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PAEDIATRIC

CHARTERED PHYSIOTHERAPISTS

NEWSLETTER

ASSOCIATION OF PAEDIATRIC CHARTERED PHYSIOTHERAPISTS

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COMPUTERS AND THEIR USES

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EDITORIAL

Broadening our horizons of knowledge inevitably seems to lead to new technology, and in this computerised age it was obvious that before long physiotherapists would find themselves faced with computers, hard and soft ware, floppy discs - not the vertebral sort - and all the associated gadgets. In many physiotherapy departments of course, they are being introduced as a means for collecting and disseminating data, but for paediatric physiotherapists they are being increasingly used as tools of their trade for stimulating development and awareness, in conjunction with teachers and other therapists.

Whilst this is a challenge to our ability to learn new skills, and add to our ever increasing range of techniques, - and an exciting one at that, - let us not forget that in our dealings with children, understanding, patience and personal empathy are still a very basic asset, without which any technology will be limited.

However, the possibilities offered by the computers, and the results being achieved cannot be ignored - indeed, we would be foolish to do so - therefore we will be wise to make use of the mass of information now becoming available, so that we are in a position to use the technology where and when required, with clear goals in view and a clear understanding that this is still only one of our 'tools', but which used selectively can be of inestimable value.

Out of the mouths of babes . . . .

Three year old sister of small boy with Prader Wylie Syndrome on recognising a sign for 'Disabled' was questioned by her Mum "What do **you** think disabled means"? That people like Ian find things a bit more difficult to do than I do . . . .

COMPUTERS — A NEW TREATMENT TOOL

Sheila Sherwood, Community Health Services, Huntingdon

Currently, it seems, many people over the age of eighteen are a little afraid of computers, taking refuge in such phrases as "I'm no good at mathematics" or "I can't stand silly arcade games" or "They're much too difficult for me to understand". This is a pity, especially with regard to the small computers such as those to be found in schools all over the country. These computers are all very "user-friendly" i.e. easy to use. If you can put a cassette in a cassette player and type simple words such as "LOAD" and "RUN" on a typewriter then you can operate a microcomputer!

Microcomputers can be used not only for "zapping aliens", keeping statistics or solving mathematical problems but also in a wide variety of other situations as a glance through any newspaper, magazine or journal will show. Many professions in the Health Service are rapidly developing the use of computers both to improve the smooth running of their departments and/or their patients treatment.

This paper describes one use of a microcomputer as a treatment "tool" for physiotherapists.

Ask any adult with cerebral palsy about their schooldays and the chances are that they will talk about the everlasting non-stop physiotherapy sessions. Most of them will agree that the treatment was valuable, it's just that it went on for so many years.

Similarly, with other long-term conditions, most paediatric physiotherapists will have struggled at some time in their career, to encourage an indolent, slightly overweight child with Spina Bifida to do various exercises to strengthen his or her arm and upper trunk muscles, or tried to maintain interest in exercise therapy in a child with a muscular dystrophy.

One possible way to improve this situation is to encourage the child to participate in the treatment rather than simply following instructions from the therapist. To do this however means that the child must understand the aim of treatment and this can be very difficult when many of them do not even know exactly what we mean when we talk about muscles, joints and nerves.

Biofeedback is a very useful method of helping children to understand movement. By using an electromyograph (E. M. G.) instrument most children learn very quickly about contracting and relaxing muscles, even though they may not be able to control their own movements very well. There is nothing new in this idea, and many articles have been written about the value of E. M. G. feedback in relation to a variety of conditions both in children and adults (Refs 1, 2, 3, 4). One of the main questions however is, how meaningful is the actual feedback itself? Particularly when used with children.

There are many E. M. G. instruments available, from the large complex pieces of equipment used in hospitals and research establishments to the small, relatively cheap items available generally as "aids to relaxation". The main difference between them being their degree of sensitivity and quality of feed back. The feedback is similar in most cases, being either auditory or visual or both. The auditory part of the feedback usually consists of a series of 'clicks'

which vary in frequency or a continuous tone varying in pitch and/or volume according to the muscular response. The greater the muscular effort the faster the clicks or the higher the pitch and/or volume. The instrument can sometimes be set so that the sound will only occur at a predetermined level of muscular activity.

The visual feedback on most E. M. G. instruments is usually by means of movement of a needle on a meter although it can take the form of a row of small light bulbs (light emitting diodes). The greater the muscular activity the greater the number of bulbs which light up and vice-versa, thus providing a moving bar of light in response to muscular activity.

Both types of feedback, auditory and visual, are useful but after a short time the patient becomes rather bored as it is difficult to make any fine distinction between a few clicks and a lot of clicks it tends rather to be between 'no noise' and 'some noise', similarly the needle on the meter tends to zip backwards and forwards or to move only a fraction on the scale. It is also possible to connect the E. M. G. to an oscilloscope but this tends to give too much information too quickly and it is difficult to assimilate, only in the most general way of more peaks and troughs close together or vice-versa.

The following method using a microcomputer provides an enhanced feedback from an E. M. G. instrument and has proved very popular with patients of all ages. The results have been most encouraging and whilst not necessarily better than any other method in the long run, improvements have been achieved in a number of cases more quickly and more enjoyably.

The system used is based on a B. B. C. Model B computer made by Acorn Computers. The reason for this being that nearly every school has this equipment and it is therefore only necessary to transport a small E. M. G. instrument and the appropriate programme. This is a very important factor now that more and more handicapped children are being placed in mainstream schools entailing visits from peripatetic physiotherapists. Where the patients are all on one site such as in special schools or hospital departments there can be a greater choice of equipment

The E. M. G. instrument used is the Myosone 404 which is easily transportable and efficient. It is also advisable to have an optical-isolater between the Myosone and the computer to ensure 100% safety. An optical-isolator is a very small junction box about 2" by 4", which converts the signal from the E. M. G. into "light flashes" which are then "read" by the computer. Thus there can be no physical connection at all between the patient and the mains A. C. supply in the computer. The Myosone runs on two small PP3 batteries.

The electrodes are surface electrodes used with Gelrode pads. The positioning of the pads over the muscle or muscle group is not critical, as in some types of treatment, but it generally works best when positioned at either end of the muscle belly. A comprehensive discussion on the use of E. M. G. instruments can be found in the following articles (Refs. 5 and 6).

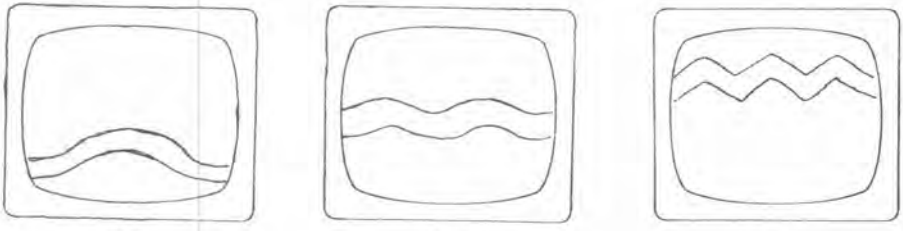
It is important to reassure the patient that he or she will not feel any sensation from the electrodes, they are actually sensors, as the word "electrode" is rather frightening, particularly for children.

The electrodes having been placed over the relevant muscle or muscle group, the machine is then switched on and set at the least sensitive level and the patient is encouraged to contract the muscle. If there is no response i.e. no movement of the needle on the meter or trace then the next level of sensitivity is selected and so on until there is a response from the E. M. G.

The appropriate level of sensitivity having been obtained, the E. M. G. is then connected to the computer via the optical isolator box and the computer is switched on. The programme is then loaded, either from a cassette player or a disc drive.

A series of questions then appears on the screen, the first being "Trace only Y/N?". If trace only is selected and the patient is asked to contract his or her muscles again then a trace will appear on the screen, crossing from left to right. It can then be explained to the patient that this trace shows how strongly the muscle is "working". Assessment can also be made of what would be a suitable target pattern.

Basically the target pattern consists of two parallel lines across the screen which can be any desired shape e.g. :



(a) (b) (c)

These target patterns can be placed at any level on the screen e.g. bottom, middle or top of the screen. Figs a, b, c.

The patient is then asked to contract his muscles again so that the resulting trace stays between the two lines: Fig. d

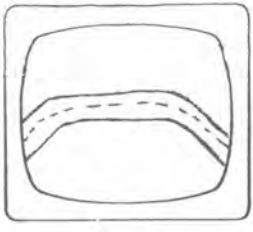


Fig. (d)

If the trace is between the lines there is no sound but if it goes above the line there is a high-pitched sound and if it goes below there is a low-pitched sound. The trace also changes colour as it goes above or below the lines.

There are a number of variations possible, for example the range can be altered so that the lines are wide apart or very close together. The speed of the trace across the screen can also be varied from very slow to extremely fast. Then the target can be adjusted to suit any particular response, whether very weak or strong, from the patient. Thus if one wished to exercise weak quadriceps muscles the sensitivity would be set to high. The target pattern would be widely spaced, low down on the screen and the speed of the trace fairly low. It is also possible to adjust the volume of the sound, children inevitably wanting it set on maximum while adults prefer the minimum!

Most children graps the essentials of the system very quickly and will design their own target patterns, often showing considerable understanding of what is required. For example Fig. f shows a pattern designed by an eight years old boy who was using the system to strengthen weak deltoid muscles. He said, "with this target I can gradually work up to peak effort and down again, it would be too tiring to do peak effort all the time".

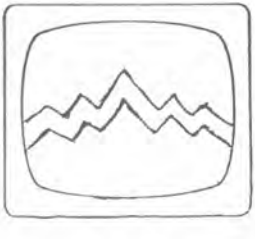
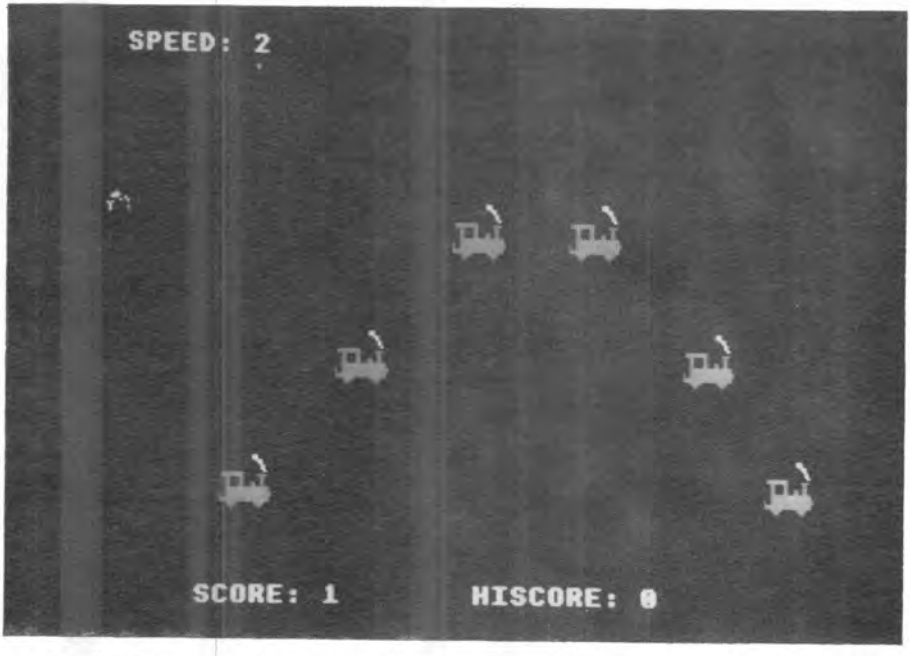


Fig. (f)

With very young children, such target patterns are not satisfactory and something more immediate and attractive is required. This is achieved by replacing the lines with Teddy Bears or Engines. These figures can be placed anywhere on the screen in similar patterns to the target lines above. See Fig. g. However, in this case a sound is only made when the trace hits a figure e.g. the Engine goes "toot-toot". Very young children become quite competent at hitting the Engine surprisingly quickly.



The feedback can also be used quite effectively 'in reverse' for teaching relaxation. E.g. the E. M. G. setting is commenced on the least sensitive level and the target pattern is high on the screen, the aim being to gradually increase the sensitivity of the E. M. G. and lower the target pattern as the patient improves his ability to relax.

The equipment has been used mainly with children, nearly all of whom responded most enthusiastically, in many cases developing a greater understanding of the aims of treatment relative to their conditions.

The use of this technique is still really in the development stage and therefore it has not been possible to make any controlled case studies or to comment on the long-term maintenance of improvement in performance achieved by patients. Nor has it been possible to compare the efficacy of enhanced feedback with ordinary feedback or with other forms of treatment, only in a subjective manner. Nevertheless, the results have been sufficiently encouraging to warrant publishing details of the technique in the hope that other therapists will try it out on a variety of conditions in patients of all ages. In this way our knowledge of the use of the computer in enhanced feedback will more rapidly advanced.

In conclusion it should be pointed out that this is not the only way of using a microcomputer in treatments, there are many other possibilities, such as the use of a joystick or a light-pen to improve arm function, eye-hand co-ordination or even just sitting balance! It could be linked with a video set to measure movement. There is a tremendous potential if only we can overcome our fear of the computer and use it as a very helpful ally.

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REPORT ON MSC/LANCASTER UNIVERSITY DISABLED CHILDREN'S PROJECT

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Introduction

The project is mainly centred on a group of profoundly handicapped children aged 3 - 17 years of age at Bleasdale School, Silverdale. The range of disabilities is quite profound, all of the children having multiple disabilities.

This year's project which is the start of our third year link with the Manpower Services Commission community programme, began in September, 1984. The period up to Christmas saw the programming team being built up again (under MSC rules we are only allowed to keep staff for one year at a time) with programmers and technician familiarising themselves with the computer systems and getting to know the children and their tutors.

During this time a good deal of small programs were written and special interface switches were designed and constructed. At the same time a range of previously written software programs for another handicapped school were adapted for use at Bleasdale House. This gave the tutors at the school an opportunity to see some of the possibilities presented by the use of computers as well as generally familiarising themselves with the computers in operation. As a result of this work the County Education Adviser approved the funding

of two microsystems for the school, the specification and installation being done by MSC/Lancaster University team.

After Christmas the computer systems were timetabled into the classrooms so as to integrate their use into the ordinary working environment. This changed the use of the computers from being a separate specialised "event" sometimes on only one occasion a week when the programming team visited the school. It also helped overcome any initial reluctance borne of the practical difficulties of moving equipment, connecting everything together and organising the child 'vis a vis' the switches and screens. In a fairly short period this then became an accepted part of the school day.

Project Aims

The main emphasis is placed on being able to input the disabled child to a device or devices and to stimulate and lead the child to a higher level of understanding of his/her surroundings. In the first year at Bleasdale House, we have in most cases, within the initial group of children been able to circumvent the child's disability and interface them to the computer systems. The various types of prosthetic devices enabling us to do this are described in a later section of this report. We have also written a series of visual stimuli programs to enable us first of all to capture the child's attention and then increase the concentration span of the child in order to use these prosthetic devices. Descriptions of these programs are also in later sections of this report. (See Appendix).

For some of the more able children, specific programs dealing with such things as number concepts, social words and elementary set work (e.g. matching colours/shapes or finding the odd one out) we have found to be useful and have written a series of programs for them. For the majority of the children, though, the computers are being used to enable them to influence their environment more easily and effectively and to allow them to communicate and make choices.

It is in this latter use that it is felt that the computer systems are not merely substitutes for traditional teaching methods but instead, offer new possibilities of methods of learning. In practical terms, this means that if a child's arm and hand movements preclude writing or typing on a keyboard then we will interpose the appropriate press switches or enlarged keypads with the necessary software to enable the child to select words or objects on general requests depending on the ability of the child. It means that if a child's own speech production system is inoperative then we will provide a synthetic speech production system run by hardware and software tailored to the abilities and needs of the child.

These ideal situations are some considerable way off for a good many of the children at Bleasdale House. The development programme that we are following, encouraged and facilitated by the use of computer systems, will hopefully lend to these optimal conditions.

In other words, to the extent to which intellectual development is handicapped by physical impairment, through a paucity of active enteraction with the environment, etc.; to that extent, it is hoped to improve the lives of the children.

Methods of Work

In developing suitable programs for particular children, individual programmers are given a framework within which to design a program, by the tutors at the school. Constant feedback is sought during program development. In appropriate cases, the speech therapist is asked for guidance and the advice of the physiotherapist regarding the limb strength of the child and the occupational therapist regarding the best way in which the limb strength can be used is sought; thus enabling the most suitable prosthetic device to be designed.

The initial work for many of the children involves the pressing of a switch to gain an effect. This is to get the child to understand that he or she can actually make something happen. The effect might be a musical reward, a visually interesting scene on the monitor screen, or the movement of a large remote controlled vehicle. Switches available include a press switch, a touch pad and a sound switch.

As an example of this kind of "cause and effect" program, the "animals" program produces, on the press of a switch a picture of an animal, a dog say. The name of the animal is then spoken by the computer and the computer then switches on a cassette play to produce 15-20 seconds of barking.

Following on from this, programs have been developed that require the child to make a correct choice in order to obtain an effect. This choice might be between options on the screen or between different switches. A completed development of the "animals" program is now available that requires the child to match the currency selected animal on the screen in order to produce the animal noises.

In a quite different area, a program with a suite of vision testing options under tutor control has been written in order to establish the visual ability of some of the children who are registered blind.

In the area of more advanced communications systems, software has been written to teach a chld MAKATON symbols. The speech therapist has been closely involved in this and also in the development of a computer implementation of the BLISS symbolics. This latter software puts the BLISS symbols on the screen in selectable pages. The child who uses them had previously used over 30 BLISS symbols selected by manually pointing to a symbol on a BLISS board. Now, he is able to move a pointer about the screen by means of a joystick and selects a symbol by then touching a touch pad. The symbol is then reprinted in a blank matrix at the top of the screen and the computer speaks the word for him. It is intended to develop this system further, to enable children to control their own classroom environment needs more than is done at present.

Conclusions

We have been greatly encouraged by the success of a number of software programs and prosthetic device interfaces. For example, a number program has quite rapidly taught one child to recognise all the numbers up to 9 and to match the numeral with the correct number of objects. The BLISS implementation is now being used by one child quite successfully and is allowing him to produce spoken language.

Regarding the simple switch programs certain observations have been made. The idea of pressing a switch to produce some outcome is well established in several of the more severely handicapped. The concentration span of these children when using the computer is noticeably higher than that found in most other activities they are engaged in.

In some instances the right approach to the children has not yet been found and some software programs have been unsuccessful, but there are many other avenues that have not been tried yet and we are hopeful that a large majority of the children can be assisted.

As a direct result of our work and negotiations with H.M.S.O., we have been able to procure for the UNIVERSITY the licence to promote all crown copywright material produced. To this end, an income earning project M.A.D.I.S., (Microprocessor Assistance for the Disabled) has been set up within the Department.

In addition we now have formal links with four regional centres (SEMERCs) and the Aids to Communication in Education National Centre in Oxford, all of whom will be exhibiting the software and hardware produced by the project. All of our hardware products conform to U.K. standards and some new developments we hope will become the U.K. standard.

We have also had requests from the County Education Advisers office to submit training curricula for teachers in schools for children with special needs. We hope that these curricula will become the standard model for special schools.

APPENDIX

Hardware Developments

Alongside the use of standard alternatives to the keyboard use of the computer such as joysticks and the concept keyboard, the project has designed and produced various other devices to enable handicapped children to use the computer. These alternatives are outlined below.

Press Switch

Where lack of co-ordination makes the use of the keyboard on the computer extremely difficult or impossible, the Press Switch can be used. Its large key allows selections to be made much more easily.

Touch Pad

For use in similar situations to the Press Switch. The Touch Pad provides a large pad area that simply has to be touched to make a selection. By adjusting the sensitivity control it can even be made to respond to a close approach of within one or two inches.

Triple Switch

Through the use of a control box with three sockets and three sensitivity controls, up to three independent touch pads can be used simultaneously to provide greater flexibility and choice.

Sound Switch

A microphone/amplifier which provides an ON/OFF signal when a sound is produced or a blow (of air) is directed towards it.

This is an alternative to the TOUCH PAD and PRESS SWITCH and is used with children who have limb disorders or for those with spasmodic actions making them unable to use a keyboard on the other switches. It also features a sensitivity control so that the Sound Switch can be adjusted to allow for breathing and distance from user.

Numeric Keypad

Allows numeric entry to the computer easier due to the large keys. This is used with the child who has some arm/hand co-ordination but still finds the computer's own small keys difficult to use. It provides 11 keys that can be labelled appropriately, e.g. with numbers 0-9 and an ENTER key or 1-9 with a '+' and '-' key.

Under development is a much larger, 16 large key, keyboard which will be accessible to many more children. This will provide more keys with a more spaced out layout with a removable perspex guard overlay to prevent accidental pressing of the wrong key.

PROGRAMS FOR THE HANDICAPPED CHILD

Encouraging use of Switches

Several programs have been developed to encourage children to use a switch in order to make them realise that they can influence their environment whether it be the images on a screen, a device they can switch on via the computer or a computer controlled robot. Most of these programs have been written for particular children under the guidance of their teacher.

Examples of this kind of program are outlined below.

Sequence

A program consisting of a suite of visually interesting scenes that are produced on the screen, in turn, on the press of a switch.

Pyramid

Builds up a large pyramid from small pyramids that are produced on the screen every time the switch is pressed. The second version uses the triple switch to allow a colour choice for each small pyramid.

Cassette Controller

This program allows the child to switch on a cassette player so that his/her favourite music can be played. Options allow the teacher to set the length of time music will be played before another switch press is required to continue the music. An audible warning before the music is stopped can be selected so that the music can be continuous if the switch is pressed on hearing the warning.

Star Wars

This program was written for a 15 year old child who likes watching teenage things on television. A victim of a road accident at 11, he is now very reluctant to press a switch at all and needs a very interesting display to encourage him to press a switch. This program moves a large square cursor to a target and then a switch press will 'shoot' the target.

House

This program builds up a picture of a house using repeated presses of a switch. Harder options require the switch to be pressed only at the right time, i.e. only when a part of the house is displayed.

Animals

In this program the pressing of a switch produces a picture of an animal on the screen. The name of the animal is then spoken by the computer and finally a cassette player is automatically switched on to play a recording of that animal's sounds.

The program runs through six animals.

Random

This program produces triangles, squares or circles on the screen randomly on the press of a switch. This uses the triple switch to give a choice of colours.

Matching Programs

These include matching tasks of various logical kinds requiring the child to press a switch at the right time or to press the right switch out of a choice of switches using the Triple Switch or Numeric Keypad.

Kevcol

Requires a preset (by the teacher) coloured square to be matched with another square that is randomly changing colour. (Single Switch).

Colshape

Is a shape and/or colour matching program with many options to modify the level of difficulty. (Single Switch).

Lift

Uses a lift rising and descending to differently coloured floors to make a match between lift position and colour. (Single Switch).

Wall 1, 2, 3.

Three programs of increasing difficulty requiring copying of coloured bricks using the appropriately coloured switch. (Triple Switch).

Animal Matching

A development of the ANIMALS program requiring the switch to be pressed when the animals match. (Single Switch).

Number Matching

For the more able child this program requires to be matched with the correct number of objects. Five options are available some of which allow the child control over the objects appearing on the screen. (NUMERIC KEYPAD).

Odd One Out

Presents four pictures of which one, the odd one out, must be selected. (Single Switch).

Communication Aids

Several programs for direct communications have been produced and are being continually expanded. These vary in complexity and mode of operation to suit particular levels of ability and degrees of handicap.

Item Requests

These are programs that associates particular requests with particular switches. For example, using a Triple Switch a choice of three possibilities is provided:

Makaton

This program uses matching to teach the Makaton symbols. (Single Switch).

Bliss

This is a computer implementation of the major communication systems of the same name. It allows selection of Bliss symbols representing words and uses computer speech synthesis to say the word. (Joystock and optionally a Touch Pad).

Keyboard

Puts the computer keyboard onto the screen and uses a joystick to access keys on the screen and print the selected character. At present it supports the full character set with DELETE, SHIFT, CAPS LOCK and SHIFT LOCK. Future additions will include editing facilities, printer routines and Save and Load options.

OTHER PROGRAMS:

Visual Testing

A program has been written for use with children who have visual problems of unknown extent. This program offers a selection of test visual stimuli on the screen which can be computer or teacher controlled.

Paraman

Requires eye-hand-co-ordination to press a switch at the right time to allow an animated character, who has jumped out of a helicopter, to open its parachute.

Bird

Uses two switches (direction and movement) to allow the child to move an animated bird around the screen providing a vehicle for language use and offering potential for expansion in various directions.

For the considerably more able there are several programs offering practice in language and number work. Briefly:—

WORDPIX matches words with pictures.

WORD requires selecting the missing word.

LETTER requires the missing letter to be typed.

NUMREC involves number recognition.

HOWMANY is a counting program.

COUNTING and SUMS are different kinds of add and subtract programs.

Finally there are programs to help in social, outside world situations:

PELICAN stimulates the action of a Pelican Crossing using graphics and sound.

SOCWORD gives practice in understanding the meaning of commonly seen symbols; e.g. Exit, Disabled Toilet, etc.

COINS provides practice in the use of money.

COMPUTER ASSOCIATED WORK WITH THE MULTIPLY HANDICAPPED

Mr. T. G. Watts, BA, M.Ed., Kilton Hospital School, Kilton Hospital, Worksop

Introduction

Hillside House is a special needs unit for up to sixteen 'day' children in the Bassetlaw District General Hospital, Worksop, Notts; (formerly Kilton Hospital). All of our children are profoundly mentally handicapped as well as having severe physical disabilities: they are all non-verbal and doubly incontinent; most are non-ambulant, and may be blind or deaf as well. This article also applies in some degree to older persons and those who are more able physically and mentally. The computing work is the responsibility of the school's headteacher and his staff, who work alongside nursing and therapy personnel as a multi-disciplinary team. Educational work is 'needs-based'; each child's needs are listed in a priority order and staff draw up individual small-step programmes of work to meet those needs.

We have had a computer for the past three years, and have gradually built up some additional hardware, a lot of software, and some ideas on how to use it all.

In the following notes:—

Programme = a work programme = a planned series of activities.

Program = a computer program = a piece of software = a screen display with or with sounds.

WHAT HAVE WE USED A COMPUTER FOR?

1. As a reward for any activity:
   a) More able children play 'space invaders' games using the keyboard.
   b) There are simpler games of low level hand-eye co-ordination using just a single touch on the space bar or on an external switch. There are a lot of such games available, e.g. Bomber, Target, Skittles. One touch operates the program - to drop a bomb, fire a gun, send a ball, stop an arrow, etc. Finding them can be a problem: they tend to come from the magazines (e.g. The Micro-User), books of programs (e.g. The Book of Listings) or cheap cassettes (e.g. "30+ for the BBC Micro"). We have found them to be very good for youngsters, and as fine motor therapy for children recovering from traffic accidents.
   c) A display with good graphics and sounds, perhaps a series of flashing pictures or patterns accompanied by a tune or various sound effects. Depending on the child's level of ability, the program will be started and stopped by him, or by the teacher.

2. As part of a structured programme of development
   a) To improve Eye Contact. The screen is used as an attention-getter. There are several levels at this stage, involving getting the child further away from the screen, and looking at a smaller colour block, and finding preferred colours and shapes, and the best position for the child.
   b) Visual Tracking. This is a stage higher than the previous one. It involves the child in watching various coloured shapes and patterns moving around the screen in a variety of different ways. Several programs have been specially written for this level of work.
   c) Visual Exploration. This requires the child to look from one picture or pattern to another, or from one part of the screen to another. There are several specially produced programs, and a good number of others that are quite useful. The child learns to recognise pictures on screen as representing objects; he realises that pictures have parts; that those parts have differences and similarities. He may go on to deciding what he wants to look at - an important step in communication skills.
   d) Visual Motor Skills. Requiring the child to operate a single touch switch in order to start or stop a program (one you already know he likes). This is the first active stage in the structured plan - where the child has to do something for himself, and not just sit passively watching the screen. We have split this into 15 separate steps: it is a very difficult level, establishing the cause/effect relationship of switch to screen; it may well be the child's firstever purposeful movements.
   e) Visual-Motor Skills - Communication. The child starts to use the switch and screen to communicate basic needs, e.g. stop the screen action when it gets to a picture of a cup. This is paralleled by work with a pointer board (An arm moves round a board which has pictures or objects fixed to it).

f) Further Communication. This is beyond our children at the moment but it should lead on to the commercially produced communication and environmental control devices (sets of switches or concept keyboards) which may operate the lights, T.V., radio, blinds, heater, 'help' buzzer, Bliss or Possum-type units.

Star Micro-Terminals for Concept keyboards (pads with touch sensitive areas on their surfaces) 22 Hyde Street, Winchester, Hampshire, SO23 7DR at about £69.

Possum Controls Ltd., Middlegreen Road, Langley, Slough, SL3 6DF.

Tandy produce an electronic book at about £15. It is used in much the same ways as the concept keyboard.

WHAT EQUIPMENT IS NEEDED?

We have used:

1. A BBC Model B computer, with disc interface fitted. About £400 through the Local Education Authority.
2. Disc Drive, about £100 through the LEA.
3. Discs, at about £1 each, to store the programs.
4. Colour Monitor (the screen). Ours is a 20'' Microvitec; about £250. It has an extra long lead so the monitor can be kept well away from the keyboard.

   Any of the above can be obtained from any computer shop, or mail order firm of which the cheapest appears to be Watford Electronics, 250 Lower High Street, Watford.
5. A trolley to move the monitor on: not just around the room, but also up and down to suit both the child lying on a floor mat, and the adult who is obliged to remain standing. Ours cost £200 and was specially made by a local joiner. A handle on the side winds the screen from ground level to 5 feet high.
6. An external amplifier. A small (3'' square) speaker from Tandy shops cost £9.18. The audio leads inside the computer need to be altered slightly and then the amplifier can be placed on top of the screen so that sound and pictures come from the same place (instead of picture from, monitor, and sound from computer). An information sheet on how to do it is issued by the MEP and the Special Education Micro-Electronics Resource Centres (SEMERCs). There are four of these centres in England.

   Redbridge SEMERC, Dane Centre, Melbourne Road, Ilford, Essex 1gI 4HT.

   Manchester SEMERC, Manchester Polytechnic, Hathersage Road, Manchester M13 0JA.

   Bristol SEMERC, Bristol Polytechnic, Redland Hill, Bristol BS6 6UZ.

   Newcastle SEMERC, The Polytechnic, Coach Lane, Newcastle-upon-Tyne, NE7 7XA.

These resource centres offer advice on all matters to do with Special Educational Computing. As they work largely independently of each other, it is worthwhile contacting all of them. They distribute information sheets and a lot of free software.

7. External switches. Although switches can usually be plugged directly into the computer, we regard the Toy Control Interface as essential. Just about any switch can be plugged into it (jack plug) for it to control the screen (via the User Port), amplifier or the toys and soundmakers which can also be plugged into it. From Micrex Ltd., 54 Linley Road, Alsager, Stoke on Trent, or Manchester SEMERC, about £25.

a) A heavy duty lever switch, very good and simple, from Quest Educational Designs, 1 Prince Alfred St., Gosport, Hants, £7.20.

b) A Vox Box is voice operated, £62 and well worth the money, from Telemachus, P.O. Box 86 Aylesbury, Bucks.

c) Touch sensitive pad, from S.C.D.C., Bilborough, Nottingham for £10. (Not on general sale).

d) Puff switch, working on child's suck and blow. From Proops Bros. Ltd. 52 Tottenham Court Road, London, £1.85.

e) Push button switch (on loan from S.C.D.C. Nottm.).

f) Mercury 'tilt' switch which operates when it detects movement in any direction; strapped to wrist, leg or head. Queenswood Scientific, Stubbington, Hampshire, £14.95.

g) Beebstick Plus; joystick from Clare's, 222 Townfield Lane, Winsford, Cheshire, £39.95.

h) A wobble stick; tall, spring-mounted joystick also from Telemachus, £61.

i) The Micro-Mike is a less expensive voice operated switch from Magpie Systems, 51 Guernsey Close, Widnes, Cheshire, WA8 0YH. They also have several programs and switches.

j) A grip switch. Like a broom handle, mounted vertically, split down the middle with the contacts inside the split so that a squeeze on the 'handle' will operate it. Made by local college.

k) An eye switch. This reacts to eye movements: there are several programs, including a word processor, with it. Produced by Dr. P. Griffiths and Mr. R. Potter, of the Medical Physics Dept., Lincoln General Hospital, it has been featured on a television programme showing recent innovations in this field.

Other useful addresses include:

Burgess Micro Switch Ltd., Dukes Way, Team Valley, Gateshead, NE11 0UB.

A. C. E., 1 Fletchers Mews, Neath Hill, Milton Keynes, MK14 6HW

Visaid Electronics., 4 Thirston Close, Nottingham NG6 7FR.

Brynle Roberts, Hafan-y-Coed, 26 Ffordd Sandway Road, Wrecsam, Clwyd, LL11 2PS, makes 'Pethna' equipment, an extensive and interchanageable toy system for helping skill development in handicapped children and adults in entertaining ways.

Nidd Valley Products, Stepping Stones House, Thistle Hill, Knaresborough, Yorks, has a piece of hardware, called Slomo, which will slow down or freeze any game £14.95.

Rofer Jeffcoate, Willowbrook, Swanbourne Road, Mursley, Milton Keynes, Bucks MK17 0JA. Gives advice and help on the practical applications of electronic technology.

MACE (Microelectronics and Computers in Education), Four Dwellings School, Quinton, Birmingham B32 1RJ.

8. Electronic Toys and Sound Makers. The work with these parallels the main direction; they reinforce the pictures, patterns and the sounds from the screen. They can be plugged into the toy interface box and operated without the computer if required. Our toys include a) Donald Duck banging drums,

b) Clown banging drums and cymbols.
c) Teddy bear and drums and whistle (as seen on TV).
d) Car racing track

These and dozens of others can be bought from all toyshops, especially towards Christmas, but need a slight adaptation so they will run from the toy interface instead of from their own batteries.

Manchester SEMERC has an information sheet on an Instant Toy Adapter, parts available from RS Components Ltd., P. O. Box 427, 13 - 17 Epworth Street, London EC2P 2HA.

Clatterway Toys produce a switch-kit and 25+ ready-adapted toys; 31 Watton Road, Colney, Norwich.

Our Sound makers include:

a) A Super Siren bicycle alarm
b) A mini buzzer
c) A tape recorder

'The Worm in the Apple. is a self-contained toy/switch. In reponse to noises, a green worm with a hat on comes out of a large red apple. From toy shops or from T. F. H., 76 Barracks Road, Sandy Lane Industrial Estate, Stourport, Worcs. DY13 9QB, about £10.

WHAT PROGRAMS ARE AVAILABLE?

Lots; mostly not very suitable and needing to be adapted to your own purposes. But . . . we sell a suite of 8 discs covering the stages Eye Contact to Visual Motor Skills. These contain 70+ programs, all adapted to single touch switches. Including documentation and curriculum brochure, they are priced at £20 the package (SAE for details or cash with order to: The Headteacher, Hillside House, Bassetlaw D. G. Hospital, Worksop, Notts. S81 0BD).

Other producers of special software are:

Dr. D. R. Harrison, 168 Shakespeare Crescent, Dronfield, Sheffield S18 6ND., who has 8 discs of programs working off single and double switches, micromike and concept keyboards.

Brian Apter; copies held at Bristol SEMERC, Redland Hill, Bristol BS6 6UZ.

Alan Nixon; 18 Kinnegar Road, Hollywood, Co. Down, N. Ireland, BT18 8JN.

Paul Blenkhorn; Research Centre for the Visually Handicapped, Birmingham University.

BARDSOFT has compiled a list of software producers for the handicapped, at Newcastle Polytechnic, Newcastle-upon-Tyne NE7 7TW.

Vector Marketing (Tel 0933 79300) will send a printout of program titles and prices on any aspect of education.

Jack Bates, 108 Old Landsdowne Road, Didsbury, Manchester, has 8 programs for the Micro-mike, priced £4.50 the lot.

CAAT, Brighton Polytechnic, Moulesecoomb, Brighton, Sussex, BN2 4GJ, have several suitable programs.

Tecmedia Ltd., 5 Granby Street, Loughborough LE11 3DU, is developing a catalogue of hardware and software for those with special needs.

C. E. T., 3 Devonshire Street, London W1N 2BA has a similar database for software only.

MAISE (Micro-computer Aids in Special Education) Elmwood Road, Baglan, Port Talbot, has free programs.

SOME FINISHING POINTS

The working environment. This should be as free from distractions as possible. We start in a small black-painted room, with the lights out, blinds drawn, no background noises, no visitors, no pictures on the wall. The child then has the best possible chance of success - looking where you want him to. He can be 'weaned off' this environment in stages to more normal working conditions.

Sound reinforcers. A bleep, tune, or sound effect can help to keep a child's attention on the screen. These are decreased as he improves his visual skills.

Recording. It is important to know how the child performed at the start, so we do a 'baseline' series of observations of his performance, and follow it up with accurate monitoring of his progress. From this, properly structured programmes of development can be worked out and followed with specific aims and objectives.

Staff. We find it best to start with one person conducting one programme, even though several may be involved in its initial setting up. The staff member has to sit with the child all the time, helping and/or observing.

Body Position: Sitting in wheelchair, Derby chair, on mat, side-lying board, upright in frame; which is best? Which switch is best - will it encourage a movement we want to improve (left arm reaching forward, head coming to centre etc.), or cause spasms in another part of the body, or does it simply make use of the only purposeful movement a child has? It is very important to discover the best body position and switch as early as possible.

Continence Training. It is possible (but we haven't tried it) to place a switch in the child's toilet receptacle so that his success is rewarded by a screen display, tune, or top operating.

Taste and smell. We have tried putting chocolate buttons on the switch we want a child to touch, so far without success. Smell is, so far, a dead end: Our children only react to the most obnoxious smells, and we don't know how we might purposefully use that.

Lips: Suck and blow switches, and sound-operated switches can help to improve lip movements, feeding and speech development.

Touch: Touch sensitive screens look useful for more able children than ours; they require good, purposeful, accurate gross motor movements. We have tried covering switches with different - textured pads (notably silk) to encourage their use. We are starting some work using vibrator pads taped to the body, instead of giving the visual and auditory rewards of screen and toys. Light pens are another area for the future, but so far our children lack the necessary motor control and intelligence to use them.

A Panacea? No!

Computers are extremely expensive.
Everything to do with them seems to be expensive.
They take up a great deal of time and effort in planning and setting up.
They do not do anything that couldn't be done before.
They are not a cure-all.
They **are** a big improvement in helping some children to do some things.

THE MICROCOMPUTER AND ITS APPLICATION TO THE NEEDS OF THE PROFOUNDLY MULTIPLY HANDICAPPED

Mary Lister, Care Officer, Douglas Arter Centre Salisbury, Wilts.

The Douglas Arter Centre opened in Salisbury in 1978, was established, and is run by The Spastics Society, to provide facilities for young adults with a severe degree of physical and mental handicap. It is primarily a community support centre able to relieve parents of some of their pressures by providing care for their heavily handicapped sons and daughters. Up to 22 people from the age of 16 can be catered for on a 5 day basis at the centre, with accommodation for 9 residents from Monday to Friday, together with phased short stay facilities. In addition, the Douglas Arter Centre runs a bungalow in a nearby village providing day care for two clients, and short term care at weekends. All our clients are multiply handicapped. Mental abilities range from a few months developmental age to the 5 - 6 year level. Physically, 75% are cerebral palsied, nearly all are wheelchair users or cannot walk unaided, most need some degree of assistance with self-help skills, most are non-verbal.

The Unit is run by a manager and assistant manager, with Care Officers covering all aspects of daily care and education. There are two Physiotherapists and there is soon to be a Speech Therapist. A high staff ratio copes with the demands of physical care, and at the same time carries through the concept of individual development. Special programmes are devised to meet the particular mental, physical and social needs of a client, whilst a great variety of group activities and outings are encouraged to extend the clients experience of life, and stimulate the maximum response to their environment.

Among the equipment used to stimulate and develop the skills of the client group is a BBC B Microcomputer. The basic hardware is the keyboard, the single disc drive and a colour monitor (this has sharper colour definition than a colour TV). With such limited equipment, interaction with the computer can only be through the keyboard, which means that only one or two of our clients are able to operate it directly. Although this does not make the equipment redundant, passive involvement is obviously not as effective as active participation. As a result we started to look for a possible alternative to the keyboard, to give a handicapped individual direct access to the computer. There are a considerable number of possible switches for the BBC Micro on the market, and we have now acquired a few of the ones appropriate to our client group.

The first and perhaps the most useful acquisition was the concept keyboard (A4 size). This is an extremely versatile piece of equipment, through which one can communicate directly with the micro. It does not have permanently labelled keys, but by means of interchangeable overlays allows the user to select the keyboard best suited to the required application. Whilst being sensitive to the touch, it is nevertheless wipe clean and scratch resistant, and can thus withstand heavy wear. We also have a lever switch, which basically is an on-off switch when plugged into the computer. This is used most effectively by one client as a headswitch. Our two switch pressure pad is slightly more complex. It is used where a programme performs two separate actions, such as a man sitting, then lying down; one switch controls the action of sitting and the other that of lying. We have recently bought the 1 - 4 way Switched joystick, which is an extremely versatile piece of apparatus, able to operate all programmes from those requiring single switches to those with 4 options. It also has a replaceable knob which permits adaption of the handle to suit personal needs.

The last piece of hardware acquired by us was the Access Adapter, which has increased the flexibility of the micro by enabling simple switches to be used as direct input to the machine, they are plugged into the adapter module and then into the computer. It is invaluable in allowing users to transfer their own familiar switches from communication boxes, for example, to the micro.

Our software has been gathered from a great variety of places. There are some very good commercial programmes for numeracy and literacy, some of which we have, plus some acquired programmes from University and Hospital Medical Engineering departments, a few programmes have been written specifically for individual clients at the centre, but by far the greatest number of programmes have come from a special educational Microelectronics

Resource Centre, of which there are four throughout the country. SEMERC is an extremely valuable source of information on the software and hardware available, but more importantly it acts as a central agency for the dissemination of information on all freshly copyable material.

Experience of various types of software, highlights the most useful to be those with the greatest number of options. The wider the range of choices in size, shape colour etc. the greater the potential, both in terms of numbers of clients for whom it is appropriate, and the range of teaching objectives covered. For example, in the area of visual tracking the programme called 'Track' is very useful. The content shows a multicoloured block which can move up and down the screen or side to side, while the programme allows the teacher to choose the size and direction of the coloured square as appropriate for each individual.

There is very little literature available on the use of a computer with the more severely multiply handicapped, so it has been largely a case of experimenting to find the most appropriate application of a micro, from the most basic level of establishing eye contact through to teaching concepts, and even in one or two cases, basic numeracy, literacy, time-telling etc. However, Kilton Hospital School, Worksop, has produced a booklet called 'Computer Assisted Development with Profoundly Retarded Multiply Handicapped Children', together with a package of computer programmes which has provided us with basic guidelines to structure our work with the more severely handicapped within the unit, according to individual requirements.

We see the computer as an integral part of the wider educational programme and therefore the first stage in its involvement, is to assess where it might be relevant to personal development objectives. The software most applicable to the client in terms of visual and auditory stimulus and programme content, needs to be chosen and constantly reassessed for relevance. The correct switch is vital in order to obtain the best performance, as is the right environment, positioning etc. On the whole it seems that in the early stages the best results occur in a distraction free room; once a skill has been learnt, then the aim is to develop it under a variety of conditions.

Having settled these problems for each client we can then move on to the specific skill to be taught. There are several major areas in which we are trying to develop the use of the computer. Firstly it seems the equipment could prove extremely valuable for stimulation of visual and auditory skills - a passive stage where a client listens and watches but does not control. At the moment, emphasis is on developing visual skills, and therefore programmes where sound can be excluded, at least in the initial stages, often prove most useful. At the basic level, we have worked on gaining and maintaining eye contact. There are various lively pattern programmes which will encourage a client to look in the direction of the screen and hopefully the greater the variety of change and pattern within the programme, the greater the attention span. With some of our clients we find that if a programme is accompanied by sound, then the sound will provide enough 'reward' and the screen will be of little interest, but without the sound the screen becomes more attractive.

Following this we are trying to develop tracking skills in a few clients. Initially the object to be tracked is large and moving only in one direction, as this task is mastered the size is reduced and the direction varied, as in 'Track' mentioned earlier. The next step is to develop visual exploration abilities. The ability to look from one pattern to another and later from one section of a picture to another has potential applications in the area of non-verbal communication. The type of programme used for the early stages of this skill would be one such as 'colshape' which produces shapes in random positions on the screen. Later a more complex programme such as 'car' could be used; in this a car is drawn on the screen and then each area is filled with colour.

Secondly, we felt the computer would be of value in the development of motor skills. One of the most vital stages of learning is to establish the principle of cause and effect. Some of the better software seems to provide the stimulus or encouragement to make that conceptual link between the switch and the resultant action. The alternative forms of switches largely eradicate the physical difficulties, to allow for concentration on the mental problem. This can be one of the occasions when such a handicapped individual is able to manipulate a part of his environment, and once developed this skill obviously has much wider applications. Most of our software in the area runs on continuous mode, which means that whilst the switch is held down activity continues on the screen, it stops as soon as the switch is released. There are some programmes which run on a latch key mode, meaning that one press of the switch starts the programme, another stops it. The type used being dependant on the physical problems peculiar to each client.

Once having reached this level, choice is introduced, a single on/off switch is replaced by two switches, each creates a different effect on the screen and has to be pressed in the correct order to produce the reward. Very popular in this area is 'Horse Jump'; switch one has to be pressed to make the horse walk to the fence, at the correct distance from the fence for jumping, it stops, and will go no further until switch two is pressed, making it jump, after which the horse will only continue to move if the user returns to switch one. When this has been mastered, the number of choices is increased again though very few of our clients have reached this stage.

Thirdly the micro has obvious advantages in the more advanced areas of teaching. The graphics lend themselves very well to concepts of shape, size, colour etc. the software available is often absorbing and stimulating, providing greater rewards than can be normally achieved, the net result, in our experience, being a greater desire to learn. 'Shape Matching' is good computer programme in this area, there are two shapes on the screen, one of which changes, when they can be matched, the concept keyboard has to be pressed and the music 'congratulations' is played. Finally, our two most able clients are at the stage of basic literacy, numeracy and time telling. At this point it becomes much easier to find interesting, appropriate commercial software. Both clients respond well to the computer, and show obvious enthusiasm to learn and achieve the reward, as in the Time Man programme, which is a tune, a smiling face, and a man planting a flag at the top of a ladder.

Although our experience of a microcomputer is at present limited, we have nevertheless, come across many advantages to such a piece of equipment

within the framework of personal educational programmes for our multihandicapped group. Undoubtedly the most significant points in its favour are the graphics and sound, which are able to change and hold the attention of those of our clients who rarely appear to make eye contact with people or objects during the normal course of a day. One young man at the centre is severely educationally impaired with no eye contact, concentration or communication, whilst having a general enthusiasm for noises. He can attend for two to three minutes at a time to a good visual display on the micro with no sound accompaniment, and is also able to track brightly coloured objects round the screen.

An increase in concentration in all ranges of abilities is a notable offspin of work on the computer. In many cases an initial enthusiasm for the equipment, and an enjoyment of the response received from the programme encourages clients to want to extend the length of time they would normally work on one task. Logically this leads to the benefits the computer can produce in improving mental and motor abilities. Although we have no evidence that clients have acquired or are acquiring skills any faster than with any other teaching aid, it would seem reasonable that the greater the interest and enthusiasm, the more likely one is to learn. With regard to the improvement of motor abilities, one can put forward examples of improved control. For instance there is the case of one of the more able clients who is an athetoid with a fairly marked intention tremor of the hands and arms, but who nevertheless controls the tremor for short periods of time in order to operate the computer via the keyboard.

Because the computer is able to attract attention from some clients where other learning materials appear to fail, it has a role in the difficult task of assessing the abilities of individual clients in areas such as visual/Motor skills and comprehension. Even if none of the goals previously laid out are achieved, the computer can still help to throw light on interesting pieces of information about a client such as whether they find certain colours are soothing or stimulating All this information is valuable. This may appear as a glowing reference for the use of a microcomputer with the multiply handicapped, and it is true that the advantages are considerable. There are however disadvantages.

The main disadvantage being the cost, and directly related to this the range of available hardware and software. Although prices are falling all the time cost of equipment is one of the major problems associated with a micro. The basic computer is inadequate for the severely multiply handicapped, and because such a Unit as ours is unlikely to find many people with the same type of disability, a wide variety of switches is needed, to ensure that as many clients as possible will have the opportunity of controlling the input to the machine. This variety of switches is increasing all the time, but even so, because we are dealing with considerable physical problems peculiar to each individual, it is still difficult to find a switch suitable for each client. The best ones are almost inevitably those which are custom built or adapted.

Similar problems occur with the software. Either the programme content is right but the reward not motivating enough for the client, or vice versa, or both are almost, but not quite right. Again the ideal would be a custom built programme. Secondly, although there are many examples of people

developing and extending skills with the aid of the computer, all of our clients have not yet taken to the machine. For one man who is very profoundly mentally physically handicapped, blind and extremely sensitive to sound, there does not as yet appear to be any suitable application of this type of apparatus. One or two clients have shown only grudging momentary interest, and at present one or two have shown no interest at all, and are obviously motivated by other things. It may be, given the problems with finding the appropriate software, that we have not yet hit on the right programme. However, it is equally likely that for some individuals the micro is simply the wrong type of teaching aid.

We have had a microcomputer in our Centre for only a year, during which time we have developed, assessed and reassessed, its application and relevance to educational programmes organised here. The important point which has been established is that the micro must be used with other teaching aids and methods to reach specific objectives within each clients individual development plan.

ELECTRONICS AND REMAP

Percy H. Hammond BSc (Hons), CEng, FIEE, East Regional Organiser

Electronics technology is a powerful weapon in the armoury of aids for the disabled and REMAP panels have not been slow to recognise this fact and to exploit it.

The special properties of electronic devices and circuits which make them so useful in helping disabled people are:

* Magnification of small effects such as switch and key operations, output of microphones and pressure sensors, electrical activity of human muscles and a host of other useful signals which people use to communicate.
* Coding and manipulation of electrical signals at very high speeds. This is the basis of the operation of microcomputers and their peripheral devices such as printers, display screens, voice recognisers, speech synthesisers, etc.
* Smooth control of the flow of energy into motors and actuators driving wheelchairs, hoists, robots and other aids.

All these functions can now be achieved with highly reliable electronic components in a small physical size and at a low cost.

Probably the highest flowering of electronics in the disablement field is in commercially available 'high-tech' systems which incorporate computing devices to carry out complex operations on data. An example is the automatic reading machine for the blind. Thus in one such device, the blind person holds a miniature TV camera and scans a line of print. The signals from the camera are converted, into a raised pattern of pins on a tablet which the blind person can feel. The conversion may be direct where the pins form the shape of the character on the paper, or may be indirect where the scanned characters are coded electronically to produce a resultant pin pattern in braille. More recent developments have character recognition functions which allow the input of the hand-held camera to be in the form of synthesised human speech.

Domestic microcomputer

A more familiar application of electronics may be the microcomputer now found in many homes. Disabled people can use microcomputers in many rewarding ways provided that the machine can be made to understand their commands. For those unable to use keyboards many methods of commanding a microcomputer have been devised and REMAP panels have contributed to these efforts. A basic requirement is a switch or switches which can be operated by the disabled person using fingers or toes, mouth or head movement, or even eye blink, coupled with electronic circuits which convert switch closures to an appropriate train of electrical pulses which the computer understands. A more advanced method uses circuits and programmes which enables a computer to recognise words of command. Having until recently been an expensive professional technique for such applications as weapons control and factory process operation, this technique is now becoming available to the microcomputer owner and the electronics enthusiast.

The output of a microcomputer may be displayed on a TV screen or printed out. It may also be converted by further electronic circuits into a means of environmental control, operation of door locks and a host of other desired actions including synthetic speech. An important component of a microcomputer is the software programme which defines how the computer will carry out the desired tasks. Developing programmes demands special skills which are becoming well established amongst hobbyists, teachers and others. Writing special purpose software to suit the requirements of an individual disabled person will increasingly become a major activity for REMAP.

Three examples

Many electronic aids have been developed by REMAP panels and three recent examples will be mentioned.

The Barnet panel is involved with a device which senses eye blinks and can enable people with severely restricted limb movement to communicate using the movement of their eyelids. Light falling on the eye from the natural illumination in a room is scattered. Some of this scattered light is picked up by a fine plastic fibre (a so-called 'optical fibre') mounted on a pair of conventional spectable frames worn by the subject. An eye blink momentarily cuts off light to the fibre and this can be detected at the other end of the fibre, which may be up to a metre long. Information is communicated by the user by a series of voluntary eyelid closures whose individual durations are significantly greater than an involuntary blink, which lasts about one tenth of a second. The light emerging from the fibre is detected and interruptions are converted into electrical pulses and analysed. Pulses significantly longer than one tenth of a second are interpreted as voluntary signals and are shaped to provide a suitable input to a microcomputer which can be programmed to interpret the trains of voluntary blinks and to organise meaningful responses. The programme which is currently being written will enable the user to blink the eyes to a pre-arranged code. This will either communicate a stored message or, alternatively, build up individual letters and enable a message to be typed on a line printer or displayed on a television screen.

The Gt. Yarmouth and Lowestoft panel was approached by a deaf client for

a simple aid to enable her aged parents to call her from anywhere in the house or garden. A small electronic lamp known as a light emitting diode, is attached to a spectable frame in a position which can be readily seen in the peripheral vision of the deaf person. The lamp is attached by a fine cable to a radio receiver the size of a matchbox in the pocket. When the deaf person is to be called, the caller operates a miniature radio transmitter which causes the remote lamp to flash.

The 'Grimsby Chatterbox' is another example of REMAP electronics in action. Two proximity switches mounded adjacent to the head on swan-necks, can be actuated by small sideways movements of the head, and enable the person to operate a tape recorder and a talking typewriter - hence the name 'chatterbox'. This apparatus comprises a speech synthesiser, a microprocessor board, a printer and the dual proximity switch. It calls out characters in sequence which can be selected and stored in a temporary memory, to be recalled for checking or printing as required. Touching the first sensor begins a cycle with the following elements: 'stop', 'check', 'cancel' 'ABCD . . . . XYZ' and '0 1 2 . . . . 9'.

If the switch is held on each character is spoken once, but if released each character is repeated five times. This permits the required character to be approached rapidly and then selected with accuracy. The selected character is then stored by touching the second sensor and the system responds by saying 'OK'. In this manner words are built up in a memory, letter by letter, and can be checked by selecting the 'check' function, rejected by 'cancel' or printed out by selecting 'stop'. After this later operation the memory is cleared to receive the next word and the process recommences.

Increasing role with REMAP

There seems little doubt that electronics will play an increasing role in helping disabled people. It is a basic 'enabling' technology, capable of providing a range of flexible and acceptable aids, requiring fairly simple workshop facilities and at reasonable cost. It is a rapidly developing technology, characterised by ever increasing functionality in its new components and with ever decreasing prices as the production of a particular component accelerates. Interest in electronics is very widespread and competence in its methods is spreading rapidly amongst students and hobbyists. It cannot fail to play an increasing part in REMAP affairs.

We are indebted to the Editor of the REMAP Yearbook for the permission to reprint this article.

FROM WHEELCHAIR TODDLER TO TURBO-POWERED SCHOOLGIRL!

by Mrs. Louise Everard

In the November '83 edition of the Newsletter, I related the story of my daughter, Ruth, and the electric wheelchair her father designed for her. Ruth is now 5 and in her first year at primary school. This is the story of

another 18 months of her life, and, the story is very much that of any 4-5 year old's progress, with just a few special circumstances to take into account.

Physical Progress

Ruth suffers from spinal muscular atrophy, and regular physiotherapy is therefore a very important part of her routine, consisting of daily stretching exercises, and as much strengthening work as possible. She has made progress in the last year in terms of muscle-power, and is still free of contractures. From being unable even to lift her head up from the floor, she can now push herself up on her arms, and even attempts crawling motions supported by the water in the bath. Her scoliosis, which was already present when her condition was diagnosed, has progressed, but is still well-corrected in a spinal jacket, which she tolerates well. She has had an ORLAU Swivelwalker for 18 months now, and, standing in this, she can waddle across flat floors by shifting her weight from side to side. Her head control is markedly improved.

The Turbo

The gains she has made physically do not substantially affect her life, gratifying though they are. She is still dependent for her mobility on the wheelchair which her father, Dan, designed. From the age of 20 months she has had the benefit of a highly manoeuvrable machine, with adjustable seat or stand height, and enough power to keep up with the other children, and negotiate quite rough ground. Since August, '84 she has had a new wheelchair, based on the first, but incorporating in its design the lessons we have learned from 3 years of living with a 'wheelchair toddler'. This is called the 'Turbo'. As in it's predecessor, Ruth can raise and lower herself by pressing buttons, right down to floor level, and can either sit or stand in a frame, which allows her to mix just as effectively standing, as sitting. This allows her better access to light-switches, bookshelves and cupboards, and increases the amount of time she spends standing, by eliminating the boredom of a static frame; and allowing her to go outdoors.

Everaids

Having seen the enormous benefits which Ruth has derived psychologically and socially, from being mobile, so young, Dan and I could not sit still and leave other children immobile. So Everaids Ltd. was born, and Ruth is no longer unique. Some 30 other children are now to be seen about the country, their horizons widened and their approach to life changed dramatically by their 'Turbo' power-chairs.

For use by children with different disabilities, the controls are programmable, to vary speed and acceleration and take account of involuntary movements or athetosis. The 'Turbo' handles even rougher ground than its predecessor with the added luxury of a comfortable spring suspension system. It even climbs 3" kerbs. As it's a family business, Ruth is as concerned as any of us about each individual child, and counts them as new friends as they come to collect their Turbos. I think it has been a relief to her to stop being unique. It is much nicer to be the founder-member of the Turbo-owners club!

She takes her Turbo to school every day, and the teachers stress its importance in allowing her to integrate fully into a mainstream school. In her swivel-walker she is too slow to keep up, and being pushed around would deny her the independence she is used to. Because of her Turbo stand, she can still keep up with her standing practice, while retaining her mobility and fitting in with normal school routines. Many of her classmates have known her and her wheelchair since their playgroup days, and so there is no problem of acceptance — she's just Ruth! In the playground, her Turbo is a source of fun, particularly with the older children, who play chase with her, and respect her for the exciting vehicle which she, and only she, can drive, as well as for the other qualities which are so much more evident because of it.

The Future

There are however difficulties still to be overcome in helping Ruth integrate fully. It is not always going to be a case of goodwill and acceptance making it possible. We are lucky that the local primary school is well-laid out for wheelchair access, but the access to secondary schools in the area will need to be improved, if she is to maintain the equality of opportunity she now has, in five years time. The 1981 Education Act has, of course, given parents a lot of say in special provision (once they have managed to understand its provisions and implications!). Yet implementation of the new law is held back by lack of resources. Integration is also dependent on the willingness and ability of staff to cope with special needs, and the kind of support and training that is available to them. Parents can play an important role in this, as we are the experts on our own child's needs, and, with enough discussion and contact, practical difficulties, which otherwise might grow out of proportion, can be smoothed out and resolved at the outset. But the specialists in special educational needs are still based in special schools and units, and ways need to be developed of spreading their expertise around the mainstream schools. Discussion and contact also needs to be a regular feature in relationships between education and health authorities, as a school's ability to cope can depend entirely on the kind of health service support to be had, also, at present, concentrated in special schools.

Attitudes are changing, gradually, and each child, like Ruth, who is successfully integrated, and learns to put herself or himself forward as a valued member of the school, is also doing a service to those about to start their education, in showing everyone that it **is** possible and teaching their schoolmates that disabled children are children first. Their similarities far outweigh their differences, and even when there is an obvious difference, like the Turbo, if it is doing its job properly, it is quickly ignored and overlooked in the midst of the activity it allows its occupant to participate in. Ruth cannot remember the time when she didn't have a power-chair. Like her friends, she has always been mobile. A person seeing her Turbo for the first time finds it exciting, remarkable, an object of surprise and admiration, but to Ruth, it is a simple tool which has always been there. It effectively substitutes wheels for legs, and lets her get on with the business of enjoying her childhood.

EQUIPMENT

Synthetic Sports Surface

Being able to play outside whenever the weather allows in an important outlet for the sometime severe behavioural problems of children at the Beech Tree School (north), a new Spastics Society school.

Scapasport is manufactured in a textile material, laid over a bed of sand and with a surface resillience adjusted to that of a good natural grass area. It is suitable for all ball games and can even be used with athletic spikes.

Scapa Leisure Surfaces, Albert Mill, Cross Street North, Halsingden, Rossendale, Lancs, BB4 5JW.

Baby Wipes

Smith and Nephew has introduced a 70-wipe drumpack of hospital baby wipes. The wipes are fully saturated with a bacteriostat for efficient cleansing. Medi-Fresh wipes contain no alcohol and have gentle skin conditioners to provide added protection.

Medi-Fresh wipes were rated superior in relation to ease of use, cleansing and protection than other traditional cleansing regimes. The incidence of nappy rash and dry skin was minimal, demonstrating the value of Medi-Fresh in continued use. Tel: 04427 74391.

Simon's Pressure Flasher Bleeper

John Bell is a partner in a company producing computer interfaces and software specifically for disabled people. He describes an electronic pressure sensor his company is marketing, which was originally designed to help his cerebral palsied son Simon.

Sensor unit (exc. battery) £55.50 + VAT
Single Pressure Pad £7.60 + VAT
Connector assembly 'and' £4.80 + VAT
Connector assembly 'or' £4.20 + VAT

Please address all inquiries, enclosing s.a.e. to JAPE, Seedbed Workshops, Ceag Buildings, 1 Pontefract Road, Barnsley, South Yorkshire S71 1AJ.

A Toe-hold on Computers

You don't need hands to play 'space invaders' at the Cedars Medical Rehabilitation Unit in Nottingham. Thanks to a new computer input switch, patients with ankle injuries have a novel way to practise movement without weight-bearing. The switch was invented by Chris Wilding, a student at Trent Polytechnic who is taking a degree course in craft, design and technology. This could also be used with children who lack hand function.

New Aids for Disabled People

Three Welsh 16-year olds have each come up with a useful new aid for disabled people.

Jonathan Craig has invented a cushion which makes a sound if a person sits on it unevenly, or slides down — very useful for stroke patients and perhaps mentally handicapped children. Michael Pownall has made a small

sensor which sounds when there is a gas leak. Rachel Pettigrew, who plans to be a physiotherapist herself, has devised a long-handled reacher which works with a very light touch.

Mattress and Cushion System

Astec range of Clinifloat mattresses. It is made from special density foam, 18cm thick with a deep grooved top surface which takes on the contours of the body and thereby spreads body weight evenly over as large an area as possible. By supporting areas such as neck, lower back and behind the knees which do not normally press into a conventional mattress, pressure on prominent areas is lowered.

Mattresses are supplied in thre interchangeable sections, each measuring 68 by 90 cm and each weighing less than 4 kg. They can be washed by conventional means.

Asten Environmental Systems Ltd., 31 Lynx Crescent, Weston Industrial Estate, Weston-super-Mare, Avon, BS24 9DJ.

Medicine Spoon

Beehive Industries has brought out the new BS 5ml medicine spoon which can be put down on a flat surface without spillage.

Beehive Industries Ltd., Imperial Way, Watford WD2 4YY.

Kingcraft Bath Chair

A fully supportive bath chair tailored to suit the disabled child. Fits securely in conventional baths and can be used out of the bath.

Price £95 × carriage + VAT. Kingcraft Limited, 31b Market Street, Chapel-en-le-Frith, Stockport, Cheshire, SK12 6HP. Tel: 0298 812528.

'Easibath'

The 'Easibath' gives safety, independence and total confidence to the bather and helper.

* Now supplied to many Local Authorities and Area Health Authorities.
* Sides drop down to form a platform which will carry over 20 stones (127kg) and can be used for drying and dressing on
* Bath at working height for Nursing care
* Access on the bath from both sides
* Made from strong polypropylene with 'built-in' hinges, which carry a 5-year Watertight Guarantee

Model 1600 bathtop is available separately for fitting to the top of an existing 5'6'' long conventional bath. Supplied with fixings and fittings. Windsor thermostatic bath/shower mixer recommended for safe and reliable use.

Prices from approximately £650 + VAT. From Kingcraft Limited, 31b Market Street, Chapel-en-le-Frith, Stockport, Cheshire SK12 6HP. Tel: 0298 812528.

Combination Work Table

For use with tilt table or wheelchair. Adjustable height accommodates children and adults. Tumble Forms coated tray with rim gives the Combination Work Table an attractive appearance and durability for heavy duty use. PC 7081 Combination Work Table.

Play Equipment

Criteria for selecting Play Equipment for early childhood education. For the Special Child, designed in close co-operation with physio and occupational therapists. Each item has evolved through an exhaustive series of tests in the field. Catalogue in full colour available free. From: Rifton, Robersbridge, East Sussex, TN32 5DR.

Easy-Air Nebuliser

The easy air nebuliser from Keeler offers great relief for asthma and chronic bronchitis sufferers — wherever they are.

Extremely portable; requiring no electricity it can be used easily and safely around the hospital, from an ambulance or in the home. Its light but robust construction makes it very durable requiring minimum maintenance.

Keeler Limited, Clewer Hill Road, Windsor, Berkshire, SL14 4AA.

The Roving Scooter

Downs Surgical has introduced Rova, an electrically-powered scooter that can climb curbs up to three inches high and descend curbs as deep as six inches. Pneumatic tyres contribute towards a more comfortable ride, and enable the scooter to move across most surfaces easily, including grass.

The Rova is eay to manoeuvre — even indoors — and can be supplied with many optional extras such as two detachable baskets, at the front and rear; swing back arm rests; a battery condition indicator; front and rear lights; seat height adjustment; and a choice of battery and charger.

It is simple to drive and the user needs no licence or insurance. Further information about Rova and a range of wheelchairs and scooter may be obtained from Downs Surgical PLC, Personal Products Division, Church Path, Mitcham, Surrey, CR4 3UE. Tel: 01 648 6291.

Auditory Response Cradles

It has taken ten years to develop the ARC and one has been in use at Hillingdon for clinical trials since 1978, screening 5,000 babies (80-90% of those born in that period) and costing about £2 per baby. Dr. Tucker, who is in charge of the evaluation of medical aspects of the study, said that all babies born in the unit from Tuesday to Thursday were tested and also all special care babies — who have a 14% risk of deafness. Of the 5,000 babies tested so far, 66 have failed twice. Early diagnosis of deafness means that appropriate medical or surgical treatment can be given at the first opportunity; and parental guidance helpd minimise the handicap. Hearing aids can be fitted as early as six months of age and lip reading can be taught to the very young child, ensuring maximum competence. Effects of handicap are thus greatly reduced.

Auditory response cradles were developed by Dr. M. J. Bennett at Brunel University and are manufactured by Linco Acoustics, Reading.

Walking Aid for Young Children

The BRIO Learner Walker, from Everest and Jennings, is a sturdy walking aid for young children. Made from weatherproof plywood and tubular steel, it has an adjustable handle and rubber wheels with nylon bearings.

The Learner Walker is almost impossible to tip, even when not loaded with books, the company claims. Available from Everest & Jennings, Princewood Road, Corby, Northants, NN17 2DX. Telephone (05363) 67661.

Wheelchair Recliner

A unique wheelchair recliner, designed and built by a teacher and two pupils from Shrewsbury School, has gone into commercial production — and some of the cash from every sale will be used to provide scholarships for children of disabled parents to attend the school.

The team who have taken the recliner from the classroom to market place are Ted Barber, head of craft and design at Shrewsbury School, and pupils John Freeman and Ingram Legge, now both aged 18. "It can be used for almost any medical handling of people in wheelchairs," says Ted Barber. "And it also makes hairwashing or just watching television that much more comfortable for the one-in-100 people in the country who are wheelchair-bound."

Available from Hatrick Industries Limited, c/o Shrewsbury School.

Thermometer

IVAC have produced the Model 821 electronic thermometer, which is suitable for paediatric use. The probe is covered in a hygienic disposable plastic cover, so there is no danger of breakage. The instrument can be used orally or rectally, and the exact temperature is registered in approx. 20 sec.

Available from: IVAC, IVAC House, Bessborough Road, Harrow, Middlesex, HA1 3DT.

Swaddling Suit

A metallised swaddling suit designed to prevent hypothermia in the newborn baby has been produced by Lewis Woolf Griptight for use in hospitals. The Silver Swaddler is made of thin polyester plastic film coated with an extremely thin layer of aluminimum, and provides a very efficient heat and moisture barrier.

Available from Lewis Woolf Griptight Limited, 144 Oakfield Road, Selly Oak, Birmingham, B29 7EE.

Special Folding Pushchair

It looks like an ordinary pushchair, but a handicapped child will tell you its 'Special', like a velvet glove the adjsutable back conceals a brace that supports its back comfortably, even for long hours of shopping, etc. (It's also prepared for a security belt).

The Pelvis belt will enable the child to relax into a good sitting posture, with its feet at the correct height and length, using the adjustable footrest,

the two-part handle opens to allow the child to be lifted 'out or in' quite easily. A security lock against folding accidently, a brake that acts on both Disc wheels and the various accessories like a leg divider, a neck support and slanting cushions, all make a handicapped child in a SULKY feel comfortably safe! FREE catalogue from Joncare, Radley Road Industrial Estate, Abingdon, Oxon, Tel: (0235) 28120.

The following items are available from Camp, Cross, Rhind Ltd., 24 Hogg Street, Airdrie, ML6 9JH. Tel: (02364) 51148.

Paedriatric Mirrors

Mirrors scaled down for youngsters to decrease external stimuli and distractions. Available with glass mirror panels or new shatterproof vinyl Saf-T Mirror.

Nested Climbing Stools

Set of four non-slip wood stools measure 16 x 20 x 8 in (41 x 51 x 20 cm); 14 x 18 x 6 in. (36 x 46 x 15 cm); 12 x 14 x 4 in (30 x 36 x 10 cm); 10 x 12 x 2 in (25 x 30 x 5 cm). Units nest for storage. PC 4535A Nested Climbing Stools.

Vestibulator — Equipment for sensory integration activities

The Tumble Forms Vestibulator provides you with the necessary tools to focus on sensory integration therapy. Create vertical stimulation and direct flexion; linear acceleration; rotational experiences; head righting opportunities; in addition to a complete range of motion excercises. Designed for safety and stability, the durable metal Vestibulator frame offers a full working load of 500 lbs. The Vestibulator is portable and folds for convenient storage.

Rollator with Carrying Case

Wheeled walker with a bright colourful appearance and carrying case will appeal to all children. Height adjusts from 19 to 27 in. (48 to 68 cm). Rollator can be folded for easy storage. PC 1880 Rollator with carrying case.

Maclaren Buggy — Feeder Seat Insert

Fits inside Puggy for firm support. Medium size fits children to 48 in. (125 cm.) tall, 8½ in. (22 cm.) width at hips. Small size to 36 in. (92 cm) tall, 7 in. (18 cm.) width. With safety lap belt. PC 2795M Medium Feeder Seat, PC 2795N Small Feeder Seat.

Fabric Insert Seat

Slips over regular seat for very small or severely disabled children. Has chest and pelvic straps. PC 4572S Fabric Insert Seat.

Everest & Jennings, Preston — Basic Child Chair.

Accessories

PC 4506 Posture Vent, Child Size. Body strap is 6 in.(15 cm) wide, 40 in. (102 cm) long at waist.

PC 4506A Adolescent Posture Vest. 50 in. (127 cm) long waist: 24 in. (61 cm) shoulder strap.

PC 2796W Deluxe Wheelchair Postitioning Safety Support. Tumble Forms padded extra wide belt has extra long nylon strap.

The Yorkhill Chariot

The Yorkhill Chariot, originally designed at the Sick Children's Hospital, Yorkhill, Glasgow provides a means whereby many children can obtain a large degree of independence in the home, in hospital and in handicapped centres, benefitting them not only medically but psychologically.

Standard and Special Models — Standard Chariots are available in six sizes and can be fitted, at additional cost, with handrims, double door catches and pedestrian handles, as required. Handrims can be fitted to sizes 20, 22, 24 and 27 but not in sizes 16 and 18.

For further information on the Yorkhill Chariot please contact the Sales Office, Robert Kellie & Son Limited, Rutherford Road, Dryburgh Industrial Estate, Dundee, DD2 3XF. Scotland.

Smiling Suzie

Strong wooden box with picture of a girl's face behind a perspex screen. Mouth light up when spoken to, speak louder and the eyes light up. Available from Toys for the Handicapped, 76 Barracks Road, Sandyhome Industrial Estate, Stowport on Severn, Worcs.

Cedric

New eye-gaze communicator in Australia House. People with minimal physical function can use it too.

Playground Range

Konpan has now introduced the Oasis range of children's playground equipment. The brightly-coloured equipment has been specially designed for children over eight years old. Available from: Kompan UK Limited, 29 Ransoms Avenue, Conniburrow, Milton Keynes, MK14 7DH.

Rebuses

Activity Pack 1. This starter pack contains 150 plain cards, 128 small peel-offs and 16 large ones selected from the 859 rebuses in the Glossary. A versatile learning resource that can be used in many ways, eg Pelmanism, Snap Lotto, etc., including those described in 'Learning with Rebuses: Read, Think and Do.' Available from LDA, Duke Street, Wisbech, Cambs, PE13 2AE.

'Paedirette'

The 'Paedirette' posture support system has been developed to allow simple and immediate body adjustment even though the child's condition may not have stabilised. The seat unit can be mounted on either an indoor or outdoor carriage with a simple locking device. Both indoor and outdoor carriages have a height adjustment and can be tilted by means of a gas-filled spring.

Also available are: The torso belt, deep profiled head support, the footboard has an adjustable heel angle, back with adjustable side supports and tray, pelvic restraint and the extra long back. The basic frame consists of two armrest pads and the adjustment brackets. To this must be added a seat, a backrest, a leg support and one of the carriages.

Available from Everest & Jennings, Princewood Road, Corby, Northants, NN17 2DX, Telephone: (05363) 67661.

New Training Kits

Following extensive research and development in Ireland, directed by Dr. Roy McConkey, St. Michael's House are pleased to make available the following ready-made training kits for use with — teachers, preschool and playgroup leaders, health visitors, voluntary workers, toy library helpers and parents. Further details of each kit are available on request.

Let's Play — Putting Two Words Together — Learning to Pretend — Community Education Kit — Preventing Handicap — Friendship Scheme.

The kits consist of video-cassettes and course handbooks. Cost £30 — £55 per set.

From: St. Michael's House Research, Upper Kilmacud Road, Stillorgan, Co. Dublin.

APCP ANNUAL CONFERENCE APRIL 4-6th 1986

University of Kent at Canterbury

A.P.C.P. Canterbury Tales

Friday April 4th National Committee Meeting
5.30 onwards Registration.
7.30 Dinner.

Saturday April 5th

8.45 a.m. Registration.
9.30 a.m. Opening of Conference and Welcome — Miss Ann Grimley MCSP.
9.45 a.m. "Neuromuscular Disorders" — Dr. Richard Robinson, Cons. Paediatric Neurologist Guys Hospital.

10.30 a.m.	Trade Exhibition and Coffee.
11.00 a.m.	"Syndromes" — Dr. Caroline Berry, Consultant in Clinical Genetics, Guy's Hospital.
11.45 a.m.	"Postural Assymetry" — Mr. David Scrutton, MCSP. Supt. Physiotherapist, Newcomen Centre, Guy's Hospital.
12.15 p.m.	Forum: The problems of maintaining Symmetry.
12.45 p.m.	Lunch and Trade Exhibition.
2.15 p.m.	"Scoliosis" — Mr. Timothy Morley, Consultant Orthopaedic Surgeon, Royal National Orthopaedic Hospital, Stanmore.
3.00 p.m.	Tea and Trade Exhibition.
3.30 p.m.	Recent Developments in Seating — Mr. Roy Nelham, Technical Director, Rehabilitation Centre, Chailey Heritage.
4.15 p.m.	Seating Problems — How can we help? Miss Ruth Cartwright, MCSP, Supt. Physiotherapist, Chailey Heritage. Mrs. Christine Foster MCSP, Deputy Supt. Physiotherapist, Chailey Heritage.
7.30 p.m.	Sherry Reception.
8.00 p.m.	Conference Dinner.

Sunday April 6th

8.45 a.m.	Registration.
9.15 a.m.	Members Discussion Meeting.
10.00 a.m.	"Respiratory Diseases of Childhood" — Dr. John Price, Consultant Paediatrician, Kings College Hospital. "Indications and Contra-indications for Physiotherapy" — Mrs. Annette Parker, Senior Physiotherapist, Kings College Hospital.
11.30 a.m.	Coffee.
12.00	"Nebulisers" and Inhaled Therapy — Dr. Richard Lewis, Senior Registrar, Southampton General Hospital.
12.45 p.m.	Review of Conference — Mrs. Olwen Nettles, MCSP. Closure of Conference — Miss Ann Grimley, MCSP.
1.15 p.m.	Lunch.

COURSE DIARY

1985

November 18th

MENCAP — Study Day for teachers working with special needs, children under 8. Details:— Mencap, 123 Golden Lane, London.

November 25-27

Personal and Social developments for young people with special needs. Castle Priory College, Wallingford, Oxford.

December 1-4

Rehabilitation Engineering, Stannington Childrens' Hospital, Northumberland. Details:— Miss E. M. McGuire, Principal Assistant Training Officer, Northern Re.H.A., Regional Personnel Division, 52 Clifton Road, Newcastle-upon-Tyne.

December 6-8

The Basic Motor Pattern. Esther Cotton, Castle Priory College, Wallingford, Oxford.

December 9-11

Hyperactivity in Children. Castle Priory College, Wallingford, Oxford.

December 10

Seating Workshop. Details:— The Secretary, National Demonstration Centre, Pinderfields General Hospital, Wakefield. WH4 DG.

1986

February 12

Wheelchair Seating Problems of the Severely Disabled. Details:— Miss Vera Friend, Secretary, Demonstration Centre, Mary Marlborough Lodge, Nuffield Orthopaedic Centre, Headington, Oxford. OX3 7LD.

April 9-12

Third International Downs Syndrome Congress. University of Sussex. Details:— Maggie Enslie, 4 Oxford Street, London.

April 28 - May 2 November 10 - November 14

The Education of People with Profound Multiple Handicaps.

Pendrell Hall College, Codsall Wood, Nr. Wolverhampton, Staffs.

June 13-15

Developing a Toy Library. University of Stirling. Details:— National Toy Library Assistant, 68 Churchway, London. NW1 1LT.

Letter from the Community Paediatric Physiotherapists, Swinton Clinic, Partington Lane, Swinton, Manchester 27.

For the past 3 years we have organised a 'Summer School' during the summer holidays for children with co-ordination problems, ranging in age from 5-12 years. The children spent the day from 9.30 a.m. - 3.30 p.m. and brought their own lunch. During the day we did various activities, in age appropriate groups, those included Soft Play room and Trampolining activities, swimming, P.E., crafts, cookery and social skills. There were communal music and movement and singing sessions. This was run jointly by the community physiotherapy and occupational therapy staff.

We wonder if physiotherapists in other parts of the country have been involved in such schemes? We would be most interested to hear from anyone who is involved in the running of any type of play scheme during school holidays, in order to compare ideas and see if there are similar problems experienced when running these schemes, and what benefits the children have gained?

FOR SALE

Brand new, unused copy of 'Handling The Cerebral Palsied Child' by Nancy Finnie, 2nd Edition. £7. Enquiries to the Editor.

SNIPPETS

Intensive Therapy for Cleft Palate Children

An enterprising speech therapist at Queen Victoria Hospital, East Grinstead, Sussex, is organising a holiday workshop for children with cleft palate.

Denise Dive has taken over the children's ward while the operating theatres are closed in August. Seven children, most of them aged between six and eight, lived in for a week and had intensive therapy for three hours every morning, speech practice at other times and recreational activities in the afternoon.

The Mersey Region have started their 'natter nights' again. These are informal meetings held in various locations in the area to discuss the mutual problems that arise and exchange ideas and information. We have found these get togethers very useful and perhaps other areas would be interested in taking up the idea also. If further information is needed please contact Ann Raffle, Superintendent Physiotherapist, Royal Liverpool Children's Hospital, Myrtle Street, Liverpool. Tel: 051-709-1000, Ext. 2554.

The Paediatric Research Unit, Royal Devon and Exeter Hospital (Heavitree) Exeter EX1 2ED has done a study of the Unmet Needs of Handicapped Young Adults. Copies price £2 from above address.

The Research Trust for Metabolic Diseases in Children has started its Golden Circle Appeal for £150,000 for Development Research. We wish them every success in this very worthwhile work. For further information contact RTMDC, 9 Arnold Street, Nantwich, Cheshire, CW5 5QB. Congratulations too, to the Editor of RTMDC News on the arrival of Rebecca Anne in June.

PUBLICATIONS

Register of Swimming Clubs and Organised Swimming Sessions for Handicapped People 1985-86.
Brighton: National Association of Swimming Clubs for the Handicapped. (219 Preston Drive, Brighton, East Sussex. BN1 6FL). 1985. £0.50.

Towards a Better Understanding, Aspects of Mental Handicap.
Robert Senior. Euromonitor Publications Ltd. £4.95.

Working Together with Handicapped Children.
Edited by Margaret Griffiths and Philippa Russell. Human Horizon Series. Souvenir Press. Paperback £5.95.

Self Injurious Behaviour. ISBN 0 906054 4.
Editre by Glynis Murphy & Barbara Wilson, Research Psychologists, Institute of Psychiatry, London. Paperback £8.95 plus p. & p.

Ready to Play
Series of nine booklets published and promoted by Play Matters/The National Toy Library Association.
Available as a set in a wrap around folder for £4.50 or separately for 50p each from:— Play Matters, Seabrook House, Darkes Lane, Potters Bar, Herts. The booklets are:— In the Bath; Going to Bed; Time to Eat; Getting Dressed; Out and About; Cooking and Cleaning; Toilet Training; Having a Holiday; Time to Play.

These booklets are packed with ideas and suggestions for incorporating PLAY into the routine of daily living, many of them from parents themselves. Covering a wide range of activities in a simple and easy to understand format, combined with clear illustrations they are a welcome addition to any book-shelf and will surely be welcomed by parents of mentally handicapped children who may have run out of energy when play is mentioned as a separate activity.

TOYS

Quality Wooden Toys

Kouvalias — Quality Wooden Toys from Greece. A dozen strong attractive toys available from: *Fabrico (UK) Ltd., 34 Hove Park Way, Hove Park, Sussex, BN3 6PW.*

ARTICLES OF INTEREST

Copies of the following articles can be ordered from:— *Mr. Martin Saunders, Asst. Librarian, National Demonstration Centre, Pinderfields General Hospital, Wakefield, West Yorkshire. WF1 4DG.* Please quote the bulletin date, the number of the article and full details of the citation. You will be invoiced at 9p per sheet. Do not send money with order.

September

(7) McGrath PJ et al
Assistive Devices: utilization by children.
Arch. Phys. Med. Rehabil 1985 Jul; 66(7):433-8.

(10) Rapoff MA et al.
Parent perceptions of problems experienced by their children in complying with treatments for juvenile rheumatoid arthritis.
Arch. Phys. Med. Rehabil. 1985 Jul 66(7):427-9.

(19) Haralson KM
Therapeutic Pool Programmes
Clin. Manage. Phys. Ther. 1985 Mar-Apr; 5(2):10-3.

(21) Heckmatt JZ ey al
Prolongation of walking in Duchenne muscular dystrophy with light-weight orthoses review of 57 cases.
Dev. Med. Child Neurol. 1985 Apr; 27(2):149-54.

(32) Messner RL et al
Neurofibromatosis: a familiar and family disorder.
J. Neurosurg Nurs. 1985 Aug 17(4):221-9.

(33) Harris SR et al
Goniometric reliability for a child with spastic quadriplegia
J. Paediatr. Orthop., 1985 May-June; 5(3):348-51.

(40) Cohen C.
Augmentative communication: a perspective for paediatricians.
Paediatr. Ann 1985 Mar; 14(3) 232-4.

(51) Montgomery PC Cashin H
Seating device for multihandicapped infants: suggestions from the field.
Phys. Ther. 1985 Jul; 65(7):1069-70.

REGIONAL REPORTS

London **Reg. Rep: Miss Fiona Graham, 27 Vardens Road, London SW11.**

We are disappointed to have to report that the course "Alternative Communication" which was to take place on Sunday 5th October at the Hospital for Sick Children, Great Ormond St. has to be cancelled due to the lack of interest. Nevertheless we should like to thank Miss Vivienne Read, Superintendent Physiotherapist of the Paul Sandiford Centre for all her hard work in organising what should have been a very interesting programme.

East Anglia **Reg. Rep: Mrs. P. A. White, 24 Maltings Drive, Wheathampstead, Herts.**

As a follow-up to the study day on "The Clumsy Child", a physiotherapy workshop conducted by Mrs. Judi Baker MCSP was held at the Cell Barnes Hospital on September 19th. It was

well attended, most helpful, and informative. It is hoped that our next meeting will be on Laban movement, particularly for the Mentally Handicapped, and will be a study day at Harperbury Hospital, probably in early March 1986. There are also plans for a Peto workshop to be held at Cell Barnes Hospital in June 1986.

South West **Reg. Rep. Miss Gillian Riley, "Meadows", Bower Chalke, Salisbury, Wilts.**

At the present time the Region is in the 'grip of Griffiths' and all the various Districts are heavily involved keeping abreast of developments. Thus it has not been possible to arrange an Autumn Study Day this year, although it is hoped to organise two study days next year. The new Regional newsletter has been circulated and first comments are favourable.

North West **Reg. Rep: Mrs. Katherine Jones, 66 Mellor Brow, Mellor, Blackburn, Lancs.**

The Region held a Study Day on October 5th on the Adolescent Knee. The full and interesting programme was organised by our Secretary, Mary Casey. The venue was Rochdale.

Our Study Day combined with the Annual General Meeting in February 1986, is planned to be on Spina Bidifa. More details later with the Annual General Meeting mailing.

The North West Branch have again agreed to sponsor four members of the North West APCP for £75 each to attend the 1986 APCP Conference in Canterbury, should they have difficulty in obtaining funding. Applications should be received by the Secretary by the Annual General Meeting in February.

The last day for submission of material to be included in the February 1986 Newsletter will be January 6th 1986.

Query

Can anyone comment on the following letter received from The Children's Centre, University Hospital of Wales, Cardiff?

're Addimed footwear: Trainers and boots.

We are interested in trying this range of footwear for children with various problems:— cerebral palsy, spina bifida, general hypotonicity and joint laxity.

The children find these attractive and more acceptable than the usual alternatives, especially in the summer, and we fell this is particularly important to the handicapped children integrating into normal schools. We have recently been prevented from obtaining these by DHSS regulations.

We wonder if any other physiotherapists have had experience with the boots and trainers and would value any comments on their suitability and durability.'

Mrs. L. Horrocks, Mrs. D. Pickering and Mrs. V. Williams.

SEMINAR ON SEATING CEREBRAL PALSIED CHILDREN AND ADULTS

21st February 1986

To be held at Cheyne Centre for Spastic Children, 61 Cheyne Walk. SW3.

10.00	Coffee and Registration	
10.30	Why seating and what for?	David Scrutton
10.40	Assessment for seating.	Carolyn Shumway
11.30	Principles & Practice.	Roy Nehlam (to be confirmed)
12.00	Windswept hip deformity and methods of coping with it.	David Scrutton
12.30	LUNCH	
01.30	Coping with windswept hip deformity.	Sara Pickford
02.15	Types of Individual Support.	Roy Nelham/Kim Barton
03.00	Alternatives to traditional seating design.	Pauline Pope
03.45	Tea/Equipment display.	
04.00	Discusson	*Chairman:* D. Scrutton
04.45	Sum up and close.	

Application forms from:

Lesley Carroll, Course Director,
Cheyne Centre for Spastic Children,
61, Cheyne Walk,
Chelsea,
London. SW3 5LX

Cost £20.