

AN EXPERIMENTAL STUDY OF INTONATION IN HUMAN SPEECH

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<https://doi.org/10.15017/6795461>

出版情報 : 言語科学. 4, pp.47-90, 1968-03-29. The Group of Linguistic Studies College of General Education, Kyushu University

バージョン :

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AN EXPERIMENTAL STUDY OF INTONATION IN HUMAN SPEECH

T.Nishihara et al.

The chief aim of our experimental research of linguistic sounds is to cast a light upon the difference and affinity of intonational patterns to be detected in human speech. The recorded material shown here will be to some extent available for the study of intensity, duration and quality of the sounds as well.

As for these records, we used an oscillograph (equipped with two galvanometers, 0-1,000 c/s) connected with a pitch-indicator, with a tape-recorded sound put in. This mechanism, it is suspected, has some limitations for copying the whole figure of sound. Even the typography was likely to hinder us from locating the precise position of each phoneme. So it will take us some time to publish our own interpretation of these tracings, which is expected in the next issue of our journal.

Our project is planned to cover as many languages and dialects as possible using the same method. It is our hope that some readers of this article will help us by translating the original dialogue of 'The North Wind and the Sun' into their language and send us the recorded tape (19 cent./s). (In this project the Japanese interpretation has been used as the original, but the German would do.)

The leaders of our linguistic group this time were T. Nishihar and K. Nasu, the former dealing with Japanese, American English, German and French, and the latter with Chinese. They are much obliged to many advisers and col-

laborators: Mr. T. Tsukagoshi, Assistant-Professor of Tokyo Gukugei University, who arranged for his son and two daughters, all brought up and now living in Tokyo, to vocally produce the Japanese dialogue on tape, Mr. T. Moriyama reviewing the phonetic transcription of it, Mr. J. E. Eastop, American Instructor of Kyushu University converting the English interpretation into Americanism and recording it by himself, Miss B. Müller, German Instructor of the same University translating the original dialogue into her own language and recording it herself, Mr. H. Saita and Mr. J. Mōri checking its typography, Prof. S. Jōno transferring the dialogue into French, on which Mr. M. Vié, French Instructor of Kyushu University gave his advice and which he recorded. Concerning the Chinese recording on tape, we unluckily failed to copy the voice of a native speaker of Peking dialect adequately, so K. Nasu was compelled to record a tape in the Chinese language. He is a Japanese, born and reared in Port Arthur and finished his last educational course in Peking. In this respect we must also express our gratitude to Mr. D. Wang, Assistant-Professor of Kitakyushu University who gave aid to K. Nasu.

Something must be mentioned about the peculiar way of phonetic transcription we employed here. Generally we used international phonemic symbols and sometimes, as needed, allophonic ones. In Japanese the interval between two consecutive identical plosive-symbols marks the duration of stop of the plosive; to be more precise, /u/ must be replaced by advanced /w/, /r/ by the sign /ɾ/ representing any sound ranging from [l] to [r], /dʒ/ and /ʒ/ signify the same one phoneme varying from [dʒ] to [ʒ], and [ŋ] is nothing but a member of /g/ phoneme in Japanese.

The phonetic symbols for Chinese are so complicated

for printing that we used the governmental spelling method called Hanyu Pinyin Fang'an. The following is the table of this method in reference to international phonetic symbols.

Consonants:

b [p]	p [p']	m [m]	f [f]
d [t]	t [t']	n [n]	l [l]
g [k]	k [k']	h [x]	
j [tɕ]	q [tɕ']	x [ɕ]	
zh [tʂ]	ch [tʂ']	sh [ʂ]	r [ʐ]
z [ts]	c [ts']	s [s]	

Vowels:

a [a]	o [o]	e [ə, e]	i [i, ʏ, ɨ]
u [u]	ü(u) [y]		

北 風 と 太 陽

北風： 君と僕じゃ、何といっても僕が強いね。

太陽： そりゃー僕の方だよ、北風君。

北風： いや、僕だよ。

太陽： どうしてさ？ 僕に決っているじゃないか？

北風： よーし、じゃーひとつどちらが強いかな試してみよう。

太陽： あー、やろう。それじゃー、何で試そうか？

北風： うーむ。おやおや、あすこから旅人が来るぞ。なかなか温かそうな外套を着てるじゃないか。そうだ、あの外套を先に脱がせた方が強いことにしよう。

太陽： それは名案だ！ 君からやってみたまえ。

北風： じゃー、すぐに吹きとばしてみせる。ヒュー！

旅人： 急に風が烈しくなったなー！ 外套を飛ばされないようにしなくちゃー。

太陽： ははは、北風君！ 早く脱がせてみせろよ。

北風： ようし、もっと強く吹いてやれ。ヒュー！

太陽： だめだめ！ 今度は僕の番だ。

北風： うーむ、残念！

太陽： さあ、どんどん照らすぞ。

旅人： 今日は何て変な天気だろう！ さっきはあんなに風が強かったのに、今度は日が照るなんて！ とてもこの温さには外套なんか着ていられはしないや。

北風： やや、外套を脱いでしまったぞ。

太陽： どうだい、北風君！

北風： 負けだよ。甲を脱ごう。

THE NORTH WIND AND THE SUN

NW: Between you and me, I'm the stronger.

S: No, you aren't. I am.

NW: No; I am.

S: Why? I'm sure I am the stronger.

NW: Well, let's try to prove who is the stronger.

S: All right! What shall we do, then?

NW: Hum! Look! There comes a traveller. He is wearing a warm coat, isn't he? Now, let's see who can make him take off his coat first, you or me? Whoever wins is the stronger.

S: Good idea! You try first.

NW: Well, I'll blow his coat off soon. Blll...

TR: Oh, the wind is beginning to blow harder. I'd better be careful, or my coat will be carried away.

S: Ha, ha, ha! Don't hesitate to show me how you take off his coat, my friend.

NW: All right. I'll blow harder. Blll...

S: Give up, my friend. Now, it's my turn to try.

NW: Oh! What a pity!

S: Now I'll shine warmly.

TR: Bad weather today! Just now we had a hard wind and now the sun is shining brightly. In this heat I can't keep my coat on.

NW: Look there! He's taken off his coat.

S: Now then, Mr. North Wind, who is the stronger?

NW: Sorry! You win.

DER NORDWIND UND DIE SONNE

NW: Von uns beiden bin ich natürlich der Stärkere!

S: Nein, das bin wohl ich, Nordwind.

NW: Nein, ich!

S: So? Das bin nicht ganz klar ich?

NW: Gut, dann lass' uns mal ausprobieren, wer der Stärkere ist!

S: Ja, gut. Aber wie sollen wir das machen?

NW: Hm. Sieh mal, da kommt ein Spaziergänger! Trägt er nicht einen Mantel, der ganz schön warm zu sein scheint? Nun, wer ihn zuerst dazu bringt, diesen Mantel auszu-
ziehen, ist der Stärkere.

S: Das ist eine gute Idee! Versuch' du mal zuerst!

NW: Ja, ich blase den Mantel sofort weg. Puuust--!

SG: Oh, wie schnell der Wind stärker geworden ist! Ich muß aufpassen, daß mein Mantel nicht weggeblasen wird!

S: Hahaha, Nordwind! Zeig' mir schnell, wie du den Mantel wegbläst!

NW: Gut, jetzt blase ich noch stärker: Puuuuust--!

S: Schlecht gemacht! Nun bin ich dran!

NW: Hm, schade!

S: Nun, jetzt werde ich stark scheinen.

SG: Ist das ein komisches Wetter heute! Gerade hat der

Wind so stark geweht, und jetzt scheint die Sonne! Bei dieser Hitze kann ich es im Mantel nicht aushalten.

NW: Ha, er hat den Mantel ausgezogen!

S: Nun, wie steht es?

NW: Verloren, ich bin besiegt!

LE VENT DU NORD ET LE SOLEIL

VN: De toi et de moi, c'est moi qui suis le plus fort.

S: Non, ce n'est pas toi, c'est moi.

VN: Non, c'est moi qui suis le plus puissant.

S: Pourquoi? Je suis sûr que je suis le plus fort.

VN: Bon, éprouvons lequel d'entre nous est le plus puissant.

S: D'accord. Qu'est-ce qu'on fait, alors?

VN: Hum, regarde! Voilà un voyageur qui vient. Il porte un pardessus qui paraît chaud, n'est-ce pas? Convenons que le plus fort de nous deux c'est celui qui pourra lui faire quitter son manteau.

S: Bonne idée! Tu essaieras tout d'abord.

VN: Bon, je vais, sur-le-champ, lui prendre son manteau.

VO: Oh, on sent venter de plus en plus fort. Je dois prendre garde à ce que mon pardessus ne soit emporté par le vent.

S: Ha, ha, ha! mon cher, montre-moi donc comment tu lui feras ôter son manteau.

VN: Eh bien, je vais produire un vent plus violent avec sifflement.

S: C'est en vain! Maintenant c'est à mon tour d'essayer.

VN: Oh, quel dommage!

S: Regarde, comme je brille vivement.

VO: Quel mauvais temps aujourd'hui! Tout à l'heure il ventait si fort, et maintenant le soleil est étincelant. On ne peut pas porter un pardessus par cette grande chaleur.

VN: Regarde, il s'est enfin débarrassé son manteau.

S: Voyons, Monsieur le Vent du nord, qui est-ce qui gagne?

VN: Moi, j'ai perdu, je me rends.

北 風 跟 太 陽

北風： 你跟我，怎么說我的本事比你大呀。

太陽： 那還是我大呀，老北呀。

北風： 不，我大呀。

太陽： 怎么？我才大，那還用說嗎？

北風： 好，那么咱們比一比誰的本事大。

太陽： 好，来吧。那么怎么比好呢？

北風： 嚙——。哎，那兒來了個走路的。看他穿着大衣很暖和。好，誰能先讓他把大衣脫下來，就算誰本事大吧。

太陽： 這妙極了！你先試一試吧。

北風： 看，我馬上把大衣給他刮下來。呼——

旅人： 突然刮起大風來了！我得小心不要刮掉了大衣。

太陽： 哈々々，老北，快讓他脫下來吧。

北風： 好，再用點兒力刮吧。呼——

太陽： 不成，不成！這回我來吧。

北風： 嚙——，真遺憾！

太陽： 來，給他熱々兒地晒起來。

旅人： 今天天氣多么奇怪呀！剛才風刮得那么利害，這會兒太陽晒起來了！這樣熱法，還能穿大衣嗎！

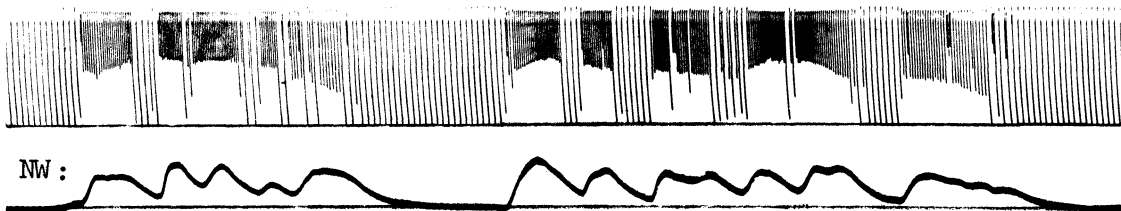
北風： 哎呀，他把大衣脫下來了。

太陽： 你看，老北！

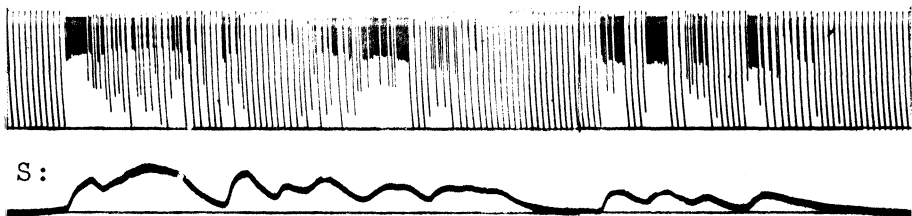
北風： 得了。算你贏了。

The time recording marks $\frac{1}{10}$ second.

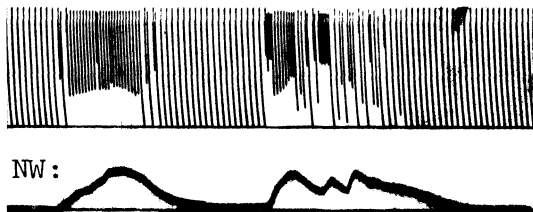
(Japanese)



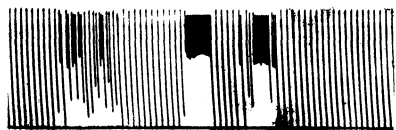
kimi to bo ku za: nan to it temo bo ku ja tsu jo ine



sor ja: bo kuno ho: da jo kitakaze kun



ija: bo ku da jo



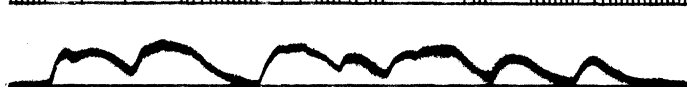
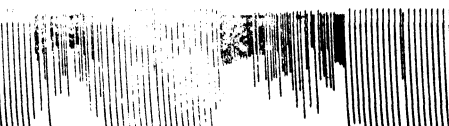
do:f te sa

bo kuni kimat teiru za:nai ka



jo:f

d3a ɕto ts do tʃira ga tsujoika tameʃ temijo:



a: ja ro:

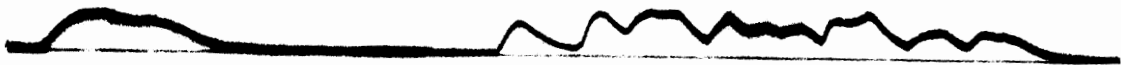
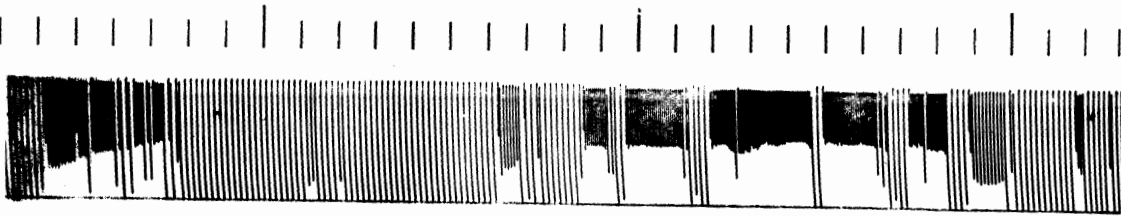
sore d3a: nan de tame s o: ka



NW:

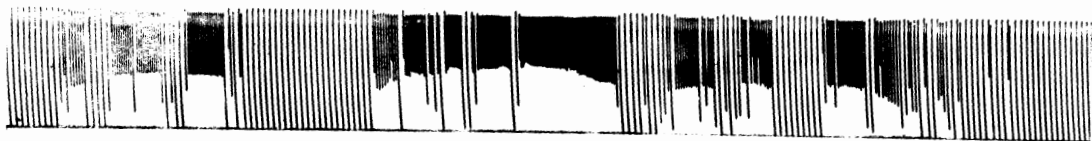
m:

m̥



oja oja

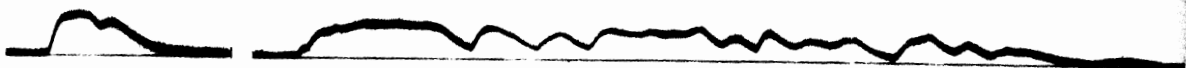
a s ko kara ta bibi toga kuru zo



na ka na ka

a ta ta ka so:na

gai to:o kiteruzanaika

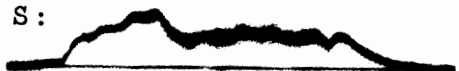


so:da

ano gai to:o sa kininugas eta ho:ga tsujoikotonif jo:



S:



sorewa me i a n da

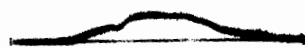
kimi kara ja t

te

mi tamae



NW:



dʒa:

suguni

ɸkitoba/tem ser

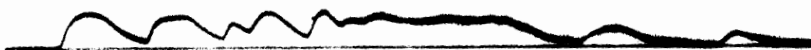
ɕ u:



TR:



kju: ni ka zega hageɸ k na t tana:



gai to:o toba sarenai jo:ni ɸ nak tʃa:



S:

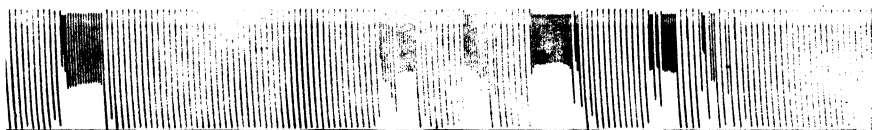


ha ha ha

kitakaze kun



hajakunugasete mi se ro jo



NW:



jo: f



mot to tsujok



quitejare

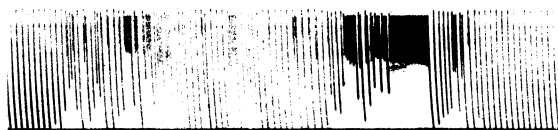
ç u:



S:



da me da me



kondo wa bo kuno ba n da



NW:



m:

m

zannen



S:



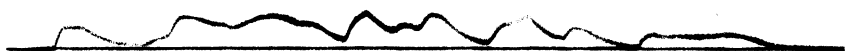
sa: don don teras zo



TR:



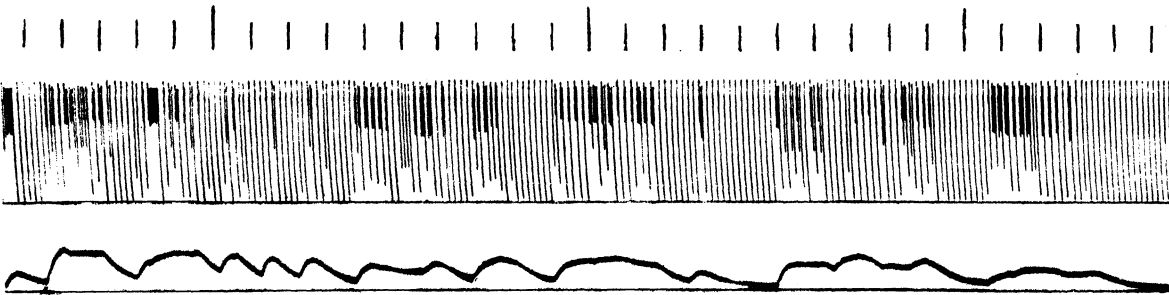
kjo:wa nan te henna ten ki daro:



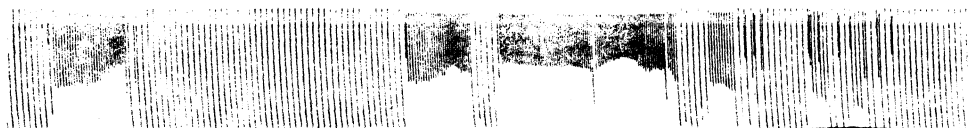
sak kiwa annani ka zega tsujo ka t ta noni



kon dowa hi ga. te ru nan te



totemo konoa ta ta ka saniwa gai to: nan ka kiteirareja finai ja



NW:



jaja

gai to:o nui de fimat ta zo

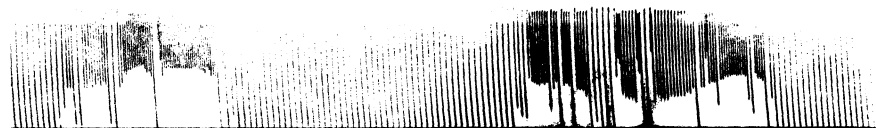


S:



do: dai

kitakaze kun



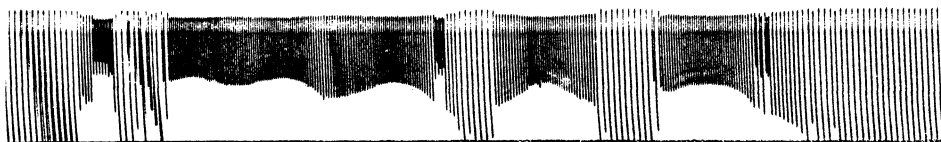
NW:



makedajo

ka bu too nu go:

(American English)



NW:



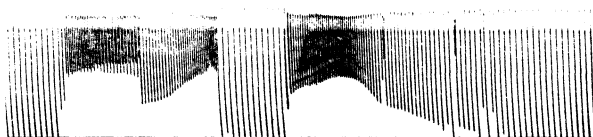
bit wi:n ju: en mi: ai mðə strɔŋ ge



S:



nou ju a: nt ai æ m



NW:



nou ai æ m



S:



hwai

aiəm / uə aiəm ðə strɔŋ gə



NW:



w ɛ l

l e t strai tə pru: v hu: i z ðə strɔŋ gə



S:



ɔ: r a i t

hwat / l wi: du: ð ə n



NW:



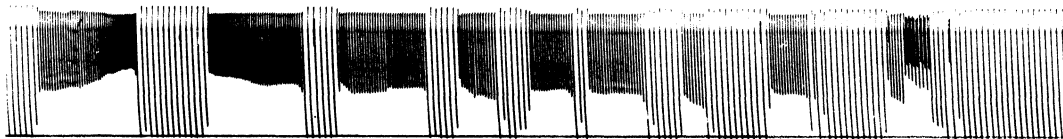
h m:

l u k

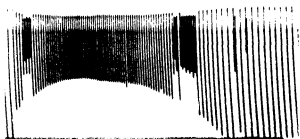
ð ə k a m z ə t r ə v l ə



h i i z w e e r i g e w o : m k o u t i z n t h i :



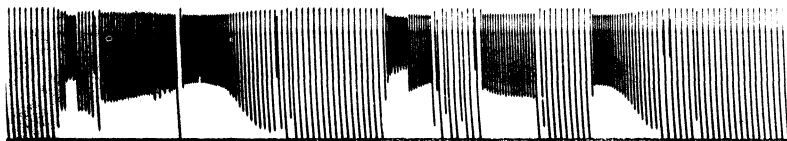
n a u l e t s s i : f u : k e n m e i k i m t e i k ɔ : f h i s k o u t f e : s t



j u : ɔ : m i :



h u : e v e w i n z i z ð e s t r o ŋ g e



S :



g u d a i d i e

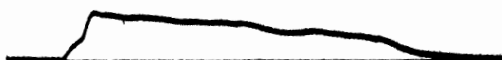
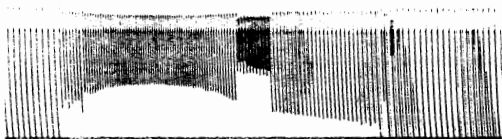
j u : t r a i f e : s t



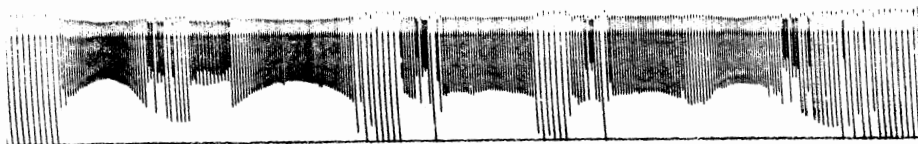
NW:



w e l a i l b l o u i z k o u d ɔ f s u : n



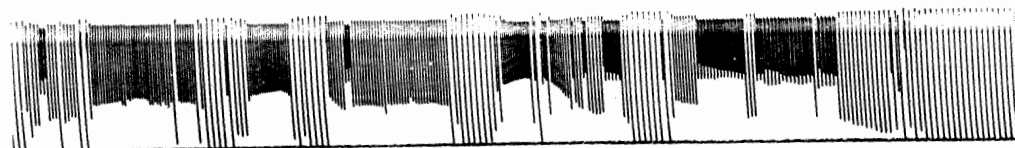
bl:



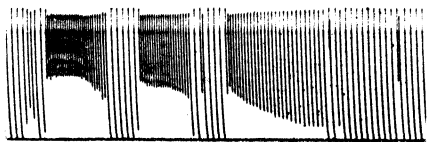
TR:



o u ɔ ə w i n d i z b i g i n i ŋ t ə b l o u f a : d ə



a i d b e t ə b i k ə f u l ɔ : m a i k o u t w i l b i k æ r i d ə w e i



S:



ha ha ha:

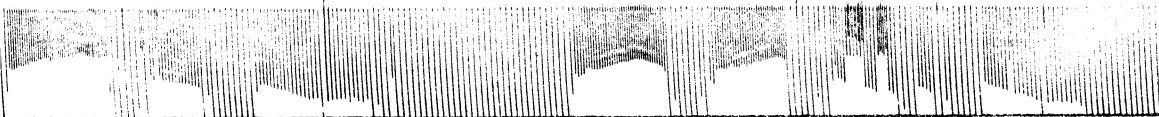


unt he zi teit tē ŋou mi ɦau ju teik ɔ:f hi z kou t mai fre n d



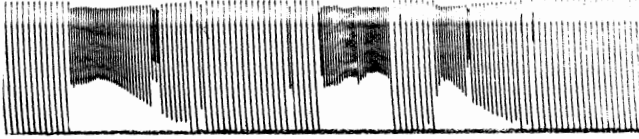
ɔ: rai t ail blou ha: də

bl:



giv ap mai fre n d

nau i ts mai tē:n tē trai

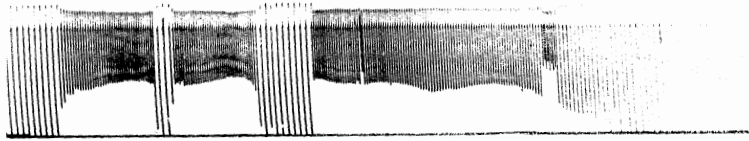


NW:



o u

hwatə piʔi



S:



n au

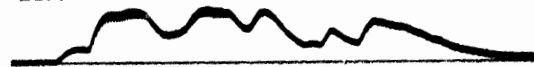
ai l

ʃ ai n

wo: m li



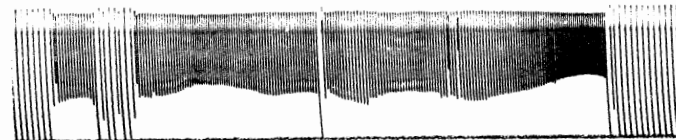
TR:



bæ d

we ðə

tə dei



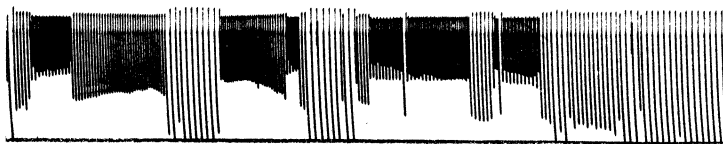
dʒast nau

wi

hæðə

ha:d

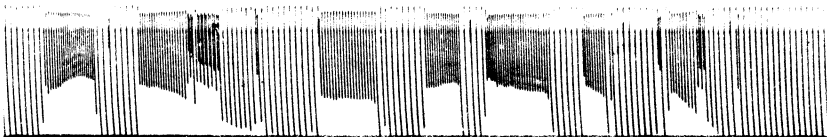
wind



end nau ðe san iz ʃ ai niŋ braɪtli



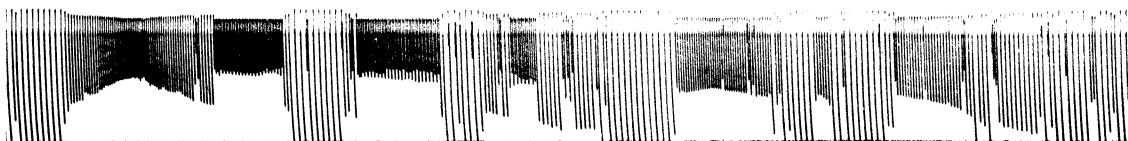
in ði s hi:t ai kæ:n t ki:p mai ko:t ɔn



NW:



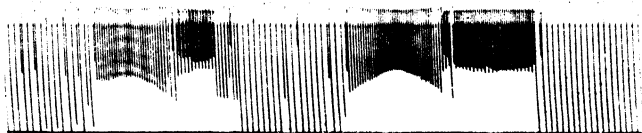
lu k ð ɛ ə hi:z teɪ knɔ:f hi:z ko:t



S:



nau ð en mi st e no: θ wi n d hu: iz ðe strɔ ŋ ge



NW:



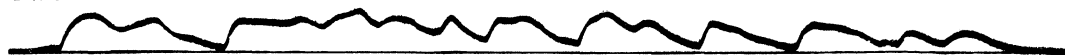
s o: ri

ju: wi n

(German)



NW:



fön uns bai den bin iç na ty:rliç dæ fter kæ re



S:



n ai n das bin vo:l iç nor t vint



NW:



n a i n i ç



S:



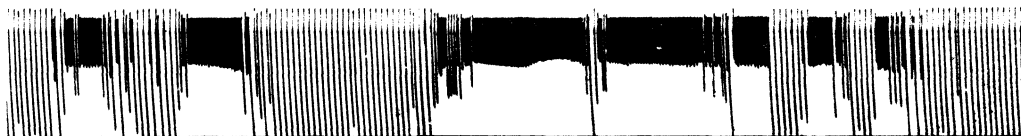
z o : d a s b i n n i ç t g a n t s k l a : r i ç



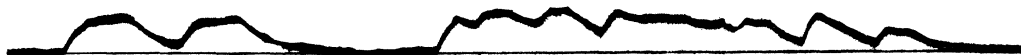
NW:



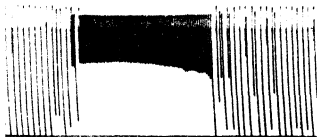
g u : t d a n l a s u n s m a : l a u s p r o b i : r ə n v e e d æ f ə r k ə r ə i s t



S:



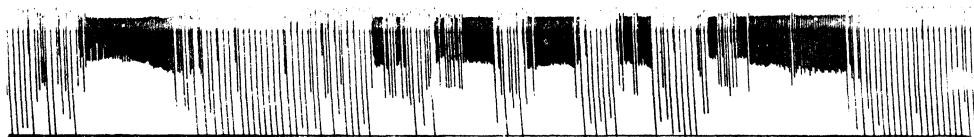
j a : g u : t a : b ə v i : z ə l ə n v i ə d a s m a x n



NW:

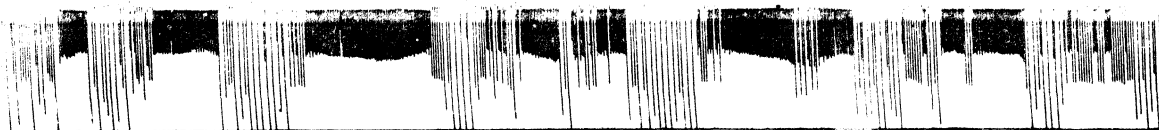


mm:

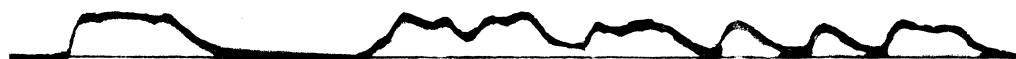


zi: m a:l

da komt ain fpa tsi:r gəgə

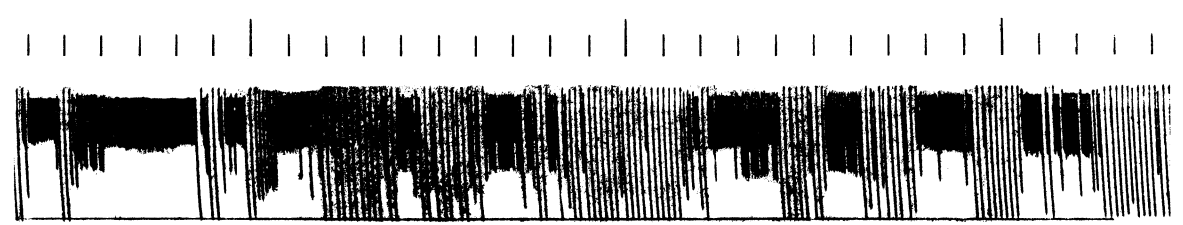


trɛ:kt eə nɔ̃ t ainen man tel deə gants fɔ:n varm tsu zain fəint

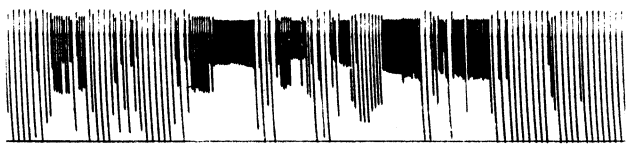


nu n

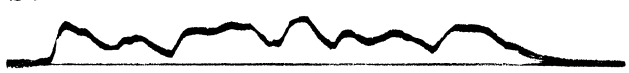
veə i:n tsu e:rst da tsu brɪt



di:zen man təl aus tsu tsi:ən i st dæ ʃtər kə rə



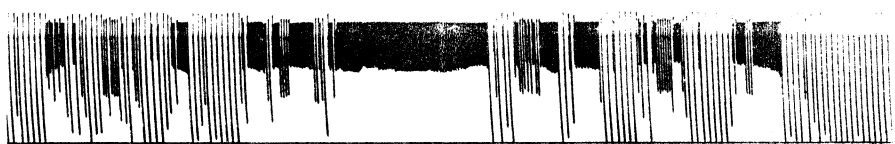
S:



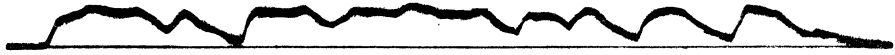
das ist aine gu: tə i de:



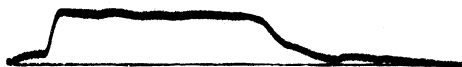
fər zux du mal tsu e:r/t



NW:



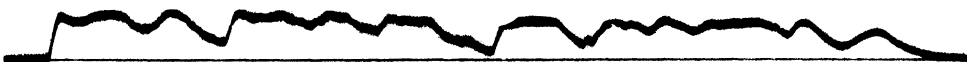
ja: iç bla: z ə den man təl zo f ər t və k



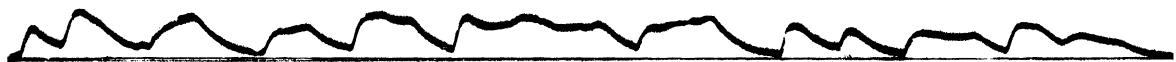
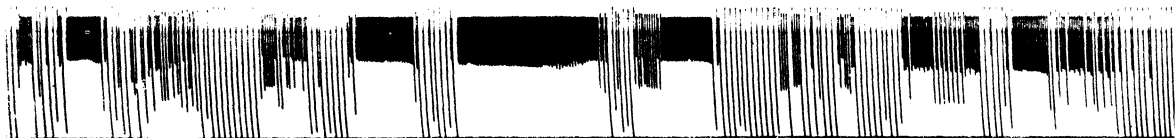
pu: ʃ t



TR:



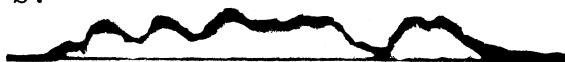
o: vi: ʃne l dæ vint ʃter kər gə vor dən i st



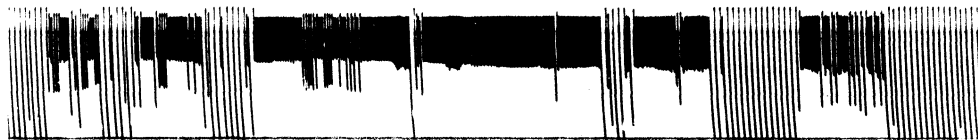
iç mus au f pa s əndas main man təl niçt vək gə bla: zən virt



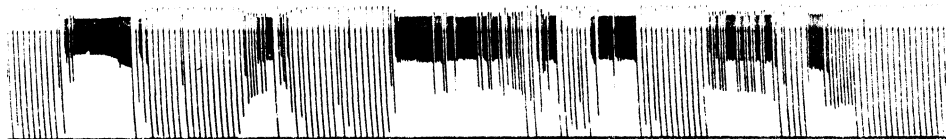
S:



ha ha ha nort vint



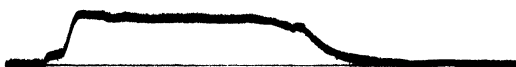
tsai k miə ʃ nɛ l vi: du den man təl vək blɛ:st



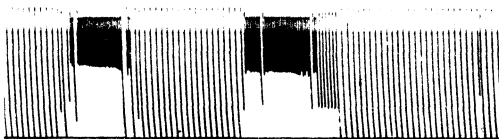
NW:



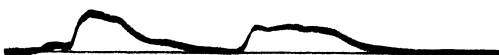
gu:t jɛts t bla: zə iɣ nox ʃter kə



pu: ʃ t



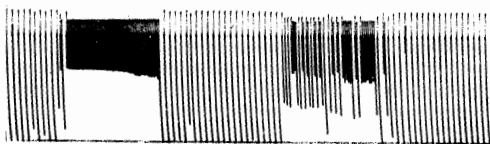
S:



ʃ lɛ ɣt gəma xt



nu: n b i n i ç dran



NW:



mm: f a: də



S:



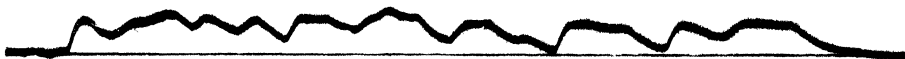
nun jetst ve:rdə i ç ftar k f a i n ə n



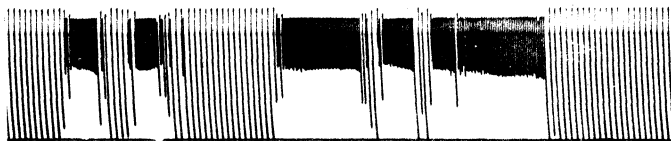
TR:



i st das ain ko: mi f ə s v e t e h o i t e



ge ra: də hat dəə vint zo: ʃ t a: k gə ve: t



unt jetst ʃ ai nt di:zo n ə



ai di: zə hits ə kəniç əs im man tel niç t au s h a l tən



NW:



ha: eəhat den man təl aus gə tso: gən



S:



nu:n vi: /te:t ɛs



NW:



fɛə lo: rən iç bin bə zi:kt

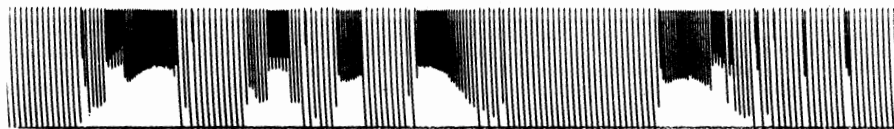
(French)



NW:



də twa e də mwa s ɛ mwa ki suil ply for



S:



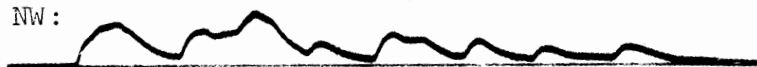
nõ

sə ne pa twa

sɛ mwa



NW:



nõ sɛ mwa ki sɥi l ply pɥi s ǎ



S:

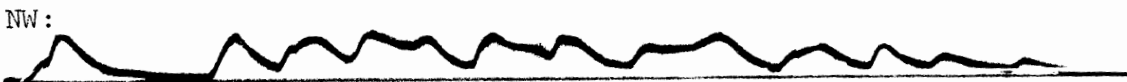


pur kwa

ʒə sɥi s yr kəʒə sɥi l ply fɔr



NW:



bõ

e prɯ võ l kɛl dǎ trə nu zɛ l ply pɥi s ǎ



S:



da kor

ke skõ

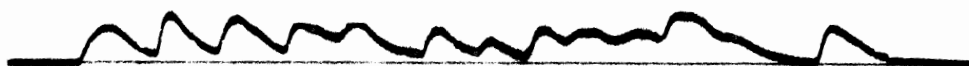
fe a lor



mm

re gard

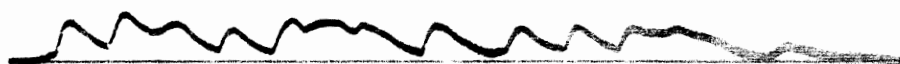
vuala õ vwaja 3œr ki vjã



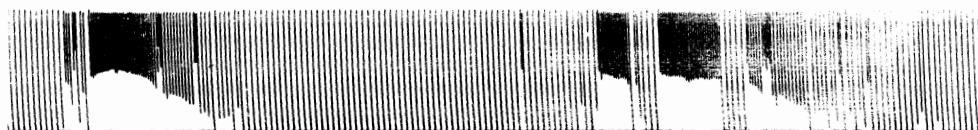
il port õ par də s y ki parɛ ʃ o: nɛ s pa



kõ ve nõ kele ply for də nu dɸ

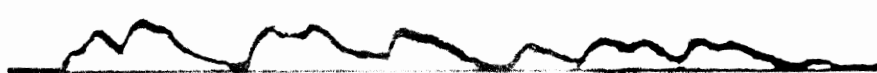


sə sə lɥi ki pɥa lɥi fɛ:r ki tɛ sɔ̃ mǎ to

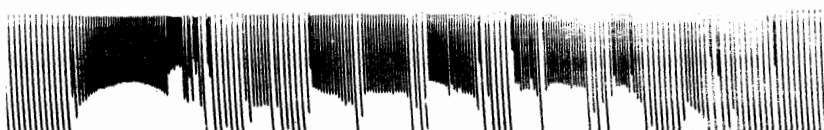


bɔ̃ ni de

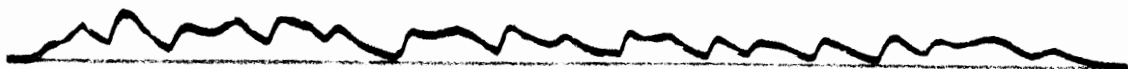
ty sɛs rɑ ɔa la bo:



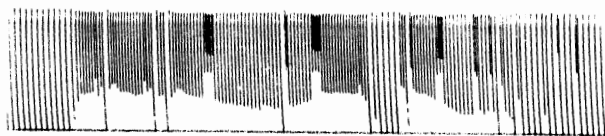
bɔ̃ ʒə vɛ s yr lə ʃ ǎ lɥi prǎ:dr sɔ̃ mǎ to



o: ʒ s ǎ vǎ tɛ dɛ ply zǎ ply for



ʒə dwa prã:dr gard a səkə mǝ par də s y nəswa tǎ pər te par lə vǎ



S:



ha ha ha mǝ ∫ ɛ: r



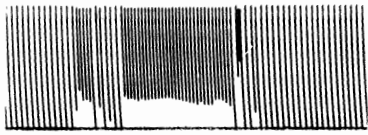
mǝ trmwa dǝ kə mǎ tylqi fə ra ote sǝ mǎ to



NW:



ɛ bjẽ ʒə vɛ prɔ dɥi: r œ vǎ ply vjo lǎ avɛ ks iɪ ləmǎ



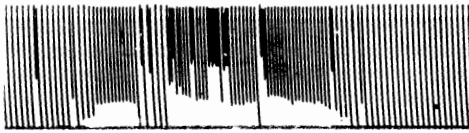
S:



sɛ tã vẽ



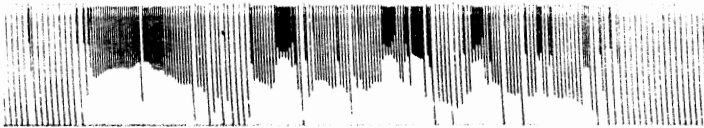
mẽ tnã sɛ ta mõ tu: r de sɛ je



NW:



o kɛl dɔ ma:3



S:



rə gar d kɔm ʒə brij vi v m ă



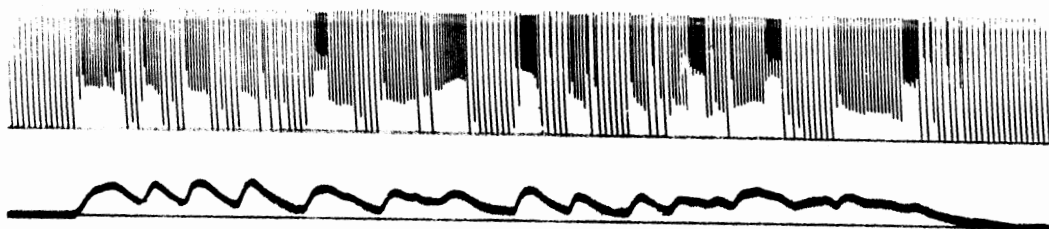
TR:



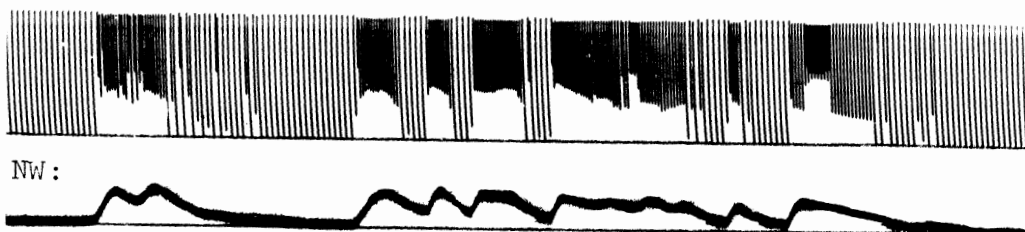
kɛl mɔ vɛ tã o ʒur dɥi



tu talœ:re il vã te s i f o:r em ã tã nã l so læje te tẽ s lã

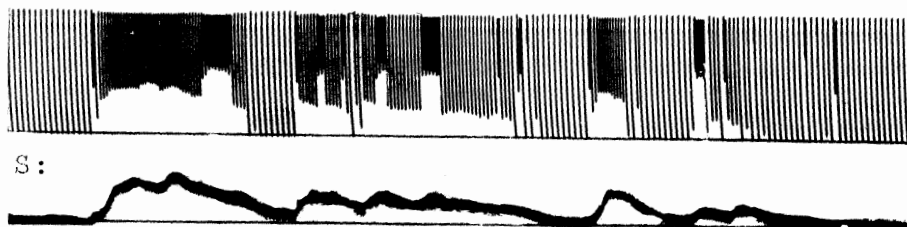


õ næ pø pa por te œ par dẽ sy parsetgrãdʃ al œ:r



NW:

rẽ gard il sẽ tã f ẽ de ba ra se s õ mã to



S:

vwa jõ m ẽ sjø lẽ vã dy no:r kies ki ga næ

NW:

mwa ʒɛ pɛr dy

jə mə rǎ

(Chinese)

NW:

ni gen wo ,

zen meshuo

wo debe nshi

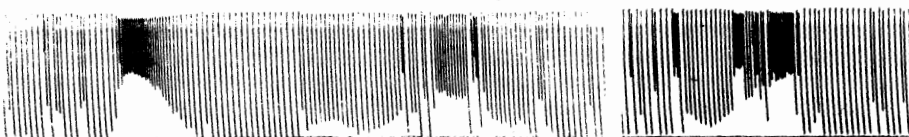
bini da ya .



S:



na hai shi wo da ya , laobeiya ,



NW:



S:



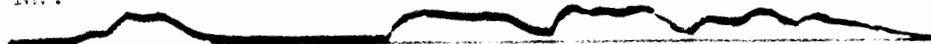
bu , wo da ya 。 zenme ?



wocai da , na haiyongshuoma ?



NW:



hao , name zanmenbiyibi



S:



she de be n shida .

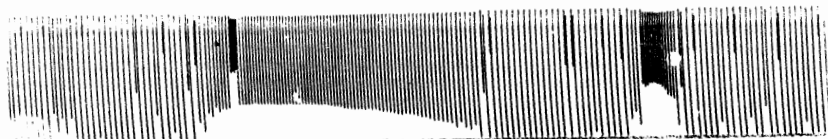
hao ,

laiba o

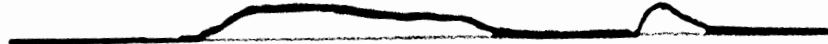


name

zenmebi haone ?



NW:

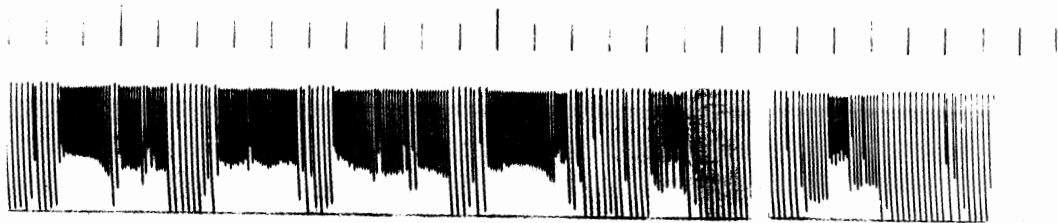


m

ai ,



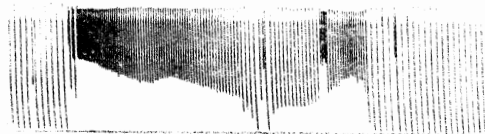
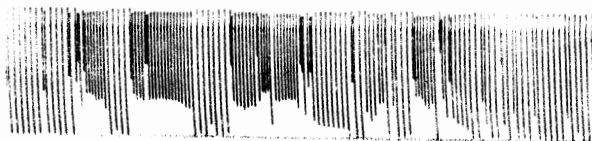
na r la i lege zo ulu de .



k a n t a c h u a n z h e d a y i h e n n u a n h e . h a o ,



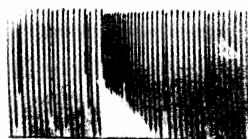
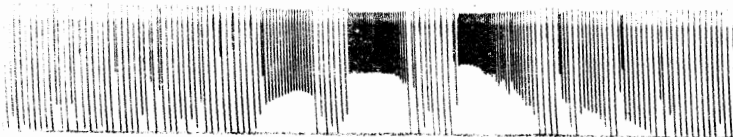
s h e i n e n g x i a n r a n g t a b a d a y i t u o x i a l



S:



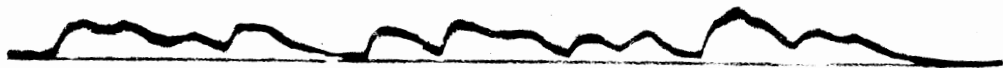
j i u s u a n s h e i b e n s h i d a b a . z h e m i a o j i l e !



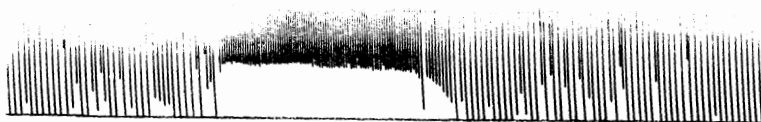
NW:



n i x i a n s h i s h i b a . k a n ,



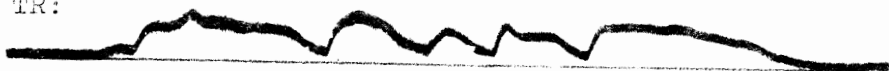
wo ma shang ba da yi geita gua xia lai .



h u



TR:



tu ran gua qidafeng lai le !



wodei xiao xin buyao gua dia oleda yi ,



S:



h a h a h a ,

l a o b e i ,

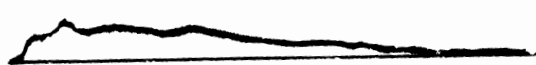


NW:



k u a i r a n g t a t u o x i a l a i b a .

h a o ,



z a i y o n g d i a r l i g u a b a ,

h u

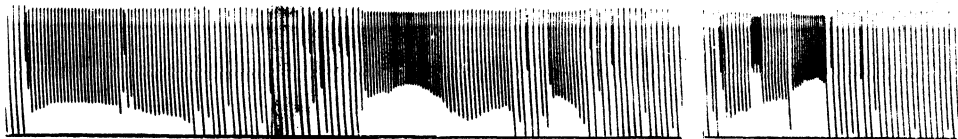


S:



b u c h e n g b u c h e n g !

z h e h u i w o l a i b a o



NW:

S:

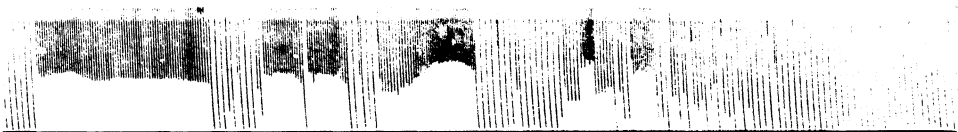
m

zhen yi han !

lai ,

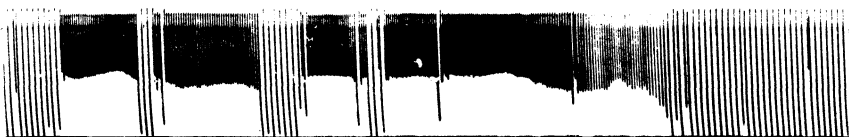


ge it a re re de sh a i q i lai .



TR:

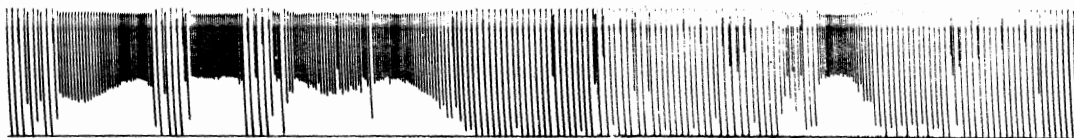
j i n t i a n t i a n q i d u o m e q i g u a i y a !



g a n g c a i f e n g g u a d e n a m e l i h a i ,



zhe hu ir t a i yang shai qilaile zhe me yang re fa ,



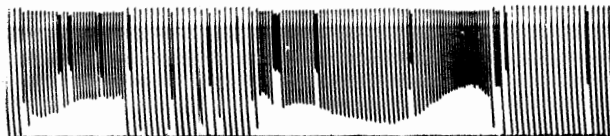
NW:



hainengchua nda yi ma ! ai ya ,



ta ba da yi tuo xia laile .



NW:



i k a n , laobe i ! de le suanni yingle .