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A basic French course, intended to stress equally the audio-oral and spelling-reading skills, is described. Intermediate courses, specialized courses (in literature, phonetics, stylistics, civilization, and simultaneous interpretation), and the comprehension of scientific material are also discussed. Descriptions of these courses stress the use and role of audio aids, particularly the magnetic tape recording. Chapters on the language laboratory discuss at length the basic principles of sound recording, operating a language laboratory, language laboratory specifications, and types of installations. An English-French vocabulary of language laboratory terminology is also included. (WB)

Language Laboratory Learning

by
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To

Dean Claude Bourcier who suggested that I should study this aspect of language teaching

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Wellesley College where this book was completed

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DESCRIPTION OF A BASIC FRENCH COURSE

GIVING EQUAL IMPORTANCE

TO THE AUDIO-ORAL AND SPELLING-READING SKILLS

All through this chapter we refer to tape as the recording medium because the majority of language laboratories are now equipped with tape machines.

All the language laboratory techniques that we describe can be used with magnetic disc or magnetic belt machines.

INTRODUCTION

1. Language teachers are now expected to give their students good audio-oral skills without sacrificing the traditional reading and writing skills.

2. This demand for higher achievement in our schools was caused mostly by ill-understood Army methods which were used during the second World War and which gave the general public (and some language teachers) the impression that audio-oral skills could be taught easily with this new approach.

3. This misunderstanding was aggravated by the commercialization around 1947 of relatively inexpensive recording machines. Many teachers, naturally enough, came to regard these machines as a godsend; they imagined that classes could be taught as usual and that these new devices, by dint of repetition, would confer the audio-oral skills that were so loudly demanded.

4. Thus, if we may start this paper with a paradox, it is no exaggeration to say that the appearance of the tape recorder at that particular time may have been a disservice to the teaching profession. It lulled many teachers into believing that science had supplied them with an answer to the audio-oral problems; they failed to see that the real answer did not lie in a given amount of dollars buying *n* machines, but in a mental effort toward the discovery of appropriate audio-oral methods.

PURPOSE OF THE BASIC COURSE

In this paper, the term "basic course" designates the period of time during which the most frequent structures and forms of the language are taught; this period may last some six months on the college level and up to twelve months on the secondary level.

These structures and forms are practiced until the students can:

1. understand them aurally and visually
2. use them orally and in writing.

Everything the student does during this basic training is designed to give him an active command of the language.

The amount of vocabulary taught during this period is secondary: structures and forms are far more important.[1]

Additional cultural material (history, geography, short stories, etc.) is not essential; we use the term *additional* purposely since language by itself *is* culture.

PRINCIPLES FOR THE BASIC COURSE

Giving equal importance to the audio-oral and spelling-reading skills requires extensive changes in class procedure, assignments, and testing. These changes can be summarized as follows.

I. THE ANALYSIS OF THE LANGUAGE MUST BE BASED ON ITS SPOKEN FORM

In order to teach *spoken* French, it is not sufficient to be able to speak the language well or even to be a native Frenchman. The teacher must also have analyzed the *spoken* language and he must understand how it functions.

Unfortunately most of our teachers have been trained in schools where the language analysis was based only on the written form. We do not deny that our teachers have been taught how to pronounce; we are only stating that the "grammar" they were taught was concerned only with visual signs: *-s* is the usual sign for the plural, *-e* is the usual sign for the feminine, *-nt* is the usual sign for the third person plural, etc.

It should seem obvious that if we want our students to speak correct French, we should tell them what happens in the spoken language. But is there a great difference between the "grammar" of spoken French and the "grammar" of written French? Let us give you a few examples.

A. Singular/Plural contrast in spoken French

1. There are cases when no changes are heard:

lœrfijtravaj	*Leur fille travaille*
lœrfijtravaj	*Leurs filles travaillent*
(No audio changes)	(Three written changes)

[1] A proper knowledge of the foreign vocabulary is extremely difficult to acquire; the meanings of the words rarely correspond exactly (room is *salle, pièce, chambre, place,* etc.); the connotations are often different, many cognates are deceptive (to ignore is different from *ignorer*), other words have no exact equivalents (a <u>shallow</u> river). The study of such difficulties should be done within a cultural content during the second year.

When changes are heard, it can be one or a combination of the following:

2. The vowel sound of the determinative is modified:

ləmɔtœrmarʃ	*Le moteur marche*
lemɔtœrmarʃ	*Les moteurs marchent*
mɔ̃nvøariv	*Mon neveu arrive*
menvøariv	*Mes neveux arrivent*
(One audio change)	(Three written changes)

Thus, while the eye looks for *-s, -x,* or *-nt* endings, the ear has to listen for vocalic changes taking place in articles, possessive adjectives, etc.

3. The plural is indicated by a change in the verb:

lœrmezɔ̃enœv	*Leur maison est neuve*
lœrmezɔ̃sɔ̃nœv	*Leurs maisons sont neuves*
(One audio change)	(Four written changes)

4. The noun is modified:

lœrʃəvalkur	*Leur cheval court*
lœrʃəvokur	*Leurs chevaux courent*
(One audio change)	(Three written changes)

5. The adjective is modified:

lœrprodɥiprɛ̃sipalkutʃɛr	*Leur produit principal coûte cher*
lœrprodɥiprɛ̃sipokutʃɛr	*Leurs produits principaux coûtent cher*
(One audio change)	(Four written changes)

6. The plural is indicated by a compulsory liaison between the adjective and the noun:

kɛlidesɑ̃bləʒyst	*Quelle idée semble juste?*
kɛlzidesɑ̃bləʒyst	*Quelles idées semblent justes?*
(One audio change)	(Four written changes)

7. The plural may be indicated by an optional liaison between the noun and the verb:

lœrfijɛmpari	*Leur fille aime Paris*
lœrfijzɛmpari	*Leurs filles aiment Paris*
(One audio change)	(Three written changes)

8. The plural may be indicated by an optional liaison between the noun and the adjective:

kɛlprofɛsœralmãprɔnõsbjɛ̃	*Quel professeur allemand prononce bien?*
kɛlprofɛsœrzalmãprɔnõsbjɛ̃	*Quels professeurs allemands prononcent bien?*
(One audio change)	(Four written changes)

9. The plural may be indicated by an optional liaison between the verb and the following word:

kɛlprofɛsœrparlitaljɛ̃	*Quel professeur parle italien?*
kɛlprofɛsœrparltitaljɛ̃	*Quels professeurs parlent italien?*
(One audio change)	(Three written changes)

The above classification is not complete, but it does indicate how widely the spoken and written systems differ. It also shows that plurality has to be analyzed within sentences since there are signs of plurality (for instance, the liaison element in kɛlzidesãblɛzyst) which would not be revealed if the words were studied in isolation (kɛl ide sãbl zyst).

B. Masculine/Feminine contrast in the segment *linking verb + adjective*

An analysis of such segments indicates that the adjectives fall into five categories:

1. Invariable:

ilezœn	ɛlezœn	*il est jeune*	*elle est jeune*
ilemarje	ɛlemarje	*il est marié*	*elle est mariée*
ilefjɛr	ɛlefjɛr	*il est fier*	*elle est fière*
ilemɔrtɛl	ɛlemɔrtɛl	*il est mortel*	*elle est mortelle*
ilegrɛk	ɛlegrɛk	*il est grec*	*elle est grecque*
iletyrk	ɛletyrk	*il est turc*	*elle est turque*

2. Consonant-adding: it can be

a /t/ sound	ilevɛr	ɛlevɛrt	*il est vert*	*elle est verte*
a /d/ sound	ilegrã	ɛlegrãd	*il est grand*	*elle est grande*
an /s/ sound	iledu	ɛledus	*il est doux*	*elle est douce*
a /z/ sound	ilezalu	ɛlezaluz	*il est jaloux*	*elle est jalouse*
a /ʃ/ sound	ileblã	ɛleblãʃ	*il est blanc*	*elle est blanche*
a /g/ sound	ilelõ	ɛlelõg	*il est long*	*elle est longue*

3. Modification of the final vowel and addition of consonant:

contrast /e ɛr/	ilepremje	ɛlepremjɛr	*il est premier*	*elle est première*
contrast /o ɔt/	ileidjo	ɛleidjɔt	*il est idiot*	*elle est idiote*
contrast /o ɛl/	ilebo	ɛlebɛl	*il est beau*	*elle est belle*
contrast /u ɔl/	ilefu	ɛlefɔl	*il est fou*	*elle est folle*
contrast /õ ɔn/	ilebõ	ɛlebɔn	*il est bon*	*elle est bonne*
contrast /œ̃ yn/	ilebrœ̃	ɛlebryn	*il est brun*	*elle est brune*

contrast /ɛ̃ ɛn/	ilesɛrtɛ̃	ɛlesɛrtɛn	*il est certain*	*elle est certaine*
contrast /ɛ̃ in/	ilsɔ̃vwazɛ̃	ɛlsɔ̃vwazin	*ils sont voisins*	*elles sont voisines*

4. Modification of the final consonant:

contrast /f v/	ilenœf	ɛlenœv	*il est neuf*	*elle est neuve*
contrast /k ʃ/	ilesɛk	ɛlesɛʃ	*il est sec*	*elle est sèche*

5. Modification of the final consonant and of the preceding vowel:

contrast /œr øz/	ilemãtœr	ɛlemãtøz	*il est menteur*	*elle est menteuse*

Thus, we find that the spoken and written systems of classification are completely different. In written French, the adjectives *jeune, fier, mortel* belong to different categories (*jeune/jeune, fier/fière, mortel/mortelle*), but in spoken French they all belong to the invariable category. In written French, the adjectives *premier/première* and *fier/fière* belong to the same category, but in spoken French they belong to different ones: fjɛr belongs to category 1 while prəmje belongs to category 3.

C. The present indicative

Written French classifies its regular verbs into three main categories:

Je chante	*Nous chantons*	*Je finis*	*Nous finissons*	*Je vends*	*Nous vendons*
Tu chantes	*Vous chantez*	*Tu finis*	*Vous finissez*	*Tu vends*	*Vous vendez*
Il chante	*Ils chantent*	*Il finit*	*Ils finissent*	*Il vend*	*Ils vendent*

This basic written classification excludes many verbs which are of very frequent use: *lire, sortir, mentir, partir, sentir, servir, dormir, écrire, suivre, mettre, vivre, etc.*

The basic spoken system of classification is extremely different from the written one. It offers the advantage of including most of the frequently used verbs we mentioned above.

Three basic categories can be distinguished:

1. Type I: In type I verbs, the third persons singular and plural are identical:

ilʃãt	ilʃãt	*il chante*	*ils chantent*
ɛlmãʒ	ɛlmãʒ	*elle mange*	*elles mangent*

The written conjugation has five different forms (*chante, chantes, chantons, chantez, chantent*) while the spoken conjugation has only three forms (ʃãt, ʃãtɔ̃, ʃãte).

If the verb begins with a vowel sound, a /z/ of liaison makes it possible to distinguish the third person singular from the third person plural:

ilariv	ilzariv	*il arrive*	*ils arrivent*
ɛlɛm	ɛlzɛm	*elle aime*	*elles aiment*

A few type I verbs have a vowel shift in their roots; when this occurs, it is always a shift from /ɛ/ to /ə/; most of these /ə/ sounds are not pronounced in conversational style:

ʒaʃɛt		*j'achète*	ʒapɛl		*j'appelle*
tyaʃɛt		*tu achètes*	tyapɛl		*tu appelles*
ilaʃɛt		*il achète*	ilapɛl		*il appelle*
ilzaʃɛt		*ils achètent*	ilzapɛl		*ils appellent*
nuzaʃətɔ̃	nuzaʃtɔ̃	*nous achetons*	nuzapəlɔ̃	nuzaplɔ̃	*nous appelons*
vuzaʃəte	vuzaʃte	*vous achetez*	vuzapəle	vuzaple	*vous appelez*

2. Type II: In type II verbs, the third person plural is formed by adding a consonant sound to the third person singular. This consonant can be:

an /s/ sound	ilfini	ilfinis	*il finit*	*ils finissent*
a /t/ sound	ilpar	ilpart	*il part*	*ils partent*
an /m/ sound	ildɔr	ildɔrm	*il dort*	*ils dorment*
a /z/ sound	illi	illiz	*il lit*	*ils lisent*
a /v/ sound	ilsɛr	ilsɛrv	*il sert*	*ils servent*
a /d/ sound	ilvã	ilvãd	*il vend*	*ils vendent*
a /k/ sound	ilvɛ̃	ilvɛ̃k	*il vainc*	*ils vainquent*

The written conjugation has five different forms (*finis, finit, finissons, finissez, finissent*) while the spoken conjugation has only four (fini, finisɔ̃, finise, finis).

If the verb begins with a vowel sound, a /z/ of liaison adds a second distinguishing feature between the third person singular and the third person plural:

ilekri	ilzekriv	*il écrit*	*ils écrivent*

A few type II verbs have a vowel shift in their roots; these variations are:

wa/ə as in *devoir, recevoir*			wa/y as in *boire*	
ʒədwa		*je dois*	ʒəbwa	*je bois*
tydwa		*tu dois*	tybwa	*tu bois*
ildwa		*il doit*	ilbwa	*il boit*
ildwav		*ils doivent*	ilbwav	*ils boivent*
nudəvɔ̃	nudvɔ̃	*nous devons*	nubyvɔ̃	*nous buvons*
vudəve	vudve	*vous devez*	vubyve	*vous buvez*

3. Type III: In type III verbs, the third person plural is formed by modifying the vowel sound of the third person singular and adding a consonant sound; examples:

ilse	ilsav	*il sait*	*ils savent*
ilprã	ilprɛn	*il prend*	*ils prennent*
ilvø	ilvœl	*il veut*	*ils veulent*

The written conjugation has five different forms (*prends, prend, prenons, prenez, prennent*) while the spoken conjugation has only four (prã, prənɔ̃, prəne, prɛn).

These verbs can be classified according to the nature of their vowel shifts.

a. Vowel shift e/a as in the verb *savoir*:

ʒəse	*je sais*	nusavɔ̃	*nous savons*

tyse	*tu sais*	vusave	*vous savez*
ilse	*il sait*	ilsav	*ils savent*

b. Vowel shift ɛ̃/ɛ as in the verbs *craindre, éteindre, peindre, plaindre, teindre*:

ʒəkrɛ̃	*je crains*	nukrɛɲɔ̃	*nous craignons*
tykrɛ̃	*tu crains*	vukrɛɲe	*vous craignez*
ilkrɛ̃	*il craint*	ilkrɛɲ	*ils craignent*

c. Vowel shift ɛ̃/a as in the verb *joindre*:

ʒəʒwɛ̃	*je joins*	nuʒwaɲɔ̃	*nous joignons*
tyʒwɛ̃	*tu joins*	vuʒwaɲe	*vous joignez*
ilʒwɛ̃	*il joint*	ilʒwaɲ	*ils joignent*

The following categories have a triple root.

d. Vowel shift ɑ̃/ə/ɛ as in the verbs *prendre, comprendre, apprendre, surprendre*:

ʒəprɑ̃	*je prends*	nuprənɔ̃	*nous prenons*	ilprɛn	*ils prennent*
typrɑ̃	*tu prends*	vuprəne	*vous prenez*		
ilprɑ̃	*il prend*				

e. Vowel shift ø/u/œ as in the verbs *vouloir, pouvoir*:

ʒəvø	*je veux*	nuvulɔ̃	*nous voulons*	ilvœl	*ils veulent*
tyvø	*tu veux*	vuvule	*vous voulez*		
ilvø	*il veut*				
ʒəpø	*je peux*	nupuvɔ̃	*nous pouvons*	ilpœv	*ils peuvent*
typø	*tu peux*	vupuve	*vous pouvez*		
ilpø	*il peut*				

f. Vowel shift ɛ̃/ə/ɛ as in *venir, tenir, obtenir, prévenir, se souvenir*:

ʒəvjɛ̃	*je viens*	nuvənɔ̃	nuvnɔ̃	*nous venons*	ilvjɛn	*ils viennent*
tyvjɛ̃	*tu viens*	vuvəne	vuvne	*vous venez*		
ilvjɛ̃	*il vient*					

D. The future

In written French, the future has six different endings; in spoken French, it has only three: re, ra, rɔ̃.

re	ʒəʃɑ̃tre	vuʃɑ̃tre	*je chanterai*	*vous chanterez*
ra	tyʃɑ̃tra	ilʃɑ̃tra	*tu chanteras*	*il chantera*
rɔ̃	nuʃɑ̃trɔ̃	ilʃɑ̃trɔ̃	*nous chanterons*	*ils chanteront*

In spoken French, the future of most verbs is based on the present indicative (the endings re, ra, rɔ̃ are added to the stem of the present indicative):

chanter stem: ʃɑ̃t ʒəʃɑ̃tre *je chanterai*

appeler	stem:	apɛl	ʒapɛlre	*j'appellerai*
acheter	stem:	aʃɛt	ʒaʃɛtre	*j'achèterai*
écrire	stem:	ekri	ʒekrire	*j'écrirai*
courir	stem:	kur	ʒəkurre	*je courrai*
cueillir	stem:	kœj	ʒəkœjre	*je cueillerai*
s'asseoir	stem:	asje	ʒasjere	*j'assiérai*
	stem:	aswa	ʒasware	*j'assoirai*
rire	stem:	ri	ʒərire	*je rirai*

There are about sixty verbs which do not conform to this classification; of these, about half base their future tense on the infinitive (*connaître, prendre, etc.*), and about half use a special stem for the future (*faire, savoir, etc.*).

E. The imperfect indicative

In written French, the imperfect indicative has five different forms (*dormais, dormait, dormions, dormiez, dormaient*); in spoken French, it has only three(dormɛ, dormjɔ̃, dormje)[1].

The endings /jɔ̃/ and /je/ become dissyllabic /ijɔ̃/ and /ije/ after two inseparable consonants. This characteristic feature of the imperfect is not indicated in the spelling:

nu ʃɑ̃ tjɔ̃	*nous chantions*	nu rɑ̃ tri jɔ̃	*nous rentrions*
vu rɛs tje	*vous restiez*	vu mɔ̃ tri je	*vous montriez*
nu gar djɔ̃	*nous gardions*	nu sɑ̃ bli jɔ̃	*nous semblions*
vu ʃɛr ʃje	*vous cherchiez*	vu zu vri je	*vous ouvriez*

The /ə/ sound cannot be dropped when it is in front of the combination /lj/. Therefore, in conversational French you will hear:

/ə/ dropped		/ə/ retained	
ʒaplɛ	*j'appelais*	nuzapəljɔ̃	*nous appelions*
tyaplɛ	*tu appelais*	vuzapəlje	*vous appeliez*
ilaplɛ	*il appelait*		
ilzaplɛ	*ils appelaient*		

F. The present conditional

In written French, the present conditional has five different forms (*dormirais, dormirait, dormirions, dormiriez, dormiraient*); in spoken French, it has only three (dormirɛ, dormirjɔ̃, dormirje)[1].

The endings /jɔ̃/ and /je/ become dissyllabic /ijɔ̃/ and /ije/ after two inseparable consonants. This characteristic feature of the present conditional is not shown in the spelling:

nu li rjɔ̃	*nous lirions*	nu za tɑ̃ dri jɔ̃	*nous attendrions*

[1] The ending /ɛ/ is pronounced nearly like /e/ by some French speakers.

vu bwa rje	*vous boiriez*	**vu plɛ̃ dri je**	*vous plaindriez*
nu mur rjɔ̃	*nous mourrions*	**nu ba tri jɔ̃**	*nous battrions*

The /ə/ sound cannot be dropped when it is in front of the combination /rj/. Therefore, in conversational French you will hear:

/ə/ dropped		/ə/ retained	
zəmãʒrɛ	*je mangerais*	**numãʒərjɔ̃**	*nous mangerions*
tymãʒrɛ	*tu mangerais*	**vumãʒərje**	*vous mangeriez*
ilmãʒrɛ	*il mangerait*		
ilmãʒrɛ	*ils mangeraient*		

G. Agreement of past participles

In written French, nearly all past participles are inflected for gender and number. In spoken French, very few past participles vary, and -when they do- they vary only in the feminine.[1] The feminine form is indicated by the addition of /z/ or /t/.

a. Examples of past participles which do not vary in spoken French:

ilevny	*il est venu*	**ilsɔ̃vny**	*ils sont venus*
ɛlevny	*elle est venue*	**ɛlsɔ̃vny**	*elles sont venues*

b. Examples of past participles which add a /z/ in the feminine:

vwasilavjɔ̃kilapri	*voici l'avion qu'il a pris*
vwasilezavjɔ̃kilapri	*voici les avions qu'il a pris*
vwasilafotokilapriz	*voici la photo qu'il a prise*
vwasilefotokilapriz	*voici les photos qu'il a prises*

c. Examples of past participles which add a /t/ in the feminine:

vwasilavjɔ̃kilaɔfɛr	*voici l'avion qu'il a offert*
vwasilezavjɔ̃kilaɔfɛr	*voici les avions qu'il a offerts*
vwasilaflœrkilaɔfɛrt	*voici la fleur qu'il a offerte*
vwasileflœrkilaɔfɛrt	*voici les fleurs qu'il a offertes*

H. Morphological difficulties presented by hiatus words

The traditional nomenclature of written grammar mentions the *h muet* (*homme*) and the *h aspiré* (*honte*). In spoken grammar, these terms are meaningless since contemporary standard French no longer has an aspirate h. Words such as *honte, haricot, haut* begin with a vowel sound just as *homme, hésiter*.

1 The optional liaison between a past participle and a following word is so rarely made that we do not include it in this discussion (*les fleurs que j'ai vues ici* - **leflœrkəzevyzisi**).

These so-called "aspirate h" words behave as follows in contemporary French:

1. They do not admit the fall of a preceding vowel sound; compare:

lɔm	*l'homme*	ləero	*le héros*
listwar	*l'histoire*	laõt	*la honte*
œ̃pødɛrb	*un peu d'herbe*	œ̃pjedəo	*un pied de haut*
kɛlœretil	*quelle heure est-il?*	kɛləõt	*quelle honte!*

With the so-called "aspirate h" words, you pass from one vowel sound to the other without stopping.

2. They do not admit the liaison mechanism; compare:

tropytil	*trop utile*	trɔõtø	*trop honteux*
trezørø	*très heureux*	treo	*très haut*

Here again with the so-called "aspirate h" words, you pass from one vowel sound to the other without stopping.

3. They do not admit the linking mechanism; compare:

Linking		No linking	
ilezit	*il hésite*	il yrl	*il hurle*

With the so-called "aspirate h" words, you stop between the preceding consonant and the initial vowel.

These phenomena (meeting of two vowel sounds and stopping between a consonant and a vowel) are generally referred to as a *hiatus*; we believe that such words should be called *hiatus words*.

Another way of expressing this idea is to say that these words have no means of defense against the hiatus (words such as *homme* fight the hiatus whenever possible either by dropping the preceding vowel as in *l'homme* or by making a liaison as in *des hommes*).

Note that some hiatus words do not even begin with a letter *h*; for example:

ileneləõzɔktɔbr	*il est né le onze octobre*

The examples given above and on the preceding pages should be sufficient to prove that French is in fact a dual language and that the gulf between the spoken and the written forms is very wide.

We cannot expect our teachers to teach spoken French properly unless they receive this special training. The amount of time required for this training will depend to a large extent on the person's fluency in spoken French. A person with native or nearly native fluency should be able to acquire this linguistic training within one summer of work[1] at one of the Institutes

[1] But this is not always true; some native Frenchmen are so infused with their knowledge of the written form of the language that they cannot conceive of any other type of analysis.

sponsored by the government.

This principle of linguistic analysis should be applied to the teaching of every language, but it is true of course that in languages such as Italian or Spanish the differences between the two forms of the language are much less marked than in French; the special training would therefore be far easier to acquire.

Let us suppose that now our teacher knows how the spoken language operates. Is this sufficient? No; he must also be able to impart his knowledge to his students in such a way that they will understand in the SHORTEST POSSIBLE TIME.

We capitalized the last three words because we believe that TIME should be our essential goal. QUALITY has been and is being obtained by many teachers without the help of linguistic science or language laboratories. But these good results in the audio-oral skills are obtained at a great cost of student's and teacher's time.

Therefore what we are after is a method which will secure good audio-oral results in the shortest possible amount of time, and this leads us to our other principles.

II. THE ACQUISITION OF THE AUDIO FORMS MUST PRECEDE THE ACQUISITION OF THE WRITTEN FORMS

Numerous experiments have shown that the spoken language cannot be taught efficiently if the student is allowed to see the written words before he has had time to practice the spoken language. If the student sees *Il vend - ils vendent* before he has learned to pronounce ilvɑ̃ - ilvɑ̃d, it is likely that the visual impression of *vend* will be so strong that the teacher's recommendations for the pronunciation (the vowel is nasal; the *d* is not pronounced) will be ineffective. The student trusts his eyes far more than his ears: he sees a *d*, therefore he wants to pronounce it. The only way to give the audio form of the language a fighting chance is to present it ahead of the visual form (the length of the time lag is discussed on page 75).

Furthermore, the spelling acts as a disguise which hides the grammar of the spoken language. When the student sees *J'achète - Nous achetons, Je jette - Nous jetons*, he puts these verbs in different categories, although in spoken French these verbs have the same contrast:

ʒaʃɛt	ʒəʒɛt
nuzaʃtɔ̃	nuʒtɔ̃

If the student is taught in an initial written presentation that two verbs belong to different categories, he will want to carry that distinction into the spoken language although it does not exist there; the *written* language automatisms that he is being taught (put a grave accent; double the consonant) will stand in his way when he wants to speak.

III. THE LANGUAGE MUST BE TAUGHT BY STRUCTURES AND STRUCTURAL SEGMENTS

First of all, we must explain what we understand by structure and structural segment (the term segment will be used from now on).

Any complete expression is a structure; for instance, *Stop!* is a structure just as well as *If it had not been for his courage, all of us would have perished.* When structures are compared, one finds that the word order of many of them is similar; structures, then, can be classified.

The system of classification can be narrow or wide; a narrow system will set up a great number of different categories of structures (too great for efficient teaching); a wide system will set up a smaller number. For example, a narrow system will put *Marie aime Pierre* and *Les jeunes enfants de mes voisins font du bruit* in different categories, while a wide system will put them in the same structural mold:

Marie	*aime*	*Pierre*
Les jeunes enfants de mes voisins	*font*	*du bruit*
<u>subject noun segment</u>	<u>verb segment</u>	<u>object noun segment</u>

A segment is part of a structure. For instance, the sentence *Le bon élève apprend ses leçons* belongs to the same structure as the two sentences above; it has three segments:

Le bon élève	*apprend*	*ses leçons*

WHY MUST WE USE THE STRUCTURAL APPROACH? Two main reasons can be given:

1. The structural approach provides the systematic study which is required by the nature of spoken French.

First, let us take a very simple example. If we shift *Leur enfant travaille* to the plural, we find that three visual changes take place; these changes are in the form of endings added to the individual words: *LeurS enfantS travailleNT*. The shift to the plural can be explained as something happening to individual words.

In spoken French, we find that **lœrãfãtravaj** becomes **lœrzãfãtravaj**. The shift to the plural is indicated by the addition of a /z/ of liaison. This /z/ of liaison would not exist if the words were pronounced separately; thus, we can state that in order to be sure to catch all the signs of plurality we must proceed by structures.

Let us take now some sentences of the type:

a. **ilebɔ̃**	*Il est bon*	
ɛlebɔn	*Elle est bonne*	<u>Linking verb plus adjective</u>
ilsɔ̃bɔ̃	*Ils sont bons*	
ɛlsɔ̃bɔn	*Elles sont bonnes*	

b. nuzavɔ̃œ̃bɔ̃livr	*Nous avons un bon livre*	Subject and verb segment plus adjective and noun segment
nuzavɔ̃ynbɔnrut	*Nous avons une bonne route*	
nuzavɔ̃dbɔ̃livr	*Nous avons de bons livres*	
nuzavɔ̃dbɔnrut	*Nous avons de bonnes routes*	
nuzavɔ̃œ̃bɔnami	*Nous avons un bon ami*	
nuzavɔ̃ynbɔnami	*Nous avons une bonne amie*	
nuzavɔ̃dbɔ̃zami	*Nous avons de bons amis*	
nuzavɔ̃dbɔnzami	*Nous avons de bonnes amies*	

In written French, there is no need to study the adjective *bon* in separate structures; the written form *bon* is always masculine singular, *bons* is always masculine plural, *bonne* is always feminine singular, and *bonnes* is always feminine plural.

In spoken French, a structural division must be made. In structure (a), bɔ̃ is always masculine and bɔn is always feminine; but, in structure (b) we find that the adjective has four forms (bɔ̃, bɔ̃z, bɔn, bɔnz) and that the form bɔn can be masculine as well as feminine.

2. The systematic classification of the structural approach groups the linguistic phenomena in such a way that one discovers many new rules which are simpler and which encompass a greater range of linguistic facts than the traditional rules. For example, without a structural approach, the following facts may be quite confusing:

a. Shift the following sentences to the negative:

Je veux DES livres	*Je ne veux pas DE livres*
J'ai besoin DES livres de Pierre	*Je n'ai pas besoin DES livres de Pierre*
Ce sont DES livres italiens	*Ce ne sont pas DES livres italiens*

b. Add the adjective *nouvelles*:

J'ai DES machines	*J'ai DE nouvelles machines*
Je me sers DES machines du collège	*Je me sers DES nouvelles machines du collège*
Ce sont DES machines françaises	*Ce sont DE nouvelles machines françaises*

These difficulties are easily resolved with the structural approach and the rules covering these cases are only two lines long[1].

IV. THE STRUCTURES MUST BE PRESENTED IN A LOGICAL ORDER

In the structural approach, only one structure is presented at a time; it is thoroughly studied before the next structure is presented. This approach demands that the structures be presented in a given order; for example, it is necessary to study all the structures with object pronouns before the structures with the *passé composé* can be presented.

In most textbooks today, the "grammar" is presented either without any apparent logical order or in an order which is dictated by the cultural material on which each chapter is

[1] These rules will be published in our forthcoming text and tapes: *Active French for the Language Laboratory*.

based. The result is that some important linguistic facts are omitted, some are presented in the wrong place, some are repeated uselessly, and some are separated when they should be grouped.

In a basic course, the system of classification must include only the most important structures and it must classify them in such a way that only one difficulty appears at a time; the easiest step is taught first, then it is used as a base for the second, and so on until all the basic structures have been taught.

Our forthcoming first-year text will use the order of presentation which we have developed after several years of experimentation. The easiest structure in spoken French is the type:

Chantez/Chantons/Chante *Dormez/Dormons/Dors*

In this first structure, the only morphological fact which appears is the opposition between type I and type II verbs.

In type I verbs, the shift to the second person singular is made by dropping the final vowel sound of the second person plural: ʃãte - ʃãt.

In type II verbs, the shift to the second person singular is made by dropping the final vowel sound and the preceding consonant of the second person plural: dorme - dor, parte - par, finise - fini.

Thus, after a few minutes of class practice, the students are able to speak; they know what they are doing and WHY they are doing it. The students then proceed to sentences of the structural type: *Ne chantez pas, Ne dormez pas, N'entrez pas, N'écris pas,* etc., where the only morphological difficulty is the rule concerning the fall of /ə/. The next few chapters are concerned with structures based only on verbs, adverbs, and interrogative combinations. Articles and nouns do not appear until the seventh chapter.

The first chapter in the traditional textbook usually presents sentences with articles, nouns, adjectives, and verbs. The students are faced with difficult interrelated problems and their first-day experience creates diffidence instead of confidence. "Success brings success" is a basic principle which is too often ignored. The student must be taught step by step. Every step must logically follow the preceding one, and it must be easy enough so that it can be successfully taken.

This need for an orderly presentation of the structures can be expressed in a simpler -if somewhat naïve- manner. When building a house, it is not sufficient to know how to construct the walls, install the doors and windows, place the wiring, connect the plumbing, paint the walls, etc. These various operations have to be performed in an order which permits maximum efficiency. If this logical order is not respected, a brand-new wall may have to be demolished in order to do some work which should have been done before the wall was built.

We have to realize that the teaching of a foreign language is a complex undertaking which must be thoroughly planned. We have to achieve in a few hundred hours what the native child has achieved in over 50,000 hours of trial-and-error practice. Again we must state that

our goal is TIME; every time the teacher uses a wrong order of presentation, every time he has to backtrack and group the linguistic facts differently, the students are confused and time is wasted.

DISCUSSION OF PRINCIPLES I, II, III, IV

1. The application of these principles may seem difficult because most of us are not trained to perform this type of audio-oral analysis of the language. In our schools, the training in our native language is visual; we are told:

—English has five vowels: *a, e, i, o, u,* and sometimes six if you count *y*.

—the third person singular of regular verbs is formed by adding -s or, in some cases, -*es*: *I stop/he stops, I miss/he misses.*

—the past tense of regular verbs is formed by adding -*ed* or, in some cases, by doubling the final consonant and adding -*ed*: *I miss/I missed, I stop/I stopped.*

These rules are true in written English, but here is what happens in spoken English:

—English is spoken with a large number of vowel sounds; this number varies according to the regions where English is spoken, but most people pronounce a different vowel sound in the following words: beet, bit, bait, bet, bat, part, note, not, all, pull, pool, but, out, boy, use, ice.

—in the contrast *I drink/he drinks*, you add an /s/ sound
in the contrast *I love/he loves*, you add a /z/ sound
in the contrast *I please/he pleases*, you add the syllable /ɪz/.

—in the contrast *I press/I pressed*, you add a /t/ sound
in the contrast *I love/I loved*, you add a /d/ sound
in the contrast *I attend/I attended*, you add the syllable /ɪd/.

This incomplete information about our native language does not create much harm because, by the time we go to grade school, our speech habits are firmly set. We hear the teacher say that *he loves* takes -s, but we continue to pronounce /z/; we hear the teacher say that *he kissed* takes -*ed*, but we continue to pronounce /t/. However, in a foreign language course, such incomplete information does create a great deal of confusion and it considerably slows down the learning process.

This audio analysis of the language may seem difficult to us, but it is easy to understand for students with no previous knowledge of French.

2. The traditional approach can be summed up as a method where the teacher explains the grammar of the written language and then adds rules of pronunciation (you have learned to write *chante/chantes/chantent*, but keep in mind that there is no difference in the pronunciation; you have learned to write *un bon ami/une bonne amie*, but keep in mind that only the article changes in the pronunciation). This traditional approach does produce some students who can speak and understand as well as they read and write, but it takes too much

time. Our contention is that a great deal of time is saved when to the traditional approach

WRITTEN GRAMMAR + RULES OF PRONUNCIATION

we substitute the approach

SPOKEN GRAMMAR + RULES OF SPELLING.

We want to stress again that we firmly believe that this reversal in procedure is necessary *if WE WANT to teach SPOKEN French as efficiently as possible*. It is true that this reversal requires considerable changes in the preparation of the teacher, the classification of the linguistic phenomena, the class presentation, and the testing. This readaptation may be bewildering at first, but it is more than justified by the considerable gains of time it brings.

V. OUR PRESENT METHODS FOR THE TEACHING OF PRONUNCIATION ARE INADEQUATE

In the preceding sections, we have tried to show that the science of linguistics is helping us to present the structures and the morphology of the language in a more efficient way. The students can be taught to understand the spoken language and express themselves correctly in much less time than before.

But the picture is not as bright as it may seem; a student may know exactly what are the structural and morphological features of the sentence he wants to communicate, he may know which sounds have to be used, BUT if he is not able to produce these sounds with a reasonable degree of accuracy and within a given melodic pattern, he will not be understood.

The progress in applied linguistics has not been matched by comparable progress in applied phonetics. Today we know a great deal more about the sciences of articulatory and acoustic phonetics, but these sciences have not provided the teachers with better means of teaching a correct pronunciation.

Having the students work with intonation graphs, telling them that they should round their lips, advising them that they should speak with more articulatory tension, all this theory does help, but the actual results in our high schools and colleges show that we are still a long way from a scientific and rapid method which would duplicate the slow (several years) and intensive (several hours a day) training in pronunciation which a child receives when he learns his mother tongue. The fact that our present methods are not adequate is abundantly proved by the phoneticians themselves. How many of the Spanish or French phoneticians who have been teaching in this country for many years have learned to speak English with a native pronunciation? If their methods were really successful, one would suppose that they would apply them to their own pronunciation first.

Faced with these difficulties, what can we do?

1. A native or nearly native pronunciation is desirable and must be taught whenever a student shows some aptitude for pronunciation, but pronunciation is only one of the factors of linguistic ability. Some students understand well and speak correctly and fluently although

their pronunciation is only fair; on the other hand, there are some students who pick up a native pronunciation in a parrot-like fashion, but who cannot understand and who cannot speak without making numerous errors of forms, structures, and vocabulary. Obviously, the former type of students is preferable.

2. With our present methods for the teaching of pronunciation, the students tend to reach a plateau beyond which -no matter how patient the teacher and no matter how hard-working the student- progress is unbearably slow. Experiments indicate that in an audio-oral course, well taught by a teacher with a native pronunciation, the students -if they do their best- reach their individual plateaus before the end of the first year. The majority of the students then have a satisfactory pronunciation, one or two may have a nearly native pronunciation, and one or two may have a poor pronunciation.

Thus, the teacher should do his best with all the best available means to give his students the best possible pronunciation they can acquire; but, it is unrealistic and unfair to force the students to work with drills which try to teach *only* pronunciation through the use of highly artificial sentences of the type:

Le mur murant Namur est un mur murmurant

On croirait voir un spectre devant le sépulcre de quartz que voile ce cercle d'arbres.

On the first-year level, satisfactory habits of pronunciation can be acquired at the same time as the morphology, the structures, and the vocabulary. For example, the contrast

nasal vowel → *oral vowel + consonant* /n/

can best be taught with the conjugation of some verbs or the masculine/feminine contrast of some adjectives:

ilvjɛ̃	*il vient*	ilvjɛn	*ils viennent*
ilprɑ̃	*il prend*	ilprɛn	*ils prennent*
brœ̃	*brun*	bryn	*brune*

Teaching pronunciation as an intrinsic part of morphology, structure, and vocabulary gains considerable time and it conditions the students to work with greater care since they are constantly reminded of the minimum contrasts that *they* must make if *they want* to be understood correctly. A student may mean *ils viennent*, but unless he can prevent any undue nasalization of the vowel, he will be understood as meaning *il vient*; he may mean *j'en ai peu*, but unless he has learned to end his vowel sounds abruptly, he will be understood as meaning *j'en ai peur*.

It is important to note that the plateau mentioned above appears only with the articulatory and melodic features of pronunciation (pronouncing with enough tension, giving the vowels their proper color, pronouncing /r/ correctly, pronouncing /p/, /t/, /k/ without aspiration, linking properly, etc.). Of course, there is no plateau with the study of the sound components that make up individual words; for example, learning that the components of *faisons, second, moitié* are:

f ə z ɔ̃ s ə g ɔ̃ m w a t j e

is an entirely different matter. Errors in this second area are made by natives as well as by foreigners. The Frenchman or the American student who gives *gageure* the sounds g a ʒ œ r

correctly pronounced makes an error of vocabulary rather than of pronunciation since he is in fact pronouncing correctly a word that does not exist. There is no plateau, no end to the work in this second area: whenever a new vocabulary item is learned, the teacher must indicate what the sound components are.

3. We should now like to explain what our findings are regarding the use of machines for the correction of pronunciation. These findings are based on twelve years of constant experimentation with language laboratory equipment and after observation of hundreds of students.

a. It is true that when a person hears a recording of his voice for the first time there is a shock: the person does not recognize his voice even if a high-fidelity machine is used. This difference is caused by the fact that, when speaking, we hear ourselves through bone conduction as well as through air conduction; with the machine, we hear ourselves approximately as others hear us. However, this difference is only a change in resonance and it has no curative value in itself; a diphthongized /o/ remains a diphthongized /o/ no matter which way it is transmitted to the ear.

b. When speaking, we concentrate our attention on what we are saying and it is difficult to evaluate our pronunciation; when listening to a recording of our voice, we can concentrate our whole attention on self-evaluation. Our experiments with persons who have a foreign accent have shown that they react differently upon hearing a recording of their voices:

—there are some who are unable to detect their foreign accent.

—there are some who hear a difference but who attribute this difference to the recording process (they blame the machine); they continue to think that their pronunciation is good.

—finally, there are some who hear a difference and are convinced by the machine that their pronunciation is not satisfactory. For this group of persons, this listening and comparing is valuable; it creates an initial shock which gives a proof that work must be done.

c. CAN THE MACHINE DO ANYTHING BEYOND GIVING THIS INITIAL SHOCK? CAN IT HELP TO TEACH THE CORRECT PRONUNCIATION? This is what we have found:

—the most favorable situation for improvements in pronunciation is when the teacher, the student, and the machine work jointly. The teacher guides the student, he tells him whether he is getting closer to the correct pronunciation (immediate reward or correction). Thus, with the help of the machine, the teacher can bring the student to his pronunciation plateau faster.

—when the student is sent to the language laboratory to work *by himself* with the machine, the teacher is no longer actively present. His voice on the recording may give advice and it may caution against the repetition of errors that have been made in class, but he cannot any longer tell the student whether he is getting closer to the correct pronunciation (there is no longer a process of immediate reward or correction).

Supposing the student hears a difference between what he says and what the recording says, it is at best a general impression; the student is generally unable to determine by himself the *causes* of this difference (vowel sounds, consonant sounds, linking, rhythm, stress, etc.). Not knowing for sure what the causes are, he cannot be *sure* that he is correcting himself.

If the student gets to the point where he no longer hears a difference between what he says and what the recording says, it does not prove anything since the student *by himself* cannot know *for sure* whether it is because *his imitation is good* or because *he is unable to hear the difference*.

Therefore, we do not deny that progress in pronunciation can be made even when the teacher is not present, but this progress is *unpredictable*. The student is not sure of what he is doing. HE MAY WORK FOR A WHOLE HOUR ON HIS PRONUNCIATION AND LEAVE THE LABORATORY WITHOUT HAVING MADE ANY PROGRESS WHATSOEVER.

A laboratory assignment should not be meant to review *only* pronunciation. It should be designed to review mostly forms, structures, and vocabulary -that is, points where progress is predictable. Of course, advice for pronunciation should be included, but progress in pronunciation cannot be counted on. Whenever it is made, it has to be accepted as a welcome dividend.

VI. WHAT IS THE OPTIMUM AMOUNT THAT CAN BE TAUGHT IN A BASIC COURSE?

Our objective in a basic course is to teach the basic structures, forms, and vocabulary as rapidly as possible so that the students will be able to express *their own thoughts*.

In this basic training, we are referring to active knowledge (structures, forms, and vocabulary that the student can understand and use fluently). A passive knowledge (structures, forms, and vocabulary that the student can understand, but cannot readily use) will come later.

In 1958, we completed a study of the structures, forms, and vocabulary of spoken French; we used this text during the 1958-1959 academic year in order to determine the optimum amount that can be taught when the audio-oral skills are given as much importance as the spelling-reading skills.

This experiment indicated that -during this training period- the vocabulary is secondary (an unknown vocabulary item can always be asked for and then fitted into the known framework of the language). The maximum time must be spent on learning the structures and the forms. The number of vocabulary items should be below 1500.

A second consequence is that -in order to have the students be able to understand and say as much as possible- a careful selection must be made in the structures, forms, and vocabulary.

A. Selection of structures

This is where the greatest amount of selection can be made. For example, there is no need to teach our beginners all the different ways to ask a question; there are nine common ways to express *How long have you been here?*, but *Depuis quand êtes-vous ici?* will serve our basic needs. *Qui parle?, Qui connaissez-vous?, A qui pensez-vous?* are easier to learn than *Qui est-ce QUI parle?, Qui est-ce QUE vous connaissez?, A qui est-ce QUE vous pensez?*. Thus, our students can be taught to express a maximum number of concepts while learning a minimum of structures. They will express themselves more rapidly and more readily if they do not have to choose. SPEECH AUTOMATISMS ARE ACQUIRED MORE RAPIDLY IF NO CHOICE HAS TO BE MADE.

Later, when the students meet *Combien de temps y a-t-il que vous êtes ici?* or other synonymous structures of what they have learned, it will be simple to refer them to the structures they already know. It would be wise then to advise them to keep using the structures they are familiar with (*Depuis quand êtes-vous ici?*) and to store the synonymous structures in their passive knowledge of the language.

B. Selection of forms

We should teach only the forms that are frequently used in cultured speech. The following forms can be eliminated in the basic course:

-simple past

-imperfect and pluperfect subjunctive

-most optional liaisons

In the basic course, it does not seem necessary to make the usual distinction between forbidden liaisons (*et il vient*), compulsory liaisons (*nous arrivons*), and optional liaisons (*des livres intéressants*). The work of the students will be much easier if the teacher simply tells them: "I want you to make these liaisons; some of them are optional, but in order to simplify our work in this basic course, I am requiring that they all be made. I will always make them in class and they will always be made on the recordings." These recommended liaisons would include all the compulsory liaisons plus the optional liaisons which are generally made in natural cultured speech (such as: *Il est espagnol*).

-most difficulties created by hiatus words

Many rules about irregular feminine and plural forms can be simplified if rare words (*landau, pou, joujou,* etc.) are eliminated.

C. Selection of vocabulary

We should be guided by the following principles:

1. The principle of no-choice is also applied here and synonyms are eliminated; the students must be able to express a maximum number of ideas while learning a minimum number of words; for example, there is no need to teach *lorsque, de bonne heure, environ, aussitôt que, davantage, à côté de,* etc. since *quand, tôt, à peu près, dès que, plus, près de* are the words generally preferred in cultured natural conversation.

2. It is agreed that the selection of vocabulary should be made according to the frequency of use in cultured conversation, but this principle is extremely difficult to apply. There are some 500 words (for example, *le, la, les, faire, être, avoir, mon, ton, son,* etc.) which without doubt belong to this list, but our choice becomes increasingly difficult after that. Frequency depends on age, sex, occupation, social level, marital status, number of children, hobbies and friends, the seasons (*mal de gorge* is hardly ever used in the summer), the geographic location (*mer* is hardly ever heard among the inhabitants of Lyon, *neige* is rarely

used in Bordeaux), etc.

Therefore, our basic vocabulary list should not be based only on a frequency count; it should be tempered with common sense and adapted to the needs of the American student (to him, *vitrail* is more important than *cave*, even though a Frenchman goes down to the cellar more often than he goes to look at stained-glass windows).

3. Some teachers may fear that such a short list will imply a childish simplification of grammar. This fear is without foundation since most of the words presenting morphological difficulties (irregular verbs, irregular feminines and plurals, etc.) are high-frequency words which will appear even in a 1000-word list.

4. At the beginning of the course, there are practically no audio cognates; it is true that *attention, cousin* are written cognates, but the English and French pronunciations are so different that the American student will have difficulty recognizing them in natural speech. As the course progresses, some students will establish mental tables of audio equivalences (ʃən=sjɔ̃, etc.) and audio cognates --for these students-- will exist.

5. Throughout the course the students should be reminded that learning a foreign language is mostly a matter of acquiring structures and forms, not vocabulary lists.

These explanations being given, we are now ready to state what appears to be at the present time the most efficient way of teaching each language structure. The structure is taught audio-orally first; the spelling and reading are presented only after the audio-oral difficulties have been thoroughly understood.

THE AUDIO-ORAL WORK

I. PRINCIPLES

We have already stated our basic principles:

--The acquisition of the audio forms must precede the acquisition of the written forms.

--The language must be taught by structures and structural segments.

--The structures must be presented in a logical order.

--Pronunciation must be taught within a framework of morphology, structure, and vocabulary.

--There is an optimum amount of forms, structures, and vocabulary that can be taught during the basic course.

To this basic list, we should like to add the following:

A. The use of a phonemic representation is not recommended. We have already explained

that the academic spelling does not represent what happens in the spoken language (the fact that the contrast between *il part* and *ils partent* is only a /t/ sound is not clear in the academic spelling. A phonemic representation (ilpar - ilpart) would show this contra but the use of phonemic representations is not wise because the students become confused when later the academic spelling is presented; for example, if the students are used to iledsy, iledsu, typarldəfilm, typarldefilm, they will find it difficult to make the transition to *il est dessus, il est dessous, tu parles de films,* and *tu parles des films*.

B. Advance preparation is not recommended; the new structures, forms, and vocabulary should be presented in class and should be a challenge to all the students. When the students are required to do some advance preparation in the language laboratory, some misunderstand the explanations and some do not hear correctly the pronunciation of the new vocabulary. In general, the student does not feel secure when he is learning brand-new material from a recording; he cannot ask questions to make sure that he has understood correctly and he feels that his time is partly wasted. The tape should be used as an instrument for review of material already presented in class.

C. Unguided imitation (that is, imitation of sentences without any explanation as to their structure, forms, vocabulary, and sound components) is not an effective way of teaching.

It is true that we learned our mother tongue by imitation, but this trial-and-error method required several thousand hours per year. Our college students are expected to spend only about 300 hours per year on their foreign language study (class time and homework) while our high school students barely spend 200 hours per year. We should stop comparing adults and babies; the situation is entirely different. We have so little time at our disposal that we should use each student's intelligence and abilities to the fullest extent; we must give him rules to go by; requiring him to perform parrot-like exercises is a most inefficient way to use our teaching time.

A strong argument against unguided imitation is that the students do not know what the meaningful features in a sentence are; they may make small sound changes that cause important shifts of meaning. Recently, we performed the following experiment with Turkish: a Turkish student recorded slowly ten short conversational sentences on a high-fidelity machine and we asked several American students to record their unguided imitations after hearing each Turkish sentence four times; these imitations were then played back to a group of Turkish students and we found that about 70% of the imitations were understood, but in several cases the American students expressed meanings different from what they heard: for example, a student consistently replaced final /m/ sounds with final /n/ sounds and thereby shifted the meaning from MY to YOUR (instead of saying "My wife is sick" the American student said "Your wife is sick").

D. We should stop comparing language learning to acquiring a physical skill. Statements such as the following do not appear to be true in the light of our experiments and a careful study of the students' reactions and results:

"Speech is a skill, like tying our shoes, ice-skating, playing the piano, playing football."

"The root principle of all language learning is repetition. You might as well let your students know the cold harsh fact sooner or later: identical with learning to play a musical instrument with any reasonable competence, the use of constant drill and repetition in language learning is of utmost importance. To be truthful about it, when you get to the point of being sick of going over and over a Beethoven run or a French idiomatic phrase -- you've got it!"

The only explanations we can find for such statements is that they were made by teachers who do not teach a basic course (but believe they know how it should be taught), or by teachers who do have a basic course, but are unable to assess properly the progress of the students. There are today some teachers who are so enthused about their new techniques in class and in the language laboratory that they do not see that the results they are obtaining are far from being as good as those they used to have before they shifted to their new techniques; test statistics are often unconsciously twisted and made to prove what the experimenter would like to prove.

The body may find pleasure in constant drill and repetition until the skill is acquired flawlessly, but the mind rebels against a long drill on a particular speech automatism; it becomes dizzy, numb, and stops learning. For example, try repeating many declarative sentences and commands with two object pronouns (*parlez-lui-en*; *ne lui en parlez pas*; *nous lui en parlerons*; *nous ne lui en parlerons pas*; *nous l'y conduirons*, etc.) --the sentences rapidly become meaningless.

"Overlearning" is an often-used term, although it is in fact meaningless. It is true that language is a matter of imitation, but it must be *intelligent* imitation and we should never forget that we want to train our students so that they will be able to express *their own ideas*.

E. We agree that a few useful sentences should be memorized at the beginning of the course so that the students will gain confidence by being able to exchange some of the basic clichés of ordinary conversation. The students should also be taught the routine class instructions: *Allez au tableau, Répétez plus fort, Encore une fois*, etc.

But on the secondary school and college levels, we are strongly opposed to the use of dialogues as a basis for every chapter. It is true that the use of dialogues for *a few* weeks seems efficient; the students can use fluently the dialogues they have memorized; visitors can be genuinely impressed. This apparent facility, however, is built on sand and difficulties appear rapidly. These difficulties are of two types and they appear jointly:

1. We have already stated that the most efficient method known today is the structural approach; in this structural approach, only one structure is presented at a time and it is thoroughly studied and practiced before the next one is presented. The dialogue approach is incompatible with the structural approach. For example, we find that the first dialogue in the Glastonbury materials[1], although containing only sixty-three words, has

[1] These beginning audio-lingual materials have been prepared under the provisions of the National Defense Education Act of 1958 as a Cooperative project of the Glastonbury Public Schools and the United States Office of Education.

fifteen different structures or structural segments. It is impossible to study all these structures and to practice each one of them thoroughly; if you teach *Demandez-le-moi* without teaching *Ne me le demandez pas*, the student will assume that one says *Ne demandez-le-moi pas*. Week after week, the teacher leaves bigger and bigger gaps in the student's knowledge of the language and he gives him more and more chances to make errors. After a few weeks, the student finds that, although he has been exposed to many different structures, he cannot use any of them with total confidence; he cannot express *his own thoughts*; he can only repeat what he has memorized. The teacher and the students become discouraged and the dialogue approach has to be abandoned in favor of a more systematic study of the language --from the very beginning.

2. The dialogue approach is similar to the natural method (the way we learn our native tongue); the slowness of the natural method[1] is unimportant when we are babies with plenty of time on our hands, but it is unacceptable in our schools. The dialogue approach is not intensive enough and, very rapidly, the students reach a point where what they learn during a week only makes up for what they forget. The only solution is the adoption of a method where the amount of material studied and reviewed during each hour is greater.

Thus, we find that the dialogue approach is not satisfactory:

a. it leads to errors because it is not systematic

b. it leads to a plateau because it is not intensive enough.

Of course, we do believe that practice with dialogues is necessary, but the dialogues in our forthcoming textbook will not appear until enough structures have been mastered. Thereafter, each chapter will end with a dialogue which will be a synthesis of the structures already practiced.

F. Our problem is twofold:

1. how can we train the students so that their use of structures, forms, and vocabulary will be automatic?

2. how can we keep up and strengthen these speech automatisms?

Let us examine these two problems in the light of experiments we carried out last year.

<u>Acquisition of speech automatisms</u>: Heavy concentration (massed practice) on a given structure on a given day is not satisfactory. Suppose, for example, that you have two groups working on the structural type: *Il aurait réussi s'il avait travaillé*. The two groups practice by shifting sentences from the present conditional/imperfect indicative sequence to the past conditional/pluperfect indicative sequence. Group A works for one hour and achieves automatic responses; Group B works for twenty minutes and achieves correct, but still hesitant responses. There is at the end of the drill a great difference in fluency between the two groups, but by the next class meeting the difference will become negligible: the responses of Group A will no longer be automatic and, in fact, will be hardly any better than those of Group B (in other words, the extra forty minutes that Group A received were largely a waste of time).

[1] Thousands of hours of work are necessary before the child can begin to use his language with any degree of fluency.

To sum it up, we might say that the saturation process for a given structure must be slow, given in small amounts, over a period of several weeks (spaced practice); automatic responses will be acquired better if the time available for a given problem is broken up in small blocks.

The same principle applies to vocabulary learning. Whether you practice the new word twice or ten times during a given hour is immaterial; what really counts is a large number of single re-uses at regular intervals.

Strengthening of speech automatisms: This strengthening takes place all the time in our native language; it is *haphazard* (some vocabulary items, forms, and structures are reviewed much more than others) and it is *unconscious* (we are not aware of it in our daily use of the language).

This haphazard and unconscious strengthening is satisfactory in our native language because it takes place constantly, but in the case of a foreign language used for only a few hours every week, it would not be sufficient. Therefore, in the foreign language, it should be:

1. *systematically organized:* a cyclic review of structures, forms, and vocabulary must be included in each lesson.

2. *conscious:* the students must be aware of what is being reviewed.

The tendency among most students is to focus attention on the new problems in a particular lesson and to disregard the strengthening features included in the drill sentences. For example, if the student has to shift *Personne ne se moquerait de vous si vous disiez quelque chose d'intelligent* to *Personne ne se serait moqué de vous si vous aviez dit quelque chose d'intelligent*, he tends to concentrate on the problem presented by the sequence of tenses and pays no attention to the fact that *Personne ne* and *Quelque chose d'intelligent* are there on purpose. Of course, the gifted student will -by himself- make a mental note of this, but most students have to be trained and constantly reminded to focus their attention on the strengthening features as well as on the new problems. The teacher should always be alert and, whenever necessary, underline these features.

We performed several experiments to study this need for a conscious strengthening. One of the tests went like this: the students were taught by spaced practice how to use the structure: verb + infinitive (*Je vais travailler - J'apprends à conduire - J'essaie de parler*). Automatic responses were achieved. Then, for several weeks, review sentences were included in every new lesson in class and on the tapes, but these review sentences were not underlined. At the end of about six weeks, a test was given on that infinitive structure and the results for most students were poor. Then, we did the same experiment with another structure, this time pointing out the strengthening features; a test was given and the results were excellent for nearly all students.

Each class period has therefore two objectives:

1. present some new material and give basic drills.

2. strengthen material studied previously.

Summary: We have such a short time at our disposal that every moment must be used to the

full. We must:

1. use all abilities of the students.
2. constantly challenge all the students and require a mental effort.
3. teach through spaced practice.
4. review systematically and consciously.

II. THE AUDIO-ORAL WORK IN CLASS

A. General remarks

1. Throughout the audio-oral lesson, the blackboard is not used; books are not needed; nothing is read or written.

2. The judicious use of English at the beginning of the course is recommended whenever it insures more time for oral practice by the students. Trying to explain everything in French at the beginning of the course often creates a feeling of frustration among the students and deprives them of the intensive practice they need; but these explanations in English should always be kept to a minimum (they should never exceed four or five minutes per class). The teacher should shift progressively to French for these explanations and he should be able to give them entirely in French by late October; the sooner, the better.

B. The method

1. Step One: the students have had no advance preparation; the teacher states (for example): "We are going to work with the basic *SI* structures; there are three basic *SI* structures:

Nous viendrons s'il fait beau

Nous viendrions s'il faisait beau

Nous serions venus s'il avait fait beau".

2. Step Two: the students repeat some examples of these structures for a five or ten-minute intonation and pronunciation drill; whenever necessary or helpful, the teacher draws an intonation diagram. The teacher pronounces at normal speed, but very distinctly; he repeats each sentence two or three times, walking around the room so that every student will hear clearly; the students repeat individually and in chorus. When the sentences are long, the teacher has the students build them up by rhythmic groups; in such a case, this build-up starts from the end of the sentence so that the intonation will always be correct. For example:

..... *pendant toute la nuit.*

..... *s'il n'avait pas plu pendant toute la nuit.*

..... *à huit heures et demie du matin s'il n'avait pas plu pendant toute la nuit.*

..... *Nous serions partis tous ensemble à huit heures et demie du matin s'il n'avait pas plu pendant toute la nuit.*

The teacher should always make the correction of the errors of pronunciation as effective as possible. Instead of simply stopping the student and giving him the correct pronunciation to imitate, the teacher should say: "*Stop! Quelle faute de prononciation avez-vous faite?*"; if the student can locate his error, he is asked to correct it himself; if he cannot locate it, the teacher asks him to repeat the sentence as he said it before and compare it with the teacher's pronunciation; if the student still fails to locate the error, the teacher asks some other student to locate the error for him.

We do not use phonetic symbols (refer to page 22); we use key words and we say for example: "Pronounce *pleure* as in *neuf*, not as in *deux*". We use these key words: *dix* for /i/, *lune* for /y/, *douze* for /u/, *été* for /e/, *deux* for /ø/, *chaud* for /o/, *sept* for /ɛ/, *neuf* for /œ/, *homme* for /ɔ/, *quatre* for /a/, *trois* for /ɑ/, *vingt* for /ɛ̃/, *un* for /œ̃/, *onze* for /ɔ̃/, *cent* for /ɑ̃/; /ə/ is referred to as the *weak vowel*. We use these key words for the semivowels: *ciel* for /j/, *huit* for /ɥ/, *oui* for /w/. We tried key words for the consonants, but it proved to be unnecessary.

3. Step Three: the teacher explains the new forms which are necessary for these structures. In our forthcoming textbook, the only new forms for the *SI* structures are the present and the past conditional tenses. Basic practice on these new forms is given.

4. Step Four: the teacher presents several examples of the new structures; the students are asked to analyze the meaningful contrasts and to formulate the structural rules (here, the sequence of tenses); whenever necessary, the teacher guides the students. It is *essential* that only little time be spent on this analysis; if after four or five minutes, the structural rules are not apparent to the students, the teacher gives them. We have to remember that the purpose of the course is not to talk about rules, but to use them; the basic goal is to speak the language, not to "discover" its grammar.

The students should be made to understand from the very first day that asking *why* the French say it this way while the Americans say it that way, *why* you should use the present instead of the past, etc. are questions about the *history* of the French and English languages; answering them would be a waste of time since it would not help the students to speak correctly.

We believe, however, that the teacher should point out -briefly, but very clearly- the differences that exist between the corresponding French and English structures (for example: *I am hungry , J'ai faim*)[1].

The reason for this structural comparison is that it helps the students to avoid errors. We must keep in mind that our students are NOT in the position of the child learning his native language (when the language is impressed on virgin territory). Our students know English and this language, no matter what we do, will come through[2]. It influences the student's pronunciation and his use of structures. This crosstalk between English and French occurs even in the speech of very young children learning both languages at the same time.

1 "The most effective materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner". *Charles C. Fries, Teaching and Learning English as a Foreign Language (Ann Arbor; Univ. Mich. Press, 1945), p. 9.*

2 "The basic problems arise not out of any essential difficulty in the features of the new language themselves but primarily out of the special "set" created by the first language habits". *Charles C. Fries, Foreword to Robert Lado's Linguistics Across Cultures*".

It seems rather futile then to try to ostracize the English language and pretend that the students can learn French as if they were babies learning their native language. Experience shows that these structural errors will be made even when not a word of English is spoken in the classroom. The teacher's job therefore is to dramatize this structural contrast so that the errors -when they come to the students' lips- will be repelled. If the error does come out, the student should be made to correct himself and the whole class should repeat the correct sentence.

As already stated (page 13), all the rules we give are based on a structural analysis of the language; they are simpler than those found in the traditional textbook.

5. Step Five: the teacher gives practice drills for the new material and for the strengthening of past material. The most efficient technique is the sentence modification drill; for example, the teacher gives the sentences with the future/present sequence and the students have to shift to the present conditional/imperfect indicative sequence:

Il viendra si vous l'invitez ⟶ *Il viendrait si vous l'invitiez*

Using a double shift is often desirable; it greatly improves the students' audio memory:

Il viendra si vous l'invitez → *Il viendrait si vous l'invitiez* → *Il serait venu si vous l'aviez invité*

Here is a list of the sentence modification techniques which we have been using; of course, we are giving only a few examples (the same technique can be used for many structures).

The student hears:	He has to answer:
Technique 1 - Change of gender: depending on the difficulties involved, the change is from the masculine to the feminine or from the feminine to the masculine; sentences where the shift of gender brings no audio changes should be included.	
tumezamisɔ̃parti	tutmezamisɔ̃parti (one audio change)
ʒlezeɔfɛr	ʒlezeɔfɛrt (one audio change)
selmjɛ̃	selamjɛn (two audio changes)
setyngrãdami	setœ̃grãtami (two audio changes)
semɔ̃nami	semɔ̃nami (no audio changes)
Technique 2 - Change of number: depending on the difficulties involved, the change is from the singular to the plural or from the plural to the singular; sentences where the shift of number brings no audio changes should be included.	
lœrãfãabitisi	lœrzãfãabitisi (one audio change)
ilʃãtbjɛ̃lɥi	ilʃãtbjɛ̃ø (one audio change)
rəgardelvitraj	rəgardelevitro (two audio changes)
lezøsɔ̃frɛ	lœfefrɛ (three audio changes)
ʒɔbeiolwa	ʒɔbeialalwa (one audio change)
ilpãsosjɛ̃	ilpãsosjɛ̃ (no audio changes)
Technique 3 - Change of person: the change can be in the subject pronoun or object pronoun.	
C'est lui qui est venu	*C'est moi qui suis venu*

Il me voit	*Il le voit*
Il me parle	*Il lui parle*

Technique 4 - Affirmative to negative or negative to affirmative: this is used especially when the shift brings a structural change, or fails to bring one when one might be expected.

Il veut du pain	*Il ne veut pas de pain*
Je me sers du téléphone	*Je ne me sers pas du téléphone*
Je n'ai pas besoin d'encre	*J'ai besoin d'encre*
Je suis certain qu'il est venu	*Je ne suis pas certain qu'il soit venu*
Demande-le-moi	*Ne me le demande pas*
Ne lui en parlez pas	*Parlez-lui-en*

Technique 5 - Change of tense: this is used especially with verbs which have difficult endings; it should also be used to practice with auxiliary verbs, the agreement of past participles, the position of adverbs.

Nous mangerons /nu mɑ̃ ʒrɔ̃/	*Nous mangerions* /nu mɑ̃ ʒə rjɔ̃/
Vous appelez /vu za ple/	*Vous appeliez* /vu za pə lje/
Nous mourons /nu mu rɔ̃/	*Nous mourrons* /nu mur rɔ̃/
Il pourrait dormir si vous vous taisiez	*Il aurait pu dormir si vous vous étiez tu*
Elle mourra	*Elle est morte*
Je ne la comprends pas	*Je ne l'ai pas comprise*
Je ne vois personne	*Je n'ai vu personne*
Il chante bien	*Il a bien chanté*

Technique 6 - Replace noun with pronoun:

Je crois Marie	*Je la crois*
Je parle à Marie	*Je lui parle*
Je pense à Marie	*Je pense à elle*
Je joue au tennis	*J'y joue*
Je veux du beurre	*J'en veux*
Lisez cette lettre à Jean	*Lisez-la-lui*
Ne lisez pas cette lettre à Jean	*Ne la lui lisez pas*

Technique 7 - Change from persons to things or from things to persons: it is a good idea to include sentences where the shift brings no audio changes.

Qui regardez-vous?	*Que regardez-vous?*
A qui pensez-vous?	*A quoi pensez-vous?*
Je pense à lui	*J'y pense*
Occupez-vous d'elle	*Occupez-vous-en*
De quoi avez-vous besoin?	*De qui avez-vous besoin?*
Qui fait du bruit?	*Qu'est-ce qui fait du bruit?*
Je les entends	*Je les entends*
De laquelle parlez-vous?	*De laquelle parlez-vous?*
Ne vous moquez pas d'eux	*Ne vous en moquez pas*

Technique 8 - Change from one interrogation pattern to another: this technique is not to be used until after the end of the basic course (refer to page 19 - Selection of structures).

Est-ce que tu y penses?	*Y penses-tu?*
Est-ce qu'elle s'y habitue?	*S'y habitue-t-elle?*

Technique 9 - Give the antonym:

Je suis jeune	*Je suis vieux/vieille*
Elle est née en 1936	*Elle est morte en 1936*
Ils sont encore ici	*Ils ne sont plus ici*
Ils sont déjà ici	*Ils ne sont pas encore ici*

Technique 10 - Give a synonym: not to be used until after the basic course (see page 20).

Tout est moins cher au Canada	*Tout est meilleur marché au Canada*
J'ai dépensé environ vingt dollars	*J'ai dépensé une vingtaine de dollars*
J'ai tant lu que j'ai mal aux yeux	*J'ai tellement lu que j'ai mal aux yeux*

Technique 11 - Add emphasis to a word:

C'est ma maison	*C'est ma maison à moi*
Il est venu	*C'est lui qui est venu*

Technique 12 - Vocabulary substitution: to be used mostly when the substitution brings a structural change.

Je lui ai parlé	parler→voir	*Je l'ai vu (vue)*
Vous devez la chercher	devoir→falloir	*Il faut que vous la cherchiez*
Que te faut-il? Du vin?	falloir→avoir besoin	*De quoi as-tu besoin? De vin?*
Sa maison nous plaît	maison→idée	*Son idée nous plaît*

Technique 13 - Change to the causative structure:

Elle s'est teint les cheveux	*Elle s'est fait teindre les cheveux*
Elles se sont fait leurs robes	*Elles se sont fait faire leurs robes*

Technique 14 - Supply the answer: the student is asked to answer a question, using a given structure in his answer.

C'est votre auto?	*Non, c'est celle de mon père*

Technique 15 - Supply the question:

La pièce a six mètres de longueur	*Quelle est la longueur de la pièce?*

Technique 16 - Avoid the subjunctive:

Je partirai à moins qu'il ne pleuve	*Je partirai s'il ne pleut pas*
Finissez-la avant que le facteur n'arrive	*Finissez-la avant l'arrivée du facteur*

Technique 17 - Replace an infinitive phrase with a subordinate clause:

Reposez-vous avant de partir	*Reposez-vous avant que vous ne partiez*

Il me faudra deux minutes pour savoir où il est	*Il me faudra deux minutes pour que je sache où il est*

Technique 18 - Shift from indirect discourse to direct discourse: it can be used to practice verbs (declarative and imperative tenses), pronouns, possessive adjectives, questions.

Dites-moi que je dis la vérité	*Vous dites la vérité*
Dites-moi de me lever	*Levez-vous*
Dites-moi de ne pas me lever	*Ne vous levez pas*
Dites-moi que Pierre a conduit Marie chez elle	*Il l'a conduite chez elle*
Dites-moi que votre auto marche bien	*Mon auto marche bien*
Dites-moi que votre nouvelle auto marche bien	*Ma nouvelle auto marche bien*
Demandez-moi le prix de cette maison	*Combien cette maison coûte-t-elle?*

Technique 19 - Carry a message or a command to a third person:

Allez dire à André que ma mère est arrivée sans me prévenir et que je ne pourrai pas aller le voir ce soir comme je le lui avais promis	*André, Pierre m'envoie vous dire que sa mère est arrivée sans le prévenir et qu'il ne pourra pas venir vous voir ce soir comme il vous l'avait promis*
Allez dire à Jean qu'il faut qu'il vienne me voir	*Jean, il faut que vous alliez voir Pierre*
Allez dire à Louis de ne pas faire de bruit	*Louis, ne faites pas de bruit*

Technique 20 - Fill-in exercise: the student hears a sentence with a tool-word missing (that is, a word which does not affect the meaning of the sentence and can be automatically restored).

Faites attention ... ne pas le casser	*Faites attention de ne pas le casser*
J'essaie ... comprendre ce qu'il dit	*J'essaie de comprendre ce qu'il dit*

Technique 21 - Change of structure: for example, the student is asked to replace the structure of obligation with the structure of non-obligation, and then with the structure of obligation not carried out.

Il faut que vous lui en parliez	*Ce n'est pas la peine que vous lui en parliez* *Vous auriez dû lui en parler*

Technique 22 - Add a word or Subtract a word: to be used especially when the addition or removal of a word brings morphological changes in the sentence.

J'ai des amis (add: *bons*)	*J'ai de bons amis*
Connaissez-vous ma nouvelle amie? (subtract: *nouvelle*)	*Connaissez-vous mon amie?*

Technique 23 - Build-up exercise: the student is given two sentences such as: *Je joue au tennis* and *Je n'y ai joué que deux fois*, and he is asked to proceed from one to the other

(adding only one feature at a time).

Je joue au tennis	*J'y joue -- J'y ai joué -- J'y ai joué deux fois -- Je n'y ai joué que deux fois*

Technique 24 - Connect two clauses: for example, connect the clauses with the proper relative pronouns.

Prenez ..... vous avez besoin	*Prenez ce dont vous avez besoin*
Je ne crois pas ..... vous dites	*Je ne crois pas ce que vous dites*

Or, the student may be asked to connect the clauses with a conjunction and make any necessary changes.

Je viendrai .. il pleut (add: *avant que*)	*Je viendrai avant qu'il pleuve*

Technique 25 - Alternate pronunciation exercise: the student hears a sentence and he is asked to give the alternate pronunciation. In keeping with our principle of selection of forms, this technique should not be used until after the end of the basic course.

senɔtrənuvɛlmezɔ̃	senɔtnuvɛlmezɔ̃
uvrəlapɔrt	uvlapɔrt
vɔtramivjɛ̃darive	vɔtramivjɛ̃darive (no changes)

Technique 26 - Exercises with numbers (for time, age, money, measurements):

These exercises can be simple operations (additions, subtractions, multiplications, divisions):

Combien font 67 et 83?	*67 et 83 font 150*
Combien font deux fois 93?	*Deux fois 93 font 186*
Quel est le tiers de 216?	*Le tiers de 216 est 72*

These exercises can also be simple problems:

J'ai dix heures moins vingt-cinq à ma montre; elle avance de cinq minutes. Quelle heure est-il exactement?	*Il est neuf heures et demie*
J'ai dépensé 3450 francs pendant mes vacances en France. Combien de dollars ai-je dépensé si j'ai reçu 5 francs pour chaque dollar que j'ai changé?	*J'ai dépensé 690 dollars*

Sometimes the directions are difficult to give; in such cases, it is easier to say: "Imitate the model". For example:

Technique 27: *Je prends des billets -- Je veux que vous preniez des billets*

Je vais à Paris	*Je veux que vous alliez à Paris*
Je fais mon travail	*Je veux que vous fassiez votre travail*

Technique 28: *Cet arbre est grand -- C'est un grand arbre*

Cet homme est beau	*C'est un bel homme*
Cet étudiant est nouveau	*C'est un nouvel étudiant*

Technique 29: *Je crois qu'il est venu -- Il se peut qu'il soit venu*

Je crois qu'il ne peut pas chanter	*Il se peut qu'il ne puisse pas chanter*
Je crois qu'il y a de la place	*Il se peut qu'il y ait de la place*

Technique 30: *S'il vient, je lui parlerai -- Quand il viendra, je lui parlerai*

Si vous savez où il est, dites-le-moi	*Quand vous saurez où il est, dites-le-moi*
Si elle m'envoie de l'argent, je vous le donnerai	*Quand elle m'enverra de l'argent, je vous le donnerai*

Having a wide variety of drill techniques is not sufficient, the teacher must also pay great attention to the way each drill is prepared. Here are a few suggestions for the preparation of these drills:

Suggestion 1: the drills should be short (about fifteen problems) and varied; avoid using the same technique too often.

Suggestion 2: every sentence must require a mental effort; the problem sentence should not give the answer away. It is preferable to have a small number of sentences which require a mental effort rather than a large number of sentences where the answer is so obvious that the students may give the correct answers without understanding what they are saying.

During this class practice, the difficulty of the problem sentences must increase *gradually*. The students learn as the drills succeed one another. If the problem sentences are carefully graded, the students on the average should be able to answer correctly nine times out of ten.

Suggestion 3: the length of the sentences should also increase gradually. The students' audio memory has to be improved systematically throughout the year.

Suggestion 4: the directions should be very clear. The students should have no hesitation about what they are supposed to do. Only one answer should be clearly possible.

Suggestion 5: rather than teach the new vocabulary in a block at the beginning of the drill period, it is preferable to teach it within each drill; every new word is taught as needed (remember that the average weekly number of vocabulary items is only forty when our basic course is taught over a period of thirty weeks).

Whenever possible, the sentence where the new word appears for the first time should reveal its meaning; if this is not possible, the teacher should try to explain the meaning of the new word either with a *rapid* explanation, a *rapid* drawing, or a *rapid* mimic; if this takes too long (more than ten seconds), it is preferable to give the English equivalent. Let us remember that our goal is to teach the language in the shortest possible time; we are not trying to perform the *tour de force* of teaching French without using a single word of English.

The fact that some teachers may succeed in explaining what *espoir, santé, bruit, loi, vérité* mean without giving the English equivalents is rather a dubious victory because:

—the students, when they finally understand the mimic or the long explanations, translate mentally into English (and this is one thing which the teacher cannot prevent).

—the teacher cannot be sure that each student has really understood his mimic or explanations; a student may deduce that *espoir* means *luck* or that *santé* means *shape*; checking that *each* student did understand properly would take a long time.

Words which present the same morphological difficulties (*craindre, plaindre, peindre, éteindre*) should be presented in consecutive order in the drills.

Every new word should be pronounced very distinctly so that all the sound components will be clear. The students should not be asked to use a word unless they know its phonetic make-up (how many sounds, what vowel sounds are used, etc.). Words which contain an unstable vowel should be presented with it and without it: lœrpətilivr - mɔ̃ptilivr.

Every new word should be given in sentences and the teacher should be especially careful with words which begin with a vowel sound; for example, the word *homme* /ɔm/ should be taught with its various phonetic environments:

nɔm	as in	œ̃	nɔm			kɔm	as in	sɛ̃	kɔm		
tɔm	as in	œ̃	grɑ̃	tɔm		zɔm	as in	si	zɔm		
vrɔm	as in	œ̃	po	vrɔm		fɔm	as in	nœ	fɔm		
rɔm	as in	lə	prə	mjɛ	rɔm	lɔm	as in	mi	lɔm		
trɔm	as in	ka	trɔm			pɔm	as in	tro	pɔm	də	kœr

The new word should also be given in its isolated form; otherwise, the student who hears ilvœ̃nœf or iljadezwazo might deduce, as some French children do, that the isolated form is nœf or zwazo.

When a word has several forms, all these forms should be given in consecutive order; for example, the adjective *grand* must be taught with all its variants: grɑ̃ grɑ̃t grɑ̃d grɑ̃z grɑ̃dz[1].

The way the drills are presented in class is also very important.
Here are two suggestions:

Suggestion 1: the problem sentences should be pronounced at normal speed and given only once. If the students know *from the very beginning of the course* that you do not repeat and that you speak at normal speed, they will try to understand you and will generally succeed. If they know that you will repeat *n* times, they will not make the effort of understanding you the first time.

Suggestion 2: the teacher presents the problem sentence, all the students prepare the answer, they whisper it to themselves, then the teacher calls on a student to give the answer (he calls on the brighter students first, thus giving the slower ones the added practice they need; this technique also saves time). Of course, the teacher varies the order of calling on

[1] The form grɑ̃də (yngrɑ̃dəɛn) does not need to be taught during the basic course.

the students; he does not go twice around the class in the same way. If the student who is called on does not know the answer, the teacher points at somebody else; after the correct answer has been given, the first student is asked to repeat it.

Every student should be made to answer in a clear and loud voice which can easily be heard by all the students in the class.

Summary of step five: Let us remember (as stated on page 24) that our aim during these basic drills is not mechanical perfection. As soon as the students have understood what has to be done and can do it with accuracy, the drill practice is stopped. The speech automatisms will be acquired during the following weeks thanks to the cyclic review of structures, forms, and vocabulary.

> **But isn't the structural method boring? Can the students really stand this intensive exchange of problems and answers?**
>
> **The answer lies with the teacher. If the teacher believes in this approach, he will communicate his enthusiasm to his students..... If the drills are carefully graded, the students will learn rapidly; their growing ability to understand French spoken at normal speed and to express themselves correctly will constantly renew their interest. Success brings success, and success is the best motivation for continued effort and enthusiasm..... All the drill material is taken from conversational French and the students realize that all the sentences can be put to immediate use. Thus, they have all the advantages of the dialogue approach without its drawbacks..... An amusing sentence occasionally adds variety to the drills.....**

6. Step Six: the students need complete confidence in their ability to use these speech automatisms. This confidence comes when they find that they can express their own thoughts and that they can easily participate in conversations.

During this part of the class, the students are also trained to express themselves *within the bounds of the structures, forms, and vocabulary which they know*. This ability is very important; there are people who, with a limited knowledge of French, are able to speak correctly while other persons -although knowing many more structures, forms, and vocabulary- make numerous errors; these persons, instead of using what they know, keep making guesses at structures, forms, and vocabulary which they have not mastered.

It is therefore a good idea to end each class with some conversation practice; this semi-free or free conversation should be thoroughly planned by the teacher and the conversation time should be used to the maximum; whenever possible, the questioning is done by the students (the teacher plans the program, but he should speak as little as possible).

The following techniques can be used:

Technique 1 - Complete a statement: the student hears an unfinished statement such as: *Nous irions en France pendant les vacances si ....*, and he is asked to complete the statement so that it makes sense.

Technique 2 - Use some vocabulary: the teacher supplies a word or expression (*examen, bal, impôt, accident*) and the students have to invent as many sentences as possible with this word or expression (*J'ai passé un examen - Nous avons réussi à nos examens - Nous avons trop d'examens, etc.*).

Technique 3 - Use numbers: the students are asked to speak using as many numbers as they can (both cardinal and ordinal); they can speak about money, dates, number of brothers and sisters, age of parents, addresses, grades, speed, time, hours, measurements, etc. The students can also set problems for their classmates.

Technique 4 - Use forms: the students are asked to invent sentences using the imperfect indicative, the conditional, the subjunctive, or the imperative as much as possible; the teacher can also ask for sentences with irregular spoken plurals, verbs with a vowel shift, etc.

Technique 5 - Use a structure: the teacher asks the students to invent as many sentences as possible using a given structure (*ne.... que, ni .... ni, etc.*).

Technique 6 - Give a definition: the teacher gives a word and the students are asked to give a definition, or invent a story which makes the meaning of the word clear.

Technique 7 - Give a summary: the teacher reads a story; the students have to give a summary of the story or they can discuss it. Jokes can also be used.

Technique 8 - Talk about a topic: the teacher supplies a topic (Example: *Le vote devrait-il être obligatoire?*) and the students have to express their opinions.

Technique 9 - Talk about a picture: the teacher shows a picture (cartoon from a French magazine, a slide, a wall picture) and the students have to speak (say why the cartoon is funny, supply a caption, describe the picture). The teacher can also show a series of pictures depicting sequential actions and the students have to narrate the story suggested by the pictures. It is also possible to show a picture depicting a social situation (greeting guests, directing people in a town, being asked for a donation, etc.) and the students have to supply the sentences generally used in such cases.

The verb tenses can be reviewed by asking questions such as these: *Que s'est-il passé? Que se passera-t-il si..? Que se passerait-il si..? Que se serait-il passé si..?*

Technique 10 - Say what you want: the students are completely free to say whatever they want (story, joke, news summary, etc.).

Technique 11 - Pretend you are a tourist: the students pretend they are in a restaurant, at the post office, at the bank, etc. and they imagine a conversation (taking various parts).

Technique 12 - Chain free expression: a student starts a story (five or six sentences); a second student keeps it going, then a third student, etc. Each student, of course, inventing as he pleases.

Technique 13 - Chain question-answer: student A asks a question; it is answered by student B; student B then asks a question from C; C answers and asks a question from D, etc. All the questions should be about the same topic.

Technique 14 - Learn and discuss poems and songs: the students are taught simple songs and poems; they discuss them.

Technique 15 - Who am I?: the teacher pretends he is a well-known person (past or present); the students ask him questions and they try to discover who he is. This quiz can also be played

with "What is it?" (the teacher chooses a thing, a town, a country, an animal, etc., the students ask questions and try to identify what the teacher has chosen).

Of course, all through this conversation practice the students invent; they do not have to tell the truth. This should be quite clear to all the students (otherwise they might hesitate to ask some personal questions).

C. Should the class meet in the language laboratory?

In some schools, the language classes are taught in the language laboratory: the students are in their booths, a tape with pauses is played, and the teacher can communicate with one, several, or all the students through an intercom system.

Let us examine the drawbacks of this system:

1. In his classroom, the teacher can adjust the *pace* and the *length* of the drills to the needs of his students. If he has a group of bright students, the pace will be brisk (the questions and answers will follow each other with hardly a pause) and short drills will be sufficient. If he has a group of slow students, the teacher will have to allow longer pauses and he will have to give longer drills. All these adaptations can be easily made in class according to the reactions and needs of a particular group.

If the class is held in the language laboratory, the pauses after the questions are made in advance and they cannot be changed; if the tape is played to a group of bright students, they will waste a great deal of time because they will find the pauses too long and because the drills will have too many practice sentences. If, on the contrary, the tape is played to a group of slow students, they may find the pauses too short and they may find that the drills do not give them enough practice.

2. A live voice is clearer and can communicate more enthusiasm than a recorded voice. In the regular class, the student has all the exterior signs that make communication more meaningful: movements of the face, eyes, body; he can watch the lips of the teacher and the pronunciation becomes easier to imitate.

3. Advertisements published by some of the language laboratory companies tell us that many students are afraid to speak a foreign language in the regular classroom because they think that they would sound ridiculous to their classmates; for this reason, these companies recommend the use of the laboratory during the regular class period. It is true that, usually, a shy student isolated in his booth will -as the term goes- perform; but this is not the solution; the student becomes used to hearing a machine, speaking to a machine; his fear of conversing in the foreign language with real people is not cured.

In fact, we believe that one of the strongest arguments against holding the class in the laboratory is that the students are deprived of a natural challenge. In class, the enthusiastic teacher can create emulation among the students, he can have them talk to one another, and shyness -when it exists- is given a chance to disappear[1].

[1] Some teachers *are guilty*. Asking a sixteen-year old boy to stand up in front of girls and pronounce /i/ with spread lips and /y/ with rounded lips and making him repeat over and over again is not the right approach.

4. Another argument is that in the usual classroom each student speaks for only one or two minutes per hour while in the laboratory he speaks all the time. This is a misrepresentation.

In the language laboratory, the *tape* presents the problem, there is a pause, each student is supposed to try to answer. Whether he does or not is hard to know; the teacher can use the intercom, but he can listen to only one student at a time; if he does find a student who is not trying, the student can always find an easy excuse (the microphone does not work, I have already answered, etc.).

In class, the *teacher* presents the problem, he makes a pause, he can see *all the students* and he can check that they are preparing and whispering their answers, then he points to a student. Thus, in class the students can speak as much as in the laboratory and the teacher can better check that all *do* speak.

5. It is also stated that each student has a *private tutor*. This is manifestly untrue; in the laboratory, there is only one teacher and he can correct only one student at a time. The best proof that there is only one teacher is the fact that if several students raise their hands at the same time, the teacher can come to the help of only one at a time -the others must wait.

When the student who was being helped resumes his work with the tape he may have missed several minutes (it may take that much time if the teacher has to explain a point of grammar) and it may be quite some time before he can understand what is taking place on the tape.

6. Another fallacy is that in the laboratory, *Student X* is "no longer exposed to the garbled sentences and imperfect pronunciation of his classmates". This reasoning is wrong.

a. It presupposes that *Student X* is good while all his classmates speak garbled French with an imperfect pronunciation. The fact is that in many cases *Student X*'s classmates will give the right answer with a good pronunciation while *Student X* would have given the wrong answer.

b. It supposes that many errors will be made. This is against basic teaching principles. If the language is taught by gradual steps, few errors will be made and *Student X* <u>will not</u> be exposed to garbled French.

7. In some schools, several tapes are played at the same time. A tape is designed for the average students and it has the essential material; another tape is designed to challenge the ability of the gifted students; a third tape is for the slow learners, etc. While the groups work with their special tapes, the teacher helps the students who are having difficulty.

This *Selective Group Study* technique appeals to many administrators and parents because it gives the individual student a chance to learn at the speed which is best suited to his mental ability. In large schools, where homogeneous grouping is possible, this technique is not justified; in a small school, where for example only one section of French I is possible, it is doubtful that the lone teacher will be able to carry for long the burden of having to prepare three or four different tapes for *each period*. In any case, this technique denies the very purpose of the laboratory: THE LABORATORY IS A PLACE WHERE THE STUDENTS CAN WORK INDIVIDUALLY FOR AS LONG AS NEEDED SO THAT THEY CAN KEEP UP WITH THE REST OF THE CLASS.

8. Another dangerous argument is that with the laboratory there is no longer a limit to mass teaching and that classes of 100 *or more* can be taught effectively. Various university

professors are pursuing research in this field and have published articles which support this thesis of mass teaching. A professor claims that soon there will be an "absolute necessity of making classes much larger than ever," but this prospect does not worry him at all because providentially we have a "*deus ex machina*" and "our *deus ex machina* is an electronic *machina*, the tape recorder."

It is up to the language teachers to resist this wind of folly which is threatening to sweep our profession. It is true that we will have many more students, but the only sensible solution consists in preparing many more teachers.

9. Some schools use the following method: they divide a large classroom with a glass partition and they install a language laboratory in the back of the room. During the class, some students stay with the teacher for conversation practice while the others work in the laboratory with routine drills (audio comprehension, reading assignment, dictation, grammar drill, or a test). The teacher can supervise the laboratory work through the glass partition. Thus, each student spends only half or a third of his time with the teacher; the rest is spent in the language laboratory.

Let us compare the gains and losses in a French class where there are thirty students and where ten students work with the teacher while the other twenty work in the laboratory.

Gains	Losses
During the period spent with the teacher in a class of ten instead of thirty, the individual student receives more attention and should progress more rapidly.	During the two periods spent in the laboratory, the student is subjected to all the drawbacks described above in 1, 2, 3. In addition, he loses complete contact with the teacher during two thirds of the time; he cannot ask any questions.

It is our contention that the losses outweigh the gains and all the more so since splitting the class will bring these additional drawbacks:

a. There are problems of discipline; the teacher has to supervise the language laboratory section and he cannot give complete attention to what he is doing with his small group of ten students.

b. Time is wasted while the students get settled down.

c. Since it is difficult to ask the students to spend a whole period with the equipment, the teacher may wish to have the students exchange places during the class and this causes more time to be wasted.

d. Whenever the equipment fails to operate properly, the teacher has to stop his class with the small group and remedy the difficulty in the laboratory.

> It is becoming more and more apparent that the language laboratory gives its best results when it is used for reviewing the material presented in class (the teacher should not need to be in the laboratory) and when the time spent in the laboratory is in addition to the regular class periods. Of course, many administrators will

claim that the school schedules are already overcrowded and that time for additional laboratory practice cannot be found[1]. But --unless the National Defense Education Act of 1958 is meant to be a farce-- time can be found: either by removing from the secondary school curriculum subjects which should not be there or by lengthening the school day. In our opinion, it is a sheer waste of money to install a language laboratory in a school where it will be used only to replace regular classes.

The fact that we are against holding the class in the language laboratory does not mean that we are against using ONE machine in the classroom. Indeed, having a tape recorder in the classroom presents the following advantages:

a. if the teacher has a poor pronunciation, it is a good idea to have the examples and/or the drills recorded by native voices; thus, the teacher can prepare students whose pronunciation will be better than his.

b. even if the teacher has a good pronunciation, it is a good idea to have the students hear various voices.

c. at times, the teacher may need a consistent model (especially when trying to teach the intonation or rhythm of a particular sentence). All too often, even the best teacher cannot help being influenced by the intonation of the students, and after hearing them a few times, he will start imitating them. Recording the sentence on tape will make sure this does not happen.

d. at times, the teacher will need the help of the recorder to convince his students that they are NOT repeating correctly; the recorder will usually give them the proof they need.

But, again, we have to state that the above work can be done more efficiently and more rapidly with one good tape recorder and a good loud-speaker than with a language laboratory installation.

Summary: For the presentation of the explanations and the basic drills, the teacher --especially with the help of a tape recorder-- is superior by far to any type of language laboratory installation.

Even in the unfortunate cases where --for lack of space-- the laboratory has to be installed in the language classroom, we believe that the equipment should not be used during the regular classes. The laboratory is an instrument for review and testing; it should be used only in addition to the normally scheduled classes.

1 Most language laboratory companies have a vested interest in spreading the idea that the language laboratory is best used during the regular language classes. They know that their sales of laboratory equipment would take a sharp drop if they approached their prospective customers with the idea that the school schedule must be modified.

III. THE AUDIO-ORAL REVIEW

A. General remarks

The work done in class should be thoroughly reviewed before the next class meets. Having a native assistant meet the whole class for this review work is not effective because the students -after the classwork- need different types and amounts of review. In order to be truly effective, the review work must be *individual*. Ideally, it should be done with each student having a native assistant to help him for as long as he needs. Since this solution is obviously too expensive for our present educational system, we have to be satisfied with a substitute: the recorded voice.

We have to keep clearly in mind all through our discussion of the merits of the language laboratory that, in this particular case, the machine is not superior to man -either qualitatively or quantitatively. Moving earth can be done better and faster with a bulldozer than with a hundred men, but when it comes to teaching a language a tape recorder is second best to a good teacher.

The amount of review needed by a given student depends on:

1. how well he took advantage of the class work. A student who paid careful attention throughout the class period, who tried to answer mentally every question the teacher asked, and who spoke in a clear voice every time he was called on will need far less review than the student who daydreamed during part of the class.

2. the linguistic ability of the student. The slow students will need to spend more time than the gifted ones in the laboratory in order to keep up with the class.

B. How to send the students to the laboratory

The teacher can use one of the following three systems:

1. Group review with a single tape: the class comes to the laboratory as a group and listens to a tape being played from the console; all the students are therefore listening to the same tape and must do their review work at the same speed.

We are strongly against this type of audio-oral review because:

a. the teacher has to leave pauses on the tapes (recording a tape with pauses requires about four times as much time as recording a tape without pauses).

b. since the group is scheduled for a definite period of time in the laboratory, the tape must be carefully timed; this imposes more work on the teacher.

c. the duration of the pauses is never right for all the students; this is especially true for sentence modification drills where the student must think about his answers (the time required to prepare the answers varies considerably according to the students); since the pauses are usually adapted to the level of the slower students, this system is particularly unfair to the top students.

d. it forces the students to come to the laboratory at a given time and may interfere with their work (for example, a college student may have an afternoon free except for thirty minutes of laboratory work; to attend this laboratory session, the student has to interrupt his work, report to the laboratory, which may be in a building fifteen minutes away, do his laboratory work, and waste more time going back to his interrupted work.)

e. in case of mechanical difficulty, the whole class has to stop and wait.

f. with this system the student is trapped; the console goes on inexorably. If the student does not understand an expression, he cannot rewind the tape and listen again.

g. the student has to listen to the *whole tape* even if nine tenths of the material are well known to him; he cannot concentrate his time on the *one tenth* which he needs most to review.

h. bringing the students as a group defeats the purpose of the laboratory; it should be a place where the students go and perform individually the work they need in order to derive the maximum profit from the course.

This system does not allow the students to choose for their audio-oral review the time and method which they find most efficient; for example:

i. some students prefer to review the material only once, but very slowly, studying every sentence carefully; others prefer to review the material rapidly, but several times.

j. some students prefer to come to the language laboratory and stay there for two consecutive hours (without apparent fatigue); others can take only thirty minutes at a time and prefer to come several times during the same day.

k. some students work more efficiently in the morning (they come to the laboratory as soon as it opens); others are more efficient at night and do their laboratory work around 10 PM (they claim that they remember better when they study a language just before going to bed).

2. Group review with individual tapes: the class comes to the laboratory as a group, but each student works with an individual tape copy of the lesson; each student will therefore be able to study as he wants during the language laboratory period.

There are two methods of providing each student with an individual copy:

a. the laboratory technician prepares as many tape copies as there are students in the class. This is not a great task since we now have tape duplicators which can produce a large number of tape copies in a short time, but these mass duplicators are expensive.

b. when the students arrive at the laboratory, the pauseless master tape is played at the console and the students copy it on their individual tapes in their booths (they can listen to it as they copy it). When the copying is completed, the students can work individually. A five-minute pauseless tape requires at least thirty minutes of work before it is thoroughly learned. Thus, the student spends only a small fraction of his time on

copying the tape.

This system is better than the group review system with a single tape; the drawbacks listed above in (a), (b), (c), (e), (f), (g), (i) are eliminated, but the other drawbacks remain. This technique may be best in schools where every activity must be accurately scheduled and where the language laboratory must be used to its maximum capacity during each period. However, every student should be given --in addition to this group attendance-- the possibility of coming to the laboratory for some individual additional work (so that the slow students will be able to put in more time than the better students and keep up with them).

3. Individual review with individual tapes: in this system, the students come to the language laboratory individually; they take a copy of the review tape and study as they please for as long as they want. In other words, they use the language laboratory as they use the library.

In some schools using this individual system, the students are required to spend a minimum of *n* minutes per week in the laboratory and their attendance is checked by a secretary who submits a report to the various professors. Such an attendance check is costly and is indeed a waste of time since the fact that the student is physically within the laboratory does not necessarily mean that he is working. The simplest way to make sure that the students will regularly attend the laboratory is to give them assignments which cannot be found anywhere except on the laboratory tapes and also to give them weekly tests on this material.

In this system, the laboratory technician does not have to prepare as many tape copies as there are students in every class; for example, if he decides that only Booths 1, 2, 3, and 4 can be used by the 34 students in French I, only four copies of the assignment are necessary. There should be in the laboratory a sign-up board (with sheets changed weekly) where the students can reserve the booth they need for as long as they want.

Of course, it is also possible to have the student make his own copy as he comes to the laboratory (but this requires the presence of an attendant who will play the master tape on the console).

This individual system eliminates all the drawbacks, (a) through (k), which we listed above; in addition, pauseless tapes afford the advantage that they can be used for quick comprehension review.

C. The audio-oral review tape

This tape contains the following sections:

1. Summary of class explanations:

This section of the tape contains a brief review of the explanations given in class; all these explanations are given in French as soon as possible. Several voices should be used for the explanations and examples. The student repeats the examples and plays the tape until he understands clearly all the explanations. Of course, if the student has understood clearly all the explanations in class, he does not need to review this section.

2. Vocabulary review:

All the vocabulary should be reviewed in a body --instead of reviewing the new words just before the drills where they first appear; the reason for this is that some students may want to review only the vocabulary (it would be a waste of time for them to have to locate the beginning of each drill). The student reviews the vocabulary until he has an active command of every new term.

How should we review the vocabulary? It can be grouped by:

--families: *chaud, chaleur, chauffer*
--centers of interest or association; for example, eating and drinking: *avoir faim, viande, pain, jambon, avoir soif, eau, thé, café, couper, couteau, cuiller, etc.*
--contrasts: *vrai/faux, tard/tôt, en avance/en retard, froid/chaud, etc.*

How should we make the meaning clear?

--by translating the new words: (but this should be avoided as much as possible).
--question-answer: *Qui apporte les lettres? - Le facteur apporte les lettres.*
--by giving a definition: *Le facteur est un homme qui apporte les lettres.* The definition can be made up of several sentences: *Je m'assieds sur une chaise. Une chaise a quatre pieds. Il y a plusieurs chaises autour de la table.*
--by using a proverb, a cliché, or any other rhythmic, catchy phrase from a poem or a song: *Loin des yeux, loin du cœur.* We should be careful in the basic course to use only those proverbs which are still grammatically correct in contemporary usage (example of proverb which uses a structure no longer acceptable: *Qui dort dîne*).

Let us not forget that this is a vocabulary review; all the words have already been used in class. We do not believe therefore that audio-visual materials (for example: a book of drawings) should be used.

How should we pronounce the vocabulary?

--several voices should be used.
--it should be pronounced at normal speed, but very distinctly.
--words which have an unstable vowel (such as *fenêtre*) should be pronounced twice: with and without the unstable vowel (ynfənɛtr - lafnɛtr).
--verbs should be given with the forms of all the tenses studied up to that time.

3. Audio retention drill:

Audio retention is comparable to visual memory; some people have the ability to look at a sentence for a second and then they can write it from memory; audio retention is the ability to listen to a sentence -even a very long one- and then repeat it without errors.

Experiments have shown that a good audio memory is essential for the development of audio comprehension and oral expression; it also facilitates the audio learning of vocabulary. Audio retention should be steadily improved throughout the basic course.

This audio retention is improved in class since the problem sentences are pronounced

only once, but there should be additional drills on the audio-oral review tapes.

An average audio retention drill might have twenty different sentences. The tape is prepared as follows: sentence #1 is recorded twice, then sentence #2 is recorded twice, and so on to the twentieth sentence; then a key word is given for each sentence and each key word is followed by the whole sentence.

The student uses the retention drill as follows: he listens to the first sentence, stops the tape, tries to repeat the sentence, starts the tape to listen to the second reading of the first sentence and check whether his "repeat" was right or wrong; then he does the same thing for the second sentence, and so on to the twentieth sentence. Then the student hears the key word for the first sentence, he stops the tape and -with the help of the key word- tries to remember the first sentence, he starts the tape to check whether his "recall" was right or wrong, and so on to the last sentence. The student should do this drill until he can recall the twenty sentences without hesitation. Of course, this drill is prepared without pauses and the student does not record his sentences.

4. Sentence modification drills:

The tape uses the same sentence modification techniques as those listed on pages 28-33. The following recommendations should be kept in mind while the teacher prepares these drills:

a. Consecutive sentences should not present exactly the same type of problem; for example, when giving an affirmative-negative drill, do not put four sentences with the partitive *du*, then four sentences with the *du* of particularization, then four sentences with the *des* of units, etc. The problem sentences should be all mixed up and they should be difficult enough so that a mental effort will be required for each of them; a drill where the student only repeats what he hears or where the problem sentences give away the answers is of little value. The problem sentences must be challenging, but do keep in mind that they must be carefully graded; the difficulty of the drills must increase gradually.

b. There should be within the drills a cyclic review of forms, structures, and vocabulary; as stated on page 25, this review should be conscious. The tape should remind the students from time to time that the purpose of the drills is not only to practice new material, but also to strengthen material learned previously and that their attention should be focused on both aspects of the drill. Whenever necessary, a voice should point out the feature that has just been reviewed: "Did you notice that we said *Quelque chose d'intelligent?*". Special review drills should be included whenever necessary.

c. Since the drills are based on structures, forms, and vocabulary which have been studied in class and reviewed at the beginning of the tape, no English translation of the problem sentences need be given in a language laboratory manual.

d. Each drill should not have more than twenty problem sentences; it is preferable to have many short drills using different techniques rather than very long drills with no variety in the techniques.

The student uses the sentence modification drills as follows:

--He listens to the first problem sentence (if he does not understand, he can rewind and listen again[1]).

--He stops the tape and prepares his answer (he can make the pause as long or as short as he needs); he says the answer to himself.

--He starts the tape to find out whether his answer is right or wrong; if his answer is right, he repeats it after the tape (for further reinforcement); if his answer is wrong, he plays the problem sentence again and gives the correct answer.

--He does the same thing with the second problem sentence, the third one, and so on.

The student writes down the numbers of the sentences he misses (for example, Drill II, sentences 7, 13, 19)[2] so that he will be able to review them at the end of the drill[3].

5. Oral translation drills:

It is debatable whether this section is necessary; the sentence modification drills should be sufficient to give the students the audio comprehension and oral expression training they need. Oral translation drills, when used, should be short and the sentences should contain as many review features as possible (without making the sentences artificial).

The student uses the oral translation drills as follows:

--He listens to the English sentence, stops the tape, translates the sentence into French aloud, starts the tape to check whether his translation is right, repeats the correct sentence after the tape; he does the same thing with the other sentences. He lists the numbers of the sentences he misses so that he can review them at the end of the drill[3].

Recording the English sentences is better than printing them in a text; when the sentences are written, the student is tempted to translate word by word; when he hears them, he is helped to translate by sense groups.

6. Pictorial review:

Further experimentation is required for this section. The basic technique is as follows:

--The tape says: "Open your book to page ---. Look at drawing #1.

--The tape asks a question about the picture, or it gives some information about it and asks the student to supply a caption. The student answers aloud.

--The student starts the tape to check whether his answer is acceptable or not. The tape may have to give two or three possible answers.

7. The tape ends with a review of the dialogues and other self-expression material that were used in Part VI of the class. For the dialogues, the student should pretend he is one of

1 See the Appendix, page 233.

2 Each problem sentence is preceded by the number of the drill and the number of the problem.

3 In the Appendix (page 233), we explain how an indexing machine could automatically play only the problem sentences that were not answered correctly during the first run.

the persons; he takes a part, then the other one, until he knows both parts well.

Comments about the audio-oral review tape

a. The teacher should make sure that his problem sentences are not ambiguous. For example, asking the student to shift ilmœr to the future would be ambiguous since two answers are possible: ilmurra and ilmurrõ. Ambiguous cases are due to the fact that most professors prepare their scripts in the academic spelling (where *il meurt* when shifted to the future has only one answer). In order to avoid such ambiguous cases, the professor should do the audio-oral drill himself without the script (as if he were a student).

b. In order to avoid monotony, several voices should be used; the drills should be recorded with warmth and enthusiasm; advice and encouragement should be given (as in class); the student should feel the presence of the teacher, but this encouragement should remain moderate (otherwise it might become ridiculous after several playings of the tape).

c. The directions should be in French as soon as possible and they should be on the tape (not in a manual); in some cases, it is a good idea to use a model sentence.

d. The drills should not be taken from a textbook; they should be available only on the tapes in the laboratory (this is the surest way to make the students come to the laboratory).

e. The problem sentence and its answer should be given only once and pronounced at normal speed (but distinctly).

f. In keeping with what we said on pages 18 and 19, there are no separate pronunciation drills. Pronunciation reminders are given from time to time; they are simple and similar to those given in class: *Keep the tip of your tongue down - Pronounce three syllables - etc.*

g. The teacher should anticipate the difficulties that may make self-evaluation difficult. For example, if the student has to shift *C'est une grande amie* to the masculine, he might answer setœ̃grɑ̃dami (instead of setœ̃grɑ̃tami) and fail to notice his error when the tape gives the answer. At such points, the tape should have a special explanation after the answer has been given: "*Did you pronounce a /t/ sound in* setœ̃grɑ̃tami?" or "*Did you make two audio changes?*" (see the Appendix for the description of an evaluation machine).

While giving these explanations, the teacher should always be careful not to try to make his point clear by overemphasizing a word: *C'est un GRAND ami* (with the adjective heavily stressed). The teacher must try to retain a normal pronunciation.

h. SHOULD THE STUDENT RECORD HIS ANSWERS?

Let us compare the system we recommend and the system where the student records his answers for later comparison.

Our system is described on page 46. The student does not need to record to find out that he said *Il venira* instead of *Il viendra*. In cases where self-evaluation might be difficult, the tape intervenes with a special explanation (paragraph g above).

In the recording system, the student plays the problem, he records his answer during the pause on the student's track, he hears the correct answer, he records his imitation of the correct answer, he hears the second problem sentence, etc. At the end of the

drill, he rewinds the tape and spends the second half of his laboratory period listening in constant alternation to the teacher's voice and his own voice.

All the experiments we have conducted during the last twelve years clearly show that

LISTENING TO A RECORDING OF ONE'S VOICE DOES NOT MAKE SELF-EVALUATION EASIER.

Why, then, waste half the laboratory period? This system has two further drawbacks:

—It is boring for the student to have to listen again to the problem sentences he has already correctly solved.

—Since the student listens to his errors, this tends to reinforce his bad habits.

In our judgment, it is preferable to use the second half of the laboratory period to work on new problems.

If you are convinced that listening to a recording of one's voice does not make self-evaluation easier, this financially important fact follows:

THE PURCHASE OF DUAL-CHANNEL EQUIPMENT IS NOT WARRANTED.

Let us remind you that dual-channel equipment is the type of equipment where the student records on a separate track (student's track) for later comparison with the teacher's voice (on the teacher's track).

i. Our technique of audio-oral review is far different from the traditional method of "delayed reward and correction" whereby the students are assigned some fifty sentences to prepare for their next class; the students spend some two hours thumbing through their grammar books and dictionaries; the next class is spent on correcting these sentences: the good students, who have made few or no errors, waste their time while those who have made many errors find that the class corrections are not sufficient to eradicate the errors which have been lingering in their minds since they prepared the exercises. The result is that the good students progress very slowly while the poor students keep making the same errors over and over.

With the audio-oral review tape, the student finds out *immediately* whether he is right or wrong. Everything he says is verified at once by the answer on the tape; he receives an immediate correction or an immediate reward. This immediate reinforcement is a very powerful stimulant (the student plays against the machine and success is the most effective inducement). Of course, the student must really try to give the answers; he should not listen passively to the questions and answers. Students who are tempted to do this passive work find out very quickly -through the audio-oral tests- that the only road to success is the active method.

j. The relative amounts of classwork and audio-oral review depend on the schools. In a high school where the ratio is one hour of outside work for each class hour, the teacher will have to do more drilling in class than in a college where the ratio is 2 or even 3 to 1.

k. Since there is a cyclic review of structures, forms, and vocabulary in every chapter, a final examination should not require a special review tape, but the students will ask for it and it may be preferable to prepare one. To simplify this work, it is better to prepare several short tapes or magnetic discs, each containing only one point of review.

1. Technically, the recording should be as good as possible and the various sounds should be clearly distinguishable. Trying to learn to speak a language with a tape where the sounds can be confused is comparable to learning to write with a book which contains many typographical errors.

But, on the other hand, we have to remember that we are often expected to understand the spoken language against a noisy background: street noises, other conversations going on at the same time, etc. We are also expected to understand the spoken language when transmitted over electronic systems; the proportion of transmitted speech against live speech is increasing (telephone, radio, television, movies, records, tape recordings); some of these transmitting systems (the telephone, for example) have a poor frequency response.

Tentative experiments indicate the usefulness --even on the basic course level-- of *special* audio comprehension drills where various levels of noise would be added, or where the frequency response would be cut, or where synthetic speech with a minimum of acoustic information would be used.

These experiments indicate that these drills of exaggerated difficulty also improve the students' general audio comprehension ability (students submitted to these special drills find normal speech easier to understand).

IV. THE AUDIO-ORAL TESTING

The essential purpose of this testing is to inform the student of his progress; therefore:

1. These tests should take only a small part of the class time.

2. One should be able to correct the tests easily and rapidly.

This testing should not weaken the good habits acquired in class and in the laboratory. If an examination is corrected and returned after a delay of several hours or days, the errors made during the examination become fixed. Thus, all tests should be corrected at once (principle of immediate reinforcement) and by the student himself whenever the type of testing makes it possible. We have to keep in mind that the teacher has more important work to do than to check the answers on a test. We are, of course, referring here to the type of testing where only one answer is possible (and this is the type of testing generally used in the basic course).

The teacher should decide whether he wants the tests to be given at regular intervals (for example, every Friday) or at irregular intervals (so that the students will be ready for a possible test at every class).

We shall now proceed to explain the various types of audio-oral tests that can be given:

A. Testing of audio comprehension
B. Testing of phonetic discrimination
C. Linguistic analysis testing
D. Testing knowledge of vocabulary
E. Testing audio comprehension and oral expression.

Note: Some teachers claim that playing the examination over a tape recorder and having the students record their answers is artificial and creates an element of injustice since --they claim-- recorded speech is not as clear as live speech and since some students are afraid to speak into a microphone.

Aside from the difficulty of holding separate individual audio-oral examinations, common sense leads us to believe that our students, who spend so much of their time with electronic devices (radio, TV, phonographs, telephone), should not be disturbed over having to use electronic equipment for their examinations. In the cases we have examined, we found that the students who complained about the use of such equipment did not do any better with a live examination; their protest was just an easy excuse[1].

A. Testing of audio comprehension

We list all the techniques that have come to our attention. The teacher can determine whether or not they are useful in his particular situation. If the questions are spoken by the teacher, he should read them in a clear voice and all the students should be able to hear him equally well. If the questions are recorded and played over a loud-speaker, the system should be carefully installed so that quality will be even throughout the room; if headphones are used, they should be high quality units and they should be equipped with individual controls.

1. Translation technique: the teacher reads sentences in the foreign language and the students have to write the English equivalents. Several variants are possible:

a. Disconnected sentences (without a context) are read only once, at native speed. The students are given just enough time after each sentence to write the translation. This technique tests instantaneous native-like audio comprehension. The sentences are made longer and longer as the course progresses and the students' audio retention improves; by the end of the first year, the students should be able to give the equivalent of sentences as long as: *Vous vous êtes trompé de chemin; il fallait tourner à gauche à environ deux kilomètres d'ici*, pronounced only once, at native speed. Sometimes, sentences which have several meanings are given:

ʒəmpɑsredø	*je me passerai d'eux*	*je me passerai d'œufs*	
ilparlofɛrmje	*il parle au fermier*	*ils parlent au fermier*	*il parle aux fermiers*
	ils parlent aux fermiers		

b. Same as variant (a), except that a preparatory context is given before the sentence is read. For example:

Context: *Vous avez lu plusieurs romans cette semaine?* For translation: *Non, je n'en ai lu qu'un*

This technique can be used when the sentence has a high ratio of words to sounds; for example, *je n'en ai lu qu'un* has a ratio of 7 to 9 (ʒnɑ̃nelykœ̃). It can also be used when the isolated sentence has several meanings: ʒɑ̃vjɛ̃ means *Jean vient* as well as *J'en viens*. This

[1] Some teachers are concerned about the lack of visual context. They claim that the test sentences should be accompanied by slides, films, or TV images.

technique tests instantaneous comprehension of sentences which even natives may have difficulty understanding when spoken without a preparatory context.

c. Same as variant (a), except that the teacher gives more time in between the sentences. This allows the students who have not understood instantaneously to go over the sentence (mentally), provided —of course— that they were able to store it in their minds when they heard it. This technique presents a danger: the students, knowing that they will have time to go over the sentences, may acquire the habit of not trying to understand instantaneously and it may impair their audio comprehension.

d. Same as variant (b), except that the teacher gives more time in between the sentences to be translated. This variant has the same potential danger as the third one.

e. The teacher reads short sentences at slower than native speed and repeats them two or three times. This technique is to be used in classes where native-like audio comprehension is not included in the objectives (the teacher being satisfied with comprehension of the language spoken slowly by natives willing to repeat).

The sentences given in the tests are based on the material which has been studied, but they are different from the ones studied in class or in the laboratory.

2. Translation technique with multiple-choice answers:

a. The students are given sheets of paper where several English sentences are written for each French sentence to be read by the teacher or played through a loud-speaker. For example, the student hears: *C'est ce que je leur ai dit*, and he finds on his answer sheet:

1. *That's what I tell them*
2. *That's what I would have said*
3. *That's what I told them*
4. *That's what I tell them again*

The student checks the sentence which he believes corresponds to the French one. This technique makes the grading easier, but it sharply limits the amount of material the students can be tested on since it is difficult to find sentences that will lend themselves to that type of exercise (to be valid the test should use sentences which are fairly close phonetically, as in our example:

1. **seskəʒlœrdi**
2. **seskəʒœredi**
3. **seskəʒlœredi**
4. **seskəʒlœrədi**).

This technique might be used to determine the audio comprehension level of a class of new students, but it does not seem possible to use it effectively in a regular weekly program of testing.

b. The students are given sheets of paper where one English sentence is given for each group of four French sentences read. For example, the students hear:

1. *J'aime manger*
2. *J'ai mangé*
3. *Je mangeais*
4. *J'en mangeais*

They find on the answer sheet: *I like to eat*, and they have to state which one of the four French sentences corresponds to the English. This variant suffers the same limitation as variant (a).

3. Multiple-choice answers without translation:

a. A question or conversational statement is read in French; the student chooses from a series of four answers read in French the one which makes sense in that particular case. For example:

Le chemin de la gare, s'il vous plaît?	1. *Ne votez jamais à gauche*
	2. *Prenez une place de première*
	3. *Quel tour adroit!*
	4. *Prenez la première à gauche*

b. An answer is read in French; the student chooses from a series of four questions read in French the one which makes sense in that particular case.

c. A statement is read; the student chooses from a series of four situations read in French the one which applies best in that case.

d. An incomplete statement is read; the student chooses from a series of four words or phrases read in French the one which fits best as an ending in that particular case.

e. A definition or a description of an object is read; the student chooses from a series of four nouns read in French the one which stands for the object which has been defined or described.

f. A passage (dialogue, description, or anecdote) is read; the student chooses from a series of four statements read in French the one or the ones which are true with regard to the passage just read.

g. A passage (dialogue, description, or anecdote) is read; then, several questions are asked about the passage; the student chooses from a series of suggested answers the ones which make sense.

h. The student hears a statement and he has to state whether it is true or false.

i. A passage is read; then, several oral statements are made about that passage; the student has to identify them as true or false.

j. The student is given a series of pictures; he hears a statement; he has to check the picture to which the sentence applies.

k. A picture is given to the student; several statements are made about the actions described in the picture; the student has to identify these statements as true or false.

Note that with such multiple-choice techniques, the same answer sheets can be used several times; the teacher can make the tests more and more difficult by modifying the questions or the statements. However, such techniques can hardly be used for weekly tests because adequate sentences are difficult to find. Those techniques can be used mostly for determining the audio comprehension level of a class (placement test or achievement test).

4. Audio comprehension of numbers:

a. The teacher reads some numbers in French and he asks the students to perform some

simple operations (add, subtract, multiply, divide).

b. The teacher writes some numbers on the board and he reads a list of numbers which may or may not correspond with the list of numbers on the board. The students indicate whether the numbers correspond or not.

c. The teacher gives a simple problem of arithmetic and asks the students to write the answer. These problems may be about time (number of hours, days, years, etc.), money (amount spent, earned, saved), dimensions, etc. A French arithmetic book will supply all the needed problems.

5. Other techniques:

a. How many different meanings does a given sentence have? For example, the teacher says: ilsekupeleʃvø; the student writes: *2*. The two meanings are: *Il s'est coupé les cheveux* and *Il sait couper les cheveux* (the student does not write what the two meanings are; he only writes: *2*).

b. How many times is the word *père* (*father*) used in the following text? The teacher then reads a passage where the words *père, perd, paire* are used several times. The student has to determine from the meaning of the passage how many times *père* was used.

c. How many times is the imperfect indicative used in the following text? The teacher then reads a passage where verbal forms (such as *chantions*) could be either the imperfect indicative or the present subjunctive. The student must be able to understand the passage and analyze it; he states how many times he thinks the imperfect indicative is used. The same technique can be used with the contrasts: past participle/infinitive (*chanté/chanter*), past participle/present indicative (*j'ai fini/je finis*), etc.

d. How many masculine (or feminine, singular, plural) nouns are there in the following passage? The teacher then reads a text with phrases such as œvjɛjami (*un vieil ami*), ynvjɛjami (*une vieille amie*) where the student must pay careful attention to single features (œ/yn) in order to answer correctly.

e. How many adjectives (adverbs, prepositions, verbs) do you hear in the following passage?

f. Who am I? What is it? The teacher reads a description of a well-known person or a familiar object. The student must identify the person or the thing.

g. If the teacher wants to check the student's ability to understand French under difficult conditions, he can choose any of the techniques described above and on the preceding pages; various levels of noise are added to the test sentences (or the frequency response may be cut). This will test the student's ability to understand a telephone conversation, a radio broadcast, a film soundtrack, etc.

6. Correction:

These audio comprehension tests are corrected at once by the students themselves.

For the translation technique (1), the sentences are divided into sense units; for

example, we consider that there are six translation units in the following sentence:

Vous devez ..... coller ..... le timbre ..... dans le coin ..... droit .... en haut

The students count one point for each sense unit they get right.

The correction of techniques (2), (3), (4), (5) presents no difficulty.

At the end of the correction, the students add up their points and the teacher assigns a grade according to the number of points.

B. Testing of phonetic discrimination

The ability to identify sounds is essential. It facilitates audio comprehension, pronunciation, ease of expression, and spelling.

1. Technique with key words:

The teacher pronounces a sentence only once and at native speed; the students are asked to identify the vowel sounds. Since we do not believe in phonetic symbols for the basic course, the students answer with the key words used in class. For example, if the teacher says *Vous auriez dû lui en parler*, the students write:

douze homme été lune dix cent quatre été

2. Counting sound technique:

a. The students are asked how many sounds they hear in a word or group of words; for example: *deux yeux/deux œufs, il vient/ils viennent, en retard*. The students write: *5, 4, 5, 6, 5*. The basic purpose of this exercise is to check that the students are able to identify separate sounds.

b. The students are asked to state how many vowel sounds they hear in a word or group of words containing also several semivowels; for example: *minuit, je me suis ennuyé*. The students write: *2, 5*. The purpose of this exercise is to test whether the students are able to distinguish vowels from semivowels.

c. The students are asked to state how many nasal vowel sounds they hear in a word or group of words; for example: *c'est un Italien de Rome, c'est une Italienne de Florence*. The students write: *2, 1*. The purpose of this exercise is to test whether the students are able to hear the contrast: *nasal vowel* such as /ɛ̃/ and *oral vowel* + /n/ such as /ɛn/.

d. The students are asked to state how many /d/, /t/, /s/, /r/, /n/, /l/, etc. they hear in a word or group of words; for example:

ilvjɛ̃dɔrmir/ilvjɛ̃ddɔrmir	*il vient dormir*	*il vient de dormir*	*1*	*2*	/d/
ilʃãtbjɛ̃/ʃãttilbjɛ̃	*il chante bien*	*chante-t-il bien?*	*1*	*2*	/t/
ilvjɛ̃sswar/ilvjɛ̃saswar	*il vient ce soir*	*il vient s'asseoir*	*2*	*2*	/s/
nutirrɔ̃/nutirɔ̃	*nous tirerons*	*nous tirons*	*2*	*1*	/r/
ynnwa/ynwa	*une noix*	*une oie*	*2*	*1*	/n/
illadi/iladi	*il l'a dit*	*il a dit*	*2*	*1*	/l/

The purpose of this exercise is to determine whether the students can distinguish between single and twin consonants[1].

e. The students are asked to state how many /r/ they hear in a word or group of words; for example: *j'en ai peu, j'en ai peur, il pleut, il pleure, c'est mieux, c'est meilleur*. The purpose of this exercise is to determine whether the students hear the contrast between the abrupt vocalic ending and the final /r/ ending.

f. The students are asked to state how many semivowels they hear in a word or group of words; for example: *il est vieux, il les veut, la veille, la vieille, je m'en irai, je m'ennuierai*. They answer: *1, 0, 1, 2, 0, 1*. The purpose of this exercise is to remind the students of the semantic importance of the semivowels.

g. The students are asked to state how many /ɥ/ and how many /w/ they hear in a word or group of words; for example: *Louis s'est plaint de lui, il est parti à minuit, je me suis ennuyé sans toi*. The students answer: *1* ɥ and *1* w, *1* ɥ and *0* w, *2* ɥ and *1* w. The purpose of this exercise is to determine whether the students hear the contrast between ɥ and w.

h. Several sentences are read with all the unstable vowels retained. The students have to state how many unstable vowels would be dropped in natural conversation; for example: *nous appelons, nous appelions, vous chanterez, vous chanteriez, nous sifflerons, nous sifflerions, vendredi, samedi, cinq pieds de long, cinq pieds de haut, je ne sais pas ce que vous montrerez, je ne le connais pas, vous ne dites rien, il est né le onze mars*. The students answer: *1, 0, 1, 0, 0, 0, 0, 1, 1, 0, 2, 1, 1, 0*.

i. Several sentences are read; the students have to state how many liaisons there are; for example: *Quand est-ce que vous partez?, nous avons reçu quelque chose de très utile*. The students answer: *1, 2*.

3. Distinguishing between liaison and linking:

Several sentences are read. The students have to state whether they have a case of linking or liaison; for example: *il est parti, ils sont espagnols, mon bon ami, ma bonne amie, il va au second étage*. The students answer: *linking, liaison, liaison, linking, liaison*.

4. Testing alternate pronunciation mechanism:

This technique should not be used until after the basic course is completed (refer to our principle of no-choice on page 20).

Several sentences are read. The students have to state whether there is an alternate pronunciation; for example:

C'est notre ami	read as	senɔtrami	*No*	
C'est votre père	read as	sevɔtrəpɛr	*Yes*	sevɔtpɛr
Ouvre la porte	read as	uvrəlapɔrt	*Yes*	uvlapɔrt
J'ai quatre dollars	read as	ʒekatrədɔlar	*Yes*	ʒekatdɔlar

1 For this contrast of single and twin consonants, compare with English examples such as: *I drive, I'd drive; I love her, I'll love her; it's old, it's sold.*

Il va être célèbre	read as	ilvaɛtrəselɛbr	*Yes* -	ilvaɛtselɛbr
J'en ai quatre-vingts	read as	ʒãnekatrəvɛ̃	*No*	

5. Testing knowledge of intonation patterns:

a. Indicate which one of the following intonation diagrams best represents the intonation of the following sentence.....

b. Which one of the following sentences is best represented by this intonation diagram .....

6. Correction:

These questions can be corrected in class as soon as the test is over (principle of immediate reward or immediate correction). They can be corrected by the students themselves (the papers can be exchanged).

C. Linguistic analysis testing

This type of test determines whether the student knows what the correct forms sound like.

1. Testing gender:

The students have to state whether a group of words is masculine, feminine, or both; for example:

a. Testing gender of nouns: the students hear

ʒœ̃namiapari semamejœrami setœ̃bonelɛv səsɔ̃lœrzami

They answer: *masculine, feminine, masculine, both.*

b. Gender of subject pronouns: the students hear

tysrɛmɔrtdəpœr nusɔmitaljɛn ʒəmsɥimarjeapari ʒəmsɥiasisyrlɛrb
ʒəmsɥifɛmal nunusɔmplɛ̃talasɛrvøz

They answer: *feminine, feminine, both, masculine, both, feminine.*

c. Gender of object pronouns: the students hear

ʒlɥiediœ̃mãsɔ̃ʒ tylapromiz nulavɔ̃vy nulavɔ̃fɛ
ʒifeatãsjɔ̃ nulɥiavɔ̃ekri nulavɔ̃ekri

They answer: *both, feminine, both, masculine, both, both, masculine.*

d. How many sounds would you add in the feminine? The students hear

tyemarje nusɔmtublã

They answer: *0, 2.*

e. How many words would change when shifting the sentence to the masculine? The students hear

setynvjɛjami semamejœretydjãt

They answer: *1, 2.*

f. How many words would change when shifting the sentence to the feminine? The students hear

ilzɔ̃ʃo ilefjɛr ilsɔ̃ʃo

They answer: *1, 1, 2.*

g. Do the following pairs of adjectives add the same consonant when shifting to the feminine? The students hear

lur frwa frɛ blɑ̃ ɑ̃glɛ gro gri ʒalu

They answer: *Yes, Yes, No, Yes.*

2. Testing number:

The students have to state whether the sentence is singular, plural, or both.

a. Number of nouns: The students hear

ilparlosɛrvøz ilparlogarsɔ̃ ilparldygarsɔ̃ kɛlpeiavevuvizite
kɛlzetaavevuvizite kɛlʒurnolizevu

They answer: *plural, both, singular, both, plural, plural.*

b. Number of pronouns: The students hear

pɑ̃seosjɛn parledesjɛ̃ fɛtatɑ̃sjɔ̃omjɛ̃ prənesɛlla parlezɑ̃
iltravaj ilzabitisi ilpar ildɔrm pɑ̃sezi

They answer: *plural, plural, both, both, both, both, plural, singular, plural, both.*

c. How many words would change when shifting from the singular to the plural (or reciprocally)? The students hear

ilvjɛ̃dɛtmalad̃ lɔkrejɔ̃ɛkribjɛ̃ laportfɛrmmal lœrfijtravaj

They answer: *1, 2, 1, 0.*

3. Testing knowledge of verb forms:

Sections (a) through (e) test variations due to a change of person; sections (f) through (i) test variations due to a change of tense; sections (j) and (k) test variations due to the agreement of past participles; sections (l) and (m) test variations due to a change of interrogation pattern; section (n) tests variations due to a shift to the negative.

a. The students have to state whether the third person singular and the third person plural sound alike. For example, they hear

ilsasje ilsaswa ilvjɛ̃ ilezit iloslezepol

They answer: *No, Yes, No, No, Yes.*

b. The students hear one person; they shift it to a different person (mentally) and they state how many sounds both persons have; for example, they hear the following verb forms and they are asked to change them to the third person plural:

iltravaj ilvã ilekri ilva ilɔb̥tjɛ̃ ilfɛ nuf̬zɔ̃ vuvne

They answer: *8/8, 4/5, 6/8, 4/4, 7/9, 4/4, 5/4, 5/6.*

c. The students have to state how many nasal vowels are added when the verb is shifted from one person to another; for example, they hear the following verb forms and they are asked to change them to the third person plural:

ila vuprəne ɛlva vutne ilfɛ

They answer: *1, 0, 1, 0, 1.*

d. The students have to state whether the vowel sound of the root is changed when the verb is shifted from one person to another; for example:

shift	ilmœr	to the third person plural	*No*
shift	ilpø	to the third person plural	*Yes*
shift	ilʒɛl	to the first person plural	*Yes*
shift	ilaprã	to the third person plural	*Yes*
shift	iltjɛ̃	to the first person plural	*Yes*

e. The students have to state how many syllables are added when the verb is shifted from one person to another; for example:

shift	tyubli	to the second person plural	*1*
shift	tyetydi	to the second person plural	*0*
shift	tysuri	to the second person plural	*0*
shift	tyri	to the second person plural	*1*
shift	ʒaplɛ	to the second person plural	*2*
shift	ilʒɛl	to the first person plural	*0*

f. The students have to state how many sounds are added when the verb is shifted from one tense to another; for example:

shift	tyʒɛl	to the imperfect indicative	*0*
shift	nuzaplɔ̃	to the imperfect indicative	*2*
shift	nuvnɔ̃	to the imperfect indicative	*1*
shift	nuʃɛrʃɔ̃	to the imperfect indicative	*1*
shift	nurãtrɔ̃	to the imperfect indicative	*2*
shift	tymãʒra	to the present conditional	*0*
shift	numãʒrɔ̃	to the present conditional	*2*
shift	nubatrɔ̃	to the present conditional	*2*
shift	nusɔrɔ̃	to the present conditional	*1*
shift	vusifle	to the present conditional	*3*
shift	tydãs	to the future indicative	*2*
shift	tyrãtr	to the future indicative	*3*

g. The students have to state how many syllables are added when the verb is shifted from one tense to another; for example, the verbs given in (f) above would give the following answers: *0, 1, 0, 0, 1, 0, 1, 1, 0, 1, 1, 2.*

h. The students hear some verbal forms and they have to state to how many tenses they belong; for example, they hear

byvõ	*2 (present indicative, present imperative)*
fas	*1 (present subjunctive)*
plœv	*1 (present subjunctive)*
aljõ	*2 (imperfect indicative, present subjunctive)*
swaje	*2 (present imperative, present subjunctive)*
saʃje	*1 (present subjunctive)*

i. The students have to state whether the verb of the subordinate clause changes when the main clause becomes affirmative (or negative); for example, they hear

Il n'est pas nécessaire que vous partiez *Je ne crois pas qu'il soit venu*
Il n'est pas certain que nous puissions rester *Je ne veux pas que vous lui parliez*

The students answer: *No, Yes, Yes, No.*

j. The students have to state how many sounds are added when the subject becomes feminine; for example, they hear

vusərjemɔrdəpœr ʒənsɥipɑneapari ʒmãsɥiplɛ̃

They answer: *1, 0, 1.*

k. The students have to state how many sounds are added when the object pronoun becomes feminine; for example, they hear

ʒlɥieparle ʒlezepɛ̃ ʒlepromiatõfrər

They answer: *0, 1, 1.*

l. The students have to state how many sounds are added when a question is shifted from the melodic pattern to the inversion pattern; for example, they hear

ilãtr vukrwaje iltravaj

They answer: *2, 0, 1.*

m. The students have to state how many syllables are added when a question is shifted from the melodic pattern to the inversion pattern; for example, the verbs given in (l) above would give the following answers: *1, 0, 0.*

Note that questions of type (l) and (m) should not be given until after the basic course is completed (principle of no-choice).

n. The students have to state how many sounds are added when the verb is shifted from the affirmative to the negative; for example, they hear

nuʃãtõ nuzezitõ vuoselezepol ʒmãsɥisuvny

They answer: *3, 2, 4, 4.*

The same technique could be used asking the students how many syllables are added; for the examples given above, the answers would be: *1, 1, 2, 2.*

4. Testing knowledge of function of pronouns:

For example, the students hear

Il me parle *Il me voit* *Il m'écoute* *Il veut me présenter à Marie*

They have to state whether "*me*" is a direct or an indirect object. They answer:

Indirect *Direct* *Direct* *Direct*

5. Testing knowledge of syntax of pronouns:

a. The students hear the affirmative form of an imperative with one object pronoun. They are asked to put it mentally into the negative form and to state whether the object pronoun remains after the verb or precedes it; for example, they hear

Habituez-vous-y *Pensez à lui* *Achetez-la* *Parlez-lui* *Parlez d'eux*

They answer: *precedes, follows, precedes, precedes, follows.*

b. The students hear the affirmative form of an imperative with two object pronouns. They are asked to put it mentally into the negative form and to state whether the object pronouns would remain in the same order or not; for example, they hear

Dites-le-nous *Parlez-lui-en* *Présentez-la-lui* *Prêtez-le-leur* *Montrez-le-moi*

They answer: *not the same, same, same, same, not the same.*

c. The students have to state whether the preposition remains or disappears when the person noun object is replaced with a pronoun; for example, they hear

Il se moque de ses parents *Je parle au directeur* *Je pense à mes enfants* *Je n'ai pas confiance en Pierre*

They answer: *remains, disappears, remains, remains.*

d. Same as (c) above, but the sentences are of this type:

Présentez-moi à Suzanne *Dites-le à votre sœur* *Confiez-le à votre fils*

They answer: *remains, disappears, disappears.*

6. Testing knowledge of thing-person contrast in pronouns:

The students have to state whether the sentence refers to a thing, a person, or both; for example, they hear:

Que regardez-vous? *Qui cherchez-vous?* *Je le crois*
J'y pense *Je m'y suis habitué* *Duquel parlez-vous?*

They answer: *thing, person, both, thing, thing, both.*

7. Testing knowledge of prepositions:

The students have to state how many prepositions they hear in a given sentence. The sentences are chosen so that the prepositions are not too apparent. For example:

ʒvedmãdeaʒãd̥partir sansɛrarjɛ̃d̥plœre nuvnɔ̃ddine

They answer: *2, 2, 1.*

8. Testing knowledge of forms of articles *du, de la, des, au, aux, à la, etc.*:

a. Changes due to a shift to the negative: The students have to state whether the articles remain invariable when the sentence is shifted to the negative; for example, they hear

C'est du pain *Il veut de la viande* *Je me sers du téléphone*
J'ai des livres

They answer: *invariable, changes, invariable, changes.*

b. Changes due to a shift to the affirmative: The students have to state whether the articles remain invariable when the sentence is shifted to the affirmative; for example, they hear

Je n'ai pas d'amis *Je n'ai pas de vieux livres* *Ce ne sont pas de bons amis*

They answer: *changes, invariable, invariable.*

c. Changes due to a shift to the feminine (or masculine): The students have to state whether the preposition appears singly when the sentence is shifted to the feminine; for example, they hear

Je parle aux deux fils de Paul *J'habite près du frère de Marie*
Je parle au mari de Jeanne

They answer: *no, yes, yes.*

d. Changes due to a shift to the singular (or plural): The students have to state whether the preposition appears singly when the sentence is shifted to the singular; for example, they hear

Je parle aux frères de Paul *Je me moque des amis de Marie*
Je parle aux étudiants

They answer: *no, yes, yes.*

e. Changes due to the addition of an adjective before the noun: The students have to state whether *des* changes to *de* when an adjective is added; for example, the students hear the sentences:

J'ai des amies *Je me sers des machines du collège* *Ce sont des histoires*

and they add the adjective *nouvelles*. They answer: *yes, no, yes.*

9. Testing knowledge of function of words:

Example: The teacher reads a sentence such as *Il travaille mieux*; then he reads a list of five words: *souvent, dur, vite, mal, moindre*. The students have to state which one of the five words cannot be substituted for *mieux*.

They answer: *the fifth word.*

10. Correction:

These questions can be corrected in class as soon as the linguistic analysis test is completed. They can be corrected by the students themselves (the papers can be exchanged).

D. Testing knowledge of vocabulary

The audio-oral testing of vocabulary can be done as follows:

Technique 1: The teacher gives a French word, then he reads five definitions. The students must state which one of the five definitions applies to the French word.

Technique 2: The teacher gives a definition in French, then he reads five French words. The students must state which one of the five words applies to the definition.

E. Group testing and correction of audio comprehension and oral expression

These *recorded* examinations test:

1. Pronunciation
2. Knowledge of forms and structures (through the use of sentence modification questions)
3. Translation

Of course, such examinations also test audio comprehension since it should not be possible to answer the sentence modification questions unless the problem sentences are understood.

1. Testing techniques:

a. Pronunciation:

(1) *Vowel identification:* This is to test that the students can identify the sixteen vowel sounds of French; for example, they are asked to recognize contrasts such as:

ʒlevø	ʒlevy	*je les veux*	*je l'ai vu*
metelə̣dsy	metelə̣dsu	*mettez-le dessus*	*mettez-le dessous*
ilsɑ̃mɔvɛ	ilsɔ̃mɔvɛ	*il sent mauvais*	*ils sont mauvais*

The easiest way is to use the key words that are used in class: *dix* for /i/, *lune* for /y/, *douze* for /u/, *été* for /e/, *deux* for /ø/, *chaud* for /o/, *sept* for /ɛ/, *neuf* for /œ/, *homme* for /ɔ/, *quatre* for /a/, *trois* for /ɑ/, *vingt* for /ɛ̃/, *un* for /œ̃/, *onze* for /ɔ̃/, *cent* for /ɑ̃/, *weak vowel* for /ə/.

If the teacher pronounces *Nous ne savons pas d'où tu viens*, the students record *douze, quatre, onze, trois, douze, lune, vingt.*

(2) *Imitation of sentences:* The students are asked to imitate sentences which contain features that most Americans find difficult; for example:

--pure vowels ending abruptly: *il fait beau, c'est du café, j'ai lu, j'en veux*
--consonant tension (clear, sharply defined consonants): *faites-y attention*
--the contrast between a vocalic ending and a consonantal ending: *j'en ai peu, j'en ai peur*
--the contrast between a nasal vowel and the corresponding oral vowel + /n/: *américain, américaine* **amerikɛ̃ amerikɛn**
--linking as in *Il arrive à sept heures et demie* which should be pronounced as **i la ri va sɛ tœ re dmi**
--passage from vowel to vowel as in *Il va à Orléans* **ilvaɔrleɑ̃**
--rhythm, stress, and intonation (the intonation should be tested within the syllables as well as within the sentence)
--the contrasts /y/ /u/, /y/ /ø/, /ɑ̃/ /ɔ̃/, /o/ /ɔ/
--the /r/ in all positions
--the contrast between the single and the twin /r/: *nous mourons/nous mourrons*
--the final /l/: *vous êtes belle, c'est une grande ville*
--the final /j/: *c'est ma fille, il fait du soleil*
--the non-aspirated /p/, /t/, /k/
--the contrast /ɥ/ /w/: *lui, Louis*
--the contrast /n/ /ɲ/: *peine, peigne*
--the combinations /sj/ and /zj/ as in **mə sjø le zjø**
--unstable vowel exercises: **ileplygrɑ̃kmwa ɛleplygrɑ̃dkəmwa**

b. Sentence modification techniques:

The techniques used are the same as those described on pages 28-33.

c. Translation:

Several English sentences are recorded on the examination tape and the student has to translate them into French. Translating spoken (instead of written) English helps the student to translate sense group by sense group instead of word by word.

It is preferable not to include a free expression section in the group examination. This section could not be corrected immediately (principle of immediate correction or immediate reward). It is preferable to test free expression in class.

2. Preparing the examination:

a. The examination must be planned carefully and the problem sentences have to be chosen in such a way that the students cannot do what they are asked unless they fully understand the meaning of the sentences. Otherwise, the teacher may find that some students have answered correctly or made the required word substitution without having the slightest idea what they were saying.

b. Concise, but very clear, explanations must be given at the beginning of each

examination. Although you may give a weekly examination and although all your examinations follow the same plan, you should not assume that your students will remember from week to week the directions about adjusting the volume controls, placing the microphone correctly, speaking softly, running the tape only when the instructor says "*Record*", waiting a split second before they start speaking, and not writing anything while taking the examination.

c. Before each set of questions, the directions should be given twice (with an example, if necessary). These directions should be recorded in French as soon as practicable in the course. Each question is pronounced only once, at normal speed, but clearly articulated. The recording should be prepared with great technical care so that the sound will be as clear as possible (the 7½ ips speed is preferable).

d. It is better to record the examination rather than to read it because:

(1) it is easier to supervise the examination
(2) the teacher can be sure that there will not be any errors or fluffs in the questions
(3) if necessary, the examination can be given by an assistant
(4) the tape can be used year after year (there is no danger of cheating since the students' tapes never leave the language laboratory).

e. The examination and correction tape is prepared without pauses; the teacher stops the tape and makes the pauses as he plays the tape during the examination. Leaving no pauses presents the following advantages:

(1) the teacher can make the pauses during the examination as long or as short as he wishes, thus making the examination easier or more difficult (with very short pauses, he may test how instantaneous the students' answers can be)

(2) the teacher saves time when recording the tape.

3. How to administer the group examination:

The students' tapes are each about 200 feet long, on a polyester or PVC base (unbreakable under normal operating conditions). These tapes should be on 7" reels; on smaller reels, the tape may fall off and delay some students (the school can purchase large reels of tape and portion it out on empty 7" reels). A piece of leader tape is spliced at the beginning of the reel so that when the examinations are corrected all the students know exactly where the first answer begins.

The whole class goes to the laboratory. The students thread their tapes, adjust the switches and hold the tapes still with the pause bar. The teacher starts the examination at the console; he plays the first question and stops the tape. The students prepare the answer during the pause and rehearse it in a whisper to check that it "sounds right". The examination tape is started again to say "*RECORD*"[1], all the students release their tapes, wait a split second,

[1] The students do not record as soon as they know the answer; they wait for the word "*RECORD*" and then all record at the same time. This is to prevent poor students from sitting near a good student, waiting until he gives his answer, and then imitating him.

record the answer, wait a split second[1], press on the pause bar, and wait for the next question. It should be clear that the students run their tapes *only* when they are told to record their answers -- they *do not record the questions* -- they *do not leave pauses* in between the answers; thus, the teacher will be able to listen to the students' tapes in a minimum of TIME.

At the end of the examination, the students are instructed to rewind their tapes to the beginning of the first answer (that is, the end of the leader tape) for the correction which follows immediately.

4. How to give the group correction:

The teacher starts the correction tape at the console; the first problem sentence and the answer are given (with comments and explanations whenever necessary). The students are instructed to repeat the correct answer with the teacher. The teacher then says: "*Listen to what you recorded*" and the students start their tapes to compare their answers with the correct one; they stop their tapes. The teacher repeats the correct sentence once again and he asks the students to repeat with him so that the last impression will be the right answer pronounced correctly. The same process is repeated with every sentence.

To make sure that the students will listen carefully to the corrections and notice their errors, the teacher occasionally gives the same examination again right after the end of the correction. On such occasions, the students receive two grades: one for the first examination and the second for the "surprise" re-examination (this second grade is based, of course, on the amount of self-correction done by the students).

The correction could be done immediately after every answer is recorded by the students; — however, this on-the-spot correction is not recommended because it might lead to cheating, and because it might prove distracting in a testing situation.

At the end of the correction, the students know how many errors they have made and what grade to expect. The teacher can grade these examinations rapidly since there are no intervals (each tape is only about *one minute* long --in *one minute* it is possible to record *twenty* fairly long sentences). The teacher does not have to record or write any corrections since the students have heard the correction tape. As soon as the examinations are corrected, the teacher bulk erases all the students' tapes so that there will not be any possible danger of confusion during the next examination. The tapes always remain in the laboratory (they are not returned to the students for the simple reason that it is likely that some students would forget to bring them on the examination day).

Please refer to the Appendix for a discussion about examination machines.

Thus, in the system we advocate the student does not record during his review work in the language laboratory; he records only during the examination (preferably weekly).

[1] This is to make sure that there will not be a wow at the beginning or at the end of the answer.

THE SPELLING-READING WORK

I. PRINCIPLES

Audio-oral skills and spelling-reading skills are two different disciplines; they must be taught separately. Ideally, the spelling-reading skills should not be taught until after the speech automatisms are so firmly established that they cannot be threatened by the erratic spelling (for a discussion of the length of the time lag, see page 75).

When the audio-oral work is completed, the students are taught:

1. How to spell what they can understand and say correctly; since they speak grammatically, they *can write grammatically*, but in addition they have to learn a set of rules so that what they put on paper will respect contemporary *spelling* usage[1].

2. How to understand visually, that is recognize the written form of what they can understand aurally. The printed page is not meant to be deciphered; its purpose is to arouse an echo in the students' minds.

3. How to read aloud; obviously, it is not enough to recognize and understand the words on the printed page; the student should also be able to read them aloud correctly.

Of these three activities, number 2 is by far the easiest; the students usually have no difficulty in recognizing in these distorted visual representations they words they have learned audio-orally.

II. THE SPELLING-READING WORK IN CLASS

The students will find spelling less difficult if they understand that it requires three different types of activity.

1. Learning to spell each word in its isolated form (the way it is found in a dictionary):

Some French words have a phonetic spelling (*midi, été, sur, pour, etc.*), but most add silent etymological letters which greatly complicate the acquisition of spelling (*doiGT, temPS, sePt, autoMne, etc.*). This type of learning can hardly be helped by rules; it requires visual memory and kinesthetic memory: the students must practice until they develop a visual and kinesthetic sense which prohibits them from writing the wrong spelling.

2. Learning spelling rules which require only memorization:

For example, learning that seven nouns ending in *ou* take a letter *x* in the plural, that all words ending with *eu* except *bleu* and *pneu* take a letter *x* in the plural, etc.

[1] For that distinction between *writing* and *spelling*, remember that *great writers* have been *wretched spellers* (for example, Mme de Sévigné).

3. Learning spelling rules which require intellectual decisions:

For example, the rules about the agreement of past participles require that an analysis of the sentence be made.

A. Learning to spell and read the vocabulary

1. The teacher reads a short sentence for each vocabulary item (so that the students will be reminded of its meaning); he spells the vocabulary item; the students *write* this word in their notebooks (they can compare with what a student writes on the board). They shape their letters as carefully as they can since it is apparent that kinesthetic memory is as important as visual memory in the learning of spelling.

2. The students read these words in isolation and make up orally one short sentence for each of them (so that the meaning will remain clear).

3. They write them again, shaping the letters as carefully as possible and spelling them aloud in chorus.

B. Explanation of the spelling rules

The teacher *must* draw a constant comparison between the spoken French the students have been taught and the written French they are now learning; he must not let the written forms influence the speech habits the students have acquired.

Let us suppose for example that the students have worked audio-orally with the structural segment *adjective + noun*; they have learned to say:

œ̃grɑ̃tami	œ̃bɔnelɛv	œ̃vjɛjami	dœbɔ̃zelɛv
yngrɑ̃dami	ynbɔnelɛv	ynvjɛjami	dœbɔnzelɛv

Now, with the spelling rules they will find that -although there is only one spoken difference between œ̃bɔnami and ynbɔnami - there are three differences on the paper: *un/une, bon/bonne, ami/amie*. They will find that -although the adjective is pronounced differently in œ̃bɔ̃travaj and œ̃bɔnami, the spelling is the same: *bon*. They will find that the adjective marje has only one pronunciation, but four spellings: *marié, mariée, mariés, mariées*. They will find that the /t/ sound of œ̃grɑ̃tami is spelled with a letter *d: un grand ami*.

C. Spelling drills

All the practice work is based on material which has been met during the audio-oral work. The students should never be asked to spell or read material they have not acquired audio-orally first.

The teacher reminds the students that they must understand the meaning of the whole sentence before they start writing; the students should not pick out groups of two or three syllables which have an apparent meaning and then try to put these groups together; for example, the student who upon hearing sɛtozgɔ̃ takes it for granted that sɛto means *cette eau* and then tries to figure out what zgɔ̃ can mean in connection with *eau* will never be able to understand and spell French correctly.

The student should also pay attention to the context (preceding *and* following); for example, it is the context which will tell him to spell:

Il est tout vert	or	*trop peureux*	or	*Quelle ville avez-vous visitée?*
or *Il est ouvert*		or *trop heureux*		*Quelles villes avez-vous visitées?*

During the class spelling practice, the teacher pronounces the sentences only once, by rhythmic groups, at normal speed, and with the natural cultured pronunciation. He should say:

sənsõpalelivr	kəʒevyisi	samdidɛrnje	*Ce ne sont pas les livres que j'ai vus ici samedi dernier*

rather than:

sənəsõpalelivr	kəʒevyzisi	samədidɛrnje

These class spelling drills use the dictation technique. They should be short, but difficult, and they should have a maximum of difficulties within a minimum of words. This class practice, especially on the college level, need not be long. The students should be able to do most of the spelling and reading work by themselves in the laboratory or at home.

It may be a good idea to record the spelling drills on tape and to play them to the class through a tape machine placed on the teacher's desk. This allows the teacher to move freely among the students and give help whenever necessary.

D. Reading drills

1. The students are asked to read the sentences of the spelling drills; the main duty of the teacher here is to make sure that the spelling will not disturb the students' audio-oral skills and that they will continue to pronounce bõ - bɔn although they see *un <u>bon</u> travail - un <u>bon</u> élève.*

2. Then, the students are asked to read a connected passage or dialogue based on the vocabulary, forms, and structures already studied by the students. Here again, the teacher's main task is to keep the spelling from influencing the speech habits of the students.

Whenever an error is made, the correction should be as effective as possible. Instead of simply stopping the student and giving him the correct pronunciation to imitate, the teacher should ask: "*Quelle faute de prononciation avez-vous faite?*" and the student should be led — with the help of his classmates if necessary — to discover and correct his error.

E. Comments

There is no effective short cut to learning how to pronounce and spell French words; the only sure method is to learn each word separately. It is true that, after a few months, the students can guess the correct pronunciation of words such as *établi, bâti, cadeau* although they have never heard them before. It is also possible in some cases to guess the spelling of words which have never been seen before. However, such guessing is not wise because the odds against winning are too high. For example, how can one guess the correct pronunciation of

Agen aʒɛ̃ *Rouen* rwã *pollen* pɔlɛn *aiguille* egɥij *anguille* ãgij ?

III. THE SPELLING-READING REVIEW TAPE

The student goes to the laboratory to review the spelling-reading work done in class and have further practice. The laboratory work must be carefully graded (step by step progression). The student can check all his answers immediately (immediate correction or reward); the student must give his answer before he looks at the correction (this requires self-discipline, but this has not given us any difficulty since the student finds out quickly that he cannot pass the spelling-reading test in class unless he exercises this self-discipline in the laboratory)[1].

Part 1: The spelling of the vocabulary is reviewed. To save time, several of the items to be reviewed are put in the same sentence. The student checks with his textbook.

Part 2: The spelling rules are reviewed; the examples of the textbook are read; the student repeats with the tape.

Part 3: This part contains spelling drills. The remarks given under "Spelling drills" on pages 67-68 also apply here. These drills contain examples for all the spelling rules and the vocabulary of the chapter under study. The vocabulary items are reviewed in all their possible forms (various persons and tenses of the verbs; masculine, feminine, singular and plural forms of nouns and adjectives). Explanations are given whenever necessary. The drills also contain a *cyclic* review of the spelling rules, vocabulary, forms, and structures previously studied.

Technique 1: The sentences are read at normal speed (natural cultured pronunciation). The student listens to the first sentence (he can rewind and listen again if he does not understand), he stops the tape, writes the sentence, starts the tape for the second sentence, and so on to the end of the drill. Then, he checks with his textbook. He makes a list of his errors and, with the help of the spelling rules and explanations in the textbook, he finds out why he made his errors and how he can avoid them in the future.

Technique 2: The tape uses the sentence modification drills described on pages 28-33; the student makes the modification orally first; if the sentence sounds right, he writes it. At the end of the drill, he checks his answers with his textbook.

Technique 3: The tape gives sentences which have several meanings. The student has to write these various meanings. At the end of the drill, he checks his answers with his textbook.

Example: **ilsekupeleʃvø** *Il s'est coupé les cheveux* *Il sait couper les cheveux*

Part 4: This part contains reading drills. The basic reading drill is as follows:

The textbook has a connected text or dialogue using the new vocabulary items (in their various forms). The student reads the first rhythmic group[2], he starts the tape to check whether *he pronounced the required sounds*, then he reads the second rhythmic group, checks with the tape, and so on to the end of the drill. The tape also contains advice for the improvement

[1] It is possible to build a machine which would present only one problem at a time and which would prevent the student from looking at the correction until he has written his answer. At the end of the drill, this machine should automatically go over the sentences missed during the first run. It should also keep track of the number of errors.

[2] In the first few chapters, the rhythmic groups are indicated in the text; after this, deciding where the rhythmic groups begin and end is part of the laboratory assignment.

of the student's pronunciation (tension, quality of the vowels, intonation, etc.). Thus the tape has two different functions:

a. make sure that the student knows what sounds make up the words; for example, the tape reminds the student that *Ils vendent* has only five sounds (ilvɑ̃d), that in *gentil* there is no final /l/ sound, etc.

b. improve the student's pronunciation whenever possible.

Under (a), progress is predictable; when the student leaves the language laboratory, he has learned or reviewed some definite facts; for example: *fille* and *ville* have different final sounds, *août* and *où* are pronounced alike, *fière* and *première* have identical final sounds but *fier* and *premier* do not.

Under (b), progress is unpredictable (refer to our discussion on pages 16-19).

If you wish the student to record his voice and compare his recording with the teacher's voice, you will need some dual-channel equipment or two machines side by side (working in tandem). As stated in the course of our discussion on pages 16-19, this recording does not accomplish anything. However, since the students may think that they would do better if they could record, it is good psychology to provide for one or two special machines. Our experiments at Middlebury have shown that the students try recording their voices once or twice and then give it up when they find out that progress is the same whether they record or not.

Part 5: Some teachers want their students to be able to use the French alphabet with ease. Two techniques are possible:

Technique 1: The student hears a word spelled in French; for example: *m a g n i f i q u e.* He has to write the word down. Then he writes the second word, and so on to the end of the drill. Then he checks his answers with his textbook.

Technique 2: The student looks at a word and spells it in French, checking with the tape.

A few drills of this type can be useful; the students do have to know how the letters of the alphabet are pronounced in French. However, trying to have the students be able to use the French alphabet as rapidly and with as much ease as they use the English alphabet is of debatable value. In fact, we believe that in order to save time and avoid the errors that are continually caused by the letters *a, e, g, i, j* it is preferable to spell -in class as on the tapes- with the English pronunciation of the alphabet.

IV. SPELLING AND READING TESTS

A. Spelling tests requiring written answers

Technique 1 - Spelling only: The teacher gives the English translation of a French sentence; then he reads the French sentence only once, by rhythmic groups, at normal speed and with the natural cultured pronunciation; the students write the sentence. This technique tests spelling only since no audio comprehension is involved.

Technique 2 - Audio comprehension and spelling: The teacher reads each sentence only once,

by rhythmic groups, at normal speed, and with the natural cultured pronunciation; the students have to spell. This technique involves audio comprehension as well as spelling. It is not a true test of spelling since a student with a poor audio comprehension might fail to understand every sentence and thus fail the examination, while he might have received an excellent grade for spelling if technique #1 had been used.

Technique 3: This technique combines audio comprehension, grammar, and spelling. The teacher uses the sentence modification techniques described on pages 28-33. The students make the changes, say the sentences mentally (to check whether they sound right), then they spell them.

Technique 4: This technique combines grammar and spelling. The teacher gives the sentences in English, the students say their translations mentally (to check whether they sound right) before writing them.

Technique 5: This technique combines audio comprehension (and some imagination) with spelling. The teacher reads sentences which have several meanings and the students have to write the various spellings. For example:

kãpãsty	*Quand penses-tu?*	*Qu'en penses-tu?*
ʒãvø	*Jean veut*	*J'en veux*
kɛskəʒãse	*Qu'est-ce que j'en sais?*	*Qu'est-ce que Jean sait?*
ilvalaprãdr	*Il va l'apprendre*	*Il va la prendre*
ilsõplɛ̃	*Ils sont pleins*	*Ils sont plaints*

Technique 6: This technique combines audio comprehension (and some imagination) with spelling. The teacher reads sentences which have nearly identical pronunciations; the students have to write them. For example:

ʒəmdəmãdutyɛ	*Je me demande où tu es*
ʒəmdəmãddutyɛ	*Je me demande d'où tu es*
ilsədizty	*Ils se disent tu*
ilsədiztu	*Ils se disent tout*
ilãvɛraapari	*Il en verra à Paris*
illãvɛraapari	*Il l'enverra à Paris*

Technique 7: A written passage is given; blank spaces are left indicating that a word has been omitted. The passage is so constructed that only one word can be used in each blank. The students must supply the missing word in each blank. For example:

Nous avons rencontré Pierre et Marie; nous leur avons parlé et nous nous sommes promenés avec ____ .

This technique, when used in sentences of this type, tests grammar and spelling.

Technique 8: The students must supply the correct form of a verb, an adjective, a noun, etc. For example:

Nous vous écrirons dès que nous (être) _____ *en Fr*

Je suis content que vous (avoir) _____ *eu raison.*

B. Spelling tests with numerical or multiple-choice answers

Technique 1: The teacher pronounces pairs of sentences such as:

nusɔmtusvəny	ʒmɑ̃tersɔkurləplyfasil	kɛlnuvotravajavevukɔmɑ̃se
nusɔmtutvəny	ʒmɑ̃tersɔkurleplyfasil	kɛlnuvotravoavevukɔmɑ̃se

The students must state how many words change in the audio contrast and how many words change in the written contrast; with our examples, the answers would be: *1/2, 1/3, 1/4*.

This technique helps remind the students that what happens when one speaks is not the same as what happens when one writes.

Technique 2: The students have to choose from a series of answers the one which is correct For example, choose the correct endings for the past participles:

1. Mes amis viennent de partir. Je les ai conduit ____ à la gare.

a. __
b. s
c. e
d. es

2. J'ai les mains propres. Je me les suis lavé ____.

a. __
b. s
c. e
d. es

Technique 3: The students hear four sentences which sound alike except for one sound; they have an answer sheet with only one of those four sentences written. Each sentence is read only once. The students have to state which one of the four sentences they have heard is written. For example, they hear:

ilvudra ilvodra ilvɑ̃dra ilvjɛ̃dra

and on their answer sheets they have: *il voudra*. They have to check: *First sentence*.

The reverse technique can be used; the students hear one sentence and they have four sentences on their answer sheets; they have to check the sentence which was pronounced.

This multiple-choice technique cannot be used for weekly tests because it is very difficult to find satisfactory groups of four sentences. Its use is limited to placement or achievement tests.

C. Reading tests with multiple-choice answers

Technique 1: The students are given answer sheets which contain lists of words. They have to underline the letters or groups of letters which have the same pronunciation as a given letter or group of letters. For example:

Underline the letters or groups of letters that sound like *im* in *important*.

Reims *comprends* *bien* *plein* *pleine* *immédiat*

Technique 2: The students are given answer sheets with sets of three words each; two words in each set have the same vowel sound. The students have to check the word which differs from the other two. For example:

1. deux	*1. femme*	*1. monsieur*
2. pleure	*2. sembler*	*2. onze*
3. œil	*3. dame*	*3. faisais*

Technique 3: The students are given answer sheets with sets of three words each; two words in each set have the same consonant sound. The students have to check the word which differs from the other two. For example:

1. second	*1. automne*	*1. nation*
2. contre	*2. nage*	*2. moitié*
3. gare	*3. main*	*3. sept*

Technique 4: The students are given a list of words with letters underlined. They must tell whether each underlined letter stands for a sound or not. For example:

1. œufs *2. blanc* *3. œuf* *4. sec*

Tests in reading comprehension are not included because we believe that the testing of comprehension should be done entirely orally.

If necessary, tests in reading comprehension can be readily made by adapting the audio comprehension tests that were described on pages 50-54.

D. Individual reading tests

The student is asked to read a paragraph (about 300 words). This passage has been specially prepared in order to include words and expressions whose spelling poorly represents the pronunciation; examples of such expressions are:

Conduisez prudemment	*Ils s'asseyent dans le fauteuil*	*Soyez patient*
kɔ̃dɥizeprydamɑ̃	ilsasɛjdɑ̃lfotœj	swajepasjɑ̃
	Nous habitons en haut au second étage	
	nuzabitɔ̃ɑ̃oozgɔ̃tetaʒ	

The student is given two or three minutes to scan the passage silently before reading it aloud.

These tests can be given in class or during a special meeting between each individual student and the teacher.

It is not recommended to have the students record the test in the language laboratory because the correction is not immediate and because the correction of individual tapes would take too much of the teacher's time.

E. Testing knowledge of written vocabulary

Technique 1: The students are handed a list of sentences. Each sentence contains a blank; the students must choose from a list of five words the one which would best fit the sentence.

Nous sommes tombés en panne d' _____	*1. ongle*	*3. oiseau*	*5. espoir*
à dix kilomètres de Paris.	*2. arbre*	*4. essence*	

Technique 2: Same as above, but this time the students have to supply the missing word without the help of a multiple-choice list. This technique requires carefully chosen sentences where the meaning is so clear that only *one* word is possible.

Technique 3: The students are given a series of pictures; they have to name the objects.

Technique 4: The students hear a question or a definition so phrased as to elicit the needed word.

Technique 5: The teacher gives a word; the students must supply the antonym.

Technique 6: The teacher gives the English word; the students translate into French.

F. Written expression tests

Most of the techniques of Step six on pages 35-37 can be used. First, the student says mentally what he wants to express; then, if it sounds right, he writes it. Written expression should not be a word puzzle where words are assembled one by one.

The following techniques can also be used:

Technique 1: This can be referred to as the telegraphic message technique. The student is given some information in the form which is generally used in telegraphic communication and he is asked to restore all the missing words. For example:

Arriverai gare du Nord mercredi deux heures rapide de Calais Stop Serais heureux vous voir plus tôt possible Stop Amitiés Stop

The student writes:

J'arriverai à la gare du Nord mercredi à deux heures par le rapide de Calais. Je serais heureux de vous voir le plus tôt possible. Amitiés.

The same technique can be used with notes to be turned into a paragraph.

Technique 2: The teacher supplies all the elements of a sentence, but he supplies them in a scrambled order. The student must put these elements in their proper order. For example:

dès possible parlerai que je sera lui ce

The student writes:

Je lui parlerai dès que ce sera possible.

Technique 3: The student has to improve a poorly written passage. The passage does not contain any errors of spelling or grammar, but it looks like the first draft of a composition.

It has to be rewritten so that the ideas will be expressed better and more clearly. We do not like this technique because it cannot be corrected immediately by the students themselves.

Technique 4: This is a translation test with multiple-choice answers. The student is given a text in English; some expressions in the text are underlined; the student must select out of four translations the one which is best for each underlined expression. The four options should be fairly close in meaning so that the correct answer will not be obvious.

THE TIME LAG

The time lag is the time which elapses before the material which has been studied orally is studied in its written form.

Throughout this discussion, we have to keep in mind that the purpose of our French courses is to prepare students who can speak and understand as well as they can read and write; our aim is *not* to produce students who can speak correctly, but who cannot spell.

Many of our language teaching principles have been influenced during the last few years by the "natural process" --the way a child learns his native language[1]. Since a child's training is entirely audio-oral for several years (he does not start to read and write until he goes to school), many pedagogues have come to believe that a long time lag is also desirable for the learning of a second language.

A time lag --as stated several times in this book-- is clearly desirable; the point at issue is how long should the time lag be? Since 1947 we have tried short and long time lags. In particular, at Middlebury during the 1955-1957 period, we used a 24-week time lag: no French was read or written from September 15 through April 15; the remaining six weeks (through May 30) were spent on teaching the students how to spell and read *all* the material which had been studied audio-orally.

All our experiments clearly indicate that *no matter how long or how short the time lag* the introduction of the spelling presents the same *potential* danger. The students with superior or good linguistic ability usually avoid this danger; *no matter how long or how short the time lag*, they learn to spell without difficulty and without endangering their speech habits; they succeed in keeping these two sets of skills separate. The students with mediocre or poor linguistic ability, *no matter how long or how short the time lag*, find that their speech habits are constantly threatened by the spelling they are learning; the teacher must continually remind them of the differences that have to be made.

Thus, in spite of many articles to the contrary, we have found that a long time lag does not produce better audio-oral results than a short one. A further danger of the long time lag is that correct spelling habits are often delayed. During the strictly audio-oral period, it is

[1] Some of these principles are: (a) the student must learn by imitation; (b) the language must be taught through the use of dialogues; (c) no comparison should be made with English; (d) there should be a long time lag.

nearly impossible to stop our high school and college students from devising their "own" phonetic spelling; it may be possible in class, but in the laboratory you cannot prevent them from writing in their books or on sheets of paper

otr *feeneessay* *shantay* *duhbuner*

when they hear

autre *finissez* *chantez* *de bonne heure.*

Even if you could stop them from writing, you could not stop them from seeing these spellings in their minds. The longer the time lag, the more strongly these spellings become fixed and the more difficult it is to eradicate them.

These disappointing results are a further proof that we must stop comparing our students with young children learning their native language. The young child is in the ideal situation; he does not know how to transform sounds into letters; he cannot fabricate a spelling in his mind. For several years, his language learning is truly entirely audio-oral. When he goes to school, his speech habits are firmly set; the spelling can now be taught without endangering his audio-oral skills (even though he sees *stopped, loved, decided,* he will continue to pronounce *stopped* with a final /t/ sound, *loved* with a final /d/ sound, and *decided* with a final /ɪd/ syllable).

> But this ideal situation can never occur again; the child now associates sounds with letters; he has lost *FOREVER* the ability to learn a foreign language in the way he learned his native English.

As stated previously, each chapter must be presented audio-orally first, but once the audio-oral features have been understood and practiced there is no need to delay the presentation of the visual forms. A time lag of about a week is preferable and will give excellent results if the teacher always makes clear the oppositions between spoken and written French.

> What really matters is not the length of the time lag, but the vigilance of the teacher. If he presents the spelling by constant comparison with the spoken forms already studied and if he is always on the lookout for errors due to the influence of the spelling, he will find that the short time lag can be highly successful.

HOMEWORK

In schools where the students live on campus and where the language laboratory is open until late at night the students can do all their outside-of-class work in the language laboratory. But in cases where the students can spend only one or two hours per week in the laboratory, some form of homework has to be given; obviously, this homework has to be *written* since all the audio-oral work must be done in class or in the language laboratory.

This homework aspect is one more factor in favor of the short time lag; with a long time lag, no real homework can be given during the strictly audio-oral part of the course. The solutions proposed by the advocators of the long time lag are not practical[1]. For example, can we really tell a student: "*Go home and recite aloud twenty times the dialogue we learned in class*" ? It is true that if the student repeats correctly the dialogue twenty times during the evening, his chances of remembering it for the next class will be increased, but the whole idea is not practical. If the student has forgotten or claims he has forgotten the dialogue by the time he gets home, no homework can be done; if the student *thinks* he remembers the dialogue and is willing to practice, how can he be *sure* that he does remember correctly and that he is not repeating wrong forms, wrong structures, and wrong vocabulary? In fact, with this system, the students who need homework most cannot do any.

With the short time lag which we are recommending, all the audio-oral work is done in class and in the laboratory. Some spelling-reading work is done in class and in the laboratory; the rest is assigned as homework.

The following types of homework can be given:

1. Learn the spelling of the vocabulary.

2. Learn the spelling rules.

3. Written exercises:

   a. sentence modification drills: for example, the students find in their textbook a series of sentences in the singular and they have to write them in the plural. The sentence modification techniques described on pages 28-33 can be used. The students can find the answers in the appendix of their textbook.

   b. fill-in drills: for example, the students have to fill a blank with the right preposition, the right person and tense of a verb, the right form of an adjective, the right ending of a past participle, etc. The answers are in the appendix of the textbook.

   c. translation drills: the students translate a series of English sentences or a short connected text into French; then, they can check their work with the translation given in the appendix of the textbook.

The students should be tested on this homework at the beginning of the next class. This is to make sure that they will do the work as recommended.

   d. self-expression exercises: the students are asked to write a short composition or

[1] The following is quoted from Circular No. 583, published by the U.S. Department of Health, Education and Welfare (June 1959):
"What, then, can be assigned for outside-of-class practice? Only those sentences which the students already know: material over which they have a firm and accurate control with regard to pronunciation and structure, including the important characteristic patterns of rhythm and intonation. Once a short sequence (for instance a brief dialogue consisting of two or three exchanges of questions and answers) has been mastered orally in class, it becomes available as material for outside-of-class practice. An appropriate assignment might be for the students to practice reciting the dialogue aloud fifteen or twenty times."

essay about a topic. This work is to be corrected by the teacher.

Summary: Ideally, all the outside-of-class work should be done in the language laboratory. When this is not possible, carefully chosen written homework should be assigned. This homework should be corrected by the students themselves at home and it should be tested rapidly during the next class.

VISUAL AIDS FOR THE BASIC COURSE

Visual aids can be used for the teaching of:

1. Pronunciation
2. Forms and structures
3. Oral expression
4. Vocabulary

The main visual aids now at our disposal are:

1. Special printing effects (special letters, colors, disposition of the text on the page).
2. Drawings (in books, on blackboard, on felt board, or taken from newspapers or magazines).
3. Objects brought to class by the teacher.
4. Moving films with optical and/or magnetic sound track.
5. Slides and filmstrips (slides and filmstrips often do a better job than moving films because they are more flexible: the speed of projection can be adjusted to the level of the class, unwanted portions can be skipped, some portions can be shown several times easily).
6. Transparencies used on an overhead projector (this is a very flexible tool when used by a properly trained teacher; strips which move up and down can be added to a transparency, transparencies can be put on top of one another, etc.).
7. Finally, let us not forget that the teacher himself should be the best audio-visual aid the class can have.

Good equipment is available for the use of visual aids, but teachers have not reached any measure of agreement as to how to use visual aids, and materials of proven value are in very short supply.

Before using any type of visual aids, we should keep the following points in mind:

1. Visual aids should be used only when they clearly increase the rate of learning, either by making the material easier to understand or by arousing interest and making the students more receptive. It is not enough to make the course entertaining, the rate of

learning *must* go up.

2. No class time should be wasted in preparing the room or in getting the materials ready to be shown; all the equipment should be dependable so that practically no breakdowns will occur during the presentation of the visual aids (otherwise the loss of class time would obliterate any possible gains due to the use of visual aids).

3. Using a complicated machine with ease may look impressive, but we must keep in mind that visual aids must be judged by the results we obtain, not by the means we use. We have to try to obtain the best possible results with the simplest and cheapest visual aids.

I. VISUAL AIDS FOR THE TEACHING OF PRONUNCIATION

A mirror, drawings on the blackboard, and a board with movable lines to show the movements of the speech organs are the best visual aids for the physiological explanations that help some students acquire a better pronunciation.

The other aids (wax head with detachable parts, filmstrip showing the speech organs, a sound film demonstrating how the sounds are produced, a slow motion film with stretched speech[1], X-ray movies of the speech parts in action) are of little practical use.

II. VISUAL AIDS FOR THE TEACHING OF SPELLING, MORPHOLOGY, AND STRUCTURES

With an overhead projector, it is possible to devise very simple visual aids. For example, all the letters that indicate a feminine agreement can be red, all the letters that indicate a plural agreement can be green. A slip can be moved up and down and all the various written forms can be shown on the screen very easily.

This system does *look* very effective and it does stimulate interest -at least for a time- among the students. But with such a system we may run against the difficulties that usually arise when exaggerated aids (or props) are used; for example, when learning to swim, should a life preserver be used to help? if so, for how long? Does it really help the students when some letters are red or green? Do they really learn to spell correctly more rapidly? These questions have not been answered to our satisfaction.

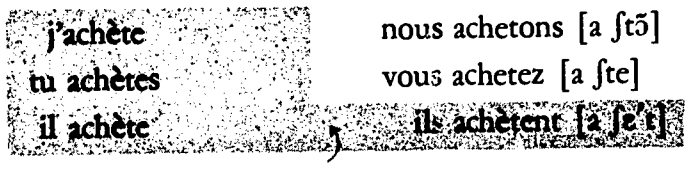
Using visual aids for the teaching of morphology is done to some extent in most textbooks. Note, for example, the use of bold letters in the conjugations given below:

je donne	I give	nous donnons	we give	je fin iss ais
tu donnes	you give	vous donnez	you give	tu fin iss ais
il donne	he gives	ils donnent	they give	il fin iss ait
				nous fin iss ions
				vous fin iss iez
				ils fin iss aient

[1] The speech stretcher can play a recording at a speed slower than normal without affecting the timbre of the sounds. The characteristics of speech can be discerned more easily.

Such visual aids are dangerous because they emphasize features which do not exist in spoken French (the endings *-e, -es, -ent* are not pronounced) and because they break up the words (*fin iss ais*) in a way which is completely opposed to the way the word is pronounced /fi ni se/.

Other visual aids -such as the "L area" below- are of debatable value (does this drawing really help the students?):



THE 'L' AREA

In some experiments, various colors have been used to differentiate the concepts of time (present, past, future); in other cases, matchstick drawings are used to explain the singular/plural and masculine/feminine contrasts[1]. It seems to us that, at the present time, the best visual aid for the practice of forms is a picture or a series of pictures depicting a story; the students are asked to relate the story in the present, then as if it had happened yesterday, then in the future, then as if all the characters were women, etc.

Using visual aids for the teaching of structures does not look very promising. Drawings such as the ones shown below appear to be of little value to the students:

SUBJECT	aller (Inflected)	+	Main Verb (INFINITIVE Form)		SUBJECT	'has been doing something' PRESENT TENSE of French Verb	depuis (for) [TIME]
Alain	va		PARTIR.[1]				
Nous	allons		PRÉPARER	la leçon.[2]	Alain	PARLE FRANÇAIS	depuis deux ans.

In other experiments, blocks of various colors representing nouns, adjectives, etc. have been used, but without any apparent success.

A picture or a series of pictures describing a story may be used for the practice of some structures. For example, if you want your students to practice the "*SI* structures", you could ask them to relate the story and say what would happen if it rained, what would have happened if it had rained, what would happen if it were spring, what would happen if it were noon, what would happen if the story took place in America, etc.

1 In co-educational schools, the students are the best visual aid for the teaching of the masculine/feminine and singular/plural contrasts. By pointing at various students, the teacher can say the following and teach the contractions: "*Jean est le frère de Suzanne; je parle à Jean; je parle au frère de Suzanne. Jean et Pierre sont les frères de Suzanne; je parle à Jean et à Pierre; je parle aux frères de Suzanne. Marie est la sœur de Robert; je parle à Marie; je parle à la sœur de Robert. Marie et Louise sont les sœurs de Robert; je parle à Marie et à Louise; je parle aux sœurs de Robert, etc.*".

III. VISUAL AIDS FOR THE IMPROVEMENT OF ORAL EXPRESSION

Objects, drawings, slides, filmstrips, moving films, and in fact any of the so-called conversational pieces can be of great help in oral expression exercises; they will not, of course, improve the correctness of expression, but they can supply the canvas, the ideas for the oral expression. A student who has little to say when presented with a topic for discussion will find his work easier if he is given good visual aids that suggest things to say.

IV. VISUAL AIDS FOR THE TEACHING OF VOCABULARY

When visual aids are used for the teaching of vocabulary, they should:

1. help the students *to understand* the meanings of the new terms
2. help the students *to remember* the meanings of the new terms.

A. Comprehension

Visual aids are not essential for terms such as *chien, chat, arbre, etc.*, that is, terms that are well known and have the same connotations in France and in America.

Visual aids become important when the objects are somewhat different and/or have different connotations; for example, *bread* is not an exact translation of *pain.*

Visual aids become essential when the objects are not generally known in this country (*espadrilles*, for example); such terms, however, rarely appear in a basic course.

If our intention is to help the students understand the meanings of the new terms, we should not logically stop at visual aids; we should use the whole field of sensations. For example, the real meaning of *vin* cannot be known until some wine has been tasted; *lilas* remains a vague botanical term until one has seen, touched, and smelled the flowers; the full significance of *faim, soif, peur* is really known only by those who have experienced *real* hunger, thirst, or fear.

But how far can we go? We have heard some professors suggest that special audio aids should be used; they recommended that, whenever possible, characteristic sounds should accompany the new terms (a *miaow* with the word *chat*?); we have heard that masculine words should be read on the tape by male voices and feminine words by female voices, that singular nouns or verbs should be read by one voice and plural nouns or verbs by several voices.

Perhaps it is wiser to let each professor decide for himself how far he wants to go in the use of sensorial aids.

B. Retention

Does a student remember the meanings of new terms more easily when aids are used? We undertook the following experiment at Middlebury during the 1956-1957 period: several series of forty words were taught, some by translation, some with visual aids, and some by giving

definitions (often accompanied by comments, proverbs, and occasional jokes)[1]. The results varied all the way from students who remembered every word to students who remembered only five or six.

An analysis of the results and a discussion with the persons who had taken the tests suggested the following conclusions:

1. Retention is facilitated by:

a. mnemonic associations (the student thinks of an English word or sentence to help him remember the new word).

b. visual aids (the only visual aids that are of any value are those which are striking and preferably witty; holding up an umbrella and saying "*Voici un parapluie*" is of very little help as far as retention is concerned)[2].

c. the phonetic make-up of the words (some words strike the students' imagination as being particularly suited to the object and they are easily remembered by most students; an extreme case of this factor would be an onomatopoeia).

d. comments, witty definitions, special intonations, face expressions, jokes can create very strong associations which facilitate retention.

2. Highly-motivated and gifted students (those who want and are able to learn) secured very high scores. They remembered the words presented to them only through translation just as well as those presented with aids. These students, in general, relied greatly on mnemonic associations.

Most of them stated that visual and verbal aids had made their memory work easier and more interesting; but they did not find that these aids were essential. They felt, as the results showed, that the extra effort required to learn without aids was very small and did not impair retention.

3. Students with poor or mediocre motivation did not seem to care much for mnemonic devices. They remembered only a very small proportion of the words which had been taught only through translation; visual and verbal aids did help, but only when the aids were striking and particularly aroused their interest.

V. THE LANGUAGE FILM

Ideally, the students should be transplanted to the foreign country for their basic course (and this should be made possible for the students who show high motivation and high linguistic aptitude). In the foreign country, they would find all the lifelike situations that make the language learning more meaningful.

1 We did not dare test whether other sensorial aids would facilitate retention.

2 Holding up an umbrella will carry the meaning across, but it will not facilitate retention.

Another solution would be to bring these lifelike situations to our schools; this would suppose an extensive use of realia, the use of native informants, and perhaps building replicas of parts of foreign villages or towns (this, of course, *is* possible and in fact was done during the war for the training of spies who had to acquire a native command of the language and its culture).

A substitute for lifelike situations is being used by several schools; for example, Otterbein College is experimenting with Film-Text, a film which according to its originator "comes as close to the ideal of living with a French family as seems possible and practical ....It is planned to cover a two-year college course.... All grammar and related structural linguistics are taught inductively and functionally."

We have to watch all these experiments carefully because they may lead to important results. But, there are several points we have to keep in mind:

1. They are not true lifelike situations. The film, after all, is only a two-dimensional audio-visual medium; it lacks the other sensorial qualities life is made of (smell, taste, touch, etc.).

2. Although the students are told to identify themselves with the characters in the film, the students are in fact OUT, looking in. THEY are NOT saying what they would like to say, they are not living the scene, they are merely imitating it.

3. Since the film is shown several times, the students know -after the first showing- how the scene is going to develop and end. Is it possible to prevent this repetition from becoming boring?

4. The proper relationship between the picture and the sound track is hard to achieve. In the usual entertainment film (for example, a film in English made for an English-speaking audience), the story is told partly by the picture and partly by the sound: one supplements the other and the objects which appear on the screen are not necessarily included in the dialogue or narration. This is the technique to which our students are accustomed; they cannot help laughing if we show them a teaching film where the picture and the sound correspond exactly, not because the method is necessarily bad, but simply because the departure from the usual procedure is too great when a man says and does at the same time: *Je prends un citron - Je coupe le citron* - etc.

Of course, the language film must teach the language, but it must do so without being obvious. Whether it is possible to strike a happy balance between a film made for natives and the childish efforts we have seen so often remains, in our opinion, an open question.

5. Another difficulty is that the language film becomes outdated very rapidly; the attention of a seventeen-year old student is easily distracted when the film shows hair styles or dresses which are several years old.

<u>Summary</u>: Language film or not, the situation remains artificial. The students are in a classroom, not in France; the people they see on the screen are not flesh-and-blood characters you can talk to, ask questions to, or disagree with. They are mechanical contraptions and -from the second showing on- you know what they are going to do and say.

Is there a difference between the results obtained by a good teacher using the audio-oral method with occasional visual materials and the results obtained by the intensive use of films? If so, in whose favor? If in favor of the film, wouldn't the cost of the film make it possible to hire native assistants which would help get the same results?

CULTURE IN THE BASIC COURSE

First, we should like to reaffirm the fact that the language of a group is part of its culture. Bernard Bloch and George L. Trager state that:

"Language is not only an element of culture itself; it is the basis for all cultural activities, and therefore the most accessible and the most rewarding clue to the characteristic features of any contemporary social group." (Outline of Linguistic Analysis, 1942).

Leonard Bloomfield writes:

"Each community is formed by the activity of language; speech utterances give us the most direct insight into its workings and play a part in everything that is done. In order to observe a human group, we must understand its speech." (Philosophical Aspects of Language, Studies in the History of Culture).

Most textbook writers apparently fear that language by itself would not give their books the cultural content they believe a first-year text should have. Accordingly, they use the so-called cultural approach, building each chapter of their textbooks around a dialogue or fabricated "literary" passage.

In our opinion, such an approach is dangerous because:

1. During most of the basic course, the vocabulary, forms, and structures are not sufficient to put together an interesting dialogue or passage. The students resent being submitted to texts which they feel are boring, childish, and below their intellectual level. Since the students are prone to generalize, they may come to think -with some disillusionment- that what they are given to read is representative of the "famous French literature".

2. However, the main objection to this type of cultural approach is that it makes a scientific and efficient study of the language impossible. The linguistic features cannot be presented in the proper order and the students do not acquire the language skills as rapidly as they should.

We believe, therefore, that the structural method we have presented throughout this paper is the most efficient. We believe that an organized study of other cultural activities (supralinguistic culture) should be postponed until after the students have completed the basic course; then, they will be able to absorb this culture through the study of texts of real literary value and without being handicapped by a lack of basic language knowledge.

This does not mean, of course, that all supralinguistic culture should be banned from the basic course. On the contrary, we believe that items of cultural information should be included whenever they do not slow down the acquisition of the language skills. Our only concern is that this cultural information should never be made the cornerstone of the lesson; it should only be a welcome dividend within the lesson when the structures, forms, and vocabulary permit it.

IMPROVEMENT COURSES

All through this chapter we refer to tape as the recording medium because the majority of language laboratories are now equipped with tape machines.

All the language laboratory techniques that we describe can be used with magnetic disc or magnetic belt machines.

INTRODUCTION

The term "improvement course" designates the type of language work which is done after the basic course is completed and before specialized courses in literature or civilization are undertaken. The basic course should not last more than twenty weeks on the college level or more than thirty-six weeks on the secondary school level. On the college level, the improvement course should occupy the last ten weeks of the first year and the following year; on the secondary school level, the improvement course should last from two to three years.

On the college level and in secondary schools, the basic course and the improvement course should be planned as a unit and the various instructors for these courses should be so selected that they agree on the principles and methods of teaching this unit.

This improvement course is crucial; the student's knowledge of the language *must* be increased; he must not be allowed to reach a plateau. The teacher's time in class must be used as efficiently as possible; he must guide the class firmly. Letting the students speak about books they have been asked to read and trying to stir up a discussion among a group of twenty or thirty students is wasteful.

During the improvement course[1], the student must:

1. Strengthen the framework of his active audio-oral and spelling-reading skills; that is, he must not be allowed to forget anything of what he learned during the basic course.

2. Acquire passive language skills (that is, structures, forms, and vocabulary which he can understand but cannot readily use).

This strengthening of the active skills and the acquisition of the passive skills can be done in two ways:

1. Special drills on structures, forms, and vocabulary designed to strengthen the active language skills.

2. Exercises based on cultural materials: these exercises will further improve the active skills and develop the passive skills.

All through this chapter we are assuming that the school has a language laboratory; for best results, at least half the outside-of-class work should be done in the laboratory. In a typical college situation, the usual nine-hour weekly work schedule should be spent as follows: three hours in class, a minimum of three hours in the laboratory, and the rest

[1] All through this chapter, we are assuming that the members of the course took the type of basic course we described in the preceding chapter. If this is not the case, several weeks may have to be spent at the beginning of the improvement course giving the students the proper audio-oral training.

in homework. In a typical high school situation, the usual seven-hour weekly work schedule could be spent as follows: about three hours and a half in class, about one hour and a half in the laboratory, and the rest in homework.

I. DESCRIPTION OF THE SPECIAL DRILLS ON STRUCTURES, FORMS, AND VOCABULARY DESIGNED TO STRENGTHEN THE ACTIVE LANGUAGE SKILLS.

The active knowledge of the language was acquired during the basic course; it encompasses a definite number of structures, forms, and vocabulary items which the student must be able to use without hesitation. This active knowledge can be strengthened if *all* the structures, forms, and vocabulary items are reviewed *regularly*. For best results, this total review should take place every week; in high schools, where less time is available, this total review may require two weeks.

This principle of *regular total* review is a complete departure from the usual intermediate review of grammar. When the students spend a week reviewing the partitive, then two weeks reviewing the subjunctive, then a week on the object pronouns, etc., each new chapter tends to obliterate the preceding one. The students seem to be in a rut; what they review each week hardly makes up for what they forget. It is essential that the need for these weekly strengthening drills be clearly explained to the students. They have to be convinced.

Experiments indicate that the strengthening drills need not take more than a third of the course time.

No grammar should need to be re-explained in class. The review work is on tape and the students work with it *individually* in the laboratory. *Individual* work is absolutely essential because what student A needs to review most may be entirely different from what student B needs. The students should be free to use the review tape according to their needs and they should be able to spend the time they want in the laboratory.

On the college level, this total review should not require more than three hours of work per week for an average student; gifted language students may complete this review work in less than two hours. The tape should have two parts: one part to be prepared for a Monday or Tuesday test, the second part to be prepared for a Thursday or Friday test.

On the secondary school level, where each total review may take two weeks, it is preferable to give it in four installments, each to be checked by a test.

Each tape contains a maximum of review within a minimum of sentences. It has three parts:

1. Audio comprehension and oral expression
2. Spelling
3. Reading

The tape uses the same techniques as the tapes for the basic course; advice for a better pronunciation is given throughout the tape. The students can refer to a textbook where the basic forms, structures, and vocabulary items are listed, but the text of each tape is not

given to the students. The textbook also contains the answers to the spelling drills.

The testing is done in class; we use the testing techniques we described in the basic course (but no recorded test is given).

II. DESCRIPTION OF THE EXERCISES BASED ON CULTURAL MATERIALS

As already stated, these exercises must:

1. Give further training for the strengthening of the active language skills; this strengthening is acquired through the oral discussions and written work that accompany the cultural work.

2. Provide the needed passive language skills.

Before we can proceed to describe the cultural exercises, we have to explain the principles that govern our teaching of the passive language skills.

The term "passive language skills" means:

1. That the student learns to understand aurally and visually *forms* such as the imperfect subjunctive; he must know why they are used and what the equivalents are in normal speech.

2. That the student learns to understand aurally and visually *structures* such as "*Combien de temps y a-t-il que vous êtes ici?*"; these structures are explained by comparing them with the synonymous structures he has in his active knowledge of the language (*Depuis quand êtes-vous ici?*).

3. That the student learns to understand aurally and visually and spell correctly the *vocabulary* items that are connected with his study of the foreign culture.

Should the learning and the testing be entirely passive? Should not some of these forms, structures, and vocabulary items become active? After many experiments, we have come to the following conclusions:

1. There is no need to request that these new forms and structures become active. For example, it would be a waste of time to force the students to learn actively the French forms of the imperfect subjunctive or structures such as: *Le lui eût-on expliqué, elle eût compris.* Of course, after some time, some of the most frequent forms (*eût, fût, etc.*) and structures (*Il y a deux mois que je suis ici*) may become active, and some students may want to use them, but the testing should check only that the students know:

   a. the exact meaning of these forms and structures

   b. why they are used

   c. how the same idea can be expressed with the forms and structures of their active knowledge of the language.

In other words, the basic course has given the student all the basic forms and structures he needs to express himself. Since the time he can spend per week on French is limited, we

cannot continually require him to increase his amount of active knowledge. If we did, we would have to increase *continually* the amount of time spent on the weekly review.

> Whether we like it or not, we have to admit the fact that an American living in America and spending only some nine hours per week on French cannot have the same *active* command of the language as a Frenchman living in France. He must limit himself to a definite amount of active knowledge.

2. The vocabulary is a different problem; we may consider that there are three levels:

a. active: vocabulary items which must be immediately understood in isolation and which must be immediately available to the student for his oral expression.

b. semi-active or vocabulary of disponibility: expressions or words such as *plomber une dent, en panne* which must be immediately understood in isolation, but which may not be immediately available for oral expression; words which are "on the tip of your tongue", words where you need some prompting or reflection.

c. passive: words which have been met before and which can be understood easily when in context (*pieu, traire, tondre*). This passive vocabulary also includes words like *hêtre* (you know it is a tree, but which one?), *perce-neige* (you know it is a flower, but which one?).

The borders between these areas are fluid; some semi-active items may become active for a while and others may become passive.

These vocabulary items will be met through the study of the foreign culture; some cultural areas will appeal more to some students and the vocabulary which goes with it will be recalled more easily.

We are justified in asking that the students increase their active vocabulary, and an increase of about 500 non-cognate vocabulary items per semester seems about right; we should, however, let the students decide which words should become active (see page 106).

Choice of cultural materials

When selecting the cultural materials, we should try to follow these recommendations:

1. The use of every item of cultural material should be carefully planned; you should know *why* you want to use it and *how* you are going to use it.

2. On this level, the students are interested mostly in the modern cultural aspects —not in what France did in 1300. References to the past are useful only inasmuch as they explain the present.

3. This cultural material should try to present the modern achievements of the foreign country as truly as possible. All too often, the teacher is tempted to interest his students by presenting the quaint and the unusual.

4. This cultural material should not be centered only on the elite of the country; it is of course necessary to talk about the artists, the writers, the scientists and their contri-

butions to society, but the students should learn also how the average Frenchman lives. They should understand the foreign culture as if they were members of the community, not as if they were looking over a fence.

In the following pages, we shall explain how we have been using the following types of cultural materials:

1. News broadcasts, newspapers, magazines.
2. Contemporary short stories and novels; essays; plays; poems.
3. Sound films.
4. Songs: folk songs and modern popular songs.
5. Various forms of realia.

We are using these various types of cultural materials in six types of exercises:

1. Newscasts.
2. Newspapers and magazines.
3. Audio comprehension.
4. Literary appreciation.
5. Free expression.
6. Audio-visual.

Of these six types of exercises, two are basic and should be used weekly: free expression and literary appreciation. The other exercises can be used at the discretion of the teacher, but there should be some continuity; for example, if newscasts are used, they should be used weekly for several weeks.

Newscasts

This type of material is used because:

1. news items are frequent topics of conversation.
2. it provides a needed cultural background (especially in politics and economics).
3. it provides a psychological lift. The subject matter is easy to assimilate and the vocabulary, although specialized, is limited in scope. Progress is fairly rapid and it helps the students realize that they *are* improving their audio comprehension. This feeling of accomplishment helps them carry on with their other audio assignments (plays, films, etc.) where progress is slower.
4. most students like to work with newscasts; they like to discuss contemporary news events, and they claim that it helps them with their other courses (such as Contemporary Civilization).

French is spoken not only in France, but also in Canada, Haiti, Belgium, Switzerland, and Luxemburg. Whenever possible, the teacher should use newscasts coming from these various countries (it helps the students realize that French is the language of more than one country and it brings them different points of view).

The newscast guide

During the first eight weeks, the students use a *Guide*. The purpose of this guide is to familiarize the students with the specialized vocabulary used in newscasts. Fortunately, these journalistic clichés are limited in number and the students can be rapidly trained to understand them, even when spoken at newscast speed.

The other purpose of the *Guide* is to give the students the basic background in politics, economics, various customs of French-speaking countries, etc. without which the newscasts cannot be understood.

Each assignment deals with one or several topics (war, peace, elections, weather, etc.) and it has two sections:

Section A: the students listen to the clichés generally used for those topics. The clichés are presented in short sentences; the difficult words are explained and spelled; the students take notes.

Section B: the students work with exercises where they hear various bulletins about the topic they are studying. These bulletins include bulletins prepared by the teacher (read by him or his colleagues in the department), and bulletins copied from the radio. The proportión of radio bulletins is gradually increased so that by the end of the eight-week period the students are ready for exercises made up entirely of radio newscasts.

In this section, the following types of exercises are given:

1. Write a dictation: the student listens to a news item read at normal speed, and takes it in dictation.

2. Answer a question: the tape gives a news item and several questions are asked about it. This exercise is to be used especially when there are many details (dates, number of people wounded and killed, election returns, scores, etc.).

3. Prepare a summary: the student takes enough notes so that he will be able to restate the news item and discuss it in class.

4. Fill in: the tape gives a news item, but several words are skipped. The student has to determine from the context what the missing words are. This exercise trains the student for actual shortwave listening where words are occasionally faded.

5. Find the error: the tape gives a news item where an error is made or an impossible fact is stated. The student has to spot the error or the impossibility. This exercise is used mostly with dates, speeds, hours, duration of an event, number of votes, etc.

6. Translation: the tape gives a news item in English. The student has to write the French

equivalent.

7. Review: the assignment ends with a cyclic review of clichés studied in preceding assignments so that the vocabulary will be kept fresh in the minds of the students.

Working only with radio newscasts

After this eight-week period, the students work with exercises made up entirely of radio newscasts. It is preferable that the students listen to an up-to-date newscast (of the night before, if possible). At the same time as the newscast is copied onto tape, the instructor takes notes and decides which items he will include in the students' assignment. He should try to pick out the most important events, and he should try to give enough variety week after week so that the basic newscast vocabulary will constantly be reviewed and added to.

When preparing the assignment master tape, the instructor uses two tape machines, a mixer, a microphone, and a pair of headphones. The assignment tape generally goes as follows:

Travail de laboratoire pour le 17 janvier 1960. Vous allez entendre un bulletin de nouvelles radiodiffusé par Brazzaville le 16 janvier 1960, à 21 heures 15 GMT, soit 16 heures 15, heure de New York.

Première partie: Dans la première partie, il s'agit de ... (here the instructor may explain two or three difficult words without which the newscast would not be understood) ... *Vous devez faire le travail suivant ...* Then, the instructor copies the news item on the assignment master tape. .... *Deuxième partie ...* and so on until the instructor has put eight or nine news items on the tape.

The instructor uses techniques 1, 2, and 3 as above. For technique 4, the instructor chooses a news item where some words did not come out clearly. For technique 5, the instructor repeats a news item after the announcer, making some changes; the student must spot these changes. Technique 6 is used as above. For technique 7, the instructor asks a few questions about preceding assignments. The following techniques can also be added:

8. Exercise about the announcer's pronunciation: the instructor asks questions about the announcer's pronunciation (how many optional liaisons did he make? how many unstable vowels did he retain?).

9. Imitate the announcer's pronunciation: the student is asked to practice imitating the announcer's pronunciation in a given news item so that the next day in class he will be able to imitate him.

10. Take expressions in dictation: this is a variant of technique 1. The student is asked to write only some given expressions (mostly journalistic clichés). The instructor indicates which expressions must be written by leaving a short pause before and after them while copying the news item. For example:

Le secrétaire d'Etat a souligné que le monde libre doit persévérer ... (pause)..*dans la même voie ....* (pause) .. *si les aspirations légitimes des peuples de ... etc.*

Le général de Gaulle a fait cette déclaration ... (pause) .. *à l'issue de la réunion ...*

.. (pause) .. *qu'il vient d'avoir à Paris avec ... etc.*

The student writes: *dans la même voie, à l'issue de la réunion.*

11. Self-expression: the students are asked to invent a news item to be read in class.

With training, it takes the instructor about twenty-five minutes (not counting the initial listening to the newscast on the radio) to prepare the assignment master tape, which is about six minutes long. Each item is copied only once and no blank intervals are left on the tape. The listening in the laboratory has to be *individual*: the student starts and stops the tape as he needs, making the pauses as long as desired. A six-minute assignment tape requires about one hour of work in the laboratory before the student can complete the assignment.

Correction and testing

For best results, the student should be able to correct his work immediately (principle of immediate correction or immediate reward). This is easy when techniques 1, 2, 4, 5, 6, or 10 are used on the assignment tape; the student receives a correction sheet when he enters the laboratory and he can check his answers as he does his work. This system, of course, requires self-discipline: the student *must try* to solve the problems before he looks at the answers. We have found that this presents no problems if the students are properly tested the next day in class (the students soon realize that self-discipline in the laboratory is the best preparation for the test).

In class, the students are first tested on the work that was self-corrected in the laboratory; then the work based on techniques 3, 7, 8, 9, and 11 is checked; this can be followed by a discussion of the news items. This classwork should not require more than thirty minutes; the rest of the period is spent on some other activity.

Periodic testing should include listening to newscasts the students never heard before.

Hours of transmission

For hours of radio transmission, you should write to the various embassies in Washington. They will send you the necessary information about the shortwave newscasts which are beamed toward the United States.

Newspapers and magazines

The instructor selects in current newspapers and magazines various articles of interest; these articles should preferably be of a controversial nature. They are mimeographed and distributed to the students; they are also recorded and comments are added. The students are asked to listen to the tape and study the articles in order to be able to participate in a class discussion.

Periodic testing consists in a set of written questions based on the articles that have been studied.

We have found that the following newspapers and magazines lent themselves well to this

type of work:

1. Le Monde, *5, rue des Italiens, Paris-IX*^{e}

2. Le Figaro, *14, Rond-Point des Champs-Elysées, Paris-VIII*^{e}

3. Paris-Match, *51, rue Pierre-Charron, Paris-VIII*^{e}

4. France Observateur, *10, rue des Pyramides, Paris-I*^{er}

5. L'Express, *29, rue de Marignan, Paris-VIII*^{e}

6. France-Amérique, *127 East 81st Street, New York 28, New York*

Of course, Swiss, Belgian, French Canadian newspapers can also be used. There is in France now a *magazine sonore*; this magazine, in addition to the usual text and pictures, has several supple records inserted between its pages. The name of this new type of publication is:

Sonorama, *117, rue Réaumur, Paris-II*^{e}

Note also that *Le Monde* and *Le Figaro* have weekly selections (*sélections hebdomadaires*) in addition to their daily editions.

All newspapers and magazines should be received by air mail in order to retain their news interest.

Audio comprehension

The exercises described below are meant to improve mostly audio comprehension, but they will also improve the other language skills.

It is recommended that the students' yearly improvement be ascertained as follows:

In September, the students listen to a series of ten recordings graded in difficulty: a simple story, part of a political speech, a newscast item, a short scene from a play, etc. The students are asked to translate these recordings into English. The papers are collected and filed (they are not graded). At the end of the year, the very same recordings are played and the students are again asked to translate them into English. Then the students receive the papers they had written several months before and they can evaluate the amount of progress they have made. This comparison is also used by the instructor as a factor in determining each student's grade (of course, the students are not told in September that the same recordings will be played again at the end of the year and that the comparison will be a factor in determining their grades; otherwise, some students might be tempted to turn in blank papers in September).

All through these exercises, we must be demanding; we must require that the students understand *correctly* and *completely*. All too often, the students are satisfied with getting the gist of the recording. We must constantly remind them that very often misunderstanding just one sound is enough to change the meaning of the whole sentence.

Our audio comprehension exercises are based on:

1. plays such as *Knock* by *Jules Romains, Topaze* by *Marcel Pagnol*, etc. Recordings of plays

by *Molière, Corneille, etc.* are used only in specialized courses.

2. excerpts from novels such as *L'Etranger* by *Camus*.

3. reconstitutions of historical events such as *Le Procès de Jeanne d'Arc, La Libération de Paris*.

4. essays such as *La Difficulté d'Etre* by *Jean Cocteau*.

5. short or simple poems such as *Le Beau Voyage* by *Du Bellay*, some fables by *La Fontaine*.

6. contemporary short stories such as *Le Petit Prince* by *Saint-Exupéry*.

7. folklore and modern popular songs; these songs should be sung by one person and they should be clearly articulated (songs harmonized by choral groups are not recommended).

8. radio materials, other than newscasts; for example: political speeches, lectures such as *Radio Collège* on French Canadian stations, sports commentaries, quiz shows, etc.

9. dialogues, classified by topics; this includes not only the simple dialogues necessary for traveling, but also discussions about art, economic conditions, politics, etc.

The vocabulary is so rich, the grammatical structures so varied, and the required cultural background so vast that progress is necessarily slow. It takes several years of weekly exercises before even the most gifted students can acquire native-like audio comprehension.

The assignments should be as varied as possible from week to week: excerpt from a novel, followed by a play, then some poems, etc. It is a good idea to include two or three songs in each weekly assignment (songs have proven to be excellent means of improving audio comprehension and oral expression). The students should have as much time as possible to work on these assignments; for best results, the tape copies should be put at the disposal of the students on Monday morning and the quiz should not be given until the following Friday --thus, the students can spread their laboratory work over five days and have several short sessions rather than one long one.

The students receive a mimeographed text of the recording; this mimeographed sheet also contains the vocabulary terms that will be used during the explanations.

All the explanations are on the tape. Putting all the explanations on the tape has several advantages:

1. It helps to develop even more the student's audio comprehension.
2. It takes less time to record explanations than to type them and mimeograph them.
3. It is less expensive.

The tape is prepared as follows:

1. A few comments are recorded about the author and the recording that is to be studied.

2. Then, the tape reminds the student that he *must not* look at the text as he listens to the recording for the first time; looking at the text would be a waste of time because the text

hides the audio difficulties. It is only through stumbling on problems and trying to solve them that the student will eventually conquer them all.

3. Then, the tape says:

Maintenant, vous allez entendre tout l'enregistrement. Essayez de comprendre sans regarder votre texte.

The text is recorded on the master tape (note here that we should use professional recordings whenever possible; preparing this master tape requires therefore the type of technique described on page 165).

4. The tape continues:

Maintenant, je vais rejouer le texte par petites parties et je vais expliquer les difficultés. Voici le premier paragraphe:

The first paragraph is recorded on the master tape.

Quelles sont vos difficultés? Qu'est-ce que vous n'avez pas compris? NE REGARDEZ PAS LE TEXTE ! Rejouez ce premier paragraphe.

The student can rewind the tape to listen to the first paragraph as many times as he needs; he locates his difficulties and tries to solve as many of them as he can.

Voici les explications pour ce premier paragraphe:

The instructor goes over the combinations of sounds and the cases of linking or liaison that may make the recording difficult to understand; difficult vocabulary items are explained; new forms and structures are explained, mostly by comparing them with the forms and structures already in the student's active knowledge of the language. Whenever possible, these explanations should be presented as a discussion with the student, asking him questions. In other words, the instructor tries to make the student participate, just as if he were in the classroom.

Avez-vous compris maintenant? Souvenez-vous de ces difficultés. Maintenant, je vais rejouer ce premier paragraphe et vous pouvez suivre avec le texte.

The student listens again to the first paragraph (recorded on the tape after the explanations); he follows with his text and finds the solutions to the problems not already clarified by the explanations on the tape.

5. Each paragraph is studied in the same manner.

6. Then, the whole passage is played again and the student should be able to understand it without looking at the text.

7. The student can test himself with the "Pick around technique". He winds the tape and stops it at random in order to listen to two or three sentences. He does this in some twenty or thirty places. Comprehension should be instantaneous. If it is not, it indicates that the student needs more practice.

Of course, this type of tape is for *individual* work: the student comes to the laboratory, takes a copy of the audio comprehension assignment from the shelves, and works with it; he can stop the tape, rewind, make pauses as he needs. However, at Middlebury, where the listening rooms were equipped with loud-speakers and were large enough to accommodate several students, we found that some students preferred to listen by groups of two or three; they claimed that progress was faster when two or three students worked together at the recording and tried to solve the comprehension problems together.

Testing

We should keep in mind that comprehension and interpretation are two different things; two persons may understand a text, but they may vary in their interpretation of it. A true test of comprehension should not involve interpretation.

The test is given in class; it should not last more than fifteen minutes. Its only purpose is to check that the language laboratory work has been done. The teacher prepares a special tape recording which contains all the questions and he plays it to the students. Several techniques can be used; for example, we used the following techniques with *Camus*'s reading of an excerpt from *L'Etranger* (Disque Festival FLD 19).

The voice of the teacher is in italics; the copy from the record is in bold type.

Examen de compréhension auditive.

Première technique: Exercice de compréhension auditive avec préparation. Je vais jouer deux parties du disque. Dans chaque partie, le mot ATTENTION vous indiquera le début de la phrase que vous devez traduire en anglais. Première phrase:

Le premier préparait les actes du second; il les annonçait en quelque sorte et il les légitimait. "J'en suis persuadé, messieurs," a-t-il ajouté en élevant la voix, "vous ne trouverez pas ma pensée trop audacieuse si je dis que l'homme qui est assis sur ce banc est coupable aussi du meurtre que cette cour devra juger demain. Il devra être puni en conséquence".

Attention.

Ici, le procureur a essuyé son visage brillant de sueur.

Deuxième phrase:

Pourtant l'heure déclinait au-dehors et la chaleur était moins forte. Aux quelques bruits de rue que j'entendais, je devinais la douceur du soir. Nous étions là, tous, à attendre.

Attention.

Et ce qu'ensemble nous attendions ne concernait que moi.

Deuxième technique: Exercice de compréhension et d'orthographe avec préparation. Je vais jouer deux parties du disque. Dans chaque partie, le mot ATTENTION vous indiquera le début de la phrase que vous devez écrire en français. Première phrase:

L'avocat levait les bras et plaidait coupable, mais avec excuses. Le procureur tendait ses mains et dénonçait la culpabilité, mais sans excuses.

Attention.

Celui-ci s'est levé le premier et s'est mis à parler de mon âme.

Deuxième phrase:

A considérer froidement la chose, c'était tout à fait naturel. Dans le cas contraire, il y aurait trop de paperasses inutiles. "De toute façon" m'a dit mon avocat, "il y a le pourvoi".

Attention.

"Mais je suis persuadé que l'issue sera favorable".

Troisième technique: Exercice de compréhension instantanée. Je vais jouer deux phrases sans préparation. Traduisez ces deux phrases en anglais.

Première phrase:

Je vous demande la tête de cet homme et c'est le cœur léger que je vous la demande.

Deuxième phrase:

Le président m'a dit dans une forme bizarre que j'aurais la tête tranchée sur une place publique au nom du peuple français.

Quatrième technique: Exercice de compréhension instantanée et d'orthographe. Je vais jouer deux phrases sans préparation. Ecrivez ces deux phrases en français.

Première phrase:

Au bout de ce temps, une sonnerie a retenti.

Deuxième phrase:

J'ai été assailli des souvenirs d'une vie qui ne m'appartenait plus.

Cinquième technique: Exercice de mémoire. Je vais jouer deux phrases et je vais arrêter le ruban juste avant les deux ou trois derniers mots. Vous devez écrire ces quelques mots sur votre feuille de papier. Si vous ne vous souvenez pas des mots exacts, vous pouvez écrire une expression équivalente à condition qu'elle s'accorde grammaticalement avec le reste de la phrase.

Première phrase:

Mon avocat a haussé les épaules et, tout de suite après, on lui a donné la parole. Mais il a déclaré qu'il était tard, qu'il en avait pour plusieurs heures et qu'il demandait le renvoi ..... (the students are supposed to write: *à l'après-midi*).

Deuxième phrase:

"Sans doute, ajoutait-il, nous ne saurions le lui reprocher. Ce qu'il ne saurait acquérir, nous ne pouvons nous plaindre ....."(the students are supposed to write: *qu'il en manque*).

Sixième technique: Trouvez la différence. Vous allez entendre deux jeux de deux phrases. La première phrase de chaque jeu sera copiée du disque et je répéterai cette phrase en faisant

un changement. Vous devez trouver le changement.

Premier jeu:

Pour lui, j'étais un fils modèle qui avait soutenu sa mère aussi longtemps qu'il l'avait pu. Finalement, j'avais espéré qu'une maison de retraite donnerait à la vieille femme le confort que mes moyens ne me permettaient pas de lui procurer.

Pour lui, j'étais un fils modèle qui s'était souvenu de sa mère aussi longtemps qu'il l'avait pu. Finalement, j'avais espéré qu'une maison de retraite donnerait à la vieille femme le confort que mes moyens ne me permettaient pas de lui procurer.

The students write: *qui avait soutenu sa mère/qui s'était souvenu de sa mère.*

Deuxième jeu:

Mais à cause de toutes ces longues phrases, de toutes ces journées et ces heures interminables pendant lesquelles on avait parlé de mon âme, j'ai eu l'impression que tout devenait comme une eau incolore où je trouvais le vertige.

Mais à cause de toutes ces longues phrases, de toutes ces journées et ces heures interminables pendant lesquelles on avait parlé de mon âme, j'ai eu l'impression que tout devenait comme une autre couleur où je trouvais le vertige.

The students write: *une eau incolore/une autre couleur.*

<u>*Septième technique*</u>*: Vrai ou faux. Je vais faire deux commentaires au sujet de l'enregistrement; puis, après chaque commentaire, je jouerai les passages correspondants. Vous devez indiquer si le commentaire est vrai ou faux.*

Premier commentaire:

C'est la première fois que le procureur général demande la tête d'un homme.

Je vous demande la tête de cet homme, et c'est le cœur léger que je vous la demande. Car s'il m'est arrivé au cours de ma déjà longue carrière de réclamer des peines capitales, jamais autant qu'aujourd'hui je n'ai senti ce pénible devoir compensé, balancé, éclairé par la conscience d'un commandement impérieux et sacré et par l'horreur que je ressens devant un visage d'homme où je ne lis rien que de monstrueux.

The students write: *Faux.*

Deuxième commentaire:

L'accusé était présent lorsque le président du jury a lu les réponses.

Nous avons attendu très longtemps, près de trois quarts d'heure, je crois. Au bout de ce temps, une sonnerie a retenti. Mon avocat m'a quitté en me disant: "Le président du jury va lire les réponses. On ne vous fera entrer que pour l'énoncé du jugement".

The students write: *Faux.*

<u>*Huitième technique*</u>*: Répondez aux questions. Je vais vous poser deux questions au sujet de l'enregistrement. Répondez à ces deux questions.*

Première question: Qui est Marie?

Deuxième question: Pourquoi le jeune journaliste a-t-il détourné les yeux?

Neuvième technique:

(The students should be able to understand the most current forms of neglected speech, especially those which are heard in the rapid conversational style of cultured people; they should be able to transfer these neglected expressions into standard forms. For example, we used the following questions with Georges Courteline's *Gros Chagrins* as recorded by *Louise Conte* and *Mony Dalmès* (Disque Ducretet Thomson Z 8043).

The record says:	ʃtepadisa	The students write: *Je ne t'ai pas dit ça.*
The record says:	sepalɛr	The students write: *Ce n'est pas l'air.*
The record says:	tarezɔ̃	The students write: *Tu as raison.*
The record says:	ʃsɥirɛstesylpalje	The students write: *Je suis restée sur le palier.*

In all of the techniques listed above, each sentence is played only once. This is a continuation of our testing policy in the basic course and it presents no problems when the students have been properly trained.

This audio comprehension test is corrected immediately in class.

In addition to these weekly tests, the students have periodic examinations (every six weeks). These periodic examinations cover all the material studied during the preceding six weeks. These periodic examinations are essential; the students' audio comprehension is greatly improved when they are asked to review material studied previously.

These periodic examinations use the testing techniques described above. The students are also tested on material they never heard before and on material they heard several months before (but were not asked to review for this particular examination). The following testing techniques are used with material that has not been heard before:

Technique 1: Prepare a summary in English or French. The passage is played only once.

Technique 2: Answer questions about the passage. The passage is played only once.

Technique 3: Listen to the whole passage; then take part of it in dictation. Each rhythmic group is played only once.

Material that has not been heard before should be selected with care. It should be fairly easy for the first periodic examination in November; then, it should increase gradually in difficulty.

Using material that has not been heard before serves to remind the students that the final purpose of the course is to train them to understand instantaneously.

Literary appreciation

No one can say that he understands all of the literary patrimony in his native tongue and that he can keep up with *all* the contemporary literary production. Perfection in that matter is impossible and the most we can ask is that our students will be able to understand as much literary French as a French college student of their own age would. This goal, in itself, is difficult to reach, but it should be within the possibilities of our best students. At least one class per week should be devoted to this type of work.

The ability to understand and appreciate literary French can be acquired with two types of exercises: intensive reading and extensive reading.

These two activities complement each other. The intensive reading exercises prepare the students to read critically; this technique of *Explication de Textes* allows the student to penetrate the true meaning of the text: the structures, the forms, the vocabulary and its connotations, the author's purpose are clearly defined.

Most of the knowledge which is acquired through this intensive reading remains passive; we do not ask the student to use it to express himself, but it should be thoroughly understood.

This study in depth allows the student to do his extensive reading with more profit. Week after week, these two activities complement each other and they keep progressing jointly.

Intensive reading

Since each author has his own literary devices: vocabulary, forms, structures which he prefers, we base our intensive reading on many short pieces by many authors. Studying many authors helps the students learn more of these devices within a short time. Also, by comparing the various styles, the students sharpen their taste and their ability to appreciate literary French.

The textbook should contain some thirty assignments by thirty authors. Each assignment should not require more than a class. These assignments should be graded in length and difficulty. Each should have notes and explanations about the author, the difficult forms, structures, and vocabulary; these explanations should be in French whenever possible. The rare vocabulary items (that is to say items which are not likely to be met again for a long time) should be listed separately. Useful phrases and sentences which fall within the active knowledge of the student should also be listed separately. Pictures should be included whenever useful for the understanding and the appreciation of the text. Questions and drills should be suggested for class use.

The work is done as follows:

1. The students are asked to read the text and the explanations before coming to class.

2. The class begins with a ten-minute test on the text which was studied during the preceding week.

The teacher then checks that each student has read the new passage with care (he does

so by asking for a summary or by asking questions). The rest of the time is spent on "digging" into the text, digging deeper than the notes in the textbook could do. The teacher has to bring everything to light (understanding) and he has to show that *style* is a *deviation* from everyday usage (appreciation). This task is extremely difficult to perform; there are two points to keep in mind:

a. the cultural explanations should be thoroughly planned and they should be given as efficiently as possible. For example, if the instructor meets the expression "*le 9 Thermidor*", he should *briefly* explain what it means and what is its importance in the text under study, but he should refrain from launching into long explanations about the French Revolution, the Convention, the revolutionary calendar, who Robespierre was, what he did, etc. Such digressions are very tempting and they usually interest the students, but they are a waste of time as far as our particular goal is concerned.

b. the teacher must present his ideas and he must make the students participate in such a way that whatever is said during the class will not be forgotten. This requires a magnetic and dynamic presentation.

3. In the language laboratory, the student can listen to a tape which contains:

a. a reading of the text (this should be a professional reading copied from a commercial record). The student listens and imitates (the sound combinations, stress, rhythm, and intonation are features of style). The student should listen until he can understand the whole passage without having to stop the tape.

b. a series of questions and answers about the meaning of the text; the student listens to the question, stops the tape, prepares the answer, and starts the tape to find out whether his answer was right.

c. a review of the notes given in class.

d. a reading of the useful phrases and sentences which fall within the active knowledge of the student.

The class testing can be organized as follows:

a. testing of understanding: in addition to the techniques already described for the basic course and for audio comprehension (pages 100-103), the following can be used:

—paraphrasing: the student hears a sentence and he has to write the same idea using the structures and forms of his active knowledge of the language.
—giving synonyms and antonyms.

b. testing of literary appreciation: the student answers questions about the explanations given in class.

c. testing of the active knowledge that was reviewed in the text and on the tape: the student translates several sentences from English into French.

The semester examination is organized as follows:

a. questions about the texts studied during the semester.

b. questions about a text which has not been previously studied.

c. vocabulary testing (refer to page 92):

--active vocabulary: the student submits his list of 500 non-cognate items chosen from the texts which have been studied; each item should be given in a short sentence. Each student is tested at an unannounced date during the last three weeks of the semester (we do this because we want to be sure that the vocabulary is really active; if the student knew the date of the test, he could cram). The student should also be able to spell this vocabulary.

This test is individual; it should not take more than five minutes of the teacher's time (testing the student on twenty-five items chosen in the list at random is sufficient). We use the techniques described on page 74 (except technique 1).

--semi-active and passive vocabulary: the student should be able to understand and spell all the vocabulary items that were met in the texts studied in class (except the vocabulary items that were listed in the textbook as being of rare occurrence). Whether a context is given is left to the teacher's discretion. This is a group test.

The textbook we have been describing is not available yet. All the experimental work mentioned here was performed at Middlebury with mimeographed texts (all the texts were chosen from those for which high-quality professional recordings exist).

Extensive reading

The students are asked to read at least one book each month. They can choose from a list of titles supplied by the teacher; if the book they wish to read is not on the list, they should have it approved by the teacher.

Whenever possible, the students should listen to a recording as they read. Such recordings should be made professionally, with several voices, sound effects, etc.....

.... Tape libraries are essential; the need is urgent. Individual colleges, however, do not have the time and the resources to prepare the hundreds of recordings that are necessary. This immense task has to be handled by a commercial recording company with a special staff of actors, professors, and language laboratory directors....

The students prepare a written or recorded essay about the book they have read; if they submit a recorded essay, it should not be over five minutes long and it should be recorded with great technical care (clear sound, no pauses, no hesitations).

Self-expression

Teaching the students how to express themselves is certainly the most difficult part of our work and it is often the most discouraging.

Even the best qualified and most enthusiastic teachers may fail if their students do not do their full share of the work. Many students tell us: "*We would love to be able to speak French!*", but all too often they expect that the teacher will perform a miracle and that, with a touch of his magic wand, he will send them forth discoursing effortlessly in beautiful French about a wide range of topics.

Here is a list of the requirements a student should meet if he wants to become able to speak French:

1. Although it may sound obvious, many students do not realize that the first requirement they have to meet is that *they should have something to communicate*; it is unrealistic to hope that the person who has nothing to say in his native language will become a sparkling conversationalist in French. The students who are most likely to succeed in self-expression are those who read, who are curious about different cultural aspects, and who are interested in knowing more.

2. It is not enough to say: "*I want to speak*", the student must also perform, he must actually speak —not only in class when he is asked to, but also every time he can. Here are a few suggestions for outside-of-class practice:

a. organize a French dormitory or a French section in a dormitory where selected students speak French to one another.

b. organize a truly *alive and enthusiastic* French club with plays, debates, films.

c. organize a French dining room where French meals could occasionally be served or, at least, a French table in the regular dining hall.

d. listen to French-speaking radio stations, play French records; this listening will facilitate oral expression and will supply more topics of conversation.

e. if there are any French exchange students on your campus, ask them whether they would like to help you with your French if you helped them with their English.

f. finally, speak French to your French professor whenever you have to speak to him (it is rather ironical that the student who is so "eager" to learn how to speak French should have to be reminded of that constantly).

3. The students should accept once and for all that mere fluency is not sufficient; the students must also express themselves *correctly*.

It is recommended that the students' yearly improvement be tested as follows:

In September, each student chooses one topic out of three; he is given ten minutes to prepare what he wants to say and record it. He does not write anything; he can start speaking whenever he wants and he can stop the tape between every sentence (most students actually

record for only two or three minutes). The recordings are collected and filed by the instructor (he does not listen to them). At the end of the year, each student takes the same test (using the same reel of tape as in September and recording the second test immediately after the first one). The student then listens to both recordings and he can evaluate the amount of progress he has made. This comparison is also used by the instructor as a factor in determining the student's grade (of course, the students are not told at the beginning of the year that the comparison of the two recordings will be used as a factor in determining their grades; otherwise they might purposely make a poor recording for the first test).

Self-expression in class

Trying to teach self-expression to the whole class at the same time is very difficult to do successfully unless the class is split into small groups. We have been using the following method with some success:

First fifteen minutes: the teacher explains what topic will be discussed; he supplies the basic ideas, forms, structures, and vocabulary; he anticipates the various types of errors the students might make and he gives the correct expressions; the students take notes and repeat in chorus some of the most important expressions.

Rest of the period: the class is split into small groups of three or four students; they sit at small tables in opposite parts of the room; in each group, the best student acts as section leader; the teacher goes from group to group helping with the conversation whenever necessary.

The students are constantly reminded that this is *free expression*; they have to express themselves within the bounds of their active knowledge of the language, never taking wild guesses at forms or structures they have not previously mastered in special drills. Since the students are free to choose their forms, structures, and vocabulary, they should not make any errors. In case of doubt, they should ask the teacher.

> Preparing students who express themselves without errors *IS* possible, but it requires a very thorough planning of the basic and improvement courses, the constant application of the skinnerian principle of immediate correction or reward, and firmness in conditioning the students to use only the forms and structures they have fully acquired.

Self-expression in the laboratory

Two types of exercises are possible:

1. Self-correcting practice.

2. Recording exercises to be corrected by the teacher.

Self-correcting practice: the following types of exercises can be used:

a. dialogues: the student works with recordings of simple or everyday scenes (at the post office, at the market, at the bank, ordering a meal, etc.). He listens to the whole tape a few

ideas, forms, structures, and vocabulary which he should try to use. This assignment can be prepared by two students working jointly and presenting the recording as a discussion.

b. explain a French proverb: explaining the meaning of a proverb gives good results, not only because proverbs are part of the folklore and should be known, but also because it forces the students to find concrete examples, to invent stories. The students are told to put themselves in the position of a grown-up trying to explain to a child what, for instance, "*Un tiens vaut mieux que deux tu l'auras*" means.

c. explain a French quotation: a knowledge of well-known quotations, whether literary or historical, is part of a cultured man's education. The student explains what the quotation means and he discusses it. Several books of famous quotations have been published.

d. talk about a story which has been studied for the audio comprehension exercises: the following assignments can be given:

— give a summary

— record a dramatized version of the story (to be done by two or three students working jointly)

— invent a different ending

— tell why you like or dislike the story

— answer questions about the story (the questions are recorded by the teacher)

— correct a series of false statements about the story (these false statements are recorded by the teacher)

e. describe the story suggested by a series of pictures: pictures can be cartoons, a comic strip, pictures summarizing a short story, a novel, etc. The teacher may provide a reel of tape containing some basic vocabulary, forms, and structures.

f. the student is free to record what he wants.

The student should prepare his recording very carefully. He should not write it; he should speak with only the help of a few notes or an outline of what he wants to say. He should record and listen to his recording several times until he is satisfied with its quality. The recording he submits to his teacher should be technically perfect (it should begin at the very beginning of the reel of tape; there should be no pauses, hesitations, or corrections).

The teacher corrects this tape as follows: he goes to a room equipped with two machines; he puts the student's exercise tape on one machine and the student's correction tape on the other machine[1]. He listens to the student's recording, stops the tape whenever an error is

[1] The student must own two tapes; they should be clearly marked: "*Bobine 1, enregistrement*" and "*Bobine 2, correction*"; each reel should have the student's name.

made, starts the correction tape and records the correction. At the end of the tape, he records the student's grade and he may prescribe some special work to be done.

However, it should be clearly understood as we explained on page 108 that these *free expression* exercises should contain practically no errors.

Upon receiving his two tapes, the student listens to the correction and does the prescribed work. He records these corrections at the beginning of his assignment tape just before he records the next assignment.

The periodic testing (every six weeks) should test grammatical correction, fluency, pronunciation, originality in the ideas and in their presentation. The teacher should allow the students to choose from several topics.

Written self-expression

The teacher can choose from the techniques we have already given those which are suitable for written self-expression.

Correspondence

The exchange of letters between students or between schools is a technique which has been used for years. It can be supplemented with tape correspondence; the students exchange tape recordings where they talk about their town, their school, the local customs, sports, holidays, etc.

This tape correspondence should be organized between schools rather than between individual students and it should be supervised by the teacher. There are several tape correspondence clubs in France and in the United States, but in our case it is preferable to find correspondents through personal contacts.

Special mailing boxes are available through the manufacturers of magnetic tape. It is preferable to use five-inch reels.

Audio-visual exercises

Visual and audio-visual materials are very important during the improvement course; they are used mostly to provide a cultural background (this, of course, includes the presentation of the cross-cultural differences that exist between France and the United States).

The following types of visual materials can be used:

1. Still pictures (photographs, post cards, charts, paintings, slides, filmstrips, cartoons) describing the various activities of the people: religion, education, work (agriculture, industry, fishing, business), family life (everyday life, births, marriages, deaths, etc.), politics, laws, transportation systems, leisure (sports, various forms of public entertainment, vacation resorts), special customs, clothing,

street scenes, daily life; depicting also history, literature, works of arts, monuments, main cities.

2. Maps of the country (physical, economic, human, demographic).

3. A collection of the main newspapers and magazines; also typical advertisements on posters, in newspapers and magazines.

4. Realia: stamps, coins and bills, costumes, flags, models of houses and typical household equipment, games, transportation tickets (bus, railroad, and subway), *santons* and other items relating to Christmas and other holidays (*Chandeleur, Mi-Carême, le 14 juillet, etc.*).

These items can become *audio*-visual materials if the teacher prepares tape recordings to accompany them. These tape recordings should be more than the reading of a text. For example, a tape about French cathedrals should include bells, preaching, background noise that will add life to the recording.

5. Sound films such as:

feature films: *L'Ecole Buissonnière, La Grande Illusion, Topaze, Regain*

language films: *La Famille Martin,* films by Professor George Borglum of Wayne

travelogues

documentary and literary films: *Matisse, Gide, Claudel, La Rose et le Réséda*

newsreels

For best results these films should not have any English subtitles and they should come with filmstrips or slides giving a summary of the story. So far, only the *Famille Martin* series and Professor Borglum's films come with filmstrips or slides.

When rented these films should be available for about five days at a reasonable cost.

We need many more films and they should be better adapted to our needs. A first step might consist in trying to convince the film companies that they should release as teaching units some short scenes taken from the features films. For example, in *Topaze* and in *L'Ecole Buissonnière* there are several scenes which can form very interesting units.

The materials listed in 1 through 4 above are for use mainly in class. In schools where the students are thoroughly dependable, small audio-visual rooms can be installed and language laboratory assignments based on these materials can be given.

Using sound films

The script of a sound film should not be studied before the film is shown (otherwise the film would be only a reinforcing device of reading).

Step one: the film is shown during the early part of the week (Monday or Tuesday). No script is given. The purpose of this presentation is to:

1. Acquaint the students with the visual contents of the film.

2. Make them realize the extent of the audio comprehension problems they will have to solve in the ensuing language laboratory work. This first showing serves as a point of reference to help them measure the amount of progress they will make during their work in the laboratory.

During this first showing, the instructor may stop the film for still viewing of a particular frame or he may play a certain passage a second time (the projector should be equipped with a still viewing feature and a reverse switch). The instructor may give comments about the visual contents, but no help is given at this point about the dialogue.

Step two: each student has to go to the language laboratory in order to study the sound track of the film.

The teacher prepares the assignment tape exactly as he prepares the audio comprehension tapes we described previously; the sound track is copied on a tape, and this tape is copied on another tape while comments and explanations are added (the sound track usually has some pauses; these pauses should not be included in the final tape).

The student uses this sound track assignment exactly as he uses the audio comprehension tapes.

If filmstrips or slides come with the film, the student may be sent to a small audio-visual room where he may study the filmstrips or slides with the help of a recorded commentary.

Step three: this third step should take place four or five days after the initial showing of the film (Friday or Saturday). The following work is done:

1. The film is shown for the second time as a final review and preparation for the class test; if the film is particularly interesting or difficult, it may be shown a third time. The students who have done their language laboratory work conscientiously should now be able to follow the film without any difficulty.

2. For further practice, the instructor may wish to show the film again and ask the students to act out the film; the sound track is cut off and the students supply the dialogue.

3. The audio-visual test is given. We have been using the following techniques:

Technique 1: the teacher shows a brief passage of the film (without sound). The students have to write the corresponding dialogue. The passage is shown only once.

Technique 2: the teacher shows a passage of the film (without sound) or one of the accompanying slides (or frame from the filmstrip). The students have to answer questions.

Technique 3: same as technique 2, but this time the teacher makes a statement about the passage or frame. The students have to state whether that statement is true or false; or the teacher may make four different statements and the students have to state which one(s) is (are) true.

Comprehension of the sound track is tested with the techniques we described for the audio comprehension exercises.

SPECIALIZED COURSES

IN

LITERATURE, PHONETICS, STYLISTICS, CIVILIZATION, SIMULTANEOUS INTERPRETATION

All through this chapter we refer to tape as the recording medium because the majority of language laboratories are now equipped with tape machines.

All the language laboratory techniques that we describe can be used with magnetic disc or magnetic belt machines.

Students should not be admitted to these specialized courses unless their language skills are good; they should be able to understand with ease all the class lectures and all the professional recordings of the texts they have to study. At the present time, many professors of literature are forced to speak English during their classes because the students they receive have not been properly trained.

The students are now entering a new field of experience. In most classes, they will have only a few opportunities to hear French spoken at conversational speed; in many cases, either because of the number of students or because the professor uses only the lecture technique, they will speak very little. In such conditions, the language skills deteriorate rapidly; at the end of the senior year, we may have French majors well versed in literature and civilization, but unable to express themselves as correctly and as fluently as they did at the end of their sophomore year.

Thus, it is essential that the active language skills be maintained throughout these specialized courses. The students should continue to work, week after week, with the type of total review tape which we described in the improvement course, and they should be tested weekly. If the professors of these specialized courses do not want to take care of this program of language maintenance, it should be placed in the hands of a professor whose special duty would be to prepare the weekly tapes and supervise the testing (this testing should count for about one third in the students' grades).

We have to keep in mind that, as far as the active language skills are concerned, the number of YEARS one spends on a language is relatively unimportant; what really counts is the number of HOURS per WEEK and how efficiently they are used.

These specialized courses are crucial. Many colleges proudly point out that each year they prepare so many French majors, but these intra muros statistics are largely meaningless; what really counts is the number of graduates who remain interested in the French language; what matters is what the graduate does with his French or rather what French does for him through life. If the student after his last examination closes his French books with a sigh of relief and is never to read or speak French again, he has failed and so has his French department.

THE LANGUAGE LABORATORY AND THE SPECIALIZED COURSES

The language laboratory techniques described below are of course in addition to the class use of audio-visual materials. There are plenty of illustrative recordings that can be played in class (to save time, it is better to prepare a tape recording containing only the excerpts that are needed). Slides, filmstrips, films, and realia can be shown in class or in special meetings; these materials are plentiful for civilization (history, geography, arts); in literature, we need many more good films (such as *La Rose et le Réséda*).

Literature

Technique 1: the students' audio comprehension should be constantly improved so that they

will be able to understand without difficulty the oral rendition of the texts they study. It is the professor's duty to see to it that his students will understand *Molière* not only in the written text but also on the stage --and, of course, we mean *real* understanding, not getting a word here and there and guessing the story in general.

The professor can prepare audio comprehension tapes similar to those we described for the improvement course (pages 97-103).

Technique 2: The professor records his lectures (either completely or a summary) and puts these tapes in the tape library. The students can come to review the notes taken in class or make up for classes they have missed.

Technique 3: The professor spends his class time on essential and difficult points. He sends the students to the laboratory to listen to lectures about the points of lesser difficulty; the students take notes (which can be checked by the professor).

Technique 4: The students are sent to the language laboratory to listen to a lecture about an author; they take notes. The class time is spent on a *discussion* of one of the author's works.

Technique 5: The students are sent to the language laboratory to listen to a tape which contains an outline of a discussion about an author's work: ideas are suggested, some facts are explained, useful vocabulary is given. The students take notes and are better prepared for a more fruitful class discussion.

Technique 6: It is a pity that some of our best professors give lectures which are heard only by their relatively small number of students. These lectures could be recorded and exchanged.

This co-operation could be organized on a college-to-college basis. For example, Yale could exchange recorded lectures with Harvard, Wellesley, Smith, etc. It could also be organized on a national basis by a commercial recording company and all the interested colleges could add to their tape libraries some of the best lectures given by the best professors in this country and in France.

At the proper time, the students would be sent to the language laboratory to listen to these recordings.

> The tapes described in techniques 1 through 6 could, of course, contain excerpts from commercial records which are already available; for example, a lecture about *La Chanson de Roland* should certainly contain excerpts from the excellent recording prepared by *Georges Hacquard*.

Technique 7: Make tape copies of the lectures that already exist on records (for example, *Simone de Beauvoir*'s lecture on the *théâtre existentialiste* with excerpts played by various actors). At the proper time, the students are sent to the language laboratory to listen to these recordings.

Technique 8: Buy and copy on tape all the professional recordings that already exist in

the series "*Leur Œuvre et leur Voix*", "*L'Encyclopédie sonore*", "*Auteurs du XXe siècle*". These literary works are recorded by the authors themselves or by well-known artists. The students can listen as they study the text. When they hear and understand *Camus* reading the trial scene in *L'Etranger* or *Saint-Exupéry* reading the preface to *Terre des Hommes*, they develop a sense of literary appreciation far superior to the one they would receive from the books alone.

The sound tracks of literary films (*Paul Claudel, Gide, etc.*) can be copied on tape and added to the tape library (the blank intervals that usually occur on sound tracks should be removed during the copying).

Technique 9: Self-testing tapes of "*Explication de Textes*" can be developed. For example, the professor records an explanation of a portrait by *La Bruyère*; the tape is prepared in such a way that the student is kept active just as if he were in class; at the end of the tape, the teacher records two or three short tests (using the techniques described on pages 100-103).

The student listens to the tape, participating as well as he can. Then, he takes the first test; he listens to the first question, stops the tape, tries to answer, and starts the tape to find out whether his answer was right or wrong; he does the same thing with the other questions. If he is unable to answer the questions correctly, it indicates that he has not worked enough with the "*Explication de Textes*"; he listens to it again; then, he takes the second test, and so on.

Technique 10 (memorization of texts): Although much decried by many, the memorization of some texts can be of considerable help for the appreciation of literature; when memorizing a text, the student should be careful to imitate correctly the intonation, the rhythm, the stress, the various contrasts of sounds since all these features are an important part of style.

The language laboratory can make this work much easier. The student says the first rhythmic group, starts the tape to find out whether he was right, says the second group, starts the tape, etc. The student practices until he can say the whole text without making errors. Thus, the tape acts as the prompter in the theater --coming into action only when help is needed.

A variant of this technique can be used with plays, especially those where the parts are made up of short lines. The student plays character A's first statement, stops the tape, tries to say character B's answer, starts the tape to check whether he was right or wrong, listens to character A's second statement, stops the tape, tries to say character B's answer, and so on. The student practices until he knows character B's part; then, he can learn character A's part.

Technique 11 (essay technique): The purpose of this type of tape is to help the students solve some of the difficulties they meet in writing essays. The tape suggests a topic; excerpts from books which are necessary for the comprehension of this question are read; the main ideas are discussed or suggested; their relative importance is explained; an outline is discussed; the student is warned against some common errors about this question and errors of forms, structures, and vocabulary.

The student then writes his essay and submits it to his professor.

Technique 12 (self-correcting practice examination): Some typical examination questions are recorded with the answers. The student listens to the first question, stops the tape, prepares

the answer aloud, checks with the tape, listens to the second question, etc. The student practices until he can answer correctly all the questions.

Phonetics and diction

Our courses in phonetics today are mostly courses in *remedial phonetics* for students who have not received an adequate training in pronunciation during their preceding years of study of the language. As stated on page 17, pronunciation *should be* taught as an intrinsic part of structure, morphology, and vocabulary.

The students we have in these remedial courses have two different categories of errors to correct:

1. They do not pronounce correctly the sounds of the language and they have not acquired acceptable melodic patterns. Let us state again what are the main habits that have to be acquired:

-pure vowels ending abruptly
-consonant tension
-syllabication
-passage from vowel to vowel
-timbre of vowels, semivowels, and consonants
-non-aspiration of /p/, /t/, /k/
-dropping or retaining unstable vowels
-rhythm, stress, and intonation

2. They mispronounce individual words; for example, they believe that

feriez should be pronounced fɛrje instead of fərje
second should be pronounced sekɔ̃ instead of səgɔ̃

They make liaisons when none should be made or reciprocally do not make them when they should be made; for example:

they pronounce *en haut* as ãno instead of ão
they pronounce *lui et elle* as lɥietɛl instead of lɥieɛl

Note clearly that errors of this second type can be made -and are made- by persons who have perfectly acquired the sounds of the language; native Frenchmen make errors of this type when they pronounce

lundi as lɛ̃di instead of lœ̃di
Metz as mɛts instead of mɛs
les haricots as lezariko instead of leariko
à tout hasard as atutazar instead of atuazar

Therefore, let us keep in mind that these two types of errors have to be studied and corrected separately.

Errors of type 1

As stated on page 17, the students reach a plateau beyond which -no matter how patient the teacher and no matter how hard-working the student- progress is unbearably slow. We have already

stated that on the basic course level -where the students have had no previous study of French and therefore no bad habits- this plateau can be reached before the end of the first year if the course is well-taught by a teacher with a native pronunciation and if the students do their best.

Most of the students who take a remedial phonetics course have never had a chance to reach this plateau because not enough attention was paid to pronunciation in their basic course or simply because they never heard any native French. Bringing these students up to their plateaus now requires considerably more work because wrong habits have to be corrected before they can be replaced with good ones.

In class, the work of the teacher consists in explaining how to correct each type of error. These explanations can be followed by *short* drills in class based on conversational sentences[1]. Individual drills cannot be given for long because while one student works the others have to wait (in fact, individual drills are practically impossible in classes having more than ten students).

How then can we give each student the individual practice he needs? The language laboratory is not a good solution because progress in the laboratory for these features of pronunciation is unpredictable; we have already explained on page 18 that a student may work for hours on a sound without making any progress if he works *by himself* with the machine. The best solution is to have the teacher (or a special assistant) meet individually with each student for about fifteen minutes at least once a week for intensive corrective drills; during these meetings, a tape recorder should be available to help the teacher point out some of the errors the student is making.

Errors of type 2

When basic corrective [illegible] has been done (about three months), work can be started on errors of type 2.

We have found that during this second period of the course, the following method is satisfactory: the first half of each class is spent on explaining and discussing some difficult words and the second half is spent on literary texts.

The difficult words are classified according to the type of difficulty they present; for example, we study contrasts such as these:

bienfaisance	bjɛ̃fəzɑ̃s	*abbaye*	abei	*Jésus-Christ*	ʒezykri
bienfaiteur	bjɛ̃fɛtœr	*cobaye*	kɔbaj	*Christ*	krist
anguille	ɑ̃gij	*roc*	rɔk	*des héros*	deero
aiguille	egɥij	*croc*	kro	*des héroïnes*	dezeroin

[1] The artificial sentences and tongue twisters that are found in most textbooks are harmful because they give the student the impression that the whole course is of trifling importance (how can you feel that you are doing serious work when you say: *Il palpe avec calme quelques algues pleines de pulpe*) or because they may discourage him (even French natives have difficulty with: *Ce chasseur sait chasser sans son chien*).

automne	otɔn	*Mexique*	mɛksik	*sept*	sɛt
automnal	otɔmnal	*examen*	ɛgzamɛ̃	*septennat*	sɛptɛna
direct	dirɛkt	*chef*	ʃɛf	*cil*	sil
respect	rɛspɛ	*nerf*	nɛr	*sourcil*	sursi

Reading literary texts constitutes a synthesis: the students have to apply what they have learned during the corrective drills of the first three months and they meet some of the difficult words they have been studying.

During this second period, the language laboratory is somewhat more beneficial: the students can review the sound components of the difficult words (progress is clearly predictable there) and they can practice with the recordings of the literary texts[1] (progress is apparent mostly in rhythm, stress, and intonation). Listening and repeating aloud is sufficient; recording is not necessary.

During this second period, individual appointments should be continued, but they do not need to be as frequent as during the first period.

All these courses in remedial phonetics should become unnecessary when proper audio-oral methods are used on the basic course level and when pronunciation is taught as an intrinsic part of morphology, structure, and vocabulary. Our courses in phonetics and diction should then be able to assume their proper role:

-teach the theory of phonetics (mostly for future teachers).

-continue the study of the melodic features of the language; this should be based mostly on literary prose and poetry.

-study various regional accents. Students should be able to recognize the typical accents of Paris (*cultivé* and *faubourien*), South-Eastern France, Belgium, Canada, Switzerland, etc. The students should be taught what are the characteristics of these regional accents. A basic knowledge of these regional accents is often necessary in order to understand short stories, novels, plays, and films where a typical regional accent is imitated or serves as a means of comedy (short stories by *Maupassant*, plays by *Marcel Pagnol*, etc.).

-study the evolution of the French language, especially with regard to the evolution of the spelling and the pronunciation. The purpose of this study would be to help the students to read and understand old editions, or understand why they find in *Tartuffe*:

D'abord j'appréhendai que cette ardeur secrète
Ne fût du noir esprit une surprise adroite

On m'y hait, et je voi
Qu'on cherche à vous donner des soupçons sur ma foi.

Stylistics

In the last analysis, the purpose of a stylistics course is to give the students the ability

[1] We use recordings chosen in the series *Leur Œuvre et leur Voix, Auteurs du XXe siècle, L'Encyclopédie Sonore.*

to hear whether a sentence *sounds* French or not. This fine sense of rhythm, intonation (since intonation is a feature of style), euphony (combination of sounds) can only come through steady audio-oral training. The language laboratory work connected with the literature courses should provide that training. Since most courses in stylistics use the translation technique, the following type of tape might also be useful:

The student is given the English translation of a French literary passage (the English translation should be extremely accurate and well written). The tape begins with various comments and suggestions about the vocabulary, forms, and structures that are necessary for the translation of that passage back into French; then the French passage is read (we should choose passages that have already been recorded by well-known artists). The student uses the tape as follows: he listens to the comments and suggestions, taking notes; he translates the first sentence from English into French, pronouncing it aloud; he starts the tape to check whether his translation (including the pronunciation and the melodic features) is right or wrong, and so on with the other sentences. He should keep working with the tape until he can give a faultless oral translation.

Civilization

The students can be sent to the language laboratory to listen to:

-tape copies of the records already published in the series *Documents Sonores, Les Grands Evénements de l'Histoire, Visages de l'Homme, Documents et Témoignages*.

-tape copies of the sound tracks of films such as *La Révolution de 1848, Colbert, Napoléon*.

In order to make this language laboratory work effective, work guides should be prepared and tests should be given.

Simultaneous interpretation

Some positions require interpreters trained in the simultaneous interpretation technique. The heart of this technique consists in being able to listen to one sense group while translating the preceding one. In other words, the simultaneous interpreter is always one sense group behind the speaker.

This technique is difficult to acquire and it demands some native ability. It can be practiced in the language laboratory with recordings of graded difficulty accompanied by written translations. The student stops the tape and looks at the translation only when he cannot find the right equivalent or is getting more than one sense group behind. He should not try to work with the next tape until he has thoroughly mastered the first one.

The student could occasionally record his translation; this would help him find out whether his delivery is acceptable and whether his translation is in idiomatic English.

COMPREHENSION OF SCIENTIFIC MATERIAL

We are now dealing with students who are interested only in the ability to understand written factual material. By factual material we mean the type of material where:

1. no idiomatic expressions are usually found.
2. no cultural background about the foreign country is necessary.
3. a great many words are cognates.
4. the audio features of style (intonation, combination of sounds, etc..) do not play a significant part.

The following is an example of such factual material:

"*Un générateur électrique met l'électricité en mouvement dans un circuit conducteur fermé; si le mouvement s'effectue toujours dans le même sens, le courant est continu; mais si le mouvement s'effectue périodiquement pendant un temps* t *dans un sens déterminé et pendant le temps* t *suivant en sens inverse, le courant est alternatif.*

t *est appelé alternance du courant alternatif.*
$T=2t$ *est la période de ce courant.*
$N=\frac{1}{T}$, *nombre de périodes par seconde, est la fréquence.*

La fréquence des courants industriels est de l'ordre de 50; on classe les courants alternatifs d'après leur fréquence....."

or:

"*Les anémies sont caractérisées par la pâleur des téguments et des muqueuses et par la diminution du nombre des globules rouges.*

Envisagées au point de vue de leur mécanisme de production, les anémies peuvent être classées en trois groupes distincts:

1. *Les anémies par destruction globulaire.*
2. *Les anémies par déperdition globulaire.*
3. *Les anémies par trouble de la réparation globulaire."*

When discussing this reading knowledge, most people fail to realize that the real difficulty does not lie in the language, but rather in one's knowledge of the material. For example, it will probably take an American scientist less time to learn enough French in order to read a French article about atomic power than it would take the average Frenchman to learn enough physics in order to make sense out of the same article. In such discussions, one should also keep in mind that our definition of factual material applies mostly to physics, chemistry, mathematics, geology, biology, and the like. Books about psychology, sociology, history, education offer many idiomatic expressions and metaphors; they require a cultural knowledge of the foreign country, its political organization, its educational system, etc. Such books prove as difficult to read as literary material and the students might just as well follow a normal program of study (learning to speak and write the language as well as understand it).

Approximately 200 hours of work can give the student an adequate reading knowledge in the field of physics, chemistry, mathematics, geology, and biology, if the following program is used:

In class: most of the explanations given by the instructor are about the points of morphology and syntax which are necessary for the comprehension of scientific material; basic vocabulary is taught and the instructor indicates how cognates can be recognized.

The usual grammar text with its emphasis on the subtleties of past participle agreements, subjunctive, literary vocabulary, etc. is of little use in such a course. We need texts such as *Scientific French* by William N. Locke, and *Reading French in the Arts and Sciences* by Edward M. Stack.

In the laboratory: the student works with recorded translations of the foreign language articles he has to read. These tape recordings may come with or without explanations. The student proceeds as follows:

1. He looks at the first French sentence and tries to translate it; if he cannot, he should localize his difficulty, find what stops him from understanding.

2. He starts the tape and listens to the translation (with or without the explanations depending on the tape he chose). He finds the solution to the difficulty he had and stops the tape.

The student repeats this process sentence by sentence to the end of the article.

It is easy and requires little extra work to train the student to understand these articles aurally. The tape then reads each sentence in French before translating it. The student proceeds as above except for Step one. Here he LISTENS to the French sentence while looking at it, stops the tape and tries to translate it. If he cannot, he should try to localize his difficulty, and continue with Step two.

Whichever method is used, it is important that the student STOP the tape in order to translate or try to translate the sentence. Letting the tape run and listening passively to the translations will not bring any real progress.

Preparing recorded translations is cheaper and faster than having the translations typed and mimeographed, especially if the 1 7/8 ips speed is used (fidelity at this speed is satisfactory for this type of work).

BASIC PRINCIPLES OF SOUND RECORDING

INTRODUCTION

The work of the teacher will be easier if he is familiar with the basic principles involved in sound recording. Basically there are only three types of sound recording and reproduction in use today: the mechanical method (phonograph records), the magnetic method (oxide-coated tapes, discs, and belts), and the optical method (optical sound tracks of films).

THE MECHANICAL METHOD

The recording operation consists in cutting a modulated groove in a mirror-smooth surface; the wiggles which you can see in the grooves correspond to the waves of the sounds being recorded. The sound waves which strike the microphone produce a varying current which is amplified and fed to a cutting head which causes a corresponding movement of the cutting stylus.

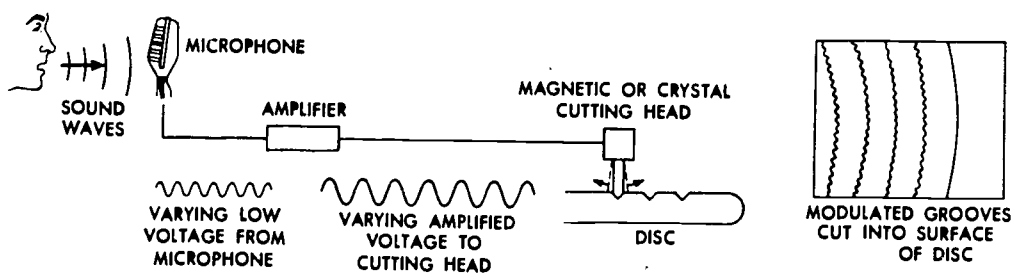


Fig. 1. Diagram illustrating method of disc recording (Courtesy Audio Devices).

In playback, this sequence is reversed:

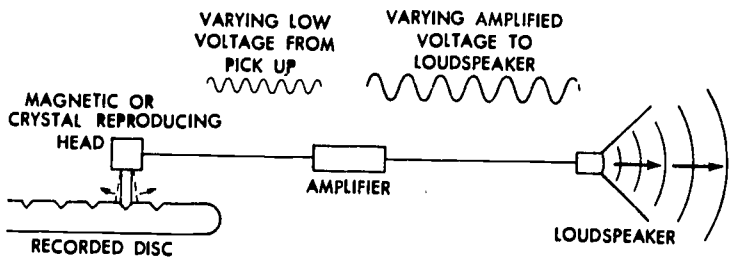


Fig. 2. Diagram illustrating method of disc playback (Courtesy Audio Devices).

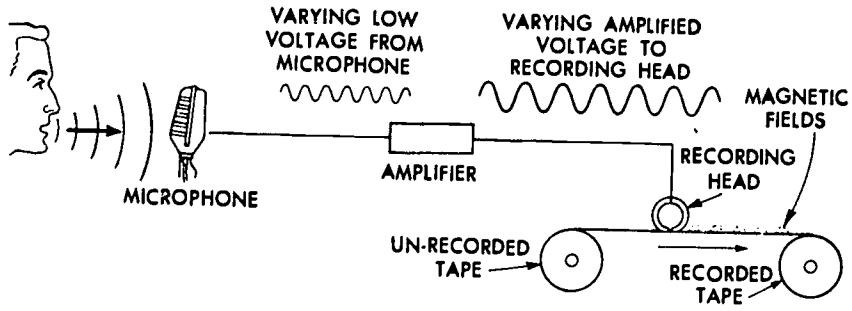
THE MAGNETIC METHOD

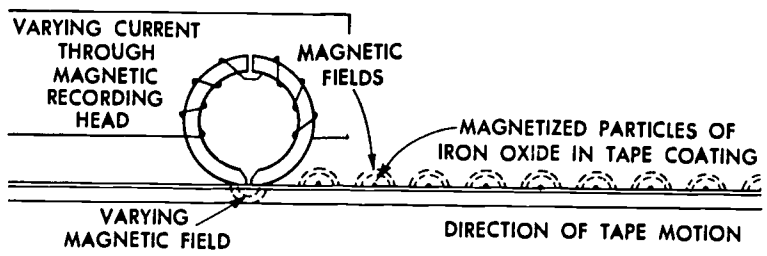
I. PRINCIPLES

The magnetic method is based on the following principles:

1. Every wire in which there is a flow of electricity is surrounded by a magnetic field which varies with the strength and direction of the current. When this wire is formed into a coil with an iron core (in other words, an electromagnet), the strength of the magnetic field is greatly increased and localized. You can demonstrate this principle very easily with a compass, a flashlight battery, a piece of wire, and an iron nail. If you connect the wire to the battery and place the wire parallel with the compass, you will see that the compass tends to place itself in a perpendicular position to the wire. If you place the wire around the iron nail and make as many turns as you can and then connect the wire to the flashlight battery, the compass will swing even more out of its position.

A magnetic substance (such as iron, steel, cobalt, etc.) when placed in a magnetic field also becomes magnetized and acquires its own magnetic field. Magnetic substances can be magnetically hard or magnetically soft. A magnetically hard substance (such as steel) retains its magnetism after it has been removed from the magnetic field; a magnetically soft substance (such as soft iron) does not retain it.





Figures 3 and 4 (Courtesy Audio Devices).

Figures 3 and 4 show how this principle is applied to magnetic recording. The sound waves are changed into electrical waves by the microphone; these electrical waves of varying intensity are amplified by the amplifier and passed through a coil (also called recording head), generating a magnetic field of corresponding varying intensity. The tape surface is covered with a thin layer of fine particles of iron oxide; as this tape moves past the head, through the magnetic field, the oxide particles (which are magnetically hard) become magnetized. Thus we have a recorded tape which contains a magnetic pattern corresponding to the variations in the current which was passed through the recording head.

2. When a magnetic field is moved past a wire (or coil of wire), a voltage is induced in the wire, in proportion to the strength and direction of the magnetic field. Figure 5 shows how this principle is applied to magnetic sound reproduction.

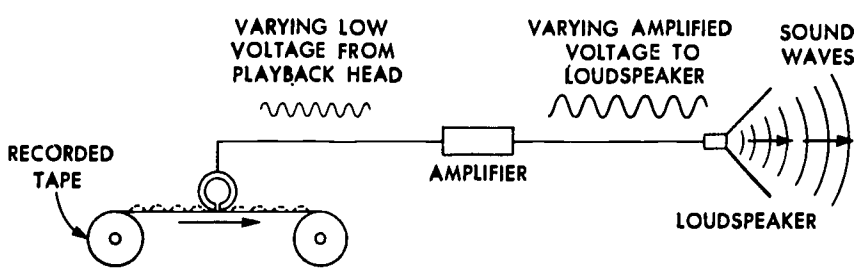


Fig. 5 (Courtesy Audio Devices).

II. TAPE RECORDERS

In order to use tape recorders effectively in a language laboratory, the teacher should understand that a tape recorder is made up of two basic sections: the mechanical section and the electronic section.

A. The mechanical section

The main parts of the mechanism are the following:

1. THE MOTOR: most machines have only one motor; it supplies power to pull the tape in front of the heads when recording or playing back a tape, and it also moves the tape in the rewind and fast forward functions. On some machines, the fast forward and rewind functions are handled by separate motors.

There are two basic types of motors: induction and synchronous (hysteresis). Induction motors can and do give excellent results, but the more expensive synchronous motors are usually preferred when an absolutely exact speed is required.

2. THE CAPSTAN-FLYWHEEL ASSEMBLY: the movement of the motor is transmitted to this assembly through a belt or an idler wheel; the heavy flywheel insures that the speed of the capstan is stable; the capstan draws the tape across the heads.

3. THE PRESSURE ROLLER or CAPSTAN IDLER: it is a rubber roller which holds the magnetic tape against the capstan by means of spring pressure in order to insure constant speed and prevent slippage.

4. THE PRESSURE PADS: they are felt pads mounted on a spring arm. They hold the tape in close contact with the heads. On some machines the tape tension is carefully regulated and pressure pads are not necessary.

5. THE TAKE-UP REEL and THE FEED REEL (SUPPLY REEL): the feed reel is the reel which supplies the tape when the machine is in record or playback position. The take-up reel is the reel which gathers the tape after it has passed in front of the heads.

6. Some machines have only one knob or lever to control the tape transport functions: play, record, stop, fast forward, rewind. Other machines have two knobs or levers: one for play, record, stop; the other for fast forward and rewind. On most machines, there is a safety lock or button which prevents accidental passage into record position (and therefore accidental erasure).

7. Some machines have a mechanical feature which allows the tape to be stopped and started instantaneously. It may be a button, a bar, a lever, or a knob. This is usually called a pause button, pause bar, stop-start lever, or edit knob.

A tape recorder mechanism is a very intricate and delicate piece of machinery; in addition to the functions we have described (play, fast forward, rewind), the mechanism provides the hold-back tension on the supply reel and the take-up tension on the take-up reel when the tape is played; in fast forward and rewind positions, the brake must apply slightly on the reel which is getting empty so that the tape will not spill. Finally, when the tape is stopped from any function, the brakes must be applied in such a way that the tape will not spill, break, or stretch (and that requires that slightly more braking power be applied on the reel which is becoming empty than on the reel which is becoming full).

B. The electronic section

Here is the basic information which you should know:

1. THE MICROPHONE: first you should understand what the terms sensitivity and frequency

response mean. If for a given sound a microphone produces a higher output (volume) than another, it is said to have a higher sensitivity. If a microphone reproduces a given sound with more faithfulness than another microphone, it is said to have a better frequency response (in electronic parlance, a microphone with ideal frequency response is described as having a "flat" or "uniform" response).

The relative sensitivity of microphones is measured in db (decibel) ratings. Since the numbers are negative, a microphone described as having a -50 db output will give you a louder output (volume) than a microphone with a -55 db output.

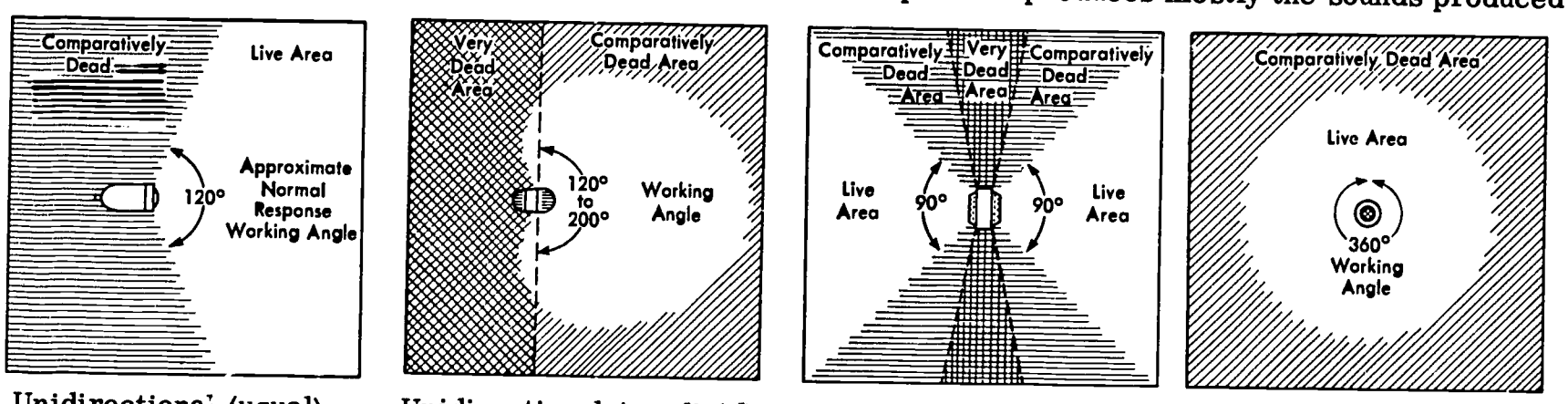
Excellent frequency response and high sensitivity are two qualities which do not go together; improvements in the frequency response are usually accompanied by a decrease in sensitivity (in other words, a microphone which has a greater output than another is usually less faithful).

Another consequence is that a microphone with excellent frequency response and low output cannot give its full performance unless it is fed into a professional machine which will be able to amplify the microphone low output without adding unwanted noise (in other terms, it is a waste of money to buy an expensive microphone for a cheap recorder; the sound chain cannot be any better than the weakest link).

There are several types of microphones: crystal, ceramic, dynamic, variable reluctance, ribbon, etc. Crystal microphones have high sensitivity, but the frequency response is only average; they are very susceptible to shock, rough handling, extremes of temperature or humidity; they should not be left in direct sunlight or in the storage compartment of a tape recorder while the machine is operating; they are not recommended for language laboratory use. Ceramic microphones have a good sensitivity (usually slightly less than crystal) and an average frequency response; they are generally sturdy and are not susceptible to extremes of temperature or humidity; they are good for use by the students. Dynamic microphones are sturdy[1] and can withstand extremes of temperature or humidity; they are less sensitive than crystal and ceramic microphones, but their frequency response is usually better. Variable reluctance microphones -although sturdy- are not recommended because their frequency response is mediocre and, when placed near the tape recorder, they may induce a loud hum in the machine. Ribbon microphones can be excellent, but they are so expensive and fragile that they are not for use in laboratories.

The microphones supplied with cheap and medium-priced recorders are usually crystal or ceramic. These inexpensive microphones with a strong output eliminate the need for increased amplification and more complex circuits; the weight and the cost of the machines are reduced.

Microphones can also be classified as unidirectional, bidirectional, and nondirectional (also called omnidirectional or all-directional). The unidirectional microphone reproduces mostly the sounds produced



Unidirectional (usual) Unidirectional (cardioid) Bidirectional Omnidirectional

Fig. 6

[1] The term is relative; even "sturdy" microphones should be treated with care; they should never be dropped; do not commit the common error of blowing into them to find out whether they are alive (instead tap the case slightly with your fingernail).

in front of it; it minimizes background noise (the cardioid type eliminates even more unwanted sound). The bidirectional microphone picks up sounds from two directions and is desirable when, for example, you wish to record two persons talking across a table. The nondirectional microphone picks up sounds equally well from all directions; it is recommended for recording a conference or a panel discussion.

2. IMPEDANCE MATCHING: since this is a very technical question, we shall give you only the basic information.

The microphone input of a tape recorder can be of the high-impedance (Hi-Z) or low-impedance (Lo-Z) type. A machine with a high-impedance input has simpler circuits and is therefore lighter and cheaper.

High-impedance microphones should be used with cables measuring less than twenty feet; longer cables introduce a loss of quality. Low-impedance microphones can be used with very long cables without any loss of quality.

In theory, high-impedance microphones must be plugged into high-impedance recorders, and low-impedance microphones must be plugged into low-impedance machines. However, if you want to use a long cable and a low-impedance microphone with your high-impedance machine, you can do it by adding a matching transformer (such as Shure A86A microphone transformer).

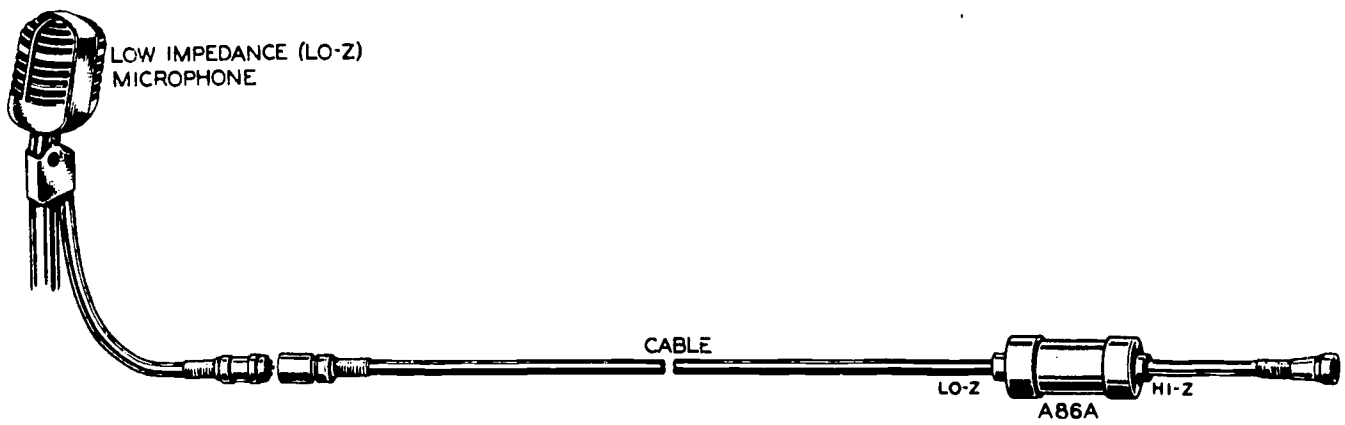


Fig. 7

If you want to use a long cable and a high-impedance microphone with your high-impedance machine, you can do it by using two matching transformers.

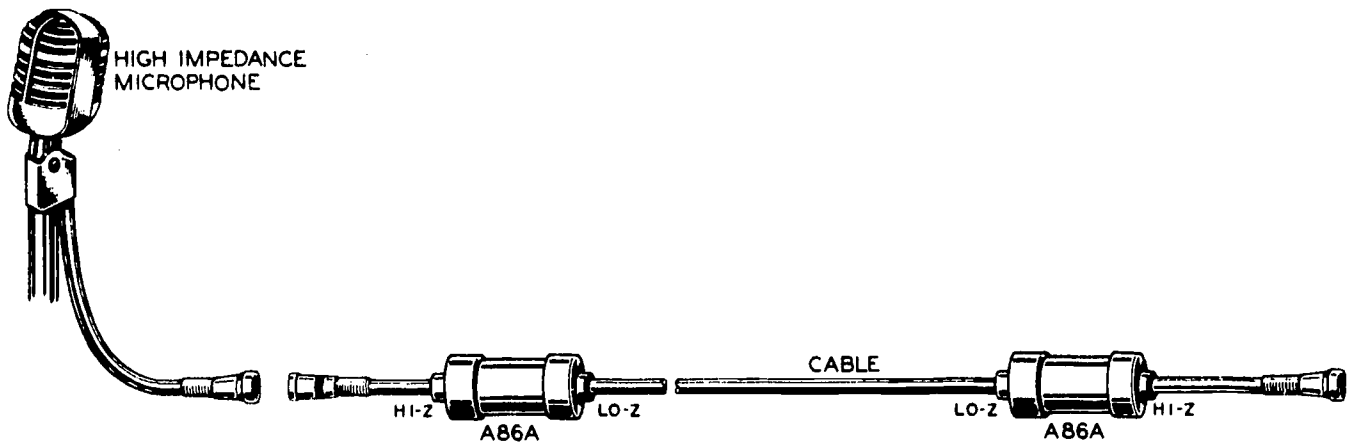


Fig. 8

3. THE HEADS: the essential part of a head is the coil or electromagnet inside the head. The electromagnet is bent into a circular shape with the poles almost touching. The distance between the poles is known as the gap. The narrower the gap, the higher the frequency range of the machine can be. On present machines, the length of the gap is usually smaller than 0.0002". The core of the coil is usually made of mu-metal; this is a metal of silvery appearance which is magnetically soft (that is, it retains its magnet-

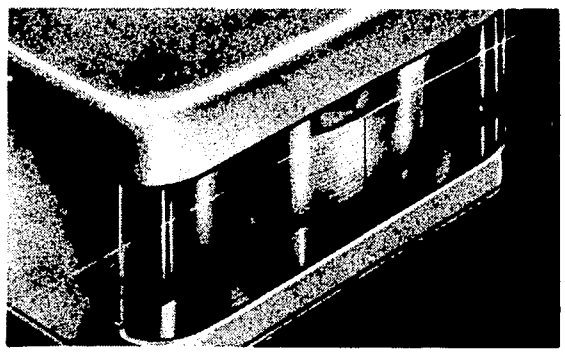


Fig. 9. Magnified picture of a full-track head. The length of the gap has been increased to make it easier to see.

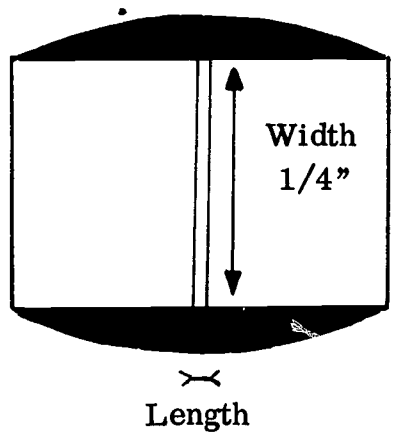


Fig. 10. Full-track head

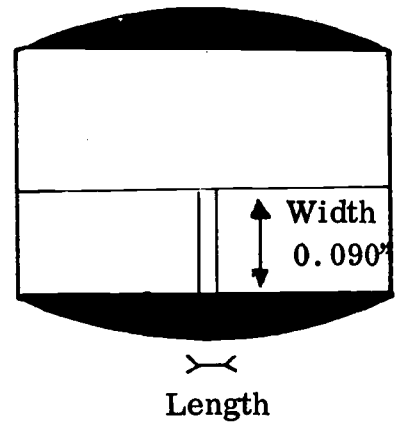


Fig. 11. Half-track head

The length of the gap has been greatly exaggerated on these diagrams. The length of the gap is generally under 0.0002"; on some machines it is as small as 0.00005".

ism only as long as the current passes).

The heads on a machine must perform three functions: erase, record, reproduce. Most professional machines have a separate head for each function. The tape passes in front of the erase head, then the recording head, then the reproducing (playback) head. The tape passes the erase head before it passes the recording head; the tape is erased (cleared of any previous material) before a new recording is put on. During the playback function, the erase head is not operating.

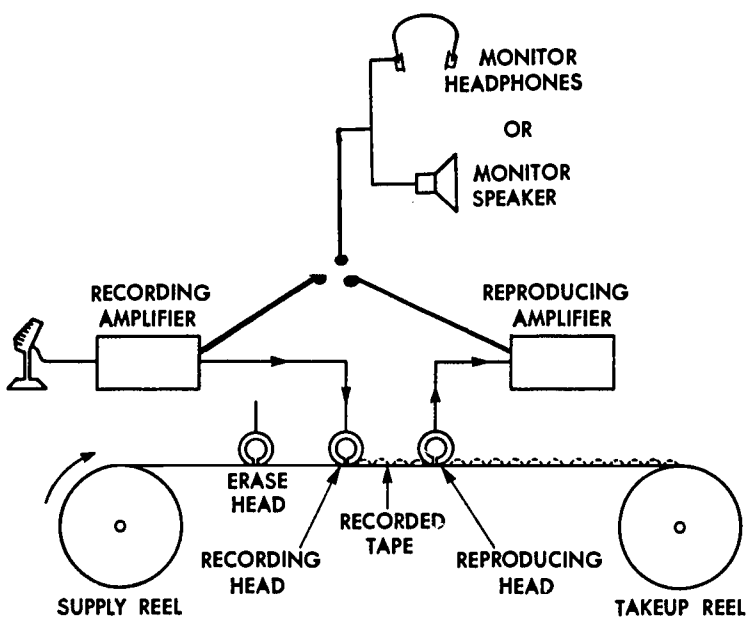


Fig. 12.

With such an arrangement, it is possible for the technician to monitor from the tape or from the input. When monitoring from the tape, he listens to the tape a fraction of a second after it is recorded, so that any technical difficulties can be detected at once. When monitoring from the input, he listens to the signal that is being fed into the machine (he has no guarantee that the sound is properly recorded on the tape). It is possible to switch from one monitoring function to the other and thus have a direct comparison between what is being sent to the machine and what is actually recorded on the tape (fig. 12).

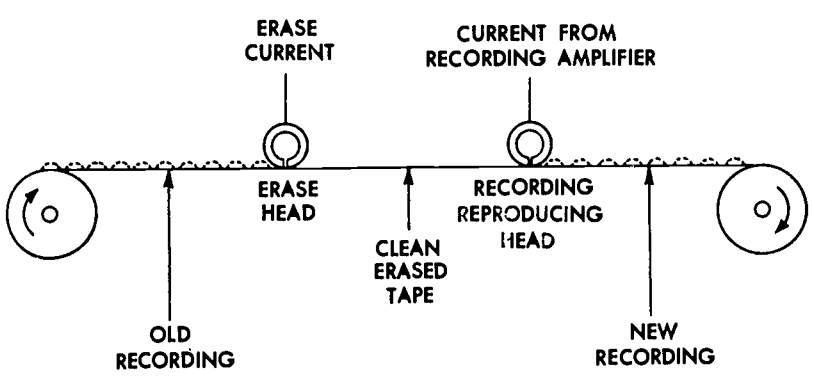


Fig. 13.

On most medium-priced machines, there are only two heads: one for the erase function and a second which combines the recording and reproducing functions (fig. 13).

On some other machines, the erase head and the record-playback head are enclosed in the same housing.

With these last two arrangements, you can monitor only from the input.

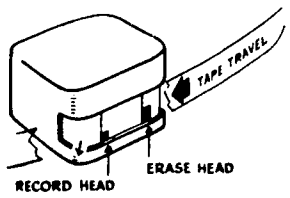


Fig. 14. Combined half-track erase and record heads.

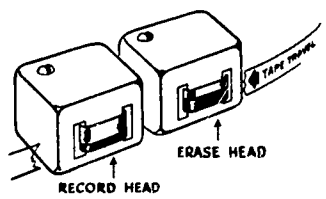


Fig. 15. Separate half-track erase and record heads.

The heads can also be classified according to the width of the gap. The type of head which is easiest to understand is the full-track or single-track head (the term full-track is clearer and we shall use it from now on). In a full-track head (fig. 9 and 10), the mu-metal covers the whole width of the tape; it is therefore the whole width of the tape which is erased, recorded, or reproduced.

The heads shown in figures 14 and 15 are called half-track, twin-track, dual-track, or double-track heads (the term half-track is clearer and we shall use it from now on). On these heads, the mu-metal does not cover the whole width of the tape; some non-magnetic substance such as brass or plastic is used for the other section of the head. On the erase head, the mu-metal section covers exactly half the width of the tape, while on the record-playback head the mu-metal section covers slightly less than half the width of the tape. With such heads it is possible to record one track on the tape, then turn the reels over -changing them to opposite spindles- and record a second track on the other half of the tape (fig. 16).

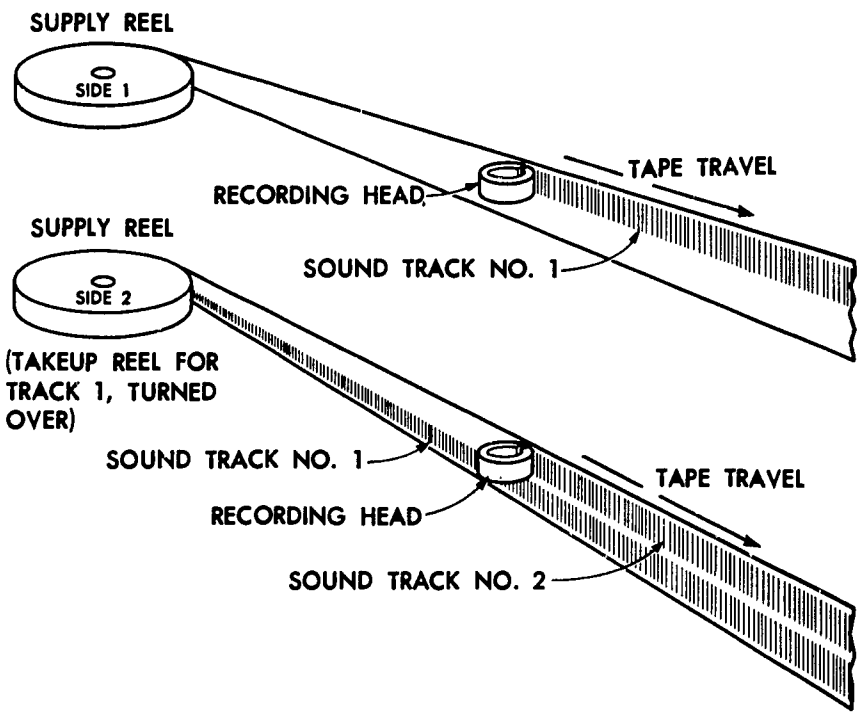


Figure 16.

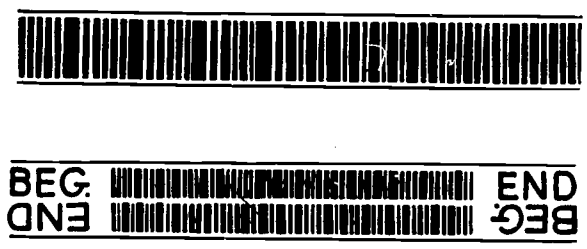


Fig. 17. Single-track and half-track tapes; the magnetic patterns can be made visible by dipping the tape in Ferro Ink (manufactured by Ferroprint Corp., Hollywood 46, California) or some similar product.
Since the half-track recording head records on slightly less than half the width of the tape, an interval is left; this is to make sure that the two tracks will not overlap and be heard at the same time. The erase head erases exactly half the width of the tape and nothing can be left of a recording.

If we compare full-track and half-track machines, we find:

a. Time per reel: the half-track machine provides twice as much recording time per reel.
b. Frequency response: it is not affected by the width of the recording.
c. Output: the output of half-track heads is slightly less than that of full-track heads (in order to retain the same signal-to-noise ratio, better amplifiers must be used).

In order to make the interchange of tapes possible, the manufacturers of half-track recorders have agreed that the mu-metal sections should be in the lower part of the heads on machines where the tape travels in a clockwise direction (see fig. 14 and 15). Since a machine where the tape travels in a counter-clockwise direction is -in a way- an upside down version of a clockwise machine, the position of the mu-metal sections is reversed: on machines where the tape travels in a counterclockwise direction, the mu-metal sections are in the upper part of the heads. Note therefore that the terms "upper track" and "lower track" are meaningless unless the direction of tape is also mentioned.

Figure 18 shows a different arrangement. The first head is an erase head which can erase one track at a time or erase both tracks simultaneously; the second head can record or play back the upper half of the tape; the third head can record or play back the lower half of the tape. This is a dual-channel system with staggered heads. With such an arrangement and with the proper amplifiers, you can do the following:

a. You can do everything you did with the preceding half-track system.
b. You can erase and record on both tracks at the same time.
c. You can play back both tracks at the same time.
d. You can play one track while you record on the other.

Machines which can use two tracks simultaneously are called dual-channel machines. It is important not to confuse the terms dual-track and dual-channel. On a dual-track machine the tracks are used separately while on a dual-channel machine both tracks are used simultaneously. This confusion could be avoided by using the term half-track instead of dual-track.

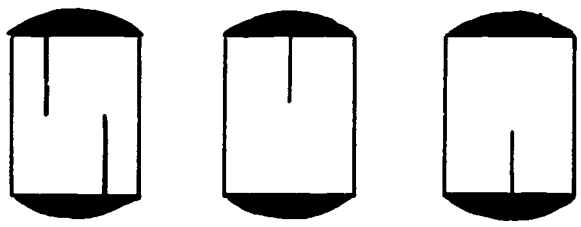


Fig. 18. Dual-channel system with staggered heads.

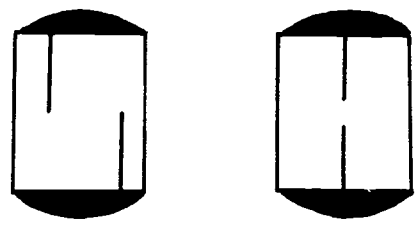


Fig. 19. Dual-channel system with stacked heads.

With a staggered head arrangement, the distance between the two record-playback heads is critical; it has to be exactly the same on all machines so that tapes can be exchanged. Because of this critical spacing, most manufacturers now prefer to use stacked heads (fig. 19).

Stacked heads perform as well as staggered heads except that there may be a slight amount of crosstalk between the two tracks. Crosstalk is due to a leakage between the two stacked heads; it means that while playing one track you may hear the other track slightly in the background.

All these various stacked and staggered heads can be combined in many ways (you may, for example, add more heads in order to monitor from the tape).

In 1958, improvements in the quality of heads and amplifiers made possible the development of quarter-track heads --recording four parallel tracks on a tape. It seems that such heads are of no value in our present language laboratories and they need not be discussed here.

4. THE HEAD ALIGNMENT: the angle of the gap to the direction of tape travel should be 90°; this is known as perfect head alignment (also called head azimuth). A machine which has its record-playback head out of alignment may still give good results with the tape it has recorded, but it will play poorly the tapes recorded on other machines. Perfect head alignment is essential in language laboratories since a tape recorded on one machine is often played on another. Head alignment can be checked and adjusted very easily with the head alignment tapes now commercially available.

Today most machines come with their heads properly aligned and this is no longer the problem it used to be during the first few years of experimentation with language laboratories.

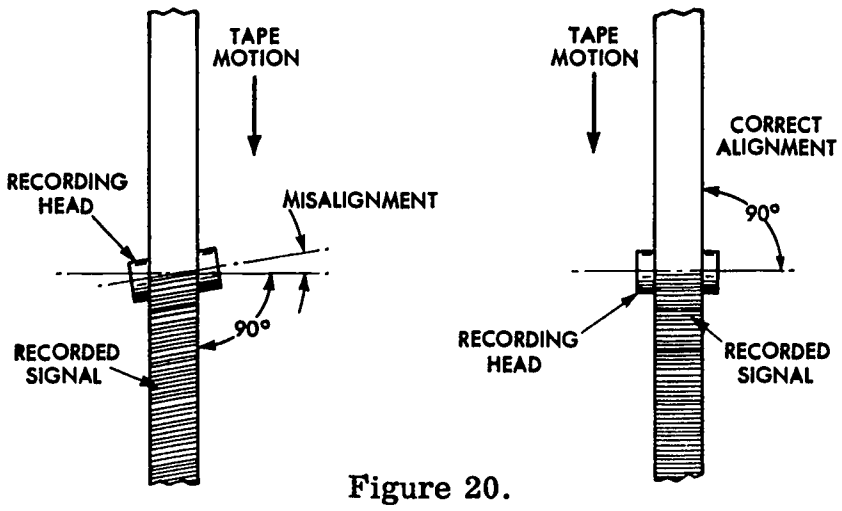
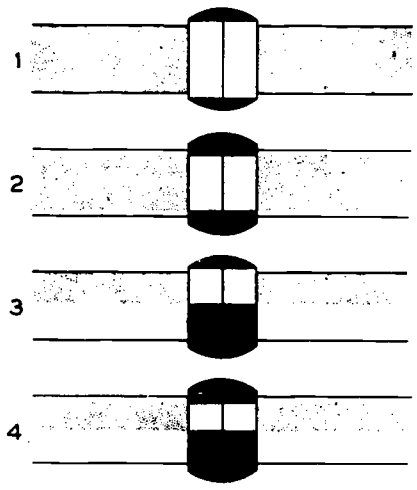


Figure 20.



Full-track covering all tape

Full-track leaving margin

Half-track with no margin

Half-track leaving margin

Figure 21.

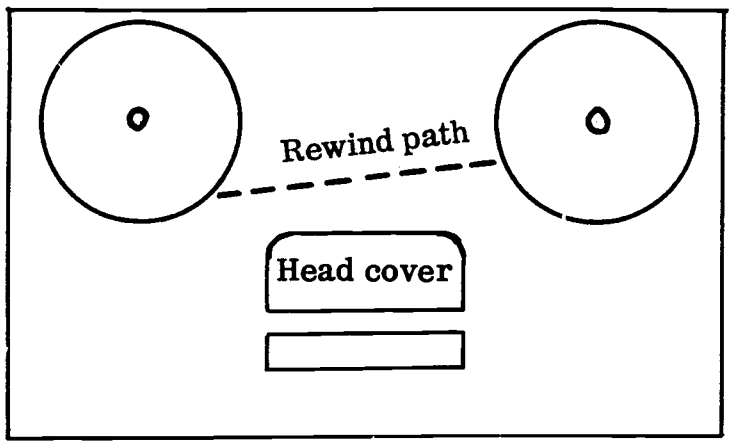


Figure 22.

5. HEAD CONFIGURATION: figure 21 shows the various types of heads now used on machines. If a tape recorded on head type 3 is subsequently erased and recorded on head type 4, a small margin of the first recording will be left; if that second recording is then played on head type 3, both recordings will be audible. The best way to avoid such ghost voices in a language laboratory is to purchase only one type of recorder. We should add that the tape recording industry is working toward standardizing head configuration in order to eliminate this problem.

6. HEAD WEAR: the useful life of a head is generally over 2500 hours, but three factors can greatly increase wear:

a. The quality of the tape is very important; some "bargain tapes" are so coarse that they can ruin the heads of your recorder very rapidly.

b. Some machines use pressure pads to maintain contact between the tape and the heads. These will wear the heads faster than a machine which maintains the tape contact only by drawing the tape at a slight angle across the heads and keeping it there by moderate drag braking on the supply reel.

c. On some machines, the tape is in contact with the heads during the rewind and fast forward functions; with such machines you should, whenever possible, pull the tape from the slot and run it directly between the reels during these fast functions (fig. 22). Many machines today have a special device which removes the tape from the heads when the machine is put in the fast forward or rewind functions.

7. EQUALIZATION: in the process of recording and reproducing records and tapes, the intensity of some frequencies has to be boosted while the intensity of others has to be decreased; a record or tape should be played on a machine which has the same equalization characteristics as the machine it was recorded on.

Phonograph record companies, which until a few years ago used different equalization curves, have now standardized to the RIAA curve (Record Industry Association of America); a modern record of practically any make can now be played with good fidelity on any recent phonograph. Discs recorded before the adoption of the RIAA curve will play with varying degrees of fidelity on modern machines. Some professional disc playbacks have built-in equalizers which can be adjusted according to the equalization curve of the record being played.

When the first American tape recorders were developed, each manufacturer worked independently and developed his own machine with his own equalization system. The result was that a tape recorded on a given machine and played back on a different machine would often sound screechy or boomy. The tape recorder manufacturers have now standardized to the NARTB curve (National Association of Radio and Television Broadcasters) so that tape recordings made on modern tape recorders can be exchanged.

8. BIAS: it is a high frequency current which is fed into the recording circuit to minimize distortion.

The purpose of the various switches and knobs will be explained in the next chapter when we study how recordings are made.

C. The different types of tape machines commercially available

In this description we shall omit the quarter-track machines since they do not seem to be useful in the laboratory.

1. Full-track tape recorders: such machines can make recordings on magnetic tape and play them instantly. The recorded sound is put on the full width of the tape. This type of machine will also play full-track tapes recorded on another full-track machine and the quality will be good if the other machine has the same equalization circuit and if the heads of both machines are correctly aligned. A full-track machine will also play a tape recorded on a half-track machine provided that only one track was used; of course if both tracks were used the full-track machine is going to play them both at the same time. Note also that a full-track machine can play the tape in reverse motion (this may be useful for some special applications in phonetics). Since a full-track machine has only one track, it is necessarily monaural (see definition of the term "monaural" in section 2).

It is possible to have a full-track machine which has only a playback circuit (it cannot erase or record). Such a machine can be used only for the playback of tapes; it is called a full-track tape playback.

2. Monaural half-track (twin-track, double-track, dual-track) recorder: although the term "half-track" is preferable, the other terms are also widely used. With a half-track recorder you can record on one half of the tape, then switch the reels over and record on the other half. During playback each track is played separately. Such a machine will also play back full-track recordings and other half-track recordings; the quality will be good if the equalization circuits are identical and if the heads are correctly aligned on both machines.

Monaural means one-eared. A person who is completely deaf in one ear does not have auditive impressions of space, of depth; it is difficult for him to locate the origin of a sound. If a play is recorded on a monaural machine, all the voices are put on only one track. On playback, the actors seem to be grouped; you do not have the impression of movement on the stage (it makes no difference whether you use one or several microphones, or one or several loud-speakers; if only one track is used, the recording is monaural).

There are some half-track machines which have only a playback circuit (they cannot erase or record). Such machines can be used only for the playback of tapes; they are called half-track tape playbacks.

3. Dual-channel machines: they are used mostly for binaural and stereophonic recordings; they have also been adapted for use in language laboratories. For a description of the heads, you may refer to figures 18 and 19.

A dual-channel recorder has two separate recording and playback systems, each with its own microphone, amplifier, heads, and speaker (or headphone). In fact, you have two recorders built on one mechanism. With such a machine, you can:

a. Record or play back half-track tapes if you use only one channel (the tracks are then used separately).
b. Record on both tracks simultaneously for binaural and stereophonic recording.
c. Play back both tracks simultaneously for binaural and stereophonic listening.
d. Listen to one track while recording on the other.

A monaural recorder/dual-channel reproducer (playback) has two playback amplifiers, but only one recording amplifier; with such a machine you can perform functions (a), (c), (d) described on the preceding page.

A dual-channel reproducer (playback) has only two playback amplifiers; it does not have any erasing or recording circuits. It can only play back tapes (monaural as well as binaural/stereophonic).

Binaural/stereophonic recordings create an impression of depth or spatial perspective. For example, when listening to a binaural/stereophonic recording of a play you may have the impression that the actors are moving on the stage; when listening to an orchestra you can place the instruments.

This impression of depth is due to the fact that the recordings on the two tracks of the tape are not exactly the same: on one channel, you have a recording corresponding to what the right ear would hear; on the other channel, you have a recording corresponding to what the left ear would hear.

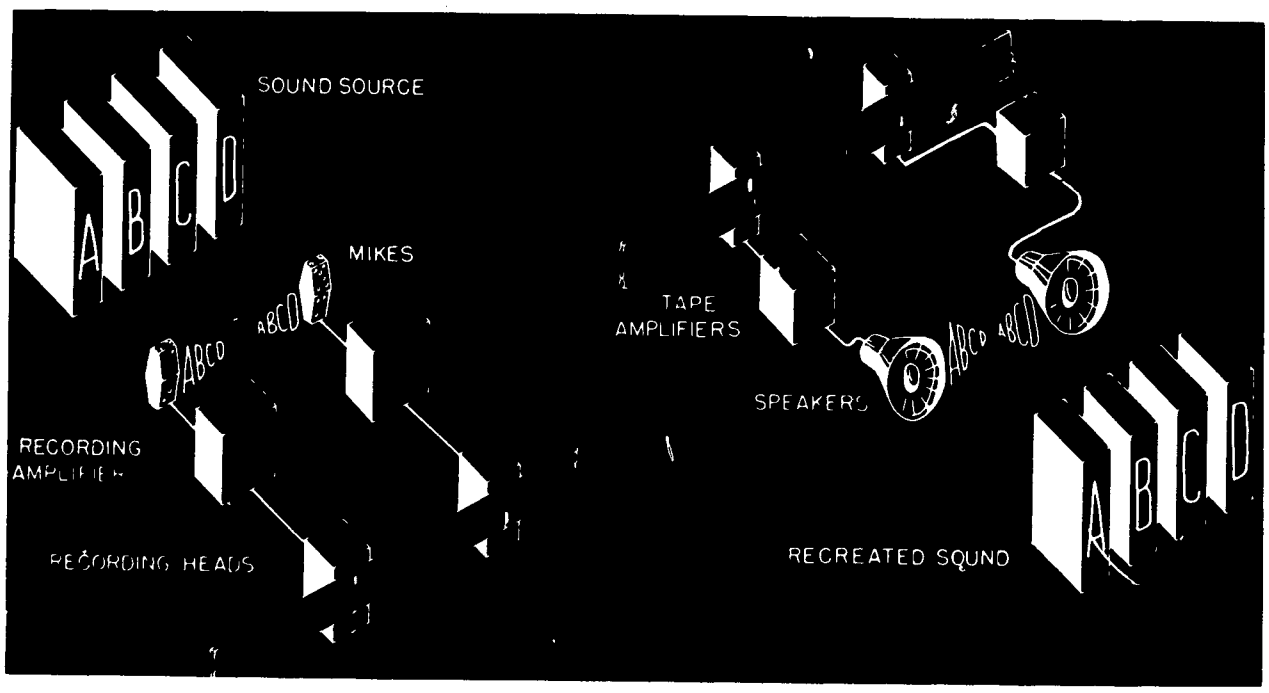


Figure 23. Techniques of stereophonic recording and playback (with staggered record-playback heads).

On playback, the right headphone (or speaker) plays the recording picked up by the right microphone, and the left headphone (or speaker) plays the recording picked up by the left microphone. Thus, there is a difference between the two headphones (or speakers); it is this difference which produces the impression of depth[1].

There is a technical difference between making a binaural and a stereophonic recording. A binaural recording is made with the two microphones placed seven or eight inches apart (about the same distance as between a person's ears; it is recommended to put some object having more or less the shape of a head between the microphones); listening must be done with headphones. A stereophonic recording is made with the two microphones placed several feet apart; listening is done with the loud-speakers placed at the same distance (figure 23).

When headphones are used, the right ear hears only the sounds picked up by the right microphone and the left ear hears only the sounds picked up by the left microphone. With loud-speakers, the sounds are intermingled before they reach the ears and the spatial effect is much less striking[2].

Some language laboratory companies have adapted the dual-channel technique, and manufacture machines which function as follows:

a. One of the channels is used as a reproducing system; it cannot erase or record. The teacher's

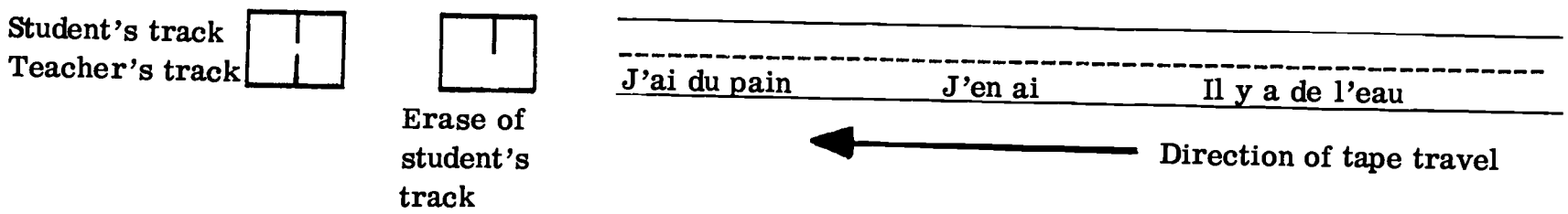
[1] Binaural listening is generally more intelligible than monaural listening. Would the use of binaural recordings speed up the acquisition of audio comprehension?

[2] In fact, experiments we began during the summer of 1958 indicate that while most people have an impression of depth with binaural recordings, only a very few have this same impression with stereophonic recordings.

voice is played through this channel (teacher's track)[1].

b. The other channel is a complete reproducing and recording system (student's track).

With such machines, the teacher must prepare tapes with pauses. If the recorded words were printed, this is how the tape would look before it is used by the student:

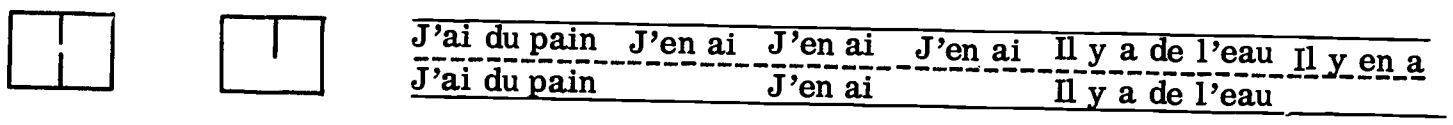


This is how the tape is used:

a. The first problem sentence (J'ai du pain) is played to the student and it is copied onto the student's track.
b. The student records his answer on the student's track.
c. The correct answer (J'en ai) is heard by the student and it is copied onto the student's track.
d. The student repeats and records the correct answer.

Then the student hears the second problem sentence (Il y a de l'eau), and so on.

After use by the student, the tape looks like this (supposing that the student answered correctly):

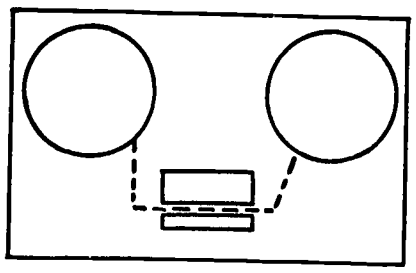


The student rewinds the tape and listens to the student's track (thus being able to listen to the teacher's voice and his own in constant alternation for comparison and self-evaluation). If he is not satisfied with his work, he can record his answers again (his previous recording is automatically erased).

Such a machine should not be referred to as "binaural" since there is no impression of depth (the two headphones receive identical sounds). Note that it is used as a dual-channel machine only during the listening/recording technique; during the playback, the student listens to only one track.

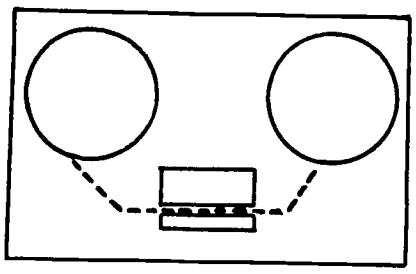
Since there is no erase circuit or recording circuit connected to the teacher's track when the student uses the machine, it is theoretically impossible to erase the teacher's voice; however, it can be done if the student commits one of the following three errors:

a. The reel is put on the correct spindle, but upside down (fig. 24). This can be avoided if a



Wrong

Fig. 24.



Right

[1] The teacher's track is generally on the standard track (upper track on counterclockwise machines; lower track on clockwise machines). Putting the teacher's voice on the standard track has the following advantages: (a) the teacher can record his tape on any standard machine, (b) copies can be made on standard machines. There is one drawback: since the student's voice is not on the standard track, examinations must be corrected on a dual-channel machine (if you have a special switch -see pages 161-162- the student's voice can be shifted to the standard track).

large label marked "UP" is placed on the reel.

b. The tape is given a half twist while it is being threaded.

c. The tape is returned to the shelves by student A without being rewound; student B comes after A and, not knowing that the tape has not been rewound, plays it end first (thereby putting the teacher's track in the wrong position and erasing it). This can be avoided by having colored take-up reels and also by fastening these take-up reels to the take-up spindles.

Several of the language laboratory companies install a switch which can shift the recording circuit (and sometimes also the erase circuit) to the teacher's track; when this switch is used, it becomes possible to use the language laboratory as a mass duplicator (preparing tape copies for the students); the switches should be returned to their normal position when the duplication is completed (for more details about mass duplication in the language laboratory, refer to pages 160-162).

4. Different systems for the handling of tape: the machines we have examined so far differ by their heads and electronic circuits; machines can also differ by the way they handle the tape.

A tape recorder such as the one shown below can use the conventional reel-to-reel threading (figure 25) or the endless loop magazine (figure 26). The endless loop magazine will play continuously, repeating the same program indefinitely. It is especially good for persons who want to memorize a passage.

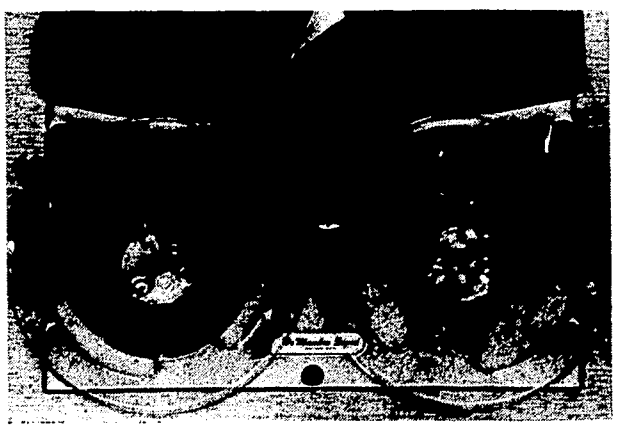


Figure 25.

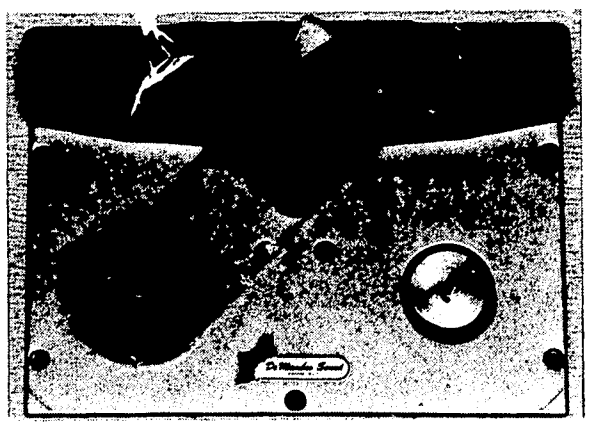


Figure 26.

This type of endless loop magazine has to be threaded; note also that clockwise recorders and counterclockwise recorders use different types of magazines (the tape comes out and goes back in differently). The endless loop has two main drawbacks when used in a language laboratory:

--it cannot be rewound; if you want to listen again to a sentence, you must wait until the sentence comes around again; if you make an error while recording, you cannot back up the tape to erase and re-record.

--before recording, you have to time your program exactly so that it will fit the length of the loop.

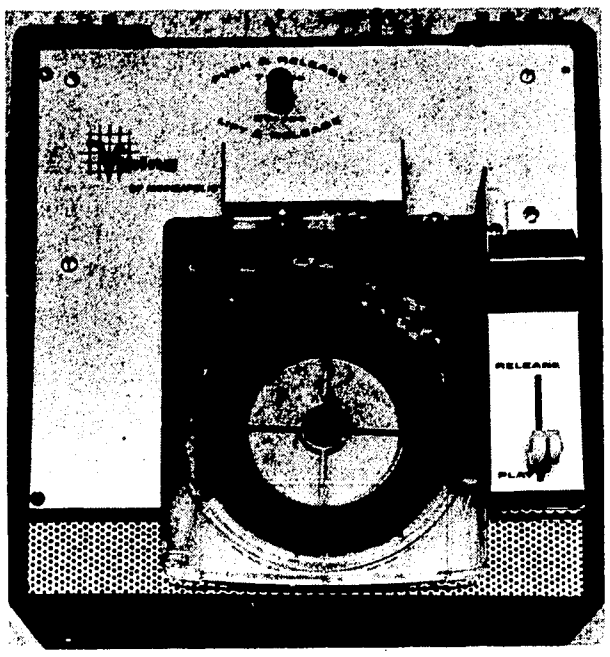


Figure 27.

Some special tape recorders are made to handle self-threading endless loop cartridges (fig. 27). These cartridges are simply pushed into a slot and the tape places itself properly in front of the heads. These self-threading cartridges are easier to handle than the endless loop magazines, but they have the same lim-

itations. For a more detailed discussion of the tape loop principle, see the Appendix.

Some special tape recorders handle self-threading hub-to-hub cartridges (figures 28 and 29).

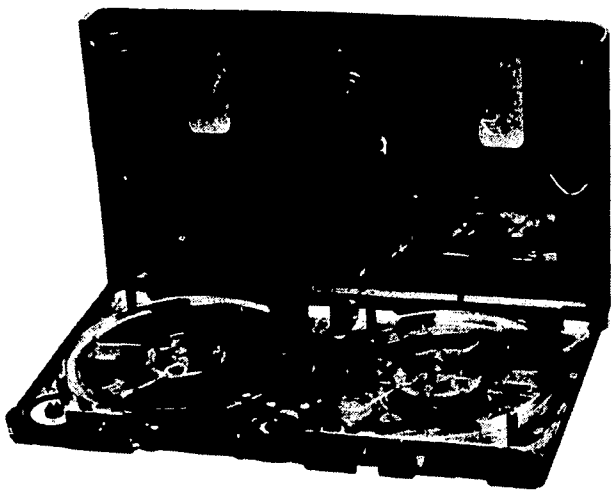


Fig. 28. Self-threading cartridge with hub-to-hub system.

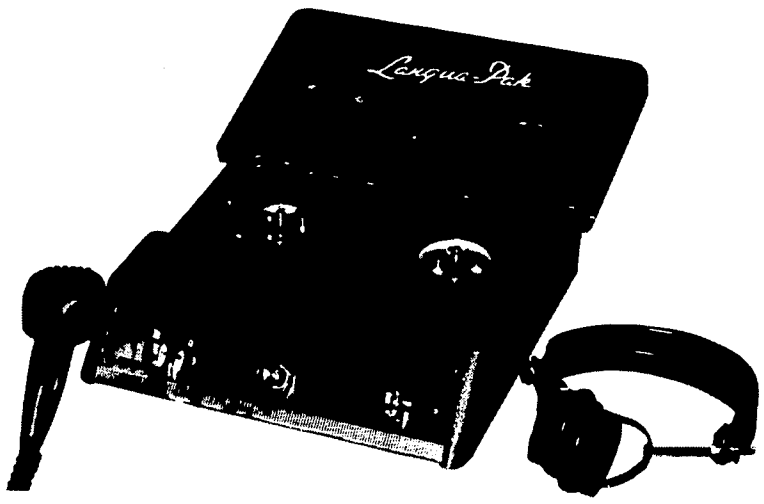


Fig. 29. How the cartridge is inserted into the machine.

These cartridges have the following advantages:

--the cartridge is simply pushed into a slot and the tape places itself properly in front of the heads.
--the tape cannot become unthreaded; it is fastened to the hubs and it stops automatically when it comes to the end.
--it is not a tape loop; it can be wound and rewound just as a conventional reel-to-reel system.
--the student cannot mishandle the tape.

D. Magnetic tape

Even though magnetic recording is now well known, there are still some students who do not know that a tape recorder automatically erases the tape just before recording. Therefore it is a good idea to explain this to your students the first day they use the language laboratory (occasionally a student will purchase a new tape every week until he finds out that tape can be erased). The second thing that ought to be understood is that you do not go into a store and ask for a reel of full-track tape, half-track tape, or dual-channel tape; it is the machine itself which puts a full-track, half-track, or dual-channel recording on your reel of tape.

Magnetic tape can be bought on 3", 4", 5", 7", 10½", and 14" reels. The 10½" and 14" reels are mostly for professional use.

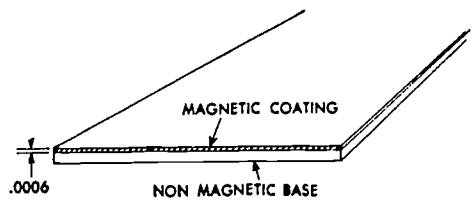
A tape consists of a non-magnetic base and a coating which supplies the magnetic properties. The base today is made of cellulose acetate (also called plastic), of polyester, or of polyvinylchloride (usually abbreviated as PVC)[1].

Acetate tape yields a little under stress and therefore does not break as easily as paper tape used to, but it is still relatively fragile and it should be handled with care. It becomes brittle rapidly if stored in a dry and hot room.

Polyester tape is far stronger than acetate tape; in fact, it is unbreakable under normal operating conditions (it will stretch if you pull on it very hard). It can withstand extremes of temperature and is

[1] Tape on a paper base has been discontinued (it broke too easily).

virtually immune to humidity; it requires no special care in storing since it will not dry out or become brittle. Polyester is manufactured in this country by Du Pont under the trademark "Mylar"; tapes on a polyester (Mylar) base are available from all major manufacturers of magnetic tape. As of January 1960, they cost nearly twice as much as tapes on an acetate base[1].



MAGNETIC RECORDING TAPE

Figure 30.

Although somewhat less heat-resistant, polyvinylchloride is, for practical purposes, as strong as polyester. Tapes on a polyvinylchloride base were first introduced on the American market by the 3M Company in January 1960 (the trademark is "Tenzar"); they sell for only a few pennies more than tapes on an acetate base (in January 1960, the list price of acetate tape was $3.50 while the list price of Tenzar was $3.75 for a 1200-foot reel).

The thickness of the base determines the strength of the tape and the amount of tape that can be wound on a given reel. At present, there are three different thicknesses[2]:

-the $1\frac{1}{2}$-mil base which gives 1200 feet of tape per 7-inch reel.
-the 1-mil base which gives 1800 feet of tape per 7-inch reel.
-the $\frac{1}{2}$-mil base which gives 2400 feet of tape per 7-inch reel.

Tapes on 1-mil and $\frac{1}{2}$-mil bases are not recommended for general use in the laboratory because:

-in spite of considerable improvements in tensile strength, they still break or stretch too easily in the students' hands.
-print-through tends to be more pronounced on thin tapes (print-through is explained on the following page).
-when a machine has been handling tapes with a $1\frac{1}{2}$-mil base, a kind of groove is made on the pressure roller; if then you shift to a tape with a $\frac{1}{2}$-mil base, the tape is likely to slip between the capstan and the pressure roller (the speed will not be constant). If you do have to use thin tapes, it is a good idea to install a new pressure roller.
-the main advantage of thin tapes is their long-playing feature, but this is of no great importance to us since laboratory assignments are generally short.

Students should use tapes with a $1\frac{1}{2}$-mil base made of polyester or polyvinylchloride (when acetate tapes are used, a great deal of time is spent repairing breaks). Acetate tapes should be used only when storage conditions are excellent and when it is known that the users will be extremely careful.

Whether the tape is on an acetate, polyester, or polyvinylchloride base does not affect the quality of the sound; the quality depends essentially on the coating. This coating is made of a mixture of iron oxide and binder; the binder is a combination of synthetic resins and its purpose is to hold the oxide to the base. The oxide is magnetically hard; once magnetized, it remains magnetized permanently unless exposed to a strong magnetic field such as the field provided by the erase head[3].

In addition to the usual reddish brown oxide (generally referred to as "red"), some companies have:

-a dark green oxide (such as on Scotch No. 120 High Output tape); this dark green oxide has a greater dynamic range, but it is more difficult to erase and it is more susceptible to print-through.

1 The competition offered by "Tenzar" tapes may force a reduction in price of the polyester tapes.
2 $1\frac{1}{2}$-mil, 1-mil, $\frac{1}{2}$-mil is the usual terminology, but these thicknesses are approximate.
3 Several years ago, some people thought that the magnetic field of the earth might cause a slow demagnetization of magnetic tapes, but this fear has proved to be unwarranted.

-a dark red oxide (such as on Scotch No. 190 High Potency tape); this oxide is claimed to be better for medium-priced machines. This is the oxide which is used on the new Tenzar tape (Scotch No. 311).

-low print-through oxide (such as on Audiotape No. 1251-M); this oxide is claimed to minimize the danger of print-through.

The oxide side of the tape is dull while the base side is shiny. The base is usually transparent and the color of the oxide shows through the base (the new polyvinylchloride "Tenzar" base is transparent, but it also has a silvery reflection). Some manufacturers put the oxide on a green or blue base; it might be a good idea to use these colored bases for your various masters (for example, you might use the usual transparent base for the masters recorded by your own faculty, the green base for the masters made from phonograph records, the blue base for the masters recorded by visiting lecturers, etc.).

Colored reels are also available (blue, green, yellow, red). These colored reels could be used to identify your masters (blue for French, green for German, etc.). You should use colored take-up reels on the laboratory machines to remind your students that the tape must be rewound before it is returned to the shelves.

There are various types of reels on the market. Buy reels which have a 2 1/4" hub; do not buy reels with a smaller hub (they are more difficult to thread and the tape tension is too great at the beginning of the tape). A manufacturer has marketed reels which have notches; the purpose of these notches is to have a rubber band hold the tape, but these notches can cut your fingers when the machine is in fast forward or rewind.

E. Print-through

On a reel, each layer of tape is in the magnetic field of its neighbors. Since any magnetic material placed in a magnetic field tends to be magnetized to some degree by it, each layer is magnetized to some extent by its adjacent layers.

When the tape is recorded and stored under normal conditions, this print-through should be undetectable. When normal recording and storage conditions are not respected, the print-through becomes audible and you hear the echo of a word just before (fore-print) and/or just after (after-print) the word is played (fig. 31).

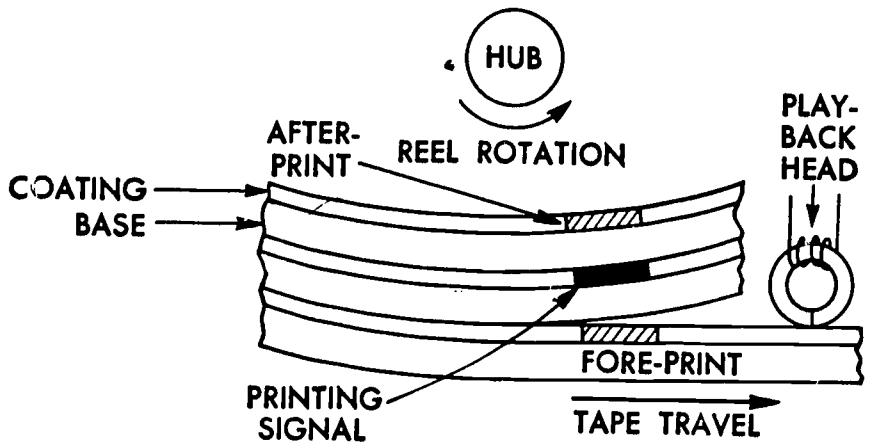


Figure 31.

Follow these recommendations if you want to avoid print-through:

1. Do not overrecord; with a magic eye, be sure that the edges never overlap; with a VU meter, the needle should never go over zero.

2. Use tapes with red oxide on a $1\frac{1}{2}$-mil base (the thinner tapes and the high-output tapes are more susceptible to print-through). For optimum quality, you may wish to use some of the "low print-through" tapes which were developed in 1959 and which, according to the manufacturers, minimize the danger of print-through without any sacrifice of quality.

3. Do not store your tapes in a warm room.

4. Keep your tapes away from magnetic fields (motors, heavy power lines, magnets, etc.).

Also keep the following information in mind:

1. Most of the print-through due to overrecording and the use of thin or high-output tapes will usually develop within a few hours after the recording is completed. Print-through, due to these causes, will then increase only slightly.

2. Some voices and instruments (because of their particular frequencies) print through more easily than others.

3. Repeated playings of a tape which has a large amount of print-through usually result in increased print-through; since the position of the layers varies slightly after each playing, new fore-prints and after-prints develop. After many playings these echoes blend into a continuous background noise.

There is on the market a device (Echoraser, manufactured by Audio Devices, Inc.) which, according to the manufacturer, can remove objectionable print-through from a tape without affecting the quality of the material which is on the tape.

III. RECORDING ON MAGNETIC DISCS, BELTS, OR DRUMS

Disc, belt, and drum units are simpler in their mechanical designs than tape recorders. They require far less maintenance and are much easier to use. They also have these important advantages:

1. No rewinding is necessary.
2. It is easier to install a backspacer which allows the student to repeat the preceding sentence without any difficulty.
3. It is easier to install an indexing device (as simple as the tabulator on a typewriter) which allows the student to play the recording a second time and hear only the problem sentences he answered incorrectly the first time.

Electronically, these machines operate as the tape recorders do. Disc units use oxide-coated discs; some of these discs are pre-grooved; the discs are removable and can be kept indefinitely; they can be erased and used again. Belt units use flexible belts which are slipped onto a cylinder; these belts can be kept indefinitely or they can be erased and used again. With drum units, the oxide is spread directly on the drum; therefore, a recording cannot be removed and stored; it has to be erased before a new one can be made on the drum unit.

Of these three systems, the disc is best for use in the language laboratory. Disc units have to be improved in two respects before they can gain general acceptance:

1. Although the fidelity has been considerably improved in the last few years, magnetic disc recording is still inferior to magnetic tape recording. Quality of reproduction can be improved by doing the following:

a. have the disc turn faster, and especially have the disc pass the magnetic head at a constant speed (so that the quality will be uniform throughout the disc).

b. place the grooves further apart.

c. since requirements (a) and (b) would make present discs too short for practical use in the laboratory, the diameter of the disc should be increased.

2. Present machines do not have an automatic erase; a permanent magnet is used; this is called PM (permanent magnet) erase or DC (direct current) erase; it leaves a rather high residual noise. It is true that the disc can be erased with a bulk eraser, but it is not practical to have the students leave their seats in order to have their discs bulk-erased. An erase head similar to the one used on tape recorders will have to be developed.

Several companies are now working on these improvements; it is quite possible that we will have a good magnetic disc machine within a short time. Tape will remain the medium used for our master recordings because it provides for longer uninterrupted recording than a disc and because it can be edited, but we believe that magnetic disc recorders -when they are improved- would be preferable to tape machines in many language laboratory installations.

THE OPTICAL METHOD

A track of sound-modulated "light" patterns is photographed on the moving film. In the playback, those varying light patterns are passed between a light beam and a photoelectric cell which converts the varying light intensities into varying current. This is a complex field and it requires costly recording equipment; there is little likelihood that a language laboratory will have either the funds or the technical know-how to produce films with optical sound tracks for the students.

Furthermore, a new development will probably make the optical sound track obsolete within a short while. It is now possible to use a magnetic sound track with a film. A stripe of magnetic oxide can be added to any film. The instructor records his own commentary on the magnetic stripe as he watches the projected picture. The commentary can be erased and a different one recorded for another class. Other advantages of the magnetic sound track over the optical sound track are:

1. It has a better frequency response.
2. It has less background noise.
3. It does not become noisy with wear.

It is even possible to keep the optical track and add a magnetic track by striping only half of the optical track. It is also possible to switch from one track to the other while showing the film (it would be possible, therefore, to have the optical track in one language and the magnetic track in another; the commentary on the magnetic track could use simpler vocabulary and structures).

OPERATING A LANGUAGE LABORATORY

WORK THAT A TEACHER SHOULD BE ABLE TO DO WITH TAPE RECORDERS

I. GENERAL RECOMMENDATIONS

When you buy a tape recorder, always read carefully the booklet of instructions, locate the various jacks, knobs, and switches.

There are two main types of jacks and plugs used on tape recorders: phone and phono.

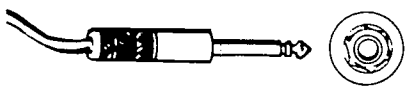


Figure 32.
Phone plug and phone jack

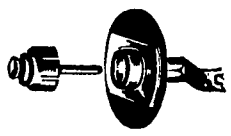


Figure 33.
Phono plug and phono jack

Most commercial monaural machines have two input jacks: one for the microphone and a second one (marked RADIO/PHONO or LINE) for use with a line coming from a phonograph, radio, sound projector, or another tape recorder. Some machines have only the microphone input jack; in such a case, a special patch cord with a resistor has to be used if you want to copy a disc, a radio program, a film, or another tape.

Most commercial monaural machines have two output jacks: one marked EXTERNAL SPEAKER and a second one marked EXTERNAL AMPLIFIER. The first jack is used when you want to play your tape through a more powerful speaker than the one supplied with the machine; the plug of the extra speaker is connected to this external speaker jack (the speaker of the machine is then automatically disconnected). The second jack is used when one tape is copied onto another. The patch cord is run between the external amplifier jack of the master machine and the phono/radio jack of the copying machine.

Dual-channel recorders combine two machines into one and have more input and output jacks than monaural recorders.

The number of jacks on a machine built especially for language laboratory use depends on the various functions which the machine can perform.

There are many types of patch cords on the market; the types you need to purchase depend on the jacks of your machines. In any case, it is always a good idea to have a complete set of plug adapters.

Fig. 34. Patch cord having a phone plug at both ends.

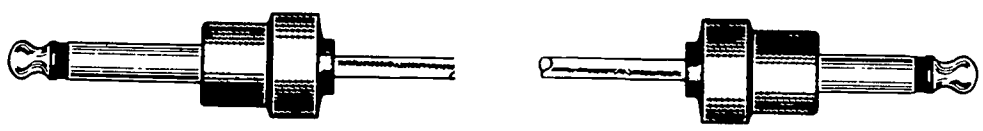


Fig. 35. Patch cord having a phono plug at both ends.

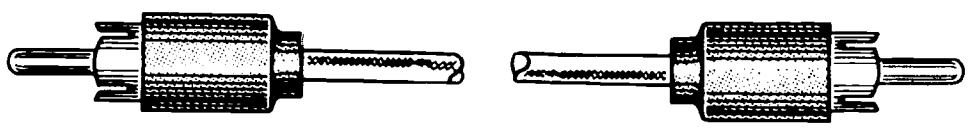


Fig. 36. Patch cord with a phone plug and a phono plug.

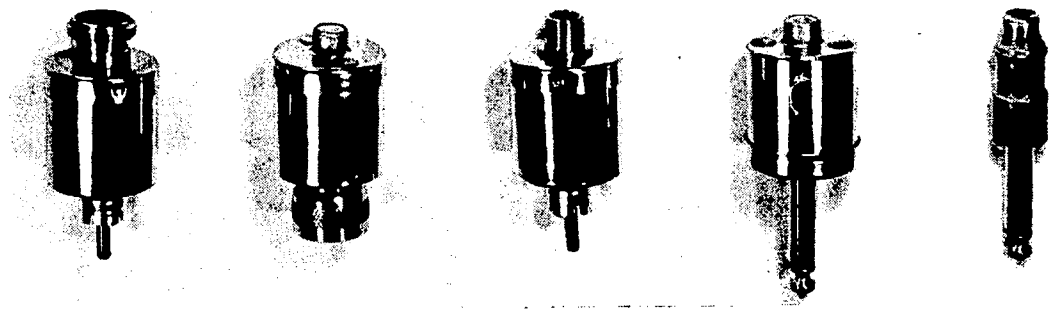


Fig. 37. Plug adapters make it possible to change one type of patch cord into another.

The usual American recorder is made to run on alternating current (AC), 117 volts, 60 cycles. Never use such a recorder with a higher voltage or on direct current (DC). Do not place your recorder on a soft surface; most machines have ventilation holes in the bottom of the case and, if these are blocked, the recorder will overheat and serious damage may occur (it is a good idea to increase the amount of ventilation by placing the machine on furniture caster cups). Do not place your machine on a rug or on a blanket; the fan will suck up bits of lint or wool. Also be sure to empty the storage compartment.

A recorder takes about twenty seconds to warm up; for maximum performance, it is preferable to wait for about five minutes so that all bearings will be at their best operating temperature. If a machine has been left in a cold car for some time, wait until it has returned to normal room temperature before turning it on. Do not move a machine which has just been turned off; wait until the tubes have returned to normal room temperature (about fifteen minutes); the filaments in the tubes are more fragile when they are hot than when they are at a normal temperature.

As a general rule, never connect or disconnect a cord or cable unless the volume has been turned down to its minimum. Never pull a cord by the wire; pull it by the plug itself.

When you use a tape, keep these recommendations in mind:

1. When you use a new reel of tape, always remove the adhesive strip from the outer end of the tape (cut it and throw it away). This strip, if not cut, will dirty the heads or get stuck on the capstan or pressure roller.

2. Whether the tape is new or has already been used, it is a good idea to wind the tape from one reel to another. This will make sure that the tape is not broken and it will eliminate any adhesions between layers; these adhesions may occur when the tape has been wound tight on its reel for a long time, or they may be caused by sticky splices; if such adhesions are not separated before the tape is used, they may cause a change in the speed of the tape (a jerking motion); this is to be avoided especially during recording since a change of speed will cause a change in the recorded sound. When winding from reel to reel, do not thread the tape in front of the heads if this can be avoided; you want to avoid unnecessary head wear and/or unnecessary accumulation of oxide in the threading slot (see fig. 22). If you have full-track tapes, store them without rewinding (thus you will have to rewind them and check them before they can be played again).

3. Always check that your reels are properly placed on the spindles; on each spindle there is usually a pin which must fit into a slot on the hub of the reel. Be sure that the right side is up (fig. 24); the dull side of the tape must press against the heads. When threading the tape, be sure not to twist it.

For better balance, use reels of the same size. It is best to choose seven-inch reels (with the 2 1/4" hub) even when a small quantity of tape is used. The difference in price with the smaller reels is negligible and the seven-inch reels have the following advantages:

a. The tape is less likely to slip off the reel.
b. The larger hub of the seven-inch reel puts less tension on the tape at the beginning of the tape.

c. A seven-inch reel is easier to thread and it is easier to handle.

d. On machines where rewinding by hand is possible, the seven-inch reel makes this operation easier.

e. The tape library "looks better" when all the reels have the same size.

4. You should learn to thread the tape and to anchor it on the take-up reel rapidly. Placing the end of the tape on the hub of the take-up reel, holding it with your finger, and giving it two or three turns is the fastest way (there is no need to place the tape into the slot on the hub).

Check that the reels are not warped and that the tape feeds out and is taken up without hitting the sides of the reels and without being slowed down.

II. PLAYING BACK A TAPE

In order to play a tape properly, you must be able to perform the following operations:

1. Turn the machine on.

2. Choose the correct speed (remember that on some machines the speed must not be changed unless the motor is going).

3. Start the tape (being sure not to put on the record function by accident).

4. Adjust the volume and tone.

5. Use the pause bar (stop lever) if your machine has one.

6. Rewind by hand (to listen to the last few words) if this is possible on your machine, or use the backspacing device if there is one on your machine.

7. Use the rewind and fast forward functions. On many machines, these two functions are faster when the speed lever is at the high speed position.

8. Shift the reels to listen to the second track (if you have a half-track tape with both tracks recorded).

When playing back a tape received from outside, you may experience one of the following difficulties (we assume in the following list of answers that your machine is in good operating condition and that the tape is properly threaded):

1. Your machine runs at $3\frac{3}{4}$ ips and $7\frac{1}{2}$ ips, but the tape you received was recorded at 15 ips or 1 7/8 ips. The fastest way to solve this difficulty is to make a copy. If the tape is at 15 ips, run the master machine at $7\frac{1}{2}$ ips and run the copying machine at $3\frac{3}{4}$ ips; then play back your copy at $7\frac{1}{2}$ ips. If the tape is at 1 7/8 ips, run the master machine at $3\frac{3}{4}$ ips and run the copying machine at $7\frac{1}{2}$ ips; then play back your copy at $3\frac{3}{4}$ ips (ips is the abbreviation for "inches per second").

2. You have a monaural machine (full-track or half-track) and you find that the sound of the tape you have received is being played backward. This nearly always indicates that you have received a full-track tape which was not rewound before being sent to you. Simply reverse the reels and rewind the tape before playing it.

In some foreign countries, there are some makes of machines where the half-track recording head is not in the standard position (refer to page 137). A tape recorded on such a machine will play backward on your machine or even -if only one track is recorded- not give any sound at all. Such a tape can be played on a dual-channel machine; if you cannot secure such a machine, you can -as an emergency measure- give a half twist to the tape so that the shiny side will face the heads (the magnetic patterns will

be picked up through the base of the tape and there will be a great loss of volume and frequency response, but -at least- you will be able to understand what is on the tape). Another solution, if only one track of the tape was used, is to play the tape on a full-track machine. This type of difficulty has become rare since nearly every country is now using the standard position.

3. You hear two (or even four) recordings at the same time. This indicates that you are playing a half-track tape on a full-track machine (you hear two tracks at the same time), or that you are playing a quarter-track tape on a half-track machine (you hear two tracks at the same time), or that you are playing a quarter-track tape on a full-track machine (you hear four tracks at the same time). Tapes with two recorded tracks can be played on half-track machines or quarter-track machines; tapes with four recorded tracks can be played only on quarter-track machines.

III. HOW TO RECORD A TAPE

A master tape recording can be prepared from one microphone, several microphones, another tape, a disc, a radio, or a sound film.

A. Preparing the tape for recording

As stated in the general recommendations, no matter whether your tape is new or has been used before, it is always a good idea to wind it from one reel to another before recording.

For master tapes, the $7\frac{1}{2}$ ips speed is preferable (the higher the recording speed, the better the frequency response)[1]. Whenever possible, a full-track machine should be used (for further details, see page 185). Unless storage conditions are particularly bad, tapes on an acetate base should be satisfactory (refer to pages 144-146).

If you want to record on a tape which has been used before, always use a bulk eraser (also called — degausser). A bulk eraser can be purchased for less than twenty dollars and using it is the only way to be sure that your tape will be cleanly erased[2] (see figures 38 and 39).

> The bulk eraser uses a strong magnetic field which neutralizes the magnetic patterns on the tape. It permits erasing a whole reel of tape in a few seconds; if the instructions are carefully followed, it makes the tape as quiet as new tape or even quieter. Never use a bulk eraser less than three feet from your tape library and from any electronic equipment (to avoid demagnetizing the magnets this equipment may contain -for example, a loud-speaker or a dynamic microphone). A bulk eraser can be used to demagnetize tools (never use magnetized tools when working on tape recording equipment).
>
> When a recording is no longer needed, bulk erase it before storing the tape. Some experiments undertaken by the 3M Company indicate that some tapes become harder to erase after storage, especially if stored in a hot room.
>
> Warning: Do not use a bulk eraser if you want to erase only one track of a tape where both tracks are recorded.

1 A given machine has a better frequency response at $7\frac{1}{2}$ ips than at $3\frac{3}{4}$ ips, but -of course- there are some professional machines which at $3\frac{3}{4}$ ips have a much better frequency response than cheap machines at $7\frac{1}{2}$ ips.

2 Never try to erase a tape by rewinding it with the machine in recording position.

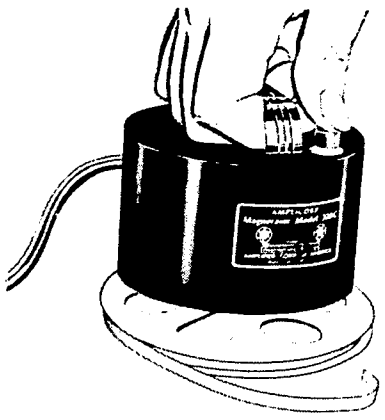


Fig. 38. Hand-type bulk eraser

The eraser is turned on while about three feet from the tape and it is lowered until it is in contact with the reel. The eraser is moved slowly over the reel. After a few seconds, the eraser is slowly withdrawn and the process is repeated on the other side of the reel.

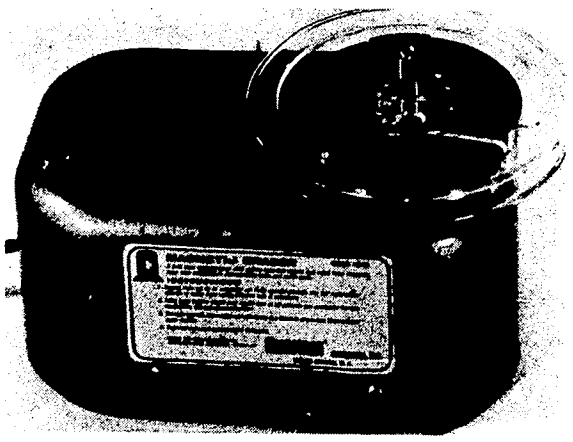


Fig. 39. Tank-type bulk eraser

The reel is placed on the spindle. The switch is pushed down and the reel is rotated slowly at ten seconds per revolution for two revolutions. With the switch still pushed down, the reel is removed slowly to a distance of about three feet; then the switch is released. The same process is repeated for the other side.

Of course, the erase head on your machine is meant to erase the tape as you put a new recording on, but keep in mind that this erase head works best when

1. it is erasing tapes which were recorded on your recorder or on a similar machine (the configuration of erase heads is not the same on all machines).

2. the tape it has to erase was not overloaded; an overloaded tape is difficult to erase and may have to be passed twice through the machine before it is clean and can be used again (when doing this, the machine should be in recording position, and the volume control should be at its minimum).

Since it is difficult to know where and when the tape was previously recorded and whether some portions were overloaded, it is always preferable to use a bulk eraser. Trust the erase head only when you want to erase a portion of tape which you yourself have just recorded.

Some persons, not having a bulk eraser, make a test erasure; they run a few feet of tape through the machine to make sure that the tape is erased cleanly. But this procedure is not really safe since the beginning of the tape may have been recorded normally while there may be grossly overloaded sections farther on.

B. Recording with one microphone

1. Make sure that you use the proper type of microphone (refer to page 134), that it is plugged in the right input, and that the plug is pushed all the way in. To avoid a hum, be sure that the microphone cable does not run alongside a power line.

2. Proper placing of the microphone is very important. Normally the microphone should be placed eight to fifteen inches away from the speaker's mouth and at the same height. The factors that influence this distance are:

a. The acoustics of the recording studio: if the studio reverberates too much, getting closer to the microphone will produce a recording with less apparent reverberation (but, of course, there are limits to this close-mike technique; it is preferable to improve the acoustics of the room as described on page 184).

b. The voice of the speaker: it is best to use one's normal conversational voice, but even so there are differences between persons. People with weak voices should be closer to the microphone than people with loud voices.

c. The sibilance and the aspiration in the speaker's voice: people with strong sibilance and/or strongly aspirated /p/, /t/, /k/ should speak across the front of the microphone; they should experiment until they find the angle where the sibilance and the aspiration no longer produce hissing and popping sounds on the tape. Each person should take note of this best microphone position and should always use it. He should always use the same microphone since the position which you have found to be good with a given microphone may not necessarily be good with another.

Do not place the microphone too close to the tape recorder, otherwise you will record the noise of the motor. Ideally, for your master tapes, you should have a recording studio with a double window between the machine and the microphone.

3. The following information about monitoring oneself while recording is very important:

a. Nearly all machines provide for headphone monitoring; it is usually sufficient to plug the headphones into the external speaker jack or the external amplifier jack (follow the instructions that come with your machine). When monitoring with headphones, these may start to squeal all of a sudden. The squeal is caused by feedback[1]; it indicates that your headphones do not fit close enough over your ears and some of the sound is being picked up by the microphone. To remedy this difficulty, try the following:

- make sure that your recording volume knob is not turned too high.
- make sure that the microphone is at the same height as your mouth (some persons place the microphone in such a way that it is closer to their ears than to their lips.
- adjust your headphones so that they will fit snugly over your ears; try rubber cushions.

b. Some machines also provide for loud-speaker monitoring. This is meant to be used only when you are recording in a special soundproof studio and your voice is being monitored by an assistant in the next room. Using the loud-speaker monitor in the same room as the microphone will result in a bad recording and will surely cause a feedback squeal.

4. Find the proper adjustment for the volume control before you start the tape. Read a few lines of your script as if you were actually recording and adjust the volume indicator as follows:

a. If you have a VU (volume unit) meter, the needle should come close to zero only on the loudest peaks of the recording. It should never go over zero.

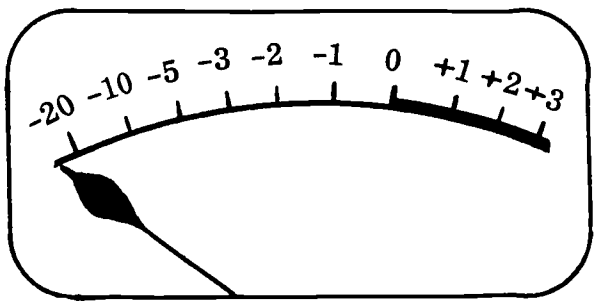


Figure 40. VU meter

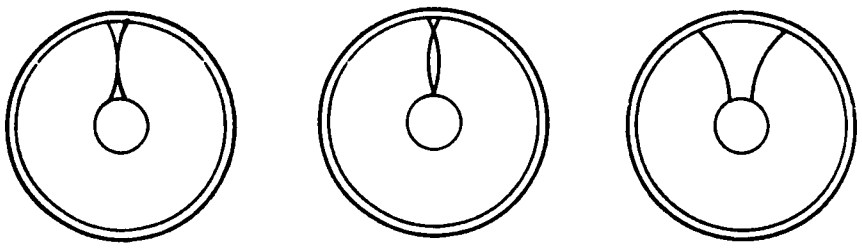


Figure 41. Magic eye indicator

b. If you have a magic eye indicator, the edges of the V-shaped section should meet only on the loudest peaks of the recording. The edges of the V-shaped section should never overlap.

1 Feedback is caused by this "vicious circle": the microphone picks up a sound, sends it to the amplifier, picks up the same sound from the speaker or headphones, sends it to the amplifier, picks it up again, and so on.

c. If you have a neon light volume indicator, follow the instructions given by the manufacturer. Such neon indicators are rarely satisfactory.

Usually you should not have to turn the volume control more than halfway in order to obtain a good recording; if the control has to be near the minimum or maximum position, something is probably wrong in your setup.

If you record with too little volume, the sound will be too weak and you will have to turn the volume control too far during the playback (thus increasing the noise and hum). If you record with too much volume, the sound will be distorted, the tape will be overloaded (and therefore difficult to erase later), and print-through echoes are likely.

5. Then start your tape; on some machines, it is a good idea, if you want to avoid recording a click, to turn the volume control to its minimum before starting the tape and then bring it back to the level you had set.

6. Do not move your head away from or closer to the microphone; avoid making noise with your chair; do not jar the microphone; turn the pages carefully and do not rustle papers.

7. If you make a mistake and want to erase it, the tape must be stopped and rewound to the last fairly long pause. Do not start re-recording in the middle of a sentence. To avoid recording a click, do as explained in (5) above.

8. If you have a half-track machine, record on only one track if you plan to edit your recording.

9. If you have to record several persons at the same time, place them around an omnidirectional microphone; be sure that they are all about the same distance from the microphone (12 to 18 inches) and that they speak with approximately the same loudness (check their individual loudness with the volume meter before you start recording).

10. If you have to stop the tape while making a recording, use the pause button (to avoid recording a click).

C. Recording with several microphones

Recording with several microphones and a mixer is necessary only when the sound sources are apart and cannot be moved or when there are so many speakers that they cannot be properly grouped around a single microphone.

Figure 42

Figure 43

Figure 42 illustrates a non-powered mixer (no tubes); two microphones can be plugged into this mixer; balancing them is done with the black knobs on the mixer.

Figure 43 illustrates a four-channel powered mixer (with tubes). Up to four microphones can be plugged into this mixer; the mixer itself is plugged into the microphone input of the recorder; balancing the various microphones is done with the knobs on the front panel.

For best results, the microphones should be of the same make and the microphone cables should not be over fifteen feet long (unless you are using low-impedance equipment --in which case the cables can be long).

D. The script

It is preferable not to try to record your master tapes without a script. Unless one is fully prepared, the number of errors can be very great; correcting them takes more time than it does to prepare a detailed script --and you waste the time of the technician who makes the recording.

Before recording, go over your script; practice the difficult words or expressions and, whenever necessary, indicate the intonation with arrows.

E. Recording from a radio, a disc, a sound film, or another tape

Placing the microphone of the recording machine in front of the speaker of the playing machine (radio, phonograph, sound projector, or tape machine) should be done only in an emergency. For best results, the tape copy should be made electronically by connecting the input of the recording machine to a matched output on the playing machine; if the impedances of the output and input are not matched, some distortion will result; most of the time, that distortion is not too severe, but it is better to avoid it. The connection between the output and input should be made with a patch cord, that is a short shielded cable with a plug on either end.

During this electronic copying, no microphone should be connected. Depending on the equipment, leaving the microphone connected would either prevent the phono/radio input from working or cause the noise around the machine to be recorded.

If you do not wish to be disturbed by the sound while the copy is being made, you can silence the loud-speaker of the playing machine either with the OFF-ON loud-speaker switch which is found on some machines or by inserting a dummy plug (a plug without wires) into the external speaker jack.

Depending on the make of your copying machine, monitoring can be done either with the loud-speaker or with headphones (plugged into the external speaker jack or the external amplifier jack).

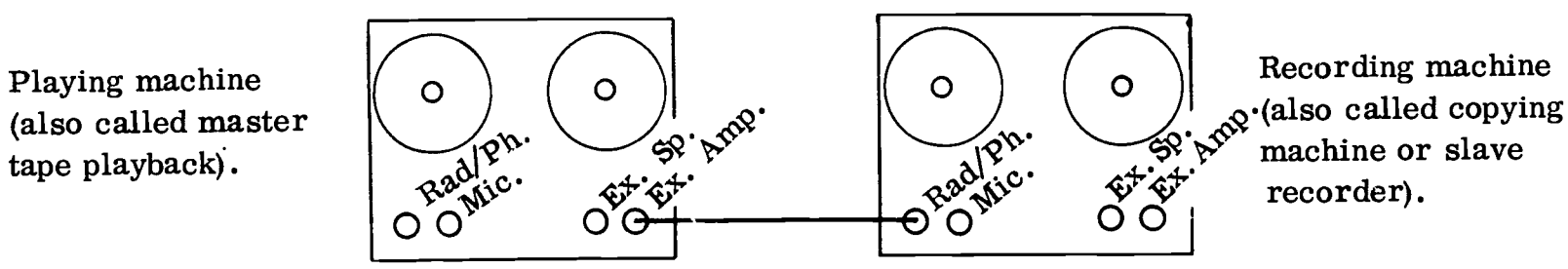


Figure 44. Copying one tape onto another.

The patch cord runs between the external amplifier output on the playing machine and the radio/phono (also called line) input on the recording machine. If the recording machine does not have such an input, you have to use the microphone input and a special patch cord.

With good equipment, the difference between the master and the copy should be hardly noticeable. The quality of the copy depends to a large extent on the adjustment of the volume controls; experiment until you find the best settings (usually, the quality is best when the volume controls on both machines

have about the same position).

If your machines have several speeds, the copying time can be cut in half if the master tape is played at double the speed at which it was recorded; the copy, of course, will have to be played back at half the speed at which it was recorded. Usually, this copying at double speed does not cause a loss of quality.

When copying from a phonograph, a radio, or a sound projector onto a tape, you use the phono/radio (also called line) input of the tape recorder; the other end of the patch cord can be connected to:

1. the voice coil lugs on the speaker of the radio, phonograph, or film projector (a patch cord with alligator clips at one end is generally used).

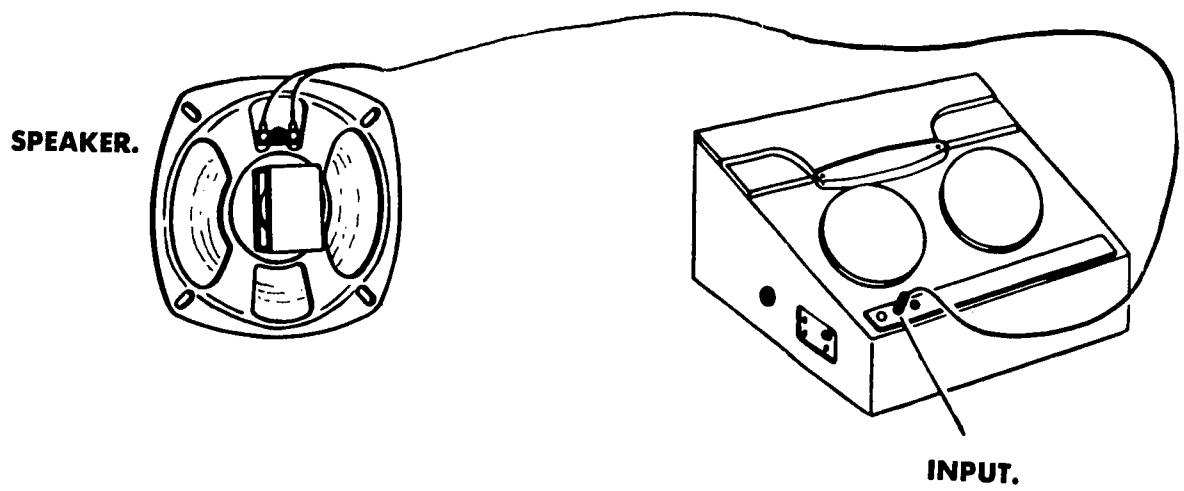


Figure 45.

With this method, you have a mismatch of impedance, but the distortion is hardly noticeable if the volume controls are properly set. If you want to avoid this mismatch, you have to use a special cord or a matching transformer.

2. a special output jack of matched impedance on the radio, phonograph, or film projector. Many recent phonographs, radios, and projectors come equipped with such a jack. If your machine does not have one, you can have it installed by a radioman. Unless you are qualified, do not attempt to do it yourself (even with a diagram) since there is a danger of electrocution or damage to your equipment when you try your installation.

Instead of using a conventional phonograph and radio set, you may find it easier to use a turntable and a radio tuner. To obtain the best quality from some records (especially old and/or European records), you may have to use a special equalizer between the phonograph and the tape recorder.

There are various legal aspects involved in the copying of discs, films, and radio programs (for example, read the warning which is found on the label of most commercial records). To be on the safe side, never sell or even give copies of such materials to other schools.

F. Making simultaneous copies

If you want to prepare several simultaneous copies, you can use one of the following methods:

1. The external amplifier output of the master machine is connected to a multiple jack box; from this jack box a number of patch cords go to the individual tape recorders. The copies are made exactly as if there were only one copy being made.

Note that you must wire the machines as indicated (parallel wiring); do not wire the machines in

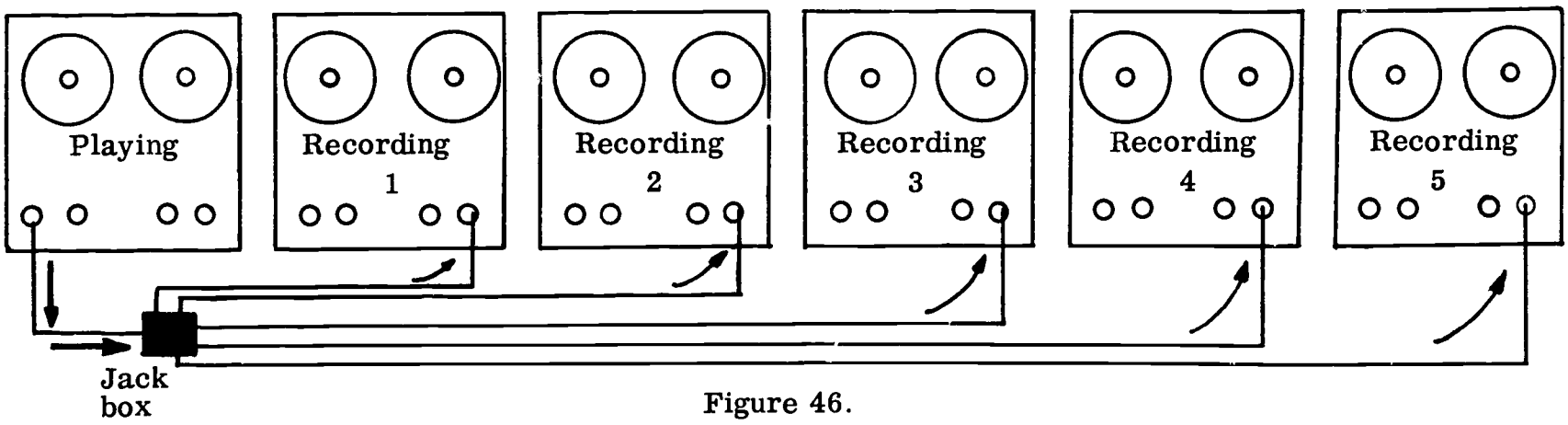


Figure 46.

series (master machine to slave machine No. 1, slave machine No. 1 to slave machine No. 2, etc.).

With a few machines, it is possible to record the master tape and make the copies at the same time; for example with the Ampex 601 recorder the plug of the jack box can be connected to the input monitor jack and the copying machines can be run as the master tape is made. Note that this is possible with only a few machines (those having the necessary circuits); on most machines, this technique produces a loud hum on the copies.

Making the copies at the same time as the master tape saves a great deal of the technician's time; however, keep in mind that if an error is made all the machines have to be stopped and all the tapes have to be corrected. This technique should therefore be used only when the professor has a well prepared script.

2. You may prefer to use a high-speed mass duplicator such as the one shown in figure 47. These mass duplicators work at high speed (30 or 60 inches per second) and can produce hundreds of copies per day. Such systems generally consist of a playback channel, a distribution dubbing amplifier, and several recording channels. Some of these duplicators can copy both tracks of a half-track tape or the four tracks of a quarter-track tape at the same time, but this feature is of little or no interest to us since our master tapes should be full-track.

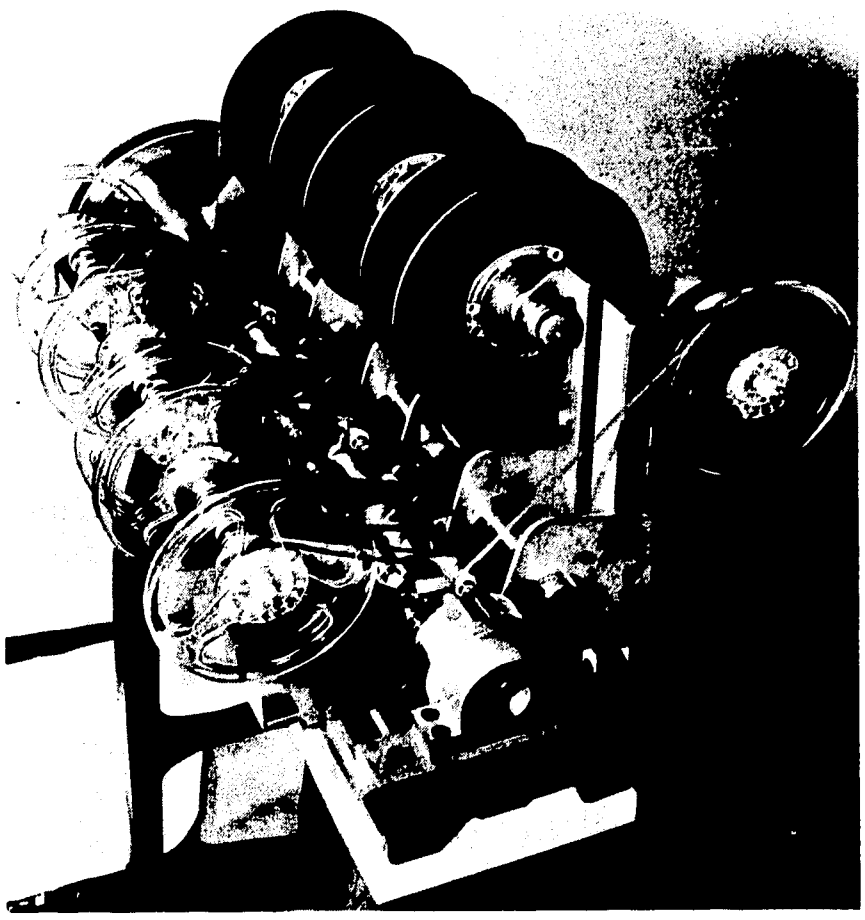


Figure 47.

These mass duplicators are generally more expensive and require more care and maintenance than the system we described in (1) above, and, in most cases, the quality is not as good.

3. A language laboratory may be planned in such a way that it can be used as a mass duplicator; for example, a thirty-booth installation can be made to produce thirty simultaneous copies.

Of course, such a mass duplication is cheaper than using a special mass duplicator, but good and uniform quality is more difficult to obtain.

Let us examine the various possibilities:

a. You have a laboratory where every booth has a monaural machine; the copies can be made by the faculty or by the students.

--The copies are made by the faculty (professor or laboratory technician) while the laboratory is closed. This mass duplication is a time-consuming process; it is necessary to go around all the booths, load the tapes on all the machines, turn the power on in all the amplifiers (but not in the motors), adjust the knobs and switches (connecting the booth to the console and disconnecting the microphone); then you have to load the master tape on the console, start all the motors together with a special switch located at the console[1]. When the tapes are copied, you have to go around all the booths to rewind all the tapes and turn all the switches off.

Of course, these copies can be used only for listening purposes; if the students tried to record on these tapes, they would erase the teacher's voice.

--Having the work done by the students is faster; it is also less expensive since there is no need for a special circuit to start all the motors together. The students come to the language laboratory as a group, load their own tapes on their own machines, adjust the switches, and start the motors; while they listen, they prepare a copy of their assignment. When this duplication is completed, they can listen individually to their own tapes and practice as needed; of course, they cannot record their voices since that would erase the teacher's voice. They can keep their tapes and return to the laboratory for more individual work whenever necessary. Thus, with this system, the time spent on copying the assignment as a group is only a fraction of the time spent on working individually with the assignment.

If you believe in comparison and self-evaluation, you can leave intervals on the master tape and the students can record their voices on their own tapes during the intervals while the copy is being made (the machines should have the necessary mixing circuits for the console and the microphone in each booth). When this work is completed, the students can listen to their tapes for self-evaluation; of course, they cannot record again since that would erase the teacher's voice.

b. You have a laboratory where every booth has a dual-channel machine.

--If the circuits in the machines are not modified, the program from the console is copied on the student's track; such copies could be used for listening only since recording would erase the teacher's voice.

If you want the copy to go on the teacher's track, switches must be added; these switches change the recording and erasing circuits from the student's track to the teacher's track. As an economy measure, you may want to change only the recording circuit (in such a case, blank tape has to be used for the copying). These switches can be located at the console or in the booths.

--Locating the switches at the console is more expensive (you must have a special wiring which operates solenoids in the booths), but it is best by far since the students cannot touch them and erase the teacher's track by accident.

The students come as a group and -except for the shift in the circuits which is done by the teacher at the console- they do all the duplication work: they load their own tapes on their own machines, they listen to the copy as it is being made from the console, and they stop their tapes when the duplication is completed. After the teacher has returned the circuit-changing switches to normal, they rewind their tapes and can practice individually as needed. They can keep their tapes and return to the laboratory for more individual practice whenever necessary.

[1] If the motors were started individually, some tapes would have long blank pieces at the beginning.

--When the circuit-changing switch is in the booth, you have to decide whether you want the students to know where it is and whether you can trust them to use it properly.

If you do not want to tell your students, the switch has to be concealed under the booth; this, of course, puts all the duplication work on your shoulders (you must go around all the booths, load the tapes on the machines, adjust the switches, start all the motors together, etc.); when the duplication is completed, you have to return all the circuit-changing switches to normal and rewind all the tapes.

If you want the students to help with the duplicating, they have to know where the switch is. To minimize the risk of errors and accidental erasures, be sure that this switch is all by itself and is marked with a warning red light when it is on. The students come as a group, load their tapes on their machines, change the circuits, and listen to the copy as it is being made from the console. When the duplication is completed, they return the circuit-changing switches to normal, rewind their tapes, and can work individually as needed. They can keep their tapes and return to the laboratory for more individual work whenever necessary.

All these switches should automatically disconnect the microphones when the recording circuits are shifted to the teacher's track (we do not want to record noises or the students' voices on the teacher's track).

In some special installations, each booth machine has two separate recording circuits: one for the student's track and one for the teacher's track. With this type of machine, the student can record on his track at the same time he records the console on the teacher's track.

With any of these installations, the student can come individually to the laboratory, ask the laboratory technician to play a master tape at the console while he copies it on his tape in a booth. The student can then use this copy for individual work. This, however, should be done only in special cases (it is not efficient to have the technician put a tape on the console for only one student); furthermore, this system would require many channels at the console since many individual students might come and ask for different tapes.

If you believe in using the language laboratory as a mass duplicator, you should also have the possibility of speaking at the console and making simultaneous copies of your voice (and, of course, making simultaneous copies of a disc played at the console).

Preparing simultaneous copies of a radio program, a sound track, or a disc can be done easily either with method (1) or method (3).

Whether you select the $3\frac{3}{4}$ ips speed or the $7\frac{1}{2}$ ips speed for these copies depends on your installation; if the machines have a good frequency response, the $3\frac{3}{4}$ ips speed should be satisfactory.

Number of copies which have to be prepared

All the copies should be made on "unbreakable" tape (polyester or polyvinylchloride base); using acetate tape is not practical because it breaks easily and the attendant wastes a great deal of time repairing the breaks.

The number of copies you need depends on the laboratory technique you use.

1. Group work from console: in this system, the students always come to the laboratory as a class and they work together with a tape being played at the console.

It is satisfactory to use the master tape if you are sure that nothing will happen to it while it is used on the console. The machines on the console should be playback units only (no erasing or recording circuits); they should be in good mechanical and electronic condition; the laboratory technician should be careful and thoroughly dependable.

If you prefer not to risk damaging the master tape, you have to prepare one copy at $7\frac{1}{2}$ ips. Supposing that you have 45 master assignments for your French classes, you will need

-a total of 90 reels if you decide to keep all the copies for the following year (45 masters and 45 copies).

-a total of 46 reels if you decide not to keep the copies (45 masters plus one copy reel which you keep erasing and re-using).

Scheduling the various classes may present serious difficulties. Experience has shown that it is extremely difficult to hold several classes at the same time in the laboratory; in fact, an institution where extensive laboratory facilities are required should try to split its installation into several smaller laboratories (about 25 booths each), each one having its own console.

2. Individual work with individual tapes: in this system, the student comes to the laboratory either individually or with a group, but he always has a tape at his disposal so that he can work completely individually. The question is: "Where does he get his tape? ". There are various solutions:

a. As already explained, you may bring the whole class to the laboratory for the duplication of the assignment; each student owns his tape. When the duplication is completed, the student can practice individually as needed and he can return to the laboratory for more individual practice if needed.

With this system, the students do not run the risk of coming to the laboratory and finding that no tapes are available; another advantage is that shelves for the storage of the copy tapes are not needed. A serious drawback is that a schedule for group attendance has to be established.

Whether the extra individual attendance should be scheduled or not depends on the school:

--On the secondary school level, it may be preferable to schedule this extra individual attendance. Each student states how many extra periods per week he wants to spend in the laboratory and they are scheduled by the principal's office.

--On the college level, the students are usually given the responsibility of scheduling their own laboratory work. They can reserve a booth by signing their names on the sign-up board.

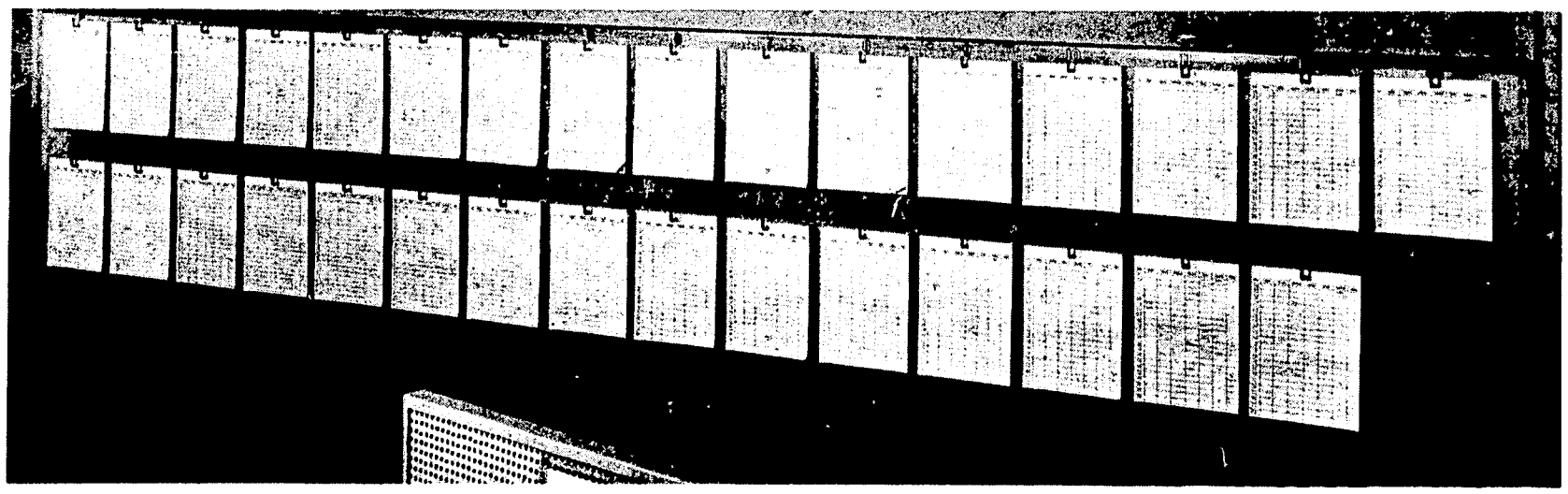


Figure 48. The sign-up board has a sign-up sheet for each booth. The sheets are changed weekly; changing the sheets can be made easier if a calendar-type pad is used and if the sheets can simply be pulled off at the end of the week.

The students should be required to buy good quality tape so that the heads and other delicate parts on the machines will not be damaged.

b. Each student owns two tapes: one tape contains the current assignment, and the second tape is in the laboratory office for duplication of the forthcoming assignment. At the end of the week, the tapes are exchanged: the student picks up the new assignment and turns in the other reel for duplication.

This system, when used in a large laboratory, requires an important staff and extensive facilities for duplication since hundreds of copies may have to be prepared each week. The students should be required to buy good quality tape so that the delicate parts of the mass duplicator will not be damaged (in fact, for optimum safety, the tapes should be inspected before duplication for breaks, dirt, sticky splices, etc.).

The advantages of this system are: 1) no group attendance has to be scheduled, 2) the students do not run the risk of coming to the laboratory and finding that no tapes are available.

Individual attendance can be organized as under (a).

c. In this system, we prepare a tape copy of each assignment for each booth. Let us suppose that you have 25 booths in your laboratory. If the students are free to use any booth at any time, you may expect that from time to time -especially the day preceding a recorded examination- the 25 booths will be occupied by 25 students belonging to the same class and desiring to use the same assignment. In order to be ready for such emergencies, you have to prepare 25 copies of each assignment for each class (in fact, you should prepare a few more since accidental erasures by careless students do occur).

This system requires an important staff and extensive facilities for duplication. Hundreds of copies may have to be prepared and placed on the shelves; problems of cost and storage make it practically impossible to keep the tapes for the following year; they have to be erased and re-used week after week.

The drawbacks of this system are: 1) the cost of the tapes, equipment, and staff, 2) the difficulty of keeping order on the shelves.

Individual attendance can be organized as under (a).

d. You assign a given number of booths to each course: for example, booths 1, 2, 3 have to be used by French I and Spanish II students; booths 4 and 5 have to be used by Italian I and French II students, etc. The number of copies to be prepared is sharply reduced: you prepare only three copies for French I, plus one copy for safety. It is easier to keep order on the shelves.

The main drawback is that it makes scheduling more difficult. If the attendance schedule is prepared by the principal's office, a great deal of shuffling and reshuffling may be necessary before every student is given the desired laboratory practice. If the students are responsible for their own attendance, they may have to sign up early in order to be sure to have a booth and a tape when needed.

The same systems can be used for duplicating hub-to-hub cartridges and magnetic discs.

G. Preparing tape copies with blank intervals and comments

Adding blank intervals to one or several tape copies can be done simply by using one of the duplicating methods explained above and stopping the master tape or the disc while the copying takes place. In order to know where to stop the tape or the disc, the teacher should leave the speaker connected or monitor with headphones.

Be sure that the pause bar stops the master tape instantaneously.

The disc can be stopped easily and instantaneously between your thumb and forefinger if it is larger than the turntable; when the disc is stopped, the turntable should keep turning without resistance (if there is any undue friction, a sheet of paper can be placed between the disc and the turntable). This practice is called "cueing"; it is widely used in broadcasting and, if well done, there is no danger of damaging the record.

If the disc is smaller than the turntable or if you do not want to run the risk of damaging your record, you have to make a pauseless tape copy which is then used to make the copy with intervals. This system of double copying also has to be used with radio programs and films (it is nearly impossible to stop a film without making a wow).

If you want to add some comments during these intervals, you have to use a mixer (the mixer is plugged into the microphone input), and you have to monitor with a pair of headphones (connected to the external speaker or external amplifier jack of the recording machine)[1].

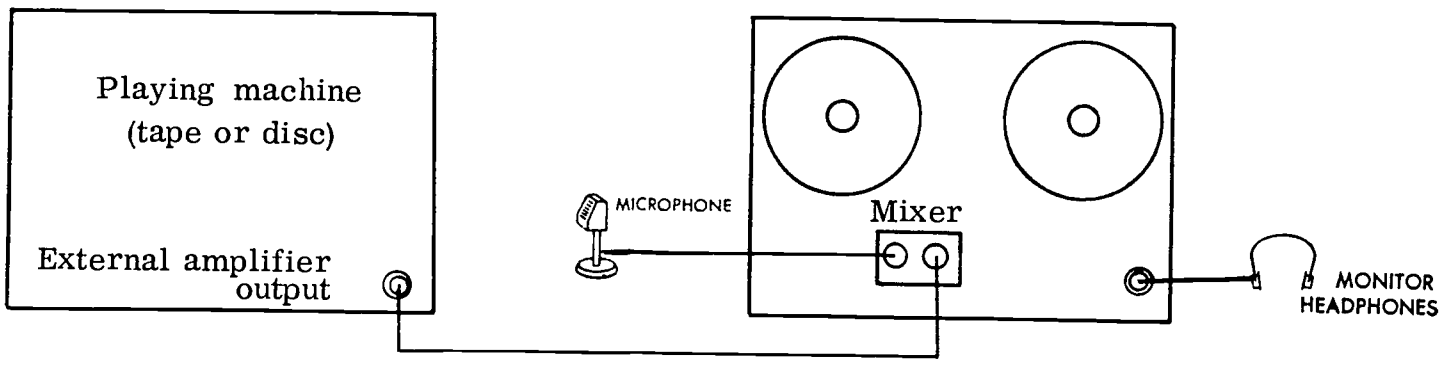


Figure 49.

The loud-speaker on the playing machine should be disconnected (we do not want the sound of the playing machine to go into the recording machine through the microphone and through the patch cord). Some machines have an OFF-ON loud-speaker switch; if your machine does not have one, you can disconnect the loud-speaker by inserting a dummy plug (a plug without wires) into the external speaker output.

Before you start recording, you have to adjust the volume controls so that your voice will be balanced with the tape or disc.

If you use a non-powered mixer, best results are usually obtained when the controls are set in the following order:

--set microphone volume knob on the mixer at its maximum position[2].
--adjust microphone volume knob on the recording machine so that your voice records normally.
--set volume control on playing machine at about 2/3 of its maximum position.
--adjust the second volume control on the mixer so that the recording level indicator moves normally when the tape or disc is played.

You are now ready to start your recording. First start the tape on the recording machine; there should be no need to stop this tape throughout the recording unless you make an error. Then record your introduction, start the playing machine, stop the playing machine, speak, start playing machine, etc.

[1] Of course, it is possible to prepare such a tape without a mixer, but the results obtained when you record your voice and the loud-speaker of the playing machine through the microphone are not as good.
[2] On these non-powered mixers, it makes no difference whether you choose an input or another.

Powered mixers have several input jacks: some for microphone lines and some for radio/phono lines. The microphone and the patch cord must be connected into the proper input jacks. Read carefully the directions that come with the mixer so that you will not use the wrong channels. For best results, the volume controls should be set in the following order:

--set the volume control on the recording machine at about 2/3 of its maximum position.
--adjust the microphone volume control on the mixer so that your voice will record normally.
--set the volume control on the playing machine at about 2/3 of its maximum position.
--adjust the second volume control on the mixer so that the recording level indicator moves normally when the disc or tape is played.

Some tape recorders have a built-in mixer; in such cases, of course, no outside mixer is needed; the microphone and the patch cord from the playing machine are connected directly into the proper jacks on the recorder and you should follow the instructions that come with the recorder.

With the method we have just described, the microphone is placed near the equipment; noises from the machine will be recorded and the quality of your voice will not be as good as if the recording studio were used. Better quality can be obtained as follows:

--have a technician supervise the recording and operate the two machines while you are in the recording studio
--if you cannot have this help, you can record your comments by themselves on a separate tape (you use the recording studio); you prepare your final tape by mixing your recorded comments and the recorded text (tape, disc, etc.); this requires three machines and a mixer.

H. Recording on an endless loop

These endless loops usually have a small piece of leader tape so that you will know where to start and end your recording. If the loop is made of double oxide-coated tape and if the loop is used on a monaural half-track machine, you can double the recording time by cutting the tape (preferably at the leader tape section) and giving it a half twist; this is called a Moebius loop.

Remember that an endless loop cannot be rewound; if you make an error, you cannot rewind the tape to correct your error.

I. Making a splice

Using a pair of scissors or a razor blade (figure 50) is difficult and few people can make a neat splice with this method. Another drawback is that you have to check that your scissors or razor blade are not magnetized (using magnetized tools would modify the magnetic pattern of the tape at the splice and would cause a click to be heard in playback).

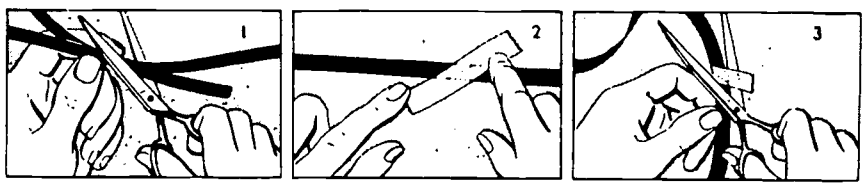


Figure 50.

Your work will be much easier if you use a splicer. There are many types of splicers on the market; we recommend that you use Robins, model TS4A-STD[1] (also order some replaceable blades).

If the tape is broken at a point where there is no recorded material, it is preferable to overlap the two ends of the tape and cut them diagonally; a diagonal splice, if properly made, cannot be detected in playback (the Robins splicer makes a 45° cut); however, if you want to repair a tape broken at a point where there is some recorded material, you have to make an end-to-end splice (the ends of the tape

[1] The "de luxe" model (TS4A-DLX) has an attached splicing tape dispenser, but the position of this dispenser is such that the operator frequently cuts his fingers.

should not overlap). When making the splice be careful to align carefully the two ends of the tape; when the splice is completed, the tape should be straight.

Never use ordinary cellophane tape; the gummy adhesive oozes from the edges of the splice and causes adjacent layers to adhere; there are wows when the tape is played and there is also a loss of quality since the magnetic oxide is contaminated; this ordinary adhesive also gums up the heads and tape guides of the recorder and it may ruin a considerable amount of tape.

You should use some of the special splicing tape sold by most manufacturers of magnetic tape. Do not use the narrow type (7/32" wide); it must be applied parallel to the magnetic tape and this requires very nimble fingers. Use the 1/2" size and apply a small section of this splicing tape diagonally across the magnetic tape. Apply the splicing tape to the shiny side of the magnetic tape and rub firmly with the fingernail to press out all air pockets. Be sure your hands are clean and dry; handle the tape as little as possible since body oils may prevent a firm splice.

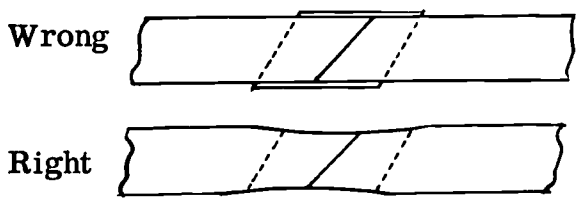


Figure 51.

Note that the splicer trims a slight concave indentation (hour-glass shape) on either side of the splice; this is to make sure that no splicing tape will remain exposed and that the splice will move smoothly through the tape guides and in front of the heads.

When repairing a break on a tape recorded on both tracks, make sure that no material is lost on either track. If some material is lost, you have two solutions:

-Make the splice; then, do this for each track: erase what is left of the damaged sentence, mark the beginning and end of the erased portion (with a china marking pencil or a piece of splicing tape), and record the sentence again -crowding it in the shortened piece of tape.

-If the damaged tape is only a copy, it is faster and easier to repair the tape, bulk erase it, and record a new copy.

Finally, note that you should never leave a roll of splicing tape in a hot place because it becomes hard and unusable.

J. Editing

The process of adding material to -or removing material from- a tape is called editing. Editing can be done in two ways:

1. Record a tape copy containing only the passages you need. With this method, you do not have to cut tapes and splice them, but there may be a slight loss of quality since you are copying; be sure to start-stop the tape on the copying machine with the pause button (otherwise, you will record a click every time you switch to the recording position).

2. Cut the needed sections from the original tape or tapes and splice them together. This work will be easier if you put all the separate sections on individual reels which are properly identified.

In order to cut the tape at the proper place, you should make a pencil mark on the head cover indicating where the gap of the playback head is; with such a mark, you can stop the tape immediately after the last word you want has been played, pull the tape out of the threading slot, and cut it at the place indicated by the pencil mark on the head cover. With practice, you will find that it is relatively easy to remove just one word or even one sound; this is especially easy if the tape is audible when moved by hand and if the tape is recorded at one of the higher speeds: 7½ ips or 15 ips (at the higher speeds, the piece of tape needed for a given sound is longer and it is easier to isolate it).

You should be familiar with these editing procedures because you will often find that last year's

master tapes need to be lengthened or shortened, have a sentence added here or subtracted there; editing can be much faster than recording the whole reel again.

Editing is also useful when you want to combine on a single reel of tape various excerpts from discs, films, or radio programs.

K. Field recording

If you want to make a tape recording in locations where no commercial electric power is available, you have two solutions:

1. Install an inverter in your car. An inverter is a small instrument which transforms the battery current into 110 volts, AC, 60 periods.

2. Use a battery-operated recorder (Amplifier Corporation of America, 398 Broadway, New York 13, is a firm which specializes in portable battery-operated recorders).

L. Reel identification

There are several ways to identify a tape recording:

1. Always write on the box the title, the name of the person(s) who prepared the text, where the text can be found, the name of the person(s) who recorded it, the date, the speed at which it was recorded, the number of tracks used, the duration in minutes, the catalogue number (if a tape library catalogue exists).

Identification will be easier if you store only one assignment per reel; if you are sure that the recording will be used for several years and if there is a sizeable amount of blank tape left on the reel, you should cut off this blank tape and save it for future use.

2. A label should be placed on the reel itself. This label should indicate the title or number of the recording. This label can be a special adhesive label (sold by most tape manufacturers); it can be a typewritten piece of paper placed on the reel with a piece of Scotch tape. Temporary markings can be made with a grease pencil or a china marking pencil; you can also use some "Magic Marker" ink[1] (note that this ink is difficult to remove).

3. It is not sufficient to identify the box and the reel. Since the reel can be put in the wrong box and since the tape may be left on the wrong reel, the tape itself should carry its own identification. This can be done in two ways:

a. Record at the beginning of the tape the title, the name of the person recording the text, and the date.

b. Splice a piece of leader tape at the beginning and at the end of the tape. The following information should be written on these two pieces of leader tape: title, name of person who recorded the tape, date, speed, duration in minutes, and catalogue number; you should also indicate whether it is the beginning or the end of the tape. This information has to be written in pencil and on the dull side of the leader tape (the shiny side does not retain any writing and ink does not stay on the dull side).

There are two types of leader tape:

a. Self-timing leader tape. This type of leader tape has markings placed at regular inter-

[1] It comes in nine colors and is manufactured by "Speedry Products", Richmond Hill 18, N. Y.

vals (usually $7\frac{1}{2}$ inches); these markings make it easy to add the length of leader you need (so many seconds or so many inches).

b. Plain leader tape. It is usually made of polyester film with a red, blue, yellow, or white coating. It may be a good idea to use one color for the beginning of each tape and another one for the end (so that you will know at a glance whether the tape has to be rewound before it is played).

Leader tape can also be used to separate various selections on a reel. Temporary markings to indicate where a given passage is located can be made either with small strips of paper placed between the layers of tape or with special tape index tabs.

WORK THAT A TEACHER SHOULD BE ABLE TO DO WITH MAGNETIC DISC RECORDERS

Recording on magnetic discs is similar in many respects to recording on magnetic tape. We shall give you only a brief summary of what you should be able to do with magnetic disc recorders.

1. Identify the various parts of the machine: turntable, disc, permanent magnet for erase, pickup arm with recording head and pole piece, switches and knobs, pause bar, and backspacing bar.

2. Erase a disc with the permanent magnet and with a bulk eraser.

3. Prepare a recording from a microphone.

4. Copy a phonograph record, a tape, a radio program, a sound track on a magnetic disc.

5. Copy a tape or a phonograph record on a magnetic disc, adding intervals and comments.

6. Play back a magnetic disc recording, using the start-stop bar and the backspacing bar.

Note that the short duration of the magnetic disc is not a great drawback since several discs can be stacked up on the turntable.

WORK THAT A TEACHER SHOULD BE ABLE TO DO WITH VISUAL AND AUDIO-VISUAL EQUIPMENT

Here is a brief summary of what you should be able to do. The necessary explanations can be found in the instructions that come with your equipment.

1. Use a slide and a filmstrip projector, with single or double frames; use a manual changer or an automatic changer; project by remote control. Use the projector in synchronization with a tape recorder (some projectors can be used in conjunction with a dual-channel tape recorder; a synchronizer mechanism permits automatic projection of the slides or filmstrips while the commentary is played; the commentary is on one channel while the electronic signals which activate the projector are on the other channel).

2. Use an opaque projector and an overhead projector. Be able to use pointer arrow.

3. Use a sound film projector (with optical sound track):

a. Project the film correctly. Use the reverse motion device. Stop the film for single frame showing.

b. Use a microphone and give commentary as film is shown (to be used especially when

the original commentary on the film is too difficult). Instead of speaking through the microphone, it is possible to prepare a tape recording of this new commentary and play it as the film is shown[1].

c. Rewind the film correctly.

d. Splice a broken film (broken films can now be repaired with a special sprocketed splicing tape made of polyester).

4. Use a sound film projector with optical and magnetic sound tracks. Record and play back a commentary on the magnetic track. Be able to switch from the magnetic track to the optical track.

5. Use a film loop (the film is spliced end to end in a special magazine and it can be shown continuously without having to rewind it).

6. Make simultaneous copies of the sound track (using the machines in the booths).

7. Be able to give audio-visual examinations (the students look at a picture and record their answers). Refer to page 113; techniques 1 and 2 can be used and the answers can be recorded.

STORAGE

I. TAPES

Tape recordings may be destroyed by:

1. Physical deterioration of the tape oxide and/or base.

2. Erasure of the recorded material.

Physical deterioration

Tapes with an acetate base should be stored under moderate conditions of heat and humidity (conditions which we would find comfortable). Storage under hot and dry conditions may reduce the life of acetate tapes to a few months; they become dry and brittle.

Tapes on a polyester or polyvinylchloride base apparently are not affected by changes in heat or humidity; they do not require the same care as acetate tapes.

High storage temperatures increase the danger of print-through on all tapes whatever the base.

If a tape is accidentally submitted to extreme temperatures, allow it to return to room temperature before running it on a machine.

Avoid excessive tension in rewinding a tape. A tightly wound tape is not recommended because:

--it is likely to print through more readily than a loosely wound tape.
--it might become stretched and permanently distorted; it might even break the reel if there is a sharp decrease in temperature.

Remember that it is better not to rewind a full-track tape (or a half-track tape with only one track recorded) before storing it. Refer to page 152, section 2).

Avoid storing unboxed reels of tape; the original box provides protection against dust

[1] To solve the problem of synchronization (correspondence of image and sound), it is preferable to prepare a tape which is run intermittently (with the start-stop bar).

and physical damage to the tape edges.

Reels of tape should be stored on edge or lying flat on individual shelves. Stacking many reels one on top of the other should be avoided as the weight may distort the plastic reels or damage the edges of the tape.

Occasional use of the tape improves storage characteristics. It should be played at least once a year in order to release strains and adhesions.

Erasure of the recorded material

Storing tapes or even passing tapes near magnetic fields may cause partial erasure and/or print-through (this accidental print-through may have fore-prints and after-prints almost as loud as the original signals on the tape). Therefore, you should keep your tapes away from any equipment containing magnets (PM speakers, dynamic microphones, etc.) and away from any electric installations which may be surrounded by magnetic fields (soldering guns, motors, heavy electric cables, etc.).

Valuable tapes should be stored with even more care; they should be put in steel cans kept sealed with strips of plastic insulating tape (such as Scotch No. 33 electrical tape). Of course, valuable tapes should be played only on selected machines (machines where the tape guides, heads, and pressure rollers are clean; the heads are not magnetized; the tension is well regulated so that the tape will not break or stretch).

If these storage requirements are respected, a tape can be played thousands of times without wear or loss of fidelity.

II. RECORDS AND FILMS

Handle phonograph records by the edges only; do not rub the playing surface against the cardboard sleeve; do not leave a record on the turntable after playing it.

Do not store your records horizontally or obliquely if you want to keep them from warping; store them vertically with rigid supports on both sides or place them in special sleeves hanging from a rod. Keep your records away from heat, direct sunlight, and dust; do not store them in a dry room.

Films, slides, and filmstrips should be stored in metal boxes or cans. The storage room should have moderate conditions of heat and humidity.

BASIC REPAIRS AND MAINTENANCE

The following tools, supplies, and basic replacement parts are necessary:

one set of Allen wrenches, for all sizes up to 1/4"
one set of open-end and box-end wrenches (3/8" to 1")
one set of standard (flat-bladed) screwdrivers
one set of Phillips screwdrivers
one set of nut drivers (sizes from 5/32" to 1/2")
several pliers: long-nose, wire-stripping, cutting
one soldering gun (with a small tip), with replacement tips
radio solder, such as Ersin Multicore 50 tin/50 lead
Scotch electrical tape No. 33
isopropyl alcohol

head cleaner, such as Ampex FP-7[1]
volume and tone control cleaner, such as Walsco Contactene No. 80-02[1]; with injector, such as Walsco No. 989
absorbent cotton and Q-tips
nail files (emery boards)
oil for oilite bearings, such as Ampex FP-5
gauge or scales for phono needle pressure
head demagnetizer, such as Ampex No. 704
test tape, such as Ampex No. 5563B
anti-static cloth for records (do not use atomic devices such as Robins' radioactive jewel SE-900)

replacement parts:

--tubes (if possible, buy Mullard, Amperex, or Telefunken tubes; they are better made and quieter than American tubes).
--erase heads, recording heads, playback heads (if your machines have a separate playback circuit).
--motors, belts, pulleys, pressure rollers, pressure pads, brake linings, knobs, fuses.
--styli (needles) for phonograph records.

I. TAPE RECORDERS

Before starting to work on a tape recorder, be sure that it is not the tape which is defective; try another tape before you get your tools.

We give you only a list of suggestions for simple repairs and maintenance; do not attempt any part of this work unless you know exactly what you are doing and why.

Keep track of all repairs and maintenance service for each machine; affix a card on each machine and write the type of maintenance or repairs which you performed and when.

1. Hum: on some machines, a hum may be eliminated simply by turning the power plug around. Check that all the patch cords and cables are plugged in the proper jacks; check that the microphone cable does not run alongside the power cord.

2. Wrong speed: if your tape does not run at the proper speeds ($3\frac{3}{4}$ and $7\frac{1}{2}$ ips), investigate the following possibilities:

a. defective motor
b. excessive tension on belts, brakes, pressure pads
c. worn motor belts, pressure roller, or idler wheels
d. dirty heads, tape guides, pressure roller, or capstan
e. lack of oiling
f. glazed idler wheels or pressure roller
g. you are playing a thin tape ($\frac{1}{2}$-mil base) on a machine which has been handling only $1\frac{1}{2}$-mil tapes (refer to page 145).

Wrong rewind and fast forward speeds may be caused by a defective motor, excessive or insufficient tension on the belts or brakes, worn motor belts or idler wheels, lack of oiling, glazed idler wheels.

[1] Use these products only in a well ventilated room; do not allow them to come into contact with the skin. Never use carbon tetrachloride to clean the magnetic heads or any parts of your machines. Carbon tetrachloride --although sold freely-- is a deadly poison.

Wow (slow variations in the speed of the tape) and flutter (rapid variations in the speed of the tape) may be caused by some foreign material (oil, dust, lint, etc.) on the motor pulleys, the motor belts, the idler wheels, the flywheel, the capstan or the pressure roller; it may also be caused by a flat on the idler wheels or the pressure roller.

Worn parts have to be replaced with exact replacement parts supplied by the manufacturer. When replacing them, be sure not to put any oil or grease by accident on the moving parts of the machine.

Insufficient or excessive tension on the belts, brakes and pressure pads should be adjusted according to the specific directions in the maintenance manual. Do not confuse this maintenance manual with the instruction booklet which is automatically supplied with every machine; usually you have to order this maintenance manual from the manufacturer. Do not attempt to adjust these tensions unless you have the maintenance manual.

The pole pieces on the heads are subject to an accumulation of oxide which is worn off the tape as it passes the heads. The heads have to be cleaned with the special head cleaner we mentioned above. Dip a Q-tip into the cleaner and rub the pole piece gently until all the oxide is removed; be sure that none of the cleaner gets into the head. Then dry the head with a clean Q-tip; be sure that the heads are perfectly dry before you use a tape (otherwise the cleaner left on the heads would dissolve the oxide on the tape and the heads would be dirtier than ever). Most modern tapes have a special silicone lubrication treatment and the heads do not have to be cleaned as frequently as they did several years ago.

The tape guides, the capstan, and the pressure roller can be cleaned with alcohol; be sure these parts are dry before you use a tape. The rubber of the pressure roller must be resilient in order to be able to exert its full driving force; if the rubber is hardened, the pressure roller must be replaced.

When oiling, be very careful to follow exactly the manufacturer's instructions. The most common fault is to use too much oil (if the instructions say one drop, use one drop --not two); excess oil may get on the moving parts (idler wheels, pressure roller, etc.) thus causing the mechanism to slip or stop altogether or permanently damaging the tape. Note that more and more machines are lubricated for life.

Glazed wheels can be cleaned with alcohol; if the rubber is still too smooth, you can take the glaze off with a pencil eraser or a fine emery board. If the rubber is not resilient enough, the wheel should be replaced.

If there is a flat on the idler wheel or the pressure roller, try running the machine for an hour or two at the $7\frac{1}{2}$ ips speed; if the machine has not returned to normal by that time, replace the part (flats are generally caused by leaving the machine in play/record position while the motor is not going).

Some companies advertise products which are claimed to lubricate the heads and the tape guides; some also sell a "tape conditioner" which is supposed to clean and lubricate the tape. These products may do more harm than good; it is preferable not to use them.

The speed of your machines should be checked about once a month. This can be done with a reel containing exactly 225 feet of leader tape (choose the type of leader tape which has markings every $7\frac{1}{2}$ inches). Your machine should take exactly six minutes to play this reel; an error of over six seconds should be remedied. There are on the market several test tapes with special recorded signals which allow you to check the speed of your machines easily. You can also use a tape stroboscope; some machines have a built-in stroboscopic disc.

These test tapes usually have special tones to check your machines for wow and flutter.

3. Poor sound: investigate the following possibilities:

a. the heads are dirty, magnetized, misaligned, or worn
b. the pressure pads are defective

Dirty heads can be cleaned as explained above.

The heads on a tape recorder may become magnetized for a variety of reasons (for example: connecting or disconnecting the microphone or a patch cord while the machine is in the record position, removing tubes or disconnecting the heads when the machine is turned on, placing a magnet near the heads). Tapes which are recorded with magnetized heads tend to be noisy and distorted; tapes played back with magnetized heads lose some of their high frequencies and become noisy.

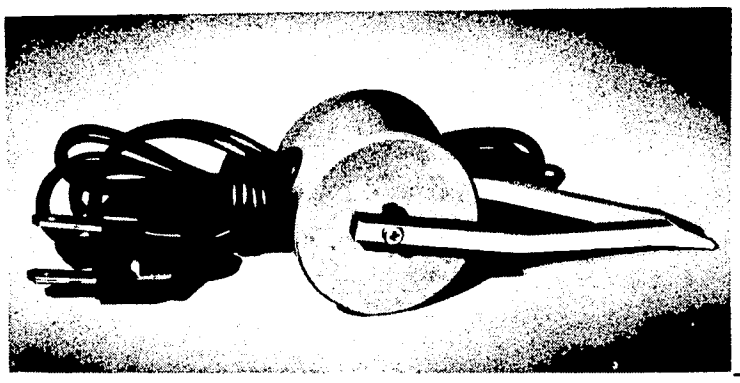


Figure 52. Head demagnetizer

A head demagnetizer must be used with great care (otherwise you run the risk of magnetizing your heads even more instead of demagnetizing them). Follow carefully the manufacturer's instructions.

Misaligned heads (refer to page 138) can be adjusted with the help of one of the test tapes already mentioned. These test tapes have a special section for head alignment.

Defective pressure pads should be adjusted or changed because good contact between head and tape is essential (as little as .001" separation between the head and the tape drops the frequency response and the volume by a great deal). When the pressure pads begin to show signs of wear, an accumulation of oxide particles, or become glazed, they should be cleaned and roughed up to restore their original condition or they should be replaced. When replacing the pressure pads, be sure not to use too much cement (some of it might get on the face of the pad and harden the material at that spot).

Remember that not all machines have pressure pads (refer to page 133).

4. The tape squeals: this rarely occurs now since modern tapes have a special lubrication treatment. If one of your tapes does squeal, investigate the following possibilities:

a. there is an accumulation of oxide on the heads and/or the pressure pads. Clean them as explained above.

b. you have bought a reel of the loudly advertised "bargain tapes". The oxide on these tapes is often soft and it accumulates rapidly on the heads and on the pressure pads. Such a tape cannot be "fixed"; it has to be thrown away. If you have something of value on that tape, copy it on a reel of good tape; to avoid the squealing during the copying, try to use the tape conditioner we mentioned above (this is the only use we would make of that conditioner).

5. The volume and tone controls are noisy: this will frequently happen if the machines are not used for several weeks or months. This condition can sometimes be remedied simply by turning the controls all the way up and all the way down for twenty or thirty times; if this does not cure your difficulty try using the control cleaner we mentioned above; if this cleaner does not work, you have to replace the controls.

6. Your machine records or plays back intermittently: check that all the plugs are pushed all the way in; check that the connections inside the plugs are strong (if not, solder them again; do not use too much solder and be sure that the wires do not touch each other).

7. No sound: check that there is not a plug in the external speaker jack; then try replacing the tubes (insert the tubes gently, but all the way in; usually there is a notch or some other mark on the tube socket to help you place the tube correctly; be sure to replace the tube shield or the cap -if any- correctly).

Of course, your tape recorder may get out of order for many other reasons; we have tried to indicate only the easiest cures.

II. PHONOGRAPHS AND MAGNETIC DISC RECORDERS

The following suggestions will help you take good care of your phonographs:

1. Check the speed of the turntable with a stroboscopic disc; most professional turntables have a stroboscopic disc marked directly on the turntable. Keep in mind that stroboscopic discs work best with a fluorescent lamp. If the speed is not correct, try the following remedies:

a. Clean or replace the motor belts or idler wheels (proceed as explained for the tape recorders).

b. Oil motor (follow carefully the manufacturer's instructions).

2. Check that the pickup arm swings freely; if there is any undue friction, oil the pickup arm bearings lightly.

3. Check the stylus pressure and adjust (following the manufacturer's instructions). Keep in mind that too much pressure can ruin a record in one playing.

4. Change the stylus as needed. A diamond stylus requires a greater initial expense than an osmium or sapphire needle, but it is more economical in the long run. However, even diamond styli are not permanent and must be checked periodically (about every 50 hours for a diamond stylus). A worn stylus can damage a record in one playing.

5. Records should be cleaned with an anti-static cloth before they are played. If a record is very dirty, it can be carefully washed with a mild detergent and thoroughly rinsed.

Mechanically, magnetic disc recorders are similar to phonographs; they require the same maintenance and repairs as explained under (1) and (2) above.

III. VISUAL AND AUDIO-VISUAL EQUIPMENT

You should be able to clean the aperture gate, the sprockets, and the lens. Oil the projector if and when needed. Replace the projection lamp and the exciter lamp (when replacing the projection lamp, wait until it has become cool; be sure the power is turned off when you insert the new lamp). Replace the belts.

For further details, read the instruction books that come with your machines. The following text is also extremely useful: ABC'S of Visual Aids by Philip Mannino (available from M.O. Publishers, Box 406, State College, Pennsylvania).

DIRECTING THE LANGUAGE LABORATORY

The director of the language laboratory should be a teacher of foreign languages; his teaching load should be reduced. It is essential that he keep teaching (especially the types of courses where the laboratory is most useful); it is only through teaching that he can participate in the important work of improving language laboratory techniques.

He should be thoroughly familiar with the principles of sound recording, the various types of audio, visual, and audio-visual equipment, and common maintenance problems. He should be thoroughly aware of the capabilities of the equipment in his laboratory so that he will be able to tell the faculty whether such or such a technique can be applied.

He should have trained assistants. The number of assistants will depend on the size of the language laboratory and the hours it is open. The director should not have to take care of all the routine work in the laboratory.

He should have the main responsibility for the selection of the language laboratory assistants and should train them and supervise their work.

The laboratory assistants should have studied at least one foreign language for several years; they must be interested in machines; they should be able to perform the basic preventive maintenance and simple repairs (also replace a unit with a spare); they should be able to type. It goes without saying that they should be dependable, conscientious, and orderly.

The constant presence of an assistant[1] is necessary on the secondary school level. On the college level, whether an assistant should be present at all times will depend on the location of the laboratory, the number of machines, the degree of attendance, and so on.

The director should help with the planning of the laboratory and the preparation of the specifications. He should check the contract very carefully and make sure it is awarded to a dependable firm[2] with a good reputation in this field (automatically awarding the contract to the lowest bidder can be a very "expensive" policy with language laboratories). He should see to it that a special clause provides that payment is not due until all the specifications have been met and until the laboratory has been functioning satisfactorily for ninety (90) days. A special clause should provide for a one-year free inspection and maintenance service. The director should supervise the installation of the laboratory.

The director should train the faculty and students in September and, if necessary, at the beginning of the second semester. For that training program, a special tape should be prepared. This tape should explain everything which can be done in the laboratory (use of the console, group and/or individual work); it should also train the students in the proper use of the equipment, microphone position, use of the sign-up board, etc. This training program should inspire confidence in the faculty and the students; they should leave the laboratory with the belief that using the equipment will be easy and profitable.

The director, and possibly a language laboratory committee, should draw up a set of rules and regulations for the use of the laboratory. Here is a list of decisions to be made:

1. Should the laboratory be open to faculty members who want to work on their own using the tapes of the laboratory?
2. Should the laboratory be open to students of other colleges (as the library is)?
3. Should the laboratory be open to town residents?
4. Should the laboratory be open during the winter and spring vacations? If so, who will supervise it?
5. Should tapes of languages not taught in the school be available for use by students and faculty who could learn by themselves?
6. Should the laboratory be open to visitors at all times? Or should it be open to visitors only at fixed times for special open house days? If so, how frequently should these open house days be held? Should the laboratory be closed to students on these open house days or should these open house days take place during a vacation when the students are off campus?
7. What policy will be adopted regarding members of the foreign language department who want to bring friends for a visit?
8. Should there be a "No Visitors" sign? What effect will that sign have on public relations?

[1] State laws vary; in some states, the laboratory assistant has to meet special qualifications.
[2] Each bidder should supply a list of the schools where he has installed laboratories.

9. If visitors are allowed while students are working, how will quiet be maintained?
10. Should visitors be allowed to use the equipment and listen to the tapes?

The director and his assistants should see that good discipline is maintained, that there is no smoking, and that everybody is quiet. They should check that students and instructors leave the laboratory in proper order: headphones on hooks, all switches in "Off" position[1], knobs in "Stop" position (to prevent flats on the rubber wheels), microphones in proper position. They should also check that no books, pens, tapes, papers, or articles of clothing are left in the booths or under the chairs.

"Out of order" signs should be placed on the machines which are not functioning properly. These signs should indicate what is wrong so that the service man will not waste any time.

The assistants must keep the shelves in the laboratory in order. They must check that no tapes are left in the booths and also that all the tapes have been rewound properly. The sheets on the sign-up board should be changed regularly.

The director should co-ordinate the use of the laboratory by the various departments so that

a. the work load in the studio and in the control room is evenly spread throughout the week
b. the students' attendance in the laboratory is fairly even throughout the week; this can be done by making sure that the number of laboratory assignments is about the same every day.

The director should make sure that the students buy or are supplied with one of the makes of high-quality "unbreakable" tape so that the equipment will not be damaged. Many schools make special arrangements so that students can obtain tape at a low price. Some do this by selecting a particular brand of tape, buying it wholesale, and selling it to the students with little or no profit. Others select a local dealer and make similar arrangements with him. These two procedures should be handled with tact because they can very easily create bad feelings among the local dealers.

The director should make sure that the master tapes are properly recorded (see page 154), that they are properly catalogued (the card should be written by the teacher), and properly filed in the storage cabinet. Each department should have its own storage cabinet and should be responsible for the system of classification to be used in it (by courses, types of assignments, etc.); each department should maintain its own card catalogue.

The director should require that all the master tapes be made in the recording studio; the tapes made by the teachers themselves on their own machines are rarely satisfactory for duplication because:

a. the recording level is not the same as the level used with the laboratory duplicator
b. the speed may be different
c. the tape may be noisy (since it is not recorded in a soundproof room)
d. two tracks may be recorded instead of one

All of this leads to poor copies and dissatisfaction on the part of the students.

The director or his assistants should make sure that the required number of copies are properly made, labeled, and made available to the students at the proper time. They should remove from the shelves the tapes that are no longer needed; they should erase them, remove the labels, and check to see that they are in good condition and have not been twisted before returning them to stock.

The staff should see that proper conditions of storage are maintained for the tapes, discs, films, slides, and filmstrips (see page 170). All the cabinets should be locked and the students should not have access to them (in fact, the students should not be allowed to enter the recording studio or control room).

[1] It is preferable to leave the power on if the laboratory is used extensively (see page 198).

The audio-visual materials should be properly filed and catalogued.

The laboratory staff should supervise the tape library of copies for students' use. This tape library contains copies of assignments (generally only one of each) which the professors want to keep permanently so that the students can be sent to the laboratory for special make-up, review, additional, or remedial work. The tape library should be in the control room. There should be a special catalogue for this tape library. The staff should see that the copies are returned in good condition. Each student using a tape library reel should sign a slip stating what tape he used and for how long; at the end of the week, these slips are sent to the various professors. The texts, if any, should be filed in the library.

The assistants should help the students who have difficulty. They should also help the teachers with the operation of the console during the group work sessions or play the tape for them when they are unable to come.

Copies of the technical publications that can be useful for the operation of the language laboratory should be on file in the control room. For example, we recommend the following publications:

a. Educational Screen, 2000 Lincoln Park West Building, Chicago 14, Illinois.
b. Hi-Fi Tape Recording, Severna Park, Maryland.
c. La Revue du Son, 40, rue de Seine, Paris-VIe.

and the following book:

How to Make Good Tape Recordings by C. J. Le Bel, Audio Devices, Inc., 444 Madison Avenue, New York 22, N. Y.

The laboratory staff should keep up-to-date schedules of foreign language radio programs (especially newscasts).

If a tape correspondence is held with other schools, the staff should be sure that the students record their tapes on the right track and at the right speed.

The director should see that the company which is responsible for the preventive maintenance and the repairs fulfills its obligations properly; he should keep track of all repairs, spot unusual maintenance problems, and see to it that corrective measures are taken. He should keep a stock of spare parts and supplies on hand for the repairs and preventive maintenance that can be made by the laboratory staff (change tubes, belts; clean the heads, pressure rollers, etc.). See pages 171 and 172 for the list of basic tools, supplies, and replacement parts.

The director should help prepare and administer the language laboratory budget. He should keep track of all expenses for staff, maintenance, repairs, new equipment, and supplies. He should evaluate the cost of the operation of the laboratory per student-hour; he should keep statistics about the number of students using the laboratory and the number of hours they spend there; he should also keep statistics about the attendance by department. He should recommend the purchase or rental of records, tapes, films, slides, filmstrips, and other types of audio-visual materials.

The laboratory should also be used as a research center where:

a. improved teaching methods are tested
b. improved laboratory techniques are tested
c. improved texts and recordings are prepared
d. new ideas are pooled, exchanged, and disseminated among the faculty and other colleges through publications and panel discussions
e. information is collected about teaching methods and laboratory techniques used in other colleges
f. new equipment is tested for possible future use

The language laboratory should try to co-operate with the college radio station. The following activities could be shared by the laboratory and the radio station:

a. broadcast foreign songs
b. make announcements in several languages
c. broadcast newscasts or college news in foreign languages
d. broadcast simple dialogues for conversational practice
e. broadcast quiz programs, debates, etc. in foreign languages
f. play discs or tapes about typical foreign holidays and celebrations

Similar programs can be transmitted through an audio system. In each dormitory room, there would be a loud-speaker (with an individual volume control) connected to a tape recorder. This machine could be made to work automatically at given times (for example, from 7 to 8 A.M., at noon, and in the evening). Thus, the students could listen while dressing, resting, preparing for bed, and so on. It would considerably help the students who live in foreign language houses; very often these students hardly make any progress because they do not receive the needed help.

The director should try to publicize the value of language laboratories through articles in the local papers, talks on the radio, demonstrations with students on TV.

The language laboratory is a complex and expensive organization. It must be operated efficiently; otherwise the cost is too high for the results which are obtained.

SPECIFICATIONS FOR THE LANGUAGE LABORATORY

INTRODUCTION

As of February 1960, only magnetic tape can give us the quality of reproduction that is needed for the teaching of foreign languages. Magnetic disc recorders are far easier to use, but they will not have our preference until the necessary improvements have been made. For further details, see page 147.

The language laboratory companies do not at present manufacture their own tape transport decks. They buy decks made primarily for home use; that is, decks which will give good service if handled carefully, but which are not strong enough to withstand for long the rough handling of hundreds of students.

Most of these language laboratory companies manufacture their own preamplifiers, but usually the components are not good enough to withstand long hours of daily use.

What can we do then in order to have the language laboratory companies manufacture the equipment we need? First, we must stop the practice of accepting automatically the lowest bid which meets the purely functional specifications; this procedure drives the manufacturers to produce equipment good enough to meet the specifications at the time of installation, but not for long after. Payment for the installation should not be due until the equipment has been functioning satisfactorily for at least three months. Second, we must stop the practice of resigning ourselves to buying poor equipment because the available funds (NDEA money for example) must be spent by a given date. All public funds should be spent only on high-quality equipment which will not become rapidly obsolete. Fortunately, there are several areas where money can be spent safely and wisely; for example:

1. The recording studio and the control room can be installed; the necessary equipment can be purchased. Few modifications, if any, are foreseen in professional machines; tape most likely will remain the best and most flexible medium for master recordings. The duplicator should not be bought until the entire laboratory installation is completed (that is, until you know whether you will use tapes or discs in the booths and practice listening rooms).

2. The necessary audio-visual equipment can be bought (projectors, screens, slides, films, etc.).

3. The console can be installed (tape most likely will remain the best medium for the console).

4. The language laboratory room, the booths and/or the individual practice rooms can be installed and given the necessary acoustic treatment; the power and audio wiring can be put in place. A limited number of portable commercial recorders can be used until proper language laboratory equipment is developed (the portable recorders can then be turned in).

SPECIFICATIONS FOR THE RECORDING STUDIO

A soundproof recording studio is essential. We recommend the following specifications:

1. Dimensions: length: 8 to 10 feet; width: $4\frac{1}{2}$ to 6 feet; height: about 9 feet.

2. Door: the recording studio should have a double door. One of these should be a 45-decibel Riverbank door (a soundproof door with an expanding flap which comes down to the floor when the door is closed); the three sides of the frame should have a rubber gasket.

3. Window: it should be a double plate glass window; for better acoustics, the side in the studio should be slanted at an angle of about 15 degrees from the vertical. Also for better acoustics, the window should not be too large (4 feet by $2\frac{1}{2}$ feet is satisfactory). This window allows the person who is recording to see the technician operating the equipment and to communicate with him visually. If the person records without the help of a technician, he can see the machine and check that the tape recorder works satisfac-

torily; he can also see the VU meter and adjust his voice accordingly. When recording without a technician, the person starts the machine, goes into the studio, turns the microphone on and records; at the end of the recording, he turns the microphone off, leaves the studio and stops the machine.

Figure 53. The recording studio as seen from the control room

4. Soundproofing: it is difficult to give a recording room the right amount of soundproofing. The following arrangement is recommended as being the most flexible:

a. There should be acoustic tiles on the ceiling.
b. The floor should be covered with a thick carpet (linoleum tiles are particularly bad).
c. The walls should be slightly off parallel; they should be covered with heavy, pleated drapes which can be drawn so that the whole wall area can be entirely covered or partly covered -thus modifying the resonance of the room so that each voice can be recorded at its best.
d. The lights should be incandescent; fluorescent lights tend to become noisy.
e. If there is heat in the recording studio, it should be of a type which is absolutely silent.

5. Equipment: the table and the chair(s) should be strongly built and, especially, should not creak. You should use an omnidirectional microphone of high quality, with an "Off-On" switch; a dynamic microphone with dual impedance (high and low) is preferable. The table should be covered with felt.

6. Intercommunication: this is not essential; if used, it should be entirely separate from the master recording equipment. A one-way intercommunication system is sufficient since the technician can always hear the person who is in the recording studio.

7. Wiring: there should be a double outlet since you may wish to use a lamp or a machine in the studio. The microphone cable goes from the recording studio to the control room through the partition; it should be an uninterrupted cable (wall mounting receptacles can lead to poor contact).

8. Ventilation: air conditioning is preferable to forced ventilation. In any case, since neither of these two systems can be made entirely free of noise, it should be possible to turn them off while a recording is being made; the switch can be located in the recording studio or the control room and should be independent from the main ventilation system. In order to renew the air in the recording room, you should not plan to make too many consecutive recordings.

9. Recording sign: it is a good idea to install a sign which says "Quiet - Recording"; this sign is turned on whenever the studio is in use.

SPECIFICATIONS FOR THE CONTROL ROOM

The control room contains the equipment for the preparation of the master tapes and for the duplication of the copies to be used by the students.

It is preferable to have this equipment built in; it looks neater (no exposed wiring); it provides for better heat dissipation; it stops the indiscriminate borrowing of delicate equipment. The equipment should be easily removable for repairs. All this equipment should be equipped with hour meters to show the cumulative running time (these meters make it easier to take care of the preventive maintenance which must be performed at regular intervals).

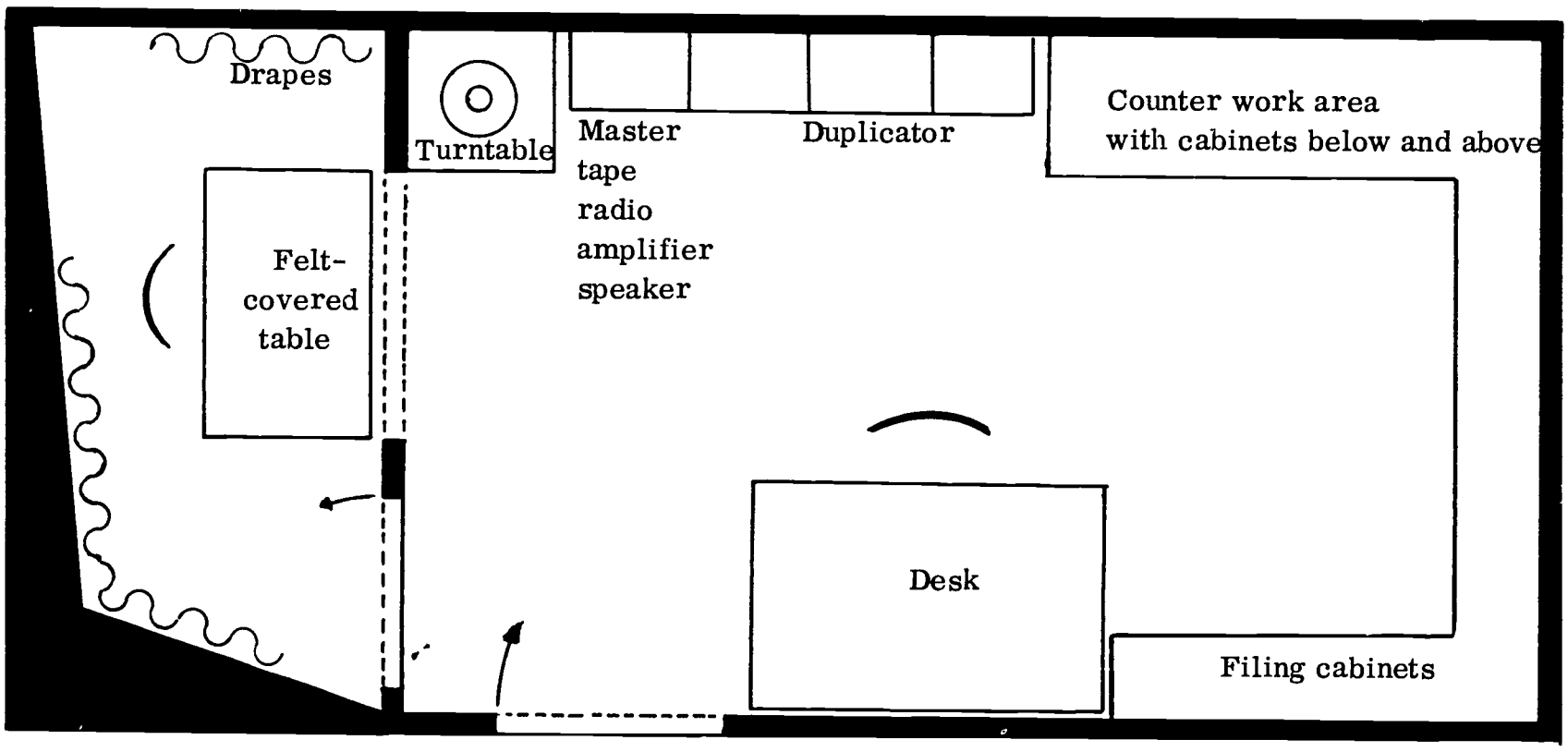


Figure 54. Detailed diagram of the recording studio and control room.

1. The master tape recorder: it should be a professional machine meeting the following specifications: frequency response, 30 to 15,000 cycles (±4 db) at 7½ ips; signal-to-noise ratio, 55 db; flutter and wow, less than 0.2%; timing accuracy, ±0.2%; tape speeds, 7½ and 15 ips; built-in mixer.

It should be a full-track machine for the following reasons:

a. The output and signal-to-noise ratio of a full-track machine is higher than that of a comparable half-track machine.
b. In any case, only one track is used when preparing a master tape recording (using two tracks makes it impossible to edit the tape).
c. It is possible to play a tape backwards (in reverse playback, /bo/ becomes /ob/); this may have some useful applications in phonetics.
d. A full-track tape plays without difficulty on any type of tape machine.

This machine should have a separate playback circuit for monitoring from the tape and for the immediate comparison of the input signal and the recorded signal. Be sure that there is no leakage between

the recording and the playback circuits and that no echo is recorded on the tape when you monitor from the tape. With this machine, it should be possible to feed the duplicator from the input circuit while the master recording is being made (so that simultaneous copies can be made at the same time as the master).

2. Amplifier-speaker: it should be a professional unit of a quality comparable to that of the master tape recorder.

3. Turntable: you do not need a complete phonograph with a full amplifier and speaker since you only want to copy records on tape (if the records have to be played through a loud-speaker, you can use the same amplifier-speaker as the one for the master tape recorder).

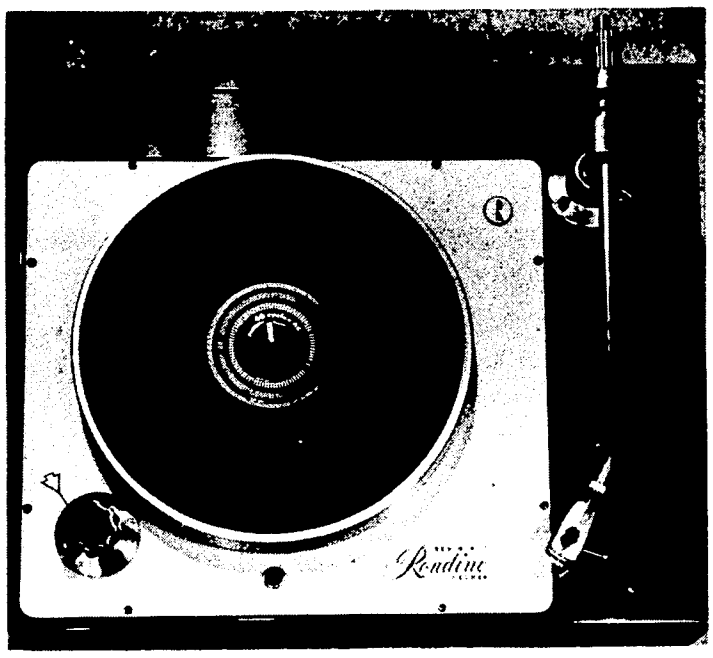


Figure 55. Turntable showing the stroboscope and the weight.

This turntable should be a professional unit; it should be vibration-free; it should have four speeds: 78 r.p.m. (revolutions per minute), 45 r.p.m., 33 1/3 r.p.m., 16 2/3 r.p.m. (at present, there are only a few records available at this last speed, but it is preferable to be prepared); it should have a built-in spindle for the 45 r.p.m. records; it should be able to play 16" records (transcription records used by radio stations); it should have special insulation so that it will be shockproof and vibration-proof.

It should not be an automatic record changer (these units can damage the records); it should not have an automatic start-and-stop device (this feature would prevent you from moving the arm freely from one part of the record to another --which you must be able to do if you have to copy various parts of a record); it should have a built-in stroboscope so that you can easily check the speed of the turntable.

The pickup arm should be a high-quality unit; the stylus pressure should be adjustable with a weight, not with a spring.

The cartridge should have a good frequency response: preferably 30 to 15,000 cycles, ± 2 db. There are three basic types of cartridges: crystal, ceramic, magnetic; all can have good frequency response, but the output is different (crystal and ceramic cartridges have approximately the same output; magnetic cartridges have a far smaller output). Crystal cartridges are not recommended because they are too fragile. Ceramic cartridges can be connected directly to the phono input of the master tape recorder, but check that the output of the cartridge and the gain of the recorder are sufficient to give you a loud enough recording; if not, you should add a preamplifier. Magnetic cartridges cannot be connected directly to the phono input of the recorder; a special preamplifier must be used. With magnetic cartridges, be sure that no hum is picked up from the motor. Check that the motor and the preamplifier have separate switches (so that the turntable can be stopped without turning off the preamplifier; it is inconvenient when preparing a copy of a record and adding comments to have to wait for the tubes to warm up). As already stated on page 175, diamond styli are preferable.

An equalizer may be necessary for old records and some European records (European records do not use the same equalization curve as American records and an equalizer is sometimes needed so that sounds such as /s/ or /ʃ/ will be reproduced satisfactorily.

The height of the turntable should be adjustable so that it can be made perfectly level.

It would be an error to buy a stereophonic unit; as of today (early 1960), these units are far from giving completely satisfactory results and it is doubtful that we shall ever use stereophonic language discs.

4. Radio: a tuner (radio without an amplifier-speaker) is sufficient. It should be able to receive broadcasts in AM (amplitude modulation), FM (frequency modulation), and SW (shortwaves). Such a tuner needs at least two antennas; they should be directed antennas and of the proper lengths for the stations you want to receive. The antenna wires should be brought to the control room through the ceiling (not with wires dangling outside and brought in through the window).

5. Duplicator: each duplicating machine (tape or disc) should have a separate playback circuit so that the recording can be monitored from the tape or disc and compared for quality with the master (the outputs from the duplicating units are fed into an independent amplifier-speaker; a multiple switch allows the technician to listen to any of the copies being made). The quality of the duplicator must be such that it is impossible to tell a copy from the master (a good way to check the quality of a duplicator is to make several generations of copies: the master is copied; this first copy is used to make a second copy; this second copy is used to make a third one, etc.; the quality should remain acceptable at least until the tenth generation).

If tape duplicators are used, three speeds should be available: 15, $7\frac{1}{2}$, $3\frac{3}{4}$ ips; this will allow for the preparation of tape copies playing back at any of these speeds and will also allow for tape copying at double speed. Whether the machines should be full-track or half-track units depends on the machines used by the students (it is preferable to have full-track duplicators if the students' machines are full-track).

All the connections between the master machine, the turntable, the radio tuner, the multiple jack boxes, the amplifiers, speakers, and the duplicating units should be strong so that perfect contact and grounding will be maintained at all times. All these machines should be installed in close proximity so that the patch cords will be as short as possible; for maximum space economy, the machines should be mounted on racks whenever possible (the installation shown in picture 53 does not use racks; the various machines take a great deal of space).

6. Accessories:

a. Timer: an automatic timing control may be useful to start and stop the equipment at predetermined hours. Keep in mind that your machines are then left in "Record" position and this may create flats on the rubber wheels and rollers.

b. Bulk eraser: it is preferable to have a tank-type eraser.

c. Head demagnetizer: be careful that the unit you buy cannot scratch the delicate pole pieces on the heads of the recorder.

The other accessories have been described on pages 171-172.

7. Miscellaneous: There should be as many cabinets as possible. There should be special steel cabinets for the master tapes and the visual materials. The dimensions of these cabinets should be carefully studied so that no space will be wasted.

The heat and the humidity should be carefully controlled (the equipment can rust); the heating units should not be installed near the equipment or the cabinets.

There should be enough counter work areas so that machines can be brought in for repairs; these counters should have a formica top. The bulk eraser should be installed away from the tapes and the equipment. There should be power outlets all around the room. There should be an audio conduit between the console and the control room (in case it is needed for monitoring the console or the booths, or any other possible future use). There should be an audio line connected to the movie projector so that sound tracks can be copied easily.

SPECIFICATIONS FOR THE CONSOLE

1. You should decide on the number of channels that will be necessary in your installation; this depends on the maximum number of groups or individuals that would be listening to separate tapes from the console at a given time. You should have one extra channel to be used in case one of the others gets out of order.

2. Only playback units should be used (you do not want to run the risk of erasing your masters).

3. Each playback unit should have a volume control, a tone control, an equalizer for $7\frac{1}{2}$ and $3\frac{3}{4}$ ips operation (whenever possible, this equalizer should be incorporated in the speed change lever), a VU meter so that you will be able to adjust the sound and transmit it to the students without distortion (during the rewind and fast forward functions, the tape should be pulled away from the playback head or the volume should be turned down to its minimum so that the needle on the VU meter will not break).

4. In addition to the tape playback channels already mentioned, there should be an audio line going from a jack at the console to the individual booths or rooms (this makes it possible to transmit a phonograph record, a radio program, or the sound track of a film to the individual booths or rooms).

5. An audio line from the movie projector ends in a jack at the console (in order to transmit the sound track to the students, you connect this jack to the jack described in (4) above).

6. The channel selectors can be in the booths or at the console. When they are in the booths, the students are responsible for selecting the channel themselves; there are two drawbacks:

a. The installation is more expensive since one wire per channel must be brought to each booth or room.

b. The students may "play" with these selectors (switching from one channel to another).

When the selectors are at the console, the teacher or the technician has to adjust the selectors for each student.

In some installations, the school tries to economize on the wiring by connecting channel one to a given number of booths, channel two to another set of booths, etc. (this means that, if you want to listen to channel one, you must sit in a particular section of the laboratory). Money can also be saved by using a booth as a channel playback; the student sitting in that booth works with the master tape (or a copy of the master tape) as it is transmitted to the other booths.

7. The counter should be made of formica.

8. The monitor panel is explained on page 215.

COMMON SPECIFICATIONS FOR BOOTH AND ROOM LABORATORIES

1. The minimum number of booths and rooms can be obtained with the following formula:

$$\frac{\text{Average number of hours each student spends in the laboratory per week} \times \text{Number of students using the laboratory}}{\text{Number of hours the laboratory is open per week}}$$

This formula gives you the <u>minimum</u> number of booths; it supposes that every booth is occupied

every minute the laboratory is open. Depending on the scheduling difficulties and the number of conflicts, this number should be correspondingly increased.

2. Air conditioning is necessary because of:

   a. body heat produced by the students
   b. heat generated by all the motors and electronic equipment
   c. poor air circulation (either because of the booth partitions or the small size of the individual rooms).

The air conditioning system should be as noiseless as possible.

3. Since the equipment may rust during the vacations, the humidity should be controlled.

4. The windows should be thoroughly calked so that no dust can enter.

5. Noise should be avoided as follows:

   a. all doors should close quietly and automatically
   b. the laboratory should be installed in a quiet building
   c. double windows are preferable (especially in areas where street noise is high).

6. The lights should be incandescent rather than fluorescent since fluorescent lights interfere with radio reception in the control room; they also tend to become noisy and may interfere with the students' work.

7. There should be a double power outlet at each booth or in each room; the console should have all the necessary power outlets; additional outlets should be provided along the baseboard (for use with a projector, for example). The circuits should have a reasonable safety margin so that the fuses will not blow if two or three projectors or recorders are temporarily added. The wiring should preferably be in permanent and concealed (under the floor) ducts; they should be separate from the audio wiring ducts. Be careful that no water can enter the ducts (in any case, it is safer to use waterproof cables). All the wiring connections should be of the plug type.

8. A master switch is absolutely necessary to prevent a fire hazard at night (for example, a stalled motor on a machine accidentally left turned on might start burning).

9. The following audio wiring is necessary: between the console and the booths (or individual rooms), between the console and the control room, between the movie projector and the console, between the movie projector and the control room, between the movie projector and the loud-speaker(s) near the screen. All the connections should be of the plug type for easy removal and changes (there should be no soldered connections).

This audio wiring requires special cables; great care should be taken to avoid crosstalk between the booths (for example, booth three can hear what is happening in booth ten), between the channels (for example, you hear channel three in the background as you listen to channel four), and on the intercom. This audio installation is far more difficult than it appears and it should be entrusted only to qualified personnel. Extra wiring should be laid just in case more channels are needed in the future or in case some wires go wrong. This audio wiring should be installed in permanent and concealed (under the floor) ducts separate from the power wiring ducts; these ducts should be protected from water infiltration and for further safety all the audio cables should be waterproof.

It is not necessary to wire the classrooms to the laboratory; it is easier to have a machine in the classroom.

10. There should be plenty of shelves for the tape copies to be used by the students. Separate shelves should be available where the students can leave their own tapes for correction by the instructors.

These shelves should be built as shown in figure 56 so that there will not be too many reels on top of one another. It is preferable not to use the tape boxes on the shelves because they become torn and mixed up. If there is any danger of the tapes' being stolen, they should be kept in the control room under the supervision of the assistants. (similar shelves can be used for magnetic discs).

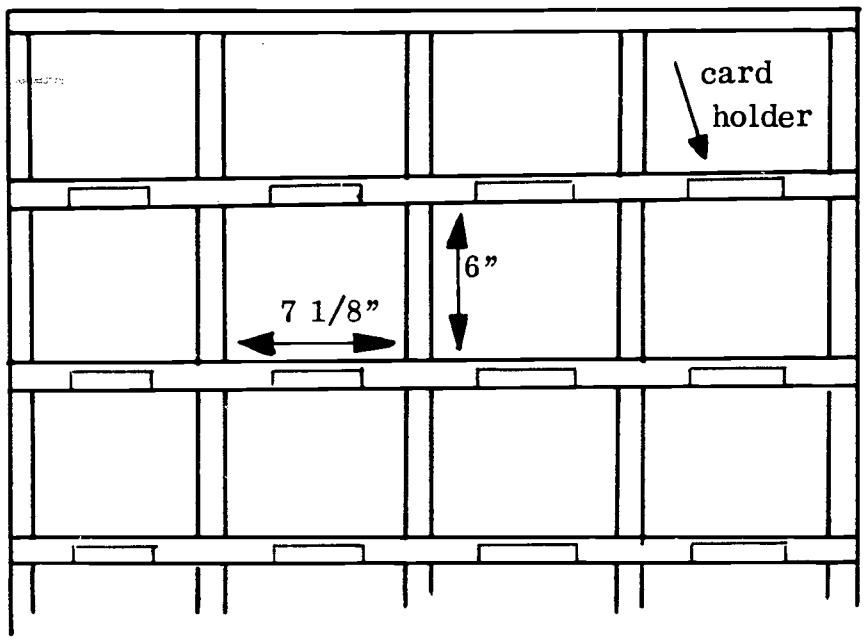


Figure 56.

11. A sign-up board (page 163) and a tack-board for posting notices are necessary.

12. Lockers and clothes pegs should be installed in the hall; the students should not bring their books or coats in the laboratory (they often forget them and have to come back — thus disturbing the students who have replaced them in the booths or rooms).

13. There should be some means of reminding the students of the beginning and end of class periods; this can be done as follows:

a. Use a bell: this bell would have to be quite loud to be heard by the students if they are wearing headphones or if they are in individual rooms.

b. Cut off the lights for five seconds: this should affect only the lights, not the machines (cutting off the power on the machines would lead to broken or tangled tapes). This, of course, should be automatic.

c. Use a red light: in a booth laboratory, using a big flashing red light is simpler.

The laboratory should also have a clock.

14. Signs such as "No smoking", "Silence", "Quiet", "No visitors" should be designed (size, color of letters, etc.) and placed so that they will be as effective as possible.

Individual audio-visual rooms

They should be large enough to accommodate three or four students; they should have a table large enough for the slide and filmstrip projector and a tape recorder (or magnetic disc unit); they should have the necessary power outlets, black Venetian blinds, and chairs. Since the image is small, a mat screen is preferable (the details are not as sharp with a beaded screen when the image is small).

SPECIFICATIONS FOR BOOTH INSTALLATIONS

A. General specifications

1. The whole installation should be "modular" (the term "modular", as used by the language laboratory companies, means that the system is made of identical units and that more can be added without difficulty whenever necessary). It should be of the plug-in type (no soldering) so that parts can be instantly unplugged and replaced.

2. The reverberation in the room should be controlled with proper sound-absorbing materials (drapes, acoustic tiles, porous materials, special paints, fiberglas or celotex panels). Since the size of

the room affects the amount and types of sound-absorbing materials to be used, the advice of a qualified architect is necessary. The floor should be made of rubber or cork tiles.

3. All the students should be able to see the console and the screen without any difficulty. A slanting floor is best; if this cannot be done, the console can be placed on a platform and the screen raised accordingly (this, of course, requires that you plan for a fairly high ceiling).

4. A blackboard is not recommended because of the dust it creates (in any case, it should never be close to the machines). An overhead projector is preferable.

B. Specifications for the booths

1. Booths can be built individually or built together in groups of 2, 3, 4, etc. (ganged booths). Individual booths placed side by side are preferable if the installation is temporary (with individual booths, it is easier to rearrange the laboratory); ganged booths are less expensive.

2. Enough space should be left between the rows so that it is possible to move easily; the following arrangements are possible:

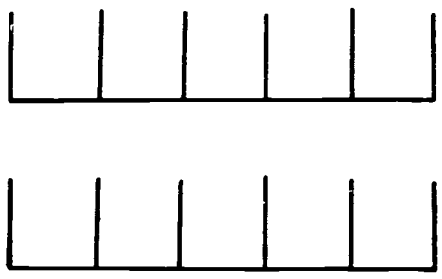


Figure 57. Straight rows.

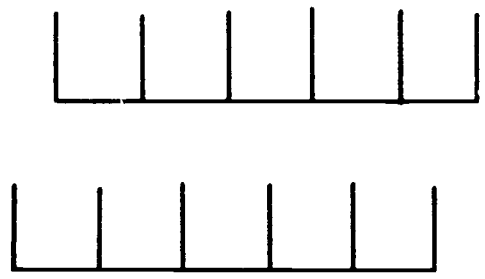


Figure 58. Staggered rows.

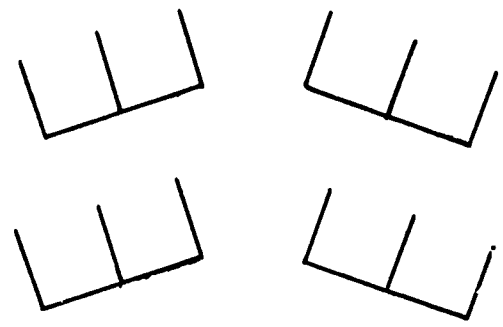


Figure 59. Chevron installation.

3. Figures 60, 61, and 62 show three current types of booths. In figure 60, the sides of the booth cannot be moved and the booth cannot be converted into a regular desk (one advantage is that the booth can be made very sturdy). In figure 61, the booth is of the "dashboard" type; the equipment and the controls are mounted on a slanted front panel; this gives the student a large work area for his text while working with the equipment; this type of booth is equally convenient for right-handed and left-handed students; if the equipment is not used, it can be protected by bringing down a hinged door (which can be locked). The booth shown in figure 62 can be transformed into a desk by bringing down the front lid; other types have lateral sides which fold over the equipment.

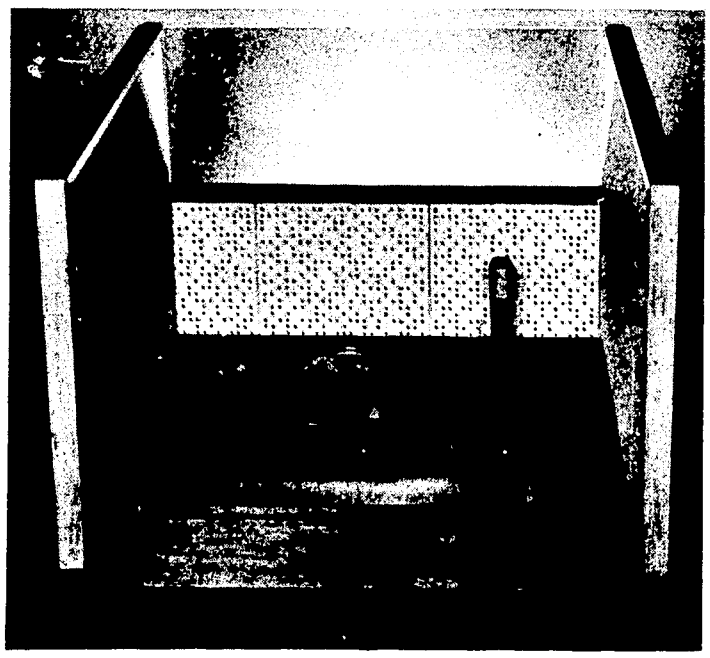


Figure 60.

Figure 61.

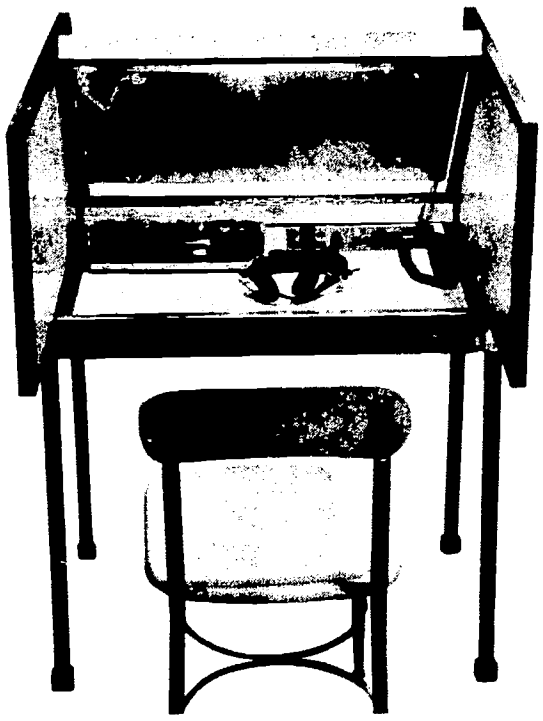


Figure 62.

4. At the present state of our knowledge of acoustics, the only way to have total soundproofing is to have totally enclosed rooms (as long as there is an open space the sound is propagated). The terms "soundproof" or "semisoundproof", when applied to booths, are misnomers. The best that can be said is that the booths are acoustically treated, lined with acoustical material, or sound-treated.

Lowering the noise level can be done as follows:

a. Have higher partitions; have wider booths (the students are farther apart); have the side partitions extend farther back. If the booth is wide enough, a back partition (with a door) can be added.

b. Line the partitions with sound-absorbing material; this can be:

-acoustic tiles: since they are fragile, they should be easily removable for quick replacement; they should be of a rather dark color and should be predecorated with a design of line patterns (these two requirements are to discourage the students from writing on them).

-perforated wood over spun glass or rock wool; perforated metal can also be used, but it has to be installed very carefully so that it will not vibrate.

For best results, the holes in the panels or tiles should be random-drilled and they should cover as large an area of the panel or tile as possible.

5. The dimensions of the booth depend partly on the amount of available space. Do not try to crowd too many booths in a small area; if you do, the noise problems will be greatly increased, the ventilation problems will be more difficult to solve, and the movement of the faculty and students between the rows will be difficult. The side partitions should extend back as far as possible (two or three feet); they should reach the floor to provide for more privacy and more strength. If a foot rest is provided, it should be high enough not to interfere with floor cleaning operations.

6. Steel booths may be easier to set up, but -on the whole- booths made of wood are preferable; they can be as strong as steel booths (if the proper type of lumber is used); they are better than steel booths for absorbing the acoustical energy produced by the vibrations of the motors and for muffling the kicks and blows of the students.

7. Tape equipment can be mounted obliquely, horizontally, or under the counter.

a. Slanted equipment provides for more work space on the counter, but it has some drawbacks:

-your choice of machines is limited (some machines cannot operate in a slanted position).
-even machines which can operate in a slanted position usually wear out faster when they are operated in a slanted position than when they are in a horizontal position (and the mechanisms tend to be more noisy).
-the reels tend to be more noisy, especially in the fast forward or rewind speeds; if the reels are not held by rubber grommets, they may fall off the recorder spindles (these grommets can be lost easily); usually, the tape is more difficult to thread (this, of course, does not apply to hub-to-hub cartridges).

b. When the equipment is used in the horizontal position, it can be built in with flush mounting

or it can simply be placed on the counter.

-it is cheaper to place the equipment on the counter; repairs and replacement are easier to make. The installation, however, does not look as neat as with built-in equipment (wires may be exposed; the machines may be placed differently in each booth); also, the machines may be dropped. Placing the equipment on the counters may be preferable in a temporary installation.

-if the machines are built-in, the following suggestions may be useful:

--each booth should have its own removable counter so that in case of a change in equipment a new counter can be easily made without having to dismantle the whole row of booths.
--there should be a strong mesh screen or a perforated wood panel under the machines to insure full protection against injury from the fan blades (without preventing ventilation).
--the counter tops should be made of formica.

c. When the equipment is mounted under the counter, only the following items are left on the counter: microphone, headphones, volume control, listen-record switch, tape control lever. Thus, the student retains full control of the tape (he can start, stop, rewind, etc.), but he cannot mishandle the tape or the machine itself. In such an installation, hub-to-hub cartridges have to be used (the laboratory assistant slips the cartridge in place before the student starts working).

8. The following can be done to enable the students to see the teacher and the screen:

a. Have the front panel completely or partly transparent; the transparent material should be made of safety glass or plastic (choose a plastic that will not get yellow with age). Be sure that rubber strips prevent the glass or plastic from vibrating. When deciding on the width of the transparent panel, keep in mind that the more glass or plastic you use, the more you reduce the sound-absorbency of the booths.

b. Use a front panel low enough so that the students can see over it.

c. Have a sliding front panel (experience indicates that such panels usually stick or bind).

9. Place the equipment so that it can be used easily by right-handed and left-handed students.

C. Specifications for the chairs

The chairs have to be comfortable; a back is needed. Strong wooden chairs (and carefully built so that they will not creak) are preferable; metal chairs are too noisy. These chairs should have no arms; the legs should be placed at a special angle to prevent tilting; they should have special tips to insure silent sliding and prevent damage to the floor. A natural finish is preferable (painted chairs look untidy when the paint begins to peel off).

It is also possible to use fixed swivel chairs.

D. Physical specifications for the presentation of audio-visual materials in the laboratory

1. The booths must be placed so that every student can see a clear image. A beaded screen gives a brighter image than a mat screen, but the maximum viewing angle for an undistorted image is about 60°. If the angle is more than 60°, a mat screen is preferable.

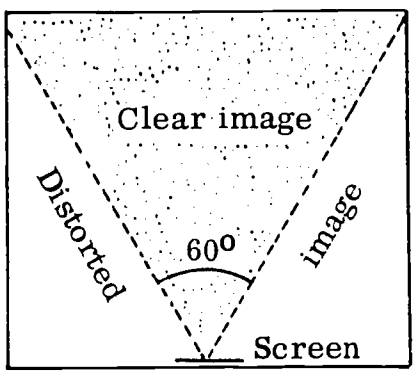


Figure 63.

2. Every student should be able to see the screen without obstructions. A slanting floor is best; if this is not possible, the screen should be raised (but not so high that the students have to strain their necks). Having staggered rows of booths or a chevron installation is also useful.

3. It is preferable to have a fixed roll-down screen that is tear-resistant and rolls up smoothly (without jerking or stopping halfway up).

4. A projection booth is necessary for the following reasons:

a. The noise of the mechanism may interfere with the comprehension of the sound.
b. The projector should be protected while not in use.

The booth should have the following features:

a. The dimensions should be about six feet by six feet.
b. It should have two small windows (with glass): one for the beam of the projector and the other so that the projectionist can see the image and focus it.
c. It should have the necessary power outlets and a light independent from the lights in the laboratory. There should also be a switch so that the lights in the laboratory can be controlled from the projection booth.
d. The projector stand should be high enough so that the beam will go over the students' heads (take this into consideration when you decide on the height of the ceiling; keep also in mind that the height of projectors varies considerably). The floor should be raised so that the projector can be operated easily.
e. Concealed audio wiring should go from the projector to the special jack on the console (for transmission to the booths), to the loud-speaker(s) near the screen, and to the control room (so that the sound track can be copied on tape). There should be a monitor loud-speaker in the booth so that the projectionist can follow the sound track.

Complete darkening of the laboratory should be possible either with drapes or black Venetian blinds.

SPECIFICATIONS FOR ROOM INSTALLATIONS

1. Each individual room should have these minimum dimensions: four feet by six feet. A few rooms should be larger so that two or three people can be accommodated.

2. The acoustical separation between the rooms should be sufficient to avoid interference when the machines are played with normal loud-speaker volume.

3. The door should be a sound-insulated door; it should have a glass panel for supervision (also to check whether the room is occupied without having to open the door and disturb the student).

4. There should be an audio line connected to the console; this audio line ends in a small speaker installed near the machine in each individual room; this speaker should have a volume control; it is preferable to have the channel selector in the individual rooms rather than at the console; this speaker should also have an output jack (in case copies have to be made).

5. There should be a double power outlet and a light (the lights and the power outlets should be on different circuits so that it is possible to turn the lights off without stopping the machines).

SPECIFICATIONS FOR LABORATORY EQUIPMENT TO BE USED BY THE STUDENTS

A. Specifications for a tape recorder mechanism to be used by students

The tape recorder is basically the same whether you have a conventional reel-to-reel system or a reel-to-reel self-threading cartridge (also called: hub-to-hub self-threading cartridge).

1. The machine should be rugged; it should be made of cast (not stamped) metal; it should be assembled with the greatest of care. It should be able to give about 5000 hours of use without repairs. It should be lubricated for life (lubricating a tape recorder is difficult; the tendency is to use too much oil, which then gets on the rubber belts or wheels and causes them to slip or stop).

2. The machine should be simple to thread; dropping the tape in a slot should be all that is necessary; it should be foolproof (the tape should not be able to go behind or under the capstan or pressure roller). A self-threading reel-to-reel cartridge is simpler to use.

3. The tape transport functions can be operated with a knob, a lever, or push buttons. A knob is rarely satisfactory; present push button mechanisms are delicate and it is wiser to refrain from buying them; a dependable and rugged push button machine can probably be built, but its high cost is not warranted since a lever presents, at much lower cost, the maximum guarantee of safe and dependable operation. The operation of the lever should be noiseless.

All the tape transport functions should be on only one lever (some machines use two levers: one for Record/Play, the other for Fast Forward/Rewind). For best results, this lever should operate mechanically, not electrically (there should be no solenoids).

4. There should be at least four tape transport functions:

a. Play/Record: to be used when a tape is played back or recorded. In order to avoid accidental erasure of the tape, the student should not be able to record unless he presses on a special safety device at the same time he moves the lever (in other words, the lever and the record safety device should be mechanically interlocked and should have to be operated simultaneously).

b. Stop: in this position, the tape is stopped and the brakes are applied.

c. Fast forward: the tape is shifted to the take-up reel at high speed.

d. Rewind: the tape is returned to the supply reel at high speed.

The student will often want to listen again to the last few words he has just heard. Using the rewind function for that purpose is not practical since the tape may go too far; therefore, it is desirable to have :

-a fifth position (marked: Cue) on the tape transport lever where the tape would be stopped, but the brakes would not be applied. It would be possible to rewind the tape by hand and it would be audible (this would also be useful for editing the tape).

or -a backspacing lever or button which would automatically back up the tape five or six inches (this would be the only possibility with a self-threading reel-to-reel machine since in that case the tape cannot be rewound by hand).

It is also possible to manufacture a machine which could -when desired- keep repeating the previous three or four seconds of the tape; this would be done with an endless loop of tape inside the machine (see footnote on page 233).

5. There should be a pause bar or lever (also called editing knob or editing key) allowing the tape to be stopped and started instantaneously. This pause bar should be able to perform over one million movements without breaking down. It should be mechanical rather than electrical; it should be noiseless; a hand-controlled lever is usually sturdier than a foot-controlled pedal. This lever should require practically no physical effort and should be so installed that the hand will not become cramped.

6. Noise and vibrations should be kept to a minimum in all tape transport functions: Stop, Play, Rewind, Fast Forward (some machines make more noise in one position than in another).

7. Passing from one position to another should require little physical effort[1] and should be as noiseless as possible. It should be positive (the tape transport lever should not be able to stay in a halfway position). The student should be able to go from one position to any other without having to go through the "Stop" position every time.

8. Since the functions most frequently used by the students are Record/Play, Stop, Rewind, it seems that the best arrangement is the following:

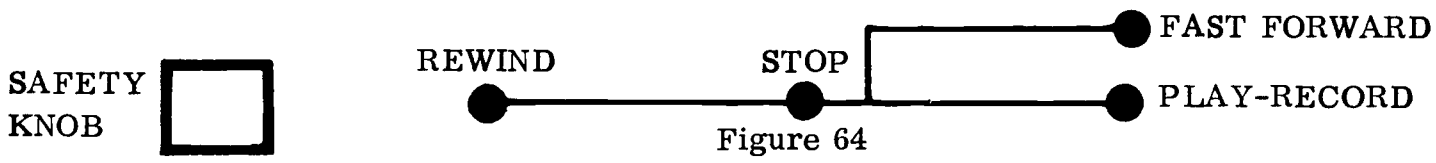


Figure 64

9. Whether one or several motors are used and whether they are induction or hysteresis synchronous motors is immaterial as long as the tape mechanism functions adequately.

10. The motor or motors should be able to work for eight consecutive hours without getting unduly hot; there should be a good ventilation system.

11. The motor or motors should be strong enough to start at whatever position the tape mechanism is left in (Play, Stop, Rewind, Fast Forward). On some current equipment, the motor stalls when turned on while the mechanism is in Rewind or Fast Forward; this creates a danger of fire because in such a case the motor gets very hot and may start to burn.

12. The speed should be correct within about 2%; for example, a 6-minute tape should not play more than 6 minutes 6 seconds or less than 5 minutes 54 seconds. The speed should be constant; wow (slow variations in tape speed causing similar variations in volume and pitch) and flutter (very short, rapid variations in tape speed) should be under 0.2%. A built-in stroboscope would be useful.

13. At present, two speeds are recommended: $7\frac{1}{2}$ and $3\frac{3}{4}$ ips. At 1 7/8 ips, the frequency response on most machines is not yet good enough for language work (but improvements are being made).

14. The speed change lever should work easily and should positively be either at the $7\frac{1}{2}$ or $3\frac{3}{4}$ position (it should not be able to stay in an intermediate position). Whether the speed change is made with a belt or idler wheel changing position on the drive shaft of a single-speed motor or with a two-speed motor is immaterial as long as the system is properly adjusted and remains adjusted. Changing the speed by adding a sleeve on the capstan is not recommended on language laboratory machines.

15. All levers or knobs should be made of strong metal; whenever rotating knobs are used, there should be a cam and pin arrangement to limit the total angle through which the knob can rotate (figure 65).

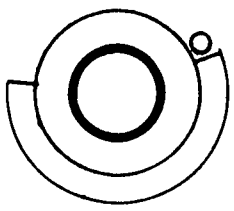


Figure 65.

16. All tension adjustments should be carefully made at the factory. You should check that:

a. the pressure of the capstan idler (pressure roller) against the capstan is strong and that there cannot be any tape slippage.

b. the tape, whatever the student does, is never submitted to a tension strong enough to break or stretch it.

c. the tape does not spill or make a loop when the machine is shifted from any tape transport position to another.

d. the tape stops instantly when passing from Play to Stop and stops within one second

[1] Levers which require a great physical effort give the students the bad habit of exercising force on all parts of the machine --even those parts which cannot resist force (switches, etc.).

when passing from Fast Forward or Rewind to Stop.

e. the Fast Forward and Rewind functions are not too brutal at the start and the tape is not wound too tightly on the reel (if the tape is tightly wound, an extreme change of temperature or humidity can cause the tape to stretch or break; in some cases, even the reel may break). On the other hand, these functions should not be too slow (60 seconds is about right to rewind a 1200-foot reel of tape).

f. the tape is motionless when the mechanism is in the Stop position (on some machines, the tape begins to inch forward).

g. the reel spindles (not loaded with tape) remain immobile when the motor is turned on and the tape transport knob is in the Stop position.

17. All these tape tension adjustments should be permanently made (on most current machines, these adjustments vary after a few weeks and the tape begins to spill).

18. With proper tape tension, pressure pads should not be necessary.

19. All indications (Fast Forward, Stop, Play, Rewind) should be written in indelible material or should be protected with a plastic cover so that they will not wear off. These indications should be written out completely; abbreviations such as S, FF, RW are not clear to the new students using the laboratory.

20. The spindles should be carefully adjusted so that the reels will sit evenly and will revolve without rubbing on the recorder.

21. Automatic tape lifters preventing the tape from rubbing against the heads during Rewind and Fast Forward are recommended; but note that with tape lifters you will not be able to scan the tape for quick location of a passage (since the tape is not audible in Fast Forward or Rewind functions). Note also that audible Rewind and Fast Forward can break the needle of the VU meter unless the volume is turned down (this, of course, applies only to the machines where the VU meter operates in these positions).

22. A device for automatic shut-off at the end of the tape is not recommended for use in a laboratory. Such a device is usually of delicate operation and may be a source of trouble (in any case, it is not needed in normal laboratory use).

23. Footage indicators (also called revolution counters, digital counters, selection finders, tape index counters, numerical tape counters) are not necessary for language laboratory work. It is easier to put the daily or weekly assignments on individual reels than to use the footage indicator to locate assignments loaded on a single reel (however, see line 15 on page 233).

24. The machine should not present the slightest possibility of physical injury to the operator; the motor pulleys and the fan should be out of reach, and there should be no cutting edges on the machine.

25. The machine should be easily adaptable to the 50-cycle current found in some parts of the world (France, Germany, etc.). The easiest method is to install a sleeve on the capstan.

26. The motor should have its own power switch so that the amplifier can be used without having to start the motor.

27. The machine should have an hour meter to show the cumulative running time and facilitate preventive maintenance.

B. Specifications for the mechanism of a magnetic disc recorder

1. The speed of the groove in relation to the head should be constant (the amount of groove that the head travels in a second remains the same). This, of course, means that the number of revolutions per second is variable; it increases as the head gets nearer the center of the disc. This type of operation insures that the quality does not deteriorate as it does on machines which have a constant number of

revolutions per minute. Wow and flutter should be under 0.3%. The motor should be silent and should remain relatively cool.

2. There should be an instant start-stop bar and a backspacer.

In addition to these two requirements which are already available on some units, the following features are essential for laboratory work:

3. There should be an indexing device similar to the tabulator on a typewriter. When the student plays the disc for the first time, he presses on the indexer whenever he makes an error. When the student plays the disc for the second time, the indexer moves the arm and plays only the sentences which were not answered correctly during the first playing of the disc.

4. The diameter of the disc should be large enough so that at least six minutes of speech can be recorded with good frequency response (up to 8,000 cycles).

C. Specifications for the electronic section

Amplifiers are described by their frequency response (for example: 30 to 10,000 cycles at $3\frac{3}{4}$ ips), their signal-to-noise ratio (for example: 55 decibels at $3\frac{3}{4}$ ips), their power output (for example: three watts), their amount of distortion (for example: less than 2%), their number of output and input jacks (phono/radio input, microphone input, external speaker output, external amplifier output, etc.), their input and output impedances, the total gain from each input to the output (for example: 100 decibels for the tape input, 70 decibels for the microphone input).

When reading such descriptions, keep in mind that some manufacturers publish exaggerated figures and that others publish figures which were obtained with a very carefully built pilot machine (the mass-produced machines rarely meet these first specifications).

Electronic specifications for a monaural machine to be used by students:

1. The minimum frequency response should be 50 to 8,000 cycles (plus or minus two decibels) at $3\frac{3}{4}$ ips and 50 to 12,000 cycles (plus or minus two decibels) at $7\frac{1}{2}$ ips.

Plus or minus two decibels indicates that you allow a maximum deviation of two decibels from the perfect (flat) response (a sound system has a flat response when it reproduces all the frequencies in their proper proportions).

2. The minimum signal-to-noise ratio should be 45 decibels at $3\frac{3}{4}$ ips and 50 decibels at $7\frac{1}{2}$ ips.

3. The distortion should be less than 2%.

4. The amplifier should use the best available components so that a minimum of 10,000 hours of use can be obtained without loss of quality and without replacement of parts (except for tubes). Transistors[1] should be used whenever the quality they provide is superior to that of vacuum tubes; whenever tubes have to be used, they should be Telefunken, Amperex, or Mullard tubes (these European tubes are quieter and better built than present American tubes).

The amplifier should be designed conservatively so that the components will not be using their full ratings; components which are not pushed to their maximum do not become hot and last much longer. If the amplifier is designed conservatively, it is preferable to leave it turned on all day long rather than turn it off every time a student finishes his work (turning an amplifier on and off constantly is bad for the

[1] Transistors are small and light electronic devices which can replace vacuum tubes. They are rugged and durable; they use much less power than tubes and produce a negligible amount of heat in our types of low-power installations.

tubes because they receive sudden surges of current). In fact, with such amplifiers it might be preferable not to have On-Off switches; the amplifiers would be turned on and off with the laboratory master switch.

5. The heads should be perfectly aligned as the machine leaves the factory. These heads should be fastened tightly so that shocks or rough handling will not affect the head alignment. Any necessary head adjustment should be easy to make and the screws should be easily accessible.

6. The machine should conform to the NARTB equalization curve which is now standard in the tape recorder industry; it will then be able to play back tapes made on other machines.

7. The erase head should remove completely any previous recording and the residual noise should not be higher than on new unrecorded tape. This particular requirement seems difficult to meet; as of February 1960, even high-quality professional equipment added a very slight amount of noise when erasing a tape[1]. The configuration of the erase head should be such that it can erase a tape no matter what make of machine it was recorded on.

8. The volume indicator should preferably be a VU meter; a magic eye is acceptable; a neon light indicator is not acceptable because it is not accurate enough.

9. A red warning light should glow whenever the machine is in Record position.

10. The machine should have a phono/radio input separate from the microphone input. A built-in mixer is not necessary.

11. It should be possible to monitor either with the loud-speaker or with headphones; when monitoring with headphones, the loud-speaker should be automatically disconnected. An On-Off switch should be provided for the monitor function.

12. All machines belonging to the same model should be identical and should meet the same electronic specifications within a very close tolerance. It is also very important that all knobs and switches be calibrated alike on all machines (it is confusing for a student to find that machine A will record his voice satisfactorily with the volume control at position 5 while on machine B he must go as high as 9).

13. The function of every switch and knob should be clearly indicated in indelible letters; no abbreviation should be used (SPKR is meaningless to most students). Clear arrows should indicate which way the maximum is. Stop-pins should prevent the students from turning the switches the wrong way or going too far.

14. To avoid all possibilities of electric shocks, no AC (alternating current) or DC (direct current) potentials should be accessible to the student. All apparent parts on the machine should be grounded (maintained at ground potential); for utmost safety, your machine should have a three-conductor line cord and a grounding-type plug.

The following specifications, although desirable, are not as important as the ones above:

15. Automatic head demagnetization. Under certain conditions, the heads may become magnetized. A magnetized head tends to add hiss to the tape and also to erase the high frequencies. For best results, heads should be demagnetized occasionally. An automatic head demagnetizer built in the machine would save time.

16. A pilot light indicating that the amplifier is on would be useful.

[1] To check this, take a short piece of high-quality raw (unrecorded new) tape. Play half of it through your machine; then, put the machine in record position with the volume control at its minimum and no lines connected into the input jacks. Rewind and play your tape to compare the first half (raw tape) and the second half (tape submitted to erasure by machine).

17. Having input and output jacks of different diameters would stop the students from connecting their headphones, microphones, or patch cords into the wrong jacks.

The machine described above would be ideal for use in a laboratory made up of separate rooms. If the machine were to be used in a booth, the loud-speaker would not be needed.

Electronic specifications for a language laboratory dual-channel machine:

Language laboratory dual-channel machines should meet the same electronic specifications as those described for a monaural machine in (1), (2), (3), (4), (5), (6), (7), (12), (13), (14), (15), (16) and (17). Here is a summary of the additional features which these machines should have:

1. The student listens only to the console:

   -the machine must have an independent volume control.
   -a tone control is not necessary.
   -whatever the installation, the microphone should not be live when the student is only listening. This can be avoided as follows:

      --install an On-Off switch on the preamplifier panel (but that would complicate it).
      --install an On-Off switch on the microphone itself.
      --pull the plug of the microphone out (this is bad for the cord; it also means that the jack of the microphone has to be exposed -it would be better to have it concealed).
      --use a push button microphone which records only when the button is pressed (but the student may forget to press, or he may press too late).
      --if you have a separate volume control for the microphone, you can turn it down to its minimum.

2. The student records the console on his tape and adds his voice:

   -the two voices (teacher's and student's) must be balanced; it can be done as follows:

      --the student has two volume controls (one for the teacher's voice and one for his voice); a recording level meter (preferably a VU meter) serves both inputs; the student adjusts each volume control so that both voices produce a normal deflection on the meter. This requires great care and can be done successfully by only a few students.
      --both volumes are preset and there is a recording level meter; the recording level for the teacher's voice is adjusted at the console by the laboratory technician; the student can adjust his voice by watching the level meter and changing the loudness of his voice and/or his distance from the microphone.
      --both volumes are preset and no recording level meter is provided; the proponents of this system say that the technician at the console can adjust the teacher's voice and that the student can adjust his own voice by matching the loudness of his voice in his headphones with the loudness of the teacher's voice. Experience shows that very few students can do this successfully.
      --an automatic volume control (AVC) would make sure that both levels (the teacher's voice and the student's voice) are equal, but it would introduce a difficulty: if the student speaks in a low voice away from the microphone, the AVC will automatically increase the recording level of his voice, but will at the same time increase the noise level and record loudly the various activities taking place in the laboratory.

   -there must be a volume control to listen to the playback of this recording.

3. The student listens only to the teacher's track:

-there must be a volume control for listening.
-there must be a switch (either at the console or in the booth) to disconnect the machine from the console.
-the microphone should be "Off".

4. The student listens to the teacher's track and records his voice on the other track:

-the machine must be disconnected from the console.
-the teacher's voice is copied onto the student's track and the voice of the student is added. Balancing the two voices can be done as follows:

--the student has two volume controls (one for the teacher's voice and one for his voice); a recording level meter (preferably a VU meter) serves both inputs; the student adjusts each volume control so that both voices produce a normal deflection on the meter. This requires great care and can be done successfully by only a few students.
--both volumes are preset and there is a recording level meter; the recording level for the teacher's voice cannot be adjusted (good quality thus depends on whether the laboratory technician recorded the copy with enough volume); the student can adjust his voice by watching the meter and changing the loudness of his voice and/or his distance from the microphone.
--both volumes are preset and no recording level meter is provided; the proponents of this system say that the level for the teacher's voice will be right if the technician prepared the copy with normal care and that the student can adjust his own voice by matching the loudness of his voice in his headphones with the loudness of the teacher's voice. Only very few students can do this successfully.
--an automatic volume control (AVC) (see explanations on preceding page).

-there must be a volume control to listen to the playback of this recording.

5. Rewind:

Accidental erasure should not be possible while the tape is being rewound; accidental erasure can be avoided as follows:

-the student switches the machine from "Record" to "Play" before rewinding; this is the least convenient method since students often forget to switch.
-the machine has tape lifters which pull the tape away from the heads while it is rewound.
-the Rewind/Fast Forward and Record/Play levers are mechanically interlocked and the erase and the bias circuits are automatically disconnected when the machine is changed to Rewind.

6. Group examination and correction technique (refer to pages 64 and 65):

-the circuit should be such that it is possible to listen to both the student's track and the console without having to keep switching; this wiring is necessary so that during the correction the student will be able to compare what he said with the correct answer coming from the console.

7. Special switch so that the language laboratory can be used as a duplicator (refer to pages 161 and 162):

-do you want a switch that will transfer the erase and recording circuits to the teacher's track? or do you want a switch that will transfer only the recording circuit? In this second case, blank tape will have to be used. In any case, the switch should also disconnect the microphone.

-do you want a machine with two separate erasing and recording circuits so that the student can record on his track at the same time he is copying the console on the teacher's track?
-do you want these switches to be at the console? visible in the booths? concealed under the booths?

Electronic specifications for magnetic disc recorders:

Magnetic disc recorders should meet the same electronic specifications as those described for a $3\frac{3}{4}$ ips monaural tape recorder in (1), (2), (3), (4), (8), (9), (10), (11), (12), (13), (14), (16), (17). The recording head should be fastened securely and the pole piece (needle) should be easy to replace. Magnetic disc recorders should be equipped with an erase head (using a permanent magnet is not satisfactory).

D. Specifications for the headphones

The frequency response of the headphones should be as good as that of the recorder; a good recorder coupled to poor headphones is a waste of money since the quality of a sound system cannot be better than the quality of the weakest link.

The headphones should be light, rugged, and easily adjustable so that they will be comfortable to wear.

There are two basic types of headphones: over-the-head type and under-the-chin type.

1. Over-the-head type: if you decide to buy this type of headphones, check that they are light, comfortable, and provide an airtight fit (or as airtight as possible).

The most common type of over-the-head headphones is shown in figure 66. Headphone cushions make these headphones more comfortable to wear, but they keep the headphones at about an inch from the ears and this results in a loss of volume and frequency response. These cushions can be made of foam rubber, molded rubber, or chamois skin. Foam rubber cushions may become sticky and increase the problem of cleanliness presented by all headphones (molded rubber and chamois skin cushions are somewhat easier to clean).

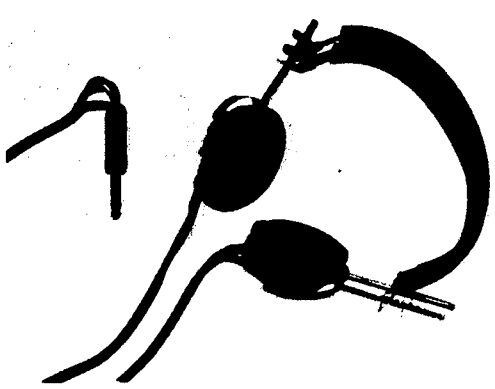


Figure 66.

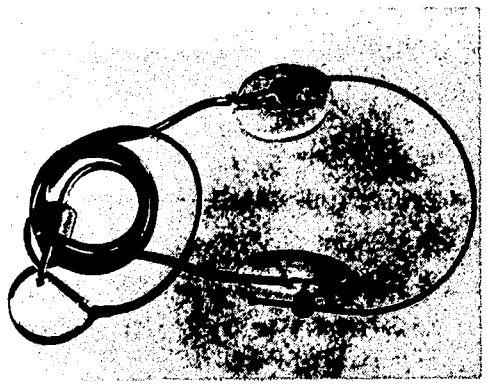


Figure 67.

Figure 67 illustrates a type of over-the-head headphones where the receiver is located in a special plug; the sound is piped through a hollow tubing to the clear plexiglass ear pieces (this type is sometimes referred to as a muff-type headset). These headphones are not recommended for language laboratory use because they are fragile and have an insufficient frequency response.

In some schools, girls object to wearing over-the-head headphones because of their hairdos.

2. Under-the-chin headphones: they are very light; since the foam rubber eartips are replaceable, they can be somewhat more sanitary than over-the-head headphones (but it is not practical to have each student own his own pair of eartips).

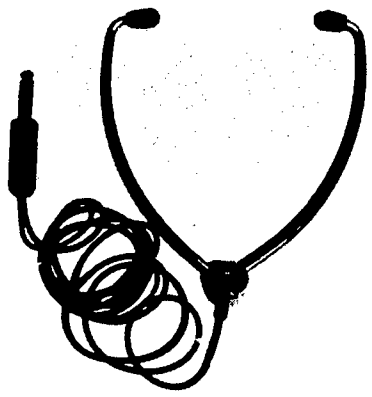


Figure 68.

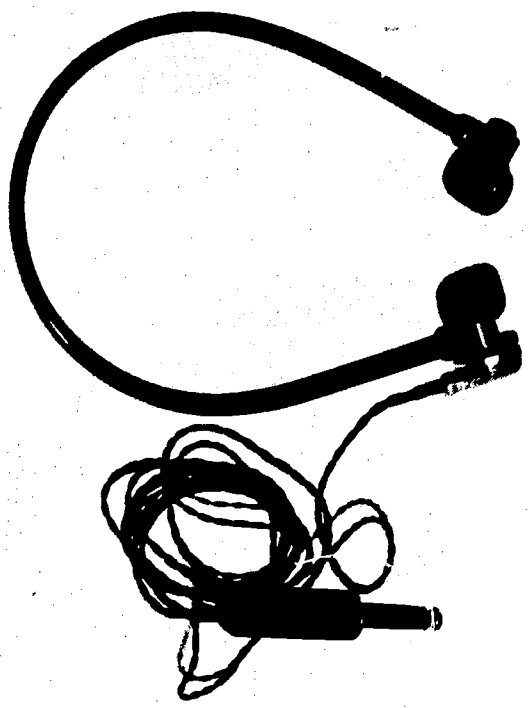


Figure 69.

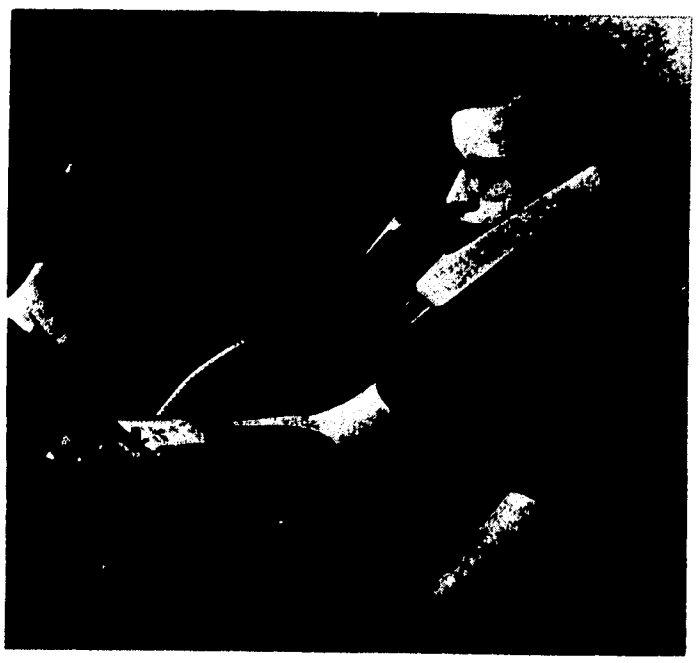


Figure 70.

The most common type of under-the-chin headphones is shown in figure 68. The type shown in figure 69 is so constructed that the sound reaches one ear one millisecond after the other; the manufacturer claims that this delay creates a "depth of sound" and improves audio comprehension (we assume that he means in one's native language; to our knowledge, the value of this time delay has not been tested with a foreign language).

Under-the-chin headphones are not recommended for language laboratory work because they are fragile and have an insufficient frequency response (generally not over 6,000 cycles).

Whatever type of headphones you use, a coil spiral cord is advisable; the wires should be strong; the braided cord cover should be slightly shorter than the wires to prevent them from being pulled from the plug.

High-impedance headphones are necessary if you want to connect several headphones to one machine.

There should be a special hook on one of the booth partitions for hanging the headphones.

A special device (figure 70), called the "Voice-Flector" uses a loud-speaker; the special shape of the "Flector" transmits the sound to the ears. The "Flector" does not touch the ears, but since all the students breathe directly on the device it is doubtful whether it is more sanitary than headphones.

E. Specifications for the microphone

1. It should be either a ceramic or dynamic microphone; it should be unidirectional and its sensitivity should be adjusted so that it will pick up only at close distances.

2. It can be installed in six ways:

a. It can be a flexible gooseneck installation. The main advantages of this installation are that the microphone cannot be dropped or stolen and that the student's hands are free. The drawbacks are:

-the metal gooseneck is often creaky when adjusted.

-the flange at the base of the gooseneck may break easily or become loose.

-unless some insulating material is provided, vibrations from the machine may travel up the gooseneck and be picked up by the microphone.

-the student often moves back and forth while recording; he varies his distance from the microphone and the recording level becomes very uneven.

b. In some installations, the gooseneck is replaced with a boom arm (a metal rod on a swivel base) affixed to the side partition of the booth; this is preferable to a gooseneck since it does not creak, can be moved entirely out of the way when not in use, and is less likely to break the flange.

c. The microphone can be hand-held; it should have a strong coil cord short enough so that if dropped it will not reach the floor. With a microphone held to the mouth, it is easier for the student to avoid changing his distance from the microphone. An "On-Off" push button on the microphone would make it possible for the student -while preparing an answer- not to be disturbed by the noise made by other students and picked up by the microphone. A drawback of the hand-held microphone is that it leaves only one hand free[1].

d. Some installations use a neck microphone (a microphone attached to a strap worn around the neck); this is also called a lavalier microphone. This type of microphone is not recommended because:

-the speaking angle is not good (the microphone is too far below the chin).
-it is so light that the student may start leaving the booth still wearing it and thus possibly break the cord and the microphone (even when a special elastic cord is used).

e. In some installations (figure 71), the microphone is attached to the headphones. It may be a good system for telephone operators who need to use the microphone and the headphones jointly for long periods of time, but it is not recommended for our students because:

-it is inconvenient to have to wear a microphone when you want only to listen.
-this combination must be adjusted before it can be worn (it is a waste of time to have to spend several minutes adjusting the position of the microphone and the headphones when you come to the laboratory for only thirty minutes).
-this combination is either too fragile or too heavy.

Figure 71.

f. The microphone can be on a desk stand; such a stand should have a wide base and should be fairly heavy. It is good to use such stands in individual rooms where the machines are on tables and where space is not critically limited, but using a stand in a booth is not recommended.

One drawback of installations (c) through (f) is that the microphone wires are exposed and may become tangled with the wires of the headphones; in installations (a) and (b), the wire is within the gooseneck or boom arm.

F. Inspection

Upon completion of the installation, you should secure the services of an independent technician and ask him to check that all the specifications have been adhered to. Then, run all the equipment ten hours a

[1] Contrary to what is said by some companies, there are times when the student does not have a hand free to hold the microphone:
a. when working with two machines simultaneously (see page 213).
b. when, for example, using this technique: record his voice, listen to correct answer, write list of errors while holding stop bar.

day for a week and have all the specifications checked again.

In addition to checking these specifications, the machine should be judged by ear; this ear test should be performed by several persons[1]: students as well as teachers. Each person records his voice and listens to it to determine how pleasing and how faithful he believes the recording to be. Each person should also listen to a series of nonsense words to determine whether sounds such as /s/, /ʃ/, /f/ are clearly reproduced by the machine (the person writes the words and then compares them with a master list); it is essential to use nonsense words since one tends to guess the meaning when the words are from one's native language.

SPECIFICATIONS FOR MAGNETIC TAPE AND REELS

1. Sound reproduction: the best way to evaluate the fidelity of various brands of magnetic tape is to make a recording on a professional machine and to switch from the input monitor to the tape monitor several times in order to compare what is fed into the machine with what is actually on the tape; ideally, there should be no difference.

2. Tape noise: the tape noise should be as low as possible. To compare the tape noise of various brands, proceed as follows: thread a reel of tape, turn the amplifier-speaker on and observe the noise; start the tape in playback position --the added noise is the tape noise.

3. Strength and durability: in theory, a magnetic tape recording can be played thousands of times without wear or loss of quality, but this requires high-quality tape which will not peel off.

It is clearly advisable to buy only brands of tape which are known for their high quality and dependability; keep away from the so-called "bargain" tapes.

If a reel of tape is listed for retail sale at $3.50, the following scale usually applies:

-the manufacturer sells to wholesale dealer for $1.68 (40-20% off list price)
-the wholesale dealer sells to retailer for $2.10 (40% off list price)
-the retailer sells to customer for $3.50

Schools are advised to buy all their tape requirements in a single yearly shipment; in this way, they can usually obtain a 40-10% discount from a wholesale dealer (40-10% off means 40% off $3.50 = $2.10, 10% off $2.10 = $1.89). If a 2% cash discount is also granted, the price comes to approximately $1.85.

Major brands (Scotch, Audiotape, etc.) have a good inspection system; you can be reasonably sure that the tape you buy has been carefully inspected and will perform well. The rejects (that is, the reels which do not measure up to their requirements: not wide enough, not splice free, oxide not thick enough, etc.) are marketed under a different name. For example, Scotch markets its rejects in a box with a design resembling the word "Vivid"; the term "Scotch" or "3 M" does not appear on the box or reel, but the same patent numbers are used on the box. Audiotape markets its rejects in a box marked "Full-Range". The cost of these rejects is lower than the cost of the brand name tapes; we are not in favor of buying rejects for the master tape recordings, but rejects of unbreakable tape (polyester or PVC) may be satisfactory for the students' copies.

[1] Having several persons perform the test is very important because what sounds good to one person may sound mediocre to another. Sound itself is an illusion (a mental interpretation of air vibrations) and recorded sound is an illusion of an illusion. Fifty years ago, some people thought that their phonograph records were so lifelike that they could not be told from the live voice; today, our ears demand a much higher fidelity, but the minimum degree of fidelity required by various persons is far from being uniform.

As previously explained, the supply reels should be clear transparent; the take-up reels should be colored. The laboratory should use only seven-inch reels; these reels should have large writing areas and well-rounded edges that cannot cut at high speed rewind or fast forward. A large amount of empty clear transparent seven-inch reels will have to be purchased (after the master is made, the tape is cut and wound on an empty reel).

SPECIFICATIONS FOR AUDIO-VISUAL EQUIPMENT

1. Sound film projector: in addition to the obvious specifications (good sound, clear pictures, easy to thread and clean, easy and reasonably fast rewind), you need:

   a. A reverse switch so that you can show a given passage several times.
   b. A still viewing mechanism so that the film can be stopped and a particular frame studied in detail.

   The projector should also be able to record and play back magnetic sound tracks.

2. Slide and filmstrip projector: the filmstrip mechanism should be able to project single as well as double frames. If you buy an automatic changer, be sure to buy one that will give good and dependable service. A synchronizer mechanism for use with a dual-channel unit (see page 169) is rarely necessary.

   Slide viewers and filmstrip viewers for the individual study of slides and filmstrips are available, but they are usually tiring on the eyes. It is preferable to use a normal projector with a wide-angle lens (so that the machine can be used in a small audio-visual individual room and still have a wide enough picture) and a low-wattage lamp such as General Electric Spotlight 125T10P-120V (a low wattage lamp will give enough illumination in a small room and will last several times longer than the usual 500W lamp).

3. Overhead and opaque projectors: in addition to good quality and good illumination, you should look for units where the ventilation makes a minimum of noise (it is very tiring for the teacher to speak over the noise of a fan). The opaque projector should be equipped with a pointer (an arrow of light which the teacher can move in order to point out some details).

THE VARIOUS TYPES OF LANGUAGE LABORATORY INSTALLATIONS

Before a school can choose the equipment or decide on the type of installation, it is essential that all concerned understand the methods of using a language laboratory. After they have decided how many of these methods they would like to use, they can order the appropriate language laboratory installation. Keep in mind that a given installation can be used in several ways.

It is difficult to find short names for these various methods of using a language laboratory; we shall therefore refer to them as Method A, Method B, Method C, etc.

METHOD A

In this method, a given number of students listen -either through the loud-speaker or with headphones- to the same recording. This recording can be on a tape, a phonograph record, a magnetic disc, or a magnetic belt; the usual machine can feed at least thirty pairs of headphones (provided that you use high-impedance headphones).

If you want to seat your students around a table and have them work with headphones, you will need one or several multiple jack boxes (the various jack boxes can be connected). If you prefer a wall installation, a simple audio line (with a jack near each chair) has to be installed.

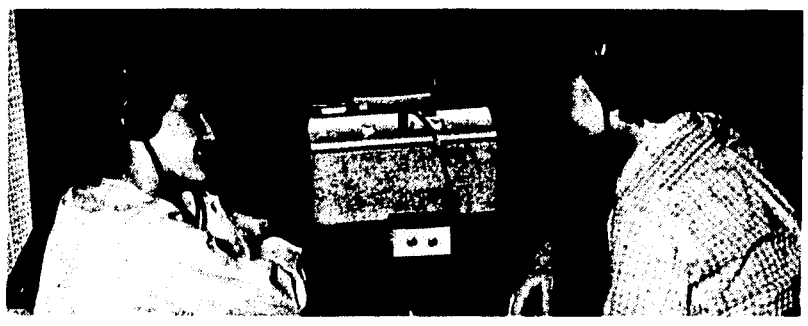


Figure 72. Table installation with a multiple jack box.

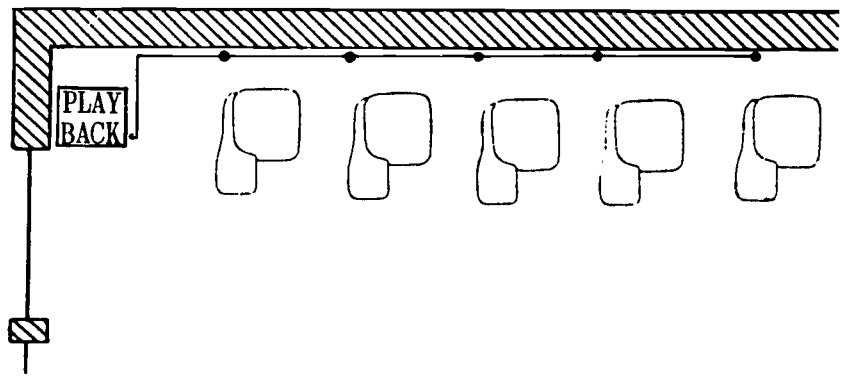


Figure 73. Wall installation.

Individual volume controls so that every student can adjust his headphones to a level he finds comfortable are desirable. Headphone cushions help in cutting outside noise and permit more concentration, but they may be unsanitary.

Since the students do not record, booths are not necessary; it is preferable to spend your money on more machines and more tapes.

Since the students listen as a group, no rewinding is done to listen again to a sentence a student may have missed; an endless tape loop -in spite of its drawbacks- may help save some time in this method of using a laboratory. When the assignment requires that the students give an answer, it is preferable to leave pauses on the tape; asking a student to act as a section leader and to stop the tape after every sentence is rarely successful since this student will find it very difficult to please everybody.

This method is often referred to as the "Passive System", but this term is not quite adequate since many active assignments can be given. Here is a list of what can be done:

1. Straight listening: the students listen to a short story, a play, etc. recorded by native speakers. No pauses are provided on the tape; the main purpose of this assignment is to improve the students' audio comprehension and, indirectly, oral expression; for best results, the students should listen at least twice without looking at the text (they localize their comprehension problems); then, they listen again at

least twice while looking at the text and they find the answers to their comprehension difficulties. During the next class, they should be able to talk about the play or short story.

2. Listen-repeat: the students listen to sentences and repeat them during the pauses provided on the tape. The students have no way of knowing whether their imitations are good or bad; even if the teacher is present, he can help only one student at a time. This technique is therefore not recommended.

3. Oral translation: the tape gives a sentence in English; the students translate it during the following pause; the tape then gives the correct translation thereby correcting or confirming the students' answers.

4. Sentence modification: the tape gives a sentence in French; during the following pause, the students modify it (shifting it to the past, the negative, etc.); they give the answer; the tape then gives the correct answer thereby confirming or correcting what the students said.

5. Write the answer: this audio-written work can be of the following types:

a. dictation.
b. the students write their answers to questions asked about the listening assignment (technique 1 above).
c. the students write their translations (technique 3 above) or their modified sentences (technique 4).

In all cases, the students are given answer sheets before they leave the laboratory so that they can check their written answers at once (principle of immediate correction or immediate reward).

The main drawbacks of this group listening are:

1. The student cannot stop the recording to listen again to a sentence he has not understood.

2. It is not possible to make the pauses of the right length for the slow students and the quick ones (especially when using techniques 3 and 4 above).

However, this method of using the laboratory -if used in addition to the regular class periods- can be very useful if the recordings are well prepared.

It is possible to install two or several machines so that several groups of students can work at the same time, listening to different assignments.

METHOD B

The language laboratory is equipped with several playbacks (for tapes, phonograph records, magnetic discs, or belts) which can be used individually by the students (the teacher prepares several copies of each assignment). Separate rooms or booths are not necessary.

The students can perform individually the five types of assignments described above. The two great advantages are:

1. Each student can make the pauses as long or as short as he wishes; he can rewind to listen again to words or expressions he has not understood; he can concentrate his work on the portions he finds most difficult (he does not have to waste time listening to what he already knows); in other words, he can learn at the speed most suited to his ability.

2. The teacher does not have to leave pauses on the recordings he prepares for the students, and this saves him a great deal of time.

METHOD C

Each student has a monaural tape recorder or magnetic disc recorder in a sound-treated booth or individual room. These machines are not wired to a central machine or console.

Each student can perform individually the five types of assignments described above; he can also record an assignment or examination to be corrected by the teacher (the text of the assignment or examination has to be submitted in written form by the teacher).

METHOD D

This method of using the language laboratory can be carried out only in an installation where separate sound-treated rooms are available. In each room, there is a monaural tape recorder or magnetic disc recorder; a separate loud-speaker connected to a central machine or console is installed near each recorder. In addition to being able to perform the work described in Method C, the student can also take an audio-oral examination and have this examination corrected at once (the questions and the corrections come over the separate loud-speaker connected to the console). Thus, with this method, individual review work and group examinations and corrections are possible.

METHOD E

Each student has a monaural tape recorder or magnetic disc recorder in a sound-treated booth or individual room; the audio line is wired through the student's machine.

The students can perform all the work described in Method C. Group examinations and corrections (as in Method D) can also be given provided that the audio line from the console be wired through each student's machine in such a way that the console is audible when the student's machine is in Playback position as well as in Record position; thus, the student is able:

1. to listen to the questions from the console and record his answers on his tape (examination)
2. to listen to the console and to his tape during the correction. For this technique, refer to pages 64 and 65.

If the console line is properly wired through the machine and if the necessary mixing controls are provided, the following work can also be done:

1. The student can record the teacher's voice as it comes from the console.
2. The student can record his own answers.

Thus, the student prepares a recording which contains in constant alternation the teacher's voice and his (the student's) voice; after the recording is completed, the student can play it back for comparison and self-evaluation[1]. While recording from the console, the student has no control over the program; he cannot rewind and he may find the pauses too long or too short. While listening to his recording, the student has a little more freedom since now he can rewind or skip forward as he needs.

Since the machines are monaural, the teacher's voice from the console and the student's voice from his microphone are mixed and recorded on the same track; the student's voice cannot be erased without erasing also the teacher's. If the student is not satisfied with his recording and wants to do it over, the program from the console has to be played again.

It is also possible with this system to use the language laboratory as a mass duplicator (page 161).

[1] The value of recording one's voice for comparison and self-evaluation has already been discussed several times; there is no need to repeat this pedagogical discussion here.

METHOD F

Each student has a "language laboratory dual-channel machine" in his booth or individual room; the console is wired through the student's machine.

The student can do individually or with a group all the assignments described in Method A; he can record individually[1]; group examinations and corrections can be given[1]; he can record the teacher's voice from the console and his (the student's) voice for comparison and self-evaluation[1]. In addition, he also can:

1. Listen to the teacher's voice which is on one track and record his answers on the other track during the pauses (the teacher's track --in normal use-- cannot be erased).

2. Rewind and play back for comparison and self-evaluation.

With such a prerecorded tape, the student is free to play, stop, rewind, skip forward and record as many times as he needs, but this method has two main drawbacks:

1. Pauses have to be made on the teacher's track. Note, however, that --since the student can stop the tape while preparing his answer -- the pauses need not be as long as on tapes used for group work.

2. If the teacher wants to check the work of the students, it takes a great deal of time since the teacher has to listen to his own questions on <u>every</u> tape.

With this installation, the laboratory can also be used as a mass duplicator; if the proper switches are provided, the copies can be made on the teacher's track (see pages 161-162).

METHOD G

In this method of using the language laboratory, the student sits in a booth where he has only a microphone, a pair of headphones, a record-listen switch with an indicator light, and a volume control. The recorders are in a special cabinet in a separate room and they are remotely controlled by the teacher (or assistant) from the console; the recorders are dual-channel units and they use self-threading endless tape loops.

The proponents of this system say that there is less noise and heat in the laboratory, that the student does not run the risk of breaking the equipment and that he is free to concentrate all his attention on his language work.

The students can come to the laboratory as a class or individually. When a student comes individually, he has to ask the attendant to put the tape cartridge in the cabinet and to start the machine. The important point to remember is that whether the student comes with a group or individually he has no control whatsoever over the tape he hears: he cannot stop it, he cannot rewind it to listen again to a particular sentence, and he cannot concentrate his work on a particular section of the tape (he has to listen to the whole loop --even if half the material on the loop is known to him and does not need any further practice) ..... and, of course, the pauses are never quite right.

For a study of the technical difficulties presented by tape loops, see the Appendix.

METHOD H

This is a variant of Methods E and F. All the machines are installed in a special room and

[1] This recording is not on the standard track and cannot therefore be corrected on a standard half-track monaural machine --unless the machine in the booth has a special switch which can transfer the student's track to the teacher's track.

remotely controlled by the students from their booths. The students can start, stop, rewind, skip forward as they want --do not, therefore, confuse this type of installation with the type described in G above. The machines can be magnetic disc recorders, monaural tape recorders, or dual-channel tape recorders. Tape recorders must use self-threading reel-to-reel cartridges (also called: hub-to-hub cartridges).

METHOD I

The student handles two machines at the same time. These two machines can be:

1. Two tape machines.

2. Two magnetic disc machines.

3. One tape machine and one disc machine.

Instead of having two completely separate machines side by side, it is possible to have two mechanisms and a common amplifier built together (thereby reducing the number of electronic controls).

Operating two machines in tandem (simultaneously) is easy (our students have used this method for years); you have to operate only the stop bars on each machine: you listen to one machine, stop it, start the other machine and record, stop it, start the first one to listen, etc.

Using two machines in tandem has several advantages over the dual-channel machine:

1. The teacher does not have to leave pauses on his tape or disc; the student can stop the tape or disc and make the pauses as long or as short as he wants.

2. The student prepares a recording which contains only his voice (without the teacher's) and without intervals; the teacher can correct such a recording very rapidly.

3. The cost of two separate machines is often less than the cost of a special language laboratory dual-channel machine.

4. Two machines used in tandem can be used separately as two independent units whenever needed.

5. The student records on his own tape or disc which he can keep; he can, therefore, compare his work throughout the year.

This method is suitable for remedial pronunciation work and for individual audio-oral examinations.

..... It should be clearly understood that several methods can be used even with a small installation. Here are a few examples:

Example one: You have $250.00 to spend. You can buy one commercial tape recorder (monaural); with the educational discount, you can buy a "satisfactory" machine for about $140.00. The rest of the money will take care of a multiple jack box, several pairs of headphones, and a few "unbreakable" tapes.

The machine is set on a table (no booth); the multiple jack box is connected to the external speaker output, and the headphones are connected into the jack box.

With this installation, you can use Method A; Methods B and C can of course be used if you send only one student to the machine.

Note that with only one machine, the students have to use your masters (and there is a danger of accidental erasure).

Example two: You have $400.00 to spend. You buy two machines instead of one. Now you can use Method A (with two groups working on different assignments), Method B (two individual students listening to different assignments --or one machine can be used by a group and the second machine by an individual

student), Method C (you will need some sort of partition between the two students), Method I. In addition, you can now make copies (you no longer have to run any risk with your master tapes).

Example three: You have $900.00 to spend. We would recommend that you keep the same installation as above, increasing the number of machines to five and adding some simple partitions between the tables. You can use Method A (with five groups working on five different assignments), Method B (with five individual students working on separate assignments --or a combination of several groups and several individuals), Method C, Method I (two individual audio-oral examinations and corrections can be given at the same time). You can also give group audio-oral examinations to four students at a time if a simple audio line with jacks is installed from one machine to the other four machines; group corrections could not be given easily since in this installation no provision is made to have the student's tape and the teacher's tape come through together over the headphones (the only way to give a group correction would be to have the students listen to the teacher's voice on the master machine loud-speaker and listen to their tapes over one headphone --leaving one ear free to hear the loud-speaker). You can also make four simultaneous copies of a master tape.

MONITORING

Many people are confused about monitoring because they do not realize that the term covers two different things: to monitor oneself and to monitor somebody else.

A. Monitoring oneself

Monitoring oneself consists in listening to oneself over the headphones at the same time one is speaking into the microphone. This feature is present in nearly every tape recorder manufactured today.

Some companies install laboratories where the student in his booth can hear the console and monitor his voice. The booth contains a microphone, a pair of headphones, and a small amplifier which amplifies the student's voice, mixes it with the line from the console, and sends the combination to the student's headphones. The booth does not contain any recording equipment. This type of installation is described with terms such as: listen-respond, audio-active, activated microphone.

Many persons believe that this "listen-respond" technique is good because "you hear yourself as others hear you". Our own findings are as follows:

1. It is not true that the student hears himself as others hear him. When speaking normally, the student hears himself through bone conduction and air conduction; when monitoring himself, he hears himself through:

   a. bone conduction,
   b. electronic conduction (the quality and the relative quantity of this electronic conduction depend on the quality of the amplifier and the amount of volume used),
   c. air conduction (unless the headphones have cushions which fit tightly over the student's ears, some of the sound reaches the ears under the headphones).

   This mixture is certainly not what other people hear.

2. Monitoring oneself has no pedagogical value. Experiments with hundreds of students clearly show that monitoring does not make it easier for them to locate their errors.

The important fact is this:

"Speaking without monitoring oneself while wearing a pair of close-fitting headphones gives a strange sensation because one hears oneself nearly entirely through bone conduction. Electronic conduction (monitoring) restores to some degree the normal way of hearing. Let us say therefore that moni-

toring helps dispel the strange impression one has when recording is done while close-fitting headphones are worn. If the student simply records his voice (without having to listen to a tape), no monitoring needs to be done and no headphones need to be worn [1]".

B. Monitoring by teacher

There are two basic ways of doing it: listening only or two-way intercommunication.

1. The teacher listens electronically: it can be done at the booth, at the console, or at the end of each row of booths.

a. At the booth: this requires that the student's machine be equipped with two output jacks: one for the student and one for the teacher.

This second jack can be so located that the teacher faces the student and can talk to the student face to face (the proponents of this system say it is good because the teacher can show the lip and tongue positions, etc.).

This second jack can be located on the student's instrument panel (in this case, the teacher is beside the student).

If the teacher wishes to speak to the student, the student has to remove his headphones; furthermore, this conversation at the booth will disturb the nearby students.

b. At the console: a rotary selector is sufficient since you will need to listen to only one student at a time (individual and independent switches are not needed).

c. At the end of each row of booths: the monitor jacks are installed on small panels at the end of each row of booths. The wiring is simpler than the one required by monitoring at the console, but the teacher has to keep moving from row to row.

With systems (b) and (c), the teacher cannot talk to the student.

If you want the student to be warned when he is monitored, a signal light can be installed in his booth.

2. Two-way electronic intercommunication: it can be done at the booth or at the console.

a. At the booth: the teacher wears a special microphone-headphone combination, with a special microphone-headphone plug to be inserted into a special microphone-headphone jack on the student's machine or on the front panel for face-to-face communication. Now the student can hear the teacher over his headphones; the teacher can whisper his instructions into his microphone and interference with the work of the nearby students is reduced.

b. At the console: individual switches (one per booth) are necessary since the intercom will be used to speak to one student, to several students, or to the whole class (to speak to several students, you pull the corresponding switches at the same time).

If you want a two-way intercom, you have to draw up a list of specifications. Here is a summary of the various points which have to be considered:

-When you listen to a student, he goes on doing his work; therefore, there should be no click or change of level when you start listening to him.

-What type of microphone do you want to use (refer to pages 203-204)?

[1] Some persons say that monitoring is good because it isolates the student; this is manifestly untrue; if there is any noise in the room, it is picked up by the microphone and sent to the headphones.

-Do you want a light signal in the student's booth to warn him that he is being monitored?

-The two-way intercom should operate no matter what position the student's machine happens to be in (listening or recording).

-You should be able to talk and listen without having to move the switch (on some systems, the instructor must keep switching from "Listen" to "Talk" and back to "Listen").

-The program from the console (if the student was recording while listening to the console), the teacher's track (if the student was recording while listening to the teacher's track), and the sound from the student's tape (if the student was listening to his own recording) should become inaudible when the intercom is used.

-A light on the intercom panel telling you whether the student is listening or recording may be helpful (in case you prefer not to interrupt the student when he is recording).

-If the student is in recording position, do you want your conversation with him to be recorded (and this means that the student's machine would stop recording the console or the teacher's track)? Or do you prefer that the program from the console or teacher's track -although no longer audible over the headphones- continue to be recorded on the student's tape?

-Do you want the intercom to be wired so that two or more students can talk to one another?

-Do you want the intercom to be wired so that you can transmit any student to any other student(s)? or to the entire class?

-Do you want the intercom to be wired so that you can transmit a conversation between two students to the entire class?

-Do you want to be able to record your students while you are monitoring them at the console? Some teachers feel that this feature should be included so that:

--an assistant may record a few minutes of every student's performance and give the tape to the teacher so that he may have a quick check

--an assistant can record the whole performance of a student (for later reviewing with the student or because the teacher suspects that the student is not doing his work as carefully as he should).

-If you record the student at the console, do you want him to know that he is being recorded? If so, a special light signal will be necessary.

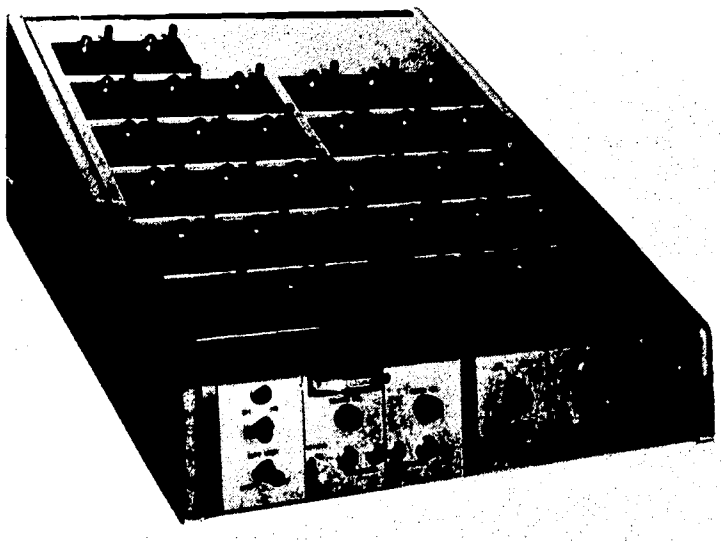


Figure 74.

-The intercom panel should be custom-designed and the disposition of the switches on this panel should represent the disposition of the booths in the room (the intercom panel should be a replica of the floor plan); it makes the identification of the switches easier (figure 74).

-Even if you have complete monitoring facilities at the console, it is a good idea to have a second output jack in each student's booth (sometimes, a tape has to be heard by two persons).

Monitoring can be done with a wireless (radio) system. Each recorder in each booth feeds an individually tuned oscillator/transmitter that broadcasts its signals to the teacher's receiver. The teacher can turn his selector dial to the booth number he wishes to monitor. A receiver is needed in the student's booth if a two-way intercom is desired. This system has been tried by several institutions and has generally been abandonned.

WHERE SHOULD THE LABORATORY BE INSTALLED?

For best results, the school should have a special Language Center (see next section). Other possibilities are:

-a special room in a quiet building
-a special section of the Library
-the back of a classroom (with a glass partition)
-the back of a study hall (with a glass partition).

THE INSTALLATION WE PREFER

In the preceding pages, we have tried to describe the various laboratory installations and the various methods of using these installations.

It is a strong temptation to adopt the most complicated (and most expensive) installation, hoping that it will be flexible and will satisfy the needs of every teacher.

We have stated repeatedly in this book that the vast majority of students -when they work by themselves in the laboratory- do not locate their errors more easily whether they record or not. Our conclusion is, therefore, that the purchase of dual-channel equipment is not warranted (refer to page 48).

We have also tried to show that the review work in the laboratory should be done in addition to the regular classes and that these regular classes should not be held in the laboratory; we have stated that the language teacher should not be needed in the laboratory while the students do their review work. A monitoring system, in our thinking, is therefore completely useless.

On page 219, we present our conception of a Language Center. The following explanations may be helpful:

1. Why a Language Center with classrooms and offices?

   a. The professors should be able to go from their offices to their classrooms and the language laboratory with a minimum waste of time.
   b. The classrooms should be near the laboratory so that the students can be taken from the classroom to the language laboratory (for an examination) with a minimum waste of time.
   c. The students like to be able to review their language assignment just after or just before a class meeting; having the classroom near the laboratory will make it easier for them.

2. Description of the laboratory:

   a. The recording studio and the control room follow the specifications given on pages 183-187.
   b. The console is in a separate control room (control room 2); the console follows the specifications given on page 188 (three channels should be sufficient since these channels would be used only for examinations). The master switch has been placed in this second control room (the laboratory lights and the power outlets are on different circuits; a night light is independent from this master switch). The tape library for students' use (as described in the first paragraph of page 178) is in this control room. There will be so much

circulation between this control room and the rest of the laboratory that a sliding door is preferable.

c. The general specifications for the laboratory (lights, sign-up board, ventilation, etc.) have been given on pages 188-190.

d. The individual practice rooms follow the specifications given on page 194. In our installation, a row of rooms has windows (but these windows cannot be opened). The machine is a monaural tape recorder, a magnetic disc recorder, or a magnetic belt recorder.

e. We have drawn only one large practice room; of course, the number can be increased according to needs.

f. The tapes (or discs) with the current assignments are on special shelves in a separate room; because of the amount of circulation, this room has a sliding door.

g. The specifications for the audio-visual projection room can be drawn from section D on pages 193 and 194.

h. Individual audio-visual rooms have been described on page 190.

Why individual rooms instead of booths?

1. The students prefer to work in the privacy of a room.

2. In a room, the student can speak in a natural voice. In a booth, unless he whispers into the microphone, he disturbs (and is disturbed by) the students in the adjoining booths. Whispering is not natural --in fact, it is harmful; the students acquire bad habits in muscular tension, rhythm, intonation, timbre of the vowels.

3. In a room, the student is not disturbed by surrounding noises. In a booth, he is disturbed by the noise of people coming and leaving, the chairs being moved, the doors being opened and closed, etc. Close-fitting headphones protect only when the student is listening since when he is recording his microphone picks up all surrounding noises and sends them to his headphones.

4. It is difficult to give an examination in a booth laboratory because the students can hear each other.

5. For most students, listening to a loud-speaker is more natural, more lifelike, and less tiring than wearing headphones. Working with headphones may be harmful because the students get used to understanding the foreign language from headphones and they may find it more difficult to understand a live voice.

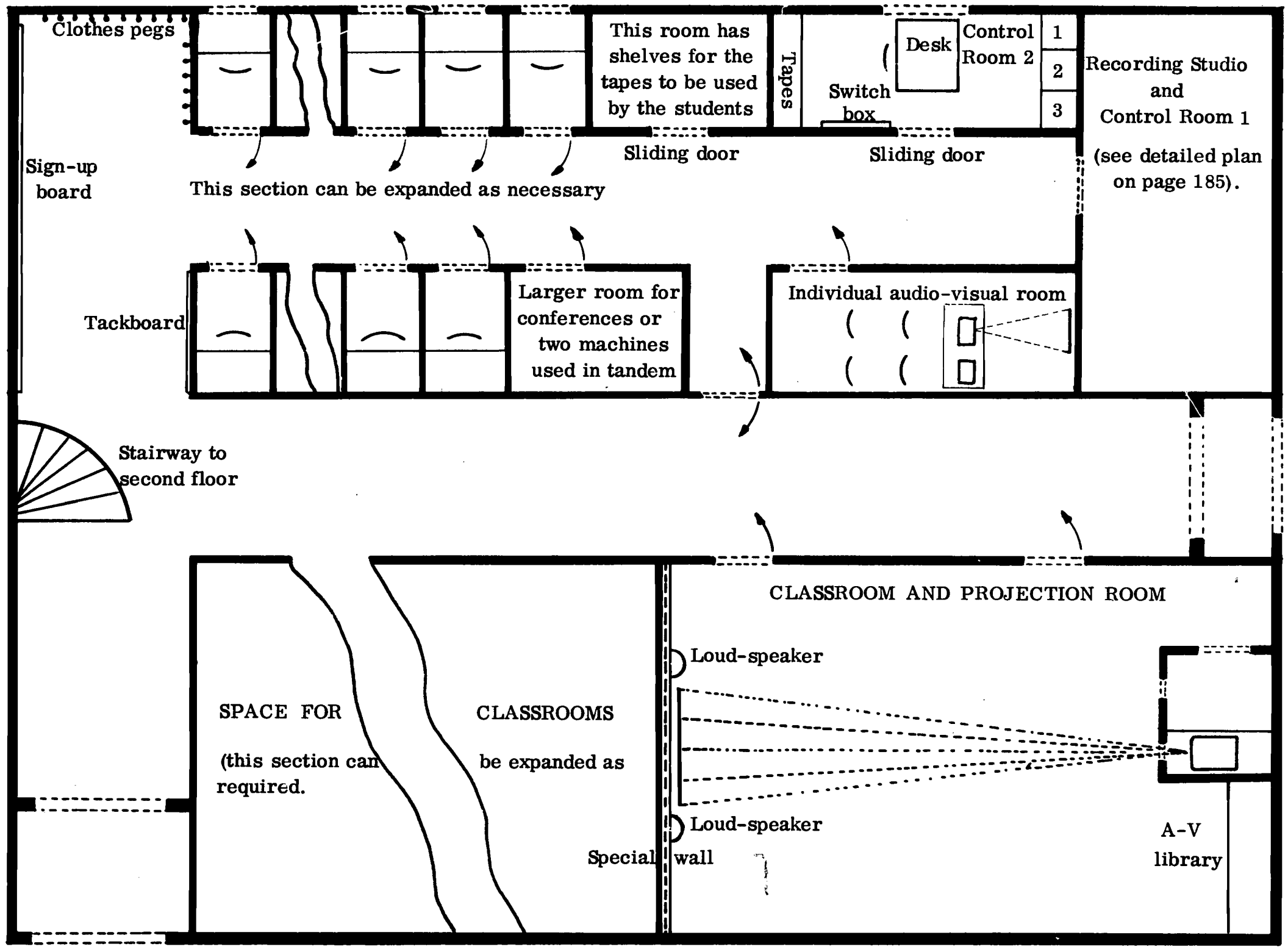
6. Headphones present problems of hygiene. Some students may rightly object to having to use headphones which have been worn by students with dirty hair or skin diseases.

7. Headphones may become sticky and uncomfortable.

8. In a room installation, two or three students may study a tape together, practice a conversation drill or work on audio comprehension.

One drawback of the room installation is that audio-visual examinations based on films or slides cannot be given (that is, the type of examination where the students look at the film or slide and record their answers). In a room installation, the visual material has to be supplied on paper; of course, it is also possible to have the students view the material (film or slides) in the main projection room and write their answers.

Above all, do not discard the possibility of having a room installation simply because you believe that you have neither the space nor the money. In general, the difference in cost and in space requirement between a room installation and a booth installation is much smaller than imagined.



LANGUAGE CENTER

Scale: 1 cm = $2\frac{1}{2}$ ft.

First floor: Laboratory and classrooms. Second floor: Library, Realia Room, Classrooms, Offices, Janitor's room, Washrooms.

APPENDIX

SOME REMARKS ABOUT NATIVE-LIKE AUDIO COMPREHENSION AND ORAL EXPRESSION

By order of *approximately* increasing difficulty, audio comprehension means the understanding of:

classroom lectures, church sermons, political speeches, cultured conversation, TV and radio news, documentary films and travelogues, plays at the theater, plays and similar material on discs or tapes, TV and radio advertisements, songs, feature films, TV and radio comedians, uncultured conversation (neglected speech), isolated sentences and bits of dialogues (with taxi drivers, waiters, etc.), children, neglected speech mixed with slang, neglected speech with a regional accent.

Audio comprehension --and especially native-like audio comprehension-- is the only skill where speed is essential. It matters little whether our students can read a modern author at the rate of ten or twenty pages an hour as long as they are able to understand him and appreciate his style; it matters little whether our students can express themselves on paper at the rate of three or ten pages an hour if what they write is correct and idiomatic; it even matters little whether our students speak rapidly or slowly if they use the forms, the structures, and the pronunciation to which a native is accustomed. It is an altogether different matter with audio comprehension because the listener must adjust himself to the speaker's speed of delivery. It is true that when natives speak to foreigners, they usually slow down; but what about the vast amount of public audio manifestations such as lectures, plays, films? The American in the audience has no control over the rate of delivery of the actor or lecturer; whether he understands or not depends on the type of foreign language training he has received.

There is no doubt that native-like audio comprehension is most desirable, not only because it provides one of the tools for unrestrained conversation with natives, but also and mainly because it allows the students to absorb directly part of the culture of the country through its innumerable audio manifestations: lectures, theater, cinema, radio, television, etc. Unless native-like audio comprehension is acquired, the American in a foreign country is partially deaf since he cannot understand a great deal of the language around him. It should also be pointed out that the ability to carry on a conversation about everyday topics with a native is only the first step in the audio comprehension training and that much remains to be done after that first step has been taken (all too often, students who have reached that stage assume they know it all).

Let us see why audio comprehension --and especially native-like audio comprehension-- is so difficult to acquire:

1. In written French, the words are separated and can be identified easily:

   Nous le saurons le six août à huit heures et demie.
   Il est mort à l'aube.
   Il en a une à louer.

In the oral versions, the words are run together; they lose their independence; each sentence must be understood as a whole:

nulsɔrɔ̃lsizuaɣitœredmi
ilemɔralob
ilãnaynalwe

So that it is no exaggeration to say that words --as listed in the dictionary-- do not exist in spoken French. Refer, for example, to the listing given for *homme* on page 34; here are more examples with *œuf* and *œufs*:

You hear	as in	You hear	as in	You hear	as in
nœf	œ̃nœf	mœf	lə mɛ mœf	kø	sɛ̃ kø
zœf	œ̃ gro zœf	dœf	œ̃ blã dœf	tø	sɛ tø
tœf	œ̃ pti tœf	trœf	vɔ trœf	fø	nœ fø
lœf	œ̃ bɛ lœf	zø	dø zø	lø	mi lø
rœf	lə dɛr njɛ rœf	dø	tro dø	trø	ka trø

It is impossible therefore to understand French word by word; the whole sentence must be understood as a whole before the words can be isolated. Good audio comprehension is thus essential for correct spelling. Quite often, the students put the cart before the horse: first they write and then they try to see whether the words they have put on paper make sense. For example, we have seen students who upon hearing /sɛtozgɔ̃/ wrote *cette eau* and then tried to figure out what /zgɔ̃/ could mean in relation with *water*; others, upon hearing /vwasiletemwɛ̃/, happily wrote *Voici l'été moins* and then tried to give a meaning to this combination of French words. It is true that a student who understands *may* not always spell correctly, but it is a certainty that the student who does not understand *will not* spell correctly.

2. This linking process would not make the language too hard to understand if the words that are linked had at least some audio body. Unfortunately, the phonetic erosion that has worked so thoroughly on the French hereditary vocabulary has left but little of words such as:

aquam	eau	o	vinum	vin	vɛ̃
panem	pain	pɛ̃	oculos	yeux	jø

In some cases, the ratio of words to sounds approaches the maximum 1/1. Examples:

Je n'y vais plus	ʒniveply	5 words/8 sounds
Je n'en veux qu'un	ʒnãvøkœ̃	6 words/7 sounds

Note that in the syllables /ʒni/, /ʒnã/ each sound stands for a word. Obviously, it is not by teaching separately: *je, y, en, ne ... plus, ne ... que* that our students will learn to understand such concentrated groups (but they will with the structural method).

These words with little audio body are often very important; for example, in the following sentences, the shift of meaning is brought about by the addition of a single sound:

Je n'ai plus cent francs	ʒneplysãfrã	I no longer have 100 francs
Je n'ai plus que cent francs	ʒneplyksãfrã	I have only 100 francs left
Je viens voir le film	ʒvjɛ̃vwarləfilm	I am coming to see the film
Je viens de voir le film	ʒvjɛ̃dvwarləfilm	I have just seen the film

In written French, the words *que, de* are quite apparent and the reader has time to study their meanings; in spoken French, these single sounds may be missed unless the student's ear has been properly trained.

In general, written French uses more signs than spoken French to indicate changes of meaning; examples:

œ̃bɔnami	(only one	Un bon ami	(three written
ynbɔnami	(audio change	Une bonne amie	(changes
lœrfijetutsœl	(only one	Leur fille est toute seule	(five written
lœrfijsõtutsœl	(audio change	Leurs filles sont toutes seules	(changes

Here again, the ear must be trained to detect these few, but important, audio changes. This is all the more difficult since these changes often occur in words (articles, possessive adjectives, etc.) which the English ear is used to consider invariable.

3. Spoken French has many homonyms; examples:

sɑ̃ : s'en, sens, sang, sangs, cent, cents, sent, sans, c'en
o : eau, eaux, au, aux, os (*plural*), aulx, oh, ho, ô, haut, hauts
ɛr : air, airs, aire, aires, hère, hères, ère, ères, erre, erres, errent, R
sɛ̃ : cinq, saint, saints, sain, sains, sein, seins, seing, seings, ceint, ceints
vɛr : ver, vers (*plural of* ver), verre, verres, vert, verts, vers (*poetry*), vers (*preposition*), vair, vairs

These audio homonyms and the fact that spoken French does not make some important morphological contrasts lead to many sentences which have several meanings (the context has to be taken into account); examples:

kɛlpɔravevuvizite	Quel port avez-vous visité? Quels ports avez-vous visités?
sezɑ̃fɑ̃	Ses enfants - Ces enfants
iletropørø	Il est trop heureux - Il est trop peureux
iletuvɛr	Il est tout vert - Il est ouvert
sɛtɔbu	C'est au bout - Cette eau bout
pɑstwadø	Passe-toi d'œufs - Passe-toi d'eux
nusɔmsɑ̃vɛ̃	Nous sommes sans vin - Nous sommes cent vingt
ilsekupeleʃvø	Il sait couper les cheveux - Il s'est coupé les cheveux
ilparlofɛrmje	Il parle au fermier - Il parle aux fermiers - Ils parlent au fermier - Ils parlent aux fermiers

4. Another factor which makes the audio comprehension of French difficult is the fact that a given word may have several pronunciations depending on:

-its sound environment
-the style of expression used by the speaker (formal or natural).

Here are some examples where the sound environment affects the pronunciation of a word:

J'en ai six	ʒɑ̃nesis	(*stressed*)
Il y a six personnes	iljasipɛrsɔn	(*unstressed before consonant*)
J'ai six amis	ʒesizami	(*unstressed before vowel*)

Now here are some examples where the style chosen by the speaker changes the pronunciation of a word; these changes are caused by:

- dropping unstable vowels:

Nous ne la verrons pas avant demain	nunəlavɛrõpazavãdəmẽ	nunlavɛrõpazavãdmẽ
Fermez la fenêtre	fɛrmelafənɛtr	fɛrmelafnɛtr

- dropping final /r/, /rə/, /l/, /lə/:

Sur le palier	syrləpalje	sylpalje
Nous n'osons pas permettre ça	nunozõpapɛrmɛtrəsa	nunozõpapɛrmɛtsa
Il pleut tous les jours	ilpløtulezur	ipløtulezur
Mets-la sur la table du salon	mɛlasyrlatablədysalõ	mɛlasyrlatabdysalõ

- not making some liaisons:

Des gens heureux	dezãzørø	dezãørø

5. So-called neglected speech drops even more sounds:

Je ne sais pas	pronounced	ʃsepa	instead of	zənsepa
Je n'ai jamais tant ri	pronounced	zezamɛtãri	instead of	znezamɛtãri
Tu es sûr?	pronounced	tesyr	instead of	tyesyr
Tu n'as pas tort	pronounced	tapator	instead of	tynapator
Il n'y a pas de vin	pronounced	japadvẽ	instead of	ilnjapadvẽ

These neglected forms are frequent --even in the speech of cultured persons, although they may not realize it or be willing to admit it.

* * * * * * * *

Although native-like audio comprehension is difficult to acquire, *it is possible* to teach it within the time limits of our regular language courses; but this requires students with a special aptitude, grouped in special sections, and submitted to a special program.

The average proportion of such students in our schools over the country is rather small *at present*, certainly not over 10%. The majority of our students will have to be content with audio comprehension of the language spoken at less than native speed.

Whatever form of audio comprehension we teach, we have to make sure that audio comprehension is always taught before visual comprehension and that the latter never outdistances the former. We have to train our students so that they will be able to understand by sense groups and so that they will not try to see the words in their minds.

* * * * * * * *

We must prepare students who can express themselves with ease in cultured natural French, without making errors of grammar, and with a pronunciation easily understandable by natives (not familiar with English). This limited program cannot succeed unless the students are eager to communicate in the foreign language; also it is unreasonable to expect that a student who has nothing to say in his own tongue will become voluble in the foreign language.

It should also be realized that audio comprehension must keep pace with oral expression; otherwise, we shall prepare students who can ask questions, but who cannot understand the answers. Furthermore, good comprehension habits will help with correct oral expression:

a. Unless the student is trained to listen carefully for the small sound changes that cause important shifts of meaning, he will not be able to imitate faithfully what is said around him. Good listening habits develop in the students that indispensable feeling for what "*sounds right*" and what "*sounds wrong*". Students who have that feeling tend to speak correctly because their ear acts as a checking device and is likely to stop them when they make an error. Students who have been allowed to study French for several years without developing good listening habits have great difficulty when, later on, they want to become fluent speakers of the language. Most of the students who go to France for their Junior Year return to this country still making elementary errors in forms and structures because they were unable to detect the exact sounds used by the natives.

b. The psychological importance of good audio comprehension is great; the student who understands everything you say will want to reply; he will find in your own sentences the vocabulary and the structures he needs for his answers.

c. For practical purposes, there is no great apparent difference between the cultured and reasonably fluent oral expression which we recommend and native-like oral expression. The latter can be defined as being rapid expression with a native pronunciation and a native command of the vocabulary and idioms. But graduating from one type of oral expression to the other requires a great deal of work and constant practice; before such a special effort is undertaken, we should remember that native-like audio comprehension is more important than native-like oral expression and that, if a choice has to be made, the former should be favored.

SOME REMARKS ABOUT THE VALUE OF SPELLING

It is difficult to have a fruitful discussion about the value of spelling because many people are prejudiced about the question. Most of those prejudices stem from ignorance of the following points:

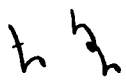
1. The spoken form of the language is the primary form of communication; the written form is but a representation of this spoken form and should be as faithful as possible. Indeed, we know that it is the spoken language which suffers evolutions, and that the written language accepts those changes --making the necessary adjustments (*patrem, pedre, père*)-- OR refuses to submit --in which case the gulf between the two forms of the language becomes wider and wider. Written French dutifully accepted this position of vassalage until approximately the 12th century: spellings such as *regem, rei, roi,* and *caballos, chevals, chevaus* reflect the evolution of the pronunciation until the 12th century. Since then, written French has more or less proclaimed its independence and has refused to recognize most of the changes that *have taken* place. The fact that *oi* is now pronounced /wa/, and that the diphthong *au* has now become a pure vowel /o/ have not been recorded in the spelling. The breach between the two forms of the language has now become so wide that a satisfactory reform of the French spelling is most difficult

to devise[1].

This question of the relative importance of the spoken and written forms of the language is misunderstood by many cultured Frenchmen because their academic training has been based on the written language and has not included an unbiased analysis of the audio form of the language.

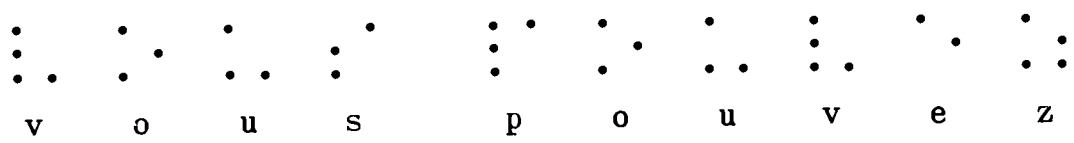
2. In the broad sense of the word, spelling is a form of storage, a supplement to memory; it is the transcription of a fleeting auditory impression into a lasting impression using another sense. This transcription may take several forms:

a. Visual transcriptions such as:

- the academic spelling: *Vous pouvez*
- a phonemic transcription: vupuve
- a shorthand transcription: 

b. Special transcriptions based on the academic spelling:

- the *touch* transcription of the Braille alphabet for the blind:



- a *Morse* transcription: ...- — ..- ... .—. — ..- ...- . —..

- a transcription using the alphabet for the deaf-mute:

These last two transcriptions, however, are not used for permanent records.

The above transcriptions are not quite faithful, not even the phonemic one since it does not indicate the rhythm, the intonation, or the exact timbre of the sounds. It is quite a paradox that the far superior representations of speech which modern science has developed should be the most difficult to read. The sound track of a film, the grooves of a phonograph record, an oscillogram, a spectrogram, a magnetic recording are not made for the human eye; they are made for special electronic devices which can play them back (that is, read them) with such accuracy that sometimes the reproduction can be mistaken for the original.

The academic spelling, therefore, is only one of the ways we have of storing or communicating information. In fact, this academic spelling has been losing ground for several decades: radio and television programs, films, telephone messages, tapes and discs are being used more and more for communicating and/or storing information of a private or official nature. The miniaturized recorders of the *transistor era* may even bring deeper changes in our spelling, reading, and book printing habits.

1 Several attempts have been made; the latest one was in 1952. Two of the proposals were: standardize the plural to s (*bijous, yeus, chevaus*), do away with most double consonants (*je jète*). So many difficulties arose that the project had to be shelved.

3. Writing and spelling are two different things. If you can speak correctly, you can write correctly. For example, Madame de Sévigné spoke good French and *wrote* good French although her *spelling* was bad; in her days, most writers felt that spelling was a menial job to be done by the printer.

4. Spelling, by itself, has no real cultural value. The French children who have to memorize that seven nouns ending with *ou* take an *x* in the plural, that all the words ending with *eu* take an *x* in the plural except *bleu* and *pneu* are simply wasting their time --time which they badly need to spend on more important aspects of the language. French-speaking and English-speaking children are at a disadvantage in comparison with German or Spanish children since these have to spend far less time on the acquisition of the spelling of their mother tongue.

It is important therefore that the teacher realize that the conventional and arbitrary nature of the academic spelling should not entitle it to the position of importance it is now granted[1]. This respect is fairly recent; it is only since the beginning of the nineteenth century that spelling has become a social obligation and one of the conventional signs of culture. In the French elementary and secondary educational systems, the *Dictée* is an eliminative feature; that hurdle must be passed before the candidate can be judged on his real culture.

This misconception of the importance of spelling has spread many prejudices:

a. One of these prejudices is that words *own* their spellings and that these spellings are part of the French cultural heritage. Any attempt to modify the visual appearance of words is felt by many cultured Frenchmen as a sacrilege against the national patrimony. They express the fears that a change in the spelling would destroy the French literary treasures, that the school children would no longer receive the intellectual habits that the learning of spelling inculcates, etc. These fears, of course, are unwarranted. A literary masterwork remains a masterwork no matter how it is spelled (the spelling used in the days of Rabelais was quite different from the one used today and most Frenchmen could not read Rabelais in the original spelling); physics and mathematics can do a more fruitful job of forming the mind than arbitrary rules of spelling.

b. Another prejudice is that homophones should have different spellings: *sang, sent, cent, etc.* Such a line of reasoning is particularly difficult to follow; indeed if the words are not confused when spoken -although they sound alike- why should they be confused if they were spelled alike? Wouldn't the following sentences be perfectly clear: *J'ai mal au doit -- Il doit rester?*

c. Another prejudice is that spelling should be etymological and should reflect the origin of the word. *Corps* has a *p* and an s because it comes from the Latin *corpus* which was a neuter noun of the third declension, thus having its accusative similar to its nominative; *doigt* has a *g* and a *t* because it comes from *digitum,* accusative of *digitus*. Some of these etymologies are wrong: *dompter* was given a *p* although it comes from *domitare*. In many cases, the principle is applied to only some words in a given family; for example, although all the corresponding

[1] Most dictionaries contain within their own pages the condemnation of the spelling they give since they feel obliged to give a second spelling (phonemic) after each word.

words have only one *n* in Latin, we have *honneur* opposed to *honorer, honorable, etc.*

It is difficult to understand why spelling should be etymological. If the Frenchman knows Latin, he should know that *doigt* (no matter how it is spelled) comes from *digitum*; on the other hand, if he knows no Latin, it is hard to imagine what the *g* and the *t* can remind him of.

We are not saying that our students should not be taught how to spell. On the contrary, we firmly believe that as long as the present spelling remains in force it should be taught well, but we should not attribute to it a value that it does not have.

FURTHER REMARKS ABOUT PRONUNCIATION

The following remarks may help clarify some of our previous discussions about pronunciation.

1. The term "satisfactory pronunciation" is hard to define because there are so many subjective factors at work. As a broad statement, it can be said that a pronunciation becomes satisfactory when it can be readily understood by a native without annoyance. We should, however, keep in mind that natives vary greatly in their ability to understand foreigners: some natives do not understand French unless it is spoken with exactly the features of pronunciation that are current in their region; others -mostly in large and cosmopolitan cities- can understand French easily even when spoken with a poor accent.

2. When discussing the pronunciation "plateau", we should keep in mind that many students --those who have had poor or unprepared teachers-- have never been given a chance to reach their plateaus. When, later, such students take a course in remedial phonetics in some summer school, the special instruction they receive bring them up rapidly to their plateaus. Thus, a spectacular progress may be achieved during the first summer; a second summer all too often proves discouraging because -having reached their plateaus during the first summer- the students are not able to repeat the brilliant success of the previous summer.

3. Some of the methods recommended by phoneticians appear excellent on paper, but do not work when applied to students. Take, for example, the problem of teaching the French /r/. We are advised: "Do not tell your students it is an R sound, do not show them the spelling; ask them to imitate; you may tell them that it is a kind of aspirate h or a soft jota, but never tell them it is an R because the very mention of an R brings the tongue reflex of the American R". This is fine in theory, but in fact most Americans who hear *bras, cerise, treize, arbre, etc.* associate that strange French sound with the letter R. We experimented with American children (ranging in age from seven to thirteen years) who did not know French; we asked them to spell twelve French words as if they were English words; in the vast majority of cases, the students used the letter R (there were only a few cases where the R sound was spelled with a letter h or l). The following list is typical of what we obtained:

treize	*trez*	*perdre*	*pairdra*	*mourra*	*moora*	*bras*	*braj*
père	*pear*	*battre*	*butra*	*iris*	*ireece*	*cire*	*sir*
courra	*coura*	*cirque*	*cirk*	*arbre*	*arbru*	*riz*	*ree*

Thus, it seems that the teacher who talks about a "soft jota" or otherwise beats around the

bush is fooling nobody but himself; the students know he is talking about an R; they know it not only with cognates such as "*arrive*", "*rivière*", "*rouge*", but also with non-cognates such as "*bras*", "*arbre*", "*perdre*".

An American child taken to France and speaking nothing but French for several months will not necessarily acquire a French /r/. In 1956, we took a seven-year old child to France; for six months, that child lived in a family where no English was spoken. At the end of this period, the American child had forgotten how to speak English and spoke French as fluently as a French child --but with an American R (thus showing that even a young child can associate these two sounds).

APTITUDE TESTS

Learning to express oneself in a second language does not represent by itself an accomplishment of great cultural value. Culturally, it makes little difference whether you are able to say *I am hungry, It is cold, etc.* in one or several languages. The mechanical skills of being able to communicate in a second language take a long time to acquire and they become valuable only if they are going to be used for cultural purposes.

At the present time, only a small minority of our students are putting this training to valuable use. The others fall within one of these two categories:

1. Some do not have the necessary background or native ability to acquire these language skills well enough within the time limits of our academic programs. The proportion of these students is increasing because we are trying to improve our standards (that is, include the difficult audio-oral skills in our language courses) at a time when we are receiving in our high schools and colleges students who are the products of a deteriorating educational system. Proper intellectual training must begin in first grade. Supposing that our educational system could make the necessary changes overnight, it would be six years before properly trained students would reach our junior high schools and twelve years before they would reach college.

2. Others acquire the skills, but they do not continue with their study of the language, thereby quickly forgetting the skills. The efforts of the teacher and the students are lost.

It is regrettable that so few of our students are able to profit by their language courses, but until the necessary changes are made in our whole educational system, it is a tragic waste of our scarce resources to spend precious time on such students. They would derive more profit from a general language course where various language systems and related cultures would be examined. Language laboratory work -for listening purposes-, although not essential, would be useful.

Thus our best language teachers should spend their time on linguistically able students in order to prepare the top language-trained people we need.

What are the qualities that are required for success in a language course?

The students should have a high audio *comprehension aptitude* and a high *linguistic ability*.

It is important not to confuse both factors. We have had students who had the gift to pick up the comprehension of a language very fast, but who never learned to express themselves correctly; on the other hand, we have had students who, although they learned to express themselves correctly, never reached the point where they could have understood French spoken at normal speed (we have even had cases of students who could not understand, after a week's interval, their own recordings; the French was correct and could easily be understood by the teacher, but the speaker himself could not follow his own words).

By high linguistic ability we mean that:

1. The student knows the structure of his own language; he is aware of the nature and function of words. His knowledge of the English vocabulary is above average. This superiority is reflected in his knowledge of the so-called cognates.

2. He is able to observe and reproduce foreign sounds, forms, and structures without being influenced by his native language (that is, he is *not* the type of student who, year after year, keeps saying: *J'écoute à lui - Je cherche pour mon livre, etc.*).

3. He has a good analytical mind: he is able to analyze forms and structures, find the meaningful contrasts, and use those findings to express himself correctly.

4. He has a better than average cultural background (for students of his age); this is necessary since audio comprehension depends not only on a knowledge of forms, structures, and vocabulary, but also on one's acquaintance with the cultural material and ideas under discussion.

5. He has a better than average auditive and visual memory.

6. He has a durable enthusiasm for foreign language study; he realizes that, in this particular field, there is no easy path to success, that hundreds of hours of work will be necessary before he can have a feeling of solid accomplishment.

What are the means that can be used to select these students before the courses start?

1. A linguistic ability test. Such a test has been developed by John B. Carroll and Stanley M. Sapon (available from *The Psychological Corporation, 304 East 45th Street, New York 17*). We have developed a test of our own, but it is valid only for students of college age.

2. The student's grades in his English courses or previous foreign language courses.

3. The verbal score on the Scholastic Aptitude Test. We have found that students with a score under 575 are not generally able to perform well in audio-oral courses.

In any case, in small classes the first two weeks are generally sufficient to determine whether the student will be successful or not.

These three devices measure only the intellectual factors of the student and his potential readiness for the intellectual exercises that will be demanded of him. It does not take into account the non-intellectual factors such as work habits, capacity for perseverance and enduring interest or enthusiasm, motivation, resistance to fatigue, influence of the environment, health, etc. Those non-intellectual factors do play an important part, but they vary so much in the course of the year that it is not possible to evaluate them with any degree of accuracy. The

teacher can only hope that they will be either positive or non-significant.

REMARKS ON THE USE OF THE AUDIO-ORAL REVIEW TAPE

As we stated on page 46, the student must do the following:

#1 - If he does not understand a problem or answers a problem wrongly, he must listen again at once to this problem.

#2 - At the end of each drill, he must listen again to the problems he missed and check that he remembers the correct answers.

At the present time and with the equipment we have, #1 can be done as follows:

a. With a tape recorder, you have to back up the tape; this, depending on the machine, can be done either with a backspacing lever, the rewind lever, or by hand.

b. With a disc or belt machine, the pickup arm is moved back; most of these machines have a reliable backspacer.

At the present time and with the equipment we have, #2 can be done as follows:

a. With a tape recorder, you write down the number of each sentence where you make an error (or the number appearing on the footage counter); you rewind the tape to the beginning of the drill and you use the fast forward lever to locate the problems you have to do again. This is difficult, time-consuming, and can become exasperating.

b. With a disc or belt machine, you write down the number of each sentence where you make an error; at the end of the drill, it is fairly simple to move the pickup arm from missed sentence to missed sentence.

What improvements can be made?

For #1, none seems possible; a backspacer seems to be the best answer to the problem[1].

For #2, an indexing device is desirable. During the drill, the student would press a button every time an error is made; at the end of the drill, this indexing device would play over again the sentences missed by the student during the first run.

On a disc or belt machine, this would be a simple mechanical problem; a device similar to the tabulator on a typewriter would move the pickup arm automatically from missed sentence to missed sentence without waste of time. On a tape machine, some time would be lost as the tape

[1] Some people have thought of installing a tape loop inside the tape recorder. This loop would keep in store the previous two, three, or four seconds of the tape and would make them available whenever needed for as many playbacks as necessary (thus eliminating the need for continual rewinding). The engineering difficulty would not be hard to solve, but the fixed length of the loop (say four seconds) would mean that it would repeat not only the needed sentence but also a little of the preceding one.

changed from one sentence to another; the main difficulty would be the engineering problem of moving the tape rapidly and stopping it abruptly.

It is also possible to devise a tape machine which would have a special extra reel of tape where the missed sentences would be recorded automatically. At the end of the drill, the machine would play this special reel and the student would hear only the missed sentences.

AN OBJECTIVE EVALUATION MACHINE

At present, the student who uses the language laboratory for review must rely on self-evaluation (he compares his answer with the answer given by the machine). We have stated (page 18) that the student cannot perform satisfactorily this self-evaluation in pronunciation drills (he cannot know *for sure* whether the way he pronounced /**y**/ is correct or not). We also stated that we can generally rely on self-evaluation when the drills are based on forms and structures (the student can discover that he said *Il venira* instead of *Il viendra*). However, there are cases where even this self-evaluation for forms and structures becomes difficult. For example, if the student has to shift the following sentences to the masculine:

C'est une bonne élève **setynbonelɛv** *C'est une grande amie* **setyngrɑ̃dami**

he may answer:

setœ̃bɔ̃nelɛv instead of **setœ̃bonelɛv** **setœ̃grɑ̃dami** instead of **setœ̃grɑ̃tami**

and fail to notice his errors when the machine gives the correct answers. To remedy this difficulty, we suggested on page 47 that at such points the recording should include a short reminder after the answer: "*Did you say* **œ̃grɑ̃tami** *with a* /**t**/ *sound?*".

It is possible to envisage a machine which could evaluate the student's answer and tell him whether his answer is right or wrong. Such a machine could, for example, make an instantaneous spectrographic analysis of the student's answer, match it with the spectrographic analysis of the correct answer and inform the student of the wrong feature(s). Whether such a machine can be built and whether its cost would be within our means remains to be seen.

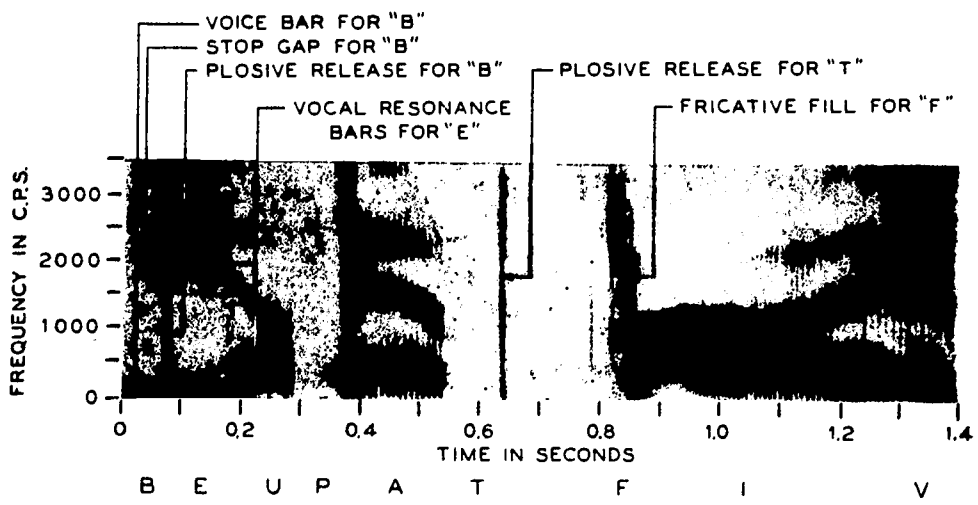


Figure 75. Spectrogram of *Be up at five*. The broad dark bars indicate vocal resonances; the intensity appears as relative shades of gray (the darker the band, the more intense the sound); the spacing between the vertical stripes indicates the intonation.

We are in the process of developing a simple teaching machine which will test whether the student knows what the component sounds of the answer should be. For example, if the machine plays *C'est une bonne amie* and asks the student to

shift the sentence to the masculine, he should press switches corresponding to the following sounds:

s e t œ̃ b ɔ n a m i

Whenever the right switch is pressed, a white light flashes; if the wrong switch is pressed, a red light flashes. The machine keeps track of the number of correct and wrong answers.

REPORT ON ENDLESS TAPE LOOPS

This is a report on *endless* tape loops; do not confuse endless tape loops with self-threading hub-to-hub cartridges (refer to pages 143 and 144). This report is based on present (early 1960) loops; we are not discounting the fact that improvements *may* be made.

A. Major drawbacks due to the construction of the loop:

1. The tape cannot be rewound. If you make an error while recording, you have to leave the error or start the whole assignment again. If, while listening, you want to listen again to the preceding sentence, you have to wait until it comes around again[1].

2. The fast forward function cannot be used; it is impossible to locate a particular section rapidly and it is impossible to concentrate one's work on this particular section (you have to listen to the whole loop even if nine tenths of the material are already known).

3. You have to fit the duration of your drills to the length of the loops you have. For example, if you have only 5-minute or 8-minute loops, you cannot prepare drills of only three or four minutes. It is of course possible to stock cartridges in many various lengths, but the cost would be very high; the special tape and the cartridges are far more expensive than ordinary tape.

4. Since there is constant friction between the layers of the tape, some lubricant is used on the tape. As this lubricant wears off, the tape squeals and binds. Sometimes, too much lubricant is applied at the factory and this causes the tape to slip between the capstan and the pressure roller. The endless loop is therefore subject to flutter, wow, and changes in the average speed (a fifteen-minute loop may play in fourteen or sixteen minutes).

5. Because of these speed variations, it is difficult to time oneself while recording a drill; you may finish recording your drill before the end of the loop (thus leaving a piece of blank tape) or you may come to the end of the loop before you have finished recording (thus having to omit the last part of the drill). Therefore you cannot be sure that you will be able to record exactly what you want: you may be forced to add something to your recording or forced to subtract something from it.

[1] The persons who are in favor of using loops say that not having to rewind saves time, but it should be obvious that this gain of a few seconds is insignificant when compared to the full list of drawbacks.

6. The tape cannot be edited; removing a piece of tape would change the amount of friction inside the loop and it would not work properly.

7. You can prepare your recording on an ordinary machine (where the tape can be edited). If you prepare your recording on regular tape (without the special lubricant), you have to copy it onto the loop, but the speed variations mentioned above make it difficult to fit your recording exactly on the loop. If you use tape with the special lubricant, you can load it into the cartridge, but this is an extremely delicate operation which requires far more than average dexterity (the July 1957 issue of *Hi-Fi Tape Recording* shows with pictures the *sixteen* steps necessary to load a *Fidelipac* cartridge).

8. The endless loop has to have a splice (in fact, it has usually two since there is a piece of leader tape to indicate the beginning and the end of the loop). These splices are weak points which may break.

9. The cartridge itself is a piece of machinery with wheels, bearings, springs. In time, these may get out of adjustment.

B. Drawbacks affecting the quality of reproduction:

1. The thickness of the tape lubricant creates a separation between the head and the oxide, thereby decreasing the frequency response. Furthermore, this lubricant tends to accumulate on the heads, thus decreasing the frequency response even more.

2. The speed variations mentioned above affect the quality of reproduction.

C. Drawback affecting the operation of the language laboratory:

A student may stop his work halfway through the cartridge; the student who comes after him has to wait until the tape goes back to the beginning.

REMOVING THE EQUIPMENT FROM THE BOOTHS

Some professors are concerned about the fact that the students may damage the equipment in the booths; they recommend that all the equipment which can be removed from the booths should be installed in a special room and should be automatically controlled from the console.

We have already underlined the pedagogical dangers of a language laboratory where the student has no control over the recording he is working with. Removing the equipment from the booths does not seem satisfactory for the following additional reasons:

1. Only part of the equipment can be removed; the headphones, the microphone, the volume control, the listen-record switch have to be left in the booth. If the students are careless, they will break these items. The solution does not consist in removing part of the equipment, but rather in building stronger units.

2. Some physical activity (for example, moving the stop-start knob) provides a release of physical energy and may facilitate the mental work.

REMARKS ABOUT AN EXAMINATION MACHINE

Please refer to our description of a group examination and group correction on pages 64 and 65.

1. It has been suggested that it would be easier for the students if the movement of the tapes or discs in the booths were controlled by the teacher. The students would hear the question and would wait until the professor started the tapes or discs to give their answers.

This system would have several drawbacks:

a. It would be expensive to install a special wiring from the console to all the booths and to install in each booth a special solenoid which would actuate the pause lever (it would be cheaper to stop-start the motors, but this would cause some difficulty since when you start the motor the tape or disc does not resume its normal speed at once).

b. If all the tapes or discs were started and stopped together, the teacher would have to allow enough time for the slow speakers; therefore, there would be blank spaces of varying lengths on all the tapes or discs.

It is even possible to install a device which would be connected to the examination tape and which would automatically start and stop the tapes or discs in the booths, but the drawbacks would even be worse since the time delay switch would have to be set for the longest answer spoken by the slowest student.

All this would deny the principle of our group examination and group correction since our purpose is *to save time* and have no blank spaces on the answer tapes or discs.

2. Some envisage a system where all the students would record their answers at the same time on the same machine; this machine could use tape, a magnetic belt, or a magnetic drum.

Such a machine can be built now; for example, we can easily put thirty-two parallel tracks on a tape two inches wide. Such a machine, however, would be complicated; it would have the drawback explained in (b) above, and we doubt that it would make the teacher's work any easier.

It does seem again that the simplest method is the best to use. Having the students record on their individual tapes or discs as described on pages 64 and 65 does seem preferable.

FUTURE LANGUAGE LABORATORIES

Throughout this book, we have stated that we need more *efficient* teaching methods and *simplified* equipment.

The ideal would be to have dependable equipment which could be lent to the students for use

at home or in their dormitory rooms. The language laboratory would then become a place where masters and copies are made and where audio examinations are given.

We shall now try to describe the various types of machines which *may* become useful in future language laboratories.

The speech stretcher

Language teachers often try to slow down their speech so that their students will hear distinctly what sounds should be used, but it is extremely difficult to slow down one's speech without modifying the component sounds; for example, it is difficult for a Frenchman to say very slowly /nəmparlepɑd̩sɛtlɛtr̩/ without modifying the articulation of the sounds.

We know that if a disc or tape is played at half-speed on a regular machine, the sounds are completely changed. The speech stretcher is a special machine which has been designed to play the tape or disc at half-speed and restore to the sounds their original quality (it acts as a frequency doubler). Thus, the students have more time to listen to the characteristics of the sounds they must learn.

The speech compresser and speech expander

Several years ago, Professors Fairbanks, Everitt, and Jaeger (University of Illinois) developed a machine which can either compress or expand speech without modifying the sounds or the pitch of the voice[1]. This machine could be used for audio comprehension exercises[2].

Automatic translating machines

Present research indicates that it may be possible to build machines which will automatically translate one language into another --directly from the written page and, possibly, from the spoken stream. Such machines could be used for translation drills or even robot conversations (that is, a machine talking with the student and correcting him).

The video tape recorder

This machine records pictures magnetically on tape and can play them back instantly on a screen similar to a TV screen. The pictures and the sounds are recorded on the same tape; this audio-video tape is usually two inches wide. The principles of video recording on magnetic tape are similar to the principles of audio recording, but the engineering problems are much more difficult since the video signals (light vibrations) go as high as several million cycles per second as compared to the average range of 20-15,000 cycles per second for the sounds perceived by the human ear.

[1] The use of this machine was considered by some radio stations (for example, a station would be able to rebroadcast in a thirty-minute program a speech originally lasting thirty-five minutes.

[2] In these discussions, keep in mind that information can be received much faster by eye (a fast reader can read about 500 words per minute) than by ear (most people have difficulty understanding speech spoken at over 200 words per minute)

At present, video tape recorders are expensive and are used mostly by the TV networks (the shows are taped, edited, erased, improved, etc. before the final tape is broadcast). The manufacturers of video recorders hope to bring their prices down so that home units can be bought by TV viewers who want to record and preserve their favorite shows. Portable audio-video cameras are also a possibility (a tourist would be able to take a picture of a scene in France and record the sounds at the same time; then, he could play back the tape at once to check that the picture and sound are satisfactory; if not, the tape could be erased and the scene taken again).

As far as language teaching is concerned, it is possible that we shall have booths or practice rooms equipped with audio-video recorders. Whether such units would improve the quality of language teaching remains to be seen.

Pronunciary (talking dictionary)

The machine would give a definition of words, would supply examples and idiomatic phrases. The student would only need to press the button corresponding to the word he wants to look up.

Closed TV circuits (on campus)

Some educators are considering the possibility of installing a TV screen in every student's dormitory room. The student would review his homework (French, physics, Spanish, etc.) simply by tuning in the proper channel.

Dormiphonics, hypnosis, etc.

Tentative experiments indicate that it may be possible to learn while one is asleep; others indicate the possibility of teaching pronunciation while the student is under hypnosis. Some persons are prophesizing the invention of a language learning drug.

Such experiments should be undertaken only under special conditions since they may be dangerous (some experiments have resulted in traumatisms and psychoneuroses).

George, wake up, you're working too hard ...

Conclusion

As the cartoon shows, these future language laboratories should be taken with a grain of salt. Our purpose is not to develop machines only for the sake of developing machines, but to teach languages and bring about cultural enrichment.

ENGLISH-FRENCH VOCABULARY

This vocabulary has been prepared for the courses in Language Laboratory Methodology.

The terms used in this vocabulary are those which are recommended by the Comité Electronique Français.

A

acoustic material	un matériau absorbant, un matériau acoustique isolant
acoustic tile	une plaque acoustique, une plaque d'insonorisation, une plaque d'Isorel
acoustic treatment	un revêtement isolant, un revêtement d'insonorisation
adapter for 110 V., 130 V., 150 V., 220 V., etc. operation	un fusible distributeur pour 110 V., 130 V., 150 V., 220 V., etc.
to adjust	régler, mettre au point
adjustment	un réglage, une mise au point
adjustment knob	un bouton de réglage
amplifier	un amplificateur, un ampli
antenna	une antenne
automatic stop and start button (lever)	un bouton (levier) d'arrêt et de démarrage automatiques
automatic volume control (AVC)	enregistrement automatique, sensibilité contrôlée automatiquement
azimuth (adjustable azimuth)	azimut orientable

B

background noise	le bruit de fond
backspacing	le retour automatique
baffle (loud-speaker)	un écran, un baffle
band (radio band)	une gamme d'ondes
band (on a phonograph record)	une plage
base (on a magnetic tape)	le support magnétique
base (turntable)	un socle
battery-powered	alimenté par pile
battery recorder	un appareil, un magnétophone à pile; un magnétophone autonome
belt	une courroie
bias current	le courant de polarisation magnétique
binaural listening	une écoute binauriculaire
binaural recorder	un magnétophone binauriculaire
binder (on magnetic tape)	le liant
booth	un isoloir, une cabine
a break (a tape break)	une rupture (accidentelle) du ruban
built-in (built-in machines)	des appareils fixes, incorporés
bulk eraser	un démagnétiseur

C

capstan	un cabestan
cartridge (phono cartridge)	une cellule, une cellule phonocaptrice, un phonocapteur, une tête de lecture
crystal cartridge (phono)	une tête de lecture piézoélectrique
cartridge (tape cartridge)	un chargeur à ruban, un boîtier-chargeur
channel	un canal
a one-channel machine	un appareil monophonique, monocanal, monaural

a dual-channel machine	un appareil bicanal
component (in a sound system)	un élément d'une chaîne
connection	une connexion, un branchement
console	une console, un pupitre de commande
control (recording volume control)	le réglage de niveau à l'enregistrement
control (playback volume control)	le réglage de niveau à la lecture
converter	un convertisseur
a copy	une copie, un double, un réenregistrement
to copy	copier, repiquer, faire un repiquage
cord (power cord)	un cordon d'alimentation
counter (index counter)	un compteur, un compte-tours
counter resettable to zero	un compteur avec remise à zéro
crosstalk	la diaphonie
to cue, cueing	repérer, le repérage
curve (response curve)	la courbe de réponse
to cut a record	graver un disque

D

damaged (damaged by oil)	détérioré (sous l'action de l'huile)
dead room	une salle sourde, muette
decibel (db)	un décibel, un db
deck (tape deck)	une platine d'enregistrement
dial	un cadran
diaphragm (loud-speaker diaphragm)	une membrane de haut-parleur
direction of tape travel	le sens de défilement du ruban
directional	directionnel
distortion	la distorsion, la déformation
dull side of the tape	le côté mat, la partie enduite, la couche sensible
duplication of the master tapes	la duplication, la copie des rubans originaux
duplicator	un appareil duplicateur, un duplicateur
duration	la durée
dynamic	électrodynamique

E

earphones	des écouteurs (m.), un casque
to edit	faire un montage, un découpage
editing	un montage, un découpage
enclosure (loud-speaker enclosure)	un cabinet, un coffret
equalization	la correction, la compensation, l'égalisation (f.)
equalization curve	la courbe de correction

In the United States there are at present two equalization curves: the RIAA (Record Industry Association of America) curve, generally used for records; and the NARTB (National Association of Radio and Television Broadcasters) curve, generally used for tapes.

In Europe most recording companies use the CCIR curve (la courbe de correction CCIR) as recommended by the Comité Consultatif International des Radiocommunications.

equalizer	un correcteur, un compensateur
erase current	le courant d'effacement
to erase	effacer
extensible	extensible, télescopique

F

fast forward	le bobinage rapide, la marche avant rapide
feedback	un effet de réaction
film	un film
silent film	un film muet
sound film	un film parlant
flutter	le scintillement, le chevrotement
flywheel	le volant régulateur
FM	la modulation de fréquence
to focus	mettre au point
foot control	une pédale
frequency response	la bande passante
function selector	un commutateur
fuse	un fusible, un plomb
a fuse has blown	un fusible a sauté

G

gain	le gain
gap (head gap)	un entrefer
groove (on a record)	un sillon
interband groove	le colimaçon
lead-in groove	les spires (f.) de sillon de départ
lead-out groove	les spires (f.) de sillon de fin
pitch of the grooves	le pas de sillonnage
ground	la terre, la masse
guide (tape guide)	un guide-ruban, un guide-bande, une encoche pour le guidage de la bande

H

handle	une manette
to handle, handling	manier, le maniement
head alignment	l'alignement (m.) des têtes
head bracket	le support des têtes
head cover	le capot des têtes
head demagnetizer	un démagnétiseur de têtes
head (erase head)	la tête d'effacement
head (playback head)	la tête de lecture
head (record head)	la tête d'enregistrement
headphones	des écouteurs (m.), un casque
heads (stacked heads - staggered heads)	des têtes étagées, superposées - des têtes décalées
high output (HO) tape	une bande de haut niveau
holdback (tape holdback)	un doigt de tension, un tendeur à ressort

hub (on a reel)	le noyau de la bobine
hum	un ronflement, un ronronnement
hysteresis (hysteresis motor)	un moteur à hystérésis

I J K

idler wheel	un galet caoutchouté
impedance	une impédance
interference filter	un dispositif antiparasites
ips (inches per second)	cm/s (centimètres par seconde)
jack (input jack, output jack)	une prise d'entrée, de sortie
jack box (multiple jack box)	une boîte de jonction (à prises multiples)
keyboard (push buttons)	un clavier
knob	un bouton, une commande

L

lamp	une lampe
exciter lamp	une lampe excitatrice
projection lamp	une lampe de projection
language laboratory	un laboratoire de langues
layer of tape on a reel	une spire
leader tape	une amorce
lens	une lentille
lever (a single lever for all tape transport functions)	un levier (un levier unique pour toutes les manœuvres
library (record library)	une discothèque
library (audio library, sound library)	une sonothèque
library (tape library)	une collection de rubans
linear	rectiligne, droit, linéaire
to locate a recording	repérer un enregistrement, le repérage
a loop	une boucle
a film loop	un film sans fin
a tape loop	un ruban sans fin
loud-speaker	un haut-parleur

M

magic eye	un œil magique
maintenance	l'entretien (m.) des machines
maintenance service	le service d'entretien
master machine	l'appareil (m.) de lecture, la machine-mère
master tape	le ruban original, la bande originale, la bande-mère
meter (recording volume meter)	un indicateur de niveau d'enregistrement
microgroove record	un microsillon
microphone	un microphone
ceramic microphone	un microphone céramique
crystal microphone	un microphone piézoélectrique
dynamic microphone	un microphone électrodynamique

ribbon microphone	un microphone à ruban
variable reluctance microphone	un microphone électromagnétique
to mix	mélanger
a mixer	un mélangeur
a mixing	un mixage
monaural	monophonique, monaural
monitor	la lecture de contrôle
monitor head	tête d'écoute (de lecture) pour le contrôle
monitor jack	la sortie de contrôle
monitor loud-speaker	le haut-parleur de contrôle
mu-metal	le Mu-métal
mylar	le mylar

N O

needle (sapphire or diamond)	une aiguille, une pointe de lecture (saphir ou diamant)
omnidirectional	omnidirectionnel
outside dimensions	les dimensions (f.) hors-tout
overload	la saturation
overrecording	la surmodulation
oxide (iron oxide)	un oxyde de fer

P

panel	un panneau
patch cord	un cordon de relais, un cordon de liaison
phono deck	une table de lecture
phonograph	un électrophone
pickup arm	un bras de lecture
pickup arm and cartridge	un lecteur
a pilot lamp	une lampe témoin
pin on a spindle plate	un ergot
to pipe, to feed a program	diffuser, transmettre un programme
playback	l'écoute (f.)
to playback	la machine lit (joue) un ruban
plug	une fiche
PM speaker	un haut-parleur à aimant permanent
pole piece (on the magnetic head)	une pièce polaire
portable	portatif
position (a 12-position laboratory)	un poste (un laboratoire de 12 postes)
preamplifier	un préamplificateur, un préampli
prerecorded (prerecorded tapes)	des rubans préenregistrés
preset (preset volume)	volume réglé à l'avance, préréglé
pressing of phonograph records	le moulage, le pressage
pressure	la pression
pressure pad	un patin presseur, un feutre de pression
pressure roller	un galet presseur
printed circuit	un circuit imprimé
print-through	un écho magnétique, un effet d'empreinte magnétique

projector	un projecteur
filmstrip projector	un projecteur pour films fixes
movie projector	un projecteur pour films
opaque projector	un épiscope
slide projector	un projecteur pour vues fixes, pour clichés, pour diapositives
pulley	une poulie
pulley with a rubber rim	une poulie à jante caoutchoutée
push button, push button operation	un bouton-poussoir, commande par clavier
push button key	une touche
push-pull (microphone, amplifier)	à double effet (microphone, amplificateur)

R

radio receiver	un poste récepteur
range (dynamic range)	la dynamique
record	un disque
record dealer	un disquaire
to record a disc	graver, enregistrer un disque
to record a tape	enregistrer, inscrire une bande
recorder (tape recorder)	un magnétophone, un appareil enregistreur, un enregistreur magnétique
recording	un enregistrement, une inscription
reel	une bobine
feed reel	une bobine dérouleuse, débitrice
take-up reel	une bobine enrouleuse
reel rest (spindle plate)	un platelet, un plateau porte-bobine
remote control (starting by remote control)	la mise en marche par télécommande
removable	interchangeable
to repair	réparer, dépanner
repair service	un service de dépannage, de réparations
replaceable	amovible
reverberation	la réverbération
to rewind	rebobiner
rewind	le rebobinage
rewind time	la durée de rebobinage
RPM (revolutions per minute)	t/m (tours minute)
rubber idler	un galet caoutchouté

S

safety lock (button)	un bouton de sécurité, le verrouillage de la position d'enregistrement, un verrouillage de sécurité (pour éviter les erreurs, les fausses manœuvres)
screen	un écran
beaded screen	un écran perlé
mat screen	un écran mat
selector	un sélecteur, un commutateur

self-correction	l'autocorrection (f.)
shavings (when cutting a disc)	copeaux (m.)
shield	un blindage
shielded (a shielded wire)	blindé (un fil blindé)
shiny side of the tape	le côté brillant, la partie non-enduite
shockproof	antichocs (anti-chocs)
shut-off (automatic shut-off)	un arrêt automatique
signal-to-noise ratio	le rapport signal-bruit, le rapport signal-parasites
to slip	glisser
slot	une fente, une rainure, un couloir de passage
soundproof	insonorisé
soundproofing of the walls, partitions	l'insonorisation (f.) des parois
soundproofing material	une matière absorbante, un revêtement acoustique, un revêtement d'isolation phonique
sound track	la bande de son
spare parts	des pièces détachées
speed (tape speed)	la vitesse de déroulement (défilement) du ruban
speed change lever	un levier de changement de vitesse
spindle	un tambour
feed spindle	un tambour de rebobinage
take-up spindle	un tambour de bobinage
spindle spider (for 45 rpm records)	un centreur (pour disques 45 t/m)
splice	un raccord
at an angle	un raccord en biais
end to end	un raccord bout à bout
splicer	une colleuse, une coupeuse-colleuse
splicing tape	de la bande adhésive, de la cellophane collante
to squeal (the tape squeals)	siffler, crisser
squeal	un sifflement, un crissement
stand (for microphone)	un pied
standard position of the tracks	la définition internationale des pistes, des pistes (f.) aux normes internationales
to start	mettre en marche, mettre en route
start	la mise en marche, la mise en route
starting time (for tape)	le temps de mise en route du ruban
static	des parasites (m.)
stereophonic sound	le son stéréophonique, le son en relief
stop lever (instantaneous)	un levier d'arrêt (instantané)
stroboscope, stroboscopic disc	un stroboscope, un plateau stroboscopique
stylus (for records)	une pointe lectrice
stylus pressure gauge	un pèse-pick-up
surface noise	le bruit de surface
switch	un bouton, un contacteur
system (a sound system)	une chaîne

T

to tangle	emmêler
tape (recording tape)	un ruban, une bande magnétique
raw (blank, virgin) tape	une bande, un ruban vierge
test tape	une bande, un ruban magnétique étalon

tape correspondence	la correspondance sonore
tape speed	la vitesse de déroulement (défilement) du ruban
television set	un téléviseur, un poste de télévision
tetrachloride (carbon tetrachloride)	le tétrachlorure de carbone
thickness of tape ($1\frac{1}{2}$-mil, 1-mil, $\frac{1}{2}$-mil)	une épaisseur (standard, longue durée, double durée)
to thread a tape, threading	enfiler un ruban, l'enfilage (m.)
time (playing time)	la durée de déroulement
tone control	le réglage (le contrôle) de tonalité, de timbre
track	une piste, une voie
half (dual, double, twin) -track recorder	un appareil à double piste, un appareil bipiste
single-track recorder, full-track recorder	un appareil monopiste, à simple piste, à piste entière
student's track	la piste de l'élève
teacher's track	la piste du maître, la piste témoin
tube (vacuum tube)	un tube, une lampe
tuning knob (on a radio)	le bouton de recherche des stations
turntable	un tourne-disque, une table de lecture

U V W

to untangle	démêler
to unwind (the tape unwinds)	le ruban se déroule
volume control	le bouton de volume, le potentiomètre de puissance
volume meter	un modulomètre
washer	une rondelle
to wind a tape	bobiner, enrouler un ruban
to wind (the tape winds)	le ruban s'enroule
wow	un effet de pleurage, du pleurage

QUELQUES PHRASES UTILES POUR PARLER DU MATERIEL

1. L'ergot du platelet doit être engagé dans une des trois fentes de la bobine.
2. La couche sensible du ruban doit venir en contact avec les têtes pendant le défilement du ruban, pendant l'enregistrement.
3. Il faut laisser tomber (faire passer) la bande dans la fente.
4. La bande doit s'engager dans l'encoche; elle doit passer entre le cabestan et le galet presseur; elle doit s'appliquer correctement sur les entrefers des têtes.
5. Une plaque perforée, de la laine de verre absorbent les fréquences aiguës; des murs tendus de reps absorbent les fréquences graves.
6. L'enregistrement peut se faire directement par micro ou par raccordement à un poste de radio.
7. Avec cette machine, aucune fausse manœuvre n'est possible.
8. Cet appareil est livré en ordre de marche.
9. Les galets caoutchoutés sont débrayés à l'arrêt pour éviter la formation de méplats.
10. Le dispositif de commande est d'une grande simplicité de manœuvre.
11. Le changement de vitesse doit se faire pendant que le moteur tourne.
12. Le compte-tours se compose de cadrans gradués; il permet le repérage à un mot près.
13. L'interrupteur de gauche commande l'allumage général de l'appareil.
14. Le cabestan et le galet presseur entraînent la bande à une vitesse stable.
15. Les machines sont équipées d'amplificateurs extrêmement faibles.
16. L'écoute doit se faire au casque.

17. Ces machines seront manipulées surtout par des élèves; elles devront donc être robustes. Les prototypes devront faire leurs preuves.
18. L'œil magique ne s'illumine que sur la position "Enregistrement".
19. Le cabestan est solidaire d'un lourd volant couplé par deux courroies de caoutchouc au moteur.
20. Le changement de vitesse de défilement peut aussi s'obtenir par la mise en place d'une chemise vissée sur l'axe du cabestan.
21. A l'arrêt du rebobinage, la bobine dérouleuse doit être freinée plus fermement que la bobine enrouleuse.
22. Ces signaux provoquent la fermeture ou l'ouverture d'un circuit électrique de télécommande.
23. Les têtes magnétiques sont en retrait des guide-bandes.
24. Il est préférable de dégager la bande pendant le rebobinage.
25. Le passage en position "marche normale" assure la mise en place de quatre pivots qui obligent la bande à parcourir un chemin sinueux assurant l'enveloppement des têtes suivant un angle optimum.
26. Aucun feutre de pression n'est prévu en face des têtes afin d'éviter l'usure prématurée.
27. La pression de la bande sur les têtes est assurée par une retenue du ruban provoquée par un presse-bande situé avant la première tête et agissant sur le guide-bande d'entrée.
28. La bobine débitrice (dérouleuse) doit être freinée pour éviter la formation de boucles. Les boucles en se résorbant provoquent des à-coups.
29. Les flèches indiquent le parcours du ruban.
30. La rondelle en feutre permet au système de patiner.
31. Le défilement s'effectue de la gauche vers la droite.
32. La colleuse a un angle de coupe de 45 degrés.
33. Comment utiliser la colleuse "Robins" : a) Placer les parties à raccorder dans le couloir-guide, oxyde en dessous, en les laissant dépasser légèrement la ligne de coupe. Fermer les presseurs. b) Pousser le bras mobile vers l'arrière. c) Appuyer pour la coupe. d) Enlever le déchet de coupe de la bande supérieure; placer l'adhésif sur les bandes à coller. e) Tirer le bras mobile vers l'avant. f) Appuyer pour couper l'adhésif. g) Relever le bras mobile et les bras presseurs.
34. Le moirage (bandes sombres sur un disque) est une modulation en profondeur qui se produit à la gravure; cette modulation n'est pas audible, mais elle accentue l'usure. N'achetez pas de disques moirés.
35. Pour les disques, le stockage vertical dans des classeurs suspendus est préférable.
36. Il est impossible de déceler un changement auditif dans la qualité du disque avant deux cents passages; l'usure reste très peu perceptible jusqu'au passage 500; ensuite on perçoit un bruit de fond qui croît avec l'usure.
37. Il a fallu résoudre de nombreux problèmes de prise de son dans des salles dont l'acoustique n'était pas favorable.
38. Ce matériel se vend à un prix qui n'est pas à la portée des écoles secondaires.
39. Un ruban commun est diffusé (transmis) à tous les étudiants.
40. Le magnétophone a une grande souplesse d'emploi; c'est un appareil maniable et de faible encombrement.
41. Les panneaux latéraux des isoloirs doivent assurer une insonorisation suffisante pour que les élèves ne puissent pas déranger leurs voisins; cette protection latérale procure une sensation d'intimité qui encourage les étudiants.
42. Grâce à un étagement approprié des têtes, la bande n'est enregistrée que sur une moitié seulement de sa largeur.
43. Les deux pistes peuvent travailler simultanément ou consécutivement.
44. Afin d'éviter toute fausse manœuvre de l'élève (afin que l'élève ne puisse pas effacer la piste du maître par mégarde), nous avons conçu un autre type d'appareil. Cette machine permet

l'écoute simultanée et comparative de la version du maître et de celle de l'élève. Ce magnétophone est double: il est pourvu de deux têtes d'enregistrement travaillant à deux niveaux de la bande; au niveau supérieur, celui de la piste du maître par exemple, nous enregistrons des sons modèles; ces modèles seront écoutés par l'élève qui enregistrera sur la piste du bas sa propre version. Celle-ci viendra s'inscrire pendant les temps morts (les intervalles, les blancs, les pauses) dont nous aurons espacé les phrases modèles (qui auront été prévus entre les phrases modèles) sur la piste du maître. A la fin de son enregistrement, l'élève pourra écouter sa propre version en la comparant à celle du maître.

45. Avec cet appareil, il y a donc deux possibilités: 1) Ecoute des modèles et enregistrement simultané de la prononciation de l'élève pendant les temps morts. 2) Ecoute simultanée et comparative du modèle du maître et de l'imitation de l'élève.
46. Les bandes, une fois enregistrées par le maître, peuvent servir indéfiniment, car la piste témoin est ineffaçable par l'appareil de l'élève tandis que la piste de travail est libérée automatiquement par l'enregistrement suivant.
47. Le micro capte (saisit) les fautes de prononciation et il les restitue avec impartialité. Nous nous entendons au magnétophone comme les autres nous entendent. L'étudiant doit découvrir les imperfections de sa prononciation. La faute est décelée par l'étudiant lui-même et elle devient un encouragement à se perfectionner.
48. Le laboratoire permet à l'étudiant de manier la langue vivante, de faire l'apprentissage de la langue parlée.
49. Grâce au magnétophone, chaque professeur peut avoir des enregistrements (des images sonores, des illustrations sonores, des matériaux sonores, une documentation sonore) à la mesure de l'usage qu'il veut en faire. Les enregistrements ne sont valables que dans la mesure où ils ont été préparés en vue d'une utilisation particulière.
50. Il faut ralentir le débit de la parole.
51. Les élèves viennent travailler par petits groupes, à tour de rôle. Il faut établir un roulement.

ADDITIONS

to demagnetize	démagnétiser
to magnetize	magnétiser
magnet	un aimant
record brush (antistatic record brush)	un dépoussiéreur électro-statique
to roughen up (an idler wheel)	dépolir, enlever le brillant
transistor	un transistor

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