OTHER PHYSICAL HANDICAPS

While blindness attracts both governmental and voluntary provision in a wide range of countries, and deafness is recognised increasingly as worthy of attention, other physical handicaps remain largely neglected. The physically crippled and the mentally handicapped in the developing countries constitute by far the largest numbers in need of special provision, but up to the present have probably the least effort made on their behalf in relation to the need. Even in Western Europe, schools and institutions for the crippled were provided later than those for the blind and deaf (1), and indeed the present situation is readily understandable in terms of the environment and social conditions pertaining in most developing countries. The severely crippled child tends to die in infancy, the less badly affected can be absorbed into the family activities in the fields and compounds, so that the need for special provision is not apparent to parents and administrators. Only with the increasing number of markedly crippled children remaining alive and with the development of health and social services does the problem of their education and training arise.

An essential distinction can be drawn between the crippling agents in rich and poor countries. In the former crippling is caused most frequently by genetic accident, war, machinery and motor vehicles, while in the latter physical handicap is the inescapable result of poverty, ignorance and disease (2). The changing pattern of physical handicap is almost a measure of a country's stage of development; the rapid increase in Africa and Asia of the incidence of poliomyelitis, a disease associated with higher rather than lower standards of living, bears out this contention. As more crippled children in the poorer countries survive, the need to make suitable provision becomes increasingly urgent, not least because, of all the handicapped, the crippled child is most immediately aware of his essential difference. The blind child can hardly imagine sight or the deaf child sound, but the crippled child (except for a number of the cerebral palsied) is likely to be of normal intelligence and thus fully cognisant of his situation. The crippled child's life can be seen as a series of crises affecting his personality.

> "In order that these children may be habilitated, they need to be under the direction of someone who really cares about them. But that is not enough: the child needs to know that someone cares about him, and be convinced that he is worth caring about. Unless this happens a perfect prosthesis and a perfect training program are useless."(3)

The chances for the physically handicapped child in a developing country obtaining such treatment are at present slight.

Origins of physical handicap

It has been said of children in tropical Africa that "in the broadest sense they are all handicapped"(4). Those who cannot function on the same level as their peers, however, must be regarded as in need of special attention. One of the major originating factors of physical handicap is malnutrition, both of mother and child: this is surveyed separately later in this study. Congenital abnormalities manifest themselves in conditions such as club foot, congenital heart disease, spina bifida, and, particularly in Africa, sickle-cell anaemia and albinism. Cerebral haemorrhage associated with birth trauma accounts for some of the physical deformities and mental

handicaps. It is postnatal infections, however, especially prevalent in areas of poverty and ignorance, which represent the main causes of child mortality and physical handicapping, although accidents and native medicine, war and natural disasters, are also contributory factors. Infections may have their origin in bacteria (tuberculosis, leprosy), viruses (poliomyelitis, measles, smallpox, encephalitis), parasites (malaria, schistosomiasis, trypanosomiasis, onchocerciasis, filariasis) or fungi (histoplasmosis, subcutaneous phycomycosis). There is a growing impression that more children in developing countries are developing asthma, while rheumatic fever, rheumatic heart disease and rheumatoid arthritis have been reported from many areas of the African continent. Improper dental hygiene leads to widespread infections of the mouth including cancrum oris and dental caries, the latter apparently increasing as urbanisation gathers pace (5). Of these origins of physical handicap few have been investigated in depth in the developing countries, but in the last decade additional resources have at last been made available in a number of countries to supplement the pioneering work of voluntary agencies and understaffed government medical departments.

Four major causes of physical handicap

(a) Leprosy. The revulsion accorded to leprosy by communities throughout the world is parallelled only by that with which epilepsy is regarded. The reaction to leprosy may be accepted as more realistic in that the disease is communicable (although not very easily) and its effects are continuously apparent. It has been called "the prime crippler of our time," because of both its direct results and the results of secondary infections which may arise (6). At the unobtrusive first signs, the "indeterminate" stage, leprosy is almost always curable, and in 50-75% of cases it heals spontaneously (7). At the second stage one of two forms of leprosy develops, the lepromatous or the much more common tuberculoid (a dimorphous form showing both sets of symptoms simultaneously is not infrequent). The skin alterations caused by leprosy give rise to much of the social antipathy towards the sufferer, but more important medically is the damage which the disease can do to the nerves. This peripheral nerve damage may result in cutaneous anaesthesia (so facilitating secondary infection) or muscle paralysis. Treatment, both medical and surgical, is possible, although recent experiments with preventive vaccination have proved disappointing so far. Treatment with dapsone, though it may be lengthy, can cure up to 95% of all those affected by the disease (8). Since close contact with an infected person over a protracted period is usually necessary for the disease to be passed on, children of infected parents are at very high risk.

(b) Poliomyelitis. The incidence of poliomyelitis seemed, until the discovery of the Salk vaccine, to vary directly with the standard of living of a country. A virus infection affecting the spinal cord, nerve cells and muscles, the disease affects particularly children in their growth period, with the result that deformity is not infrequently aggravated by the normal process of growth. The acute stage of the disease is of short duration but the after-effects may persist in permanent severe crippling. Four major factors lie behind the increasing incidence of poliomyelitis in East Africa. These are: the probable increased virulence of the virus, thus enabling it to break through natural immunity; improved standards of domestic hygiene, resulting in a larger number of weaker children remaining alive to fall victim to the virus; rapid population growth, producing an increasing group susceptible to successive triennial epidemics; and population movement, polio epidemics seeming to follow routes of communication (9).

(c) Cerebral palsy. This is the only major type of physical handicap which is accompanied by a high incidence of mental handicap. The term cerebral palsy is generally used to cover any malfunctioning of the motor system resulting from brain damage. The condition has been recorded as congenital and usually involving complex multiple handicaps (10), while additional natal factors have been suggested, such as oxygen lack or haemorrhage, and post-natal factors, including meningitis and encephalitis, drugs, neoplasms, and trauma (11). The comprehensive definition of the United Cerebral Palsy Research and Education Foundation is perhaps more descriptive than definitive:

> "Cerebral palsy embraces the clinical picture created by injury to the brain, in which one of the components is motor disturbance. Thus, cerebral palsy may be described as a group of conditions, usually originating in childhood, characterised by paralysis, weakness, inco-ordination or any other aberration of motor function caused by pathology of the motor control centre of the brain. In addition to such motor disfunction, cerebral palsy may include learning difficulties, psychological problems, sensory defects, convulsive and behavioural disorders of organic origin." (12)

Because of the different intensities and manifestations, in cases of infantile cerebral palsy, it is very difficult to establish a diagnosis (13). Three main categories of cerebral palsy may be listed: the spastic conditions (hemiplegia, diplegia, quadriplegia), ataxia (impairment of balance and inco-ordination of movement), and dyskinesia, including athetosis (involuntary movement) (14). Children with cerebral palsy are often otherwise handicapped; in about 30% of cases some hearing defect is also present (15).

(d) Tuberculosis. While pulmonary tuberculosis and tuberculosis of the bones and joints are decreasingly common in the richer countries, in the poorer countries they still represent a major hazard. Poor living conditions, especially in urban areas, and malnutrition create conditions in which the disease can spread most easily. In India some 5 lakhs (500,000) people probably die of tuberculosis annually and up to 100 crore (1,000,000,000) man-days are lost every year because of its effects (16). Cameron Duodu reveals the attitude of the Ghanaian rural schoolboy to the disease:

> "I had never liked smoking myself - it blackened the teeth and also, I felt that my chest was too thin and I might cough if I smoked, and coughing could lead to consumption - the deadly disease we feared most when we were in school." (17)

There is little doubt that in East Africa tuberculosis is now a major endemic disease and believes the general picture to be one of widespread infection, more concentrated in the towns, but by no means negligible in the rural areas (18).

Incidence

Physical handicap, excluding leprosy, is generally estimated at double the incidence of blindness (19). On this basis there could be some two and a half million physically handicapped children in Commonwealth countries,

half of all handicapped children. Although accurate data are lacking for almost all the developing countries it is probable that the main crippling agents at present are leprosy and polio. As dapsone and the Salk vaccine become more readily available these numbers are likely in the future to fall, but the overall incidence of physical handicap may well be restored by the increased survival rate of more severely handicapped children suffering from such afflictions as cerebral palsy, muscular distrophy and spina bifida (20). In a personal communication to the author a medical officer from Tanzania indicated that he did not see spina bifida as a problem in that country in the near future: "They will die." Table 3 indicates some incidence rates of major crippling diseases where these have been estimated.

An important aspect of the incidence of crippling is the fact that disabled children tend to be multiply handicapped. A comprehensive inter-disciplinary study conducted in the American State of Georgia which concluded that the average handicapped child had 2.2 handicaps; one-third had three handicaps and two-thirds showed signs of two handicaps (21). That this can be assumed to be true of the developing countries is easily demonstrated by the estimate that 90% of all children in Lagos are infected by malaria, some 60,000 infants dying annually from malaria within months of their birth (22). Virtually every physically handicapped child in tropical Africa, therefore, is additionally affected by malaria (and its accompanying enlarged spleen and anaemia) and malnutrition.

The overall problem is given some perspective by the situation in Uganda, a relatively small country of some 8 million people. Of this population, some 650,000 have obvious disabilities, a figure which is increasing by about 6,000 annually. Rising populations bring increased numbers of handicapped children even if incidences remain steady or dip slightly.

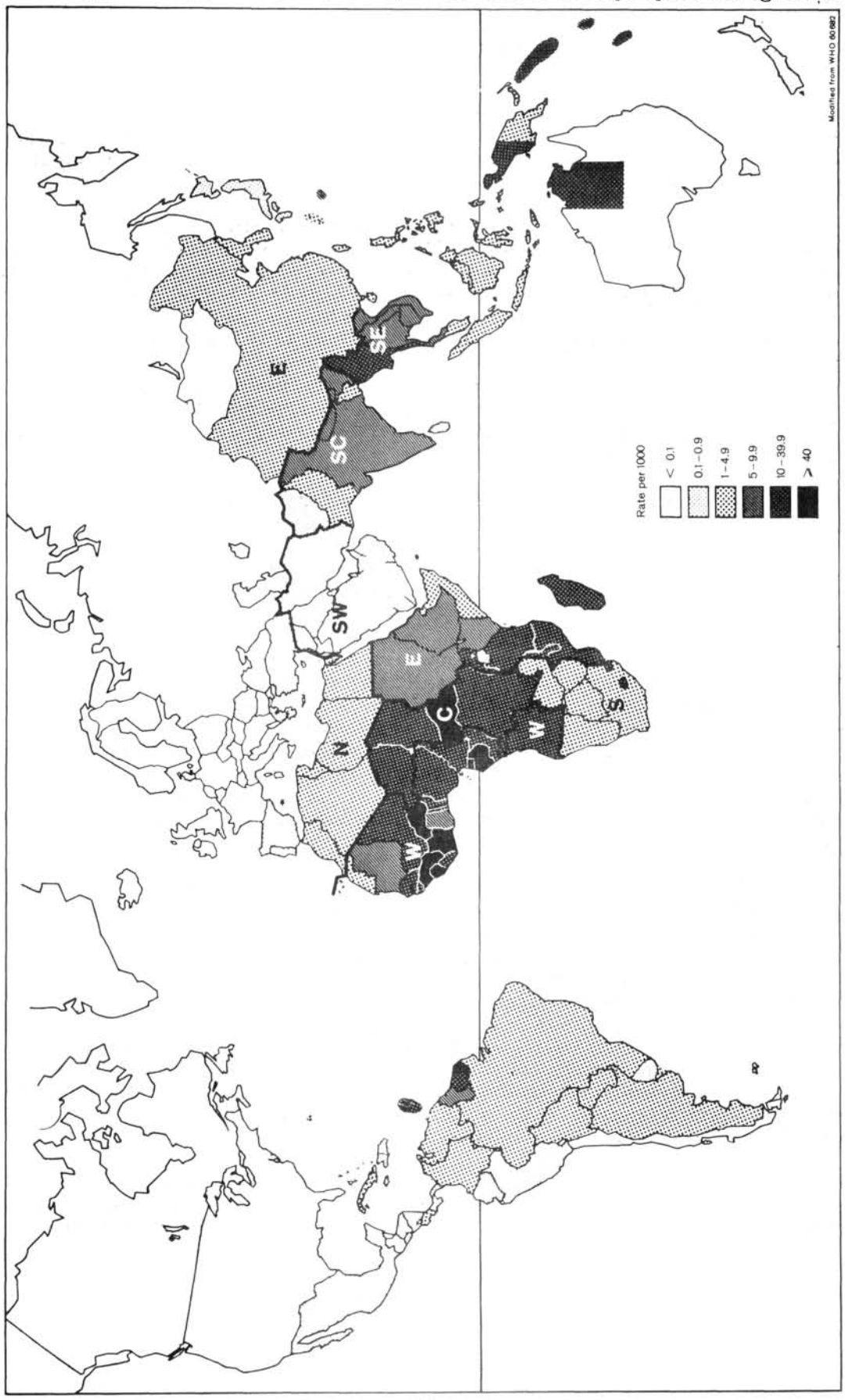
Unfortunately, some incidences rise as the unhygienic conditions of overcrowded urban areas take their toll. A recent dramatic example of this is the incursion of cholera into West Africa where it has not previously been endemic. Overloaded pipeborne water supplies have facilitated the spread of this disease more rapidly than in traditional socieities where water from wells and streams is not polluted so quickly nor used by such large bodies of people. Even leprosy, for which effective controls are available, has not yet been halted. The 1969 Report of the British Leprosy Relief Association is pessimistic:

> "The world problem of leprosy, far from diminishing following the introduction of the sulphone curative drugs, continues to be aggravated by rising world populations, bringing reduced standards of hygiene and living conditions which are conducive to the spread of the disease. The combined efforts of Governments, Missions and other organisations, fail to reduce the reservoir of infection which keeps leprosy going." (23)

The present distribution of leprosy is indicated in the map on the next page adapted from W.H.O. statistics (24), and the overall incidence as calculated by W.H.O. is reproduced as Table 4.

The incidence of physical handicap in the developing countries can be estimated only within the broadest of limits. As with other diseases and conditions, difficulties in assembling data are due not only to the lack of

trained staff to conduct surveys but also to superstition, prejudice and ignorance which act to prevent crippled children being brought forward for assessment and treatment. The mildly crippled pass for normal; the more severely handicapped die, or, if they live, tend to be kept apart and ignored.



DISTRIBUTION OF LEPROSY IN THE WORLD

TABLE 3

SOME DETAILS OF PHYSICAL HANDICAP IN DEVELOPING COMMONWEALTH COUNTRIES

AREA/COUNTRY	TOTAL POPULATION (a)	LEPROSY		POLIOMYELITIS		ALL PHYSICAL HANDICAPS		APPROXIMATE NUMBER OF PHYSICALLY HANDICAPPED CHILDREN(n)
		INCIDENCE PER 100,000	APPROX. NO. OF AFFECTED PERSONS(7)	INCIDENCE PER 100,000	APPROX. NO. OF AFFECTED PERSONS	RATE PER 100,000	APPROX. NO. OF AFFECTED PERSONS (g)	
WORLD-WIDE	4,318m.	250-500 (b)	11m.-20m.			1150(h)	50m.-100m. (k)	5m.-15m.
COMMONWEALTH	890m.	250-500 (b)	2.25m.-4.5m.			1650(h)	14.7m.	1.5m.-2.75m.
FIJI	500,000					500(i)	2,500	250-375
GHANA	8.6m.					1250	1m.(l)	100,000-150,000
INDIA	533m.	556(c)	3m.				8m.(m)	800,000-1.2m.
KENYA	10.5m.	760(c)	800,000(c)		25,000(c)	2750-5000(c)	500,000(k)	500,000-75,000
MALAWI	4.4m.	1599-2000(d)	66,000				3,000 registered	
NIGERIA	64m.	1800(c)	1,150,000					
SIERRA LEONE	2.5m.	3800 N. Terr. 1200 overall (e)	30,000					
SINGAPORE	2m.						700 spastic and 186 paralysis registered(k)	
TANZANIA	13m.	1020(c)	132,500		25,000(c)			90,000-150,000(c)
UGANDA	8.3m.	1700(c)	140,000		25,000(c)		650 + 6,000 annual increase(k)	
ZAMBIA	4.2m.	1000(e)	42,000					
HONG KONG	4m.	175(f)	7,000					
BRITAIN						150+130 delicate children (j)		10,500 school places needed for delicate children (j)

NOTES ON TABLE 3

(a) Population figures are those estimated for mid-1969 by the United Nations, except for Ghana (1970 census figure) and Uganda (1970 figure in UNECA Population Programme Centre).

(b) Lower rate: Ahrens, T. et al. What is Leprosy? Basle, Documenta Geigy (mimeo), 1969. Higher rate: Lepra Annual Report 1969.

(c) Anderson, E.M. The Education of Physically Handicapped, Blind and Deaf Children in East Africa, London, National Foundation for Research into Crippling Diseases, 1968.

(d) Lepra Annual Report 1969.

(e) Lepra Annual Report 1968.

(f) Hong Kong Annual Report 1969.

(g) Calculated from incidence.

(h) Calculated as twice the incidence of blindness plus the leprosy incidence.

(i) Report of the Headmaster of Suva Crippled Children's School, Fiji.

(j) Jackson, S. Special Education in England and Wales, London, 2nd edition, 1968.

(k) International Labour Organisation. Report to Participating Governments on the ILO Regional Seminar and Training Course in Vocational Rehabilitation, held in Denmark 14 July-2 August 1969, Geneva, ILO, (mimeo).

(l) Ibid. Suggested figure of 100,000 permanently disabled through physical handicap.

(m) An additional 8 million cases of active tuberculosis are reported in Indian and Foreign Review, 15 December 1970.

(n) Based on 10% - 15% of the total.

TABLE 4

GEOGRAPHICAL DISTRIBUTION OF LEPROSY IN THE EARLY 1960's (WHO)

Continents and countries	Population total	Leprosy patients		
		Registered	Estimated	Treated
AFRICA				
North	56 800 000	27 300	124 500	?
West	83 750 000	1 024 000	2 047 000	826 000
Central	22 100 000	417 500	783 000	91 000
East	79 900 000	238 400	824 000	146 000
South	26 700 000	10 000	89 000	?
	269 250 000	1 717 200	3 867 500	1 063 000
AMERICA				
North	208 300 000	416	980	?
Central	73 000 000	22 800	54 500	11 500
South	147 800 000	154 600	302 000	84 300
	429 100 000	177 816	357 480	95 800
ASIA				
South West	54 250 000	5 800	21 700	2 450
South Central	583 800 000	545 000	2 819 000	511 800
South East	231 800 000	312 000	1 184 000	232 100
East	838 520 000	52 600	2 450 000	45 000
	1 708 370 000	915 400	6 474 700	791 350
AUSTRALIA-OCEANIA	7 140 000	9 680	33 200	4 290
EUROPE	606 850 000	16 600	51 900	9 190
WORLD	3 020 710 000	2 836 696	10 784 780	1 963 630

Organisational problems of physical handicap

Despite the large incidence of crippling diseases and conditions in the poorer countries, medical and educational services have lagged behind those for the blind and the deaf, although they exceed those for the other major handicapped category, the mentally handicapped. For this there is one convincing explanation:

> "A crippling disability tends to conjure vague doubts, misgiving and fear of the unknown. The softer elements of pity and sympathy can be more commonly and easily directed to the blind and the deaf; but it requires some special effort to resist fear and disgust of the unfamiliar and the obviously abnormal. The undesirable attitude of society towards the crippled becomes more intensified in the face of mounting ignorance and superstition." (25)

Such attitudes are reinforced by rationalisation such as that encountered by the author in the Gambia. Cripples in the streets of Bathurst, he was told, are invariably Senegalese who have come across the border in order to benefit from the charity of Gambian Moslems. The lack of provision for treatment or rehabilitation is not, therefore, seen as a serious deficiency (26).

The lack of priority awarded to provision for the handicapped by official bodies militates against early identification, diagnosis and assessment of handicapped children. Neither staff nor equipment is provided on a scale to meet the need. On the other hand, social attitudes lead to many of the physically handicapped not being brought forward to take advantage even of the services which can be offered.

> "Poliomyelitis is rarely seen in the acute phase - most cases come to hospital weeks, months or even years after the onset. This is mainly due to the mental attitude towards certain illnesses as 'Acts of God'. Gradually this attitude is being overcome, but, the next stumbling block is the reluctance to attend for treatment over a prolonged period. Miracles are expected to be performed in a relatively short time irrespective of the severity of the case and the length of time left untreated." (27)

A similar situation has been recorded from Kenya, where the majority of cases seen in the rural areas are neglected poliomyelitis (28).

The location of handicapped children as soon as possible ensures the best chance for successful treatment. Early diagnosis of cerebral palsy is essential so that a child may be guided according to his real capacities (29). In addition to problems arising from social attitudes and lack of staff and equipment, however, there are the difficulties of interpreting the results of psychological tests administered to selected groups of handicapped children (30). In particular, the relative effects on the test results of environment and of cerebral palsy need to be determined, and a base-line of achievement for normal children of the locality established. Until such tests are created and validated, detailed assessment of many handicapped children will be impossible.

handicapped who will have the chance of attending school in the coming years. At present it is only a tiny minority of the markedly crippled who attend school in the developing countries. Only 10% of the children attending the Kampala Round Table Polio Clinic, for example, can be placed in ordinary schools (34). Those who attend the clinic are only a small fraction of the physically handicapped children in the country, yet before 1969 there were no schools for physically handicapped children in Uganda except for the class associated with the Polio Clinic (35). Accurate data are not obtainable for many of the countries covered by this study, and, while it may be assumed that some mildly physically handicapped children are attending ordinary schools unrecognised, it is probable that the percentage of crippled children receiving education is higher than the 2% of the total estimated for the blind and the deaf.

The physically handicapped child cannot be expected to succeed educationally through ordinary school provision. His special needs may well be less apparent than those of the blind child, in particular, but these needs still exist. As has been indicated already, most crippled children have additional handicaps which need to be taken into consideration if the school is to have any beneficial effect. Psychological problems, too, should not be overlooked. Handicapped pupils are frequently highly distractible in classroom situations, while spasticity tends to be accentuated when the child is interacting with a group. Both factors affect adversely the rate of learning. More particularly, crippled children have rarely been able to enjoy the same range of the pre-school experience as their fellows. This means that, whatever the community into which the child is born, it is almost inevitable that he will suffer disadvantage in comparison with his peers as a result of his impaired senses, limited mobility or lack of strength.

Physically handicapped children have a wide range of capacities and needs (36). Such children range from those additionally handicapped by mental subnormality or severe sensory defects to those at the other end of the scale who could profit from secondary and tertiary education were it available to them. In the context of the developing countries one of the major problems is that of reliable assessment on which to base predictions. As has already been noted above, the most striking feature to emerge from an experiment in Uganda was the poor and meagre response of the handicapped children to the tests (37). Unfortunately it was not possible to distinguish the relative effects of environment and brain damage, nor to establish norms from which deviations could be usefully measured.

As for children suffering mildly from othe handicaps, slightly crippled children in the developing countries ahould as far as possible be integrated into ordinary schools. It is both more satisfactory educationally not to isolate the child unnecessarily from his fellows, and cheaper than providing special institutions (as a local authority in England discovered recently, when, for the cost of an adapted lavatory compartment at the local school, the much higher continuing cost of transporting a crippled child to a special school was eliminated). Nevertheless, for the more severely handicapped child special provision is necessary, in the form of a special day school, special boarding school, hospital school, home teaching, or teaching through correspondence and other media. Circumstances in most developing countries will probably make it necessary for special schools to be provided indefinitely for leprosy patients, while methods involving correspondence and media can be directed effectively only to the minority of older children who are already literate or the even smaller minority of young children whose parents are literate and both able and willing to co-operate with the education authorities.

The physically handicapped child, even of accepted by his community and able to attend a normal school, has to recognise his limitations. An English mother of such a child said that the worst thing to her, was "him getting upset about being handicapped. There's so little you can do to comfort him." (31) Guidance and counselling services, therefore, can play a vital role in minimising secondary psychological handicaps by helping the child to come to terms with himself. Such services are currently available in very few of the developing countries. Small-scale services, however, are now being built up in a few countries such as Malaysia.

The present activities on behalf of the physically handicapped in most developing countries are concentrated on rehabilitation and vocational training of the adolescent and young adult, rather than on early diagnosis and treatment of the child. This approach can be justified in a number of ways, not least that public funds should not be devoted to young children whose survival is by no means certain. Affecting all planning for the crippled, however, as for most other forms of handicap, are the pressures of a public opinion founded on ignorance, superstition and fear. A major part of official education and rehabilitation programmes will have to be directed at the community at large if the cripple is to be allowed to participate to his full capacity within his society once he has been trained.

Education, rehabilitation and training alone are inadequate provision for the physically handicapped, for it may be questioned whether any purpose is served by raising the hopes of the handicapped youngster and his family without being sure of realising them by the provision of useful employment at the end of the course. One ILO Report sees six main obstacles to the success successful employment of physically handicapped persons in Africa: over-protection of the crippled child in the home; lack of confidence of the handicapped in their own ability; lack of medical facilities; lack of educational facilities; lack of transport; lack of training opportunities; the heavy nature and seasonal aspect of agricultural work (32). Where, as in Uganda, only 2.5 per cent of the population is in paid employment, the handicapped cannot be trained in the hope that they can afterwards compete on equal terms in this fierce market. Even assuming, therefore, that public opinion can be affected sufficiently for the crippled child to be given his chance, an integrated programme oriented towards ultimate gainful employment is vital if the confidence of the youngster and his community is to be preserved and reinforced. The formal educational programme must be regarded as but one aspect of an overall provision and not as an end in itself. As the head teacher of Suva Crippled Children's School, Fiji, says in his report:

> "To let a badly handicapped young adult, who would stand no chance of a job in the ordinary field, leave school and feel that he was useless in the community after spending years of proving himself, would be criminal. Far better if he had been left at home in the beginning." (33)

Education for the physically handicapped

To advocate the linking of education to rehabilitation, vocational training and ultimate employment in this way is not to minimise the difficulties involved. The formidable rate of school-leaver unemployment in most developing countries presents a severe obstacle which can be overcome only by comprehensive and realistic planning for those few among the physically

A small number of pioneer special schools for crippled children are developing approaches and curricula which could be of considerable value to others working in the same field. The Salvation Army Joytown School at Thika in Kenya (38) has been running for nearly ten years and now functions mainly as a primary school for post-polio children who apply for places from all over Kenya. The school is well staffed and equipped, enabling the children to follow a full academic curriculum together with a wide range of out of door sports, games and clubs. Every child is taught to swim in the school pool. Relations with neighbouring schools are good and opportunities are taken to publicise the work through broadcasts and other means. A major problem is the employment of school leavers, although it is planned that when finances permit, vocational training facilities will be established on the compound.

In contrast with the relatively sophisticated organisation of Joytown, the Atunda-Olu School for Handicapped Children in Lagos, Nigeria, (39) is small in numbers and very limited in resources. The school opened in 1965 with seven pupils and now has over sixty, all of whom live at home and travel daily to school in government subsidised transport. Unlike Joytown their disabilities result from a wide range of causes, including polio, cerebral palsy, epilepsy, spina bifida, renal rickets, cancrem oris, sickle cell anaemia and tuberculosis. This means a complicated programme of physiotherapy, conducted by a volunteer twice weekly. The school organisers recognise that their activity represents "a drop in the bucket of the immense need" but believe that this effort will serve to stimulate concern and further provision in the community.

The School for Crippled Children in Suva, Fiji, (40) unlike Joytown and Atunda-Olu, is conducted by a voluntary society, the Fiji Crippled Children Society, and not by a church organisation. Small numbers of blind and deaf children are accommodated but the bulk of the 94 children on roll are physically handicapped. The staffing is helped by the presence of a headmaster provided by the Australian government, and by United States and New Zealand volunteer physiotherapists. Many local service clubs (the Lions, Rotary, Apex) and charities (the Hibiscus Charity Chest) work to supplement the Government grants to the school. A sheltered workshop has been built on the school site and contracts have been carried out for local firms - assembly of bottle divisions was running during 1969-70 at the rate of 24,000 per month. Standards at the school are high, in terms of staff and buildings. The comprehensive programme includes a home for crippled children in Suva (staffed by three Catholic Sisters), a physiotherapy department and the sheltered workshop. Such overall provision makes possible the long-term care, education and training which are essential if the needs of crippled children in developing countries are to be met constructively.

A more traditional and specialised school is the Chinkankata Leprosy Patients School in Zambia (41). Seventy children are taught on a varied and practical curriculum by a competent and adequate staff supported by sound medical care. The McGregor Commission felt that the school should not allow its policy to be affected too strongly by the neighbouring academic secondary school since this could raise unrealistic hopes. Realism, the Commission believed, required a largely practical curriculum which would give the leavers the best chance of reintegration into their communities and serve as an example to other such schools. In these circumstances the case for "centres of excellence" can be made very effectively.

The treatment for many crippled children involves long periods spent in hospital. The proportion of handicapped children who enjoy this provision

in developing countries in minimal but, for those few who do, hospital classes should be organised. This may be regarded as therapeutic as well as educational, and the two aspects are in fact mutually reinforcing. Before the child can benefit from teaching he must be as fit and hopeful as possible; before he can become fit and hopeful he must have the incentive in the form of acquiring knowledge and skills against the future. A number of excellent hospital schools and classes are operating in the developing countries, such the Kitwe Central Hospital children's class which impressed the McGregor Commission which commented: "We have nothing to add to our general commendation of this particular class. The sooner other Zambian hospitals can start classes like it the better." (42) The Red Cross, too, runs hospital hospital schools, frequently supported in some measure financially by the local government (43). In Hong Kong, for example, the Red Cross runs seven hospital schools with the chief aim of keeping the children occupied by producing a school programme which is seen as an essential link with normality, thus making the transition back to the ordinary school much easier when the child is discharged. Group teaching in classrooms and wards is organised for those not confined to bed, as well as individual bedside tuition for those who are. When considering the question of hospital schools in developing countries it is interesting to reflect that at a recent conference in Britain at which the Younghusband Report (44) was discussed, no mention was made by any delegate of the role and function of the hospital school (45).

Forms of educational provision for crippled children made in the richer countries, such as home teaching by peripatetic teachers, are at present out of the question in the developing countries because of lack of money and staff, and because of the distances involved in most areas. As mentioned briefly above, however, there seems to be much more prospect of a wider use of the mass media supplemented by correspsondence courses and, as conditions make it possible, short residential courses and home visits. Pupils suffering from infectious diseases, for example, could be reached by radio and correspondence, as could isolated cases in remote areas. Now that the transistor radio has become available to virtually every compound (and for very poor families with crippled children the service clubs could be encouraged to organise projects for supplying radios) the possibilities have been opened up. Considerable experience and expertise are available in a number of countries for the organisation of courses, in particular Australia and New Zealand among the richer countries, and India, Malawi and Zambia among the less developed. Correspondence and radio courses, however, depend on the child being already literate (as he may be if crippled during later childhood) or his family being literate and both willing and able to help. In many cases these conditions will not be met, but pilot schemes would both benefit directly those making use of the courses and also provide useful basic experience for the organisers from which larger schemes could be developed. Radio programmes also could usefully be aimed at the parents of handicapped children, for it is probable that many would be prepared to help their children if they only knew how.

Isolation is probably the greatest enemy of the crippled child. Loneliness, boredom and frustration can soon sap the desire to learn, participate and communicate. The handicapped child, even more than his non-handicapped peers, needs play materials and organised experiences if his retardation is to be reduced to a minimum, because his incidental, casual experiences will be so much more limited. Above all, the opportunities should be available for socialisation, so that the handicapped child learns his role as a member of a group. It is this aspect of therapy which is frequently so difficult to achieve in the developing countries where attitudes tend to be

prejudical to the handicapped child. An interesting piece of research undertaken recently among children in Britain indicates that the major factor in influencing children adversely against their fellows is not colour nor intelligence but visible deformity (46). To this must be added the very strong prejudices against some particular forms of handicap in every country. In enlightened societies conscious efforts are made to bring crippled children into contact with normal children through integrated classes, clubs, sporting activities and games, clubs, excursions, holidays, Scouting and Guiding. Informal contacts can often lead to mutual acceptance. Those responsible for handicapped children in the developing countries could well explore appropriate ways in which these types of activity could best be fostered and encouraged. The "team" approach, for example, by teachers, medical, social and voluntary workers to the problems faced by the handicapped child increases the possibility of the child's benefitting from special education, where it can be provided (47). Education cannot in this context be limited to schooling.

The role of the teacher

The team needs to have a leader if the child is to benefit from the concerted efforts of several specialists rather than be confused by fragmented approaches. The most appropriate leader is the teacher, who, after the parent, has the greatest influence on the child (48). It is the teacher who can most readily act as the continuing link in the long process of rehabilitation, education and training which most crippled children need if they are to function again adequately in their community (49). In the developing country, as has been noted in earlier chapters, the teacher may well find himself required in the rural areas to act as a one-man team, for lack of other trained personnel. This reinforces the need already expressed for every teacher during his course of training to become conversant with the causes and symptoms of major handicaps in his country, and to have some knowledge of essential educational techniques for dealing with handicapped children.

The practical problems associated with the staffing of schools and classes for crippled children are numerous. One particular aspect is of general concern: the lack of continuity of staff in any one school. In some cases this may be attributed to the absence of incentives for special school staffs and the consequential departure of trained teachers in search of better conditions of service (50). This applies especially to teachers working in voluntary agency schools which are not fully supported by official funds, and lends weight to the argument for an integrated national teaching service within each country. The present status of teachers dealing with handicapped children is markedly low, since a high proportion of staff is untrained, not infrequently handicapped themselves, and generally regarded as working more in the field of social welfare than education. An illustrative anecdote of staff staffing problems may be recounted from the Qua Iboe Mission Leprosarium School at Ochadamu in Nigeria's Kwara State. Some fifteen years ago the Medical Superintendent of the settlement succeeded in attracting a qualified teacher to work in the school for two terms, in return for a free hernia operation (51). The bargain was concluded in the most amicable fashion but can hardly be regarded as a basis for a staffing structure. Nevertheless, it typifies the problems faced by then proprietors of schools for crippled children.

While these antipathetic attitudes persist it is difficult to envisage an early improvement in staffing quality for special schools, especially those for children with infectious diseases. In the more developed countries the general pattern is for special school teachers to be recruited from among proven experienced teachers. (It should be noted, however, that a number of these countries do not require special certification for teaching crippled children (52).) This does not seem to be appropriate for the developing countries at present. In these circumstances the best solution probably lies in a four-fold programme: (a) the financial support from official sources of the salaries of all teachers in special schools; (b) the inclusion of guidance in the teaching of handicapped children as part of the initial training common to all student teachers; (c) the provision of in-service and sandwich courses to enable practising teachers to specialise in the teaching of the handicapped; (d) the development of a staffing structure whereby schools would be provided with aides and auxiliaries in addition to fully-qualified teaching staff, so releasing specialist staff for specialist work.

Equipment, aids and appliances

In the case of physically handicapped children no clear distinction can be drawn between equipment which is educational and that which is medical, since for the child to develop adequately, both types are essential. Broadly, those prosthetics and orthotics which enable a child to move, see about him and communicate may be regarded as medical, those which help his psychological and intellectual development as educational. In both areas the range of possibilities is extensive but, as has already been mentioned in respect of blind and deaf children, the simpler aids have great value and can be of much assistance to children in the developing countries where more sophisticated equipment can be neither afforded nor maintained.

a) Medical aids

An investigation some years ago into problems associated with prosthetics in India revealed three major reasons why in most parts of Africa and the Far East over 90 per cent of those crippled have not even a crutch; (a) few of the physically handicapped could afford the artifical limbs and appliances; (b) inadequate training existed to enable the handicapped to make the best use of their aids; and (c) the design of the prosthetics at that time did not always take into account local climatic conditions. Within the last five years, however, new materials including plastics, laminates and carbon steel, have been adapted for use in cheap, simple but functional prostheses. A regional training programme has been set up in Iran by the United Nations in order to teach artisans the principles and methods of making and fitting a number of appliances. These new techniques can be of great potential value to the developing countries, since research is concentrating on designing appliances which provide very basic functions, with minimum size, bulk, weight, cost and process time, yet with maximum durability and resistance to deterioration in unfavourable climates (53).

Simple aids using local materials have been designed and produced for a number of years. For example, a series of simple rubber boots and clogs and sandals has been devised for the protection of leprosy patients' feet and to compensate for minor amputations (54). A number of local alternatives to expensive imported equipment have been evolved in Uganda (55). Calipers, boots, clogs, crutches and wheelchairs can be made by semi-skilled labour

using local materials which, while not of the sophistication of more costly apparatus, can at least be made available on a wide scale. The total salary of the 23 artisans in the Uganda workshop is considerably less than the salary of one orthopaedic technician from overseas. Further economies have been achieved in some countries through the production of aids in sheltered workshops, thus also giving purposeful employment to disabled adults (56). An interesting experiment in distributing appliances is operating in Kenya in the form of a mobile orthopaedic unit, (originally recommended by Elizabeth Anderson in her report (57)), so overcoming another obstacle in the way of providing for the physically handicapped in rural areas (58).

(b) Educational aids

Toys, educational materials and teaching aids for use by handicapped children are also being made successfully in sheltered workshops by young people and adults who are themselves handicapped (59). The ISRD Committee on Technical Aids, Housing and Transportation, based in Sweden, publishes a continuous supply of information about new aids. Although many are of a degree of sophistication far beyond the resources of the developing countries the lists indicate a number of simple aids, such as pointers, mouth sticks, and pattern boards which are capable of being adapted. Simple vocabulary cards, spelling-boards, spelling-boxes and counting-sticks have been developed to enable the most severely handicapped cerebral palsy case to learn, and to communicate the success of his learning to his teacher (60). The importance to learning of an adequate supply of play materials to stimulate both mental and physical activity cannot be overemphasised (61). Clay, walking frames and trucks, dolls, model cars, handicrafts, painting, materials for making collections, all can be made available in even the simplest surroundings. If the local social customs are favourable to the idea, the caring for small domestic animals is valuable for the handicapped child who can feel responsible for the wellbeing of another creature more helpless than he, at the same time as learning useful practical lessons. The range of toys designed for each disability must be of good quality and varied both in style and colour, suited in size, weight and mobility to each stage of the handicapped child's development. A study of the educative value of toys for normal children gives essential guidance in assessing the motor capacity of the handicapped child (62). Toys are "a therapeutical weapon" and an important educational aid. Much scope remains for them to be developed for use in the poorer countries. This could well be one area in which provision for the handicapped child might provide preliminary information and experience which could carry over into the ordinary schools in these countries, where toys are at present rarely regarded as of positive educational value.

Proposals

As already mentioned in respect of other handicaps, provision for the physically handicapped cannot be planned comprehensively in the absence of data. The schools and medical services can play complementary roles in establishing types and distribution patterns of handicap. The schools, too, have a specific responsibility in the moulding of public opinion, by inducing parents to bring forward their handicapped children for assessment and treatment, and also by fostering more positive attitudes towards the handicapped by the more normal children. On a wider scale, identification and public enlightenment can be encouraged by the mass media.

Provision for the physically handicapped should be planned on a common basis by educational, medical and welfare bodies. For example, with the increasing trend of governments to assume responsibility for school systems for children between the ages of 5 and 18 years, voluntary agencies might well reassess the role in which they can function to best effect. They might consider greater involvement in special education as their ordinary schools are absorbed into the public system. In particular they might concentrate on identification of handicapped children, and the provision of pre-school activities and vocational training, so extending both ends of the normal course. Voluntary agencies could also make a valuable contribution by increasing their activities in the area of prevention of handicap, most obviously through nutrition campaigns.

Within special education consideration should be given to the production of a range of paramedical and paraeducational personnel, with the object of releasing highly qualified personnel for specialist duties. Aides and auxiliaries could help to increase the efficiency of the services provided without a proportionate increase in training and salary costs.

Research should be conducted into the effectiveness of the provision which is made at present for physically handicapped children in a representative selection of developing countries. Particularly, follow-up studies should be made in order to assess how far and how well handicapped young people have succeeded in finding and keeping employment and those who have not, and comparative studies of the lives being led by those who have had the opportunity of formal schooling and those who have not, could give valuable indicators for further developments.

As a basic principle the education of the physically handicapped should take place in normal schools wherever possible, reserving special schools only for those whose severe disability precludes them from attending ordinary schools. While this principle may be generally acceptable, its implementation will vary from country to country and area to area depending on the incidence of handicap, social attitudes towards handicap, the quality of teaching staff available, and the system of public transport. The McGregor Report recommends the development to the highest possible standard of those institutions which show most promise (63). The concept of "centres of excellence", the creation of outstanding schools to act as examples to others in the area, was put forward by the Indian delegation at the Fourth Commonwealth Education Conference (64), and has also been accepted as policy in Ceylon. It seems to have much to recommend it in the field of special education, where history has resulted in a large number of poor special schools. The establishment of a few top quality schools could inspire and reinvigorate those working in special education and also have a positive effect on public opinion.

Further investigations are needed into the use of modern media in the education of physically handicapped children, especially those needing secondary education who cannot find places in ordinary schools or are excluded from them. Correspondence courses, supplemented by radio broadcasts, and the use of school buildings for vacation courses, could bring help to many children whose school experience would otherwise be extremely limited.

Planning for these children should take into account the fact that most will spend their lives in rural communities. Some, possibly with mechanical aids, will be able to take part in agricultural activities. For the

others, occupations should be planned in related activities, storekeeping, book-keeping, the servicing of co-operatives, the making and repair of simple machinery, and so on. The occupations ancillary to agriculture in most countries are undersubscribed and at present attract few of the ambitious able-bodied, many of whom prefer to seek success in the towns. The vacuum they leave might well provide the opportunity for some of the physically handicapped to prove themselves.

The problem and the possibilities of the physically handicapped in the developing countries are effectively illustrated by a short account from Uganda:

> "The rehabilitation programme in Uganda has had other dramatic successes. There was, for instance, the boy born without legs and kept in a dustbin at the back of an Asian's hardware store. The father was not only ashamed but completely at a loss as to what should be done. Today the young man is a medical student." (65)

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