

# Medical

This chapter emphasises, without need for elaboration, our progress in knowledge and application of techniques which had taken place since we opened The Spastic Centre of New South Wales in 1945.

At that time, Dr Earl Carlson of New York made it all possible by saying that it could be done; more significantly, that it was worth doing – that spastics do improve.

Dr Winthrop Morgan Phelps, a Baltimore orthopaedic surgeon, showed how it could be done; by expounding the need for radical surgery during the growth period and heavy bracing. This type of treatment has now changed, but Dr Phelps' enthusiasm was the spur, which in the nineteen forties and early fifties laid the foundations of the orthopaedic treatment which was followed in America, in Europe and in Australia.

In the early nineteen sixties the introduction of the Bobath treatment profoundly affected the basis of physiotherapy. Later, the introduction of early treatment of the infant, in the first few weeks of life, by programmed training of the mother as a significant member of the active therapy team, rounded off this phase of development of modern therapy programmes.

The Spastic Centre regards itself as being responsible for every cerebral palsied child and adult in New South Wales who can be fitted into its programme. As a parents' group it can best discharge its responsibilities to the child by compulsorily involving the parents in the project. No charges are made for treatment and transport but, as a condition of admission, mothers are required to work one day per week performing domestic tasks and fathers one day per month on building maintenance. Parents are required to share in any fundraising functions and their compulsory attendance at The Centre has proved an effective means of developing in them an understanding of both their family's and the child's special problems.

This format, incorporating the parents willy nilly in the child's medical and educational problems, has unsuspected but necessary benefits for the child's future and the parents' peace of mind. Instead of parents being a necessary evil to the child's medical development, the mothers are brought into the picture from the earliest time, so they have a full knowledge of what lies ahead of the child's current treatment. The future is built up slowly from her observation of a peer group of children who can be equated with her own child's progress.

We do not accept the need for any formal group training of parents in those terms. We prefer to have the mother and father in touch with the doctor or the therapist, and the teacher, as needed. This was in 1945, but in 1984 there would not be a children's hospital that did not come around to the same point of view. The mothers learn from one another as they go about their rostered duties; as the fathers do on their building projects. It is good to brag about the progress of your cerebral palsied child, because it diminishes the hurt that you must feel.

We started with thirty-five children in 1945 and had grown to one hundred and ten day children and two hundred outpatients by 1950. We had a staff of five Education Department teachers, eighteen therapists and three splint and leather workers. In addition, we had bought a residential home located at Mosman, for a pilot operation to accommodate twelve country children. This was a forerunner to the Country Children's Hostel at Allambie Heights.

By the term 'cerebral palsy' we mean a child who has had damage to the motor parts of the brain which control movement or balance, either before, during or after birth. Actually the percentage of cerebral palsy sufferers is very small considering the hazards of the birth process and the number of children born. About 75 per cent of the total number are due to injury during the birth process. The use of forceps is often blamed for this, but they frequently prevent such injury and do not cause it. In many cases a haemorrhage occurs on the surface of the brain, and this causes actual damage to the brain.

In other cases, the brain tissue suffers a severe shock due to changes in pressure, or the child is not breathing properly, either because the cord is around the neck, or tiredness after a long labour, or a difficult delivery, or if the mother has had a long anaesthetic, or has been too heavily sedated during labour.

In a certain number of cases the damage occurs before the child is born – the mother may have high blood pressure or kidney trouble, or German measles in the first four months of pregnancy, or perhaps some other severe infection that may cause damage to the developing child. A few cases occur after the birth during the first few weeks of life. The child may get pneumonia, or meningitis, or whooping cough, or may have some operative condition requiring a long anaesthetic, and in all these cases the child's breathing is affected, causing a lack of oxygen to the young brain and a resultant damage.

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Originally we were only able to provide Dr Burton-Bradley, our Medical Director, with a salary on a half-time basis, but she worked full-time in any case. After six months we raised the money to afford to pay her at the full-time rate. She served us well during the seventeen years when we were battling for recognition from the medical profession. With no medical precedent to guide her and no guidelines but those that she herself established, Dr Burton-Bradley was faced with setting her medical efficiency and style, to the test of effectiveness.

Most of the children at that time were dosed heavily with phenobarbitone, as much for the mothers as for the children themselves. We soon established that it did not mix with the demands we were making in the schoolroom, and by 1950 it was no longer a problem. The major work that Dr Burton-Bradley handled so successfully in those formative years was in involving herself, her medical specialists, therapists and Education Department teachers in a multi-planning exercise on behalf of the individual CP child. At her weekly clinics, she involved all the people concerned with a child's problem – the teachers, occupational therapist, physiotherapist, speech therapist – without involving those people who were not concerned with the immediate problem.

In 1949, we had installed a Stamford X-ray unit with its own darkroom, because we had a recurrent problem with hip joints slipping out of position. A child's hip joints are formed by weight bearing. In the absence of the weight bearing for a child who is a non-walker, there is a constant danger of the joint slipping out of the upper socket of the pelvic bone, with corresponding shortening of one leg. Its effect is to tilt the pelvic bone to one side, which in turn produces a curvature of the vertebral column, and in order to have shoulders square, a subsidiary movement of the head is necessary to compensate.

For training in walking, we provided a movie camera and a projector for registration of the children's ability in terms of muscular function. Then we were asked to provide an audiometer for the hard of hearing group of our CPs. At that time we attributed the lack of speech in the CP to the parents' failure to teach the child to talk. We needed to break the mother's dependence on the child, as well as the child's dependence on the mother.

We bought an anaesthetic machine because most of our dental work was then carried out under general anaesthetic, and we needed a respiratory machine to remove the dangers of a patient collapsing under too heavy manual sedation.

We were facing a dental problem with our children, whose teeth were atrocious, primarily because local dentists would not take these children into the surgeries, being afraid of jaw spasms breaking their hypodermic needles; and general anaesthetics administered by doctors became major operations. Dr Burton-Bradley used to give her anaesthetics on a makeshift table in the bathroom with a visiting dentist. At one of these sessions a young athetoid boy caused some amusement. He had a fund for equipment needed for his school friends. As he was recovering from the anaesthetic, his speech had improved so much, because of the reduction of his muscle spasm, that he put 'the bite' on the dentist for a contribution to his fund. He went off groggily in the arms of the dentist, waving a pound note in his hands and announcing in wonder, "A quid! A quid!"

For more than thirty years, a panel of honorary dentists and orthodontists, under the leadership of Mr Alan Watson, concerned with the poor dental health of our CP, operated a weekly session at our Mosman Centre. Dental and orthodontic work on spastics is made more difficult by over-active jaw and tongue muscles, but apart from dental caries and the malformation of teeth and gums, it has a serious effect upon the development of speech and on feeding. We remain grateful to this panel for the excellent dental condition of more than six hundred patients. Mr Watson handed over his responsibilities in 1981 – a remarkable effort. During the busy years of his own practice and rostering The Spastic Centre dental group for at least one half-day per week over the thirty-five years, he found time to research and produce two valuable publications on the teeth of the cerebral palsied, which will be referred to in a later chapter.

One of the senior members of a dental supply company, Mr Charles A. Harris, became interested in our problem and arranged to supply a portable dental unit and a secondhand dental chair, and I did the rounds of the dental supply houses, each of whom provided an armful of instruments and dental supplies that equipped the surgery very well indeed.

We ultimately found the means of doing a great deal of the dental work in a chair under local anaesthetic, where previously a general anaesthetic was necessary. For this we thank Dr Watson and his dental panel. We decided to tackle the problem of our out-patients in this manner, but they had grown to a massive three hundred children and we had to provide a complete Dental Unit so that we could make the job as easy as possible for our Honourary dentists. In the seventies we reverted to general anaesthetics for patients with spasms, in the interest of the increased quality of work provided by a stationary dental target.

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The physiotherapy room was equipped with standard hospital plinths, which were narrow tables designed to suit the physiotherapist but not the children, whose startle reflexes made them aware of the risk when they spasmed on the high plinths. They were protected by sandbags on their trunks and limbs, but that did not remove the fear of falling through an uncontrolled muscular spasm.

It was another twenty years before we achieved the present system of physiotherapy on mats at floor level, and got rid of the self-induced startle reflex spasm.

Plaster was still a standard method of treatment and in 1949 I brought back from America a Stryker plaster saw which cut through plaster like butter, without abrading the skin at all. Night boots also became a standard technique of treatment in the early nineteen fifties. They were boots with the upper toecap removed, and were fitted with a short splint below the knee, and a heel stop for the ankle joint. They were worn at night, to stretch the soft tissues of the legs, and were supplemented by pelvic band splints in the daytime, with a stand-up table for weight-bearing exercise.

From America I brought back for Miss Grace Ellis (a staff speech therapist), a Chromovox which, in 1949, was a mechanical TV box. It had pictures and designs printed on a four inch paper spool, with red and green lights for 'yes' and 'no', and it was used with an amplifier by hard of hearing students. It worked well until it gave way to the System 80 in 1975, which was much more sophisticated. We also bought her a wire recorder, which pre-dated the tape recorder. Recording was done on a steel wire, and it could be amplified at will. I think our Doctor was more concerned with the big muscles of the limbs in physiotherapy than the small muscles of speech. In her mind, I believe, it was a case of 'first things first' and we did not then appreciate the importance of speech in the vital matters of communication and education.

Most of the outside medical doctors and specialists found it difficult to accept that the medical facilities should be shared with the patients. They assumed that cerebral palsy was an exclusive medical condition. We maintained that it was a social problem in which the parents, therapists, teachers, psychologists, the doctors and surgeons had a major role to play. The medical specialists needed time to establish confidence in Dr Burton-Bradley's ability to manage the individual cases, as did the parents. The poliomyelitis epidemic was still with us and a medical controversy over the results achieved by the Kenny treatment still rankled among the Health Departments and the medical hierarchy. In the meantime, Sister Elizabeth Kenny accepted an invitation to practice in the United States and she left, vowing never to return to Australia. The orthopaedic surgeons were understandably on their guard against a group of parents needlessly intervening between the orthopaedic surgeon and his prospective patient. It was only a question of time and patience, and 'taking care not to put a foot wrong'.

By 1950 Dr Burton-Bradley had established a rapport with her fellow orthopaedic surgeons, some of whom treated spastic muscles as they had been taught to do in polio cases. It took a lot of bad surgery and a lot of tact to establish the difference between the athetoid and the spastic muscles, and what the surgical target was to be. We had fourteen therapists and three aides on her staff – more than the major hospitals – and most of the surgeons were quite happy to pass the responsibility of surgical intervention over to our Medical Director, provided the responsible surgeon conducted the operation himself. At that time we had difficulty with the metal braces and splints which were necessary to complement successful operations and I will refer to this in the following chapter.

At the same time, Dr Burton-Bradley had earned the respect of the attending mothers, although some were still looking for a cure among the non-medical fraternity of 'quacks'. We had some experience of these gentlemen before we got under way and started The Spastic Centre. So we included in the by-laws for admission of the parents and their child to The Spastic Centre, that the treatment would be based on the 'usual professional medical ethics', and the attendance of an unqualified practitioner, entailed removal of the child from The Spastic Centre treatment lists. Most of the parents were looking for a magic cure and the only acceptable answer was to educate them by example, so that they knew what the teachers and therapists were doing for their children. By 1946, most parents had come to realise that their child was receiving by far the best medical care and education at

The Spastic Centre.

Of equal concern was the epilepsy to which our children were subject. At that time, the preferred medical technique involved expressing the air from a sinus of the brain and taking an X-ray of the skull – quite a fearsome procedure for a child. For our new building, we had erected a filtered room for the electroencephalograph (EEG) equipment which we had bought in the United States for the princely sum of \$5000. Thereafter were able to predict the onset of a fit by the typical epileptic ‘spike’ on the tracing paper, thus giving our Medical Director the opportunity to preclude the onset altogether with appropriate medication. It was only the second EEG installation in Sydney, but intuitively we had known that, despite its high cost, we could not do without it.

I should tell you that on testing the machine during assembly, I had the operator do a test run with myself as patient. As the result of a miscalculation, the reading showed a straight line on all the eight channels of the EEG machine. The operator’s diagnosis of the trouble was uncomplimentary, if predictable: ‘There is nothing wrong with the machine, it must be the patient!’

A report by Dr Burton-Bradley stated:

*‘We do not know how nerve tissue, of which the brain is made up, functions to produce learning, memory, thought, reasoning and movement, but one thing we do know is that it functions electrically. In 1875, Caton (an English physician) discovered that the brain itself produces electric currents. In 1928, Berger (a German psychiatrist), devised a method to record these electrical rhythms. In 1934, work began in England on making an electronic instrument which was eventually to become known as the electroencephalograph, or EEG. With increased knowledge of electronics, great development has taken place, and today it is usual to make records of the electrical discharges from the brain from eight different areas, simultaneously.*

*What really is taking place is that the EEG reports the frequencies and amplitudes of the electrical changes in different parts of the brain which are detected by electrodes on the scalp. Their minute currents are amplified and relayed to an oscillograph which activates pens which make the record. The electrical changes which give rise to the alternating currents of variable frequency and amplitude thus recorded arise in the cells of the brain itself.*

*In the early work, the tracings were all found to be similar and this disappointed the scientists working in this field, for they had hoped to gain information as to thought processes. They then began investigating patients with mental disease and epilepsy. It was in relation to the differences in the tracings from brains of epileptic patients that led to a recognition of the significance of the earlier tracing - that was of the normalcy of these tracings.*

*Since the beginning of 1954, in the course of investigating our cerebral palsied children and the non-cerebral palsied brain injured children who are sent for investigation, all have had electroencephalographic tracings carried out. Over the years 1954 to 1956, EEG investigations of over 1000 children have been made and of these, 70 per cent have shown abnormal tracings.*

*Tracings of individual patients may give information as to the probable site of abnormal electrical activity, and the tracing may suggest the medication. Different abnormal wave forms and abnormal wave frequencies are known to be often influenced by drug therapy. Working on the assumption that the nearer normal the tracing can become the better for the child, the drug known to best influence the particular abnormal pattern is now administered. This is usually done whether the child takes epileptic seizures of any kind or not.’*

Dr Burton-Bradley concluded:

*‘The EEG investigations perhaps, would help a little boy to grow up acceptable to the community and the behaviour of others to be correctly understood.’*

Our Medical Director in her first year detected cerebral palsy occurring in births subsequent to the firstborn. The picture as it emerged was a normal birth for the first or second child, then a series of cerebral palsied or stillborn. In one case, the mother had five living CP children, and expressed her intention of risking more, saying, ‘If it is God’s will, I will do so’.

Looking back through her literature, Dr Burton-Bradley wondered whether it had something to do with the then newly discovered Rh blood anomaly. She did blood tests on the mothers and the fathers over the ensuing weeks, and when she added up her score she found a shocking 20 per cent of our children attending The Centre were affected. They all had some auditory handicap ranging from hard of hearing to completely deaf and their hand function was suspect.

We thought that this was a significant finding and suggested that the National Health & Medical Research Council might be interested in sharing the cost of a survey. We made application to the Council in February 1947:

*'It is requested that your Council should make a grant of \$700 as a contribution towards the cost of conducting an investigation into the incidence and extent of cerebral damage following upon the clinical condition of Icterus Gravis Neonatorum or Erythroblastosis Foetalis. It is estimated that this investigation will cost this Centre a further \$1400 during the first year and a similar amount spread over the ensuing two years.*

*This work is urgent and necessary, but this organisation, while recognizing its essentiality, is as yet unable to provide the whole of the funds required without seriously impeding its more urgent therapy commitments.*

*The work will be closely directed and controlled by our Medical Director who assumes full responsibility for the conduct of the project.*

*Dr Claudia Burton-Bradley's notes are attached. We estimate at least 20 per cent of our cases display the Rh blood anomaly.'*

This application was refused – but it should not have been.

In 1954, after nine years of work on cerebral palsied children, we found that if we could start work on the children before two years of age we could teach most of them to walk, but if left until after six years of age, the advances were only minimal.

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Splints and braces. Aluminium Pelvic Control Braces with hip, knee, ankle and foot control manufactured in our own splint shop from 1949 onwards.