"MUSIC WHILE YOU WORK"

FIRST REPORT

for

Period

5th May to 30th November, 1941

INTRODUCTION

1. The issue of this report marks a definite stage in the research work on the subject of Music While You Work, but it is not suggested that this research is complete. For a subject that has proved to be so complex and of such vital importance to Industry it will be necessary for a constant study to be made of the varied problems that are certain to arise.

Research on the effects of music in Industry has been very limited. The report which is most widely quoted is that which is included in the Publication by the Medical Research Council entitled "Report No. 77 - Fatigue and Boredom in Repetitive Work". The limitations of that report may be realised when it is pointed out that, though the duration of the experiment was twenty-four weeks, one factory alone was involved and the number of workers included in the experiment was only sixty-eight. Also, all the operatives were employed on a fairly simple form of repetitive work.

The formation of a Music While You Work department has made it possible for a most careful study to be made of the application and effects of music in Industry. In particular, it has been possible to enquire into the effect of music on production, the most suitable medium for broadcasting, the most satisfactory music, and the importance or otherwise of rhythm.

METHOD OF RESEARCH

Listener Research Investigation

2. An experimental week, 6th to 12th July, was organised in conjunction with Listener Research Department. The details and results of this experiment will be found in Report L. R. 371.
3. Early in the research a conference was arranged with the Press. The results have been most gratifying and the co-operation of the Press has been extremely helpful in spreading the doctrine of Music While You Work. Articles on the subject have appeared in such journals as The Radio Times, The Listener, The Factory Manager, Business, Commercial Motor, Electrical Times, Industrial Welfare Journal, Mechanical Work, News Review, and the World Review.

4. Reports are made on a Card Index of all Music While You Work broadcasts. These reports are checked constantly with reports received from factory managements and a careful note is made of faults and criticisms.

5. To make the research as all-embracing as possible a study has been made of all available literature on the subject and opinions and impressions have been gathered from many and various sources. Interviews have been held with the Ministries of Labour and Supply, with the various Industrial Societies and with Directors of Organisations, such as the Gramophone and Equipment firms, who are commercially interested in the subject.

It has been found that the Ministries are keenly interested in the effects of music in Industry and various departments have asked for detailed advice on the subject. The impression has been given that our report may have an important influence on the development of music in Government factories. In addition to the Government Labour Departments certain societies, such as the National Institute of Labour Management and the Industrial Welfare Society, attach considerable importance to our studies and are very interested in our Research findings.

6. Factories have been visited in various parts of the country, covering processes ranging from the manufacture of sausages to the assembling of tanks, and a study has been made of the effects of music on operatives engaged on both repetitive and highly skilled work. Detailed reports have been made on all these visits for reference purposes.

FINDINGS

7. Industrial Managements, to an ever increasing extent, are becoming aware of the importance of music in Industry. Managements who are using music wisely and intelligently are convinced of its worth as an aid to production. In most cases managements are unable to supply percentage figures, but, nevertheless, they have not the slightest doubt that, directly or indirectly, music increases output.

Here are some of the views of managements that have been received in letters and reports:

"When, owing to a breakdown, no music was used production dropped 13%. When music was re-introduced not only was normal production regained but output increased by 5%.

“For an hour or hour and a half after a programme of music production is increased by 12½ to 15%.”

“You will be interested to know that production figures, for the period covered by the Music While You Work programmes, are constantly higher than those for other periods of the working day.”
"The introduction of music has been a marvellous thing for us and we have been more than repaid for the cost of installation."

"The importance of Music While You Work in war production is probably incalculable."

"The introduction of music has undoubtedly helped production if only be eliminating a considerable amount of the talking that takes place between the girls."

"There is an excellent reaction to music throughout the works that is bound to increase production. It is one of the finest things ever introduced into Industry for the benefit of the workers."

"In the four years that we have been playing music in our factory we have found that the effect on our work people has been to make them much more mentally alert. We are convinced that those who are engaged on repetition work do not make as many mistakes when compared with the pre-music stage; also, that our female workers leave at the end of the day much fresher and brighter."

"The application of music is an excellent method of boosting the tired worker."

"Music is a mental stimulant. It has a humanising effect which helps to counteract the evil effects of the mechanisation of the workers. This, indirectly, is a decided benefit to production."

"Radio takes away most of the boredom caused by repetitive work."

"We have aimed at creating a background to increase and improve happiness and health as, thereby, we consider we shall obtain the best production."

"Music is of great value as a means of relieving nervous strain amongst workers after blitzing."

"Suitable music has a definite pleasant mental effect and a tendency to dispel gloom and boredom. When gloom and boredom have once been dispelled an operator is much more alert and more likely to operate a machine, at its maximum possible capacity, for long periods."

"In the absence of music there is a great tendency to discuss the doings of the night before and to talk across the machines. Immediately music is heard conversation tends to fade away."

"Before the introduction of music female workers used to wander off to the cloakrooms towards the end of the day and were absent for 15 or 20 minutes. Since the introduction of music this practice has ceased."
Views of Managements (Continued)

"There has been a marked increase in attendance on weekends since the introduction of music."

"Would it be possible for you to lengthen this programme and so help war workers to hasten production of machines and tools?"

From the above extracts it will be seen that music does aid production by:

1. Boosting the tired worker.
2. Acting as a mental tonic.
3. Relieving boredom, especially that caused by repetitive work.
4. Increasing happiness and improving Health.
5. Minimizing conversation.
6. Relieving nervous strain.
7. Cutting down absenteeism.

Misapplication of Music

8. In many instances managements pay too much attention to the requests and criticisms received from their staff. It is not unusual to find managements acceding to requests from the workers for longer periods of music, special vocal items and the playing of records of classical music. These managements are overlooking the fact that output is the primary consideration and that workers' requests may often run contrary to this main objective. Cases have been met where the workers received so much music that they were completely confused as to what exactly constitutes our Music While You Work programmes. Again, it is not unusual to find that gramophone records are used which have been chosen by a junior member of the staff and, from an output point of view, that these records often are most unsuitable. It is important that managements, while giving every consideration to the welfare of their workers, should ensure that music is being applied in the most correct and beneficial manner for production.

Female Workers

9. To-day, more than ever before, the female worker has to be considered. Thousands of women are being drafted into industry for tasks that are largely repetitive and monotonous. The majority of this new array of workers is undisciplined to working conditions as they exist in factories. Great importance is attached by managements to the use of music as a means of helping these recruits to settle down to their new and often arduous occupations.

Monotonous Labour

10. It has been found that the workers who benefit most from the application of music are those employed on monotonous and repetitive work. These workers can reach an acute state of boredom with a consequent relaxing of their efforts. Periods of music help to break the monotony and to relieve the boredom.

Skilled Labour

11. Skilled workers, also, derive considerable benefit from suitable programmes. The skilled worker, however, is easily irritated by any musical material that is unsuitable. For this class of worker it is very
important that the musical volume and tone level should be correct. While broadcasting bands, organs, etc., often contain tone level faults it is quite usual to find managements seriously in error by continuing to use speakers which are badly placed and wrongly adjusted.

Executive Staff

12. Generally speaking, for executive and office staff music is unsatisfactory. The normal routine of an office cannot be conducted successfully against a background of music.

Factory Installations

13. Many factories have the most up-to-date installations for the broadcasting of music. Other factories are by no means so well equipped. In a good factory one will find that there is a constant check kept on the effectiveness of the equipment and experiments are made in the placing of speakers to ensure that the music can be heard satisfactorily in both noisy and quiet departments. In a bad factory, musically speaking, and unfortunately there are many of these, one finds that speakers are badly placed, that there is no attempt to adjust the volume of individual speakers to suit the requirements of the shops in which they are placed, and that distortion is prevalent. It is quite usual to find speakers too loud for quiet shops and too quiet for noisy shops. A Wireless engineer would have no difficulty in overcoming these faults.

Many factories are equipped with 6 Watt speakers placed at infrequent intervals. Due, no doubt, to the degree of amplification that is necessary for one of these speakers to cover a large area the tone quality is usually unsatisfactory. Under these conditions the 6 Watt speaker gives a 'booming' effect and has a tendency to distort. The most satisfactory results appear to be obtained from smaller speakers of the 3 watt calibre placed at frequent intervals and in the most suitable positions.

14. Factory workers are very definite in their likes and dislikes and unsuitable programmes have a decidedly bad effect and cause intense criticism.

In general male and female workers have similar tastes and the following order of popularity is applicable to both sexes:

(1) (a) Dance Bands
     (b) Novelty bands - especially accordion bands.

(2) Theatre Orchestras

(3) (a) Military and Brass Bands
     (b) Light Orchestras

(4) Gramophone Records

(5) Organs

Dance Bands — Dance Bands supply the most popular and satisfactory music for the purpose of Music While You Work and can most easily create an atmosphere of cheerfulness and gaiety. The main criticism received of dance band programmes is that there is a too constant repetition of the same current dance tunes.

Novelty Bands — Most workers ask for and welcome musical variety, and this is one reason why novelty bands of the accordion type are so very popular.
Theatre Orchestras  Theatre Orchestras play dance music interspersed with light orchestral items. This variety in their programmes, added to their bright music hall style, makes them popular with both managements and workers.

Military and Brass Bands  The average worker does not distinguish between military and brass bands; therefore, for the purpose of this report, they are grouped together. These bands are popular with older workers, especially men. Many factories have their own bands and so have a personal interest in brass and military band music. The main criticisms of these bands are received usually from shops where young girls are employed. It has also been found that they are often not so satisfactory in noisy machine shops; this criticism applies especially to bands whose instrumentation is thick and whose style of playing is not 'tight' and crisp.

Light Orchestras  The inclusion of this type of orchestra is necessary to help break the monotony of too much dance music. They need most careful choosing as they are often criticised for too much variation in tone level - playing with too much 'light and shade'. They sound most satisfactory in shops where there is little overhead noise.

Records  Many criticisms are received of our record programmes. Some of these criticisms are due, no doubt, to the fact that many managements use gramophone programmes of their own choosing and show a pardonable conceit in feeling that our programmes are inferior to their own. Also, as this is one type of entertainment that they can readily supply themselves they are likely to be more critical of our efforts. Nevertheless, it is clear that great care is needed in the choice of records and that special regard is paid to the requirements essential for Music While You Work. In particular, care should be taken that there is the least possible variation in tone level as between records.

Organs  Organs are not satisfactory. The main criticisms against them can be summed up in the words used by many managements - "Organs add to the noise". The very nature of the tone of an organ renders it unsuitable for amplification in factories. The organ tone has a tendency to boom and sound 'woolly', and the dynamic range of the instrument is so wide that there is a constant tendency for considerable variations in tone level. The faults are most noticeable in noisy shops - the melody is either lost altogether in the quieter movements or there is a blasting effect when the full organ is used.

Vocalists 15. The majority of managements are not in favour of the use of vocalists for Music While You Work. In factories where the requests and preferences of the workers are given undue consideration vocal items are often used, but all managements who have studied the subject with intelligence, and with proper regard to the effect of music on output, are unanimous in their opinion that vocalists should be excluded entirely. In the same way that the broadcasting of speeches is quite unsuitable for working conditions so vocal items are intrusive and tend to distract the attention of the worker. Music should be a background to work and vocalists do not conform to this essential.

Hot Music 16. Any music that can be termed 'hot', either rhythmically or melodically, is unsuitable. All managements are agreed on this. The melody should be clearly defined without being broken up by any 'jazzing', and the rhythm should be unobtrusive. When managements and workers condemn 'hot music for working conditions they do not intend or wish to imply that all 'swing' music is unsuitable. Dance music can be played with 'swing' without being 'jazzed'.

Variety In Music 17. There is no doubt that the too constant repetition of certain dance tunes can result in much irritation and annoyance. Many requests
are received, from both managements and workers, for the inclusion of more
old time selections from musical comedies and light operas, for Viennese
waltzes, and for the numbers of 'yesterday'.

popular.

18. The timing of our morning programme appears to be satisfactory,
but a number of requests have been received for the afternoon programme
to be played at 3.30 or 4 p.m. It is said that 3 p.m., our present
timing, is too near to the lunch break to be fully beneficial and that it
is usually about 4 p.m. that the workers need 'boosting'.

Factories would welcome a third period of Music While You Work
but to date there is not enough evidence to indicate what would be the
most suitable time for an additional programme even though quite a number
of managements have suggested that a third period be introduced between
6 and 7 p.m.

Opinion is divided as to the desirability of introducing a late
night programme. Many factories would welcome it for their night shift
but others explain that they would be unable to use such a programme owing
to their being situated in built-up areas. Musical sounds, as amplified
in factories, carry considerable distances at night, and there is a strong
possibility that, in many districts, a late night programme would cause
annoyance to local residents. Gramophone records are used a great deal
in addition to our programmes and factories which are suitably situated
for late musical sessions should be able to use their own record
programmes.

19. It is recognised that a musical tonic loses its effect if it is
applied in overdoses, and, for the normal working day it is accepted
generally that two and a half hours music is sufficient. Many managements
keep gramophone record programmes in reserve to be used for special
occasions. Instances have been given where programmes of records have
given excellent results when used first thing in the morning after a
'blitz', towards the end of a particularly long and tiring day, or when
it is essential that output should receive a sudden 'stepping up'.

20. The research has proved that the following four headings are
essential:-

(1) **Familiarity** Workers definitely want tunes
that they know and the most popular and
successful programme is one that enables them
to join in by singing, humming or whistling.
Unfamiliar items are never satisfactory.

(2) **Melody** Numbers that have no melody or that
are so orchestrated or played that the
melody is lost are not satisfactory. The
melody must always be clearly defined and
never be submerged by the 'inner parts'. If
the scoring is too thick or the balance
wrong the only effect in a factory is a
meaningless blurred musical sound which aids
to the existing machinery noise. Any music
that can be termed 'hot', either rhythmically
or melodically, is unsuitable.

(3) **Constant Tone Level** Variation in tone level
is one of the main grounds of complaint from
factories generally, and for these programmes
it is necessary that the dynamic range should
be limited. The extremes of piano and
double-forte should be avoided, and the
dynamic range should be confined between
mezzo-piano and forte.

(4) **Rhythm** Some industrial psychologists are
of the opinion that a rhythm should be
chosen that is slightly in advance of the
normal speed of the operator, their
contention being that the application of
such a rhythm will increase the rate of
working. This theory is unsound. In
all factories the processes are many and
varied and the working speeds of the
operators vary accordingly; also,
experiments have shown that the rate of
working of the naturally slow operator
cannot be stepped up to that of the
naturally fast operator. Again, the
maximum rate at which an operator can work
is often governed by matters completely
outside his control and generally depend
upon the machine and its particular cycle
of operations. It will be seen then that,
for Music While You Work, rhythm should
not be thought of in working speeds but
should be considered as a means of
creating a spirit of cheerfulness and
gaiety that can be of benefit to operators
engaged on any and all processes.

Dance bands are able to supply a most
suitable rhythms for creating a bright and
cheerful background to work and this
rhythm is usually obtained from a jig or
quick step tempo. Extremes of tempo should
be avoided, slow tunes are obviously
unsuitable and too many very fast tunes are
likely to create an atmosphere of unrest and
irritation. The rhythm should not be too
strongly accented and for this reason the
following are unsuitable:— hot rhythms, drum
breaks and, in fact, any numbers that depend
chiefly on strongly accented rhythm for
their effect.

Combinations such as light orchestras,
military bands etc., cannot build programmes
with the same rhythmic ideals as those which
can be obtained from dance bands, but they
have advantages in other directions. In
their programme building they should aim to
get a cheerful, bright and lifting spirit
running throughout. Slow or too many very
fast tunes should be avoided and special
attention paid to familiarity and melody. As
their repertoire is so much greater than that
of dance bands they are able to provide a
welcome relief from dance music by the inclusion
of selections from musical comedy and light
opera, Viennese waltzes, and well known entractes.
The Future of Music in Industry

21. There is abundant evidence that Music in Industry has come to stay. Though some thousands of factories already are using programmes of music during working hours it is safe to say that the movement is only in its infancy. Constant enquiries are being received from Directors and Managements of newly equipped factories who are seeking advice on the subject. Managements have reported that it is now becoming a common question with new applicants for employment - "Do you have Music While You Work?" Industrial Managements, Manufacturers of Radio Equipment and Gramophone Companies have all expressed the opinion that there is a big future for Music in Industry.

SUMMARY

22. (1) This report is based on the experiences and knowledge gained from visits to factories and discussions with managements and workers, on Listener Research Reports, on interviews with Industrial Psychologists and Welfare Officials, on the exchange of opinions with various Equipment and Gramophone Companies and on a study of all available literature relating to the subject of Music in Industry.

(2) Music While You Work should not be considered as a means of increasing the rate of working during a programme period but rather should it be looked upon as a tonic which will so improve the morale of the workers that output will be stepped up during the whole of the work spell.

(3) One factory gave an example of a drop in production of 1% when music was stopped and an increase of 5% over normal production when the music was recommenced. Another factory showed a 12% to 15% increase in output under the stimulus of music.

(4) The claims made by the advocates for music in Industry have been substantiated. The research has proved that music can boost the tired worker, act as a tonic, relieve boredom, increase happiness, improve health, minimise conversation, relieve nervous strain and reduce absences. To an ever increasing extent music is being looked upon as an essential to Industry, and visits to factories have given the most convincing evidence and proof of the great importance of Music While You Work.

(5) It is important that managements should realise always that, while having every regard for the welfare of their workers, the ultimate objective is increased output. No musical items should be played or requests granted that may be detrimental to this aim.

(6) Owing to the influx of women into Industry, and the many problems involved in the successful maintenance of this new army of labour, managements
are paying special attention to their welfare, and in many cases are more concerned about the morale of their female staff than they are about their male employees. Criticisms and complaints about programmes receive more attention when they come from female employees than when they are received from the men.

(7) Workers employed on monotonous and repetitive work derive more benefit from music than those employed on skilled tasks. Music is unsuitable for executive and office staff.

(8) Many factory installations are in a bad condition. Lack of sufficient volume controls is a prevalent fault and often speakers are wrongly situated.

(9) Small speakers at frequent intervals are more satisfactory than large speakers infrequently placed.

(10) Dance Bands and dance music head the list for popularity and there has been a demand for more accordion bands.

(11) Organs are unsuitable owing to the nature of their tone and to their wide range of dynamics, resulting in tone level faults.

(12) The inclusion of vocalists is condemned by managements, though they are popular with some workers.

(13) Speeches should not be broadcast to the workers during working hours neither should any announcements be delivered 'cold' - they invariably distract the attention of the workers and have a detrimental effect on output.

(14) Programmes should contain as much variety as possible. Though dance music is the most popular the too constant repetition of the same tune can become wearisome. Many requests have been received for more Viennese waltzes and selections from musical comedies and light operas. 'Hot' music is always condemned.

(15) Factories would welcome a third period of Music While You Work. There are indications that the most suitable timing would fall between 6 and 7 p.m.

(16) There is not enough evidence to support the introduction of a late night session of Music While You Work.

(17) There is a certain demand for a later timing of our afternoon programme and it appears that 3.30 or 4 p.m. would be more suitable.

(18) There are four main essentials which should be observed in all programmes. The music should be familiar to the ordinary worker, the melody should be clear and not distorted by 'jazzing', the tone level should be constant and the rhythm should create a bright and cheerful atmosphere.