-educating the strength of individual muscles, but the encouragement of group action of muscles is by far the most useful method of re-education. Working a muscle to the point of fatigue is in no way harmful, but care must be taken not to work the muscle beyond this point.

Early ambulation I believe to be desirable, when possible. From the start, in adopting erect posture—in sitting, standing and walking—great attention must be paid by the physiotherapist to POSTURE. A residual tightness in one side of the back is so often the forerunner of a scoliosis, and an "apparent" shortening of one leg. Other postural defects, such as kyphosis and lordosis, frequently have their origin in back spasm, which has not been fully freed. The use of appliances is often necessary—to raise a dropped foot or stabilise a knee, etc. The added weight and weakness of one side are complicating factors in establishing good posture, but it invariably can be achieved with continued perseverance. Distribution of the weight equally between both legs, correction of a forward tilt of the pelvis and an erect carriage of head and shoulders are probably the most important considerations. Attention to posutre throughout the child's growing life is essential.

It is not possible here to discuss every aspect of after-care, as with the wide variety of patients contracting the disease,

many different problems have been presented. The young non-European patients, by virtue of their background, present many problems all their own.

Respirator patients were fortunate in that both hospitals are provided with the modern Drager iron lungs. The use of the positive pressure dome in no way increased the patient's distress, and this greatly facilitated nursing and physiotherapy care. Passive movements were easily performed, with the exception of abduction and elevation of the shoulders. One adult European patient, who suffered very extensive paralysis, has slowly but surely been weaned from the lung, until now, six months later, he only sleeps in it at night. The many benefits of the Drager lung have contributed much to his comfort and recovery. His courage and faith will certainly help him towards the greatest possible recovery.

The question of prognosis is one which still remains undecided. Muscle charts, using the 0 – 5 gradings, carried out at regular intervals, give an extent of the paralysis and the gradual improvement, but in most cases are not indicative of what the final result will be. The more one sees of these patients, the more one is amazed at what their weak muscles and flail limbs will achieve in time. One must form in one's own mind a picture of what one can expect from each patient, but time alone will tell what each individual makes of his own particular disability.

To have witnessed this epidemic throughout its duration was a unique experience, and although we all found it intensely interesting at the time, one hopes that, with the introduction of the poliomyelitis vaccine in this country, one will never witness such a disaster again.

I would like to thank Dr. van Heerden and Dr. MacIldowie for their interest in physiotherapy, and my assistant Miss Rendell for her help throughout the epidemic. The views expressed in this article are shared by us all.

EASTER STAMPS

FLOWERS and sunshine no doubt help a devoted and efficient Nursing staff at a Cripple Care Home, to produce such a sunny smile! However, in addition to nursing, the Physiotherapist's services will soon be required in this case.

Thanks to the generous public, a grant from the Easter Stamp Fund (the fund-raising section of the National Council for the Care of Cripples), was able to be made to purchase a Hubbard tank for this Home's physiotherapy department.

The National Council for the Care of Cripples in South Africa and its nine Cripple Care Associations, with their sub-associations, have rendered outstanding service in promoting, helping to maintain and expanding existing orthopaedic services in the Union, since the inauguration of the Council in 1939.

Before 1939 there was practically no orthopaedic personnel in the Union, and very little work being done for Cripples.

THIS HAS BEEN DONE SINCE 1939:

Subsidized training: Orthopaedic surgeons, Orthopaedic nurses, technicians for making and fitting Orthopaedic appliances.

Subsidized salaries: Qualified Welfare Workers and After-care Sisters doing essential urban, sub-urban and district Cripple Care work.

Grants towards: transport of above, establishing After-care Homes and maintenance of them, Mission Hospitals and other Institutions engaged in Orthopaedic services, and towards establishing and maintaining Orthopaedic Clinics.

Nine main Cripple Care Associations have been formed, affiliated to Council, each with its sub-association, making a network of Cripple Care activity throughout the Union and South West Africa.

STILL TO BE DONE:

Assistance is required in: establishing more Rural Orthopaedic Clinics throughout the Union and South West Africa; training of more Orthopaedic nurses; erecting more After-care Homes for children and adults; adding extensions to existing "Homes"; obtaining more Rehabilitation Centres and Sheltered Workshops; negotiating with more Employers to engage employable Cripples.

HOW YOU CAN HELP:

BUY Easter Stamps! SELL Easter Stamps! USE Easter Stamps! Place one on every Letter you post—and give us the publicity we need so much to HELP CRIPPLES TO HELP THEMSELVES.