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A PRIMARY TEACHING PACK

NOISE

Based on the Darlington, England Quiet Town Experiment

PREFACE

The U.S. Environmental Protection Agency, Office of Noise Abatement and Control, has purchased this teaching package and its reproduction rights for your use. The package is one output of a Quiet Town Experiment conducted in Darlington, England.

Throughout the book you will find words and phrases which are typically British in use and which may sound strange to American schoolchildren. Among the best examples of these are:

lorry (truck)
mecano set (erector set)
wendy house (doll house)
aerodrome (airport)

In addition, you will notice references to British organizations and activities, as well as the expected spelling differences between British and American English. The editors elected not to make substantial semantic changes, partly to insure that the integrity of the original package is preserved and partly because exposure to these cultural differences is instructional in itself. Please be alert to these differences and be prepared to explain unfamiliar words, phrases, and references to your students.

On the whole, this package is an excellent resource for teachers of elementary grades. It can be used in whole or in part and adapted in any way you deem appropriate. Projects are outlined for students of every age and grade level.

FOREWORD

Thanks to the rapid advance of science and technology, our generation enjoys unprecedented material advantages. But the path to progress of any kind is paved with pitfalls. Not many of us who board our flight for a holiday abroad spare a thought for the distress that aircraft noise may cause; not all of us remember that a power-drill or motor-mower, thoughtlessly used, can ruin our neighbours' peace and quiet.

The Noise Advisory Council, of whose Education Group I am Chairman, was formed in 1970 to advise Government on the noise problems generated by our society. Since almost all of us want to have our cake and eat it too, there are no easy solutions. A lot depends on us as individuals. We can choose - at work, at home and at leisure - whether to make more noise or less. It was to assess the extent of which individual members of the public might play their part in reducing noise that the Darlington Quiet Town Experiment (the first of its kind in the world) was mounted from 1976 to 1978.

No dramatic reductions in ambient noise levels were expected - that would have been unrealistic over a two-year period - but the hope was that at least one town in the United Kingdom would become more conscious of the need to cut noise wherever possible. 'Say No to Noise' was at once the campaign slogan and the main objective. Since the Council also wanted to see a national campaign to contain and reduce noise, the intention was also to identify which information and education techniques worked, and which did not.

As test-bed for the Experiment, Darlington proved a first-rate choice. No backwater but a busy industrial

town, it is gifted both with civic pride and an enviably distinctive character. Its Borough Council was already committed to noise abatement measures; its community spirit ensured the Experiment's success.

There could be no better testimony to the 'Darlington spirit' than this Noise Pack. It was produced voluntarily by the Experiment's Schools Group. Just one of many important contributions they made, it distils the essence of the classroom experience gained during the Experiment. It has been tried and tested, and the hope now is that with its help primary teachers throughout the United Kingdom will be able to focus more attention than hitherto on the noise choices before us.

Some teachers shy away from the subject of noise because it seems a difficult one. This is an understandable view, but it is unfounded, as a glance at the Pack is enough to show. The scope for project-work and participation is really very wide, and children do enjoy it.

Thanks to Darlington's pioneering spirit teachers everywhere now have the chance to help children decide for themselves whether to 'Say No to Noise'.

ARTHUR PERCIVAL
Chairman, Education Group
Noise Advisory Council

April 1979

TEACHING PACK FOR PRIMARY SCHOOLS

NOISE

This Teaching Pack has been prepared for Primary Schools under the auspices of the Darlington Quiet Town Experiment, a joint venture between Darlington Borough Council and the Department of the Environment. The Management Committee established a School's Working Group which, with the help and advice of teachers, has produced this set of Work Cards, Teacher's Notes, Pamphlets and References which form the basis for Centres of Interest using the theme of 'Noise'. It is hoped that the materials will form a useful aid for Teachers wishing to spark off oral and written language, discovery of information through reading, investigation, observation, recording, surveying and collecting as well as creative, artistic, imaginative, dramatic, mathematic and scientific activities covering the breadth of the curriculum.

The cards at the beginning of the Pack are for the use of Infants and Lower Juniors while the language and types of activities become progressively more difficult to challenge the abilities of older children. Apart from this, there is no particular sequence and the cards are easily detachable from the folder so that they can be used individually. An index is provided of the activities involved in each Card and the appropriate Teachers' Notes for each separate Card suggests further activities which might be encouraged.

In addition to worthwhile educational activities, it is hoped that these Cards, with the Teacher's support, might lead the children to a new awareness of their immediate environment with particular accent on the problems of Noise and through practical involvement help them to distinguish between the acceptable and unacceptable levels of Noise which are ever increasing in their lives and to formulate positive judgements with a critical ability to evaluate the need for control of Noise levels for their own welfare and that of their fellow citizens, both at work and at play.

NOISE - A PRIMARY TEACHING PACK

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Arising from the Darlington Quiet Town Experiment and carried out
under the auspices of the Schools Education Working Group.

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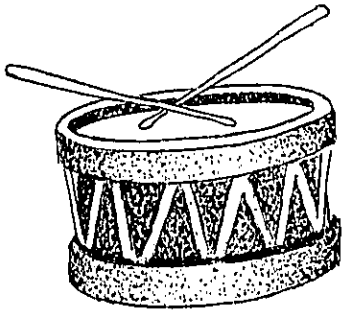
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The help and advice of the following is gratefully acknowledged.

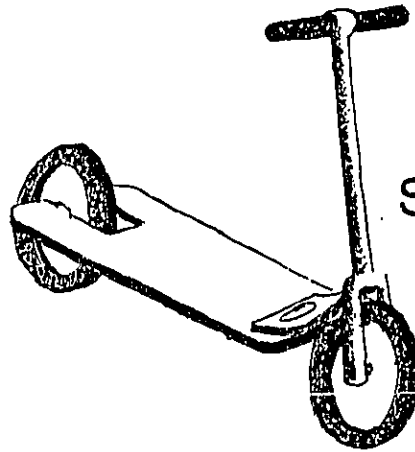
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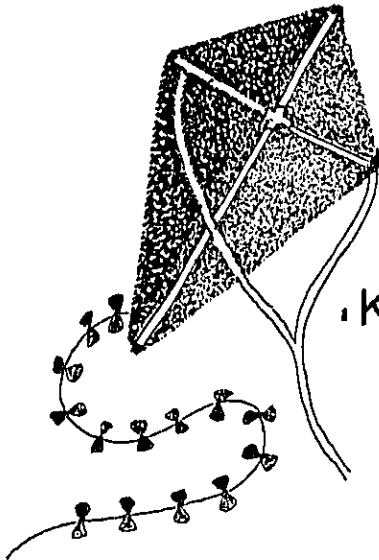
Toys



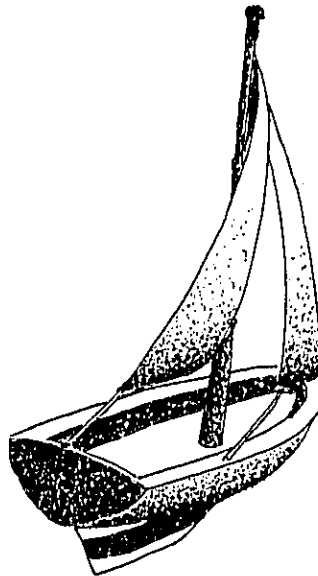
Drum



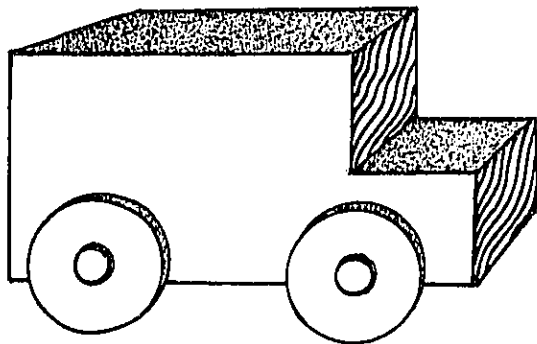
Scooter



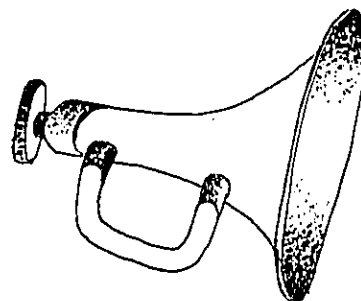
Kite



Yacht



Truck



Bugle

TOYS

1. What sounds does a drum make?
 - scooter ?
 - bugle?
 - wooden truck?
 - yacht?
 - kite?

2. Which of the following toys make quiet sounds?
drum; kite; mamma doll; engine; sailing boat; trumpet; rattle.

3. Which of the following toys make loud sounds?
teddy bear; scooter; tiddlywinks; gun; music box.

4. Which toy when used would be noisy?
football; whistle; car; hooter; pram; bicycle; tractor; aeroplane.

5. Which real-life thing makes the most noise?
car; bus; ship; jet plane; steam hammer; helicopter.

6. Which toy could you play with quietly?
 - (a) racing car; steamroller; play-bricks; play-dough; pedal car.
 - (b) doll's house; trumpet; hammer and nails; jigsaw; construction set.
 - (c) mecano set; cookery set; wendy house; shop; painting set.

7. Place the following toys in order from those making least noise to those making most noise:-
fire engine; rattle; mouth organ; basedrum; flute; bat and ball.

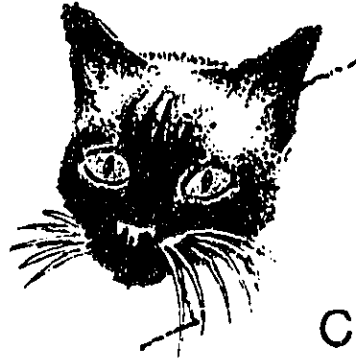
8. Which sounds, if made over and over again would be a nuisance?
crash; scream; tinkle; patter; bang; screech; clatter; tap; rumble.

9. When you are playing, which noises do grown-ups object to most of all?
 - (a) laughing; giggling; shouting; muttering; talking; screaming;
 - (b) tapping; knocking; clattering; banging; stroking; clapping;
 - (c) gasping; humming; screeching; mumbling; groaning; hiccupping.

Pets and Animals



Dog

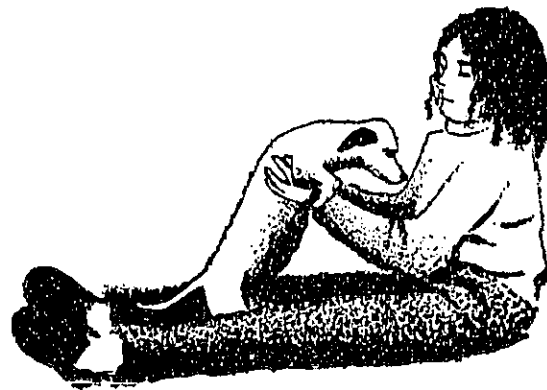


Cat

The following words may help you to answer the questions below:

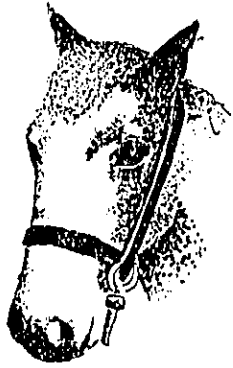
howl	bark	squark	screech	yelp	yap
bray	neigh	miaw	snuffle	squeak	chirp
cheep	cry	call	growl	snarl	snap
whine	tweet	twitter	warble	cackle	cluck

1. Make a list of sounds which a cat, dog or your own pet might make when:-
 - (a) Happy or excited
 - (b) Sad or in pain
 - (c) Afraid or fighting
2. Underline the words in your list which are unpleasant sounds or noises.
3. List the kinds of noises which make your pet afraid.
4. What special precautions do you take to help your pet
 - (a) on Bonfire Night?
 - (b) at Christmas Party Time?



5. How does your pet behave when it hears the following noises:-
 - (a) a car backfire?
 - (b) Fire Engine Siren?
 - (c) a Jet Plan overhead?
6. Make cartoons of your animal pets reaction to noise.
7. Make up slogans about noise and your pets.
8. Which noises make your pet happy?

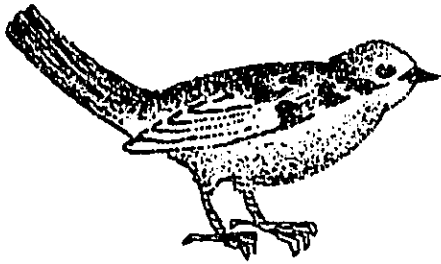
Draw a picture or cartoon of one of these situations.



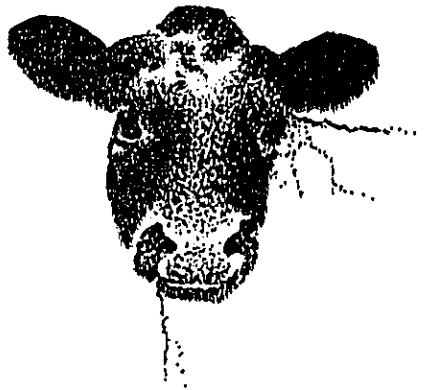
Horse



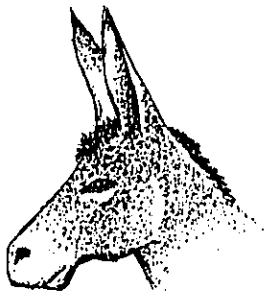
Pig



Bird



Cow



Donkey



Duck

Animals of the Countryside

Match the animal to its sound:-

Horses say Pigs say Birds say

Cows say Donkeys say Ducks say

Dogs say Chickens say Cats say

Turkeys say Cockerels say

What other sounds might you hear in the countryside?

What are the names of the babies of the following:-

Horse Cow Hen Cat Dog

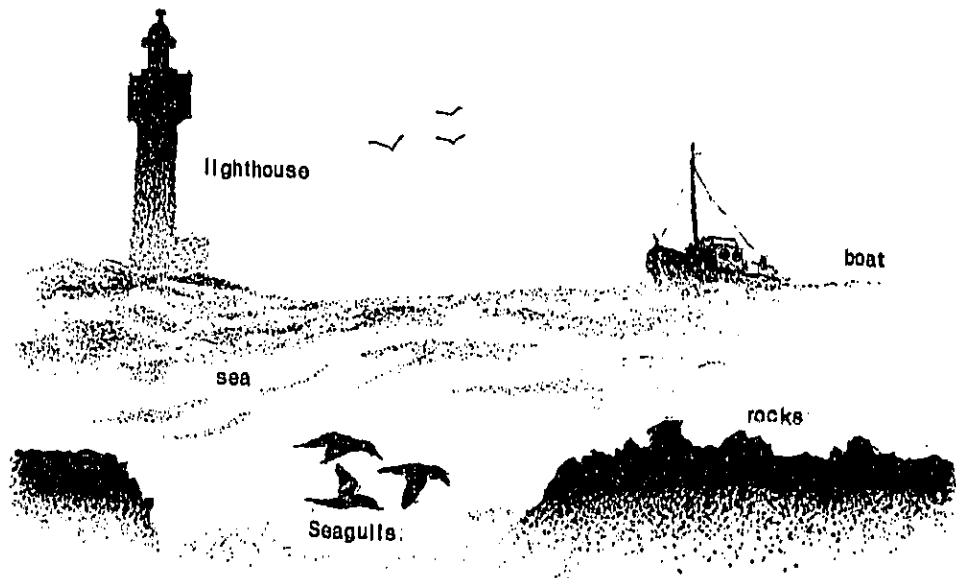
How does the sound of the baby animal differ from the parent animal?

Why do animals sometimes make a louder noise?

Name as many sounds of different birds, which you can think of.

Which animals of the countryside make loud noises?

The Seaside



1. Underline the correct answers in the brackets:-

In the picture we are at the (docks; seaside; market; countryside)

The tall building is a (skyscraper; harbour; lighthouse; tower)

Birds which live near the sea are (robins; finches; owls; seagulls)

The rocks are washed by the sea's (waves; water; salt; sand)

The boat uses the lighthouse for a (landing site; starting post; warning of danger; to light its way)

The rocks are a danger for (the sea; the birds; the boat; the lighthouse)

2. Underline the correct sounds:-

The lighthouse may send out a (buzz; screech; fog warning)

The birds (sing; twitter; screech) as they are feeding from the sea

The waves (thunder; rattle; wash) against the rocks.

The boat's engine (rumbles; works; chugs) in the distance

3. What sounds would you be able to hear on the beach?

4. Underline the words listed below which show the sounds you could hear at the seaside:-

the blast of a siren; the falling of timber; the splash of waves; the sound of machinery; the sound of boats engines; cries of children playing; the sound of an aeroplane's engine; the squelch of sea boots; the clinking of glasses; the sound of a spade in sand; the bouncing of a ball; the rumble of traffic; the bleat of sheep; the rippling of water; the music from amusement arcades; the barking of dogs; the quacking of ducks; the sounds of an ice-cream van.

5. Which of the above would be unpleasant noises?

Which would be pleasant noises?

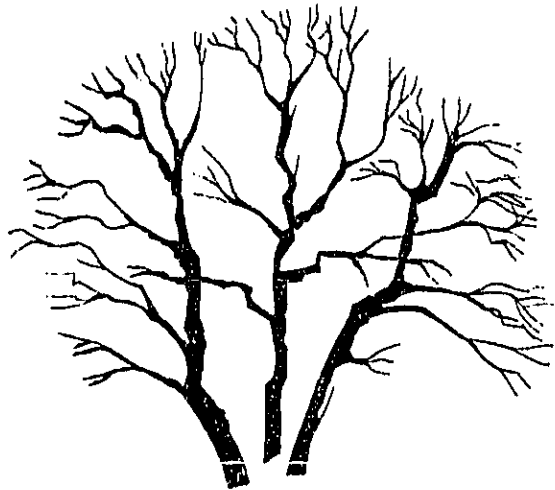
Can you think of any other noises which you might hear but which you would not like?

Which noises would be irritating to the following people:-

the fishermen; the lighthouse keeper; the seagulls; the old man sleeping on a deck chair; the little girl making a sand pie?

Which noises of happiness might you hear?

THE PARK



THE PARK (Visit a Park)

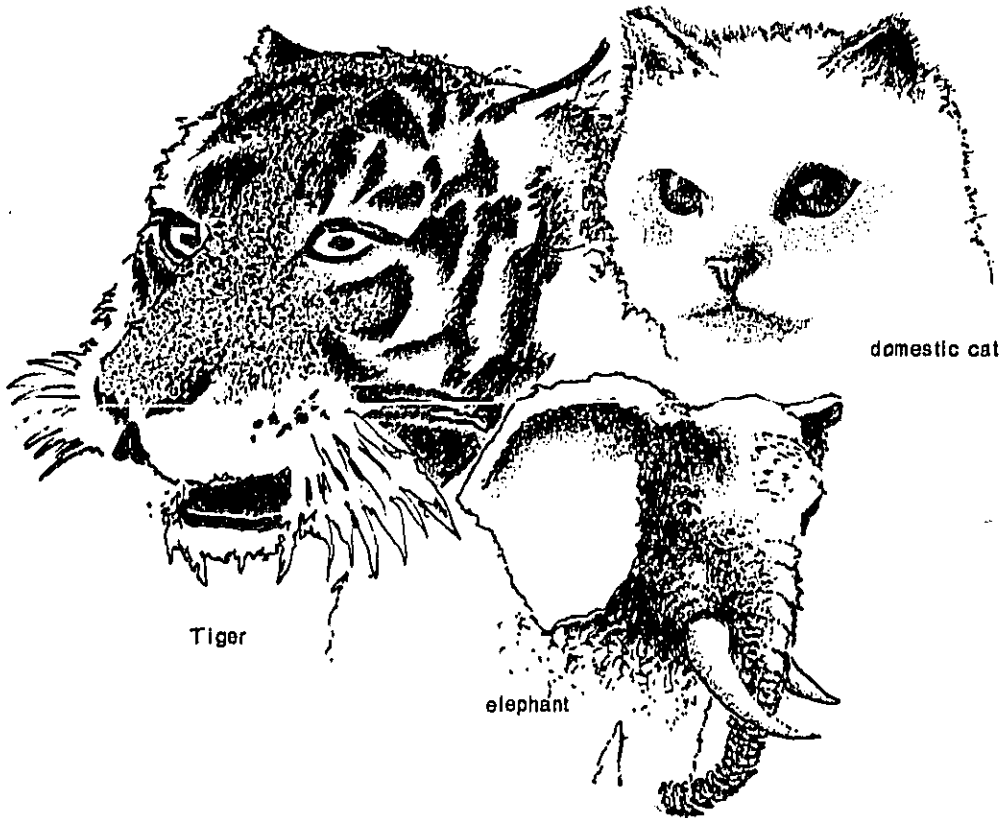
1. Paint a big picture of the park.
2. What sounds did you hear?
3. Make a list of the noises you did not like.
4. Make a list of the sounds you enjoyed.
5. Which part was noisiest and why?

N.B. Take a soundmeter with you and measure the levels of noise in various parts of the park and in particular the various sections of the play area.

6. If you had to plan a play area in a park; indicate what you would include.

Draw a plan of the park and the houses around it and show where your play area would be.

WILD ANIMALS



1. Make a list of the names of as many wild animals as possible.
2. Collect pictures from newspapers, magazines etc. of wild animals and make a collage for class display.
Indicate on the chart the sounds that the animals make.
3. Make sets of the following by collecting pictures or painting:-
 - (a) wild animals and tame animals
 - (b) noisy animals and quiet animals
 - (c) large animals and small animals
 - (d) furry animals and smooth animals
 - (e) cold blooded and hot blooded animals
 - (f) meat eating animals and vegetation eating animals
 - (g) animals above the ground and animals below the ground
 - (h) animals when they are calm and animals when they are alarmed
 - (i) animals which live on land and animals which live in water
 - (j) animals which make noise and animals which do not make noise

At Home



Here are some words which may be useful, there are many others.

Scratch
splutter

bang
sizzle

rattle
rackety

swish
deafening

crash
piercing

1. Draw a picture of someone making a meal in the kitchen; label it with describing words to show the sounds and noises made.

2.

vacuum cleaner
vase
television
radio
bookcase
ash tray
hair dryer
table lamp
sewing machine
spin dryer

carpet
food mixer
coffee grinder
mug
washing machine
picture
tumbler dryer
chair
door bell
settee

Make two lists from the above named household objects with the headings

(a) noise making objects

(b) silent or quiet objects

3. Write a short sentence about each item on your 'noisy' list and describe the sound it would make.

4. Collect pictures of noisy machines and stick them on a card to make a 'Noise Poster.'

5. What noises would you hear in the kitchen when:-

- (a) mother is cooking breakfast
- (b) the dinner is being prepared
- (c) when the washing is being done

Draw pictures or collect pictures of all the items in the kitchen which when used can make noise.

Label them with describing words which tells of the noise they make.

Make sets of those which are used on their own and those which are sometimes used together and those which are always used together.

6. If you can borrow a soundmeter from school, make accurate measurements of noise levels of:-

electric equipment; other equipment; equipment that is used together.

Make a chart showing the noisiest items in the home and the quietest. Compare your findings with a particular make of equipment with other makes which other children in your class may have.

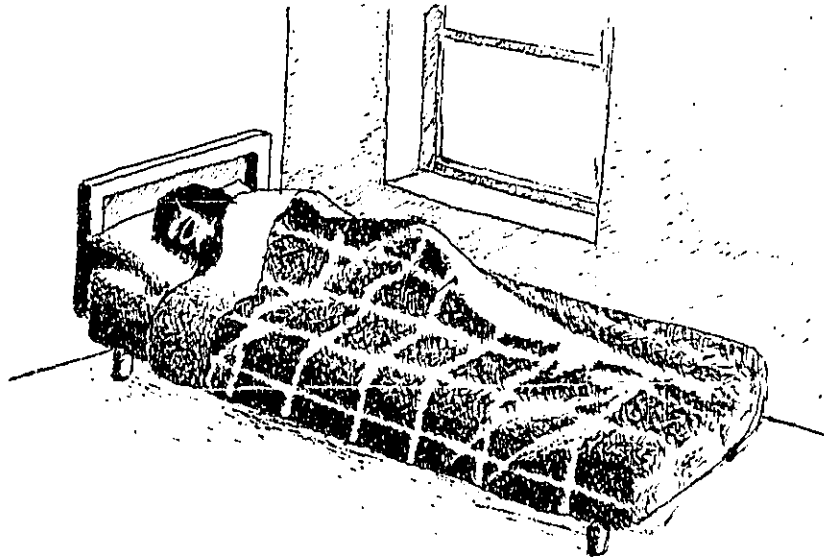
Make a booklet like 'Which' recommending which pieces of equipment are the best from the noise point of view.

Sound Meters

Information on soundmeters is included in the pack and includes -

- Where to obtain them
- How to use them
- How to measure sound and noise

Going to Bed



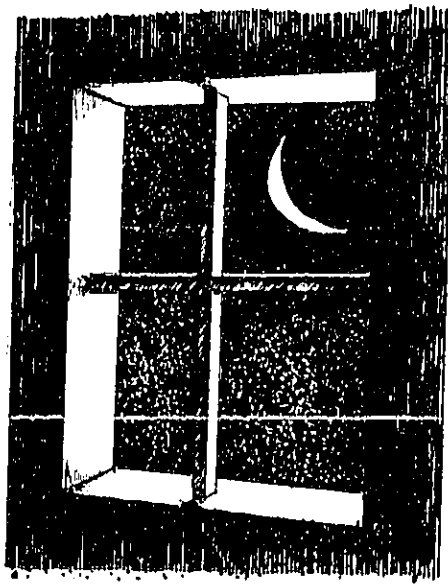
1. Imagine you are in bed, or listen when you go to bed tonight, and make a list of all the sounds you can hear.

2. On the list that you have made put an x against all of the unpleasant sounds or noises.

- | | | |
|-----------|----------|----------|
| 3. laughs | talks | bangs |
| shouts | whimpers | rattles |
| cries | babbles | hums |
| screams | chatter | whistles |
| wails | whisper | sings |
| howls | gargle | |

Which of the above sounds are pleasant (sounds)? and which are unpleasant (noises)?

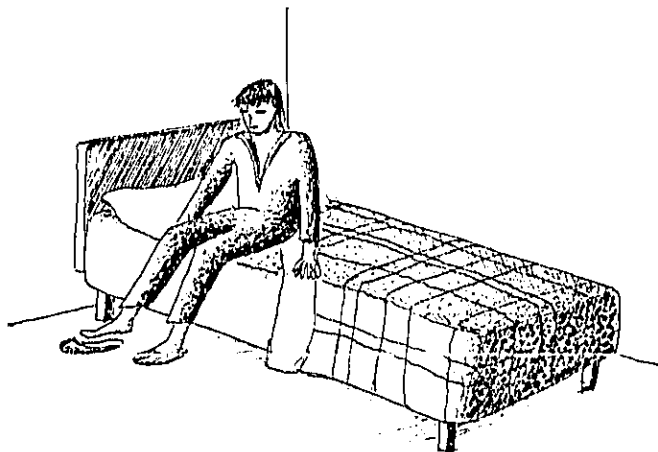
4. Write a sentence using the words above, which describe unpleasant sounds. Each sentence should describe who or what makes the sound.



5. Make a pictorial chart which shows:-

- (a) all the noisy things which disturb you as you are trying to go to sleep
- (b) noises which can wake you during the night
- (c) noises which wake you up in the morning
- (d) noises which are annoying and should be stopped

Getting Up



ping	ring	peal	splash	squeak	knock
slam	rattle	tinkle	click	hum	patter
crash	splash	bubble	gargle		

Some of the words listed above may help you to answer the questions below but there are many other words which you can use.

1. What sound or noise wakes you up in the morning?
2. As you lie in your bed, before getting up, what sounds can you hear in the rest of the house or from outside?
3. Draw a picture of yourself having a wash and add to the picture describing words which suggest the sounds you are making.
4. Write a list of sounds you would hear whilst having your breakfast. Put a star against those which are 'noisy'.

5. Using some of the words given below write six short sentences to describe some of the sounds you would hear early in the morning.

distant stealthy muffled soft low
rowdy deep gentle deafening hissing
sizzling

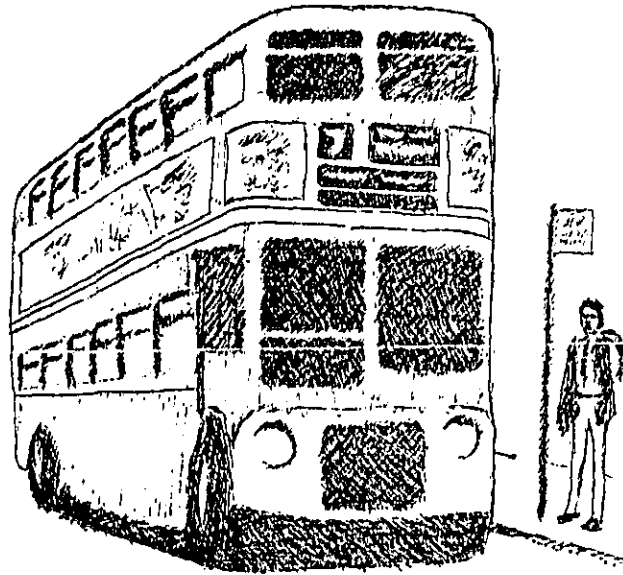
6. Make a painting of yourself getting up in the morning and add describing words which suggest the sounds you hear:-

- (a) as you are dressing
- (b) as you are getting washed
- (c) as you are having your breakfast

Put a star by the ones which you think are noisy.



Going to School



1. Make a list of all the 'noises' you heard on the way to school. The list below will give you some help but you will be able to add many more.

yell	hoot	roar	bellow
snigger	shout	squawk	screech
bark	whimper	whistle	

2. Take six of the words from your list and write short sentences to describe how or by whom the noises were made.
3. Find out how the pupils in your class came to school, (by bus, car, bicycle, walked, etc.). Make a block graph of the numbers using each method of coming to school.
4. How do most pupils in your class come to school?
5. You would hear many noises on the way to school. Draw a picture of a street scene and put on the name of the things which made the most noise.
6. What do all of these 'noisy' things have in common?

7. Draw a map showing your route to school and indicate the noisiest places on the way.
8. Take a traffic census of the road near to your school and show your results in chart form.
9. If you travel by bus or train to school:-

List the sources of noise:- (a) outside the bus
(b) inside the bus

Record the times and places where the noise was the greatest.

Make a map showing the route taken by the bus/train and show the noisiest places.

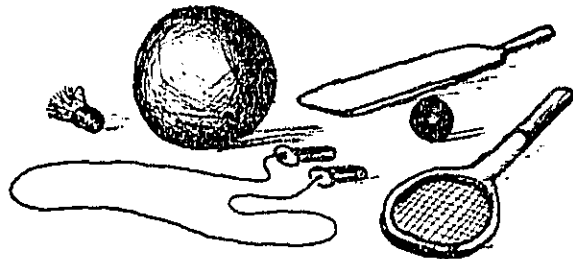
Make up rules for bus travellers for keeping noise under control.

Make up rules for the Corporation who control transport for lowering the levels of noise.

Discover all you can about the buses/trains used and what precautions, if any, are taken to lower noise.

Invite the Transport Manager into School to discuss with you the future developments of Corporation Transport.

The Playground



1. Go into the playground at playtime and make a list of words which describe the sounds you hear.
2. Go into playground when school is in and list the sounds you hear.
When you are writing in the classroom, what noises do you hear in the playground?
List the games you play in the playground.
Draw a picture of children playing the noisiest game.
If you listen very carefully can you hear any sounds which are not being made by the children playing? Make a list of the sounds which do not come from the playground.
3. Make a map of your school neighbourhood showing the sources of noise which might disturb the school.
Is the playground and school in the right place, and if not, show where you think it should be.
Which game is the quietest?
When do you prefer to play the quietest game?
What do you like about a noisy game?
When would you prefer not to play a noisy game?
Where do you play games at home?

Make a map of your neighbourhood and show where you play games.

Make a map of your neighbourhood as if it was ideal for playing.

Read Pamphlet - "Noise in everyday Life."

List the noises in your playground which you think are:-

- (a) Neighbourhood noise;
- (b) Road Traffic noise;
- (c) Aircraft Noise;
- (d) Industrial Construction noise.

What might limit the action which can be taken to reduce noise?

What would be the priorities in your school neighbourhood if you had to make the decisions to reduce noise on a limited budget?

If you were a School Manager determined to reduce the level of noise around your school, how would you raise the money required and estimate the cost of doing this?

The Street



Visit a street. Take a sound meter to measure the levels of noise.

1. Make a frieze showing the moving and noisy objects which can be seen in the street.
2. Label the sound or noise which each object makes.
3. Put crosses against each object to indicate the level of sound made.
(The most crosses for the noisiest).

4. Take a traffic census of this street and of other streets and compare the levels of noise and the census. Record either with:-

- (a) models
- (b) pictures
- (c) block graphs
- (d) other kinds of graph

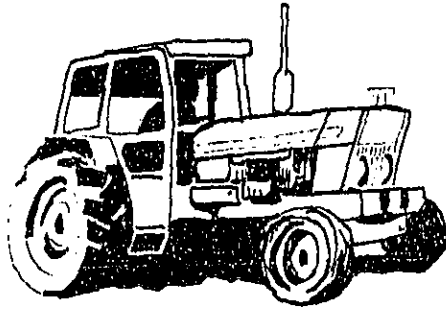
5. Make a drawing of an imaginary street showing:-

- (a) the traffic
- (b) other causes of noise.
- (c) things which would cause noise that would be a nuisance
- (d) noises which could be controlled
- (e) noises which could be removed.

Make another street and design it so that it would be ideal from a noise control point of view:-

e.g. indicate traffic restrictions; alternative routes; play areas etc.

The Countryside

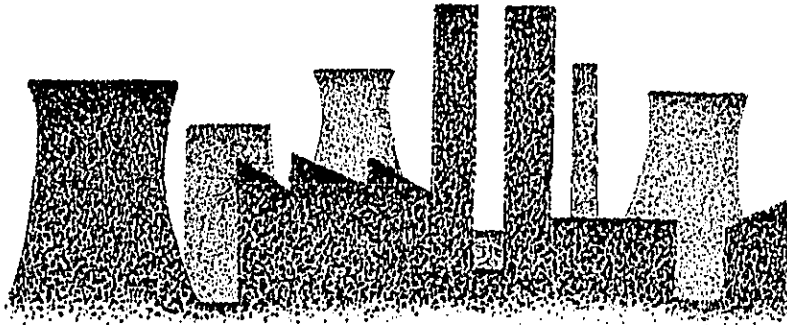


Read the Country Code

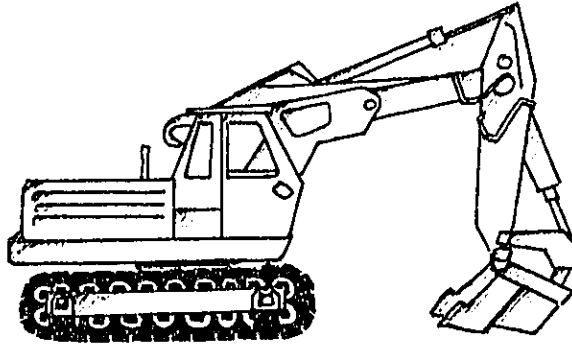
Guard against fire
Fasten all gates
Keep dogs under control
Keep to paths on farmland
Do not damage hedges or fences
Leave no litter

1. Make up a Noise Code or a Quiet Code.
2. Draw a small picture to go with each idea.
3. Stick the pictures on big piece of paper and write the rule under each picture.
4. Write Quiet Code on the top.
5. Is the countryside always quiet? What disturbances are there?
6. What noises would you hear on a farm?
7. (Find out about farm machinery) - What kinds of machines are used?
8. Which is the noisiest machine a farmer will use, and when will he make most use of it?
9. What sounds do you like to hear in the countryside?
10. Go for a country walk and list all the sound that you hear. Which of these sounds would you consider to be noise?

Noise Around Us

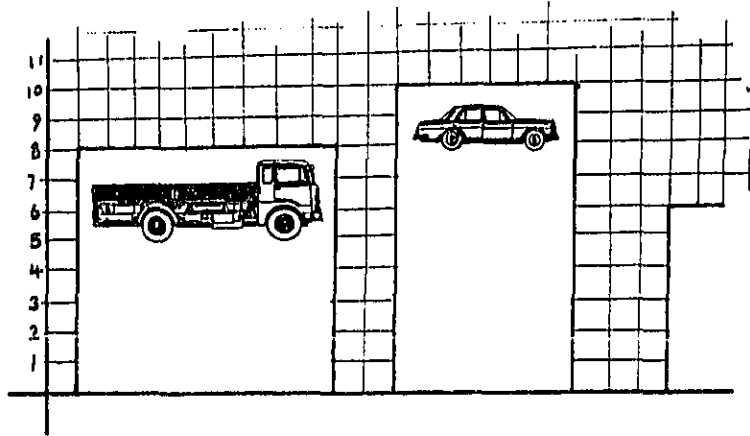


1. What sort of factories are in your area?
2. Are any of the factories noisy?
 - (a) from the outside
 - (b) from the inside
3. What makes a factory noisy?
4. How can busy factories create extra noise in towns?
5. What times of day are often the noisiest on roads near factories?



6. Does anyone in your school live near a factory? What do they and their parents think of the noise from it?
7. Do you think a building site would be noisy? Write about the noises you would expect to hear.
8. Do you think the noises on the building site are necessary? Why?
9. Can you suggest a way by which the noise can be stopped?
10. Do you know of any other noisy places, besides factories and building sites, where people have to work?

Noise in the Town

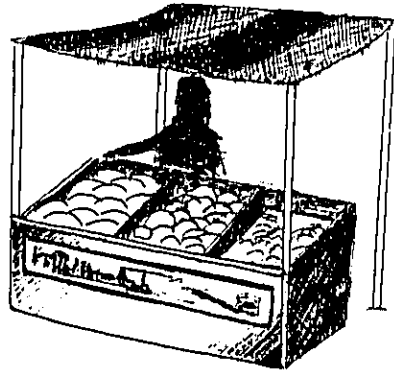


1. Count the number of vehicles that pass your school between:-

- | | |
|-------------------------|-----------------------|
| (a) 9.45 am - 9.55 am | (d) 1.45 pm - 1.55 pm |
| (b) 10.45 am - 10.55 am | (e) 2.45 pm - 2.55 pm |
| (c) 11.45 am - 11.55 am | (f) 3.45 pm - 3.55 pm |

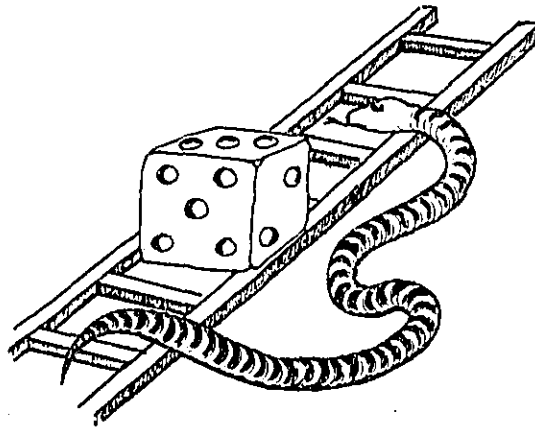
Make a graph to show your results.

2. Make a list and draw pictures of all the noisy vehicles in your town.
3. Write a story describing those things in your town which are too noisy.



4. Is there any particular day in your town which is noisier than other days. Can you explain why?
5. Which parts of your town are noisier than other parts?
6. Which noises in a town can be disturbing?
7. Some noises in a town can be essential. What are they?
8. Make a Noise map of the centre of your town.
9. Make a model of an imaginary town with all its noise problems.

In Your Spare Time



1. Think of the noises which you make at home and list the ones which might annoy the people around you.

Read Pamphlet 'Neighbourhood Noise'.

Make up your own rules on how you should behave at home to control noise.

2. List the toys and games you play which are noisy.

Make sets as follows:-

- (a) quiet games and noisy games
 - (b) games involving movement and games which are static
 - (c) noisy games; noisy games which could be a nuisance; quiet games
 - (d) safe toys; dangerous toys; noisy but safe toys; quiet safe toys; noisy dangerous toys; quiet dangerous toys
 - (e) make up other sets like this
3. Tell about the parts of your home where you play games and describe the sorts of games you play.

What special arrangements are made if it is wet and you wish to play?

List the games you like best.

List the games which are likely to cause annoyance to grown-ups and give the reasons.

4. Borrow books about noise from the public library or from school.

Read the pamphlets 'Noise from Lorries' - 'Drive a quieter car'.

Make a booklet showing:-

(a) The noisiest cars to the quietest cars.

(b) What can be done to make cars quieter?

Read: 'Noise Policies In the U.K. Legislation and Control!:-

Make a list of the most interesting laws on noise control.

What is a Noise Nuisance?

Make a Cartoon up about someone making too much noise.

List the ways in which you can tell if you are causing a noise nuisance.

Visit an aerodrome and measure the noise of the planes as they come and go.

5. Read Pamphlets on 'Noise Control and Industrial Noise' - 'Office Noise!:-

Where is noise likely to come from:-

(a) Inside the building?

(b) outside a building?

Make a chart and test different buildings: Use a sound meter:-

a garage; your own home; your school.

Ask the teacher to organise a visit e.g. Fire Station, and record your findings.

What makes a noise in an office?

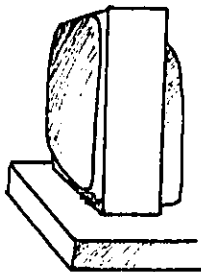
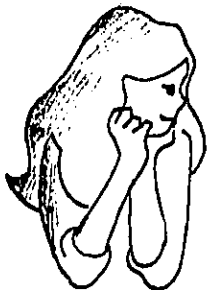
What can be done about office machinery to reduce noise?

What can be done to buildings to reduce:-

(a) Inside noise?

(b) outside noise?

TELEVISION



1. List your favourite T.V. programmes and give reasons.
2. Choose a particular programme and list all the sounds you hear. Put an x if it is noisy and a \checkmark if it is quiet.
3. Watch a programme with the sound completely off and see how much of it you can understand. It must be like this to be completely deaf. Loud noise can affect your hearing. What helped you to understand the programme when you were unable to hear?
4. Watch and listen to some adverts on T.V. Notice how they use words over and over again. Sometimes they use humour and sometimes shock. They sometimes sing the message.

Invent your own advertisement for controlling noise.
Tape it and play it back to your class.

5. Notice the strength of sound and the use of sound during the advertisements as compared to the programmes.

Make up a different advertisement about noise but use varying levels of sound as well as words as a means of getting your message across.

6. List the times when the sound of Television becomes a source of irritation to you.

Explain why this is so?

7. Imagine you are a T.V. Interviewer:-

- (a) With other children acting as a panel of experts, tape an interview with them on the control of noise.
- (b) Act as a Quizmaster and hold a quiz about noise.
- (c) Interview a man who is being charged by the police for making too much noise.
- (d) Interview people living near an aerodrome which intends to use the Concord.

*If you have the equipment, record this on video tape and show other people your programme.

8. Make a play for T.V. which carries a strong message about the folly of making too much noise:-

e.g. boys and girls at a disco; complaints from people living nearby, order by Council to close it.

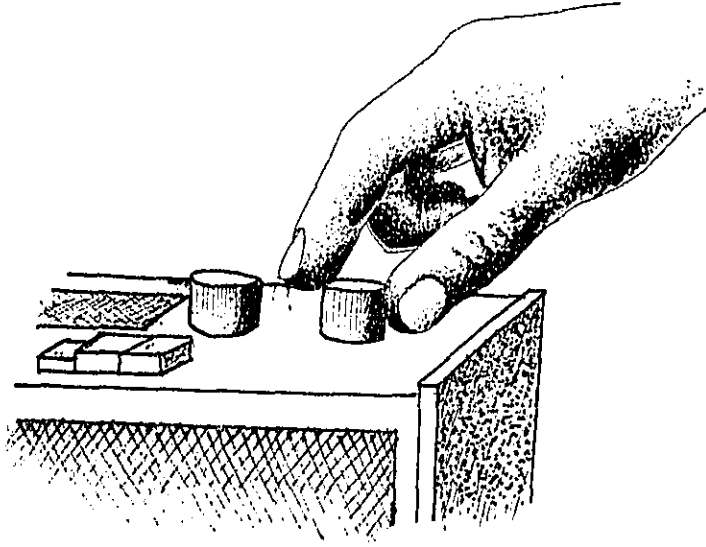
*If you have the equipment record this on video tape and show other people your programme.

9. Make up Puppet characters and hold a puppet play:-

e.g. Characters:- policeman; old man; teenager.
Play:; row between old man and teenager over noise.
Policeman and perhaps other characters brought into the situation.

*If you have the equipment record this on video tape and show other people your programme.

TURN IT DOWN



1. Cut some pictures out of magazines of things which are noisy.
2. Stick the pictures in a book.
3. Think of how you could 'quieten' the noise down, and then add these onto your pictures.
4. People can be noisy too, as noisy as machines. How do you think you could get people to make less noise? Write down the ideas you have.
5. Do you think that people who are noisy know they are noisy? Think of when your mother or father tell you to be quiet.
6. How does your teacher get you to be quiet?
7. Put your hands over your ears and listen to a story which a friend is telling you. Press your hands to your ears very hard - does it make the sound quieter or louder?
8. How does a man who is digging up the road stop the noise getting into his ears?
9.
 - (a) Noise can be made quieter by putting something over or around the noise - a box or cloth can be placed over a noisy alarm clock - try this.
 - (b) Noise can be reduced by putting something underneath which absorbs sound, stand a clock on a table and then stand the clock on some carpet or foam rubber.
 - (c) You can move a noisy thing further away to make it quieter or you can move away from the noise.
 - (d) Things can be fitted over openings where the noise comes out or the opening closed - e.g. a car exhaust can be repaired or a window closed.
 - (e) If music is being played then the volume knob can be turned down to make it quieter.
 - (f) If you have a transistor radio you can try all the ideas and see if they work. Write down your findings.

10. Find out the fine for making a noise. (Look at the Booklet 'Bothered by Noise'.)

Ask your friends these questions and record their answers:-

(a) Is making a lot of noise against the law?

	TOM	PAT	ANNE	MISS
YES				
NO				

How many people got the answer right?

(b) What is the fine for making a lot of noise?

	TOM	PAT	ANNE	MISS
up to £50				
up to £400				

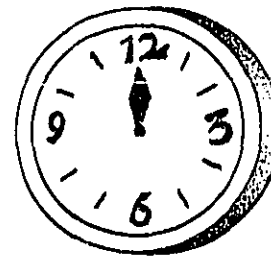
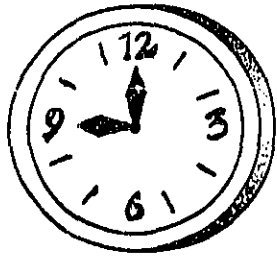
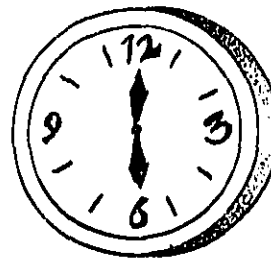
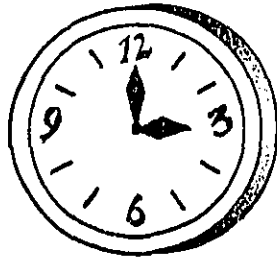
How many people got the answer right?

How can you make sure that everybody knows that making too much noise is against the law?

- (a) Do you think you could invent a machine to stop noise?
- (b) Draw a picture of the machine.
- (c) Make a model and paint it.
- (d) Write down how it works and what sort of noise it stops.
- (e) Do you think anyone would want to buy your machine? - who?
- (f) How much would it cost?

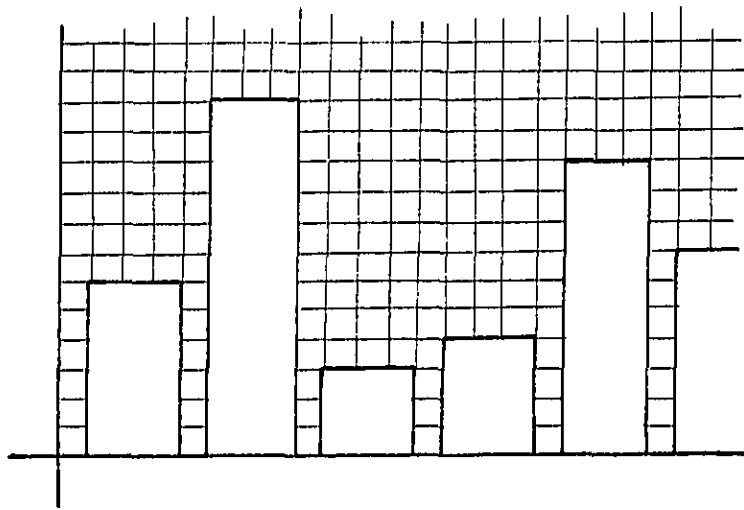
11. Find the sheet music entitled "Turn It Down" and ask your music teacher to play the accompaniment so that the members of your class can sing it together.

QUIET



1. Make a list of all the places which are Quiet.
2. Make a list of all the things which are Quiet.
3. Draw a picture of a place which can be both Noisy and Quiet.
Why and when is it Noisy?
4. Try and work for fifteen minutes without making any sounds. - Isn't it difficult?
Did you find it strange? It would be very difficult to live without some sounds.
5. Time somebody who is working, for 10 minutes - count how many noises they make.
6. If you could not hear, what sounds would you miss? Make a list of them.
7. When is the quietest time of day in School and at home? Why is it quiet at these times.
8. Consider those people who are either deaf or blind
 - (a) What must it be like not to be able to hear?
 - (b) Why are sounds important to blind people?
9. How can those people who are dumb communicate without sound?

NOISE SURVEY



1. Carry out a noise survey using the survey form overleaf - you can ask children at school to fill it in or you can ask your family at home.
2. When you have carried out the survey, present the results and answers to the questions in the form of a graph or a block chart.

SURVEY FORM

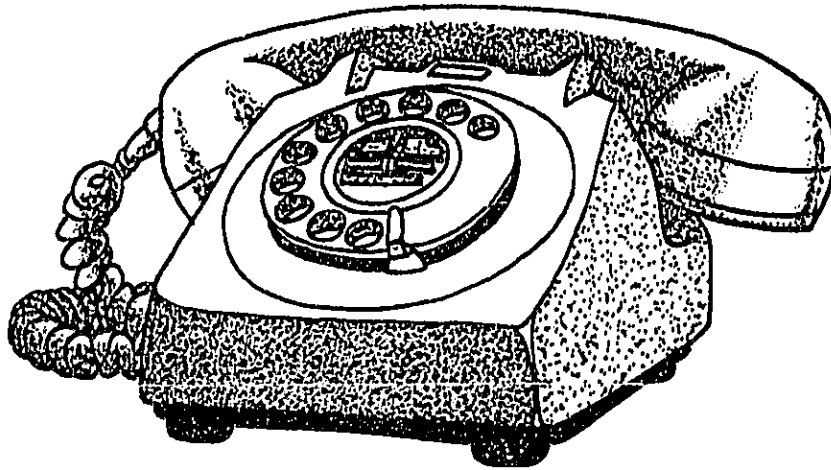
These questions are about what you think about noise at home. There aren't any right or wrong answers. The questions are simply to help us on our survey. Just mark the answer you think is right, with a line through the circle, for example:

yes
 no

THANK YOU VERY MUCH INDEED FOR YOUR VALUABLE HELP

<p>1 Does noise from outside ever bother or annoy or disturb you in any way when you're indoors at home?</p> <p><input type="radio"/> very often <input type="radio"/> fairly often <input type="radio"/> occasionally <input type="radio"/> hardly ever <input type="radio"/> never</p>	<p>5 Do you think the noise around your home has been increasing or decreasing during the last year or so?</p> <p><input type="radio"/> increasing <input type="radio"/> decreasing <input type="radio"/> about the same, no change</p>
<p>2 Would you rather hear some noise, or no noise at all, from outside when you are indoors at home?</p> <p><input type="radio"/> some noise <input type="radio"/> no noise</p>	<p>6 On the whole, would you say there is too much fuss, or too little fuss, made about noise nowadays?</p> <p><input type="radio"/> too much fuss <input type="radio"/> too little fuss <input type="radio"/> just about the right amount</p>
<p>3 Is the quietest room in your house at the back or at the front?</p> <p><input type="radio"/> at the back <input type="radio"/> at the front <input type="radio"/> it's the same back and front</p>	<p>7 Would you agree or disagree with people who say that "Noise is one of the biggest nuisances of modern times"?</p> <p><input type="radio"/> agree strongly <input type="radio"/> agree a bit <input type="radio"/> neither disagree or agree <input type="radio"/> disagree a bit <input type="radio"/> disagree strongly</p>
<p>4 Do you ever get upset or irritable about any of these noises when you're indoors at home during the day or during evening?</p> <p><input type="radio"/> road traffic <input type="radio"/> aircraft <input type="radio"/> industry (factories and so on) <input type="radio"/> railway <input type="radio"/> children <input type="radio"/> lawn mowers <input type="radio"/> anything else?</p> <p align="center">..... (write in)</p> <p>How about at night? Does noise ever stop you getting to sleep?</p> <p><input type="radio"/> yes, often <input type="radio"/> sometimes <input type="radio"/> no, very rarely</p> <p>If "yes", what is the noise? </p>	<p>8 If it does get noticeably noisier in your neighbourhood, would this matter to you?</p> <p><input type="radio"/> very much <input type="radio"/> a little <input type="radio"/> hardly at all</p> <p>9 In general (and not just at home) do you find noise</p> <p><input type="radio"/> very disturbing <input type="radio"/> disturbing <input type="radio"/> a little disturbing <input type="radio"/> not at all disturbing</p> <p align="right">THANK YOU VERY MUCH</p>

Useful Noises



Some sounds and noises are useful to us - they tell us something. The sound which is made is made for a reason, not like other noises which are not made for a reason. The sound of a telephone bell ringing tells us that someone is telephoning us and that we should pick the telephone up.

1. Draw pictures of three things which make useful sounds.
2. Write down the sounds which come from them.
3. Make a list of things which make sounds which tell you something.

Things which warn me of danger

.....

Things which tell me to do something

.....

Things which try to get my attention

.....

4. Which of the groups has the most things in it?

5. How do you try and attract the attention of your friends?

Are there any other ways you could get them to look at you and listen to you? Try and attract a friend's attention without shouting at him.

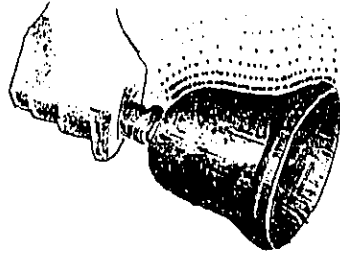
Notes:

Groups of things which make useful sounds are:-

- (a) **Bells** - telephone bells, doorbells, church bells, bicycle bells, school bells, burglar alarm bells;
- (b) **Sirens** - Police, Fire Engines, Ambulances;
- (c) **Beeps** - beeps at pelican crossings, beeps of car horns;
- (d) **Whistles** - Police whistles, referees' whistles, dog whistles; school whistles.

Usually things which are useful to us are **SOUNDS**. Sounds which are not useful to us are **NOISES** e.g. the noise of a car engine, the noise of a dustbin lid rattling.

Enjoyment and Annoyance



1. Make a list of sounds which are pleasing to you, at school or at home. Why do they please you?
2. Noises can be a nuisance. Make a list of noises, which cause you, or your parents to be annoyed. These can be at school or at home. Why do they annoy you?
3. Write a sound story about a day you have spent when nothing seemed to go right.
4. Does the sound of something which pleases you cause someone else to be annoyed? Write it down.



5. Does the same sound please you at times and at other time annoy you? Draw a picture of your face when you are pleased with a sound and beside it draw your face when you are annoyed with a noise.
8. During a free activity lesson when paint is available for finger-painting, ask if you can listen to a record used for music and movement lessons (Electronic Sound patterns is ideal).

While listening to the record move your fingers, which have been dipped in paint, around the paper, using the mood of the music to guide you. It could be straight lines, swirls or zig-zags.

If you are pleased with the result, perhaps after it dries you could use a variety of yarns and threads to make a collage.

THE DANGER OF NOISE



1. Describe what you hear when you either:-

- (a) burst a ballon
- (b) fire a blank in a pistol
- (c) bang two pieces of wood together

How did you feel about these sounds?

What happens when you are not expecting these sounds?

2. Make a list of the sounds you like and the noises you dislike:-

Sounds I like

Noises I dislike

e.g. recorder played well

e.g. children screaming

3. Ask your friends which are the sounds they like the most and hate the most. Make a list and see if there are any noises which everyone hates or likes. As people to give reasons for their choice.

4. Make up some questions about noises and ask other children if they like them or not. e.g.

Do you like the noise of an ice-cream bell chiming?

	Yes	No
John	✓	
Ann		✓
Tracy	✓	
Mark	✓	

Which set has the most ticks?

READ THE PAMPHLET 'NOISE'

5. How is sound measured?

8. Use a sound meter to measure and classify sounds from machines either at home or at school:-

Name of Machine	Soundmeter Rdg. Decibels	Range of Sound		
		Harmful	Dangerous	Safe
e.g. Jet Engine	140	Yes		

7. Draw a diagram of the ear showing how we hear sound.

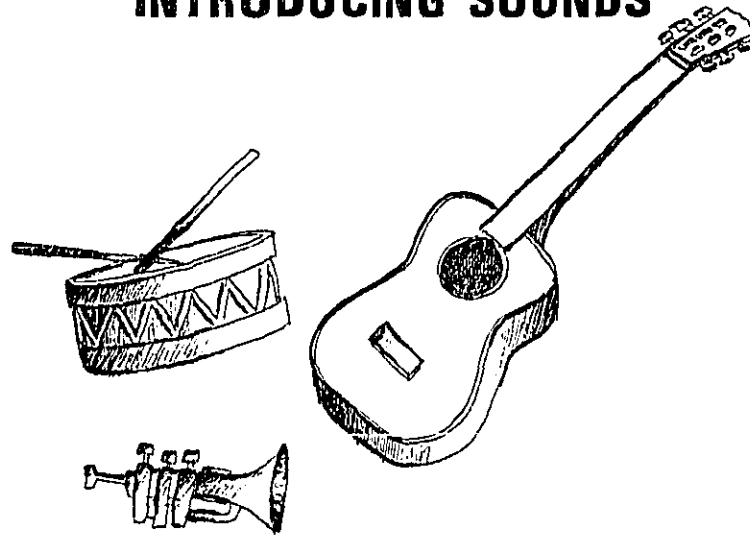
8. Carry out an experiment to discover how different people vary in the amount of noise they can stand:-

Make a loud noise, record it on tape, ask many people what they think of it. Try varying the level of noise by adjusting the volume control. Record your results:-

Name of person tested	Noise	Level Decibels	Rating		
			Unbearable	Unpleasant	Bearable

9. What harm can loud noise do to people and how can they be protected?

INTRODUCING SOUNDS



1. Ask your teacher to play a sound effects record or make a tape recording of some sounds yourself.
 - (a) Play a guessing game with other children and see if they can recognize the sound and what made it.
 - (b) Ask other children whether the sound played was 'noise' or 'sound' and why they thought it was 'noise' or 'sound'.
2. Gather some objects together which can make noise e.g. tins, cups, bottles or visit the music table and make noises by banging, blowing or plucking etc. Write down the 'sound' or 'noise' which is made and what you did to make the sound.

Sound	How it was made
Whistle	Blowing across the neck of a bottle

How and why do you think that a particular sound was made?

3. Imitate a sound e.g. a horse 'whinnying', dog 'barking', car horn 'beeping'. Make the sound and ask other children if they can recognise the sound and what it is supposed to be.
4. Make a 'collage' of noisy things cut from newspapers, comics etc. and stick words on describing the noise they make.

USING A LIBRARY

1. Newspapers often carry articles about Noise, particularly Noise complaints.

Visit the local Reference Library and ask for back numbers of local or national papers. Make charts about the articles e.g.

Date	Type of Noise (traffic, Jets, people, etc.)	Effect

From these charts find out the common causes of complaint or sources of noise.

What effects were complained about?

2. Look at Motoring Magazines, particularly the advertisements and test reports. How many advertisers or reports mentioned safety, acceleration, economy, low noise levels? Make charts for each of these. How many mentioned Noise as compared with other comments?

What types of Noise were mentioned by the testers? Did the testers think Noise was significant in commenting on a car or recommending it?

Count the number of advertisements for making car noisier (horns, special exhausts, etc.) and count the number which help to make it quieter (insulation kits, fans, carpets, etc.)

3. Finding out about Noise

Use the Reference Library and Public Library (the Librarian will show you how) to find out which books about Noise there are in the Library. Write down the titles, make charts or graphs about the sorts of noise which the book is about, e.g., industrial noise, aircraft noise.

Find out from classified catalogues or reference books:-

- (a) Firms who make Noise Control Equipment.
- (b) Associations and organisations concerned about Noise.
- (c) Magazines and publications about Noise.
- (d) British Standards dealing with Noise.

Note: Some of the above will be found under headings other than Noise e.g., Sound, Environmental Pollution.

HISTORY

1. Transport has changed throughout the ages. Make a list of the transport used at various times and write down the sounds produced.

e.g.

Time Period	Transport	Noise
Roman	Chariots	Chariots wheels on road Horses hooves on road

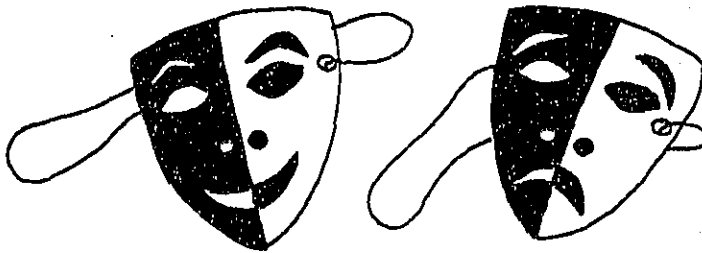
2. Make a list of the different weapons used throughout the ages and write down the noise associated with them.

e.g.

Time Period	Weapon	Noise
Norman	Bow and Arrow	'Whoosh' of arrow flying through the air.

3. Imagine how your town or village has developed since it was founded. Write down all the sounds which changed as it developed. Compare and contrast these sounds and explain why they changed.
4. Trade and industry has changed throughout the age, write down the noises which each period produced.
5. In our lives today we produce certain noises. Pick one period of history and compare the noises which were made then with now.
6. Important milestones in history occurred when certain inventions were made e.g. Steam Engines. Think of some inventions which also produced noise and make a list.
7. Is our world becoming noisier as it develops? Write down a short essay on this theme.
8. Write a story about the future 2000 AD and include in the story the noises which might be heard.
9. Trace the development of a road since it began. It might be a footpath or an animal path, write down and include the sounds which were produced when it was being used and built.

SUGGESTIONS FOR DRAMATIC ACTIVITY



1. You are involved as a community with a noise hazard, e.g. motorway being built or juggernauts from a local factory being diverted through your area or street. It is in the planning stage. What objections would the local residents raise?

A meeting is held. Each member of the class is to take a role - lorry driver, children, mothers, fathers, local policeman, factory directors, councillors, etc. One might have a local enquiry and receive a Whitehall Inspector, a judging panel, etc.

Each group of 'residents' can develop their own approach. As the final meeting is not rehearsed, the crossfire of questions and opinions should prove illuminating.

What sound effects could one use to reproduce the noise hazard in question?

2. Make a play up together and include road repair workmen, market stallholders, protest marchers, football supporters.

When the noise reaches its loudest, decide what can happen to change the situation.

3. Make up a play about a competition to make the best machine which can reduce noise to a minimum. Let each member of the group be part of the machine and by using suitable noises (percussion instruments or records can be helpful), decide on movements which will give the impression of a working machine. Decide what should go wrong with the machine at the end.
4. Make up a burlesque of old-time music hall with comedians, dancing girls and clowns. All the jokes should be connected with noise. Make up a song, which will get the audience singing with you, about keeping noise under control.

5. Imagine you are in a world of silence - make up movements of noisy activities but carry them out in silence and in slow motion.
6. Make up a play about a Time Machine which lands in cave-men times by accident. The people in the machine cannot believe the silence of the world. Perhaps the play can develop to the cave-men being transported to the modern world to hear the noise for themselves.
7. Make up a play about a king who was only interested in money and valuable things, and a professor who invented strange but invaluable noisy things. Perhaps the greed of the king and his courtiers angers the professor and his helpers who plan to punish him by creating noise when he sleeps.
8. Make up a play about a king and queen who like noise so much that they organised a competition and those who made the most noise would win the prize. Show how the people became annoyed by this and eventually plotted against them to change their ideas about noise.
9. Make up a pantomime about Aladdin - but change the magic powers of the lamp to a trumpet which, when blown, makes noisy people quiet or quiet people noisy. Make Aladdin's mother, Widow Twanky (Clanky!!) noisy and make the Emperor quiet. Show how the powers of the trumpet and the Genie of sound change the lives of Aladdin, Aladdin's mother and the Emperor.
10. Make a play about a king who had over sensitive ears who could not bear sound at all and the difficulties people had to live with him. Bring in a magician who can cure the king of his malady but at a price.

POETRY AND CREATIVE WRITING

1. Read this poem:

NOISE

Noise is a baby crying, a train on the track.
There's noise on the building site,
People shouting, hammers banging,
Drills drilling holes in the ground,
The sound of aeroplanes at the airport is NOISE.
A school full of chattering children,
A Football Match,
A disco, a park, is NOISE.
The noise of music and bells, people shouting at the fair,
At the swimming baths people shouting and screaming.
To me noise is a DISTURBANCE.

Allison Taylor Age 10

- (a) There are many word pictures in this poem, choose one and make a painting of it. Write all the noises in words and stick them onto the picture.
- (b) List all the words you can think of that describe the noises suggested in this poem.
- (c) How many of these words actually make the sound of the noise when spoken?
- (d) Write a poem or a paragraph which explains what you consider a noise.

2. Read this poem:

NOISE TAKES OVER

I had taken over, every machine grew louder,
blaring forth, car horns hooting, bicycle brakes
screeching to a halt. Doors slamming and heaters
clanking. Everything grew noisier with my help.

Silence was dead! Gone for ever! Banished from
earth! My next assignment was to deafen people
with NOISE. It worked. Vacuum cleaners swelled
and grew noisier as if they had a life of their
own. Flowers no longer grew with the deafening
sounds, grass shrivelled up with the immense
pressure. Birds were dying. Animals no longer
roamed the earth's surface. The population of
the human race was being wiped out.

But unfortunately, I did not know that three or
four bits of silence had escaped banishment and
were in the process of declaring war upon me.

One day, ever so suddenly, things grew quieter.
All my strength was drained out of my body in
trying to keep the noise level up. But I failed.
I was dying. Slowly silence was taking over once
more.

Penelope Smith Age 11

Comprehension:

- (a) Who do you think the writer was trying to be?
 - (b) What was the effect when she took over?
 - (c) What had happened to silence?
 - (d) As the noise grew louder, what happened to the animals, birds and people?
 - (e) Why did the writer fail in her task?
 - (f) What happened to her in the end?
3. Some poems are about noise. Try to find one. Which did you like best? Why?

NOTE: A collection of poems, etc., "Children on Noise", is available from Darlington Teachers' Centre, North Lodge, Darlington, Co. Durham, price 75p.

4. Read this poem:

NOISE

Noise! What is noise!
A bang, a crash or a shout.
Is it a car hooter or is it a slam?
Is it dogs barking and children shouting?
Is it the wind as it walls through the trees?
Is it a door as it bangs in the breeze?
Is it you and me as we run around?
What ever it is it spoils our town.

Lesley Williams. Age 11

Now write a poem yourself about noise being a nuisance.

6. Write a story or a poem called:

"The Mysterious Noise".

What is it? Where has it come from? Who, or what, made it? Describe how it sounds.

6. Write a story, including as many noises and sounds that you would hear, about one of the following:-

"The Football Match"
"Saturday"
"A Visit to the Airport"
"Market Day"

7. Creative Writing: Write about

- (a) The dangerous Monster Noise.
- (b) A perilous journey through a noisy kingdom.
- (c) A cautionary tale about a child who could not be quiet.
- (d) The king who hated noise.
- (e) Adventures of a noisehound.

A TRUE STORY

One sunny day some people were sitting in their garden, sunbathing and enjoying themselves.

Their neighbours came out and switched on a transistor radio and started to cut the lawn with an electric mower. They also started to repair their car, using an electric drill.

The people in the garden were disturbed and annoyed.

The next day, when the people who made the noise were having a lie-in, the neighbours who had been in the garden turned their radio up and started knocking nails in the wall.

The neighbours looked out of the window and said-

"Stop that noise, we are having a lie-in".

The other people said -

"You never thought about us yesterday, when we were sunbathing, so how do you like it?"

- (a) What do you think happened next?
- (b) What did the two people do?
- (c) Act out this story with your friends.
- (d) Were either of the people right to disturb the other?
- (e) Write down what you would have done.
- (f) Imagine you are the sunbathers and write a letter to your local paper about the way some people make noise in their gardens.
- (g) Make up a code or guide for people in their garden so that they do not disturb others.
- (h) What do you feel about inconsiderate people who make loud noises late at night?
- (i) How could you and your neighbour help to make your street quieter?
- (j) Write a story about the noisiest time of day in your street.

9. (a)

"Beanz Meanz Heinz"

"You can't tell stork from butter"

"Drinka.Pinta.Milka:Day"

These are slogans. Can you think of any to help reduce noise?

(b)

"Actions speak louder than words"

"Empty vessels make most noise"

"He's fond of blowing his own trumpet"

These are proverbs or sayings about sound. Explain what they mean.

Can you think of any more sayings about sound and noise?

MUSIC



1. What sort of music do you like and why?
2. What sort of music do you dislike and why?
3. Which are your favourite songs?
4. Which songs do you dislike?
5. Gather together non-tuned percussion instruments such as:-
tambourine, bells, cymbals, claves, marracas, triangles,
woodblocks, gourds, castanets, snare drums, guiro.
6. Find out how the instruments are played and try to play them. Write down what you had to do to each instrument to make a sound and the sound which was made.
7. Make a chart to show the ways in which different instruments are played.
8. Measure the levels of sound produced when the instruments are played normally.
Read the worksheet on sound meters to learn how to measure the level of sound. Always remember to use the meter at the same distance from each instrument, if you do not, then your results will not be true.
Label each instrument according to its decibel level and make a display table.
9. Gather together tuned percussion instruments such as:-
tambour, timpani, glockenspiel, xylophone, metalophones,
autoharp chime bars, tunable tambourines.
Measure and label their decibel levels etc. when played normally.

10. Take any one of these tuned percussion instruments and measure its noise levels when the instrument produces:-

- a. low notes
- b. middle notes
- c. high notes

11. Compare varying level of sounds which any one of the following instruments can make when played normally:

- a. violin
- b. piano
- c. flute
- d. recorder
- e. clarinet
- f. trumpet

Make a chart of your findings like the one below

Instrument	Level of noise when played normally		
	High Notes	Middle Notes	Low Notes

12. Choose a combination of any three untuned instruments, using a sound meter find the highest and lowest readings it is possible to obtain.

Do the same by selecting any three tuned percussion instruments.

If any of the following instruments are available, try it with them

Woodwind: Clarinet, Oboe, Flute Brass: Trumpet, Trombone, Tuba.

N.B. This experiment may be disturbing to others.

13. If an orchestra was to play a rousing piece of music, which instrument would be used?

Which ones would mainly be used if they were to play a lullaby?

14. Choose an instrument and play a chord (a chord consists of several notes which blend together). Measure the sound level produced.

Play a discord (a discord consists of notes which do not blend but oppose). Measure the sound level again.

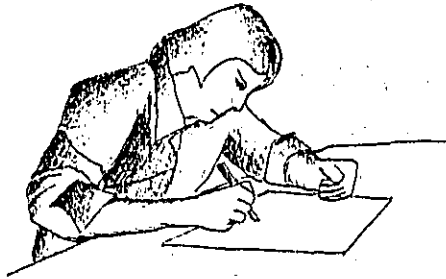
Try this with various notes.

Are there any conclusions to be drawn from your results?

15. Make up a song about Noise, words can be made to be sung with an existing tune or a new tune can be made.

NOTE: The words and music for a song 'Turn It Down' are provided with the pack. You can sing the words and play instruments with the Teacher's help.

ART WORK (INCLUDING HANDICRAFTS)



1. Draw or make an Imaginary 'Noise Tree' from which grow all sorts of noise. Instead of flowers and fruit, noises emerge to float off into the air and attach themselves to particular items. At the end of each branch, pictures or models can be placed showing a variety of noises.
2. Invent, draw and make a 'noise-eating' machine or robot with various parts and projections that devour, digest and regurgitate noise. What does this new noise become?
3. Make a frieze of noisy situations.
4. (a) Look at some posters on the School notice board. Notice the colours and how the words have been arranged.
(b) Design your own poster to stop people making noise.
(c) Think of a slogan for your poster.
(d) Either write your slogan with felt tips or cut letters out of magazines.
(e) Show your teachers your poster and ask if you can put it on the classroom wall.
(f) If your poster was chosen to be put up in your town or village where would you put it?
5. **Noisy Characters**
 - (a) Use your imagination to create two characters - one who makes noise wherever he goes (look at the Noisy Gnome leaflet) and one who fights noise (in the same way as Wombles collect litter.)
(b) Think about these two characters and what they look like

Are they large or small?
Do they have big or little mouths?
Do they have big or little feet?
Do they have big or little ears?
Where do they live?
How do they talk to each other?
 - (c) Draw these two characters and give them names.
 - (d) Draw a poster against noise which uses these characters.
 - (e) Write a short story to go with your pictures.

- (f) Make up an adventure about your characters and write it down. Draw some pictures to illustrate the story.

Some ideas:-

These characters go for a walk, what do they do and who do they meet?

A meeting between the two characters.

A fight between the two characters, who wins?

- (g) Make models (perhaps paper mache) and puppets of the two characters.
(h) Make up a play (like a Punch and Judy Show) using the puppets and models.

8. A Noise Measuring Machine

- (a) You are going to make a model of a machine for measuring noise.
(b) Think what parts such a machine will have and work out what materials you will need, for example:-

boxes, tubes, cartons, etc.

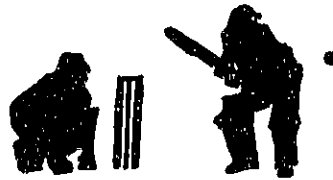
- (c) Stick the parts together and paint it when it is dry.
(d) Think of a name for your noise measuring machine. Paint a picture of someone using your machine.
(e) How can you find out about real machines for measuring noise?
(f) Have you seen anyone measuring noise? What were they measuring?
(g) The Environmental Health Officer at the Town Hall will have machines for measuring noise. Think of some questions to ask him about them, some examples are:-

I How much does it cost?

II How loud will it measure?

- (h) If you contact your Environmental Health Department you might be able to go and see some machinery and hear about it, or a visit could be made to your School.

SPORT



1. Write down the name of your favourite sport and why you enjoy it. Do you like to play or watch best?
2. Write down the noises that are heard when you play or watch your sport. Who makes these noises and why?
3. People who referee a game or start an event have to attract the players attention. Write down as many things that are used to make a noise and when they are used.
4. Why are spectators at some sports quiet and noisy at others? Write down lists of these 'quiet' and 'noisy' sports.
5. How do the crowds of spectators behave:-
 - (a) When they are at an event?
 - (b) When they are going to it, or away after it has finished.

noise

TEACHERS NOTES

TOYS

This worksheet is mainly an exercise in describing sounds which are made when playing with toys.

If there is a toy table then children can play with the toys and experiment with the different sounds produced.

Activities

Describing, making comparisons and making sets.

Materials Required

Paper and pencils - this is an introductory worksheet and no other materials are required, however some of the toys could be provided.

Topics for Discussion

How and why do children 'rate' or 'scale' things as "quiet" or "noisy".

Is the toy 'noisy'? or is it the child playing with it 'noisy'? or are they both 'noisy'?

Ideas for Further Activities

A tape recording can be made of some noises or a sound effects record played and children can describe the sound and guess what made it.

PETS AND ANIMALS

Children form close relationships with their pets and this experience is drawn on and investigated.

Activities

Making Lists: Making Up stories: Slogans: Cartoons.

Materials Required

Paper: Pens: Pencils: Paints

Topics for Discussion

Do children prefer quiet or noisy pets?

Do pets prefer quiet or noisy people and situations?

ANIMALS OF THE COUNTRYSIDE

The identification of animal sounds and their meaning is the basis of this sheet.

Materials Required

Paper
Pencils

Topics for Discussion

'Sounds' are those which are pleasing e.g. 'purring' of a cat, 'barking' of a dog when it sees its owner.

'Noises' are those sounds which are unpleasant or upset you or others, e.g. a dog 'howling' in pain upsets you and a dog 'howling' when shut outside, because it wants attention and company, may upset neighbours.

Sound is associateable with pleasure and enjoyment, noise with annoyance, disturbance and irritation.

Children should also note how various sounds and noises cause reactions in animals and people, depending on the sound made and the situation of the person/animal hearing it, e.g. 'A dog barking when seeing its owner will give pleasure to the owner, but perhaps annoyance to the person next door if they are engaged in a quiet activity - reading or an activity which requires concentration.' Also the warning 'roar' of a wild animal.

THE SEASIDE

As well as man-made sounds, there are some natural sounds around us in the world. The seaside is used to illustrate this concept.

Activities

Listing, Making selections.

Materials required

Paper

Pens

Pencils

Copies of the Questions for Pupils to

fill in Answers.

Topics for Discussion

Are naturally occurring sounds, e.g. wind rustling leaves, water trickling, generally pleasant and not annoying?

Are man-made noises generally unpleasant, annoying and irritating?

Why is music played at fairgrounds and sideshows?

Ideas for Further Activities

Pupils can question other pupils and their family why they chose a particular place, resort or country to go for their holidays and make a chart of the results. Do some people deliberately choose 'quiet type' holidays, e.g. camping, climbing and pony trekking to get away from the noise of modern society?

THE PARK

Leisure and sporting activities can be a source of noise in parks and can be annoying and irritating to people seeking quietness and peace in the park. This worksheet leads children to consider conflicting uses of land, positive "planning" to overcome the problems inherent in "Mixed" use areas. One of the basic concepts of noise control is introduced - separation of "noisy" and "quiet" areas.

Activities

Visit to a park, painting, making models, noise measurement, planning.

Materials Required

Drawing paper
Pens, pencils, paints
Writing paper
Sound Meter

Topics for Discussion

Why are parks provided?

If you do not have a sound meter - are there other ways in which the level of noise could be described (e.g. No. of people, peoples' activities, NOISE associated with play and sport; QUIET associated with walking and sitting, people talking, shouting or silent). Is the sound of people enjoying themselves NOISE?

Ideas for Further Activities

Find out if the Council have made "Rules" or byelaws about people's behaviour in parks e.g. are transistor radios and model plane flying banned. There may be copies of rules displayed in the park or the Parks Manager at the Town Hall may have copies of rules. Why are rules made? How can you let people know about such rules?

WILD ANIMALS

This work sheet is concerned with wild animals and the SOUNDS they make.

Activities

Making lists, collecting, making a collage, labelling, making sets.

Topics for Discussion

Are there any sets or types of animals which are noisier than others i.e. generally do larger animals make more noise than smaller animals? What do the sounds which animals make mean?

Ideas for Further Activities

A map of the World can be taken/drawn and pictures of animals stuck on where they live.

AT HOME

To encourage children to -

1. Investigate "noise" in their homes;
2. discover that the home is a source of "noise" which can affect people in the house.

Activities

Drawing, labelling, making lists, sentence writing, collecting pictures, set making, a sound meter is required for one activity, refer to "Sound Meter Card" for availability and instructions on use and suggestions for measuring.

Materials Required

Drawing paper, pens, pencils, writing paper, women's magazines or "home" magazines, glue, graph paper, sound meter - for further work.

Topics for Discussion

1. The types of quiet and noisy activities in the home.
2. The types of quiet and noisy machines and objects in the home.
3. Are there "quiet" rooms and "noisy" rooms in the home?
4. Quiet times and noisy times in the house.
5. How can "noise" from machines be reduced?

Ideas for Further Activities

Display the results of sound measurements from different pieces of equipment. How can the "noisiness" be shown pictorially? Follow work up by applying the questions to different buildings - schools, offices, hospitals.

Note: Lists of equipment should be divided into two areas:-

- (I) Equipment - hoovers, washers, mixers, etc.
- (II) Sound reproducing equipment - radios, T.V., Stereos etc.

the distinction can be made between them, hoovers etc. - the 'noise' level' cannot be reduced or controlled - only the time and duration of use. Radios etc. can have their 'noise' level' controlled by the user, - as well as the time and duration of use.

GOING TO BED

Pupils are encouraged to use their homes (bedrooms) as a source of information for work.

Activities

Observation: Making Lists: Sentence Construction: Chart Making

Materials Required

Paper
Pens
Pencils

Topics for Discussion

Where do the noises which are heard come from? They can be grouped into - inside the home, from neighbour homes and from outside.

Do the pupils find some noises disturbing them when they would not be disturbed by the same noise during the day?

What 'effects' does noise have on you? Why does it have these effects?

Ideas for Further Activities

Different rooms in the house are used for many activities. Draw up lists of activities which happen in each room. Do any of these uses conflict?

GETTING UP

Childrens activities in their houses at morning time are used as the basis for mainly language exercises dealing with sounds and describing them by use of onomatopoeia and alliteration.

Activities

Sentence construction: Drawing: Labelling:

Materials Required

Paper: Pens: Pencils.

Topics for Discussion

Do 'sounds' wake people up at the desired time? e.g. alarm ringing or mother shouting, and do 'noises' wake people earlier or disturb them? e.g. Milkman, Lorry, Engine etc.

Discussion on the use of onomatopoeia and alliteration.

Some 'noises' are produced deliberately e.g. works siren, alarm clock ringing - can the purpose they serve be replaced by something which does not make a noise, a flashing light for instance? Is it because they are cheaper and more convenient that such methods are used?

GOING TO SCHOOL

Starting from examination of modes of transport to school, this card moves on to consider transport as a major noise source.

Activities - making lists; sentence construction; personal survey; making graphs; map making; transport survey; rule making; using reference books.

Materials Required

Paper; Pens; Pencils; Graph Paper.

Topics for Discussion

Must transport always produce noise? Are there quiet modes of transport?

Should there be stricter controls on noise levels of vehicles?

Should the producers of noisy vehicles be penalized in some way for producing noisy vehicles?

Has the world become noisier mainly because of the use of motor vehicles for public and private transport?

THE PLAYGROUND

Playtime and leisure activities are very important to children, a great deal of their time is spent on amusing themselves. Their play experience is drawn on in this worksheet.

Activities

Observation, Listing, Drawing, Map Making, Designing

Materials Required

Paper,
Pens
Pencils
Paints or Crayons
Pamphlet 'Noise in Everyday Life'
Pamphlet 'Hearing Hazards and Recreation'

Topics for Discussion

The noise that accompanies some games is an integral part of the game - shouts from spectators and participants - is this really 'noise' by definition 'unwanted sound'?

How much should the noise that could arise from a proposed discotheque, be taken into account when planning permission is being considered? What other factors could be taken into consideration and how are the advantages and disadvantages considered and 'weighed up' before making a final decision?

Ideas for Further Activities

Some sporting and recreational activities produce noise levels which can effect the hearing of participants - see booklet 'Hearing Hazards and Recreation'. Pupils can suggest where this might occur and how participants can protect themselves.

THE STREET

Children's observations of streets and roads are used as a basis for comparing, contrasting and set making.

Activities

Visiting a Street, Observations, Recording, Comparisons, Set Making, Designing, Noise Measurement.

Materials Required

Paper
Pens
Pencils
Sound Level Meter

Topics for Discussion

Can noise be described or rated in different ways? - e.g. what or who makes it? - the mimicking of the actual noise, e.g. beep-beep of horn, vroom-vroom of motor cycles - words used to describe the movement or action of people, animals or equipment - barking of dogs - screeching of brakes - rating by annoyance factor, distinction can be made between:-

- (1) Loudness of the noise
- (2) Annoying factor of noise e.g. whistle, whine, etc.
- (3) Continuous and intermittent
- (4) Frequent or infrequent noise
- (5) The time the noise occurs - more annoying at night and quiet days such as Sundays.

Would you like to live in a quiet street?

THE COUNTRYSIDE

To encourage children to develop their own ideas on "noisy" and "quiet" behaviour.

Appreciation of the countryside as a "quiet resource",

Activities

Sentence construction, code making, drawing, labelling, setting out, finding out exercises, making lists, forming opinions.

Materials Required

Writing paper
Drawing paper
Pens, pencils
Glue

Topics for discussion

How can people learn about the Quiet Code?

Are "natural" sounds really noise, e.g., horses neighing, birds singing, leaves rustling?

How can a tractor driver protect his hearing?

Ideas for further activities

Develop the idea of the "quality" of the countryside by making a check list for future visits to "grade" or "scale" noise. Also develop scales for other environmental matters, e.g. litter, animals, provision of trees and hedges.

NOISE AROUND US

Our environment is a valuable resource, not just from the ecology and pollution viewpoint, but also a resource which can be used in teaching. Pupils are encouraged to think about the noise environment and write about their observations and views.

Activities

Observation, Interviewing, Writing, Role-Playing

Materials Required

Paper, Pens and Pencils,

Paper

Pens and Pencils

A map of your village, town or city is helpful

Topics for Discussion

Do people accept noise as inevitable? e.g. from traffic, industry and building sites.

What can people do if they are bothered by noise from factories or building sites? - Refer to Noise Advisory Council booklet 'Bothered by Noise'.

Are there any particular groups of people who will be bothered by noise more than others? - shift workers, people confined to their homes, sick and elderly.

Ideas for Further Activities

The class or group can imagine they are residents in a street where noisy building works have started. Other children can take the roles of Councillors, Council Officials, the Building Site Manager, Newspaper Reporters, etc.

A meeting has been arranged between these parties. The children can act out the meeting with each person or group making their point.

NOISE IN THE TOWN

The town is used as 'Resource Material', children are asked to observe and make judgements about noise in towns.

Activities

Counting: Drawing Graphs: Making Lists: Writing: Map and Model Making.

Materials Required

Paper: Pens: Pencils: Graph Paper; Materials for Map and Model Making.

Topics for Discussion

How can traffic noise be reduced in a Town Centre?

Should towns be planned to make them as quiet as possible? How can this be done?

Discussions based on the childrens observations and findings may also be rewarding.

Ideas for Further Activities

An 'ideal' noise free town can be designed or drawn by pupils.

Measurements can be made of noise levels in different areas of the town, using a sound level meter.

IN YOUR SPARE TIME

This worksheet enables children to investigate noise from a different viewpoint - that of noise associated with leisure activities. The sheet then leads on to a wider examination of noise in the environment.

Activities

Rule making, listing, set making, reference to other publications; Making charts, visits to Library and other buildings; language.

Materials

Writing paper

Pens and pencils

Access to a library

Sound meter

Graph paper

Leaflets -

Neighbourhood Noise

Noise from Lorries

Drive a Quieter Car

Noise Control and Industrial Noise

Office Noise

Noise Policies in the U.K. -

Legislation and Control

Topics for Discussion

Are there specific times and places where children can play and not annoy anyone else?

If cars are made quieter by manufacturers will people still drive them noisily?

How can the laws on noise be effectively enforced? Can people be "educated" into making less noise, rather than enforcing the noise laws?

Should new cars and machines have a label with the noise level attached?

Ideas for further Activities

Look at "Which" Motoring magazines or other Motoring magazines and make lists of cars and testers' opinions of the cars' "noisiness" (earlier Motoring "Which" magazines have actual noise levels.)

TELEVISION

Sound is essential to modern society, particularly with regard to communication (telephones, radio, etc.); also sound is an inseparable part of entertainment.

This worksheet is based on these two concepts and uses television programmes as an 'information source'. Children are asked to examine critically television and its role.

Activities

Watching television programmes and 'commercials', interviewing, role playing, play writing and critical appraisal.

Materials Required

Television

Tape Recorder

Paper/Pencils

'Props' for Drama

Video Recording Facilities if available.

Topics for Discussion

Are 'commercials' louder than programmes? If so, why?

Why do you think that 'theme' music is played at the beginning and end of a programme?

Why is music used during a programme? Are there particular 'types' of music which are played at certain times to accompany or complement the programme - e.g. dramatic car chases or romantic scenes.

Ideas for Further Activities

Pupils can mime certain 'noisy' activities and the remainder of the group have to guess the activity.

Watch or listen to the various schools programmes on noise (see appendix T.V. and Radio Programmes for Schools for current Broadcast Calendar).

TURN IT DOWN

Since basic principles of noise reduction are introduced - enclosure, insulation, isolation and absorption. Simple scientific experiments are used to examine these principles.

Activities

Collecting pictures, book making and labelling, simple experiments - methods of observation and results.

Materials Required

Magazines for cutting out.

Paper, Glue

Pens

For Experiments

A noise source (radio, alarm clock etc.)

Boxes, cloths, foam rubber

Topics for Discussion

Why are machines and equipment sold which are noisy? - can they be quietened? e.g. vacuum cleaners. Should radios, record players have a "stop" on the volume knob so that they cannot be played too loud? Should people use earphones when listening to radios and stereos? Can people do something themselves to reduce noise from machines and equipment?

Ideas for Further Activities

The experiments can be made more "scientific" by measuring noise levels with sound meters, if these are available.

QUIET

Periods of quiet or silence are essential for working or resting. Quietness is a resource that we are in danger of losing. The value of quietness is arrived at by investigation and by self questioning.

Activities

Making lists, drawings

Materials required

Paper
Pencils
Watch

Topics for Discussion

1. Comparisons of the different 'values' placed on quietness.

2. People talk about 'noise' in a negative way e.g.

The standards of sound level in new houses are known as 'Noise Levels' - should we not think positively of 'Quiet Levels'?

Ideas for Further Activities

Children can carry out a survey of other children or their families to find out what they think about Quietness.

NOISE

An exercise which allows children to collect 'raw' data on people's attitudes and reactions to noise. The information which is collected is then interpreted and presented by the pupil.

Activities

Interviewing, designing a 'survey', collecting and collating information, presentation of data.

Materials Required

Survey sheets (can be copied from the Worksheet), pens and pencils and graph paper.

Topics for Discussion

The findings of the survey provide much material suitable for discussion e.g. people's attitudes to noise. Do people accept noise as inevitable? What should you do with the results of the survey?

Ideas for further Activities

As an alternative to using the set survey sheet children can make-up their own questions about noise.

A social survey of this type was carried out in Darlington as part of the Quiet Town Experiment. Summaries of the report can be obtained from the Department of Environmental Health, Town Hall, Darlington, Co. Durham for discussion or comparison.

USEFUL NOISES

When objects are used, as well as performing the function for which they are intended, they also produce unwanted effects, e.g. by products and side-effects of a motor car are - noise, air pollution, accidents. This worksheet considers how one normally unwanted side-effect, noise, can be useful to us.

Activities

Drawing, Making lists and Sets

Materials required

Paper

Pens

Pencils

Paints

Perhaps some items which can be used to demonstrate
'Useful Noise' - alarm clocks; school bells; whistles

Topics for Discussion

Are there certain types of noise which we associate with certain activities? e.g. sirens on - ambulances, police cars, fire engines - why use sirens - why not roars or hums?

Which of our senses is most important to us? How important are our ears?

How can you take care of your ears to make sure they function perfectly?

Ideas for Further Activities

Think of some important uses of sound - sonar; geological testing; mineral exploration;
Illustrate the concepts used:- reflection; propagation of sound waves through different media
- water; air; rock.

ENJOYMENT AND ANNOYANCE

Many sounds and noises convey meanings and emotions and are important for communicating our feelings.

Activities

Making Lists, Story Writing, Drawing and Painting

Materials required

Paper
Pens
Pencils
Paints

Topics for Discussion

Can you generalise about sounds which are Pleasant? e.g. 'soft sounds' 'regular', 'rhythmic sounds'.

Can you generalise about sounds which are Unpleasant? e.g. loud, impulsive, sudden, high frequency and irritating.

Can you use these generalisations of enjoyment and annoyance to make up 'descriptions' or dictionary meanings of 'sound' and 'noise'?

Ideas for Further Activities

Peoples facial and body expressions often convey their feelings. Draw some faces or figures showing feelings and link them with the feelings they are expressing and sounds which they might make.

THE DANGER OF NOISE

Excessive noise can damage our hearing, this is investigated by examining the annoyance or discomfort which occurs at noise levels which do not damage our ears, and then progressing to examine higher noise levels and their effects.

Activities

Making lists, interviewing, making sets, measuring noise, drawing, experiments with noise.

Materials required

Paper
Pencils
Pamphlet 'NOISE'
SOUND METER
Tape recorder
Sound level meter card

Topics for Discussion

Where would you expect to find noise levels which could affect your hearing?

When you leave school would you like a job in a noisy place?

Ideas for Further Activities

Look at the humorous noise scale in the pocket of the file. Children can make up their own noise thermometer using noises which are common and to which people can easily relate.

INTRODUCING SOUNDS

Our ears are a very important link with the world, this card investigates sounds and their recognition.

Activities

Making and recognizing sounds, Making a collage.

Materials Required

Sound effects record
Tape Recorder
Music Table
Items which can be used to make Sounds
(bottles, tins etc.)
Newspapers, Magazines
Glue, Scissors, Paper

Topics for Discussion

How many different ways can sound be produced? Do these ways have one thing in common? (All vibrate to produce sound)

How can you change the level of sound which is produced?

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NOISE IN EVERY DAY LIFE

RUPERT TAYLOR MIOA

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1. INTRODUCTION

Environmental noise control seems to be following a ten year cycle. The first peak began in 1959-60 with the formation of the Noise Abatement Society and the passage of the Noise Abatement Act, a private member's Bill, followed by the publication of the Wilson Report on Noise. Then in 1969 Anthony Crosland, as Minister of Housing and Local Government, formed the Noise Advisory Council (the NAC) with a brief

"to keep under review the progress made generally in preventing and abating the generation of noise, to make such recommendations to Ministers with responsibility in this field and to advise on such matters as they may refer to council".

The NAC was and is a body of experts and laymen from outside Whitehall which is chaired by the Secretary of State for the Environment currently deputed for by Denis Howell, Minister for Sport, Rain and Noise. Behind it is a noise policy division within the DoE.

The second peak began in the early seventies, which were stimulating for those involved in the regulation of noise. The Control of Pollution Act, with its Noise Abatement Zone proposals, was taking shape as the then Protection of the Environment Bill; the Health and Safety at Work Bill was emerging at the Department of Employment. These measures followed the Land Compensation Act which laid the framework for what became internationally envied Noise Insulation Regulations for houses suffering increased noise from new roads, and a DoE Circular (No. 10/73) "Planning and Noise", which set new standards for planning authorities. Then it all went rather quiet - except of course in the streets, round airports and in factories.

2. ACHIEVEMENT TO DATE

What have the two peaks of activity achieved so far? Summary proceedings for statutory noise nuisance are commonplace, though not always for the kinds of noise nuisance that trouble the largest number of people. Employees are beginning to wear ear defenders at noisy work and their employers are groping for ways to reduce the noise. Aircraft have got quieter, but their numbers have increased and sufferers' protests have got louder. Ten thousand people have been sealed into their homes alongside new roads, and others round airports, with double glazing, and planners have become more intelligent when it comes to putting noise-sensitive development next to noise-emitting installations and vice-versa.

Though the citizen of the late seventies may not think so, there are certainly fewer people suffering from high levels of industrial and traffic noise than there would have been without noise legislation but the state of affairs is far from satisfactory.

3. NEIGHBOUR NOISES

Possibly the worst noise problem today results from a machine that has increased in numbers and power output to an even greater extent than the juggernaut and is the more disturbing because rather than pass by in the road outside, it tends to run continuously the other side of a party wall or floor, far into the night. I am referring to the hi-fi outfit. It has always been possible to turn a record player up to fairly loud levels, but what has changed dramatically has been the increase in the level of low frequency sound in the music which has become so fashionable.

In a survey recently sponsored by the Building Research Establishment a total of 3122 people living in houses and flats built after 1947 were interviewed about noises they heard and which bothered them. Noise from neighbours substantially outstripped road traffic as a source of bother, although over twice as many people reported hearing road traffic. There is no easy solution to this problem. The sound insulation of structures falls markedly as the frequency of the source decreases, and there effectively is no way of soundproofing a domestic room, at least to an extent that would permit unrestrained hi-fi in one room and rest asleep in the next. Litigation for the sufferer is possible, either by applying to a magistrates' court for an order under section 59 of the Control of Pollution Act or, if the plaintiff is poor enough to get legal aid or rich enough not to need it, by seeking an injunction. But this is no way to carry on one's neighbour relations policy, and for some reason only the most tactful of people are capable of getting a noise maker to turn his noise down without the request being taken as a belligerent act, requiring an equivalent response.

Though noise from neighbours tops the list in opinion surveys, there is, on the face of it, little scope for government action to alleviate the problem. An improvement in the Building Regulations may be necessary, but would not affect existing dwellings. Furthermore, no practical construction specification would be hi-fi proof. Laws controlling the use of sound equipment would be politically rather unacceptable, and still would need to be enforced. The answer can only be either a change in musical fashion, or in the education of the public to think of its neighbour. With the latter in mind, the Noise Advisory Council does have an Education and Publicity working group (one of whose magna opus was the Darlington Quiet Town Experiment). Perhaps zero-rating the VAT on headphones would do more than anything.

4. ROAD TRAFFIC NOISES

Second on the list is road traffic noise. The overwhelming majority of people exposed to high levels of road traffic noise live in towns or near existing roads so that the only scope for

reducing their noise burden lies with sound insulation or vehicle noise reduction. It is first necessary to decide whether a reduction in their noise exposure is desirable, and if it is desirable, whether the concomitant cost is acceptable. The estimated cost of insulating all houses exposed to more than the qualifying noise level for houses near new roads, 68 dB(A) L_{10} (18 hour), is £1000 m. and that the application of the modifications developed in the Quiet Heavy Vehicle project to all new heavy vehicles would cost about £12 m. per year. By comparison, the National Health Service costs £6000 m. per year to run.

Sound insulation is generally considered to be an unsatisfactory solution to a noise problem because of the psychological effect of sealing people into their homes, and the fact that they are still unable to enjoy the environment immediately outside their homes. From the point of view of the householder, the only satisfactory solution to the traffic noise problem is to divert the traffic, or to quieten the vehicles.

The Noise Advisory Council has considered in depth such matters as the diversion of freight from road to rail, but although freight costs on long haul rail routes are lower than for roads, the problems of distribution at termini are considerable. Nevertheless, it is known that public response to rail noise is less than to road noise, and an overall benefit in noise terms would be insurmountable. Diversion of noise producing traffic is already practised in many cities where heavy vehicles are excluded from certain areas, and preferred lorry routes have been planned.

There is no doubt that one of the most beneficial improvements would be the widespread implementation of the developments achieved in the government sponsored Quiet Heavy Vehicle Project. The purpose of the project is to demonstrate to the industry that heavy vehicles can be built to be no noisier than cars, at a certain cost as yet undetermined but thought to be in the region of 18 per cent. Because the benefits would only be felt if at least the majority of vehicles were quietened, it is only by regulation that such a change could be brought about. Motor vehicle noise regulation in the U.K. is an EEC matter, and the current state of affairs is that member states are to produce proposals for national implementation of an 90 dB(A) noise limit by the mid 1980s. The U.K. is likely to respond when more is known about the cost of the required design changes, but the intentions of the other states are less certain.

5. AIRCRAFT NOISES

Aircraft noise, though affecting fewer people than traffic noise, affects those people to an extent greater than any other environmental source. There are, acoustically speaking, two populations: those who live near airports and those who do not. The latter have no conception of the reality of being exposed to noise peaks of over 90 dB(A) every few minutes from an overhead source so that there is no escape. Fortunately not all the population is equally noise sensitive. McKennell in 1963 found that of 42,000 people living in an area round Heathrow where peak sound levels from aircraft exceeded 98 dB(A) (98 dB(A) = 103 PNdB) only 28,000 or 68 per cent were "annoyed". It is known that response to aircraft noise is due to a composition of at least three factors: the noise itself, fear of crashes and a feeling that officialdom is not dealing with the problem. The unannoyed 14,000 may have included many people employed in some aspect of aviation and the fear and misfeasance are largely absent in their response.

The fact that noise is only one of three causes of annoyance caused by aircraft can easily be overlooked, with important consequences. The Boeing 747 is a relatively less noisy air-

craft and was one of the first models to meet Part 36 of the U.S. Federal Aviation Regulations, yet it is frequently mentioned by airport residents when they are delivering themselves of their feelings about noise. Concorde is a relatively noisy aircraft, but except among its fundamental antagonists, its physical beauty and lack of the appearance of ponderously lumbering over the rooftops tends to reduce the intensity of annoyance. The newest types of aircraft are substantially quieter than their predecessors, and though this is obviously to be welcomed, it must be remembered that noise is not all: as with juggernauts, so with jumbos do I suspect there would be substantial annoyance even if they were silent. What is to be done to aircraft besides making them quieter? The only answer is to get them up and away without flying low over people's houses. The A300B or European Airbus, because it has only two engines, has for safety reasons to climb a much steeper slope after take-off and part of its exceptionally low certified noise level is due to its height at the measurement point. Though I have no figures to prove it, I should be surprised if public response to the A300B were not even lower than would be predicted on its noise level alone.

6. INDUSTRIAL AND CONSTRUCTION NOISES

The noise source which has received the most extensive legislative treatment is industry. While an aircraft can roar overhead and a juggernaut thunder past the gate, both with impunity, a factory which made half the noise would be in trouble either through the mechanisms of the Control of Pollution Act or in the civil courts. Road traffic noise is in fact industry's friend, since it largely furnishes the background level against which industrial noise is assessed. Owners of fixed noise sources do have a partial let-out in statutory proceedings because of a built-in defence if they can prove that they have used the best practicable means to prevent or counteract the noise, although this does not protect them in common law. Nuisance actions have been brought against moving sources in the form of road vehicles but only in rather specialised circumstances.

The statutory controls on industrial noise in the community (quite apart from the Health and Safety provisions), now extend way beyond the control of nuisance. Local authorities can create 'Noise Abatement Zones', of which to date 22 either exist or are in the process of creation. In these zones, local authorities have powers to prevent any increase above the noise levels extant at the inception of the Zone, and when the circumstances indicate it to require a reduction in noise levels (subject to the best practicable means proviso) without having to prove nuisance.

Controls on construction noise are also to be found in the Control of Pollution Act, although they do not appear to have been widely used, effective though they are in principle.

7. CONCLUSION

Neighbour noise apart, the question of what to do about the major noise problems is one of values. All noise problems are technically soluble - at a price. The consumer and taxpayer ultimately pays for everything, and the big, unanswered question is 'how much will he pay for how much quiet?'. If this question could be answered accurately, objectives would become much clearer. Sometimes the payment is not only in cash. Would the community tolerate the severe curtailment of air travel to relieve the sufferers from noise round airports? One suspects that there would still be resistance to the growth of heavy goods vehicles even if they were quiet, and indeed social survey data show that, decibel for decibel, noise from heavy vehicles causes substantially more dissatisfaction than noise from passenger cars.

1.

Measuring Noise
Sound Level Meter or Indicator

Sound is caused by things moving and causing changes in the pressure of the air around them. These changes are carried through the air as a sound wave (like the ripples made when a stone is dropped in a pond). Our ears receive the sound wave and our brain recognises the sound and what made it and how loud it was. We can measure noise with a sound meter (this is a machine like a 'Bionic Ear') it has a microphone which 'hears' the sound and a scale which tells us how loud it is. We measure sound or noise in decibels (dBA). If you look at the chart in the pack you will see noise levels of everyday things around us.

If you can get a sound meter first read the instructions which go with it and then try and measure some noises yourself.

Always use the SLOW button on the meter - this slows down the meter's reaction to noise and makes it easier to read.

You will probably find that the noise level varies and you can measure different things:

- The highest level (loudest)
- The lowest level (quietest)
- The average level - which will be in between the highest and lowest.
- You can compare noise levels if you measure things in the same way.
- Hold the meter in the same way and at the same distance and height.

You can use the meter to measure the noise levels of things or you can use it to measure the BACKGROUND noise level - this is the steady noise level at a point (ignoring things like passing cars).

However, if you measure things like cars you will find that the level changes a lot as the car approaches you and then leaves you, the same if you try to measure noise levels of several vehicles (traffic noise). There is a special way to measure this noise, the L10 (that is the noise level which is exceeded for 10% of the time - the very top part of the noise which is measured).

How to make a noise background measurement

.. At least three people are needed. The group could perhaps best split themselves into working groups of three, and take turns with the meter at different locations during the week.

Person No.1. holds the meter. No.2. has the job of timing. No.3. is the recorder.

The meter should be on the SLOW setting.

The idea is to get a series of noise meter readings at 10 second intervals. It doesn't matter if the intervals are now exactly 10 second ones. It is more important that they are equal intervals.

If you have a stopwatch with a second hand, so much the better. But if not, the job can be done very simply.

No.2. in the team counts 10 second time intervals to himself. This is easy to do 'one hundred and one, one hundred and two, one hundred and three.....one hundred and eight, one hundred and nine, one hundred and TEN, one hundred and one, one hundred and two, one hundred and three....one hundred and nine, one hundred and TEN, one hundred and one ' and so on.

Nine is spoken out by No.2. to give No.1. (who is holding the meter) some warning. At TEN no.2. (as quietly as possible) taps No.1. on the shoulder. (He does not, of course, say TEN - that would interfere with the reading).

When he feels the tap, No.1. notes the meter reading, and speaks it out to No.3. who is standing by with notebook - No.3. takes it down.

At least 20 10 second readings should be taken. But 30 or 40 would be better, if the team has the patience.

Although noisy annoyance is a complicated matter, it is recognised that a measure of it is the noise level which is exceeded for a tenth of the time. If this is high, people can be expected to become annoyed.

A sound level meter often has a FAST and SLOW setting. The FAST setting will allow you to measure the highest peak of an intermittent noise, like a passing jet, or traffic along a country road, or a passing lorry sounding out above a traffic noise background. The SLOW setting will enable you to take the measure of a steadyish noise - the noise of a road a distance away, for example.

First of all, practice using your meter. Try it on heavy lorries from a kerbside; inside a bus; a motorbike from the kerb; the dawn chorus (if you can get up early enough); a school bell, squeaky toys.....practice using FAST and SLOW settings, if your meter has them.

Is the sound which gives the highest reading the one you'd call the loudest? It would be interesting to find if one of your group was hearing things differently.

Try out the meter on a steady source of noise - a TV set just off station makes a hiss. Find out the effect of moving the meter round the room.

A lot of noise can enter a room through the windows. What's the effect of closing the curtains?

As well as trying to find high readings, you can try to find low ones. How far do you have to move away from a noise source (a pneumatic drill) before you can talk to your pals? What's the reading on the meter?

.....in other words, there are plenty of ways of getting used to using the meter. It is very simple to get the hang of it.

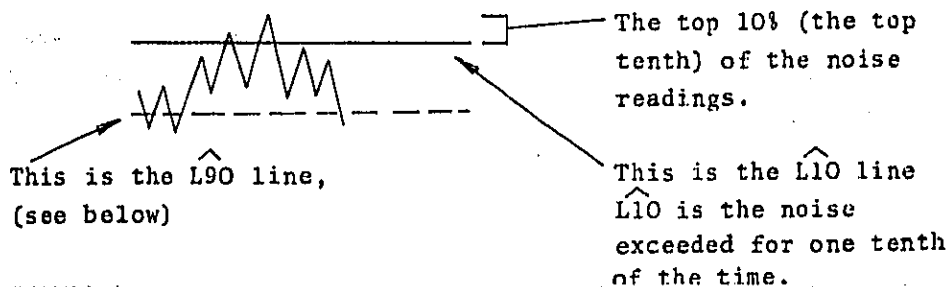
If that is a bit difficult to understand, it might be clearer with a graph:

This graph has been drawn from continuous noise measurements.



The noise trace above is not very useful. But if you simply take off the top ten per cent (the top tenth) of the measurements, and draw a line at the next highest measurement, that line approximates to the noise level which is exceeded for a tenth of the time.

(see top of page



If you compare L10 at one place with $\hat{L}10$ at another place, you'll be able to see (quite accurately) which is the 'noisiest' place.

To measure L10 from your sound level meter readings.

If you've taken 20 10 second readings with your meter, cross off the two highest. (That is, cross off the top tenth, the top 10% of your readings).

The next highest readings, will roughly correspond to $\hat{L}10$ - the noise level exceeded for a tenth of the time.

If you've taken 40 readings, you'll have to cross off the top four (and the next highest will be $\hat{L}10$) the top three for 30 readings.....and so on.

* * * * *

Here are, for interest, some standards recommended by the Government's Building Research Station. They are L10 for indoor noise (noise coming through the windows and walls).

	day	night
Suburban areas away from main roads	45	35
Busy town areas	50	35
School classrooms	45	

After practising getting $\hat{L}10$ readings outside, try inside your classroom, with windows open and windows closed.

* * * * *

Having found \hat{L}_{10} the 'top' of the noise, what about the noise background?

You go about this in the same sort of way.

Taking the same 20 readings (or 40 or 30 - however many you took) cross off the bottom 10% - the lowest two (or four or three...etc). The next lowest reading is something corresponding to ' \hat{L}_{90} '. This is the noise that is exceeded for 90% of the time, that is most of the time.

L_{90} is called The Noise Background.

The simple subtraction ($\hat{L}_{10} - \hat{L}_{90}$) gives an idea of how widely the noise background varies, that is The Noise Climate.

* * * * *

So, with just 20 measurements with your meter (although, as mentioned before, 40 would be better), it is possible to get an idea of:

- \hat{L}_{10} - the noise which might be expected to annoy people.
- \hat{L}_{90} - the noise background people are living with.
- $\hat{L}_{10}-90$ - which is the range of noise people live with, the noise climate at the place you took your measurement.

If you make many measurements of \hat{L}_{10} and \hat{L}_{90} at many different spots in your neighbourhood, you can plot the readings on a map and make a simple NOISE MAP of your neighbourhood.

Turn it Down

Turn it down,
Turn it down,
Don't let Noise get you down,
Get to know the score,
And use the law,
Let's have a Quiet Town.

If you live near a noisy factory,
While jets zoom overhead,
Or the music blares from the folks upstairs,
While you're lying in your bed.

If you can't think for the traffic,
As it roars by your front door,
Or your neighbour's dog is barking,
And you can't take any more.

Turn it down,
Turn it down,
Don't let Noise get you down,
Get to know the score,
And use the law,
Let's have a Quiet Town.

Now the laws of the land are forceful,
And their arms stretch far and wide,
The Police, the Council and the Magistrate,
Are working on your side.

So find out who to speak to,
And get to know your rights,
Let peaceful urban living be,
Where to set your sights.

Turn it down,
Turn it down,
Don't let Noise get you down,
Get to know the score,
And use the law,
Let's have a Quiet Town.

Turn it down,
Turn it down,
Don't let Noise get you down,
Get to know the score,
And use the law,
Let's have a Quiet Town

Shhhhhh, BEEEEEE, Hasn't it gone quiet.

Turn it down.

1.

Allegro. Chorus

Guitar Chords

Intro C D7 G G Turn it

This system contains the beginning of the piece. It features a treble clef with a key signature of one sharp (F#) and a 2/2 time signature. The tempo is marked 'Allegro.' and the section is labeled 'Chorus'. Above the staff, 'Guitar Chords' are listed: C, D7, G, G, and 'Turn it'. Below the staff, an 'Intro' section is shown with a treble clef and a 2/2 time signature, containing a few notes and rests.

G down, turn it C down, Don't D let noise get you G down; Get to

This system contains the first line of lyrics. The notes are: G down, turn it; C down, Don't; D let noise get you; G down; Get to. The chords C, D7, and G are indicated below the notes.

VERSE Verse 1.

know the score and use the law, let's have a qui- et town If you If you

C D G C D G. (P P)

This system marks the beginning of the 'VERSE Verse 1.'. The lyrics are: 'know the score and use the law, let's have a qui- et town If you If you'. The chords C, D, G, C, D, G are indicated below the notes. There is a double bar line followed by a repeat sign and the notes '(P P)'.

live near a nois- y factory while jets zoom ov - er head or the

can't think for the traf- fic As it roars by your front door or your

G C D D P P P * repeat

This system continues the lyrics: 'live near a nois- y factory while jets zoom ov - er head or the can't think for the traf- fic As it roars by your front door or your'. The chords G, C, D, D, P, P, P are indicated below the notes. A repeat sign is shown at the end with the text '* repeat'.

me - ic blows from the folks up-stairs who's ain't ly - ing in your bed.
 neigh - bor's dog is bark - ing and you can't take any more

Repeat last 4 bars of piano after 2nd chorus from #

Repeat chorus twice on final appearance (1st and 2nd times)

VOCAL DESCANT TO CHORUS.

Turn it down, turn it down, don't let noise get you down. Get to know the score and use the law, let's have a quiet town.

INDIVIDUAL VERSES. (RHYTHM VARIES SLIGHTLY)

If you live near a noisy factory which jets him over head or the music blows from folks upstairs who's ly - ing in your bed.

If you can't think for the traf - fic as it roars by your front door Or your neighbour's dog barking and you can't take a - ny more.

Now the laws of the land are force - ful and their arms stretch far and wide They - like the Council and the Magistrate are working on your side.

So - find out who to speak to - and get to know, our rights let peaceful urban living be, where to set your sights.