Music
and
Visually Impaired Children



Some Notes for the Guidance of Teachers



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Foreword

The production of this pamphlet was stimulated by the large number of enquiries from parents and professionals that I have received over the past few years, in my capacity of Head of Music at Linden Lodge, a school for the visually impaired in Wandsworth. It is intended to assist those who are faced, perhaps for the first time, with the responsibility of organising or undertaking a visually impaired child's musical education. It should be appreciated that the observations and suggestions made in the pages that follow are only preliminary in nature, and that the best advice one can give, is to get in touch directly with any of the relevant people or organisations listed on page 31. In my experience, they will be only too glad to offer what help they can.

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Do Visually Impaired Children have Special Musical Abilities?

Introduction

Visually impaired children are commonly thought to have special musical abilities that in some way compensate for their poor vision or lack of sight. Like many such beliefs, this one does contain an element of truth. There is always a danger in drawing too much from generalisations, though, and in fact a given visually impaired child may show just as much or as little musical promise as any other. So what is the true position? My own observations suggest the following tendencies:

- among partially sighted youngsters and those who become blind after the first few years of life, the development of musical abilities is generally unexceptional;

however,

- among those who are born blind or with very little useful vision—perhaps just being able to perceive light—or who lose their sight early (say up to the age of three or four), the development of musical abilities is often substantially different from normal.

We will now examine these differences, and consider their educational implications.

The Early Development of Musical Abilities

In my experience[1] the musical development of those who have had little or no vision since birth or shortly afterwards tends to run ahead of that found in most children. Here are some examples of what this can mean for both pupil and teacher.

The ability to sing 'in tune' is almost invariably in place by school age, and often well before this. Hence we could and, I believe, should expect such youngsters to cope with rather more

[1]This observation, and those that follow, are based on a study of 50 severely visually impaired children who had never or only briefly been able to see. They were all pupils at Linden Lodge School, and, within the constraints given, effectively a random selection. Certainly, there would appear to be no reason why the tendencies noted here should not be reflected on a wider scale.

melodically demanding songs than would normally be the case. Try chromatic material, and lines with awkward intervals. Can the child sing a tone-row (or part of one)?

The capacity to hear and understand harmonic structure is often well-developed at an early age too. Where this is so, the child's attention should be drawn, if possible, to ever more complex harmonies, and the contexts in which they typically appear. Part-songs, rounds and canons, perhaps of some complexity, offer a further source of aural stimulation.

Young blind children often excel at rhythmic work, both in imitating faithfully what they hear, and in improvising appropriately within a given metrical scheme (that is, tapping out new rhythms to a predetermined beat). In my view, we should always be challenging them with new ideas: can they cope with patterns of 5's and 7's? What about 3 against 2? African music provides a particularly rich source of vivid rhythmic material.

Finally, it is not unusual to find the children I am describing making up their own pieces, whether by singing or playing, in which case, an accompaniment may be in evidence too. Clearly, such abilities need expert guidance, and access to a first-rate music teacher is essential.

Further Reading Rosamund Shuter-Dyson & Clive Gabriel (1981) *The Psychology of Musical Ability (2nd edition)* Methuen. David Hargreaves (1986) *The Developmental Psychology of Music* Cambridge University Press.

Memory

My own observations have confirmed the opinion, widely held by others who are also working in the field of visual impairment, that a group of youngsters, blind since birth or shortly afterwards, will tend to learn material that is presented aurally more quickly, and retain it for longer and with greater precision, than will a comparable group of their sighted peers. It seems likely that this heightened capacity for storing and retrieving data develops due to necessity, through a child missing out on the visual cues with which the eye is constantly bombarded. For example, a person with a severe visual impairment has to make mental notes of so many things, from phone numbers hastily given in the absence of a brailler or tape recorder to the location of one's fast-cooling cup of tea! Little wonder, then, that information, in whatever form, is retained so effectively.

A good memory is prized by all musicians, and is especially important for those who are visually impaired, whether or not they can read music, as will become apparent in the sections that follow. However good is a child's memory, it can always be improved with

practice, and as teachers or parents, we should ever be encouraging progress along this path. How much can the child recall, and of what complexity, at the first hearing? The second? The third? For how long, and with what accuracy, can they remember what they have heard? Always aim to present new, though attainable, challenges: for just as memory can flourish through sustained use, so it can atrophy through neglect.

Perfect Pitch

The question of 'perfect pitch' is one that is often brought up in relation to blind children, though both the ability and its musical significance are often poorly understood. Hence we will consider them in some depth here.

By saying that someone has 'perfect pitch', musicians[1] generally mean either

- that the person concerned can tell the name of a note (whether it be C, C♯, D, E♭, or whatever) just by listening to it;

or

- that he or she can sing a given note on request, without reference to any other;

or both.

Defined in this way, perfect pitch is extremely rare among the population as a whole, and is far from usual even among professional musicians, most of whom deem it an innate 'gift'—a sure sign of great musicality—which no amount of practice can help one acquire. Let us now consider each of these points and see how they relate to our present enquiry.

First, I would like to amend the view that there are those who can identify or reproduce pitches in isolation and those who can't. Virtually everyone has this ability to some degree, even if it means being able to state with certainty only that a given note was high, low or somewhere in between. Actually, with a little thought, most of us can do rather better than this, just how well varying from one person to another. Hence 'perfect pitch' probably exists on a continuum, ranging from what may be described as very poor to excellent. Moreover, the capacity for recognising notes is dependent upon such factors as the instrument on which they are played, the range within which they appear and even upon considerations such as the fatigue of the subject. Still, a useful distinction can be made between those who,

[1]Most psychologists favour the term 'absolute pitch'.

generally speaking, can distinguish notes let us say over the middle range of most instruments to within a semitone, and those who cannot. We will describe those in the first category as having a 'very good sense of perfect pitch'.

An astonishing number of youngsters who have had a severe visual impairment for all or most of their lives have a very good sense of perfect pitch—my own observations suggest around 1 in 3. It would be easy to attribute such a high proportion solely to the children's early preoccupation with sound fostered by a denial of vision, were it not for the fact that just under 80% of the visually impaired youngsters I have known to have an excellent perfect pitch sense have also had one of two medical conditions: 'retinopathy of prematurity' (brought about by too great a fluctuation in the oxygen levels being given to the premature baby) and 'lebers congenital amaurosis' (an hereditary disorder). Currently, it is not known why this should be the case, but teachers should, I feel, be aware of the greatly increased likelihood of an excellent pitch sense developing in a child with either of these conditions.

How can one test for a very good sense of perfect pitch? This may seem an obvious question, and indeed, as far as the older, more able child is concerned, it probably will be, since he or she will doubtless be aware of his or her special ability, and be able to demonstrate and discuss it. With very young children, however, and with those who are less able, this need not be the case. I have taught a good many youngsters who have clearly been able to recognise pitches in isolation without knowing their names. This may be apparent in a number of ways. For example, can the child reproduce notes or chords that are played on the piano without too much hesitation? Does he or she sing beautifully in tune, perhaps at the same pitch at which the song was learnt, some time previously? Is he or she put out if a piece familiar in one key is played in another? All these are indications that may lead one to suspect a very good sense of pitch.

What is the significance of well-developed perfect pitch in musical terms? It is commonly thought that its possession indicates a great musical talent, but actually this is not the case. Being 'very musical' means having a cluster of different abilities, of which being able to name notes in isolation is certainly a useful, though entirely dispensable, member. Sadly, it is not uncommon to come across a young blind child with a very good sense of pitch who has been dubbed some sort of minor musical genius on account of having this rare and much-envied ability. Why is it then, one is asked, after several years of struggling, that he or she is still incapable of playing all but the simplest tunes on the piano? Perhaps the child lacks the concentration, the physical coordination or even the motivation required to succeed; there could be a number of reasons. In any case, let us hope that in the future fewer children will experience the misery of failure because of the inappropriate expectations that have been foisted upon them.

Having said this, the possession of a good sense of perfect pitch can be a valuable resource, particularly to singers, something that the conductor of any choir will confirm. And, contrary to the popular opinion expressed above, it is an ability that can be improved with careful listening and practice. Hence if a child can name notes on the piano, encourage him or her to do the same with other instruments too, and with voices. If he or she can name notes in the middle of the range, encourage attentive listening to the very high and the very low. Finally, just how accurate is the child's sense of pitch? Is it good to a semitone or better than that? Can he or she, upon request, sing the note that lies midway between C and C♯, for example?

Further Reading Dixon Ward (1963) Absolute Pitch (Parts I and II) *Sound,* **2**.3 & **2**.4.

The Ability to Play Pieces in Any Key

Finally, I would like to mention a remarkable ability demonstrated by a number of visually impaired youngsters I have taught who play an instrument—particularly the keyboard (whether in the form of the piano, organ or synthesiser). This is the facility for 'transposition': that is, being able to play a piece starting on any note. In the highly developed form shown by some of my pupils, this is a rare skill indeed, and one that musicians usually have to go to some lengths to cultivate. Yet the young people I am referring to had, in most cases, acquired their special ability quite unwittingly, in an effort, no doubt, to accommodate erring singers, or tape recorders and turntables that played back at the wrong speed. Certainly, the capacity to transpose freely is very useful indeed, and is well worth fostering. For all children, practising difficult passages starting on different notes can be a valuable exercise. For those with special abilities, we should have the highest expectations: as a matter of course, I would expect most new material that they learn (especially song accompaniments) to be available to them, if not immediately, then very shortly, in every key.

Further Reading Adam Ockelford (1988) *Some Observations Concerning the Musical Education of Blind Children and those with Additional Handicaps* (Unpublished paper given at the University of Reading to the Autumn Meeting of the Society for Research in Psychology of Music and Music Education—available from Linden Lodge School).

Reading Music and Writing it Down: Notation

Introduction

The question of music notation for visually impaired people naturally divides into two main areas: braille and large print, and these will be considered in turn. We also examine the position of those for whom neither alternative is appropriate.

Braille Music—An Outline

In my opinion, the use of braille is the most significant factor distinguishing the musical education of a blind child from that of one who can see. For us, therefore, it is a very important issue, and one that will be discussed at some length. We will begin by considering how the system of braille music notation works, and then examine its educational implications.

All braille comprises individual 'cells' of six potential dots, arranged in two adjacent columns of three, which are numbered for convenience in the following way:



The letter names of the notes are symbolised as follows:



Durations (note-lengths) are written using the lowest two dots in the cell (3 and 6). For example, a semibreve appears as the two dots together, a minim by dot 3 alone, a crotchet by dot 6, and a quaver by both positions being left blank. These indications appear in the same cell as the pitch that is qualified. For example:

 C semibreve  F minim  B crotchet  E quaver

To show which octave a note is in, an additional cell is placed immediately before the pitch-sign to which it refers. For instance:

1st octave C 

2nd octave C 

3rd octave C 

4th octave C 

5th octave C 

6th octave C 

7th octave C 

This need not be repeated for subsequent notes, depending how similar each is to the one before, according to rules which are explained in detail below.

Sharps and flats appear as follows, before the note to which they refer:

4th octave G sharp crotchet 

5th octave B flat semibreve 

3rd octave F natural minim 
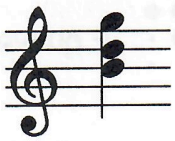
Braille music copes with chords by flattening them out, as it were, into a series of intervals, described successively, that then have to be restacked in the performer's mind. For instance:



means "the note a fourth below the one written", while
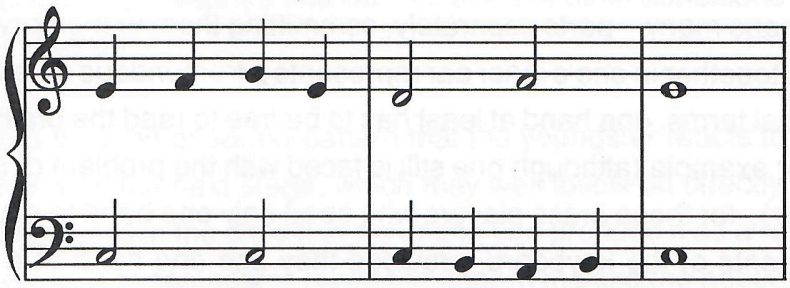


means "the note a sixth below". Hence



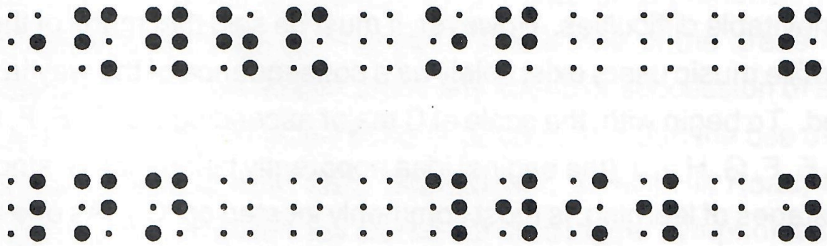
is written as 

which means: "fifth octave G crotchet together with the note a fourth below and the note a sixth below."

In piano music, the right hand is generally written on one line, with the left hand directly underneath it. The beginning of each bar is aligned, a process which means space often has to be left in one part or another, a simple process, since barlines each appear as one blank cell or more. For example:



is written in braille:



Other specialised notation, such as that for guitar chords, is also available.

Difficulties Inherent in the Braille Music System

So much for a rather sketchy outline of braille music; we now examine some of the problems it raises. To someone unfamiliar with the system, its most striking feature must surely be its complexity. Partly, this is inevitable, as anyone who tries to capture a universe of sound in groups of six potential dots soon discovers. Each combination must have several meanings, the one intended being discernable only from the context in which it occurs. The simplest example of this is found in the realm of duration, where the sign for a semibreve (illustrated above) also means semiquaver; that for minim stands as well for demisemiquaver; and so on, the pattern being continued for shorter lengths of note. Sometimes extra signs have to be used to avoid ambiguity. The problem is, that wherever a number of successive cells depend for their meaning on those preceding—as can be the case with octave signs, for example—one tiny initial error on the part of the reader or, indeed, the transcriber can render a whole passage musically nonsensical. Then there are the perceptual limitations that characterise our sense of touch: the most discerning fingertips in the world are ultimately a poor substitute for the retina. Essentially they can scrutinise

data only in serial fashion, which, in terms of braille, means examining each item of information successively from a single file of cells, inevitably a much slower process than the rapid and directionally free scanning available visually. This means, as we discovered above in relation to chords, that the vertical aspect of music, has, as far as possible, to be horizontalised. Even for the most advanced reader, scores can be a nightmare: reading several—perhaps many—parts separately, committing them to memory, and then piecing the fragments together in one's inner ear represents a tremendous musical and intellectual feat. In physical terms, one hand at least has to be free to read the braille. This is feasible for singers, for example (although one still is faced with the problem of reading words and music together), for those brass players who need only one hand to play their instrument, and for exponents of the keyboard, provided they use one hand at a time. Aside from circumstances such as these, sightreading is out of the question. A portion of braille has to be memorised and then played afterwards.

These are inevitable difficulties. However, it must be said that many of the problems facing would-be braille music users exist solely as a consequence of the way in which the system is formulated. To begin with, the scale of C major ascending ('C, D, E, F, G, A, B') is written down as 'D, E, F, G, H, I, J' (the original idea apparently being that 'D' stood for 'Doh' which, in the early stages of learning, is most commonly located on 'C'). As one works through the code, it becomes clear that this lack of memorability is a feature of a system that was evidently devised with little thought as to how it might be learnt. Further complexities seem to have been incurred by a desire to save space. Take, for example, the rules regarding the use of octave signs, and I quote from the *Revised International Manual of Braille Music Notation 1956* (pp. 24 & 25):

> The octave is always marked at the beginning of a paragraph or piece, and at various other points...mentioned later. ... In a melodic progression, the octave is not marked for the second of two consecutive notes if it is less than an interval of a fourth from the first. ... The octave is always marked in a skip of a sixth or a seventh, even when the second note is in the same octave as the first. ... The octave is only marked in a skip or a fourth or a fifth when the second note is in a different octave from the first.

Admittedly, in the course of a long piece these regulations may save a little space over a rule that simply said: "Use the octave sign at the start of passage and thereafter to show a change of octave", but does the increased intellectual burden really warrant it? A comparable intricacy is found in the notation of chords (as the example on page 8 shows). Common sense would suggest having a sign for 'chord' and then a list of the pitches involved, but instead of this, braille music requires that the first note only be written, followed by a series of intervals, from which the remaining pitches have to be calculated. But this requires a knowledge of music theory far beyond that which should be necessary just to play

two notes, say, at the same time! Finally, the limited production of braille music over recent years has done the dissemination system no favours at all. There is an appalling dearth of up-to-date teaching material. At Linden Lodge we largely rely on *Braille Music for Beginners* by Joan Partridge (RNIB, 1982), which, while justifiably criticised for lacking in musical interest, at least has the virtue of being thorough. As a music teacher, one feels obliged to spend a good deal of time undertaking one's own transcriptions in order to do justice to a young child's developing musical interests and imagination.

Implications for Music Education

So what is the music-educational significance of these observations? Essentially, they add up to the fact that to be musically literate, a blind child will need to be more intelligent than his or her sighted counterpart—just consider, for example, the rules regarding the use of octave and interval signs mentioned above—and more musical too: take, for instance, the fact that the music usually has to be memorised before it can be played. And whereas print music can aid aural awareness, since the way notes are written down reflects the 'shape' of the music in sound, a keenly developed ear is, it seems to me, a prerequisite of making effective use of the braille system.

Be all this as it may, for a blind person who wishes to become fully musically literate, there is currently no alternative to the present braille system. It is absolutely essential that an able blind child with an interest in music should have early access to the appropriate braille code, and, most importantly, a competent teacher. Now, while this should (in theory, at least) present no problem for blind youngsters placed in schools for the visually impaired, for those in integrated settings, real problems can arise. Who is there to teach them? In all probability a child's support teacher will not be a music specialist, while his or her music teacher will almost certainly know nothing of braille. One answer is for more of the schools for the visually impaired to offer effective outreach services, so a wider body of children can benefit from their expertise. In this way, it would be possible, for example, for a teacher with a knowledge of braille music to team up with an instrumental specialist, the two working with a child together. I would suggest that the parents or teachers of a youngster whom they feel should be learning braille music contact their nearest school for the visually impaired, to see what help or advice may be on offer. Alternatively, the RNIB is inaugurating a scheme which aims to put the blind youngster in touch with an experienced braille-user (if such a person exists) in his or her local area. The Music Advisory Service can furnish further details of this—and a series of awards designed to promote the learning of braille music.

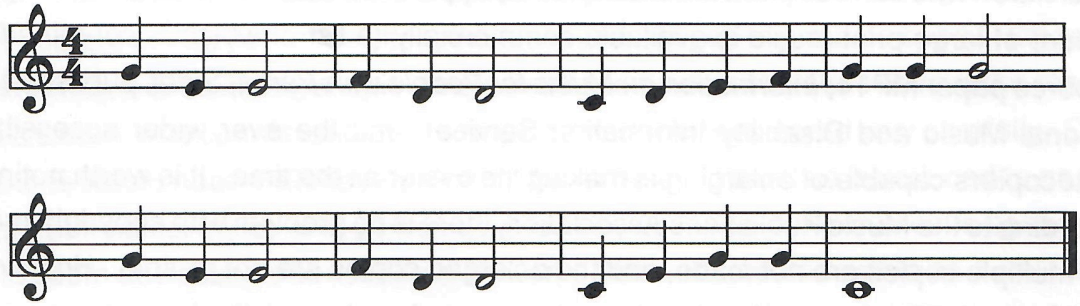
The Possibility of 'Talking Scores'

Even having acquired the services of a braille music teacher, further challenges may lie ahead, since at the present time, there are great difficulties getting print music transcribed. Although technological advances and greater international cooperation between libraries may eventually solve this problem, for the moment, it is one that the musical blind youngster must face. One solution, it seems to me, would be to have a sighted musician tape a verbal description of what is on the written page. A protocol could be formulated between the reader and listener to ensure a consistency of approach that would facilitate understanding (so one would use conventions such as always defining a pitch before its duration, and so on). Admittedly, there have been objections to this proposal in certain quarters, in that it somehow reduces the independence of the blind person concerned. But would he or she rather have access to a 'verbal' score or to none at all? And philosophically there is really no difference between music being described onto tape or transcribed into braille—both are one step removed from the original. In fact, a verbal description could reveal subtleties in the layout of the printed score that could never be encoded satisfactorily in any system of braille music. For example, an indication to get louder or softer may begin just after the middle of a note rather than precisely at its onset. And at a time when on the one hand many serious musicians are consulting original sources (such as facsimiles of manuscripts) to ensure that they are interpreting the composer's intentions as faithfully as possible, and on the other 'graphic' scores are being used ever more, it seems that verbal descriptions will be a necessity—not as a substitute for braille music, but as an additional weapon in the transcriber's armoury. After all, talking books have been around for years, so why not 'talking scores'?

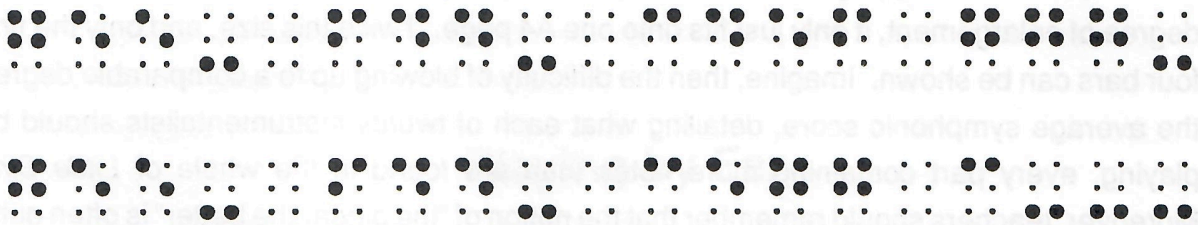
A Simpler Alternative to the Present System

So much for the child who is academically able. But what of those who are of average ability or below? If braille can be used at all, at Linden Lodge they are taught a system in which 'C' on the piano is written as 'C', 'D' as 'D', and so forth, the emphasis being on ease of learning and use. In the early stages, the duration of a note is shown by the length of the line that follows it (made up of cells comprising dots 3 and 6). For example:

Little Bird



is written in braille:



Even if the child never gets beyond this stage, he or she will at least have some idea of what it is to read music and to write it down. Although the scheme I have devised (of which more details are available on request) is ultimately capable of conveying the most complex conventional scores, it would be futile to treat the system as a complete substitute for traditional braille music, since there is so little material currently transcribed. Hence the alternative notation should be introduced only to those children who definitely won't be able to cope with the standard code. But how can one make this judgement reliably, particularly where young pupils are concerned, since late in a child's school career, his or her capacity for managing braille may improve beyond what was earlier thought to be possible? This is an issue which is not easy to resolve, and one can only aim to get the best advice available before making a decision.

Further Reading E. Watson (1922)*"Braille" Music Notation* Novello. H.V. Spanner *Revised International Manual of Braille Music Notation 1956 (Part I)* World Council for the Welfare of the Blind. John Henry (1984) *Braille Music: An International Survey* National Library for the Blind. Adam Ockelford (1985–1987) *Proposals for an Alternative System of Braille Music* (Unpublished dissertation submitted in part-fulfilment for the Diploma in Special Education (V.H.); the University of Birmingham—also available from Linden Lodge School).
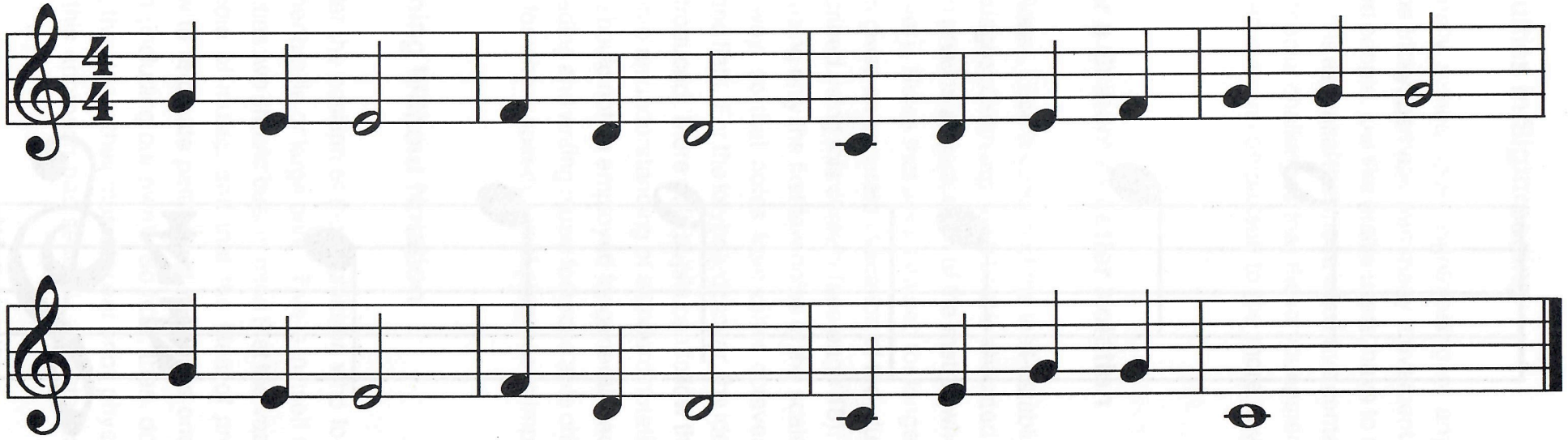
Music Notation for the Partially Sighted

For children who can use print, the situation may appear to be far less problematic. A certain amount of large print music is available commercially (a list of which is contained in the resource paper MP14, *Information on Music for People with Partial Sight*, published by the National Music and Disability Information Service), and the ever wider accessibility of photocopiers capable of enlarging is making life easier all the time. It is worth noting that, according to the Music Publisher's Association, there is no problem with copyright provided that multiple copies are not made, and the enlarged copies are not re-sold. However, the fundamental difficulty remains that the more a score is enlarged, the less one can see of it at any one time. Consider, for example, the different views of the first section of *Little Bird* shown on the following pages. This is a very simple piece of music, yet with only a moderate degree of enlargement, it only just fits onto one A4 page. Twice this size, and only the first four bars can be shown. Imagine, then the difficulty of blowing up to a comparable degree the average symphonic score, detailing what each of twenty instrumentalists should be playing, every part containing more notes than are found in the whole of *Little Bird*. Moreover, teachers should remember that the notion of "the bigger the better" is often quite mistaken: according to the eye condition of the child concerned, there may be an optimum size for characters, beyond which reading again becomes more difficult. Irrespective of the dimensions of the print, a good contrast between this and the paper is essential. Instead of enlarging the music photographically, visual aids may be used to read regular scores, although the teacher should appreciate that the degree of magnification used for ordinary print may not always be appropriate for music, whose signs tend to cover a greater area on the page. Closed-circuit televisions are another possibility, as are back-projections of the music reproduced on slides.

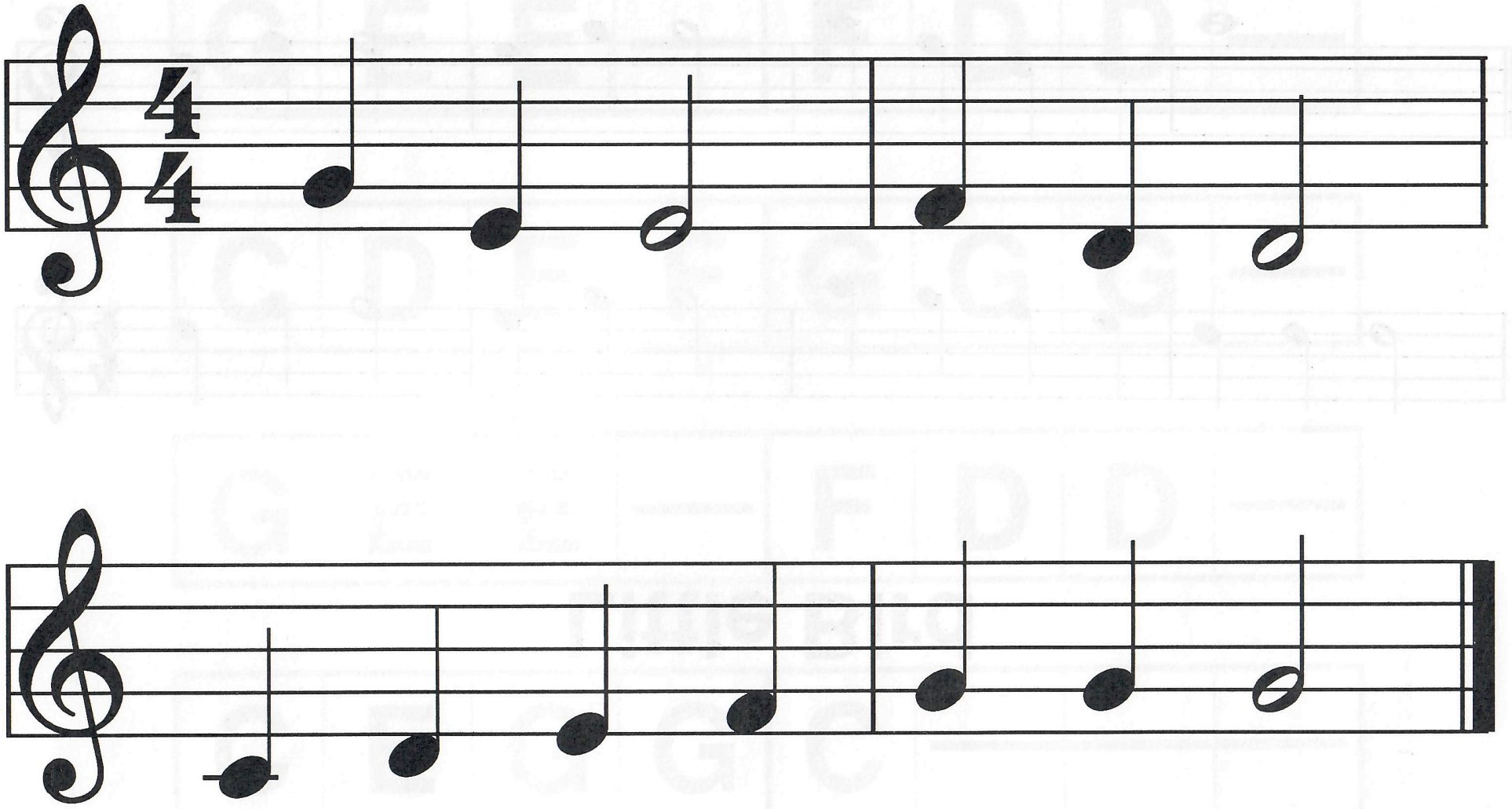
The Importance of Suitable Conditions in which to Read

For a partially sighted child, having a favourable environment in which to read (and write) is critical. Suitable illumination is one important factor, in which respect angle-poise lamps can be very helpful. However, not all partially sighted children need a very bright light in which to work—some may well prefer conditions that most of us would find too dim. Whatever the brightness, one should always aim to avoid undue glare and shadow. A second point concerns posture, since there well may be a conflict of interests between getting the score near enough to the eyes to read, and the general position the child needs to adopt in order to play a particular instrument comfortably and correctly. With suitable swivelling or other adjustment, commercially available rests—perhaps modified—can sometimes provide adequate solutions. Alternatively, at schools for the visually impaired one can often pick up ideas for stands that have been tailor-made to suit individual requirements precisely.

Little Bird



Little Bird



Difficulties in Sightreading

No matter what conditions are finally settled upon, sightreading of any but the most straightforward piece is bound to be tricky, perhaps with many movements or page-turns to be made. In fact, partially sighted people, just like braille users, have to rely on memory far more than their seeing peers do. It is essential that those who have contact with partially sighted children are aware of the special challenges that these youngsters have to face, which are sometimes rather glossed over in comparison to the more obvious difficulties confronted by blind children.

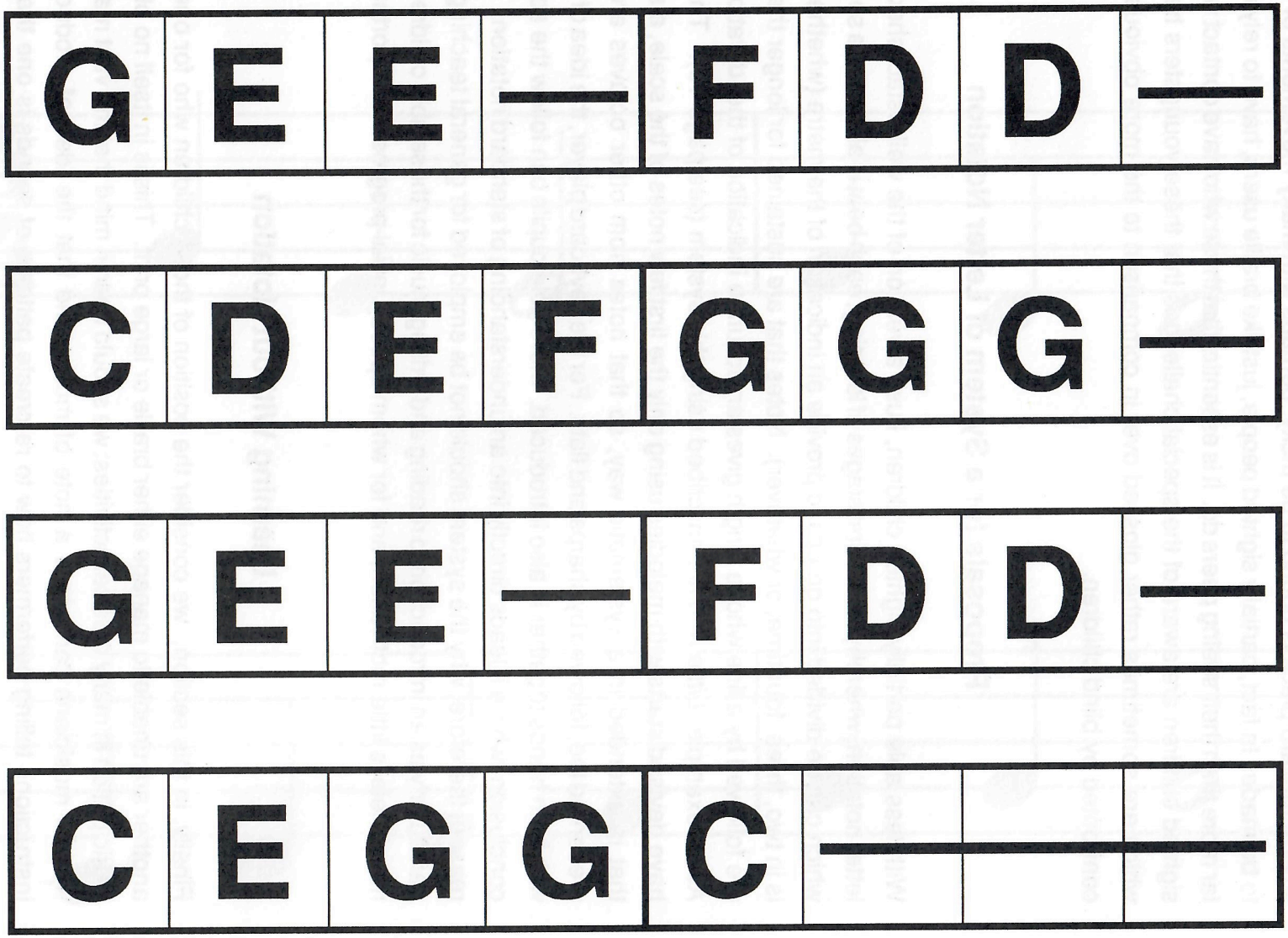
Proposals for a System of Letter Notation

With less able partially sighted children, I use a version of the well-established system of letter notation, whereby, in the first stages of learning, each beat is allocated a separate box, which can be divided into groups to provide an indication of the metre (whether the music is in two, three, four time, or whatever). Notes that are sustained for longer than one beat are followed by a line whose length gives an accurate indication of the duration required. As an example, *Little Bird* is transcribed using this system (see page 18). The scheme I have devised starts with melodies using only the first few notes of the scale, a small group that is extended in a systematic way, so that notes from other octaves are gradually presented too, followed by sharps and flats. For the keyboard player, the idea of performing with both hands together is also introduced. More able pupils can follow the scheme to its conclusion, where it leads directly into an understanding of standard notation. There is no reason, therefore, why the system should not be employed for general teaching purposes, particularly as an introduction to reading and writing music for those able children who have nevertheless little motivation, and for whom speedy initial progress is important.

Learning Without Notation

Finally, in this section, we consider the position of those children who for one reason or another are unable to manage either braille or large print. This is in itself no obstacle to a participation in many musical activities: we should bear in mind that the vast majority of the world's musicians can't read a note of music, and that the idea of producing written instructions telling performers how to re-create patterns of sounds is one that has been developed only by certain cultures (including our own). So how, then, do the majority of musicians manage? Quite simply, they learn their music by ear or by physical demonstration and remember it. Although this approach has several advantages—memory, for

Little Bird



example, is kept in trim to an age when most of us have settled for the safety of visual cues—there are serious disadvantages too: principally, a lack of musical independence. In order to learn new pieces, children who are musically illiterate depend on being shown what to do or hearing others perform. Often, the teacher is obliged to produce special tapes of the material that is to be learnt, a topic considered in some detail below. I believe the repertoire of youngsters who cannot read or write music should be considered very carefully. Clearly, while one would hope that these children, like all others, would be introduced to as wide a variety of musical styles and genres as possible, as far as performance is concerned, it would seem advisable to concentrate on works that were created within an aural tradition, such as jazz, pop and the indigenous music of any country, which was intended to be learnt and performed by ear.

Playing by Ear

Introduction

It is a widely held belief that playing by ear is a territory held by the lucky few, which the hapless remainder are somehow barred from entering. In reality, the skill of reproducing on an instrument what one has heard can be acquired in some measure by virtually everybody, although admittedly certain people do appear to be more naturally disposed to the exercise than others, and within the constraints of a lifetime could undoubtedly achieve more. Another misapprehension that should be cleared up at the outset is that playing by ear refers only to instruments that can produce melodies, such as the piano, violin or recorder. In fact, it pertains equally to untuned percussion instruments: copying a simple rhythm tapped on a drum is as much playing by ear—at a lower level, to be sure—as imitating a whole piece on the keyboard.

There are two essential elements to the ability, it seems to me. The first is to have an internalised representation of the music one wishes to perform. A simple check is to see whether the child can 'sing by ear'; that is, produce a reasonably accurate vocal rendition of the piece he or she has in mind—with suitable adjustments for range, if necessary, and chords sung one note at a time. The second is to have the ability to translate the sounds one can imagine or remember into the movements necessary to reproduce them on one's chosen instrument. How are these skills acquired? Let us assume that the aim, indeed, is for the child to be able to play the keyboard by ear.

Teaching Children to Play by Ear

The first stage is the building of internal musical models, which most children seem to achieve through countless hours of singing and making movements to music, whether through dancing, clapping, stamping the feet, banging instruments, or whatever. Gradually, their efforts will approximate more and more closely to the sounds they perceive. Normally one would expect them to have made substantial progress towards singing in time and in tune before going on to the second stage. As intimated above, this involves learning the physical movements that are required to reproduce each of the intervals that occurs between the adjacent notes of a piece. In this, I feel that the would-be keyboard player has a double advantage over other potential instrumentalists. Not only does a bigger movement of the finger or hand produce a correspondingly larger difference in the pitches that are produced, but the effects of playing two or more notes at once—of harmony—can also be gauged. (That is not to say, of course, that children could not, or should not, learn to play by ear on other instruments too.)

The requisite actions can be taught by a combination of explanation and physical manipulation—mainly the latter if the child's grasp of language is weak. However the teacher chooses to wrap it up, perhaps in the form of a game or a story, the aim is for the child to realise that by striking the same note twice the same sound is produced (not as obvious to some as might be assumed); that by moving a little way to the right a small rise in pitch results, and that the further one goes, the bigger the rise; and, conversely, that by moving to the left, the pitch goes down. Gradually this model can be refined so that the exact movement needed to produce a certain interval can be made at will.

To facilitate this learning process, I aim to teach the children, among their other repertoire, a series of songs that are carefully graded according to the number of different notes used (beginning with selections of white notes only), and how near to one another these are. When the youngsters come to play by ear, they then work through these in sequence, each new piece building on the lessons of those preceding. A similar procedure is applied to chords: we start with pieces that can be played with only one chord (I), then two (I and IV or V), then three (I, IV and V), and so on.

Children with a good sense of perfect pitch, for whom each note leaves a distinct impression, inevitably find playing by ear much easier than those who process pitch largely in terms of the differences between one note and another . People who hear music in this way often find it puzzling, at first, knowing which note they should start a piece on. The simple answer

is that it doesn't matter—any tune can be played beginning on any note—it is just that some may offer an easier performance than others, on account of the asymmetrical layout of the keyboard. For example, if one begins *Twinkle, Twinkle, Little Star* on C or G, then the entire melody can be played using only white notes. Try starting anywhere else, and at least one black note will be required. To begin with, the teacher can make things simpler for the pupil by indicating which note or notes offer the most straightforward continuation, advice that will hopefully become redundant as the youngster's awareness of how pitch is structured deepens.

So much for the theory! I have omitted to mention that the single most important factor in all of this is motivation. Where possible, I teach a pupil how to play part of a piece he or she finds particularly attractive, for I find that learning even the first three or four notes of a favourite work can capture a child's interest, and inspire further effort. And there is no doubt that it will only be through his or her own sustained efforts—through many hours of determined experimentation and practice—that success will eventually be achieved. Luckily, the enthusiasm of young visually impaired children to acquire the skill of playing by ear can be extraordinarily strong!

The task of learning to play by ear can be greatly facilitated by the use of appropriate taped material. Certainly in the early stages, this will have to be specially recorded by the teacher, which can be a highly time-consuming process (although once made, the same tape can sometimes be used by other children). According to the pupil's individual needs, pieces can be broken down into small sections (even as little as a note or two at a time), and the parts for each hand separated at first. Chords can be split into their component pitches, and, initially, passages that a pupil is likely to find difficult to 'hear' can be played very slowly. Any additional information can be added verbally as required. For example, the names of the notes can be sung as they are played, and suggested fingering conveyed through the same means. Any temporary sacrifices in rhythm can be made good once the notes and their fingerings are secure.

In conclusion, I believe that learning to play by ear is not only valuable in itself, it can also provide a most effective means of developing the aural faculties, including memory, and of laying the foundations for improvisation and composition. For the more able child it can be a useful (I would say indispensable) adjunct to literacy.

Multihandicapped Visually Impaired Children and Music

Introduction

When considering the musical education of visually impaired children with additional handicaps, it can be difficult to make comments that will be of general value. There are a number of reasons why this should be so. First, the young people who fall into what is, after all, a somewhat arbitary category are at least as diverse as the rest of us, and so their musical needs, aspirations and abilities cover a very wide spectrum. Then there is the problem that work done in this area is often heavily dependent upon interpersonal relationships that may be forged over long periods of time—even years in some cases. Moreover, for many dually or multiply handicapped people, music cannot simply be plucked out in isolation and treated as a subject to be taught separately from other aspects of the curriculum: one's efforts as a music teacher should ideally, I feel, form part of a coordinated educational approach, which views the young person as a whole. Having said this, I do believe that certain guiding principles can be laid down, not as absolutes, but with the aim of provoking further thought and discussion. And that is my intention in the paragraphs that follow.

Those at an Early Stage in All Areas of Musical Development

As a starting point, let us recall a comment made earlier, that musicality is not a single quality, but a cluster of abilities and propensities, including, for example, pitch and rhythm perception, concentration, memory, physical coordination, and a whole host of social skills. A small but significant proportion of additionally handicapped visually impaired children have what may be termed a 'skewed' musical profile, in which certain abilities or skills are well advanced, while others remain far less so, and the position of these youngsters will be considered in due course. We begin, however, with the child who is at an early stage in all areas of musical development. Hence some of the following comments apply also to very young children of normal intelligence.

The first step is for the child to produce an observable response to sound, which may come in any form: a vocalisation, perhaps, or an emotional reaction; a movement, a change of movement, or quite possibly a momentary cessation of activity. To this end one can try stimulating the child at different times with all manner of different sounds, both 'musical' in the traditional sense and 'extra-musical' too (these are only our labels, after all). Try various levels of loudness, sound coming from different directions—possibly using a moving source, various types of sound and a wide range of musical styles and genres. Be

imaginative, but systematic. Exactly what is it about a given pattern of sounds that a child is reacting to? It may just be the volume at which it is played, or it may be the steady pulse running through. If so, do beats that are slightly faster or slower produce a comparable or even more marked effect? How long does the child's attention for a particular stimulus last? Is the reaction consistent, or was it a one-off? Finally, are other conditions important: time, place, person, and so on?

Having discovered a sound or sound-pattern that the youngster reacts to in what may be deemed a positive way, the next stage, which may well follow on directly from the first, is to promote an awareness in the child that he or she can produce it as a result of his or her own efforts. One way is repeatedly to guide the pupil in making the necessary movement, in the hope that the realisation will eventually dawn that action and sound are linked—that a basic notion of cause and effect will be established—the motivation being partly the creation of a pleasurable aural stimulus and partly, perhaps, an apprehension of the fact that by dint of one's own efforts things can happen. This is one of the areas in which I feel technology can be particularly beneficial, since any sound or succession of sounds can be initiated by virtually any change of bodily state or position, through the use of such devices as the 'Soundbeam' (available from EMS Soundbeam, 87 Mill Hill Road, Norwich, NR2 3DR), whose imperceptible ultrasonic ray can be set up to trigger symphonies of sound from movements as small as the twitching of a finger. Hence, rather than imposing a new movement upon a child, one could start by using one with which he or she is already familiar, and which could be modified gradually in the sessions that follow, so that little by little the youngster has to work harder to achieve his or her desired end. Moreover, instead of a given movement merely initiating a sound, the characteristics of the former could define those of the latter. So a rapid sweep of the arm could cause cascades of notes across a wide pitch band, whereas a more calculated wave could result in a measured scale over a restricted range. What a powerful means for transforming certain stereotypical behaviours into something more productive!

Beyond this, one can aim at interaction in sound. To begin with, this may mean the adult imitating the child, and then guiding him or her to copy in turn. From a mere alternation of undefined noises, such a process may slowly grow in subtlety and complexity, as the youngster is encouraged to echo the original ever more faithfully. A coherent simultaneous response—in which teacher and pupil play or sing together—is, in my experience, a further stage.

Those with a Markedly Uneven Spread of Ability

We now consider those children, mentioned above, who, for one reason or another, have an uneven spread of musical skills and abilities. An obvious example is the child with a good ear, even a precise sense of perfect pitch, whose physical disability means that he or she would nevertheless be quite incapable of realising in sound what is perceived—at least, using conventional instruments. Again, technology can often come to the rescue. For example, the boy whose spasticity prevents him from fulfilling his ambition of playing the drum kit can perhaps achieve his goal by using a drum synthesiser, which requires only the smallest movements to produce the full range of percussive sounds. Then again, the wishes of a girl with brittle bones who wants to fill a hall with the sound of a concert grand could possibly be realised through the means of an electronic keyboard that is operated with the lightest of touches.

Solutions such as these are straightforward, given access to the appropriate equipment and expertise. The effects of weaknesses that are rooted in mental handicap, however, are not so readily countered, and teaching children whose skewed musical profiles result from cognitive difficulties is particularly challenging. The disparity involved—and therefore the challenge—can be great indeed. One occasionally encounters a child who, in one specific area or more, is remarkably talented—perhaps the equal of the best professional musician—yet whose other abilities are scarcely developed at all: the so-called 'savant'. As an example, one may be faced with a young child who can play long and complex pieces after one or two hearings, but whose capacity for verbal communication is so limited that he or she is afterwards unable to define or describe a single note of the music that has been performed. Therefore correcting the occasional mistake, putting forward improvements in fingering or phrasing, proposing that the repeat of a particular section be omitted, or other similar requests are extremely difficult to get across other than by physically showing the pupil what is meant, in the hope that the new suggestion will be implemented through imitation. The difficulty is that one reaches a stage when this method is no longer practicable or desirable, when it is necessary for the student to produce original ideas within a preordained conceptual framework that can be communicated only in words. Imagine, for example, trying to teach a potential jazz pianist how to improvise strictly within the parameters of a given style, if at no time you can actually *tell* him or her what is expected. A difficult problem indeed, and one to which I am still searching for possible solutions. Certainly, such children merit the continued effort.

Further Reading Loraine Obler & Deborah Fein, editors (1988) *The Exceptional Brain: Neuropsychology of Talent and Special Abilities* The Guilford Press. Darold Treffert (1989) *Extraordinary People* Bantam Press. Leon Miller (1989) *Musical Savants: Exceptional Skill in the Mentally Retarded* Lawrence Erlbaum.

Using Music to Assist in Other Areas of Development

Introduction

For young visually impaired children and for the multihandicapped alike, music—for many a source of immense pleasure—can be a valuable tool in assisting other areas of development. At a basic level, music may be used as a reward for good behaviour, perhaps, or for achieving a particular task. This could take the form of being allowed to listen to a favourite tape, for example, or being permitted to play the piano for a period. The possibility of devices such as the Soundbeam being used to encourage movement has already been mentioned, and as far as mobility is concerned, the simple offer that "you can play the synthesiser if you can get yourself there" can be an enormously strong incentive for a child to explore his or her environment. A psychologist may call this extrinsic motivation. But music has various intrinsic qualities that can be used educationally too. Here are some of the ideas, old and new, that I have found work particularly well.

Movement and Body Awareness

Music can provide a welcome accompaniment to physiotherapy, offering both a rhythm to which a required action can be set, and also some distraction from what may be a tedious and uncomfortable experience. Tapes are now commercially available containing music specially written to accompany specific body movements, and of course there are many well-known 'action' songs. Conventional 'music and movement' sessions, in which the visually impaired youngster may initially require considerable physical guidance, can be of great value in promoting imaginative and expressive movements, as well as a heightened degree of body awareness. Dancing of any type can be beneficial too, not least as a form of exercise, which visually impaired children often lack. Finally, coordination and muscular control can be improved through learning to play an instrument, at whatever level, whether it be banging a drum or playing a piano concerto.

Language and Concept Development

Songs, in one sense at least, are a highly structured form of speech, in which not only is the choice and order of the words controlled, but their precise rhythm and the pitches at which they are enunciated too. Perhaps it is not surprising, then, that songs afford a valuable means of promoting and developing speech. Today, there are numerous books containing a vast amount of suitable material. It would seem sensible to ensure a fair porportion of the

songs used require only a limited vocabulary, that the children can understand at least in part, and whose words can be made applicable to them. This can become a great game for some youngsters, who eventually enjoy making up their own versions too. One encounters children who couldn't recite a whole sentence, but when the same words are structured in a simple song, can sing them easily. Even if most of the vowels and consonants aren't quite right, the rhythm and the shape of the melody hold the whole thing together, and we can understand what is meant. Children who can't or won't speak, but who can sing or hum, can be taught specially-composed songs with a particular meaning, ranging from a need to go to the toilet to a desire to go swimming, which can then be conveyed musically (examples are available on request). A modern approach to encouraging vocalisation is through 'sampling' the child's voice, whereby the sounds are stored electronically in digital form, and then played back, through a keyboard, drumpad or even the Soundbeam, at any speed. The effects can be amusing and motivating for adults and children alike! Finally, the development of various concepts can be encouraged through the use of music too. An obvious example is the idea of number, which is fostered in the many counting songs that have been composed, traditional and modern. Apart from this, as suggested above, particular songs can consciously be associated with certain people, objects, activities and important times of the day. Once these are familiar, they can be used to bring the person, thing, or whatever to mind, either in anticipation or remembering. Used like this, music is a special form of symbolic language.

Social Interaction

Music is above all a social activity—one that is done with and for other people—and for the young or multihandicapped visually impaired child, it offers a secure framework through which many of the skills and disciplines of social interaction, such as turn-taking, listening to others, and responding appropriately to them, can be taught, as well as enabling the pleasures of combined achievement, in singing or playing together, for instance, to be experienced. As one of the few forms of cultural and recreational activity where the visually impaired youngster can, without concession, stand alongside his or her peers on an equal footing, music is the ideal medium of social integration. As an aside, there is no need for teachers who have blind or partially sighted children in their classes to choose vocal material carefully, as some do, in an effort to avoid the references to colour, the joys of vision, and so forth, which many songs and hymns contain. Indeed, such material may even stimulate a fuller awareness of certain visual concepts.

Literacy

Although musical literacy can be a problem area for many children, for the one or two who are highly musically motivated and are just coming to the stage of being able to read and write (ordinary letters and words), the simplified systems of braille or large print notation described above can be a help. For if the youngster, perhaps with a good sense of perfect pitch, discovers that the letters on the page can refer, among other things, to the sounds he or she has learnt to recognise so well, then this can be a strong source of motivation to practise the basic skills of reading and writing.

Music as Therapy

The notion that music can be used therapeutically is already well documented, although none of the publications listed below takes any account of the special musical abilities and interests that many multihandicapped visually impaired youngsters often have, and I feel that this is an area that could profitably be researched in the future.

Further Reading Paul Nordoff & Clive Robbins (1971) *Therapy in Music for Handicapped Children* Gollancz. *The Orff Music Therapy* Schott, 1980. Miriam Wood (1983) *Music for Mentally Handicapped People* Souvenir Press.

Choosing an Instrument and Learning to Play

Choice of Instrument

Being visually impaired affects one's ability to perform surprisingly little: I have known children who can't see at all become proficient players on one or another of a wide range of instruments, from the piano to the drum kit; from the violin to the electric guitar; from the tabla to the didjeridoo. One boy who was totally blind even became a virtuoso on the vibraphone—using four sticks at once—a feat which I still find mind-boggling. Clearly, though, from the point of view of not being able to see what one is doing, some instruments are easier than others. Those which require only small, simple movements in a limited range that are not normally reliant on vision, such as the recorder, clarinet, trumpet and harmonica are the most straightforward. Instruments demanding larger or more complex manoeuvres, such as the action of bowing on a stringed instrument (which is normally learnt visually, of course), and where a good deal of physical guidance may be needed initially, can be more problematic. However, any of these factors can be overriden by other physical considerations

(a child with high blood pressure may be ill-advised to play the oboe, for instance), and, above all, by a youngster's strong desire to play one instrument in preference to another. It may even be that a teacher encourages a child to study a given instrument for a period precisely because it will benefit an area that is weak. Hence he or she may be persuaded to tackle the keyboard, for example, in the hope not only of acquiring a worthwhile musical skill, but with the thought also that independent finger movement may thereby be improved.

Learning to Play

In my experience, it is essential for children, particularly the very young and the less able, to achieve something as soon as possible (consistent with the acquisition of a sound technique), and to this end, it seems sensible to make learning in the early stages as simple as possible. For example, it can be much easier to make use of keyboard music if, to start with, the keys are labelled in braille or large print. These signs can gradually be removed as the child progresses. Matters of posture and technique may well have to approached in a physical way: pupils feeling what their teacher does and then allowing themselves to be manipulated or guided so that the correct hand-shape, embouchure or body position can be obtained. In areas such as this, a good deal of sensitivity is required on the part of the adult, particularly if one is dealing, perhaps, with an adolescent who has recently lost his or her sight, and will not be used to such treatment. This hurdle will have to be overcome, however, if progress is to be made.

The National Curriculum and Public Examinations

The National Curriculum

Although any remarks concerning the National Curriculum for music can only be preliminary at the present time, the Interim Report of the Working Group published in Februrary this year (1991) seems promising indeed for visually impaired children in terms of its broad-based flexibility. Problems that may arise in Attainment Target 4, levels 4a and 6a, regarding the use of different notations, including graphic scores, have been raised with the DES, and we await their response with interest. For those additionally handicapped visually impaired youngsters with special musical talents, who in most curricular areas are likely to remain working at Level 1 for their entire school life, the new music curriculum at least gives them one avenue of nationally recognised achievement.

The GCSE and A-Level

For the more able pupil both GCSE and A-level examinations are viable options. Candidates working in large print should be able to manage with local resources and expertise, but for the braille-user, expert advice must be sought from a centre such as RNIB New College, Worcester, which has long experience in coping with the requirements of particular examination boards. The occasional concession—in the matter of graphic scores, for example—may have to be made.

Associated Board Examinations

The Associated Board has a long-standing and cordial relationship with the world of the visually impaired. At all grades, the exercise in sight-reading is available in braille or large print, with the further alternative of an aural memory test, for those whose reading of music is poor or non-existent. With practical grades of VI and above, however, a high level of literacy is needed, because of the requirement to have passed the Grade V theory examination. Other boards are sometimes more flexible in this respect.

Music as a Hobby or Career

Introduction

It is widely believed that music is of special importance to the visually impaired, and particularly to those people that cannot see at all, since it is one of the few art forms through which they can express themselves and communicate with others uninhibitedly. Such a view is reinforced in our own culture by the existence of such famous musicians as the classical pianist Bernard d'Ascoli, the master of jazz George Shearing (an ex-pupil of Linden Lodge), and, in the field of pop-music, superstar Stevie Wonder. Indeed, in one society, at least, a certain genre was at one time almost the preserve of blind people: music for the 'koto' (a type of zither) in Japan. Certainly, in my survey of the fifty blind children who entered Linden Lodge in the period of about ten years up to 1988 (see footnote on page 2), I found a special interest in music was commonplace.

Music as a Hobby

Hence as a hobby, music can be very important, whether in the realm of performing, composing, writing about music, or simply listening. When playing or singing with others, a few difficulties may have to be ironed out, such as finding ways round the visual cueing that often goes on between musicians—and particularly between the members of an orchestra, band or singing group, and the conductor. It can be done, though, and blind people are often highly valued members of choirs, for example.

Music as a Career

In terms of a career, many of the options open to fully sighted people can be taken up by the visually impaired too. For example, there have been many successful blind and partially sighted music teachers over the years, working at all levels, from the primary school to the university. Various items of specialised equipment have been devised to assist in this particular vocation, such as the Hoare magnetic music notator. With the ever greater availability and accessibility of computers in education and the appropriate software to go with them, some of the day-to-day challenges currently faced by visually impaired teachers, such as dealing every night with page upon page of handwriting, should hopefully be obviated.

As regards becoming a performer, there are certain realities that must be confronted: it is extremely difficult for anyone to make a living through playing or singing, and in this cut-throat world people with a disability must show themselves not only to be the equal of the other candidates for the job, but able to offer something that their rivals don't. Even assuming this were the case, and the famous figures cited above show that the miracle can happen, there are some problems that currently seem insurmountable. For example, a fair portion of an orchestral musician's life might be spent in sightreading hastily scribbled film scores or music for jingles, that are played only once through and immediately recorded. At a time when it can take months or even years to get music transcribed into braille, such a prospect seems unrealistic indeed. And as for those children who cannot read or write music, it is perhaps unfortunate that we live in a society whose classical tradition is so strongly rooted in literacy: over the centuries, composers have come to rely on notation to support the intricacy and length of the pieces that they write. Even Mozart, it seems, would think his most complex ideas through on paper, and today, it is quite simply essential for the aspiring classical musician to be musically literate. Hence, I believe that those children with a marked musical talent who cannot cope with print or braille should be steered, at least as far as serious performance is concerned, towards those genres that are not dependent on notation, such as jazz and pop. That is not to say, of course, that they should not be

introduced to all styles of music, and derive immense pleasure thereby. It just seems a recipe for despair (and unfortunately, this is borne out by experience) to encourage non-literate youngsters, no matter how talented, to contemplate the life of a classical musician.

Piano Tuning

Although not strictly speaking a musical career, piano tuning does offer excellent employment opportunities for visually impaired youngsters who are reasonably able and mobile, and have an ear that can be trained ('perfect pitch', in the traditional sense, is not necessary). The Royal National College and Academy of Music for the Blind in Hereford runs a course that is world-renowned, and they should be contacted direct for details.

The Visually Impaired Musicians' Association

The Visually Impaired Musicians'Association, or 'VIMA' for short, has recently been set up with the general intention of promoting the aims and aspirations of visually impaired musicians (whether professional or amateur) and music lovers in the United Kingdom. Details of membership and the current subscription can be obtained from the Head of Music at RNIB New College, Worcester.

Useful Names and Addresses

Linden Lodge School, 61 Princes Way, Wimbledon Park, London, SW19 6JB. 081-788 0107 (For information regarding visually impaired children of all ages and abilities).

RNIB New College, Whittington Road, Worcester, WR5 2JX. 0905-763933
(A secondary school for able visually impaired youngsters).

Royal National College and Music Academy for the Blind, College Road, Hereford, HR1 1EB. 0432-265725 (Further education for visually impaired students).

Royal National Institute for the Blind, 224 Great Portland Street, London, W1N 6AA. 071-388 1266 (For information from RNIB Education and Leisure Division or to contact the Music Advisory Service).

Afterword

Comments, criticisms, and ideas for inclusion in future editions of this publication would be most welcome. Please send them to Adam Ockelford, c/o Linden Lodge School.

This booklet is published by the Royal National Institute for the Blind

RNIB offers a wide range of services for children with impaired vision, their families and professionals including:

- support for visually impaired children in mainstream schools
- schools and colleges for visually impaired children and young people
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For further details contact: Information Officer, RNIB Education & Leisure Division, 224 Great Portland Street, London W1N 6AA. Tel. 071-388 1266



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Music and Visually Impaired Children

Update June 1992

Adam Ockelford is now Music Education Advisor at the RNIB, and all comments and enquiries should be addressed to him at

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Visually Impaired Musicians' Association (VIMA)

VIMA is an organisation of blind and partially sighted musicians and music lovers, together with their friends, colleagues and wellwishers. Among the concerns and activities of VIMA are: the needs of visually impaired performers, amateur and professional; services for teachers and students; the promotion of concerts and lectures; the current difficulties facing the production of braille music, the availability of music in braille and large print, and the future teaching of braille music; promoting the musical opportunities made possible by the new technology; music as recreation for visually impaired people; and the sharing of common problems and experiences.

Ordinary membership with full voting rights is open to visually impaired people at £8 per annum. Associate membership is open to sighted people at the same rate. Subscriptions should be sent to:

Diane Ashton
10 Tracy House
Mile End Road
London E3 4PP

For further information contact either David McCann (Chairman) on 0865 747873 or Bill Martin (Secretary) on 0452 526437.

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