

Auditory Dysgnosia of Postural Origin –  
Some Notes and Method of Early Treatment (1967)

'Auditory dysgnosia' is a condition in which there is a failure to develop entirely normal associations between sounds which are heard and the other sensations from similar sources which are apprehended through the haptic, visual or olfactory modalities.

In short one might say that auditory dysgnosia is a developmental failure to find a normal interest and significance in sound. Probably one should also include under this heading any developmental difficulty in responding normally to sound, which has a perceptual or perceptuomotor basis – that is dysgnosia and dyspraxias. Hence one should perhaps properly use the term auditory dysgnosodyspraxia.

If the general concept and this rough definition of auditory dysgnosia, in which a failure to respond normally to sound is neither entirely the result of significantly impaired auditory acuity nor of a physical impediment to responding, is accepted it remains to consider the possible bases for this in a traumatic or development lesion of higher auditory pathways, or in some functional anomaly of postural evolution.

If, leaving aside the former or 'central' view, the concept of *auditory dysgnosia of postural origin* is accepted it must be seen not as an isolated dysfunction confined to auditory perception but as part of a more generalised dysgnosia also affecting visual and haptic perception to some extent.

Haptic perception derives information from all manner of bodily functions but the most highly developed, versatile and specialised data accrue from the activity of the limbs, more particularly the upper limbs, and rotation and flexion of the trunk, head and eyes, all of which tend to be exercised in a generally forwards direction.

Similarly visual perception is generally frontwards directed and is usually even more restricted to receiving stimulation from a fairly limited region in front of the body.

In the absence of bodily scanning movements these perceptual modalities tend to receive stimulation from the sides, above, below and behind in a relatively passive manner, that is to say without active movements of reaching, handling, visual scanning or accommodation to locate the source.

Audition, on the other hand, involves receiving stimulation from all directions without special scanning activity. It is the prerogative and presumably the primary function of this system to detect, and render the

organism aware of, energy-producing sources beyond the brief range of the haptic, and outside the spatial limitations of the visual perception.

Hence not only might a failure of the proper expansion of haptic and/or visual perceptual development result in auditory dysgnosia but the characteristic forwards orientation of many such children and their relative disregard of stimulation from without the anterior field of interest, tends to restrict the simultaneous apprehension of auditory, haptic and visual stimuli from a common source to within the confines of this region of bodily space.

Yet it is the sounds which originate from within this region which carry little or no information, which are, in short, virtually redundant, unless separately endowed with symbolic signification.

Hence it would seem to me that this is not the region of bodily space in which to generate sounds which one hopes to liaise with perceptual information via the other modalities of perception.

Commonly the abnormally restricted visual scope allows the child to ignore a static or moving visual source within what would normally be the periphery of the visual fields yet the addition of sound to this subliminal visual source adds greatly to the chances of attention's being directed towards it and may result in immediate and active localisation.

This suggests to me that during the educational treatment of auditory dysgnosia sounds should be made in varying positions outside the main visual range of interest perhaps making special use of the regions of subliminal visual and haptic interest.

When a stimulus evokes no interest, meaningful associations or direct feelings of pleasure, the organism adapts to the stimulus at a rate which is proportional to its subjective intensity, within a fairly wide range, below the level at which it cannot be ignored.

Over-stimulation with meaningless sounds tends to encourage habituation to sound and amplification greatly accelerates this process.

Hence I would suggest that raising the intensity of sound in general, the use of hearing aids and speech training amplifiers, and all the methods which accentuate sound intensity are in the treatment of auditory dysgnosia not only generally useless but sometimes positively deleterious.

So we may see that two of the practices which may be so valuable in the treatment of 'filtration deafness', namely amplification and the encouraging of the child to look at the face of the speaker, and designed to compensate for an auditory deficiency, *are to be avoided* in the treatment of auditory dysgnosia.

That is not to say that on occasion a small amount of amplification, by raising the voice or using an amplifier, utilised intermittently, might not prove to

be of some value in enhancing the attention-capturing properties of an already meaningful auditory signal.

It is my opinion too that the development of a meaningful use of sound in a child is potentiated by, if not dependent on, an early and prolonged exposure to human vocalic sounds; although it is possible that other animal sources might also be effective.

Hence I consider that the dysgnostic child should be spoken and sung to, cooed, hummed and growled at, at close quarters in an ordinary quiet voice from as early a time as possible.

From the practical standpoint this is mainly of importance for the prevention of an abnormal attitude towards sound in a very young child, for most methods of encouraging language will involve the use of maximal speech.

It is the 'good' under-responsive child who is left very much to himself, and the child of profoundly deaf parents, who are most 'at risk' in this respect.

However the need for early differential diagnosis and the institution of careful preventative measures, and the dangers of too-early fitting of hearing aids and an 'acceptance-of-deafness' attitude, become apparent.

### Aims of Treatment

Clearly education should be orientated to extend the child's learning and experience, redress omissions and correct maladaptive propensities whilst reducing the effects of, compensating for, or better still, making use of any untoward behaviour.

This would suggest that the individual 'teaching' should be directed towards (i) enlarging and extending the spatial range of his perceptual fields of interest and attention (i.e. towards increasing the capacity of the available input channel), through the active and passive exercise of controlled movement and stable postures; (ii) making maximal use of the already available channels of communication to develop the perceptual abilities to the full; (iii) fostering the symbolic use (primarily the understanding) of vocal and articulatory sounds.

Language should form an intrinsic part of the activities at all stages and at all times.

- (i) The first operation is to some extent achieved by the same methods of restriction and activity games as may be used for (ii) but is also encouraged by having the child reach or otherwise strive for some of the things he wants or finds attractive by making them difficult of access so that he must of necessity bend and twist his body during the efforts of striving.

Dancing, climbing, music-and-movement, wrestling, etc. all have a passive exercise value in this respect but cannot replace the active exercise of striving towards attainment.

Interesting materials which although presented from the front can be displaced, once attention and desire are aroused, upwards, downwards, or to the side, etc., to encourage haptic (truncal torsion, rotation of the eyes and head, and manual), visual and auditory following, and in this way enlarge the extent of the perceptual fields of interest.

- (ii) The methods used to promote learning by setting up perceptual habits and intersensory liaisons obviously should not attempt to limit the learning to any particular sphere, as 'auditory training', but should be designed and directed to involve the child's whole perceptual apparatus; primarily the haptic (in particular the postural), and always the affectual.
  
- (iii) See below under 'Development of Speech Comprehension'.

His learning should involve a maximum and wide range of set posture and movement (co-ordination and equilibration), because postural (including kinaesthetic) perception is basic to all perception and itself generates feelings of pleasure directly in the child, and because it may be assumed that he has a limited experience of stable postures and controlled movements, and has a biological need to involve himself in activity.

Involvement in the 'useful' activity can be further encouraged by reducing ambient stimulation and by 'polarising' the information channel between 'teacher' and child. The term 'teacher' here refers to any person who systematically sets out to modify a child's behaviour with the intention of enlarging his adaptive faculties and furthering his environmental adjustment. This would, of course, very definitely, include a parent.

Unnecessary stimulation can be reduced by using a room from which the majority of moveable objects and furniture have been removed. A minimum of light is directed on to the 'work area' so that any distracting features which cannot be eliminated, as pictures, wallpaper, etc., are cast into shadow and so deprived of form, definition and colour.

The floor should be as 'quiet' as possible and the room isolated, as much as it can be, from distracting influences. Any furniture used should be as simple and rigidly constructed as possible to obviate any distracting creak and give from loose joints.

'Polarising' the communications channel consists in arranging that the 'teacher' and child are close together so that the child's attention can be readily directed to whatever activity is selected whilst the 'teacher's' voice and other stimulation can come variously from the sides, above and behind.

Before outlining any technique in detail there are several general points to discuss:

- (i) The adequate adjustment of Attitude;
- (ii) The importance of Consistency;
- (iii) The use of motivation and reward;
- (iv) The ways of encouraging controlled posture and movements;
- (v) Extending the perceptual 'fields of interest';
- (vi) The manner in which understanding of speech develops in the early stages

### The Adjustment of Attitude

The general attitude towards the child of those about him plays a singularly important role in his habilitation. This attitude consists in the individual's overall behaviour reaction, which stems from whatever recognition and understanding he has of the child's problems. For this to exercise a positive influence the mind must be clear of doubts or at least the available data should be clearly organised into what is known and what is uncertain.

It is particularly difficult for parents, or anyone else emotionally involved with the child for that matter, to fully adjust to the child's real needs, which often requires the behaviour towards him to be quite different from, or even the reverse of, that exercised towards other children.

Quite often the difficulties are recognised on an intellectual plane but when it comes to action this is governed by more emotionally derived factors. For example we may know that a particular three years old child understands no language and yet expect him to respond appropriately to 'yes' and 'no' under everyday conditions.

Our behaviour is guided by what we feel to be true so that it is important that our 'knowing' is really thorough, that is to say our understanding at the intellectual and affectively dominated levels coincide.

This is more important than is generally realised for quite subtle and unrecognised aspects of our behaviour may make all the difference between success and failure in the treatment of a dysgnosic child. For example when a child is thought to be deaf much attention tends to be given to raising the intensity of sounds, attracting the child's attention before speaking, etc., either as a spontaneous reaction or under direction from a specialist. He is often 'tested' regularly with loud meaningless sounds, may be provided with electronic amplification and conscious effort may be given to encouraging 'a glance'.

If now this child is shown to be not deaf but dysgnosic he may continue to be treated as if he cannot hear despite it being accepted at an intellectual level that his hearing is acute. As I have pointed out earlier this may well hinder the dysgnosic child's progress.

Perhaps the most profitable discipline for those concerned with any backward child is to attempt to view the world and its inhabitants from the point of view of a languageless and perceptually immature child.

A simple attempt to 'explain' some of the child's abnormal behaviour to his parents may help to illustrate this point.

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### Sammy – an Athetoid Child

"Sammy has a number of difficulties which we can help him to overcome in various ways but there are several important ideas your understanding of which can help to lay the foundations for real progress.

First Sammy's movements are rather excessive and clumsy for, as a result of his difficult birth and jaundice he is less well co-ordinated than usual and he has to work much harder than most children to control and direct them. When he gets excited his whole body becomes involved and his movements get jerkier and clumsier so that he falls more readily and is less successful in his handling of things.

Secondly his attitude to things and some of his general behaviour is similar to that of a younger child because his slow early development, late sitting, illnesses and hospitalisation, together with his clumsiness have prevented his learning as quickly as he might otherwise have done. Despite this, and perhaps a little because of it, Sammy has learnt to manage in a number of very clever ways and to solve useful problems such as how to use a chair as a means of getting something which is out of reach.

Thirdly he is extra-active both because he is interested in everything about him and because he is drawn irresistibly to everything he sees despite himself and must involve himself with it – must touch and handle it – unless something else draws his attention elsewhere.

Fourthly Sammy seems to like to have things his own way and objects by throwing a tantrum when he or his activity is interfered with. He frequently throws things on the floor or does other 'naughty' things seemingly 'just to annoy' you.

If now we remember that Sammy has no understanding of speech yet and must make sense of the world without any explanation, we can begin to understand how this apparently 'naughty' behaviour comes about.

Most of us recognise that we are more afraid of the unknown or the uncertain than of what we are familiar with, however unpleasant. We are most anxious when we don't know what is going to happen. And it is just the same with children, only more so!

Now Sammy is surrounded by things he doesn't know or understand but as long as some or most of the daily happenings are fairly routine he knows to some extent what to expect. If they are not sufficiently familiar for him a child may help to make them more consistent by having firm likes and dislikes, and by tending to do the same things in the same ways.

If we now accidentally upset his scheme of things by suddenly putting him in a strange place with strangers doing unfamiliar things he is likely to become anxious and frightened.

He may show this anxiety by frantic clinging to you or he may take one of the two main lines of action in redoubling his efforts to make or keep things familiar.

By simply staying close to you and appearing 'shy' he can achieve this fairly easily but if this is not possible he can engage in routine activities of his own – jumping, playing with a ball, making faces to himself, humming or singing, etc., - and repeating them over and over again enables him to create some feelings of familiarity.

If now you interfere with these activities, thinking that Sammy is just being 'naughty' or 'silly', he may well react by 'going to pieces' and having a 'tantrum' or 'paddy'.

A tantrum can arise in a similar way if a child like Sammy is taken out by a familiar person to unfamiliar surroundings but in such a way as to lead him to expect a certain routine, that he will go by a certain route – for example to shops to which he is taken regularly – and then his unsuspecting parent decides on a different programme. Suddenly much of his relatively settled feelings may be taken away from him so that his anxiety and fear get the better of him. He digs his heels in and refuses to budge or attempts to drag his parent back towards the familiar.

Usually we as parents look upon this behaviour as 'unreasonable' but for the child it is his only way of being reasonable.

For the next point we must remind ourselves that Sammy has at present very few clues about why things happen.

If he does something which gives him a feeling of pleasure he will do it again. If it doesn't give him pleasure he is less likely to repeat it.

For a child – or anyone else for that matter – to learn he must have an incentive to do something and a reward for doing it.

The simplest and most effective rewards are the feelings of pleasure which doing something brings and these are also likely to be an incentive to do that something again.

The most rewarding things for a young child who does not understand speech are his own movements, especially the big, noisy ones, being tickled and thrown about, bright lights, or highly coloured and shining objects, etc. Also the movements, activity and noise of others – provided that these are not too much so as to be frightening.

Now normal parents are so used to behaving normally towards normal children that they tend to forget that a child with a difficulty may not react in the same way.

A two-years-old child has usually long ago learned what 'yes' and 'no' mean and is fairly well controlled by these and other words and commands.

However, a child who cannot understand speech must depend on what other signs go with it and the more noise and activity, within reason, the greater the reward from the child's point of view.

If he does something we like or think is good or clever we turn on a little smile and murmur "That's a good boy" or something of the sort.

However, if he is in danger of harming himself or some precious object we tend to rush across the room shouting "No, no! Put that down at once!"

Is it any wonder that this unusual child tends to repeat the very things we don't want him to do so that we misinterpret his behaviour and say "You can see he knows it's wrong. He's only doing it to annoy".

He doesn't, of course, know that something is 'wrong'. He doesn't know that we don't want him to do it. It is just that seeing Daddy do a sort of war-dance, whooping and shouting as he chases across the room is so very much more rewarding than a faint moaning sound and a slight change of expression.

The lesson is clear. We must try to prevent the unwanted actions by avoiding the 'dangerous' situations and putting away the precious and fragile objects as far as possible. We must firmly guard the fire, lock the door to the main road, keep out of reach the expensive ornaments, etc.

When something serious does happen we should attempt to correct or put it right with as little noise and fuss as possible and, if we are able, ignore the little annoyances which will then rapidly diminish.

On the other hand, put rather more energy – more noise and activity – into rewarding the behaviour we approve of. This is almost as difficult for most of us as controlling our natural reactions to a child's 'naughty' activities but both these methods of thinking and behaving rapidly bring their rewards as you will see.

The secret – once the idea is clear – is in the consistency of your behaviour towards Sammy, which will give him reassurance and security, make him easier to handle and give him much more freedom to learn and to make progress.”

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Even when the parental attitude has been satisfactorily adjusted to the circumstances and progress is being made, continual accommodation to the child’s behaviour is necessary.

The remote child who is usually under responsive to pain comes more and more to react with emotional upset as he becomes more social. He makes more noise and demands more attention. These and other positive signs of an accelerating perceptual interest in the environment, with the increased learning and activity associated with exploration and experimentation, may be misinterpreted and deprecated as deterioration in behaviour if the parents are not forewarned with adequate explanation.

Another potentially dangerous problem of attitude to the child’s progressive changes in behaviour is that of expectation of outcome; that neither too much nor too little is expected of the child.

It is, of course, important that the parents accept the child’s obvious limitations without allowing this acknowledgement to curb their capacity for exploiting his potential abilities or lead to a lightweight prejudgement of his ultimate capability.

However it is very difficult sometimes to cultivate in ourselves or others sufficient enthusiasm to satisfactorily motivate progress in the child without introducing the serious hazard of pushing him too hard.

When the earlier hurdles have been adequately negotiated the smell of success can too readily lead to a rapid, understandable but unreasonable, elevation of goal in parental ambition for their offspring. (See page 12 under ‘Encouragement of Controlled Posture and Movement’.)

### The Importance of Consistency – the formal approach

Life implies organisation and so apparently contradicts the Second Law of Thermodynamics in seeming to create order out of chaos.

In the widest sense living implies learning and although, in the behaviour of higher organisms at least, learning would usually be defined more narrowly, it is the organism’s perception of pattern within the environment which underlies the process of adaptation through experience.

Learning is facilitated by the provision of a sufficient number and variety of well-deployed suitably sensitive receptors apposite to the energy patterns to be perceived, together with efficient equipment for sorting, storing and making use of the stored experience.

The amount by which we can modify the sensory apparatus, except by encouraging its perceptual acuity through active use, is minimal but at any stage it is possible to artificially aid the process of learning by manipulating the environment so as to modify the statistical probabilities of certain patterns being perceived; that is, to increase the likelihood of certain associations being set up, and to decrease that of others.

This is the process which we sometimes call formal teaching.

By 'formal' in this context I of course mean 'essential' – setting out to form, or deliberately to accentuate particular shapes or patterns as instances representing a principle to be learned, in contrast to the situation which usually confronts a child in the early years who, more or less without specially organised aid, must discern for himself any essential principles within the 'buzzing confusion' of his environment.

We are here concerned with the child's learning certain activities rather than others and associating speech and parental approval or disapproval with the appropriate activity patterns. It is clear then that the greater the consistency in the behaviour of those about him the more readily the child will discern and abstract the more stable and constant behavioural patterns and make the required mental associations.

Although a high degree of consistency in our behaviour is a sine qua non for social life at any level much of what we do may not at first sight and in limited contexts appear to show much consistency; and it is necessary to remember that the young child we are considering does not have access to the necessary insight to allow him to infer the presence of a cryptic meaningful pattern where or when it is not readily apparent.

To constantly behave in an obviously consistent manner and to assiduously emphasise meaningful relationships within the environment requires very great effort from any of us, and yet we must strive towards this end in our relations with an unusual child. At first however it is only necessary to be scrupulously consistent during the fairly limited periods of time when our attention is wholly engaged with the child, whilst making an increasing effort to regularise our behaviour during the remainder of the time we are in contact with him.

In time one hopes that the somewhat artificial 'teaching' episodes will become less narrowly formal as they lengthen, whilst our behaviour at other times increases in clearly discernible structure until episodes of 'teaching' are concerned only with more advanced academic skills.

## REWARD AND MOTIVATION

I would suggest the primary and ultimate reward to be the sensual pleasure which accompanies an activity or follows its completion.

To the small child it is the pleasurable sensations which he experiences during active movement – especially continued or repetitive movement – and to a more limited extent the relatively automatic movement which is elicited by crude and primitive stimulation, as by being tickled, squeezed, punched, rolled, turned upside-down, etc., which provides both the reward that crowns the effort and the incentive to further activity or striving to attain some end.

As a young child his learning requires him to explore the environment with all the means at his disposal, to extract invariant patterns from the plethora of stimuli which bombard his senses, and to build up the perceptual associations which lead to the abstraction of concepts. Such operations involve motivation, opportunity and reward.

Our object is to provide him with adequate incentive and the opportunity to learn, together with ample reward, the whole being given just the right amount of bias towards what we know or understand to be the most adaptive areas of learning.

It is possible to consider motivation and reward together for in the early stages the ideal state of affairs is reached when motivation and reward are one and the same process – the success of achievement providing both gratification and incentive for further essay.

Basically all reward in learning consists in feelings of pleasure and the fact that these are expressed outwardly as emotional display, in laughing, giggling, smiling, etc., can be made use of in teaching.

Unpleasure as anxiety or fear (commonly induced by insecurity or uncertainty) tends to counteract or neutralise pleasure and in teaching needs to be kept to a minimum, for although undoubtedly a highly efficient reinforcement in some forms of learning, it is far too difficult to manipulate in practice.

On the other hand non-specific reward learning, both as the use of sweets or conventionalised signs of parental approval, and as anxiety avoidance, seems to me to be largely limited to artificially contrived situations and not to lend itself to spontaneous extension beyond the learning of skills and associations selected by another individual.

Perceptual development depends on posture and movement which impose order and pattern on sensation. Hence stable movement or postural structures associated with feelings of pleasure are likely to be repeated and to become learned behaviour habits.

Much of an infant's active movement, other than the posturally reflexive, consists of activities whose repetition leading to learned experience depends on the potentiating or reinforcing function of the direct sensations of pleasure which accompany the changes of posture.

Exploratory movements are more or less random, guided at first only by the physical limitations of the bodily parts and the degree of pleasure any particular movement affords the child.

Movements such as these (including vocalisations, articulatory efforts and ocular movements) as they become more extended and complex come to produce postural reorientations which give access to further pleasurable experiences so that pleasure in activity gradually becomes subordinated to pleasure in achievement. The primitive condition in which sensations of pleasure as both incentive to activity and reward are one and the same experience gradually gives way to circumstances in which motivation is the anticipatory contemplation of the prize, which is the success of achievement. The actual experience of satisfying or gratifying pleasurable sensations can be further postponed in learning as the memory expands, eventually extending to the use of promissory tokens in lieu of an indefinitely deferred reward.

#### The Encouragement of Controlled Posture and Movement

Normally at any stage of development a movement is accompanied or brought about by a dynamic redistribution of muscle-tone, being at any one time an increase in some muscle groups, a lessening in others.

In order that any such movement might be intentionally brought about it is necessary that engrammatic recall, or at least recognition, of similar complete or partial movements is possible so that the sensations which are experienced during the production of the movement can be used to monitor any stage of the displacement and to correct the movement when necessary.

During the early years, and particularly during the first twelve months, the changing patterns of postural and movement reaction to a passive or active modification of any posture impose certain restrictions on the total experience of the child. Enforcing some degree of order and symmetry on the infinitely wide range of possible bodily attitudes and movements, some experience is assured of those postures which are to assume major importance in sitting, standing, crawling, creeping, walking, running, climbing, reaching, manipulating, etc.,

These automatic postural-reaction mechanisms although environmentally activated, appear autonomously in sequence at certain stages of development and remain for varying periods of time, thus imposing definite limiting restrictions, relatively stereotyped movements and orientations on the possible movement patterns of the child. This ensures that certain movements and postures are significantly more probable than others and, moulding the

perceptual experience into patterns and guiding it along fairly definite pathways and directions, later help to direct the more versatile learned movements.

Normally these automatic reactions are temporally self-limiting, to be superseded by active movements and actively maintained postures.

Under certain conditions this normal sequence of activity, leading as it does to skilled and adaptive movement, and to perceptual maturation, is disturbed so that various anomalous patterns of development can arise.

Some of the primitive reactions may:

- (a) Remain for an inordinate period so as to delay the supervision of intentional activity;
- or (b) become excessive so as to swamp and prohibit the development of voluntary activity;
- or (c) fail to develop or develop late so that there is both a paucity of total movement, and of organised movement and stable posture with a consequent delay in voluntary activity;
- or (d) be disorganised so that movement co-ordinating and postural equilibrating mechanisms fail to develop with a consequent difficulty in carrying out organised movements.

All these developmental 'breakdowns' not only result in postural inadequacy but also in diminished and distorted perceptual experience and structuring.

To these may be added conditions of actual sensory deficit (including blindness and deafness), states of diminished awareness, and lowered emotional responsiveness. This latter factor probably plays a major role in auditory and language dysgnosia associated with autistic states.

It will I hope be apparent that the functional anomalies I am considering under these general headings include hypertonic, hypotonic, ataxic and athetoid cerebral palsy, as well as less well defined cerebral dysfunctions, and 'autistic', epileptic and toxic conditions.

In practice a child may have a significantly raised muscle tone; crippling accesses of raised tone which fix him in helpless bodily attitudes or bizarre movement patterns at the initiation of a movement or a passive change of position; a diminished tone with hyperextensibility of the joints which requires time to bring about voluntary movement and denies him sufficient strength to fix and maintain stable postures in opposition to gravitational influences; delayed onset of equilibrating and co-ordinating functions which the recognition and estimation of a movement error have initiated; various postural movement weaknesses, often without clear abnormality of muscle tone; inadequate and too

stereotyped bodily movements as is often associated with post-encephalitic states, epilepsy, drug stupor, visual deficit, etc.

For development of active intentional movement to prevail in the face of any of these abnormal situations the child must have perceptual experience of the normal or near normal movements beginning with the earliest he may have missed and progressing in order through from gross repetitive motions to the occasional highly skilled operation.

It is essential for adequate perceptual development that the child's experience is as full as possible and in particular that no significant sphere of experience is neglected, for whilst progress may be made for a time, serious gaps in the foundations of the perceptual structure will lead to subsequent breakdown with partial or complete arrest of progress or even autistic withdrawal.

It is I think neglect of this contingency which leads to many of the strange behaviour patterns which are encountered in developmental conditions, especially in "language disordered" and autistic children.

This pitfall is particularly dangerous in view of those aspects of 'human nature' which allow us to forget or overlook the less successful essays in our enthusiasm to maintain accelerated progress.

Not uncommonly whilst a child appears to be very backward in some or all spheres and is making virtually no progress, we all, including parents and teachers feel that we would give anything just for a little sign of change for the better. Our prognostic sights are set very modestly at this stage.

A parent asks: "Will he ever be anything more than a vegetable doctor?"

However once progress has been set in train the objectives are progressively raised at a rate which usually outstrips even the speediest advance to be encountered in a child.

"Do you think he will be able to learn things?"

"Will he go to school?"

"What sort of schools are available for children like Tommy?"

"Will he go to normal school?"

"We want him to be an engineer like his Daddy!"

This commonly leads to unreasonable parental impatience; undue pressures are brought to bear on the child and short-cuts are attempted, often with devastating results.

Complete arrest of development, grotesque behaviour, such as 'budgerigar talking', based entirely on non-specifically rewarded skills, or shells or reticular

edifices of semi-adaptive behaviour, precariously erected over and largely separated from an incomplete nuclear foundation of early perceptual structures, can occur.

When there has been gross movement deprivation therefore, as in 'cerebral palsy' and 'autistic' conditions, the exercise of active movement should begin at a fairly primitive level and progress rather slowly at first, following the pattern of movements and postures which are to be seen in the normally developing child.

In the cases where movement restriction has resulted in fairly well developed perceptual functioning but is limited to within the narrow spatial range of frontwards-orientation, the exercises can be directed primarily towards enlarging the 'fields of interest'.

Always however new exercises should be introduced in small steps only under auspicious conditions and for sufficiently short a time, supported by social encouragement and always crowned with success, even though some 'cheating' may have to be connived at.

The methods I suggest for inducing active exercise of the postural mechanisms are:

- (a) the passive imposition and direction of movement or stable posture, followed by intermittent, partial, and then complete release, of the child as he comes to actively take over the passively initiated movement or position;
- (b) the passive direction of active movement or posture by encouraging the form of the operation through visually or haptically apprehended gesture, such as pointing, glancing or pushing;
- (c) the use of anticipated reward to motivate the child to active striving to some end such as the acquisition of an object, the performance of a skilled movement, or the attainment and maintenance of a posture which allows access of a pleasurable physical state or to an attractive view.

In certain special cases active postural exercise can be further encouraged by:

- (d) passive restriction of redundant movement and imposition of postural stability to allow greater range of movement and freedom from autogenous distractions, (e.g. athetoid cerebral palsy);
- (e) passive orientation and manipulation, in the presence of abnormally high or low muscle tone, to provide favourable substrata for active movement, to overcome spasm, to allow weak movements or limbs to perform against minimal resistance or to make use of gravity or

joint restriction or spasticity, to utilise an abnormal means to produce a more or less normal end-result.

The sensual pleasure which attends on movement not only rewards the effort and provides incentive to further endeavour, it also leads to a building up of the perceptual processes both directly, as with the kinaesthetic sensations which accompany the activity, and indirectly, as with adventitious sensory stimuli such as conventional speech sounds which may be brought into temporal conjunction with the activity.

### Extending the Perceptual Fields of Interest

Although I suggest that many cases of dysgnosia are postural in that they have an origin in an inadequate developmental acquisition of perceptual experience through the use of exploratory movement, which leads to an incompleteness of the mechanism by which the child apprehends his environment and causes him to neglect a significant extent of bodily near-space, I do not mean to imply that the dysgnosia necessarily arises from a primary movement disorder.

A fairly common and major cause of postural dysgnosia would be a state of diminished affect which, even in the presence of a perfectly normal sequence, or potential sequence of automatic postural reactions, may be inadequate to allow learning at a sufficient rate, under ordinary conditions, to overcome the natural inertial reaction to the progressive impulse.

This state of debility is usually potentiated by greatly reduced social and physical stimulation, particularly during the first year or so, which also results from the diminished affectual response to activity.

On the other hand, I would maintain that there is an important element of 'secondary' postural dysgnosia in those conditions which are associated with primary lesions of the auditory and speech 'pathways' within the central nervous system.

In those cases one would anticipate a neglect of those regions of bodily near-space outside the scope of easy manual and visual access, but without perhaps, the same degree of dysgnosia affecting the other perceptual modalities, as would be expected in a condition of primary postural dysgnosia.

It seems to me, therefore, that extending the child's consideration of the space beyond his forwards-orientated region of interest should be a primary objective in a high proportion if not all cases of auditory dysgnosia, as hinted at in the introduction to this note.

As I have implied earlier ("Influence of Postural Anomaly on Perceptual Growth") the lateral 'fields of interest' appear to develop independently as if the perceptions were 'stored' within separate halves of the brain. Only in the region directly in front of the child does it appear that the two halves of the perceptual field overlap so as to merge and permit bilaterally co-ordinated perceptuomotor functioning during the early months.

The forwards-orientation of many of the dysgnostic children may perhaps represent their dependence for active contrast with the environment on a narrow region of biperceptual organisation blinkered by a limbic collar of relatively blank imperception.

This would suggest that the region of perceptual interest needs to be widened not only by attention to lateral extension but also by cross-linked interest between the two functional sides of the body, such as by the active manipulation of one hand within the usual territory of the other, by association between widely separated stimuli, and by rapid transitions of interest between the two sides, etc.

The manner of effecting such a proposal must vary according to the child's age, and the exercise increases markedly in difficulty with the increasing age at which the treatment is instituted.

In the child of six or seven months it is a comparatively simple matter to extend the fields of interest, even in the presence of fairly severe movement restriction, by the simple expedients of passive manipulation; offering objects of tactual or visual interest from a variety of directions once the interest has been aroused; by inducing haptic or visual following in the various directions; and varying and carefully arranging the baby's postural orientation and position in a room. Sometimes much is achieved by having him reversed in his cot or arranging for the cot to be moved to a different position.

Even if the active measures are not instituted until the child is eighteen months or even two-years old similar methods should be successful though they will require much greater application and ingenuity.

With the older child it becomes increasingly difficult to find ways appropriate to his more sophisticated ways to break down the habit which has steadily gelled over the years and even been reinforced by attempts to encourage his interest in sound and speech.

It should, however, be possible to find ways of overcoming the obstacles and even make use of a child's attempts to look at one's face to draw his attention to the sides, upwards, downwards, and to the rear. Talking to him quietly from continually varying close-to positions outside his usual visual range, and offering things during constructive play from continually changing direction, may be sufficient.

Rougher energetic play in which the child is encouraged to twist and turn from relatively fixed positions such as sitting in a chair, climbing on a jungle gym, wrestling or slow motion 'ball games' using balloons, can also provide the means of extending his perceptual fields of interest.

### The Development of Speech Comprehension

It is important to note that although speech is used continually during the various procedures it is not dominant, in that at no time is the child expected to depend on speech, and no attempt is made to have him talk. Speech accompanies or just precedes activity, the child's emotional show providing a meter by which to monitor his level of enjoyment of the activity, and later the speech.

Secondly it must be noted that the method implies a different view of the nature of early speech acquisition from the one which is often taken and the manner of presentation of speech to the child stems from a consideration of the processes, as I interpret them, by which the normal child comes to find symbolic signification in the vocalic and articulatory sounds of others, and so becomes to a large extent subject to and controlled by these sounds.

It is often assumed by those who attempt to impose one of the purely arbitrary systems of speech classification, used for convenience by grammarians, on the early speech and understanding of speech in young children, that early language is acquired in the form of words homologous with those used by adult speakers.

Attempts are made to count 'words' in a child's vocabulary, and it has even been inferred that children first acquire 'nouns' followed in turn by 'verbs', 'adjectives', etc., etc.

As a result of this it would be argued that a linguistically backwards child should be exposed to simple 'substantives', in association with the objects these represent in adult speech, to be used as labels for the objects or pictures of the objects.

The 'nouns' chosen are those which are imagined to appear in the early speech or understanding of normal children, or those which might prove to be especially useful in communication.

It seems to be argued somehow that by isolating each component vocable as a potential auditory symbol, and pairing it in time and location with its intended referend that (a) the naming function of speech is being promoted, and (b) that the process simplifies and facilitates linguistic development in the language-retarded child.

I would deny the validity of both of these arguments as not being consonant with the observed language development of normal young children,

and entertain very serious doubts as to their relevance and value in the treatment of linguistically handicapped children.

Firstly, I consider 'naming' to be a fairly advanced linguistic skill and not derived by direct association of word with object; and secondly, I see attempts to tie an isolated and neatly tailored vocable, as a sort of symbol-elect, directly to a referend by simple association not as a process simplification but as a ruthless pruning.

I see no indication from the behaviour of young normal children that early language develops in this way. Even if one argues that such an observation is irrelevant to the case of the 'language disordered' child, the method seems to me to give little heed to the intellectual and emotional status of the child, and to deprive the potential language user of the very aspects and properties, namely, transfer of information and incitement to action, which distinguish the merely consistent responding to stereotyped conventional signals from real versatile and functionally effective language. That is to say direct pairing with an object or picture not only lacks impulsion to effect change but confines the association initially to what is virtually a single reference or image of the referend, instead of exposing the symbol directly to a whole sphere of reference already built up by the child. It appears to be assumed that some sort of secondary transformation, from symbol with unitary intention into symbol with extensive notion sphere, will take place spontaneously.

The use of a non-specific reward, divorced from the satisfaction of particular achievement and the motivating influence of success in communication, seems to me to be a further flaw in the basic argument of some of the standard attempts to induce language function. Responding appropriately to conventionalised auditory signals is not necessarily language, just as talking appropriately is not necessarily speech. It is not difficult, unfortunately, to induce well enunciated 'budgerigar talking' even in singularly backward children and it is commonly to be observed in 'autistic' children; however, I am aware of no evidence to convince me that such direct association conditioning leads towards language function, and I believe that it does not do so.

It is true that once a basic linguistic functioning has been established in a normal child, 'vocabulary', in terms of vocables which can be utilised in the communication system, expands rapidly but not I venture to say by directly linking word to object, at least during the early stages.

It is readily to be observed that such vocables as 'ball' or 'mummy' are used by a young child, with or without tonal or stress variations, to represent many kinds of activity, as, e.g. "That's the ball" (indicative in the logical proper-name sense – not naming), "Give me the ball", "It's my ball", "Where is the ball?" "Is it the ball you want?" "Yes the ball", etc., etc.

The language of young children should not be thought of as partial, immature, incorrect or simplified adult language. The normal speech of a two-years-old child is mature two-year-old's speech.

Tonal patterns (mainly in terms of vowels and diphthongs), rhythms and stresses are almost certainly the features of vocalisations to be first understood by young children as having symbolic signification, and it is these patterns which carry most of the emotional significance and implication at this level of communication.

Early speech seems to me to be absorbed under conditions of directional activity (including postural set) together with a high level of accompanying affect.

It is, I think, noteworthy that appropriate responses to such action-invoking phrases as 'clap hands', 'how big', 'give me a kiss', commonly figure much earlier in an infant's behaviour (e.g. 8-9 months) than responses to the word 'mummy' (e.g. 9-10 months), and I would venture to suggest that at this stage it is not to 'mummy', the substantive, that the child responds but to 'mummy' the bound component of one or other of a related group of transitive and intransitive 'doing phrases'.

Language has its beginning in activity - predominantly active movement. As with perception generally, movement is fundamental to the growth of auditory perception and upon movement spoken language depends both in a general and a specific way.

Movement is necessary for the direct acquisition of verbal understanding for it is the vocalisations which the child hears to accompany certain repeated activities which are first associated with the activities and come more and more symbolically to represent them.

First is the activity and then the speech, short circuiting, abbreviating, and taking much of the effort out of the demonstration of activities to be mimicked. Gradually it is an engrammatic perceptual recall elicited by the speech pattern which is reiterated in movement and manipulation; and this we call responding to speech.

When I suggest that activity should be an integral part of any technique designed to promote linguistic function in a young or 'non-communicating' child I do not mean simply that one ought or must use activity as part of the programme; I mean that *movement is the essential and natural precursor of spoken language* and that any chance of bringing language to the older alinguistic child rests upon a recognition of this fact.

Speech is not only a substitute for bodily activity – it has grown out of movement.

It is not my intention to attempt to outline a system for the teaching of language but rather to suggest ways, based on the observation of normal children and children with auditory or speech dysgnosia, in which to encourage the linguistic habit – to introduce the child to the possibilities of communication and control which language brings.

Hence it matters little in the pre-linguistic and very early linguistic stages with a dysgnosic child whether the 'words' used are likely to have an immediate adaptive function in everyday social intercourse. It does not even matter whether the vocalisations used are part of any conventional language system as long as they can acquire symbolic signification for the child.

Thus any classification of speech, from our point of view at least, should be in terms of physical activity. Even the process of naming or labelling with words at first demands an active indicatory function.

The use of language in a 'labelling' or 'naming' function I consider to be a relatively complex abstractive process which can only come when linguistic development is fairly well advanced.

Labelling or naming in this sense is quite different from the mere indicating by means of the 'name' of an object.

This indicative function directs the attention to some region, object or property, being therefore the linguistic analogue of the logical proper name, and its activity-bound nature needs to be accentuated in the early acquisition of speech.

The various injunctive functions require that a child performs some action as 'clap hands', 'So big', 'Give me a kiss', 'Put that in the box', 'Show me the light', 'What is that?'

Indicative functions such as 'That is the .....' accompanied by pointing later extends to the more complex form e.g. 'It's by the tree' or 'In the box', (can have the form: 'Where is .....?' when intended to indicate a state of uncertainty) or contracts to the naming operation.

There is no fundamental difference between indicative and injunctive forms, for learning that an object or activity is or can be associated with a verbal utterance depends on the active direction of attention towards the object in response to the utterance whilst the early indication that an utterance requires an energetic response is often carried by the movement gesture which accompanies the speech. As for example – "Give this (or 'the ball') to Mummy" is spoken together with handing the article to the child so that he discovers that the sequence of his being handed something accompanied or followed by speech usually requires action of some sort. The 'key' element of the spoken sequence (in this case 'Mummy') can now give direction to the operation, which can if necessary be further reinforced by gesture or glance so that simply handing an article to the child comes to imply 'do something with this', to imply that an

operation is required of him. This is further reinforced by such forms as "Put the ....." or "Give this ....." which gradually inherit the more specific significations which become induced in them.

That an understanding of speech is dependent, in the first instance, on its association with activity is no more to be doubted than the importance, especially during the early stages, of environmental context in supplying necessary categorising and defining clues, in directing the attention and encouraging appropriate postural set.

At the earliest stage the speech is narrowly confined to, and supported in conveying information by, a situational context. For example, 'Come and sit up' might be meaningful for the young child if the table has recently been laid, there are smells of cooking in the air, or his tummy indicates a need for refreshment, but elicit no clear outward response without these indicators of an approaching meal.

At nine months a child may respond identically and appropriately to 'clap hands' and to / æ æn / or / æ æ? / if spoken by mother on whose lap he is sitting whilst father is within view, but not under other circumstances.

A month later he may respond under less set conditions and soon may not respond regularly to less than the correctly articulated sounds.

These points might be further illustrated by a consideration of the early growth of an understanding of those linguistic structures which parallel and describe the operations and states of positional relationships (acquisition of prepositional understanding) as I interpret the process.

In a relatively analytic language such as English I see such structures, which might loosely be called predicative, as being more representative of linguistic prowess in the young child than mere size of vocabulary. This sweeping statement becomes less and less approximate as language develops and becomes functionally less and less divisible into predominantly lexical and predominantly syntactic elements.

It is suggested that at some early stage a substantive embedded in a short injunctive utterance and used by an adult may be understood by a child to indicate or refer to a particular referend whilst the verbal context represents "meaningless" noise for him. Any further implications about operations to be performed on that referend must be understood from situational clues, gesture, and a statistical knowledge of the probabilities concerned.

At this stage the response varies not at all whether the full utterance, the substantive alone or together with voiced jargon is used. The word order is irrelevant but the emotive features and stress patterns are already important.

For example a fourteen months old child might be handed a ball with the instruction: "Give the ball to Mummy". That the child takes the ball and hands it

to his mother cannot be taken to indicate his understanding of the lexical elements and syntactic construction of the utterance in this particular situation. It is only required that he recognise the vocable "mummy" under these conditions as indicating a particular person and the implication that he should do something with the object he has been given.

Thus the single word "mummy" is all that is necessary to produce the required response under these conditions.

Likewise: "Put the ball (it) on the chair" said under similar circumstances would tend to result in the proffered objects being brought into apposition with the referend of the substantive "chair". Statistically the operational relationship described by "on the chair" might well be a more probable choice than that described by 'under', 'in front of', 'beside' or 'behind the chair' and therefore the likely one to be adopted by the child. At this stage although the preposition may be present it carries no information.

The first linguistic element capable of implying the positional relationship is the action word or phrase which comes to express linguistically the physical displacement or instructive gesture of the earlier development.

Now the nature and direction of a positional relationship (prepositional understanding) is implicit for the young listener in certain verbal phrases as a result of their repeated usage in fairly restricted contexts and where situational clues continue to be abundant.

Thus most prepositional relationships would appear to be implied by certain verbal forms and are at an early stage in the development of verbal understanding 'tied' fairly intimately to particular actions such as: 'jump over', 'hide behind', (association pointed out to me by Dr. Angela Broomfield) 'go round (behind)', 'sit down', 'stand up', etc., or more loosely such as 'put .....', or 'lock.....', where understanding of the actual prepositional relationship is more dependent on the context.

Gradually as auditory memory and sequencing facility develop, and the ability to handle more complex sequences becomes sophisticated, meaning is induced by the listening child in the prepositional clause.

At first meaning or signification is understood from the complete phrase or phrase-word as the word group as a whole becomes imbued with the implication of prepositional relationship. At this stage we might say that in the decoding process the preposition is 'tied' to the substantive or to a number of substantives.

The more varied the substantive combinations involved the sooner the signification denoted by the preposition, when transferred in novel combination to another substantive, is comprehended.

Such phrases as 'sit on your chair', 'put your feet under the table', 'throw that in the bin', 'going round the corner', etc. may early tie verbal elements such as 'in', 'on', 'under', or 'behind' etc., to particular substantives in association with elements signifying actions so that concrete linguistic concepts, such as 'on the chair', may become recognised as complete units by the child some time before a phrase such as 'on the house' is recognised as a whole or is capable of being understood in terms of its component words.

In the meantime the meaning induced in the prepositional noun clause condenses towards the 'preposition' where it becomes more flexible and capable of use with a larger number of different substantives. In this way the preposition acquires a more individual importance in conveying information about relationship thus freeing the other lexical elements for use in increasingly varied syntactic combinations and allowing them to assume more extensive and versatile roles.

The preposition comes eventually to be understood in abstraction, its meaning being readily comprehended in any context.

The criterion of mature use of the preposition from this particular point of view would be the ability of the child to correctly recognise and respond to it in any appropriate context, that is to say it has acquired infinite transferability.

The preposition continues to evolve beyond this stage and become imbued with a wide range of subtle shades of meaning according to its interaction with its lexical, syntactic and suprasegmental phonemic (e.g. emphasis, intonation, etc.) context.

### Encouraging Linguistic Function

When attempting to initiate and foster the spirit of language in the ailinguistic or linguistically backward child it is necessary to couple speech with the activity it is to describe, replace or invoke, and under the most suitable conditions.

Naturally a lexical candidate for an injunctive function should supervene at a suitable time interval prior to the action with which it is to be operationally yoked and this is the manner in which speech must generally be used; however, it is also effective in practice to use repetitive speech simultaneously with repetitive activity.

It is also convenient sometimes to follow an accomplished action by descriptive speech and although probably not leading directly to meaningful associations in the early phases it helps to make up the linguistic environment.

The speech whilst inviting responses should not be allowed to demand one and no attempt, other than a minimal delay following a verbal command, to deliberately test language function should be made lest anxiety be introduced. It is important, therefore, that as far as possible every command is reinforced by its being followed by the action.

The two main methods to be used in encouraging interest in speech involve its use in association with (a) 'passively imposed' activity or (b) anticipated imminent action, either fortuitous or contrived. The methods may be applied casually whenever an opportunity presents itself during the day, and also at times under more organised and set conditions.

This might be an appropriate time, before going on to outline some practical details, to point out a major pitfall which is too readily neglected and which I find to be one of the greatest stumbling-blocks to progress when working through the agency of a parent, or even a teacher sometimes.

One form of response a child can give, which is useful in its correct place, is the vocal response.

In its earliest stages this will take the form of echoing the speech of others so that vocal utterance is responded to by an attempt at repeating the vocalisation.

Unfortunately the delight at hearing the speechless child 'speak', as occasioned by a deep and powerful biological need and expectation of speech from a child after the early months, can seduce us towards encouraging echoing responses from the child at the expense of his deriving real understanding from speech.

If he is rewarded for the reproduction of the vocalisation, which he may find easier than interpreting its meaning, he may well develop high grade but non-linguistic 'budgerigar talk' and fail to realise that speech requires adaptive action.

Not only is following such a wayward course a waste of time and effort, it may also seriously impede linguistic progress and can readily lead to severe emotional upset when attempts are made to redress the situation at a later date.

No relevant linguistic understanding

No recognition of required response. Objects simply taken and brought together spontaneously.

No recognition of relationship between objects other than that there is one (approximation).

Recognition that action is required. Proffered object approximated to named object.

Non-linguistic information suggesting or indicating a relationship.

As above but with contextual clues and memory statistics guiding – establishing the character of the particular spatial relationship.

Early linguistic information about relationship.

Verb (with prepositional implication) + prep noun. Preposition present but redundant

e.g. "Hide behind (behind) object".  
"Sit down (down)".

'Verb' with implied 'preposition' induces the condensation of preposition-substantive phrase-words.

Verb + preposition  
substantive.g. "look - - - under - - - - the chair". "look - - - - - under the chair".

Phrase-word consisting of preposition 'tied' to the substantive. Preposition not 'understood' in abstraction and not transferable to other substantives. New phrase-words may be readily learned at this stage but the relationship not transferable.

Preposition understood in abstraction as representing a relational concept. Comprehensible in any context, e.g. 'under', 'on', 'behind', etc. are recognised as representing relational concepts of 'under-ness', 'on-ness', 'behind-ness', etc., and as symbolising a positional relationship between two or more objects, substances, qualities, etc., the 'sense' or direction of the relationship being given by the word order.

Verb preposition substantive  
Abstracted connotation of preposition gives preciseness of meaning to the complete phrase

Extension and differentiation of connotation of prepositions.

Behind ..... obscured by  
..... beyond  
..... coming after, etc.

Under ..... lower than  
..... sheltered by

## Perceptual Exercising in the Remote or Distractable Child

Any attempt to encourage learning in a remote, anxious or highly distractable child in a formal manner requires involving the child's attention and interest in a balanced sort of way, approximating as nearly as possible to the normal social interaction between a child and others. Any special emphasis on a particular perceptual modality or department of learning then requires being integrated within an all round or holistic approach, and artificiality avoided as far as it can be.

Routine drilling or repetitive exercises as such have little or no place in the education of the backward child; however, the principles of repetition and routine may be utilised effectively and certain basic methods or techniques can form a skeletal structure for extremely versatile modes of promoting social and adaptive progress.

An approach which resembles, at least superficially, techniques which are widely practised in the education of young pre-school children, I interpret and use as follows:

The first object is to establish a direct multichannel communication system with the child which can be set up quickly and without undue effort. The channels should be as noise-, and equivocation-free, as possible.

Secondly this communication system should be utilised frequently and regularly to facilitate learning in the child by feeding stimuli to two or more of the sensibility modalities simultaneously (or in some other appropriate time relationship).

'Equivocation' is reduced to a minimum by making the channel as short as is feasible and, where necessary, using prosthetic means (spectacles, sound amplification, etc.) to ensure that information losses are as small as possible.

'Noise' is also reduced by keeping the channel short, by reducing ambient stimulation (tactile, kinaesthetic, auditory and visual – olfactory and gustatory) to a minimum, and by imposing restrictions on the movements and orientation of the child.

A room should be selected that is fairly large and as empty as possible. All pictures, toys and other objects should be removed or adequately covered and kept out of reach. A well padded, carpeted room, is ideal and as far as possible it should have a low reverberation time and be isolated from external sounds.

Visual distraction ('noise') may be further reduced when required by the use of a shaded low-power lamp hanging low from the ceiling over the spot selected as the working area. This puts most of the room in shadow and concentrates the visual attention within one small region.

The child should be taken into the room – with the lights on at first if this is thought desirable – and allowed to do as he likes under the limiting conditions as he accustoms himself to the environment.

Depending on their age, development, state of activity and fatigue, mood, etc., the actual teaching situations available fall into two main categories:

(a) The 'free-range' situation. Accepting whatever opportunities, as regards region of the room and orientation of the child, present themselves no attempt is made to restrict the child to one place for more than 30 seconds or so at a time.

Using the 'free-range' situation one or both of the general techniques referred to earlier may be made use of, namely:

Passively introduced active exercises using close-contact passively imposed movements when and wherever possible, and  
Anticipatively induced active exercises using both adventitious and contrived anticipated opportunities.

To set up the communication channel for the free-range situation

Social overtures are made to the child until sufficient rapport is built up to allow physical contact without inducing anxiety. The region of the room which is chosen is largely immaterial but it may be wise with some children to remain close to a parent in the early stages, whilst for some activities a well illuminated area is preferable.

A small chair or even a table may be made use of as apparatus but not consistently or with the same restraining purpose as in the 'battery' situation.

(b) The 'battery' or table-and-chair situation. Confining the child for several minutes or more to a particular location and postural orientation means that relatively concentrated periods of perceptual exercising are possible at an appropriate stage of development.

Again, the general techniques of passive introduction and anticipative induction to active exercise are equally applicable to the 'battery' set up; however several extra items of apparatus are required.

A low table and two chairs of appropriate size for the child and 'teacher' are provided and a cardboard box for ("toys") play materials, which is of adequate size and depth to contain all the apparatus needed but small and light enough to be continually held on one's lap or in one arm without fatigue. When necessary further materials may be kept in a discreetly situated cupboard inaccessible to the child and into which he cannot see without the help of the teacher. The child never sees directly into the box which contains materials and objects not normally available to the child at other times.

### To set up the communication channel for the 'battery' situation

The ease with which the channel is set up will depend largely on the age, ability and condition of the child.

Some children will go almost at once and set themselves down at the table whilst others – particularly those for whom such a technique is particularly required – will wander or rush about the room.

As soon as the child has exhausted the novel possibilities of the room, or after a short delay in the case of a hyperkinetic child, an appropriate toy or piece of apparatus is produced by the teacher who sits himself at the table on a low chair or if necessary on the floor, initially perhaps at the opposite side of the table but subsequently to the side and slightly behind the child's chair. Some phrase such as: "Have you seen this car John? You can come and sit down and we'll play with it together," may be used to attract the child's attention, whether or not he understands or even attends to speech. If necessary the toy may be played with on the table in an acoustically or visually noisy manner to gain his interest. If this gambit fails to bring the child to the table it may be necessary to noisily rake about within the box and perhaps produce another object after slight delay.

If the child comes to seat himself at the table he should be rewarded verbally and with a smile and allowed to handle the materials under control whilst he sits at the table.

If the child attempts to pick up the toy without sitting down or reaches for the box these are gently but firmly withdrawn whilst it is made clear by speech-accompanied gesture that there is no reward without compliance. "You sit down in your chair and then we can look at this together".

Any rising from his seat to reach for the box is countered by withdrawing it and insisting upon the child's sitting down and drawing his chair close to the table.

Sometimes it is necessary initially to carry a child to the table on which a toy has been left and to seat him in his chair. However this should not be done after the first few minutes have elapsed even though complete success in establishing the set-up may not be achieved in the first or even the first three or four sessions. No attempt to woo the child by direct promises or pleading etc., except as has been suggested should be tried, neither should more than occasional overt interest be shown in the child who is not complying. He should then be studiously ignored under these circumstances whilst visual and auditory stimuli are generated provocatively as bait.

This often requires a great deal of patience.

As soon as the child complies with the rules he is allowed to play with the apparatus but always under control.

In time the child becomes conditioned to this formal play situation in which he gets maximal benefit – reward and liberty – only when he obeys the rules.

Eventually he may run to the table and sit down as soon as he is brought into the room or he may respond to an injunction such as: "Bring your chair and sit down and we'll look at these things."

It is of the utmost importance that one is unremittingly consistent in everything and every way, for any lapses such as allowing materials to be taken away from the table (during the early sessions at least) will interfere with the control, induce emotional insecurity, impede learning and generally interfere with the efficiency of the system.

In addition to this set-up I often find that instructions uttered in a 'serious' and commanding tone of voice facilitates the procedure, especially in overactive children with some understanding of speech; however, connected speech is used to accompany the activities, and to 'name', draw attention to, indicate, question, command and describe throughout the work.

When all this has been accomplished successfully a short direct channel has been established with the child. By arousing and maintaining his interest he is brought close to and facing the sources of stimuli one wishes to feed to him, whilst he can be spoken to from the side without the possibly distracting continual view of the teacher's articulatory movements.

By reducing ambient distractions as far as possible, by limiting his own grosser activities and orientating him in a relatively set basic posture it is possible to focus his attention on the haptic, visual, auditory (and where necessary olfactory and gustatory) properties of the materials and their manipulation whilst he is simultaneously readily accessible to verbal, gestural and more directly emotional stimulation, as reward from the teacher.

This positional and social relationship however does more than give access to learning situations, for the very responses in the child which bring him to the table and orientate him satisfactorily by arousing his curiosity and interest and maintaining his attention, are also those which, by inducing unsatisfied appetites, motivate exploration and experimentation and facilitate the learning processes.

### Reward

This has been referred to briefly and will not be developed here; however I would repeat that as far as possible the reward should consist in the child's enjoyment of the activity itself or the success of achievement realised through the activity. In addition to these specific rewards it is necessary to establish a form of non-specific reinforcement as a vocal show of approval which can become linguistic. This reinforcing tool should be used with considerable caution, however, for it is only too easy to institute unprofitable or even obstructive habit patterns, some of which, such as non-linguistic speech, may be misinterpreted as adaptive.

The materials and exercises offered to the child will, of course, depend upon the individual child, his specific difficulties and level of functioning.

The appropriate material, complexity of activities, the rate and manner of change with time, will need to be estimated initially, tested by trial and error and be subject to constant modification and revision according to the behavioural response of the child and the way in which this is interpreted. Such control can be very difficult and may severely tax the ingenuity of the teacher.

With, for example, an autistic and generally under-responsive child who is able to attend for at least a few seconds together, one might explore the variety of objects and movements which capture his attention and interest even if only for a fleeting moment. Having learned something of this one could attempt by careful manipulation and alternation and substitution of stimuli to extend the multiplicity of successful stimuli and the duration of concentration of interest.

Social interaction may be encouraged by effecting an interest in circular chains of behaviour which require the intervention of a second person as a necessary link so that the child may be obliged to offer or demand the attention of/behaviour/activity from another in order to satisfy his needs. This may be simply the retrieving or replacing of a deliberately displaced object, or the rebuilding of a structure or the re-articulation of jointed apparatus, but should lead to a social inclination on the part of the child to approach the 'teacher' to request assistance.

In this way simple social games may be evolved and with them greater and greater social responsiveness associated with increasingly appropriate emotional reactions.

Of course it is undesirable to have the child sitting at a table longer than is necessary, either at any one time or beyond the stage when such a restriction is no longer essential for maintaining an efficient communication channel.

Many important activities are outside the scope of the highly restrictive table situation; however the establishment of an obedience to certain basic rules which brings with it an optimal balance of individual liberty and efficient learning is most readily brought about in the first instance by confining the scope of activities within a small universe. As soon as possible, but not before 'correct habits' are firmly established, the range of activities and availability of space is enlarged, extended and developed to everyday environmental proportions.

### Activity Exercises with Speech

The 'Activity Exercises' are intended to enlarge and extend the whole of the child's motor and perceptual experience but, directing our attention towards the linguistic aspects, a basic pattern can be outlined largely in terms of example techniques.

It may well be thought at first sight that, aside from the modified position of the speech source and the avoidance of unnecessary amplification, there is little difference between the methods suggested here and many in common use. This, in many ways, is probably so; however, it is this seemingly small difference which I contend to be of singular importance in the treatment of dysgnosic children.

It is not simply that speech needs to be used as an integral part of a child's daily life activities and not as an isolated skill, but that early language is activity based and has no meaning – no existence even – in the early stages without its being directly and immediately tied to the child's activity.

In the simplest activity exercises no apparatus is required other than can be held in the hands but once more complex manipulations and perceptual discriminations are involved, a small table and suitable chairs are pretty well essential. (See previous note 'Perceptual Exercising in the Remote or Distractable Child').

The sorts of activities which can be used may, of course, be invented on the spot to suit the child and the occasion.

That an action is required as a response to speech may be demonstrated first by following the command by the passive activity (passive, that is, from the child's point of view), then repeating the command in a modified or indicative form signifying accomplishment perhaps by actively demonstrating the results of the activity response e.g. "Let's put the brick on the table" or "We'll put baby's shoe on" – operation – "There we've put his shoe on," etc., etc.

Each speech function can be clearly demonstrated by carrying out the activity type required.

A little formula (using close contact, a short highly polarised communication channel, structured passive displacements leading to active movement, visual and auditory stimulation from the materials, together with 'emotionally charged' speech and other 'show' from the teacher) which I find very effective on some children can be illustrated as follows:

#### Early Stages:

Close social contact is gained with the child through active movement, accompanied by simple conversational level speech of the sort – "Come along, let's have a game".

Taking the child's hands in one's own and enclosing a coloured brick in each, bring these together in a series (five is a good number to choose) of rhythmic taps, accompanying each tap with a vocalisation – e.g. "bang – bang – bang – bang – bang".

Having by this manoeuvre brought a smile to the child's lips or better still a giggle or a laugh or a show-off look towards mother, etc., now add to the speech something of the order "Come on – let's do that again."

Then begins the simple speech pattern which might take the form: "Ready" – (slight hesitation) – "Go! Bang – bang – bang – bang."

This is repeated several times or until the laugh is not quite so great signifying need for a change of interest.

Then – "Let's have a different game". For example – Dispense with the bricks. Take the child's empty hands in teacher's and "Sawing! Ready? (Pause) Go! Saw – saw – saw – saw – saw – saw," accompanied by reciprocal and alternating sawing movements with the hands and arms.

This might lead to "twisting" or some other word-activity where full onomatopoeic relevance can be given to the words. The long-drawn-out, replete with glottal plosion and grunt!

One game which always goes down well if the child has reached this stage is "Push-pull" using two interlocking plastic bricks or beads.

Here, after some alerting or trigger phrase the bricks held within the child's hands are pushed together accompanied by "P-u-s-h" and culminating in a click when the nipple of one brick enters the hole of the other.

Then, "Now let's pull. P-u-l-l" said together with all the counterfeited show of effort which can be mustered until, after a brief manufactured delay, the bricks separate with a "plop".

They should be disengaged fairly readily but make a loud noise when they part, for quite soon the child will do his own pulling but may continue to require help with the more complicated task of rearticulation for a while.

He will then pull together with the 'teacher's' sympathetic grunting vocal accompaniment but offer the bricks for rearticulation after a brief person attempt.

I have often found this gesture to be the first social overture from a primarily autistic child just emerging from his remote and insular condition.

From this one can go on, at the appropriate stage, to undressing and dressing, feeding, bathing and bedding a doll, which can be extended to the child's own self-help skills, with one or two reservations, to 'posting' solid shapes, completing a form board, building, taking out and replacing inserts in a simple picture jig-saw, play with model farm, doll's house furniture, recreation ground, zoo situations, etc.

Positional relationships are realised in active terms via various routes and between a variety of different objects.

For example, "We'll put the car right over there" may be accompanied by extended reaching and the slight effort of rising forward to place the object at a distance. It can be recovered after a short time interval being preceded by a form such as "Where is that car?" and a questioning bodily attitude, if necessary a momentary pause, to allow child to respond by reaching, fixating the car, assuming a searching, enquiring or expectant attitude depending on his stage of development – "Oh there it is ... there's the car over there ..... you bring the car back."

In a similar way, "Let's put the cow under your chair ..... (action) ..... and put the key under your chair .... (action) ... and put the glove under your chair .... (action) .... etc .... Now just look at all those things under your chair .... (accompanied by elaborated bending and peering under the chair) ..... you bring them out again .... and put them on the table .... (enumerating etc. if appropriate)".

Again: "Make the car go through the .... "You make the dog hide behind the .... Climb over .... jump over ..... go round behind ..... round and round ..... crawl under ..... slide it under ..... fall off ..... push it off ..... lift it up ..... climb up ..... jump up ..... jump down ..... go between ..... put \_\_\_\_\_ between ..... squeeze the \_\_\_\_\_ between ..... put the \_\_\_\_\_ in the ..... drop the \_\_\_\_\_ in the ..... right down to the bottom ..... look under ..... look behind ..... look down ..... look through ..... look in ..... look round ..... etc., etc.

For example the activity phrases "Pick the \_\_\_\_\_ up", "Put it (or the \_\_\_\_\_) in the \_\_\_\_\_", "Turn it over", "Turn it round", etc., can be readily introduced by the method of anticipation, making use of the child's obsessional tendencies, as soon as he reaches the stage of spontaneously rectifying a disorientated play object. Using for example, 'Rowing eight with cox', the 'little men' may be fed to the child one by one from various directions with the injunction to 'put this one in the boat', spoken from continually varying positions to either side or behind or above the child's head, and accompanied by adequate vocal and haptic expression of approval for success.

Once this activity is in happy train it becomes possible, whilst offering a 'little man' from one side, to surreptitiously slip another into the boat but in an inverted position. The injunction "You turn that one over" is timed from the moment the child is observed to become aware of the anomaly and seems about to redress the situation. If necessary, of course, his attention can be drawn to the upside-down man.

Slightly later using a form-board or picture inset board the child can be induced to reorientate in one plane or reverse a purposely misplaced piece before fitting it into its recess.

"There's another one ..... (or) Here's the dog ..... you turn it over" or "turn it round ..... that's right turn it round ..... and push it in", etc., introducing

descriptive names for the various pieces and allowing a brief interval between an introductory or interrogative phrase and the appropriate action.

Other adverbial forms may be similarly presented, as may adjectival elements, though perhaps less obviously, by emphasising the dynamic nature or basis of quality and comparative size, or a contrast between qualities brought into physical relationship.