

DANCE AND DAILY ACTIVITIES AMONG THE  
MARING PEOPLE OF NEW GUINEA:  
A CINEMATOGRAPHIC ANALYSIS  
OF BODY MOVEMENT STYLE

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## PREFACE

The field work upon which this study is based was done under a grant from the National Science Foundation to Columbia University. The grant was given to Dr. A. P. Vayda, the principal investigator, and four anthropology graduate students for the study of "The Human Ecology of the New Guinea Rain Forest". This group, which consisted of Dr. and Mrs. Vayda, Mr. and Mrs. Rappaport, and myself, was formed with the intention of bringing together anthropology students interested in widely varying fields, thus making possible a more comprehensive investigation than would be possible for one anthropologist alone. My aim was to make film records which would be useful to all the other members of the expedition and which would provide me with data for the study of human movement. My husband, Marek Jablonko, joined the original group primarily to assist with the filming.

My preparation for fieldwork was based primarily on classes given by Dr. Harold Conklin, Dr. Margaret Mead, and upon a seminar given by Dr. Ray Birdwhistell in June, 1962. During this seminar, Mr. Jacques Van Vlack impressed upon me the importance of film as a recording device, as opposed

to an aesthetic device, and Mr. Paul Byers showed me some techniques of still photography and shared with me his ideas on the possibilities of using still photographs for behavioral analysis.

It was with this background that I went to the field with my husband in March, 1963. We proceeded directly to the Simbai Valley, Madang District, where the Vaydas' and Rappaports' had been settled since November, 1962, among the Maring, a montane group of swidden horticulturalists. We joined Dr. and Mrs. Vayda at their field location in Gunts, at the eastern end of the Maring territory. Mr. and Mrs. Rappaport had established a field location in Tsembaga, at the western end of Maring territory. The two field locations were about seven hours hike from each other. They were reached by a footpath from the airstrip at the Simbai Patrol Post, which was about ten hours walk from Tsembaga and seventeen hours walk from Gunts. (See map on page 27.)

The first months in the field were spent in getting acclimatized and acquiring a minimum vocabulary in Maring with the help of the linguistic analysis already done by Ann Rappaport, and with the help of the Vaydas' interpreters. In subsequent film work we used our rudimentary Maring to communicate, and relied on interpreters only during social exchanges in which we were directly involved. While filming,



we behaved as observers, and, more rarely, as participant observers.

The period of fieldwork drew to a close with the departure of Dr. Vayda in August, of Mrs. Vayda in November, and of the Rappaports in December, 1963. We left Guntis at the beginning of February, 1964. Since then, three geographers, Mr. William Clarke, Mr. Harley Manner, and Dr. John Street, have done field work in the Maring area. Dr. Vayda and Mrs. Vayda returned for a summer in the field in 1966. At the time of writing, January 1968, Georgeda Bick is engaged in anthropological fieldwork in the Simbai Valley.

Filming began on June 10, 1963, three and one half months after arrival. The pace of filming increased gradually: four hundred feet of film were taken in June, and five thousand feet in July. Between August 1 and September 28, 20,800 feet were taken. After a short vacation from the field, filming was resumed in November, during which 14,200 feet were taken. In December and January and the first two days of February, 1964, 20,900 feet were taken. The last 200 feet of film were taken from a plane on the departing flight from Simbai to Madang.

Of the total corpus, 54,860 feet of film were taken in Guntis, the field location of the Vaydas and Jablonkos. 5,300 feet were taken in Tsembaga, under the direction of

the Rappaports: 4,500 feet of rituals and ceremonies, and 800 feet of gardening. 1,140 feet were filmed in Gai with the help of the teachers at the Anglican Mission school, and 200 feet were filmed at the Patrol Post in Simbai (see map on p. 27).

Filming was done by Roy Rappaport (Roll B1 - 100 feet), by Allison Jablonko (7,300 feet) and by Marek Jablonko (55,000 feet). The principal camera used was a 16mm. Bolex Reflex with an electric motor drive. Rolls of 100 feet were used, each of which can run uninterrupted for 2.7 minutes. However, with the exception of two sequences, most of the footage was filmed in segments lasting from 30 to 60 seconds. A second 16mm. Bolex with no reflex viewer or electric motor drive was used by Roy Rappaport, and by Allison Jablonko during the filming of rituals and ceremonies. Only 700 feet of film was taken on this camera. From roll 0 to roll 269 a tripod was always used, but for the remainder of the film the tripod was dispensed with to allow greater freedom on the part of the cameraman. There were three lenses on the principal camera: a) wide angle: SWITAR 1:1.8 f = 16mm; b) normal: SWITAR 1:1.4 f = 25mm; c) telephoto: YVAR 1:2.8 f = 75mm. Of these, the telephoto lens was rarely used, the wide angle lense was used from time to time, and the normal lens was used for most of the filming. During all filming I took

notes which documented the place, time, personnel, and general context of each 100 foot roll of film. These notes were arranged in the form of a card catalogue with one card for each 100 foot roll.

The original footage taken in New Guinea consisted, then, of 624 rolls numbered consecutively 0 to 622 and B1. Nine of these rolls had to be discarded as a result of inadequate exposure. The remaining 61,500 feet of original footage, consisting of 23,300 feet of color (13,300 of Ektachrome Commercial and 10,000 feet of High Speed Ektachrome) and of 38,200 feet of black and white (19,100 of Plus-X and 19,100 of Tri-X) have been divided into 69 reels numbered 1 through 63 (reels 7, 28, 35, 42, 55, and 60 have each been subdivided into two reels, A and B).

The taking of this amount of film was only possible because of the collaboration with Dr. D. Carleton Gajdusek and Mr. E. R. Sorenson of the National Institute of Neurological Diseases and Blindness. They had established the Film Archives for The Study of Child Growth and Development and Disease Patterns in Primitive Cultures and they were, consequently, interested in obtaining visual records of Maring children in their environment. The exposed film was sent to Bethesda, Md. where Mr. Sorenson arranged for its processing and storage prior to our return.

Upon returning from the field my husband and I put the original footage into the order required by the Archives. We were able to do this in New York, using a total set of workprints which Dr. Gajdusek made available to us. We checked that the film was arranged in chronological order, and we composed identification titles on the basis of the notes taken during filming. These titles were filmed in Bethesda and my husband inserted them into the original footage. This stage of completing the Maring Research Film was finished in the spring of 1966. The final stage, that of recording an explanatory commentary to accompany each reel, was also done in Bethesda, Md. in May and June, 1967. The commentary was recorded on 16mm. magnetic tape in synchrony with the original film. This commentary can be transcribed onto magnetic stripes on the answer prints or on any further prints made.

This corpus of New Guinea reasearch film (63-JABLONKO Reels 1 through 63) is now deposited in the Film Archives of the Study of Child Growth and Development and Disease Patterns in Primitive Cultures of the National Institute for Neurological Diseases and Blindness, Bethesda, Maryland, in the form of the original negatives with identificatory titles, one answer print of each reel for viewing by any interested scholar, and the taped commentary which accompanies each reel.

In addition, there are copies of the original field notes made for each 100 feet of film, all the notes which I made while viewing the film upon return from the field, and descriptions of each event appearing on film, written as an index to the film corpus in June 1967.

In addition to this research film, my husband and I, using two Asahi Pentax 35mm. reflex cameras, took 241 rolls of black and white pictures and 102 rolls of color slides. These color slides, negatives, and contact sheets are, for the time being, in my possession, and they are available to other scholars for purposes of study.

Simultaneously with the process of putting the corpus of research film in order, I was engaged in learning a method of movement analysis which would enable me to study the movement patterns of the Maring on the basis of the research footage. Mr. Alan Lomax put me in contact with Mrs. Irmgard Bartenieff, who invited me to join a class that she was giving in effort-shape notation, a form of movement notation and analysis developed by Laban (Laban and Lawrence 1947). I attended this two hour class each week during the 1965 spring semester, and in June I participated in a one week workshop which combined observation with the actual performance of the various types of observed movement.<sup>1</sup>

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<sup>1</sup>The effort-shape training course was given at the Dance Notation Bureau, 8 East 12 Street, New York City.

Throughout the fall of 1965 and the spring of 1966 I continued to study movement analysis within the context of a training course given by Mrs. Bartenieff and her assistants, Mrs. Forrestine Paulay and Miss Martha Davis. The course consisted of twelve hours a week, six devoted to practice in observation and notation, and six devoted to the practice of performing the movements. During the spring of 1966, Alan Lomax invited Mrs. Bartenieff and her assistant, Mrs. Paulay, to work with him in the development of a method for comparative description of dance style cross-culturally, similar to the descriptive system for cross-cultural analysis of song performance style called Cantometrics. The aim of this study, which eventuated in a rating system called Choreometrics, was to describe those main distinctive features of dance style that would produce a cross-cultural taxonomy, and, thence, to determine whether or not dance styles are distributed areally in the same way as song styles. Since my study in the training course coincided with the early work on Choreometrics, I was apprised of some of the progress in this research. Insights that Bartenieff and Paulay gained from their first systematic cross-cultural look at the dance were inevitably translated into movement exercises and explorations in the training course which I took from them. In December of 1966, some preliminary findings from Choreometrics were reported upon in the A.A.A.S. meeting. I have



incorporated two of the Choreometric rating parameters reported upon at that time, with adjustments that seemed to me suitable to my frame-oriented study technique.<sup>1</sup> The analysis of the Maring film reported upon here was carried out in the summer of 1967.

The basic purpose of the research film (Gajdusek 1963:89; Sorenson & Gajdusek 1966) has been fulfilled. A previously unknown system of analysis has been applied to the film. The film has also provided answers to questions which were asked neither prior to nor during the time of filming. I hope that, since the data upon which the present study is based are in the form of films, future investigators will refer directly to these films. Such a procedure of rechecking by the same and different investigators will lead to a degree of exactness attainable only when film is used.

The worth of this film corpus is not exhausted by the present study. It provides a baseline for the description and analysis of Maring movement patterns as of 1963. By 1963, the Maring of the Simbai Valley had been subject to only minimal contact with Europeans. The area was considered by the Australian Administration to be under control in the spring of 1962. Mission schools manned by teachers from Papua and the Solomon Islands had been established in a few

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<sup>1</sup>See Chapter IV, p. 67ff.

localities since 1956-1957, but their influence had barely penetrated the people living near Gunts or Tsembaga. The pacification imposed by the Australian Administration had brought several changes, the implications of which were not yet fully realized. There was, for example, discussion among the men of Tsembaga about the future of the ceremonial dances, kaiko. Since these were an integral part of the ritual cycle triggered by Maring warfare, there was some question as to the possibility of the men's being able to perform them when warfare would cease. Some men said, "This is the last kaiko." Others felt that it could be integrated with the European and mission celebrations known as "Christmas". Since pacification the network of paths binding together the territories of the various local groups had been radically changed by the establishment of a wide track required by the Australian Administration to be kept open to all persons (Kiap road; Kiap - Neo-Melanesian word used by Maring speakers for the Patrol Officer). Upon this path a person was free to walk without fear of being killed or of traversing the territory of enemies, which, in the past, he would have had to circumvent. The settlement pattern had not yet undergone any change. Work patterns were the same as had existed since the adoption of steel axes which had arrived via native trade routes since the early 40's. In 1963 no cash crops were as



yet being grown. The traditional dress was worn: only a few men connected with Europeans (principally the anthropologists) had adopted cloth loincloths, and even fewer wore sandals.

As we left the field in early 1964, however, the first group of young men who had gone out of the area to the coast as conscript laborers were returning, complete with shorts and shoes, suitcases for their possessions, and gifts for their families. They brought kerosene lanterns, which could change the patterns of handling night time. They had seen new tools and new work processes. How their return affected Maring movement patterns can be the subject of future study. The baseline for such studies is the record of Maring life in 1963 as preserved on the research film.

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## ACKNOWLEDGMENTS

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My thanks also go to all the people who were of direct assistance in the field: to my colleagues Dr. A. P. Vayda, Mrs. Cherry Vayda, Dr. Roy Rappaport and Mrs. Ann Rappaport, and to my husband, Marek Jablonko, who did most of the filming; to Mr. and Mrs. Peter Robin of the Anglican Mission in Simbai, and to Patrol Officer Gavin Carter, all of whom welcomed us warmly whenever we came or went from our field location, and who helped us with supplies and the mailing of the film.

I am grateful to Irmgard Bartenieff, Forrestine Paulay and Martha Davis for teaching me the techniques of observing and analyzing human movement in terms of the Laban approach. I have used a limited range of these techniques systematically in the present study, and the enhanced sensitivity which I gained from their teaching pervades my descriptions. I also appreciate the opportunity of testing some of the early findings of Choreometrics in the context of one culture -- namely, the Maring of New Guinea.

I wish to thank Mr. Alan Lomax who, in suggesting the connection between my analysis and Birdwhistell's concept of signature behavior, helped place this study in its present perspective.

Finally, I would like to thank our friends among the Maring who patiently pursued their activities while being watched by two strangely-garbed white human beings and a big black box.

## A NOTE ON MARING ORTHOGRAPHY

The following orthographic conventions have been used in writing Maring words in this paper:

"a" as in "father"

"e" as in "met", in final position as in "day"

"i" as in "bit", in final position as in "meet"

"o" as in "or"

"u" as in "put"

"č" as in "chat"

d, b, g are prenasalized: nd, mb, ng. They are written here in most words without the prenasalization.

"ng" in final position is pronounced as in "sing". In medial positions it is most often pronounced as in "finger".

CHAPTER I - INTRODUCTION

The question with which this paper is concerned lies at the basis of dance ethnology: what is the relationship between the movements of dance and the movements of daily activities of people in a given culture? In trying to specify the subject matter of dance ethnology Kurath states the following:

"Ethnology deals with a great variety of kinetic activities, many of them expressive, rhythmical, and aesthetically pleasing. Would choreology, the study of dance, include all types of motor behavior or only restricted categories? If the latter, what identifies "dance," which uses the same physical equipment and follows the same laws of weight, balance, and dynamics as do walking, working, playing, emotional expression, or communication? The border line has not been precisely drawn. Out of ordinary motor activities dance selects, heightens or subdues, juggles gestures and steps to achieve a pattern, and does this with a purpose transcending utility."  
(Kurath 1960:234)

"In a strict sense, dance ethnology would be confined to patterned phenomena. In a broad sense, it could deal with any characteristic and expressive movement, since everyday motions are the roots of dance." (Kurath 1960:235)

In order to arrive at a more precise understanding of the relationship between dance and everyday motions, it is necessary to define carefully what is meant by such terms as "selects," "heightens," and "pattern." Dance ethnology however, has been concerned primarily with describing dances rather than analyzing them. Whether a dance can be recognized immediately upon the basis of movement criteria, or

whether it is recognized because of the context in which it appears, or finally only because an informant identifies the activity as dance, has not been investigated. Once an activity is identified as dance, the investigation proceeds to describe the dance in relation to other dances. Then the dances are placed within the context of the culture as a whole, in terms, usually, of ritual and social structure (Kurath and Marti 1964; Speck and Broom 1951). Thus, the level of observation which is concerned with physical movement is passed over with scant attention. Dance is analyzed in terms of aspects of culture other than movement.

This bypassing of physical movement may indicate the existence of a basic assumption that the physical movements of daily life are biologically given and determined by external necessity, in contrast to the movements of dance, which are culturally determined. There is an imprecision in the use of the word "pattern." It is clearly incorrect to state that only dance is "patterned phenomena." When we observe movement phenomena at the level of physiology, we see definite patterns (Marler and Hamilton 1966: 203-225). The question is not whether everyday movements are patterned, but whether they are culturally patterned. As long as movement studies are limited to certain sets of movements, such as dance, or gesture, we shall remain unsure whether these patterned sets of movement are special sets that emerge from



pan-human movement patterns appearing in daily activities, or whether they form part of a whole corpus of culturally patterned movement that has been artificially segmented by the separate subject matters of our studies. Recent studies of motor activities other than dance have shown that patterning exists in a wide variety of activities of which dance is only one example. Hall has shown the patterning of the use of space in interaction (1966). Goffman has indicated that there is a patterning both of space and bodily use in social encounters (1963: 35-37). Observations and studies of events in terms of movement indicate that cultural patterning of movement exists (Bateson and Mead 1942; Bateson and Holt 1941; Mead and Macgregor 1951; McPhee 1966; Efron 1941; Bailey 1942). Birdwhistell has worked out the kinesic structure of American English, showing in detail how patterns of bodily communication constantly complement and supplement all verbal interchange. His systematic approach indicates that there is a kinesic structure matching, level-for-level, those of the linguist -- kines, kinemes, kinomorphs, etc. (1952, 1960, 1967) Elsewhere, in his wide-ranging studies of body communication, Birdwhistell points out that movement patterns within a culture do indeed form a culturally-patterned whole, and he identifies a culturally-determined base-line from which the movements of each individual proceed: "Body Base is that diagram about the behavior

of other human beings which the individual must internalize to be a predictable and predicting member of a particular society" (Birdwhistell 1960:10). Birdwhistell has also referred to this aspect of the kinesic system as "signature behavior" (1964:14).

On the basis of these studies indicating cultural patterning of all movements including dance, it is reasonable to hypothesize that the patterns of movement seen in dance are related to the patterns of daily movement. Such an hypothesis was the basic assumption of the Choreometrics pilot survey (Lomax, Bartenieff and Paulay 1966). The preliminary findings of the Choreometric study showed: 1) that movement style varied consistently from one culture region to another: 2) that some aspects of movement style varied in terms of cultural complexity: and 3) that in relationship to a cluster of 23 clusters, for which both work and dance activities were available for rating, the computer discovered a higher order of paired similarity between work and dance per culture than could have occurred by chance. In other words, the same style of movement was used in both of these activities. This third finding resulted in the hypothesis that "dance/is/a formalized and repetitious use of movement patterns that /are/ frequent and important in everyday life" (Lomax, Bartenieff,



and Paulay 1966:2). It is this hypothesis which is further tested in this thesis by a study of movement in one culture -- the Maring of New Guinea. If one set of movement patterns can be perceived in all Maring activities, whether dance or work, this set can be called, following Birdwhistell's suggestive phrase, signature behavior. By moving in conformity with this pattern, a Maring man, woman, or child automatically identifies himself as a Maring: he is constantly sending the message "I am a Maring." If this study reveals one set of movement patterns in both Maring dance and work, we will have succeeded in uncovering Maring signature behavior.

Choreometrics found such signature behavior in its cross-cultural survey, and the present study will attempt to confirm the Choreometric findings on the basis of a more detailed approach.

The characterization of movement has, until recently, been approached as a simple problem in literary description. Mauss produced a format to guide ethnographic investigation of movement (1935). Unfortunately, his outline concentrated upon general activities rather than upon the details of movement. In 1937, Sachs, in his World History of the Dance (1963), was hampered by a lack of data. On the basis of reports that varied considerably in reliability as to the

correspondence of the image created by the report with the observed behavior, Sachs found relationships between various patterns of dance and other aspects of culture, such as stage of technical development and social structure. His observations can scarcely be checked, however, because he did not define his terms exactly. A descriptive approach to movement, such as Sachs used, relies upon the skill of the observer in using his own language.

Even more important than the variations in language skill from observer to observer, is the fact that every language probably has inherent and unique paradigms of terms concerning movement. While these inherent paradigms may to some extent standardize movement observations made by observers using the same language, it is probable that each observer further operates even then on the basis of a slightly different individual paradigm, one which he has personally and unintentionally selected from the range of movement concepts inherent in his language. In cases where no clear definition of terms is given, and no systematization is made, the reader has no way of checking the extent to which his impression, gained from reading, corresponds to the original event. This problem is avoided in the work of Mead, Bateson, and Macgregor in their studies of Bali by the practice of using photographs and film in connection with a technical vocabulary based on anatomical terms.

Verbal description is thus clearly not sufficiently standardized for detailed comparative work. In addition, observation procedures are also left to the preferences of the individual observer, instead of being guided by a coherently structured plan. This may lead to a simple cataloguing of observations with no effort to integrate the movement patterns observed in isolation from one another and to connect them in any coherent system. This problem is evident in the descriptions of Navaho motor habits by Bailey (1942). Although her descriptions are vivid, only the slightest attempt at systematization is made (210).

As opposed to merely descriptive methods of dealing with movement, analytic methods involve choosing, on the basis of an explicit movement paradigm, specific aspects of movement to be included in the recording. One such paradigm is provided by kinetography (called Labanotation in the United States) (Hutchinson 1961). In a complete score of a sequence of movement, the following aspects of movement are included:

- a) group movement--formation, path, duration
- b) individual movement--body part, direction, duration, dynamics, and contact with other persons or objects.

Kinetography is extensively used in both the United States and Europe. It has been used to provide permanent records of the

work of several choreographers (Doris Humphrey, Jose Limon, George Balanchine, Hanya Holm, and Anna Sokolow), and it is also used by students of folk dance and dance ethnography for the recording, archiving and analysis of dance forms (Kurath 1953; Kurath and Marti 1964; Lange 1966). As precise as kinetography is, and as clearly as it differentiates movement into specific aspects, each of which must be observed, it does not lend itself to the study of movement patterns that lack the clear aesthetic structuring of dance. Patterns that do not emphasize clearly repeated use of specific body parts and directions are not easily perceived upon a kinetographic score. It is possible that this is a further reason for the neglect of so-called "unpatterned" daily movement on the part of dance ethnographers. Moreover, since the aim of a kinetographic score is to present a record of a movement pattern that can be reproduced by the skilled reader-dancer, it can be difficult to abstract from a score single aspects one at a time for detailed analysis.

In a study initiated by Boas and carried out by Efron, a method for the analysis of several distinct aspects of movement was developed (Efron 1941). In order to investigate the hypothesis that gesture is culturally, rather than racially, determined, Efron made a detailed comparison of the gestures of head and arms of Italians and Jews in New York. The method consisted primarily of direct observation from

life. The observations led to three different kinds of records: general descriptions, sketches (done by the artist Mr. Sturtevant Van Veen), and counts of the occurrence of specific kinds of motions. In addition, 5,000 feet of film was analyzed. First, naive observers were asked to describe verbally the gestures recorded on the film. These descriptions seemed to corroborate the impressions gained by Efron and Van Veen from live observation (50). Second, Efron projected the film frame-by-frame on graph paper, plotting the path traced by elbow and wrist. This allowed the pinpointing of movements to specific sections of the film (41f.). This method, however, limited the graphic representations to segments of film four seconds or less in length. Since many of the analyzed patterns of movement were longer than four seconds (62), the film analysis was used only as a supplement to live observation. Efron's definition of the movement aspects of individual gestures to be observed (radius, form, plane, bodily parts involved, and tempo) was clear enough that a reader could use this method with fair assurance that the results would be comparable.

In 1952 Birdwhistell's Introduction to Kinesics made a substantial contribution to the methodology of analyzing movement. Body part, direction and duration of movement were all notated in detail, usually in segments ranging in

length from  $1/24$  to  $1/8$  of a second. The analysis of these records was made in terms of a communication model, rather than in terms of movement. Instead of abstracting movement aspects from the records, he performed a context-analysis, separating the records into units which had significance in the communication system of the culture of which the moving individual was a part.

Following Birdwhistell's research, and still using the communication model, Condon (1964) and Kendon (1967) investigated one specific aspect of movement, namely the synchrony between the movements of all the people present during a given event. They arrived at the conclusion that this aspect of movement has specific meaning within the communication system.

Other methods of investigating movement are based upon effort-shape notation, a clearly specified terminology dealing with the dynamic and spatial qualities of movement (Laban and Lawrence 1947). Effort-shape notation was developed by Laban and took clear form during the Second World War in the investigation of working processes in industry. Since then it has been applied in England in the field of aptitude rating in industry (Lamb 1965), in the field of personality assessment (North 1967), and in the fields of rehabilitation and psychiatry (Bartenieff 1962; Kestenberg 1965, 1967).



The most recent development in the analysis of movement is Choreometrics. Bartenieff, Lomax, and Paulay started with the systematization of movement provided by Laban in both kinetography and effort-shape notation. In its original form, however, this systematization did not lend itself to cross-cultural taxonomic problems: its focus and its success is in characterizing individual differences within a cultural framework. For this reason, Bartenieff, Lomax, and Paulay have been engaged in the testing and development of a new group of about 100 rating parameters suitable for cross-cultural comparison. These parameters are intended to reflect the norms of behavior that characterize the movements of all the people in a filmed scene, rather than one individual. The Choreometric technique, in experimental development, applies about 100 measures to the description of filmed sequences. Rather than recording the details of movement in a frame-oriented or step-by-step manner, so that the movement might be either replicated or analyzed from a written score, it is concerned with the relative presence or absence of specified qualities and traits of movement and interaction observed in the scenes studied. Its parameters are carefully defined and the movement profiles they produce can presumably be checked by consensus with other coders. The coders record their judgment about the tendency of people

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in an observed scene to employ a certain movement quality at some level of frequency. Depending on the scale employed and the statistical handling of such information, a corpus of such judgments can serve to define the relative differences between movement from scene to scene or from culture to culture. Choreometrics is, then, a taxonomic tool which operates with a small number of diagnostic characteristics rather than an exhaustively descriptive system. It uses a coding sheet upon which experienced observers record their observations in terms of relative presence or absence of traits. Its basic data are films and it is designed to characterize any filmed scene from any culture in a standardized and comparable way.

In order to investigate the relationship between the movements of dance and the movements of everyday life among the Maring, I have turned my attention to two of the aspects of movement used in the Choreometric codings. The use of these aspects will allow the results of the present study to be placed in the cross-cultural context provided by the choreometric survey. I have not, however, used the choreometric coding sheet to score impressions of the filmed movement. I have, rather, developed a notation that serves to transfer from film to a two-dimensional diagram the two aspects of movement in such a way that questions asked by experienced



observers of the film can be asked by inexperienced observers of the movement diagrams. This diagrammatic technique can be learned in a few minutes, and it keeps the movement aspects under investigation separate from each other, so that each can be analyzed directly (see Appendix II for illustration). In addition, the notation is done in terms of the frames of the film, so that any portion of the diagram can be scrutinized together with the film, thus allowing the results obtained by the notator to be retested. At this stage of movement research, it is especially important to take advantage of the fact that film consists of series of frames that can be relocated: a movement pattern can be operationally defined by pinpointing the frames where it occurs. Only in this way can the relationship between movement phenomena and movement terminology be made precise enough that we can proceed unhampered by the terminological imprecision inherent in past movement studies.<sup>1</sup>

The dance movements to be analyzed in detail will first be described in a larger cultural context. Chapter Two is a description of the konj kaiko, a major ceremonial event among the Maring which took place at Dikai, Simbai Valley, New Guinea, on November 9 and 10, 1963. The third chapter

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<sup>1</sup>The Choreometrics project group has just completed two training films designed to illustrate some of the features of movement important in its rating system.

is a description of the broader cultural context of Maring dance. The fourth chapter is a presentation of the method used in the detailed analysis of movement patterns. The analysis of selected Maring movement patterns is presented in Chapter Five. Chapter Six presents the detailed relationships found between dance movement and work movement, and makes suggestions for further research.

CHAPTER II

The Konj Kaiko - Dikai, Nov. 9-10, 1963<sup>1</sup>

The morning dawned clear. As the sun rose high the people of the Tsembaga clancluster<sup>2</sup> busied themselves in the final preparations for the last ceremony of their ritual cycle that had begun many years ago. Both men's and women's houses were more crowded than usual; affinal and cognatic relatives had begun to arrive during the previous days. In the yards of men's houses men unpacked their feather head-dresses from bark and bamboo tube carrying cases, and smoothed and softened the feathers in the smoke of small fires.

In one woman's yard, a man took the opportunity to make one in a series of payments to his classificatory mother's brother. He had carefully spread shells, steel axes, beads, salt, and pork for display on pandanus mats. The mother's brother surveyed the collection. The women of the family sat close to the door, watching. The donor stood, legs apart, arms crossed over his chest, while he explained the proceedings to the anthropologist. His scrutiny of the

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<sup>1</sup>This description of the konj kaiko is based upon the film record of the events in reels 63-JAB- 35A and 35B of the Maring research film. It is supplemented by the impressions gained by the author at the time of filming and by facts reported by Rappaport (1968). Photographs of the dance ground at Dikai appear on Plates XV and XVI.

<sup>2</sup>For an explanation of the term clancluster, see Chapter III, p. 25.

payment finished, the mother's brother squatted by the mat and slowly reached out for the gold-lip shells. One by one he fingered them and picked them up, turning each until he could grasp it in his left hand. Now he had a bundle of shells all facing in one direction. He waited for a younger man to come and take the shells, then he slowly collected the axes and beads. Finally he handed the salt and pork to his wife. The empty mats were rolled up, and the women put them inside the house.

At Muk's house, which was serving as the principal men's ceremonial house, many local men were gathering. Muk's yard overlooked the dance ground; it had previously been sheltered from it by a thick clump of bamboo. The yard had recently been incorporated into the part of the dance ground marked by the fifteen foot tall pave -- a fence made of saplings stuck side by side into the ground and lashed to horizontally placed saplings. The leaves were already brown and withered (the pave had been constructed several weeks before), but the pave formed an effective shield between the main dance ground and Muk's yard. In the center of the pave there was a small window barely a foot square.

As the day wore on, people approached the Tsembaga territory along the many paths linking the Tsembaga with other Maring groups. Slowly the dance ground grew crowded

with dancing clumps of men wearing feather headdresses. Their faces were colored with a variety of earth colors, black charcoal, and bright powders obtained in native trade from European sources. Their most beautiful crescent shells were inserted in the septum and adorned the neck, while hornbills hung at the back of the neck and marsupial furs hung both over their chests and their backs. Around their waists were wide, stiff belts of bark and of woven fibers. Soft loincloths hung in front from belt to foot, tassels of fur at the ends brushing their insteps as the men stamped forward. Into the back of their belts numerous kinds of grasses and leaves were stuck: freshly pleated green and red leaves, and dried, sand-color leaves which rustled sharply as they moved. The men of each clancluster formed a dance group and they were often joined by allies from other clanclusters. No two men wore identical decorations, but each dance contingent tended to have similar headdresses. One group wore crowns of black and white. Another wore white cockatoo feathers with a single bird of paradise rising in the center. A third wore crowns of green and yellow parrot feathers around a central red parrot.

The edges of the dance ground were lined with women, children, and men wearing no decorations who were simply on-lookers. Some women wore several gold-lip shells, but it was

the young girls who were richly dressed. Some wore breast-plates of beads, others of fur, or a heavy necklace of green sea snail shells. Their bodies were freshly oiled and shone smoothly.

Many of the women stood in front of the dance shelter which overlooked the dance ground from the east. It was about 25 x 35 feet, tall enough to stand in, and was built especially to provide shelter from rain. Several small fires were built on the floor and both men and women cooked bananas or tubers on the coals for snacks. Since traditional enemies cannot enter the same house, although they may both come to the dance grounds of groups with which they have friendly connections, another shelter had been built downhill from the dance ground. It was used by people who found that their traditional enemies had already occupied the first.

As the crowd thickened on the dance ground, more and more Tsembaga residents gathered in Muk's yard. Men and women, some with children on their hips, brought bundles of salted pork which would later be distributed. Older men arranged the bundles in piles close to the window of the pave. The girls had almost finished putting on their dance finery. Kombra helped Momun, his brother's daughter, put on a heavy headdress of feathers and a string of shells. She tested the firmness of the headdress and then joined the little knot of

other girls who already had started their own dance, singing softly to themselves.

Below on the dance ground, the visiting contingents continued to dance and sing. Men synchronized their steps and drumbeat only within their own group. Groups moved back and forth across the dance ground in curved paths, rarely retracing the same path. The men bounced up and down, holding their trunks rigid and bending their knees with each beat. The long feathers of their headdresses swung forward and backward with each step. Most of the men held a simple drum in the left hand, and were beating it with their right hand. Other men wielded a bow and arrows or an axe in their right hand, or held a long wooden spear.

By four o'clock all the allied dance contingents had arrived. Two young Tsembaga men thrust heavy poles into the earth inside the pave, climbed to the top of the poles, and surveyed the dance ground. Inside the pave all the bundles of pork had been collected, ready for presentation. Muk climbed a pole and began to shout to the crowds below. The ceremony could begin.

In front of the pave, Aboi, an old man, carried a bamboo tube full of salt. He wore no decoration at all since he had decided he was too old to dance, but he carried his axe. As Muk shouted to the milling crowds, an older man



standing among the women and children also raised his arm in a gesture meant to silence them. But the groups of men continued drumming, singing and dancing. A young man walked down the slope of the dance ground and wound his way among the groups of dancers and spectators, punctuating his shouts for silence with sweeping gestures of his right arm. At last the roar of dancing subsided. The groups of dancing men drew closer to the lower edges of the dance ground. A bare slope was cleared in front of the pave.

Behind the pave Mer climbed up a stake beside Muk and prepared to call by name the men who were to receive gifts of salt pork. First to be called was the resident anthropologist. He ran up to the pave flanked by members of his household shouting and wielding axes. Next to be called were the two men who rendered most assistance as allies in the last war. Before they rushed up to the pave, flanked by young men and followed by the massed formation of their dance contingents, Aboi ran down and back, wielding his axe. He contrasted sharply with the highly decorated dancers, the dark brown of his body unrelieved by the colors of shells, fur or feathers. When the two honored men reached the window of the pave, they carefully removed the delicate shells from their septums, sliding them for safety into their woven arm-bands. Then a hand grasping a large chunk of salted pork fat

reached through the narrow window. In turn, the fat was pushed into the recipients' mouths, and Aibint and Aboi rubbed salt onto their shoulders. Once their mouths were stuffed with fat, bundles of pork were handed to them through the window, and they turned, strips of fat dangling from their mouths, and danced back down with their dance contingent.

Mer and Muk called out the name of the next recipient. Another dance contingent surged forward, led by the recipient flanked by younger men. The recipient and the men flanking him ran backward and forward two or three times before they finally reached the window. The calling out continued. Inside the pave bundles of pork were passed to the men handing them through the window. Women and children stood on the fringes watching, or peered through thin places in the pave. Between twenty-five and thirty men were called to receive pork and salt (Rappaport 1968:217). At 5:45 p.m. the presentation finished, Muk, Mer and Borgai came down from the poles.

The visiting contingents of dancers again spread over the dance ground. The dancing groups moved through the crowds and past each other, each bouncing and singing in a clump in one place, then each forming a rough column as it moved between other groups, still bouncing and drumming.

Again they formed a clump in another spot, and continued the bouncing and singing without interruption. Women and children shifted about on the edges of the dance ground. The light began to fade. Everybody waited for the pave to be broken down.

Inside the pave the local girls had been dancing intermittently throughout the presentation. The men of the Tsembaga clans, finished with the presentation, gathered around a small fire where bamboo tubes were heated till they exploded with loud reports. Then with the last of the daylight, the men rushed down Muk's yard to the west corner of the pave. The saplings waved wildly above and a breach was made. The men, followed by girls, leaped down onto the dance ground, running from the breach down the slope to form a clump at the edge of the crowd. Then they, too, made their way in a column among the other dancing groups. It was 6:15 p.m., and the only motion still visible was the waving of feather headdresses against the strip of grey sky on the horizon.

Dancing continued on and off throughout the night. Women and girls stooped in small bunches around the edges of the dance ground and in the shelters. Men dropped out of the dance groups and came into the shelters to eat sugar cane or roasted tubers. Some of the residents of the Tsembaga hamlets, and people visiting them, eventually returned to their own

houses -- women to the women's houses, men to the men's houses. Throughout the night the sound of drumming could be heard coming from the dance ground.

By seven the next morning the dance ground was only a third full. Dancing had ceased. Some people had already departed for their own villages, while others wandered about in search of items of trade. One man walked about displaying parrot plumage, eagerly approaching prospective customers but being disappointed again and again. One man with a green sea snail shell found a man with a pound note and they agreed to trade. Beads were bought and taken off a headdress. Acquaintances met and greeted each other with vigorous handshakes.

Above, in Muk's yard, the Tsembaga men were gathering again. Nightfall had interrupted their ceremony and the final ritual of the cycle had still to be completed. At nine o'clock several lengths of bamboo were again placed upon the fire. As soon as a length exploded a man picked it out of the fire and held it high above his head, talking loudly for a short time. A young man bounced and drummed. Below, on the dance ground, the report of the exploding bamboo was greeted with enthusiastic shouting by both men and women, and the erratic grouping of the trading encounters formed a more regular pattern as spectators went to the edge of the dance ground. Several more pieces of bamboo were exploded, and then the men and girls within the pave formed a column. Led

by the man holding one of the split bamboos overhead, they again broke through the breach in the pave and hurtled across the dance ground, regrouping once more at the lower edge of the sloping space. The group danced several times around the dance ground and then gathered at the lower gate. Now, women, children, and visitors all crowded close, closer than at any other time in the kaiko, and watched while Yemp dug out two cordyline roots which had been buried under the gate the year before when the kaiko celebration began. The roots were tied to vines and were held just over the ground, carried thus by two men in the midst of the crowd. The column of dancing men, led by the two carrying the roots, could hardly move out through the crowd. Finally, the whole group moved once more around the dance ground. And then the dancers, in a formation that was fast disintegrating, left the dance ground, going over the gate and along a narrow path to the west. A few men sang and drummed. Less than five minutes walk away the roots were thrown over a bluff toward enemy territory (Rappaport 1968:218). This was the last act of the ritual cycle.

As the people came back, they walked and only a few young men drummed as they leaped up the steep edges of the west side of the dance ground. People milled freely on the dance ground. Decorations were taken off and offered for trade. Some women and children still stood watching on the perimeter.

Since early in the morning people from distant territories had been leaving: men carrying sides of pork and bundles of sugar cane over their shoulders, women carrying heavy string bags full of smaller pieces of pork and tubers, and often with a small child riding on top. Throughout the day people continued to drift away. That night no more drums were heard.



### CHAPTER III

#### The Context of the Konj Kaiko in the Maring Ritual Cycle and Daily Life

A konj kaiko is the largest gathering that takes place among the almost 7,000 Maring living on the slopes of the Bismarck Mountains. At its conclusion the gathering disperses and the Maring population, engaged in the daily tasks of agriculture and family life, reaches its widest dispersal.

The Maring territory stretches between the Simbai River and the Jimi River and includes a small area on the north bank of the Simbai, and on the south side of the Jimi. The territory runs approximately fifteen miles from east to west and ten miles from north to south. (See map on the following page.) The settlement pattern is one of scattered hamlets whose location and composition change with time.

The largest named groups among the Maring are called clan clusters by Vayda and Cook (1964:800):

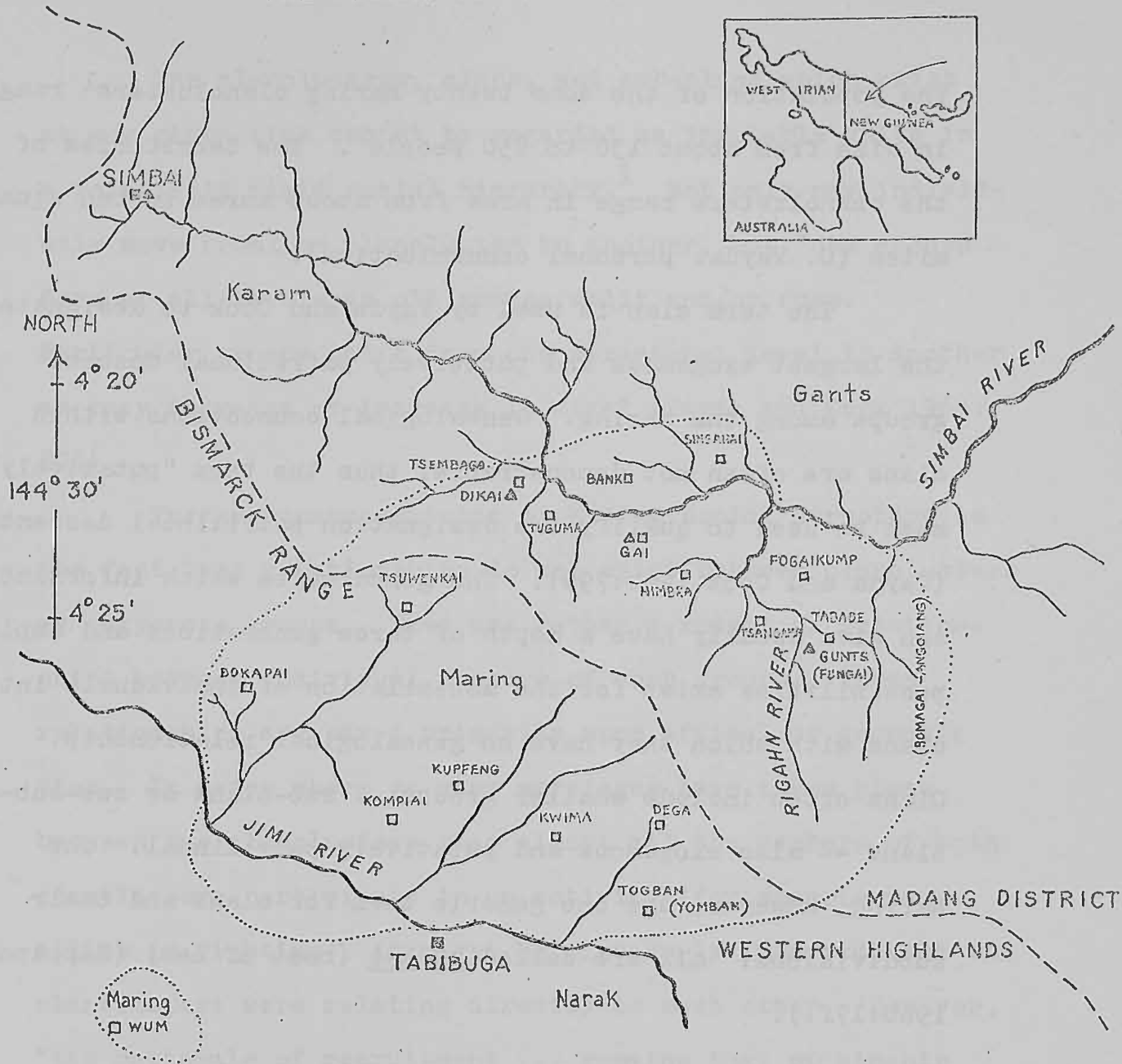
"A clan cluster consists of two or more clans and is the largest named nonexogamous group ... It is the largest unit with recognized territorial boundaries. And it is the largest unit whose members ever act as a single unit in fighting or ceremonies."<sup>1</sup>

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<sup>1</sup> Instead of the term "clan cluster," Rappaport uses the term "local population" (1968:21).



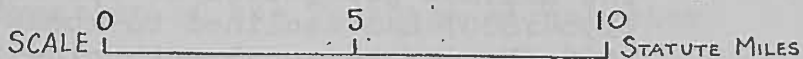
THE MARING AREA - 1963



LEGEND

- AUSTRALIAN PATROL POST WITH AIRSTRIP
  - GOVERNMENT REST HOUSE
  - ▲ FILMING LOCATION
  - ( ) CLAN/CLANCLUSTER NAMES
- Linguistic Groups

Based upon maps made in the field in 1963, and on map in Rappaport 1968:10.



The population of the some twenty Maring clanclusters<sup>1</sup> ranges in size from about 130 to 850 people<sup>2</sup>. The territories of the clanclusters range in area from about three to ten square miles (C. Vayda: personal communication).<sup>3</sup>

The term clan is used by Vayda and Cook to designate the largest exogamous and putatively patrilineal descent groups among the Maring. Genealogical connections within clans are often not demonstrable, thus the term "putatively" must be used to qualify the designation patrilineal descent (Vayda and Cook 1964:799). The genealogies which informants can give usually have a depth of three generations and ample possibilities exist for the assimilation of individuals into clans with which they have no genealogical relationship. Clans often include smaller groups -- sub-clans or sub-sub-clans -- also exogamous and putatively patrilineal. The Maring, however, use one generic term for clans and their subdivisions: all are called yu kai (root of men) (Rappaport 1968:17f.).

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<sup>1</sup>I have taken the liberty of spelling "clancluster" as a single word so that it can be combined with the prefixes "inter" and "intra", in order to avoid confusion with the meanings which would be implied by the constructions "inter-clan cluster" and "intra-clan cluster." Although the term "clancluster" is rather unwieldy, I have not abbreviated it to "cluster", since "cluster" is a technical term used in pattern analysis.

<sup>2</sup>The maximum population of 900 reported by Vayda and Cook (1964:800) had declined to about 850 in the summer of 1966 (Vayda: personal communication).

<sup>3</sup>In this paper A.P. Vayda is referred to as Vayda, and Mrs. A.P. Vayda is referred to as C. Vayda.

The clanclusters, clans, and sub-clans which exist at any given time cannot be regarded as immutable units in a relatively rigid social hierarchy.<sup>1</sup> Not only may individuals move from one clancluster to another, but "new groups form at all levels as old groups split and/or fuse. Particular groups shift from one structural level to another as they decrease or increase in size" (Vayda and Cook 1964: 801).

Further characteristic of Maring social structure is the fact that relationships do not exist between clanclusters as corporate groups. They are rather a result of relationships between individual members of such groups. These relationships are based primarily upon affinal or cognatic ties. In cases where so many marriages have taken place between two clanclusters that almost all the members of both clanclusters participate in an activity (for example as allies in fighting), it might be mistakenly inferred that the clanclusters were relating directly to each other. However, "the rationale of recruitment ... remains that of kinship ties between individuals" (Rappaport 1968:117).

In order to provide a context for the occasions at which dancing occurs, as well as for the other activities during which distinctive movement patterns may be seen,

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<sup>1</sup>For a history of the formation of the Tsembaga clancluster see Rappaport 1968:27.

Maring life will be described first from the point of view of the gatherings occurring during the ritual cycle, and second, from the point of view of gatherings taking place in everyday life.

### The Gatherings of the Ritual Cycle

It is convenient to divide the gatherings of the Maring ritual cycle into two types on the basis of size and social composition. The largest gatherings, called here inter-clancluster gatherings, are composed of most of the members of two or more clanclusters as well as some members of other clanclusters. Smaller gatherings, termed here intra-clancluster gatherings, are composed of the members of one clancluster, or of one clan, or of one sub-clan, plus visiting affines.

The ritual cycle will be described first in terms of the succession of inter-clancluster gatherings, and second, in terms of the succession of intra-clancluster gatherings. As will be seen, these two successions are interdigitated. The description, which is largely based upon the details reported by Rappaport (1968), is highly schematized. Although the literary clarity is thus enhanced, such schematization creates an impression of neatness which is in contrast with the disorder characteristic of Maring style.

### A. Inter-clancluster gatherings

Each clancluster has its own ritual cycle. This means that throughout the Maring area different territories become the focus of gatherings of different compositions at different times. The various ritual cycles involve different, though overlapping sets of clanclusters.

The beginning of a ritual cycle may be considered to be the outbreak of hostilities between a given clancluster and an enemy clancluster.<sup>1</sup> During the stage of fighting there are repeated confrontations between the two groups of hostile warriors and their allies. These large confrontations take place on a space especially cleared for fighting (Rappaport 1968:119), and they occur sporadically over a period of several months. They end either with the rout of one clancluster, or with a truce celebrated separately by the two hostile groups.

During the period of truce, which lasts for an estimated average of ten to twelve years (143), no large inter-clancluster gatherings form on the territory of the

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<sup>1</sup>Vayda has reported that there is a geographic distribution of enemy clanclusters such that each clancluster has at least one enemy clancluster on its boundaries, usually located on the same mountain wall, occasionally separated by the major rivers at the bottom of the valleys, but never separated by the mountain ridge (Rappaport 1968: 99f.).



given clancluster. Its members may not initiate hostilities and they instead turn their attention to the multiplication of pigs, for it is with butchered pigs that they will finally fulfill their obligations to ancestors and allies for help in the preceding hostilities. When there are enough pigs, the final stage of the ritual cycle begins.<sup>1</sup>

The final stage, kaiko, lasts about a year. At the beginning of the kaiko a dance ground is cleared (Rappaport 1968:173f.), and throughout the following months visiting groups of allies come to dance with members of the host clancluster.<sup>2</sup> At these occasions dancing starts late in the afternoon with the arrival of the visiting dance contingents, and the invited dancers are presented with vegetables. There is dancing throughout the night and trading in the morning.<sup>3</sup>

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<sup>1</sup>For an analysis of "sufficient pigs," see Rappaport 1968:159.

<sup>2</sup>During the kaiko described by Rappaport, there were fifteen occasions, also called kaiko, during which members of other clanclusters were entertained. At many of these occasions members of only one visiting clancluster were present, although several were attended by members of two or more clanclusters, and members of three of the visiting clanclusters came to more than one kaiko. In all, people from thirteen other clanclusters were entertained throughout the year (1968:184).

<sup>3</sup>Maring research film 63-JAB, Reel 5, records the preparations of men of the Yomban clancluster for a visit to the Tsangamp kaiko, and the Bomagai-Angolang dance contingent on the way to and from the Tsangamp kaiko. In Reel 31 there is a record of the arrival and dancing of men from Tuguma at the Tsembaga kaiko.

The kaiko, and with it the whole ritual cycle, is brought to a close with the konj kaiko (pig kaiko). This gathering brings together all the allies as well as many unrelated visitors and spectators who come in order to trade. The members of the host clancluster present bundles of pork to allies who helped in the previous fighting. A new ritual cycle can then begin.

#### B. Intra-clancluster gatherings

A brief introduction to Maring cosmology will provide a background for the description of these gatherings. The outline of Maring cosmology presented here is based upon the information obtained by Rappaport from his informants in the Tsembaga clancluster and described primarily on pages 38 through 41 (Rappaport 1968).

The men of each Maring clan or clancluster have their own spirits, distinct from those of other local groups. Each local group has two sets of spirits: spirits which dwell in the high altitude part of the local territory, and spirits residing in the low part of the territory. The spirits of the high ground are of two types. One is a single entity called the Smoke Woman (kun kaze ambra) who lives on top of the mountains. She is the intermediary between the other spirits of the high ground and the spirits of the low ground. She is also the intermediary between all spirits and living people. The



other spirits of the high ground are called red spirits (raua mugi). These are the spirits of local people who have been killed in battle. They are specifically concerned with the relationships of the local group to other local groups.

The spirits of the low ground (raua mai) are principally the spirits of all local people who did not die in battle. They are cold, wet, and are responsible for the fertility of all living things on the local territory.

There are, in addition, the spirits of the dead of other local groups (raua tukump ragai). The only actions undertaken vis-a-vis such spirits are attempts to expell them.

The body is conceived as consisting of two main parts, each one the domain of either the red spirits or the spirits of the low ground. The red spirits are concerned with the head, the arms, the shoulders, and the chest. They can be called upon to cure illnesses in these parts, and, if angry, they may cause illnesses localized in these areas. The spirits of the low ground are concerned with the lower trunk, the genitals, and the legs, and they too may cause or cure illness in these parts. A special treatment of the body was necessary during periods of fighting. The head was considered to be the seat of the red spirits who possessed the warrior. Anything wet might extinguish the "fire" of the red spirits which enabled the man to fight. Therefore, contact

with women, with the low altitude parts of the local territory, with eels, and with rain were all taboo from the time a serious fight was ritually begun until a truce was formally made. Before entry into battle, a man's chest is touched with a magic bundle thought to "give courage," and his legs are rubbed with grey clay to "make them strong" (Rappaport 1968:120f.). Similar treatment is given to dancers before they enter a dance ground, with special attention to the legs so the men will be able to dance tirelessly.

Living people relate to the local spirits in a number of ways. The basic relationship is one in which men give pigs to the spirits in exchange for their help. In giving a pig, a man calls out to the appropriate spirits, informing them of the request. The pig is then clubbed to death and is eaten by members of the local group, if it was sacrificed to the red spirits, or it is shared with allies if sacrificed to the spirits of the low ground (Rappaport 1968:128f.).

The Maring believe that spirits may communicate directly with living men, specifically with kun kaze yu, i.e., men with ritual knowledge. Such communication is done primarily with the Smoke Woman as intermediary. In order for the Smoke Woman to communicate, a kun kaze yu induces in himself a trance by smoking and shaking his body. While he is in a trance, it is thought that the Smoke Woman has entered his head and that it is she speaking (Rappaport 1968:119).

It is also thought possible for the red spirits to communicate directly with the kun kaze yu prior to entry into battle.

The intra-clancluster gatherings, as they occur in the course of the ritual cycle, also begin with the outbreak of hostilities. The night before engaging the enemy, the warriors gather in clan or sub-clan groups in several men's houses. The kun kaze yu among them induce in themselves an ecstasy during which they contact the Smoke Woman who informs the ancestors of the coming fight (Rappaport 1968:119). It is in the morning that the weapons and chest of each warrior are touched with a magic bundle thought to "give courage," and their legs are rubbed with grey clay to "make them strong" (1968:120f.). The group then proceeds to the fight ground singing a song called wobar.

The first encounters with the enemy may lead to a mutual decision to call off hostilities and settle the dispute peaceably. If no reconciliation is reached, the groups return to their homes to undertake the rituals which will enable them to embark on formal hostilities (1968:123f.). These rituals produce a relationship of obligation toward ancestors and allies and of enmity toward members of the opposing clancluster. They are performed in the ringi ying, small, round houses in which the necessary paraphernalia are kept by one or two men versed in the magic pertaining to fighting. These men are subject to a number of stringent

taboos and are called aček yu (taboo men) (Rappaport 1968: 125).

Warriors gather in the evening at the ritual house (ringi ying) of their clan.<sup>1</sup> Two pigs are sacrificed, one for the red spirits and one for the spirits of the low ground. The pork is cooked during the night, while the warriors are assembled in clan or sub-clan groups in their own houses, and the kun kaze yu among them contact the Smoke Woman (129). At dawn the warriors again gather outside the ritual houses, together with their allies who arrive as early as possible. The allies are given the fat of the pig sacrificed to the spirits of the low ground (133). The local warriors eat the fat of the pig dedicated to the red spirits (135). Their weapons and bodies are bespelled as preceding the initial encounters, and the warriors form a circle with their shields inside of which the taboo men rush about while communicating directly with the red spirits. The group then goes to the fight ground singing the song called de (137f.).

The engagements at the fight ground may continue for weeks or months. They are limited by rain and by the ritual pauses necessary whenever casualties are suffered (140f.). During such pauses, necessary gardening work may be done.

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<sup>1</sup>On the territory of the Tsembaga clancluster there were, in the past, three ringi yings. Each belonged to a group called by Rappaport (sub-territorial groups" (1968:19). According to the information in Vayda's "clan survey" (not yet published), these groups are clans.

After each pause, the ritual gathering described above must be repeated before fighting may be resumed (Rappaport 1968: 142). If neither side suffers a rout, a truce is eventually made on the battlefield. After a certain period of time elapses, the truce is formally celebrated by each of the two hostile groups.

Two days are required for the necessary rituals. On the first day pigs are sacrificed to both the red spirits and the spirits of the low ground. This is done by individuals at their own raku. A raku is the location of an ancestor's house, and each individual has several raku where he may kill pigs (146). It is likely that several people of each minimal agnatic unit may kill the pigs for any given ritual at one raku, but the constellations of people gathered at rakus at different occasions may vary (199).

The first truce ritual is thus generally an occasion for the formation of minimal agnatic groups, with affinal relatives who were allies. The pig sacrificed to the low spirits is, with the exception of the belly fat, given to the allies straight away. The rituals of the second day take place in the yards of the several ringi ying where warriors, allies, women, and children all gather. The belly fat saved from the day before is now formally presented to the allies, and salt is rubbed into their mouths and on their shoulders (147). A taboo man plants a variety of cordyline and "all



the local males are then directed to place a hand on the plant as the earth is tamped around its roots" (Rappaport 1968:148). Participation in this ritual is the ultimate statement of membership in the local group. Individuals who have joined the local group as refugees after a rout, or for other reasons, may become formal members of the local group at this time (150, 171).

Having completed the truce rituals, the people set about to build up their depleted pig herds so that final and generous gifts of pork can later be made to ancestors and allies. During the years of truce the intra-clancluster ritual gatherings are limited to the gatherings that take place at one or another raku whenever a person is dangerously ill. This period of small and scattered ritual gatherings ends with the preparations for kaiko.

Preparations begin early in the drier season at the time when ground has been cleared for new gardens but no planting has been started. Pigs are sacrificed at several raku, and then the men gather in larger groups at the ritual houses. From there they move in processions through the residential areas. Finally all the groups meet in a large, newly cleared garden area. In this garden most of the food needed to present to allies in the latter part of the kaiko year will be grown. From the garden area, the clancluster group proceeds to the boundary between its territory and the

territory of the enemy. On the path it is joined by allies (Rappaport 1968:168f.). After the boundary is ritually established, the procession returns to the various residential areas and the allies go home to their own territories.<sup>1</sup>

The next stage of preparations begins with the ripening of a variety of pandanus (yambai), about two months after the boundary-marking ceremony. During this stage, men trap marsupials (ma) which are thought of as "pigs of the red spirits" (175). The flesh of the marsupials is required for the ritual which inaugurates the kaiko, and their skins are needed to make the drums which will provide the only instrumental accompaniment to dancing. Territorial distinctions are made during this ritual period which divide the forest land of the clancluster into sub-territories:

"Ma trapping is carried on separately by the least inclusive agnatic units, clans in some cases, sub-clans in others, in their own komong, tracts in the high-altitude virgin forest which are said to be the homes of their red spirits. While at ordinary times a man may set his traps anywhere on Tsembaga territory, he may now set them only in the komong of his own minimal agnatic unit because it is only with one's own ancestors that "pigs" may be exchanged" (Rappaport 1968:175).

The kaiko is inaugurated with two days of rituals which take place after a second variety of pandanus (pengup) ripens (about four months after the boundary-marking). On the first

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<sup>1</sup>A record of the boundary-marking ceremony of the Kanamp-Kaur clancluster is to be found in Maring research film Reel 4.



day people gather at their raku and sacrifice pigs to both sets of spirits. While the oven stones are heating on a large fire, all the people present form a procession.

"Led by two men who continually raise and lower the pandanus fruits they are carrying, the group circles the fire chanting ... when the chant... is almost completed the procession halts. All males take hold of one of the pandanus fruits, while the females grasp the other" (Rappaport 1968:177).

At the end of the day, the pork which has been dedicated to the spirits of the low ground is carried home from the various raku and, with the exception of the belly fat, is given to the allies (Rappaport 1968:180). On the following day there are gatherings at the ritual houses. Salted pork belly is presented to the allies. Later the cordyline which was planted during the truce ritual is uprooted. A procession forms, led by the men carrying the cordyline, and goes toward the boundary of the clancluster territory. As during the boundary-marking ritual, the groups coming from the various ritual houses meet and are joined by a contingent of men from a neighboring, friendly clancluster. Most of the men go to the boundary, only a few leaving the procession to dispose of the cordyline in streams (181). The procession then goes to the dance ground where dancing, drumming, and singing last throughout the night. Now the kaiko is formally under way.

The kaiko lasts about one year and has two stages which echo the two stages of warfare. During the first stage,

wobar, which lasts until enough taros and yams have ripened to make generous presentations to visiting dancers, only the melody and refrains called wobar may be sung. During the second stage, de, two melodies and two sets of refrains may be sung: wobar and de. The de period is usually begun with two days of rituals. On the first day people gather at their raku to sacrifice pigs. On the second day

"the allies assemble on the dance ground, and small trees ... are assigned to each group responsible for slaying an enemy in the last fight. ... The trees are uprooted while the men sing welowe, the killing song. ... The killers ... are then carried around the dance ground on the uprooted trees" (Rappaport 1968:183).

The periodic visits of allies in dancing contingents continues until the final ceremony, konj kaiko. Preparations for the konj kaiko begin after most of the men's work in clearing new gardens is over (Rappaport 1968:197). The men turn their attention to the ritual trapping of eels. The trapping follows the principle of territorial division used during marsupial trapping, i.e., each minimal agnatic unit has its own territory, in this case on the low ground. Eels are trapped for a period of about two months, and then final preparations for the konj kaiko are begun.

The tall ceremonial fence, the pave, is built on one side of the dance ground. A timbi ying -- a small, round house -- is built at each raku where pigs are to be sacrificed to spirits of the low ground. Inside the timbi ying eels and

pork will be ritually cooked together on the night preceding the konj kaiko. When a timbi ying is built, all the men and boys present place their hands on the center post as it is thrust into the ground (Rappaport 1968:200).

Several weeks later the konj kaiko takes place. The first day of the three-day ritual is devoted to sacrificing "taboo" pigs (205). This pork is eaten only by members of the host clancluster and serves to lift both some of the taboos associated with formal hostilities and other taboos arising from personal disputes between members of the clancluster (206).<sup>1</sup> On the second day, more pigs are sacrificed at the various raku, and most of this pork is given to allies. As at the formal truce ritual, the belly fat of the pork is set aside for the following day. The ceremonies of the third day, the konj kaiko proper, which have already been described in Chapter II, are the culmination of the kaiko and, with it, the ritual cycle.

In the above schematized description of the gatherings of the ritual cycle, I have discerned a repeated pattern of group composition. People gather first in small groups at the various raku, and as the rituals progress, larger and more inclusive groups are formed. During the preparations

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<sup>1</sup>A record of events at the Tsembaga-Tomega raku on November 8, 1963, is to be found in Reels 33 and 34.

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for fighting and for the kaiko, the gatherings proceed in order from the minimal groups, to the clan groups, and finally to the clancluster group. Only during the rituals inaugurating kaiko de and the konj kaiko do the gatherings shift directly from minimal agnatic units to the clancluster assemblage. In no case does a ritual begin with the whole gathering of the clancluster. At each stage of either fighting or dancing, the first inter-clancluster gathering is preceded by intra-clancluster gatherings. Other inter-clancluster gatherings may follow the first without being preceded by intra-clancluster gatherings until the next stage of fighting or dancing is reached. A summary of these gatherings is shown on the following page.

The kaiko year is not only a time of many inter-clancluster gatherings on one territory, but also a time of residential clustering for the members of the celebrating clancluster. During the period of preparations for kaiko "the settlement pattern changes from one of scattered homesteads and sub-clan and clan hamlets to one of relative nucleation around a traditional dance ground" (Rappaport 1968:173).

Although each clancluster celebrates a kaiko on the average of only once every ten years or more, it may be possible for each person to visit or to participate in a kaiko somewhere in the Maring area every year (221).

# THE RITUAL CYCLE

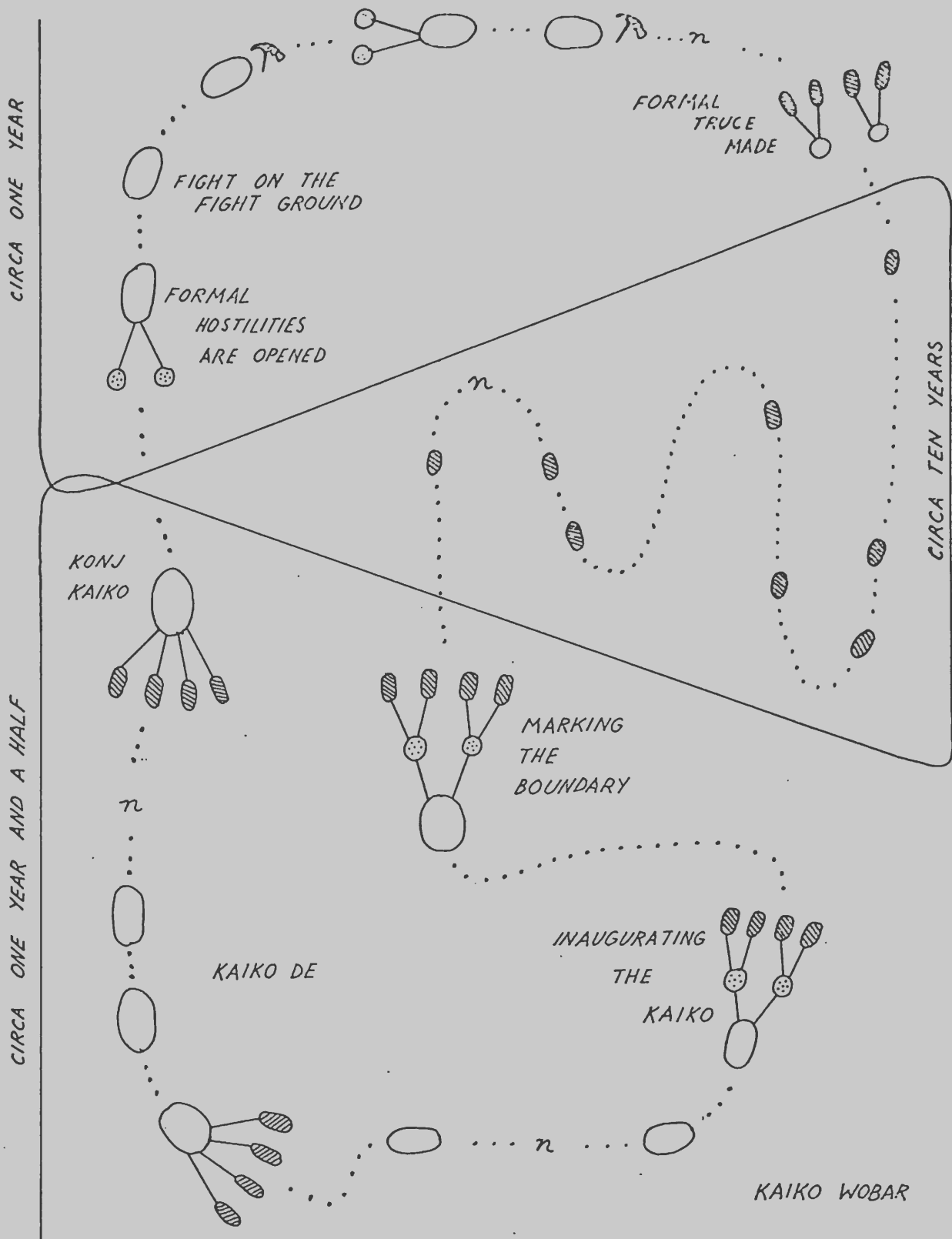
A SCHEME OF THE GATHERINGS OF ONE CLANCLUSTER

▨ - GATHERING IN A RAKU

○ - GATHERING OF CLANCLUSTER

⊙ - GATHERING IN A RITUAL HOUSE

⚔ - CASUALTY SUFFERED



### The Gatherings of Daily Life

The stream of daily life runs parallel to the ritual cycle, and there is a pattern of daily assemblage into which even the largest ritual gatherings are fitted. This pattern is closely associated with the diurnal cycle.

#### A. Climate and the diurnal cycle

Temperature and rainfall records were kept in Tsembaga for only one year, December 1, 1962 through November 30, 1963. While no conclusions can be drawn from a one year record, the data collected by Rappaport do not show seasonal fluctuation in either the temperature or the amount of rain. Records kept at the Tabibuga Patrol Post<sup>1</sup> from 1959 to 1963 indicate that there is a far greater variation between the lowest and highest rainfall in a given month over a period of several years than between the rainy and dry seasons referred to by Maring speakers. The Tsembaga records show that in 1963 the months of August, September, and October, which, according to informants (Rappaport 1968:33), are supposed to be part of the dry season, were the first, second and fifth wettest months of the year. From August through

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<sup>1</sup> Tabibuga lies in the Jimi Valley in the Narak territory which borders on the Maring area. A summary of the rainfall records made there is presented by Rappaport (1968:243).



December an average of 18.38 inches of rain fell per month. From January through July, there was an average rainfall of 8.85 inches per month.

The temperature and rainfall aspects of weather provide little ground for long-range, seasonal differences in local group behavior. They provide, rather, a strongly patterned diurnal variation. Most rain falls at night. Although on most days there is both sunshine and rain, there are some totally sunny and totally rainy days each month. The nightly temperature in the high fifties or low sixties begins to climb sometime after dawn, depending upon whether or not the rain continues into the morning. After the clouds disperse the temperature in the shade reaches the mid- or upper seventies and several hours of intense sunshine usually follow. Rainstorms occasionally occur in the afternoon, and the nightly rain may begin before dusk, though it frequently falls only later.

#### B. The daily round<sup>1</sup>

The daily temperature and rainfall fluctuations, and the alternation between night and day are associated with a

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<sup>1</sup>The description of daily round is based upon experience among the people of the Fungai clan and upon the many reels of research film taken among the Fungais. For a detailed listing of these reels, see synopses of the Maring research film at the Film Archives for the Study of Child Growth and Development and Disease Patterns in Primitive Cultures, National Institute for Neurological Diseases and Blindness, Bethesda, Maryland.



basic pattern of assembling and scattering within the local group. This pattern might be considered as a skeleton upon which the gathering-pattern of any given day is built.

During the night people are gathered in their houses (see Plate XIII:3 and 4). Men and women live in separate houses. The houses of husbands and wives may be in the same yard. Small children sleep in their mother's house. Beginning at about the age of five, boys sleep in the house of their father. Adolescent boys may share a house, and adolescent girls may either stay with their mother or have their own house. Children frequently stay in the houses of single grandparents, uncles, or widows.

Morning dawns at about six-thirty the year around. When it dawns clear, some people disperse immediately upon errands of their own: searching for a missing pig, or going to a nearby garden site to do a few hour's work before the heat of the day. Most people begin the day's activities more gradually, leaving the chilly houses to search out the first patch of sun in their yard. It is a time when the whole family may gather in a small space. These men whose yards are separate from those of their wives often spend morning hours in their wives' yards. People eat freshly roasted tubers, leaning over the fence to throw peelings to the pigs. Following this period of gathering in yards, individuals or small

groups (from two to five people) go to their gardens (see Plate VII). Alternatively, people may go from their own yards to some large, sun-lit area where a larger gathering takes place<sup>1</sup> (see Plate IV). Several hours may be spent at such an informal gathering, conversation waxing and waning, children playing among the adults, and women frequently working on the making of twine and string bags as a counterpoint to the chatter. The personnel changes gradually and eventually the whole gathering disperses, each individual to his own garden plot, and the children, older ones caring for the younger ones, play along the paths and fringes of the hamlet.

The middle of the day, when most people are in their gardens, some men are in the forest hunting, and children and older people are in the hamlet, is the period of widest dispersal of a Maring local group over its territory (see Plates III, VIII, IX, and X). In the early afternoon, the process of assembling begins as people finish their gardening tasks, and bring in food for the evening meal (see Plates II: 4 and XI). Intermediate gatherings (see Plate XII:1), similar to

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<sup>1</sup>This pattern may have been exaggerated by the presence of the anthropologists, whose yards became the focii of such gatherings. Among the Fungai, however, at least two other locations existed where these gatherings formed. (See Plates IV and XII:1.)

the large groups often seen in the morning, may occur as women cluster at the crossing of their various paths, resting and talking, before each continues on to her own yard to prepare the evening meal (see Plate XII:3).

The supper gathering of each family tends to be more dense than the early morning gathering. Pandanus fruit and several varieties of leaves are often cooked with the tubers in an earth oven by the mother, and it is often the father who squeezes the pandanus oil over the leaves and prepares a separate bundle for each person present. While a person may easily roast tubers over an open fire whenever he pleases, it is not as easy to make earth ovens. This largest meal of the day may be ready any time between four and six o'clock. If it is raining or already dark, the whole family may gather in the mother's house (see Plate XIII:4). Later at night the menfolk disperse to their own individual houses.

Such is the basic daily schedule. Two variations occur in response to environmental conditions. On days when rain falls continuously, the period of dispersal at mid-day is minimal, only a few people venturing forth to nearby gardens to gather food for the evening meal. At times of full moon, if the weather is fine, groups formed primarily by young men remain out of doors far into the night, sometimes dancing and sometimes hunting eels.

Other variations arise when social events precipitate gatherings larger than usual. In this category fall arguments of various sorts, stemming from personal quarrels or from the invasion of someone's garden by another's pig. Occasionally gatherings are precipitated by the arrival of visitors from outside the local group. Many such visitors, especially daughters who are married and are returning for a visit, enter the daily cycle of their family and introduce no changes into the gathering-pattern of the local group as a whole. The visitors who do precipitate gatherings are: traders, around whom men interested in the goods gather; men to whom someone in the local group is under obligation, such as trading partners or affinal relatives, who wish to press their claims; and unmarried girls visiting friends or relatives with whom the local young men gather for a courting dance at night.

The settlement pattern of the Maring varies from one clancluster to another in degree of nucleation and in the extent to which the residences of members of the clans and sub-clans are intermingled.<sup>1</sup>

#### C. The gardening pattern

Since the main subsistence pattern of the Maring is swidden horticulture, the plots of ground being cultivated go through a series of stages which are repeated with a

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<sup>1</sup>This is indicated in A. P. Vayda's "clan survey," not yet published.

certain periodicity. A plot of ground is cleared, planted, and gradually harvested. It then reverts to non-garden vegetation and is allowed to remain in fallow for an average of about twelve to sixteen years (Clarke 1966:350). The cycle is then repeated. The first of these stages, clearing, is dependant upon the work of local people (see Plate VIII). The clearing and fencing of major gardens is often undertaken between April and early June. The fencing work may continue until the garden cleared wood is burned between June and September. The garden is then planted. It is weeded periodically and harvesting first becomes possible about ten weeks after planting (Rappaport 1968:48). Cucumbers and leafy tops are the first to ripen, followed by corn, beans, and gourds, and somewhat later by some species of yams, taros, and sweet potatoes. Bananas and sugar cane ripen even later. One year after planting all the crops are ripe, the harvest of some is long since over, and the harvest of others, in particular bananas and sugar cane, continues for another year, at which time the garden is abandoned. In some Maring areas, gardens are replanted for a second time before being abandoned (42).

The gardening cycle applies to each garden independently, and the cycles of separate gardens are not well synchronized. Thus, on any given day, the various gardens in a clan cluster territory are in many different stages.



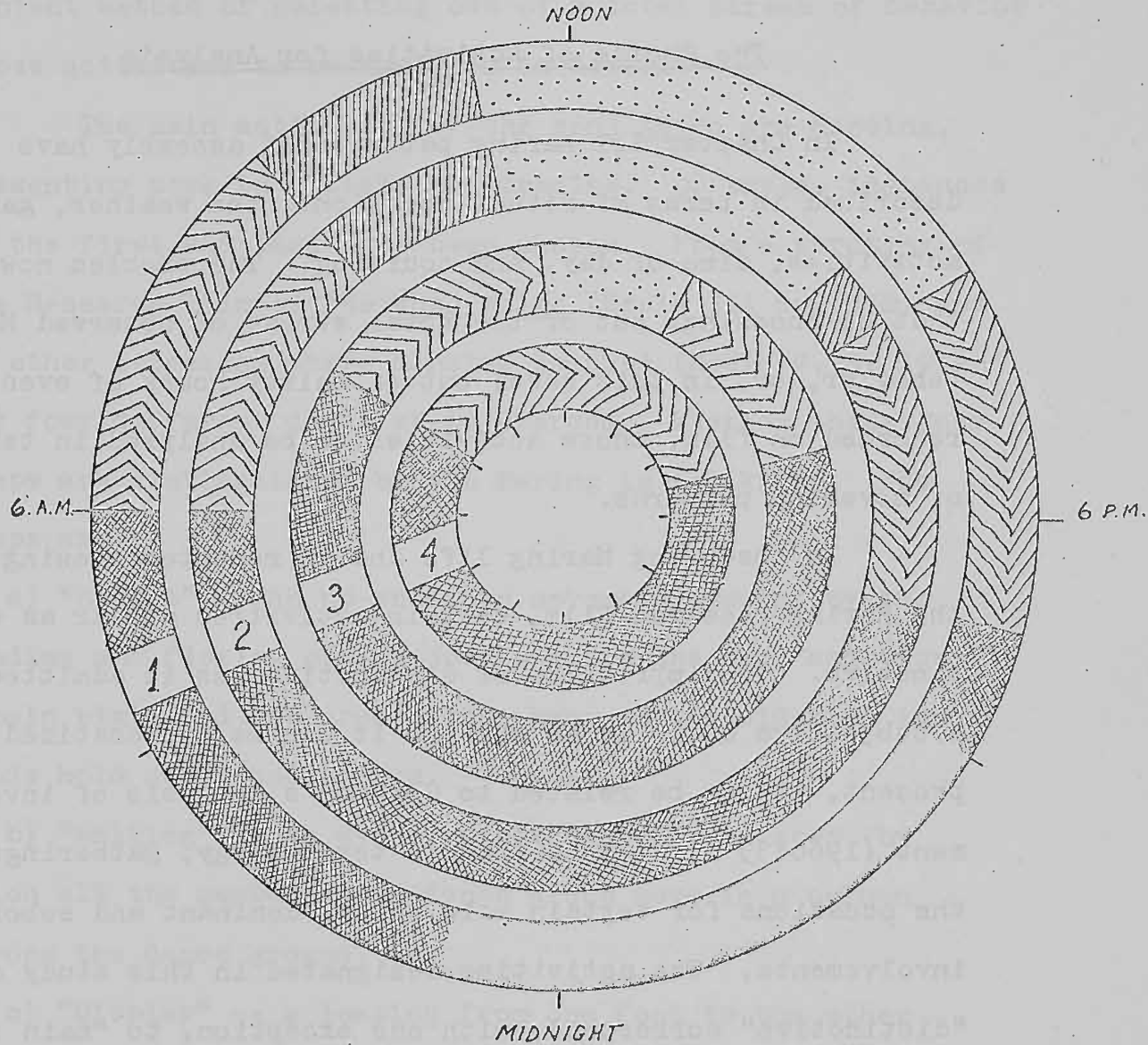
During the various gardening stages, men and women cooperate, the men doing heavy clearing work and caring for bananas, sugar cane, and pitpit (Neo-Melanesian for Saccharum edule), while the women clear underbrush, plant and harvest all the other crops, and see to the frequent weeding. A woman makes gardens primarily with her husband, widowed father, brothers, or sons. A man generally gardens with his wife, his widowed mother, unmarried sisters, or daughters. Depending upon the number of men and women in each clan or sub-clan, the distribution of people in gardening pairs takes different patterns.

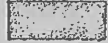




The garden work of men and women does not frequently coincide in time, and people tend to work alone in gardens. Occasionally several men join to clear a large garden area together. Later it is divided into plots gardened by individual women. When garden plots are close to each other, women may pause in their work and join each other for a snack and some conversation.

A summary of the daily scattering and gathering of a Maring local group appears in graphic form on the following page.



1. A SUNNY DAY WITH COURTING DANCE AT NIGHT
2. A SUNNY DAY
3. A RAINY DAY
4. THE DAY OF A SICK PERSON



-  GATHERING OF MANY PEOPLE IN ONE HOUSE FOR COURTING DANCE
-  GATHERING OF FAMILIES IN MEN'S AND WOMEN'S HOUSES
-  GATHERING OF FAMILIES IN OWN YARDS
-  GATHERING OF MANY PEOPLE IN ONE YARD
-  PEOPLE DISPERSED IN GARDENS AND FOREST

## CHAPTER IV - A METHOD OF ANALYZING HUMAN MOVEMENT

### The Choice of Activities for Analysis

In Chapter III Maring patterns of assembly have been described in terms of ritual occasions, the weather, gardening activities, time of day, and courting. The problem now is that of choosing, out of the total stream of observed Maring behavior, or, in this case, out of thirty hours of events recorded on film, those activities to be analyzed in terms of movement patterns.

In observing Maring life and in repeated viewing of the Maring research film, certain activities appear as distinctive. The impression of distinctiveness is admittedly a subjective one. In as much as it can be systematized at present, it may be related to Goffman's analysis of involvement (1966:33 f.). In Goffman's terminology, gatherings are the occasions for certain main, side, dominant and subordinate involvements. The activities designated in this study as "distinctive" correspond, with one exception, to "main involvements." The decision as to whether an observed activity is or is not a "main involvement" can be made if the purpose of the occasion is decided upon. This decision can be based on the answer to the question, "What is the person doing now?" Although the answer to this question provides only a gross

analysis of the stream of behavior, it does provide a convenient method of selecting out of a total stream of behavior those activities to be analyzed in detail.

The main activities of the konj kaiko are dancing, presenting pork to allies, and trading. Of these, instances of the first and last have been chosen. From a scrutiny of the Research Film of the konj kaiko (Reels 35A and 35B) and of other occasions where dancing occurred (Reels 4, 5, 19 and 31) four different dance steps emerged. Whether these four steps are distinguished by the Maring is not known. The steps are:

a) "Bounce" -- an up-and-down movement created by the bending and flexing of leg joints while the head and trunk remain rigid and the arms either hang at the sides or the hands hold and pound a drum.

b) "Walking" -- an even, rather flat-footed step, by which all the members of a dance group move in a column across the dance ground.

c) "Display" -- a leaping from one foot to the other while thrusting the free foot backward or up toward the buttocks. This is accompanied by a free wielding of an axe on the right side, or by passing a spear from one hand to the other above the head.

d) "Stoop" -- all the men in the dance group stoop and remain motionless.

The first three steps, as performed by both men and girls, are the subject of detailed analysis in Chapter V.

Trading consists of two overlapping involvements: personal interaction between the traders, and the handling of wealth items. One instance of handling wealth items was analyzed. Instances in which dancers decorated themselves were also chosen for analysis, because of the relationship of this activity both to the handling of wealth objects and to the preparation for dancing.

The distinctive activities of Maring daily life are considerably more numerous. In the present study three basic categories have been chosen for movement analysis: those involving a) heavy physical work, b) light physical work and handicrafts, and c) walking. Heavy work occurs during the early stages of making gardens and during the construction of houses and ritual structures, namely the pave. Instances of clearing undergrowth and secondary growth trees with axe and bushknife, planting tubers and sugar cane, and driving a heavy stake into the ground are analyzed. Light work is associated with the daily tasks of collecting food and firewood and of cooking. The instances analyzed are of building an earth oven, cutting firewood, and preparing the vegetable sauce from a variety of pandanus (marita - Neo-Melanesian). During the social gatherings of

daily life, women are usually engaged in what is called, using Goffman's terminology, side involvements. The most striking of these are the various processes of making string bags. An example of netting a string bag has been analyzed in detail. A further example of handicrafts, the making of bark cloth, is analyzed. Finally, three instances of walking are analyzed. These analyses are presented in Chapter V.

Since a detailed movement analysis requires a considerable amount of time, only one instance of a given activity was, in most cases, chosen. Although the number of instances of various activities chosen for analysis is thus limited, it is possible to scan the total available footage for other examples of activities exhibiting patterns similar to those specified by the detailed analysis. One can thus arrive at a broader understanding of the way certain movement patterns are distributed through Maring life. This broader description will be presented in Chapter VI.

### The Method

#### A. Individual movement

##### 1. Choice of aspects

In order that the present study of the Maring may eventually be placed in the cross-cultural context provided by Choreometrics, aspects for the analysis of individual



movement have been chosen from two of the Choreometric parameters (Lomax, Bartenieff, and Paulay 1966):

- a) number of active body parts
- b) transition between paths

The number of active body parts is an aspect of movement easily observable without the need of previous training.

Transition between paths is a complex aspect of movement which requires some instruction in order that an untrained observer may systematically perceive and record it. The concept "transition" is related to Laban's concept "trace form" -- the shape of the pathways traced by limbs as they move through space (Laban 1966:4).

The finding of Choreometrics was that different cultures characteristically use some trace forms in preference to others and that a significant aspect of this was the transition, the way that movement changed direction, which can be seen from an observation of the paths that movement followed and the characteristic ways of linking these paths. This whole complex set of qualities was combined under the concept of transition and, after a world sample of cultures had been inspected, a diagnostic list was selected to serve as a taxonomic tool in the cross-cultural characterization of movement styles (Lomax, Bartenieff, and Paulay 1966).



The Maring occupy an extreme position on the scale of transition types in the choreometric world sample: a considerable part of Maring movement is categorized as vague. It was, therefore, necessary for the present study to devise another way of distinguishing between the various trace forms created by a moving Maring. The development of this set of categories was influenced, not only by the characteristics of Maring movement, but also by the decision to diagram the movement on the basis of frame-oriented observation. In frame-oriented analysis, described fully on p. 67, trace forms can be immediately divided into instantaneous and gradual changes in direction. Instantaneous changes in direction take place between one frame and the next, and they create either an angle in space, or a point in space. Gradual changes occur over a number of frames, and they were, in the present study, therefore, categorized as paths. Five types of paths emerged as useful in describing Maring movement. Paths of a rounded character are termed either curved or cyclic (returning to the starting point along a curved path). Paths of a linear character are termed straight. The term indeterminate covers the numerous movements observable among the Maring where a path is neither clearly straight nor definitely curved.<sup>1</sup> Rotating paths are created by a limb,

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<sup>1</sup>It is probable that these are the movements which would be characterized by choreometrics as vague.

the whole trunk, or the head moving around its own axis. Rotating paths are the only ones which can occur simultaneously with the other path types.

Changes in direction include "angular" and "pointed". A third type, to account for the gradual changes noted above, is called "smooth," and is used to specify any non-angular and non-pointed changes occurring between a path of one type and a path of another type, or between two curved paths of different radius. The moment at which a smooth change occurs is not as precisely identifiable as the moment of the instantaneous changes - the smooth change can only be inferred from the character of the paths, rather than directly observed.

The following set of categories of trace form, then, proves to be a useful means of describing Maring movement, and it can be eventually related to the choreometric transition categories observable on film projected at 24 frames per second.

#### Trace Form

<u>Paths</u> <sup>1</sup>	<u>Changes of Direction</u> <sup>1</sup>
straight	pointed
indeterminate	angular
rotating	smooth
curved	
cyclical	

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<sup>1</sup>It should be noted that some of these words (straight, curved, cyclical and angular) are used in choreometrics with slightly different meanings: they designate types of transitions, rather than types of paths or changes of direction.

## 2. Graphic format

Once body parts and trace forms are chosen as the aspects of movement to be analyzed, a format must be determined. In the format developed here the movement of body parts and the occurrence of various trace forms were each considered as a process through time, and in order to compare these processes as they occur in different activities, each one must be diagrammed.

Kinetography, as distinct from Choreometrics, uses a basic staff similar to a musical staff on which continuous changes through time are shown. This staff was at first considered as a format for diagramming, however, upon closer examination, it was found to be inappropriate for this study. First, it does not distinguish trace forms as a separate aspect of movement. Second, Kinetography was devised mainly for dance movement, and uses meter as the basic division of time. In the present study, activities other than dance are analyzed, and a simpler division of time was needed. Since film is taken at a constant speed (24 frames per second), the frame presents itself as an exact way of measuring time on a diagram regardless of the nature of the analyzed activity.

Each diagram consists of two staffs (modelled upon Kinetography) which are read from left to right, one for

notating body parts used and the other for notating transitions between paths. Each staff contains five major spaces representing, from top to bottom, left leg, left arm, head and trunk, right arm, and right leg (see Appendix II).

These body parts are referred to as "major body parts."

The divisions of the body-part-use staff indicating major body parts are further subdivided to indicate "minor body parts" as follows:

Major body parts	=	Minor body parts
head plus trunk	=	head, chest, pelvis
arms	=	scapula, shoulder, elbow, wrist, and fingers
legs	=	hip, knee, ankle, and toes

Any movement can be seen either as a change of the angle at the joint, or as a change in the position of the body segment immediately below the joint -- e.g. elbow flexion moves the forearm. In addition to moving the limb segment immediately below the joint, movement at a joint affects all the segments below it. Thus, the shoulder moves and causes the whole arm to traverse space. This movement of the whole arm is not notated. Only the shoulder is marked on the diagram, unless the elbow, wrist, or fingers are themselves separately moving. Since the movement style of the Maring is one of those distinguished by the use of the trunk

as one unit (Lomax, Bartenieff, and Paulay 1966), chest and pelvis have been diagrammed together. This allows differentiation from a situation in which the pelvis and chest would be moving simultaneously but as separate units. The latter has not (as would be expected) arisen during the analysis of the Maring film thus far.

The method of indicating movement upon the staff is an adaptation of one devised by Condon in his study of synchrony between speaking and body movement (1964). It was used here because of its graphic clarity, and because of the possibility that synchrony of body part movement may be an additional factor which can be used to distinguish between the movements occurring in different Maring activities. Movement of a limb caused by muscular activity, and which has a clear direction, is indicated by a solid line. Movement which is caused by gravitational pull, rather than by muscular activity, or which is too small to be clearly seen is indicated by a heavy dotted line. A light dotted line indicates movement which is obscured, because of the camera-angle from which the activity was recorded, but which can be inferred from visible movements of other joints. The lines are punctuated by an arrow whenever the direction of the movement changes. When the speed of the movement changes independently of the direction (with the exception of gradual accelerations and decelerations), the lines are punctuated by a straight mark.



The staff on which trace forms are recorded indicates (from top to bottom) left leg, left arm, head, trunk, right arm, and right leg. Technically, all the joints and limbs of a body in motion may be considered as tracing paths in surrounding space. The analysis of trace forms, however, is not concerned with this level of observation, but rather seeks to characterize the forms traced by the part of the body leading the movement.

There are two further comments to be made on the staffs developed for notating Maring use of body parts and trace forms. Both comments refer to the specific place that the Maring movement style was found to occupy in the total sample analyzed in the initial Choreometrics survey. First, the Maring use few body parts and little fine differentiation appears in the movement of hands. For this reason, hands have received only scant attention in this study. This is reflected in the construction of the staff: only one line is allocated to the fingers and thumb of each hand. Second, Maring movement patterns do not contain the more complex of the Choreometric transition types. Should a comparable study be made of a style more elaborate in either body-part-use or trace forms, the staffs presented here would have to be expanded.



### 3. Procedures of notation

#### a. Choice of footage

The choice of activities to be analyzed for movement patterns has been described at the beginning of this chapter. Footage on which the chosen activities are recorded must be further scanned in order to select those portions which will yield the clearest results in diagramming. Depending upon the quality of the film, the duration of shots, and the distance from which they were photographed, the selection procedure will differ from one film corpus to another. The Maring footage contains relatively few continuous shots of long duration. In addition, many shots, while giving a general impression of an activity, do not present a clear enough image for detailed notation: either the film was badly exposed, or the camera was placed at an angle from which certain details were obscured. These limitations are quite different from the problem of choosing sequences for analysis out of a body of clear and continuous footage (Kendon 1967:9, 11).

b. Viewing for notating

The equipment used consisted of hand re-winds, a Moviscop viewer, and a synchronizer.<sup>1</sup> The film was wound by hand past the viewer and over the synchronizer. The first frame in the shot to be notated was counted as "zero" and was held in the viewing screen while the synchronizer was set to zero. The portion of footage to be notated was then run through the viewer while each body part was observed. In general, the activity was notated first in terms of body-part-use and then in terms of trace form. Notation could start with any limb. In the present study the most active limb was usually notated first, starting with the proximal joint (either hip or shoulder). That segment of film (two or more frames) on which the joint is moving in one direction was pulled back and forth through the viewer until the frames on which that movement begins and ends had been ascertained. The number of these frames could then be read off the synchronizer and the movement notated in the appropriate place on the diagram.<sup>2</sup> It should be especially

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1

A synchronizer is a device for measuring film as the film is wound through it. It counts frames from 0 through 39, and thereafter counts feet plus frames. One foot equals forty frames. For purposes of diagramming, the number in feet was always converted back to number of frames. In order to relocate specific frames, previously analyzed film need only be put on the synchronizer with the frame marked "0" in the viewer and the synchronizer set to 0. The film is then wound until the desired number appears on the synchronizer. The use of a synchronizer obviates the necessity of frame-numbering film, thus cutting both the expense of the project and enlarging considerably the number of films available that can be used for detailed study.

2

This method is an adaptation of the one used by Condon (1964, and personal communication).

noted that this procedure is not a frame-by-frame analysis in which each frame is scrutinized separately, but the dynamic links between frames disappear. It is precisely the continuity between frames which is of interest in the present procedure. The orientation toward the frame is merely for the purpose of measuring time. To avoid possible confusion, I have called the present analysis "frame-oriented," as opposed to "frame-by-frame."

#### 4. Analysis of diagrams

Once notation is complete (see Appendix II), the resulting diagrams can be analyzed to provide answers to a number of questions. In order to condense the diagrams, so that many of them can be placed on one page for simultaneous inspection, four questions have been asked, the answers to which are expressed in simple graphic form:

a) How active are the various body parts in terms of the amount of time each moves, as contrasted to the total time of the activity?

b) During what percentage of the time in which trace forms were created in an activity does each type of trace form occur?

c) How often in the course of the activity is a change in movement initiated?

d) To what extent do changes in movement in one body part coincide with changes in the other active parts?

To answer question a), one counts on the body-part-use staff the total number of frames during which movement occurs in each body part. This total, multiplied by 100, is then divided by the total number of frames in the notated activity. The resulting figure is the percentage of time the given limb is used during the activity. A comparison can then be made between the various limbs involved, and a simple graph drawn (see Table I, p.79, Table IV, p. 86f.).

To answer question b), two elements of the Trace Form staff must be counted. First, the duration of each type of path is counted separately, multiplied by 100, and is divided by the total duration of all types of paths. Second, the instances of each type of change of direction are counted, multiplied by 100, and then divided by the total number of changes of direction. The results of these two calculations are represented on one graph (see Table II, p. 82, Table V, p. 91f.).

In order to determine how often a change in movement is initiated, it is necessary to count the duration of every movement segment on the body-part-use staff. A movement segment is a movement of a single joint in one direction, at a constant speed, or with a constant acceleration. The percentage of movement segments of a given duration is calculated as follows. First, the number of movement segments of that duration is counted. Then this sum is multiplied by 100 and

the total divided by the total number of movement segments of all lengths. It can be expressed in the following equation:

$$\% = \frac{\text{number of movement segments of K duration} \times 100}{\text{total number of movement segments}}$$

The percentage is calculated for the movement segments of each length occurring in the activity. All the percentages are plotted on a single graph which shows the range of duration of movement segments and the predominant durations (see Table III, p. 82, Table VI, p. 94 f.). The larger the percentage of segments of short duration, the more frequently are movement changes initiated. This count is a method of measuring the tempo of an activity.

Question d), concerning synchrony of movement changes, is answered by counting on the body-part-use staff the number of changes that occur at the same frame, and by dividing this sum by the total number of changes occurring in the diagram. Since two, three, or more changes may occur simultaneously, the following formula must be used:

$$\text{Synchrony index} = \frac{(\text{number of instances where two changes coincide times } 2 + \text{number of instances where three changes coincide times } 3 + \dots + \text{number of instances where } n \text{ changes coincide times } n) \times 100}{\text{total number of changes}}$$

This formula can be written more conveniently as:

$$\text{SI.} = \frac{(2x_2 + 3x_3 + \dots + nx_n) \times 100}{C}$$

where x equals the number of coincidences of 2, 3, up to n changes, and C equals the total number of changes.



The higher the index of synchrony, the greater the tendency toward a simultaneous use of body parts during an activity.

This attention to synchrony is related to research concerning the synchrony between speech and bodily movement of a speaker and a listener (Condon 1964; Kendon 1967). An identical study of the Maring is not possible since the film is not accompanied by synchronous sound. However, we may investigate whether it is possible to distinguish between various Maring movement patterns on the basis of degree of synchrony.

The questions asked of the film diagrams are, then, answered by simple counts which can be carried out and checked by anyone, and which are presented as simple graphs. Questions a) and b), concerning body part use and trace forms, are related to two questions asked by the Choreometrics study group: "What is the greatest number of body parts involved in an activity and which parts predominate; what is the most complex trace form created during an activity?"<sup>1</sup> The answers given by Choreometrics are based upon inspection of the film and are presented as scores on a rating sheet.

The present method is designed for a detailed movement analysis. It allows replication of results and offers the

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<sup>1</sup>The Choreometric scale of complexity ranges from the simplest paths, straight and curved in one plane, to the most complex, curved in several planes.



possibility of analyzing the diagrams from many different points of view without having to return to the film. In addition, this method does not require highly trained observers.

The notated diagrams are adaptable to many kinds of counts in addition to those made to answer the four questions asked in this study. For example, it would be possible to distinguish patterns of simultaneous or sequential joint action, to analyze the patterning exhibited by the alternation of different trace forms, or to examine how various combinations of body parts go into the production of different kinds of trace forms. It would also be possible to compute the extent to which certain trace forms and certain durations are executed primarily by certain limbs. Upon simple inspection of the diagrams the impression is gained that the head executes primarily rotating trace forms, and the arms execute a greater variety of trace forms than do the legs. It also appears that more distal limbs execute movements of shorter duration than the proximal limbs or the center of the body. Only further detailed analysis of the diagrams could determine whether these initial impressions are correct.

## B. Group movement

### 1. Choice of Aspects

As in the case of individual movement, it was desired to place Maring group movement in a cross-cultural perspective.

The Choreometric method includes a rating system for the choreography of the moving group, as well as for the degree and type of interpersonal synchrony and for the social structure. Since, however, no report has been published on this work, two aspects of group movement -- formation and pathway -- were chosen from the body of literature on dance ethnography. An additional aspect of group movement, synchrony, was also chosen. This aspect was diagrammed only for Maring dance movement as a check on the visual impression that the dancers were not adhering to the same beat. The diagrams of synchrony consist of indications for footfalls and drumbeats (see Appendix III), and they cannot be compared with the synchrony index for individual use of body parts described above.

## 2. Graphic format

In dance ethnography formations are customarily described in terms of geometric patterns -- circle, line, row, etc. Some investigators use diagrams in addition to descriptive terms (Speck and Broom 1951: 56; Kurath 1950: 121; Knust; McPhee 1948:189, 198). In this study, diagrams similar to those accompanying Labanotation scores are used (Knust; Hutchinson 1961: 97f.); (see Appendix IV).

In these diagrams the location and orientation of each individual is indicated, plus the pathway traversed by

individual or group during the time duration indicated for the diagram. Series of diagrams are made to cover extended time periods or complicated group pathways. This form of diagram differs considerably from the diagrams of individual movement. First, the two aspects of movement, formation and pathway, are not presented separately. Second, these diagrams represent discrete units of time, not a continuous process through time.

### 3. Procedures of notation

#### a. Choice of footage

The criteria for choosing footage have been described in the section regarding individual movement.

#### b. Viewing for notating

Since the diagrams of group movement represent discrete units of time rather than continuous processes through time, frame-oriented viewing of footage was unnecessary. Instead, film projected at the normal speed of 24 frames per second was viewed. Frames in which formations could be clearly seen were stopped, the formations diagrammed, and viewing at normal speed resumed. Pathways were traced while viewing at full speed. In spite of being able to stop frames for a detailed inspection of a formation, it was not always possible in the dance scenes to see the formation in terms of the orientation and position of every individual. In general,

diagrams were not made to scale, and in the case of large groups the formation was indicated with "hypothetical" individuals, rather than as an exact mapping of the particular instance. In cases where only a few people were present, or when individuals moved independently of groups, the individuals were diagrammed separately.

#### 4. Analysis of diagrams

Two questions form the basis of the analysis of group movement:

- a) What formations occur in dance and daily life?
- b) What pathways are traced by the movements of these formations?

The diagrammed formations can be distinguished by four factors: size, orientation of individuals, distances between individuals, and placement in the environment. In addition, stance and activity can also be used to describe formations.

In order to distinguish between various types of pathways, the terminology used for individual limb movement was adopted. Pathways are divided into paths that may be straight, curved, cyclical, loop-like, rotating, and constrained, and into changes of direction that are angular, pointed, or smooth. With the exception of constrained

pathways, all types are assumed to be the results of the free locomotion of a group or a person unconstrained by the paths fixed in the environment. The study of the forms of constraining pathways is a separate one which will be touched upon briefly later in this paper.

No specific counts were made of formations or of pathways. The conclusions drawn from inspecting the diagrams are described in words, rather than graphically.

CHAPTER V - THE ANALYSIS OF MARING MOVEMENT

This chapter provides an extended commentary, based upon the diagrammed instances, on Maring movement, individual and group, in dance and everyday activities.

The Analysis of Individual Movement in Dance

The following analysis is based on diagrams of five instances of girls dancing and six instances of men dancing (see Appendix II - Diagrams 1 through 11).

A. Body Part Use

By transcribing the Body Part Use staff of the diagrams into a more concentrated format showing percentage of body part use, we obtain the graphs on Table I (p.79 ). Three major patterns emerge from an inspection of these graphs, and these patterns can be directly associated with the three dance steps described at the beginning of Chapter IV.

In the first pattern, corresponding to the bounce step and to the walking step of the girls, only the legs move (graphs 1A, 3A, 4A, 6A). In the second pattern, corresponding to the walking step of the men, the legs as well as the right arm move (graphs 8A, 9A). In the third pattern, corresponding to the display step, all the major body parts -- legs, arms, head and trunk -- are involved



(graphs 5A, 11A). In one variation of the bounce step (graph 2A), the legs and trunk are used but not the arms. In a variation of drumming (graph 10A) the trunk and arms are all used with the movement of the left arm predominant.

Two patterns in the use of minor body parts are apparent. In one pattern, corresponding to the bounce step, all active body parts move continuously or almost continuously (graphs 1A, 2A, 6A). In the second, corresponding to both walking and display steps, there is a tendency for limbs to be used less continuously. Proximal joints are used more than distal joints in five cases (graphs 3A, 6A, 7A, 8A, 9A), however, in four cases (graphs 4A, 5A, 10A, 11A) one limb moves a distal joint more than the proximal, while in the other limb the proximal joint movement predominates.

#### B. Trace Form Use

Looking at the graphs representing use of trace forms we can see four major patterns (see p.82, Table II).

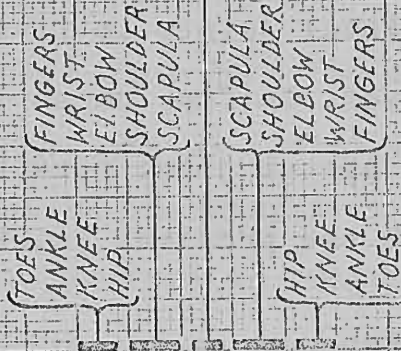
1. The movement creates indeterminate paths and all changes of direction are smooth (3B, 4B, 7B). This corresponds to the walking step.

2. The movement creates indeterminate paths and all changes of direction are pointed (1B, 9B). This corresponds to the bounce step.

3. The movement creates straight paths (6B), a combination of straight paths with indeterminate paths (10B),

KEY

PERCENT OF TOTAL  
USE POSSIBLE PER  
BODY PART

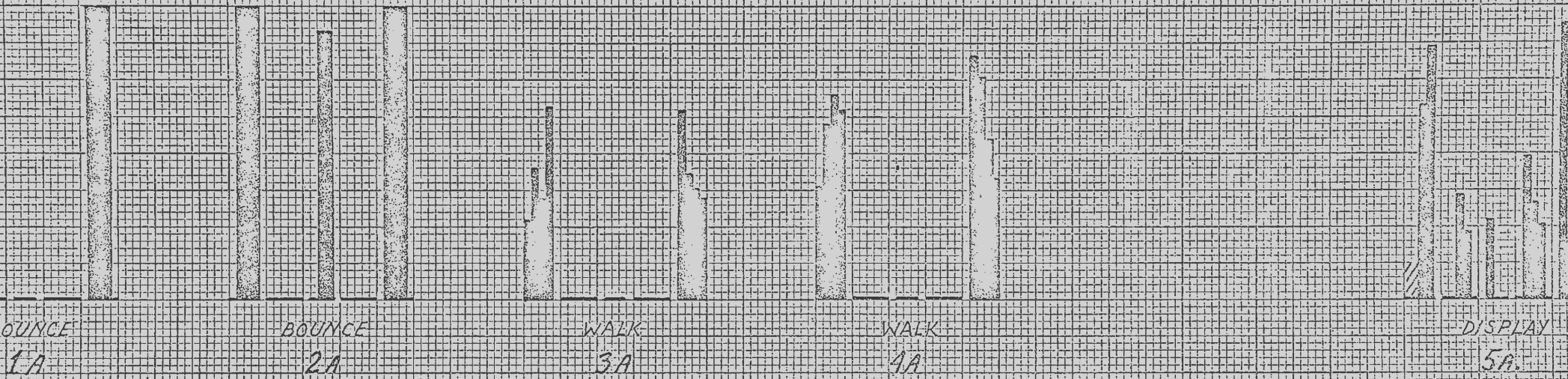


100  
75  
50  
25  
0

100  
75  
50  
25  
0



GIRLS



MEN

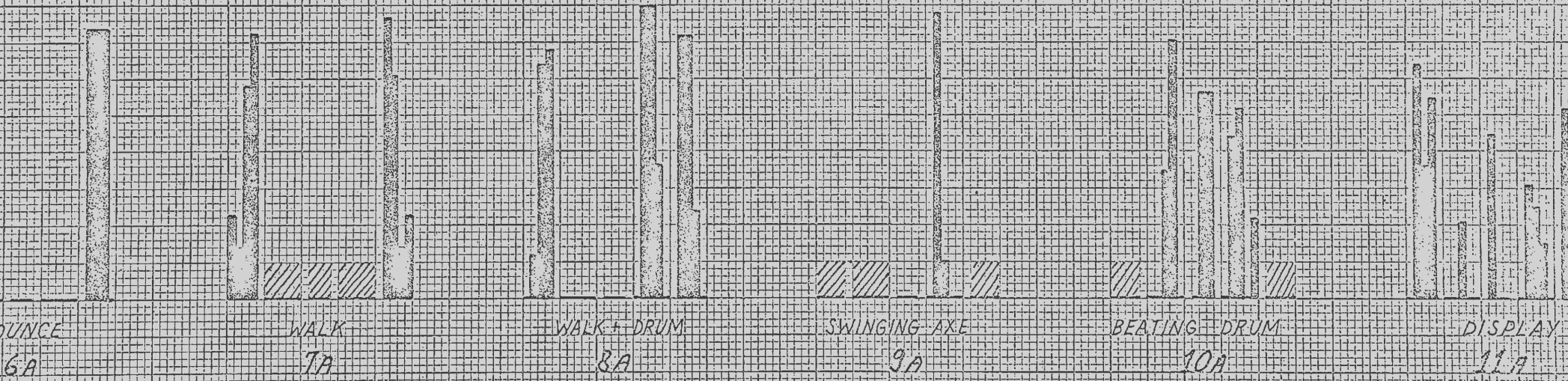


TABLE I - BODY PART USE IN DANCE

or a combination of indeterminate with rotation (2B). The changes of direction are either pointed (2B, 10B), or pointed with some smooth changes (6B). These three examples may be considered variations on the pattern described in 2. above: the indeterminate paths are partially or completely replaced by rotating or straight paths, and a few smooth changes are introduced to the otherwise exclusive use of pointed changes of direction. These variations in trace form correspond to two variations in the bounce step (2B, 6B) and to a detail of drumming while walking (10B).

4. The movement creates three or four kinds of paths: straight, indeterminate, curved (5B, 8B); and straight, indeterminate, curved and rotating (11B). Both smooth and angular changes of direction are used and, in two of the three instances (8B, 11B), pointed changes are also used. This pattern corresponds to the display step (5B, 11B) and to one instance of walking while drumming (8B). This instance of the walking step was unusually complicated due to the fact that the person was making a turn.

If we consider graph 1B as representative of the bounce step, and 3B as representative of the walking step, we can see that both steps use indeterminate paths. The difference between the two steps in terms of trace form consists in the exchange of direction changes: the pointed

changes of the bounce are replaced by smooth direction changes. The display step (5B, 11B) introduces a more complex use of trace form.

Rotating paths appear as a variation in one of the bounce steps (2B) and as an element in the display step (11B). Cyclical paths do not occur in any of these instances of dance movement.

### C. Duration of Movement Segments

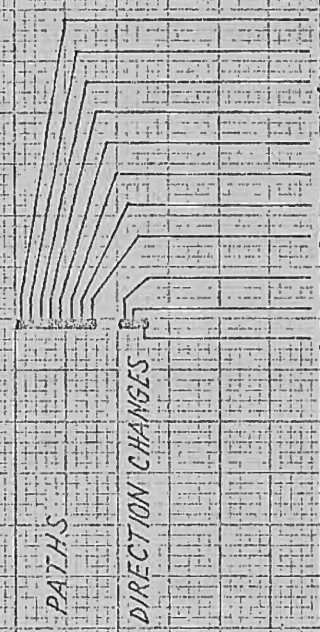
From the graphs showing duration of movement segments in dance (see Table III, p. 83) we see that movement segments vary in duration from  $1/24$  second to  $11/12$  second. The most frequent durations to occur range between  $1/12$  second and  $1/3$  second. Durations of  $1/24$  second and of more than  $1/3$  second rarely occur.

There are three instances in which movement segments of one duration comprise more than 35 per cent of the movement segments of all durations. These three (1C, 2C, 6C) correspond to the bounce step. Although the bounce step is thus differentiated from other steps by duration of movement segments, no clear distinction can be seen between display and walking steps.



# KEY

PERCENT OF EACH TRACE FORM USED



- 1. STRAIGHT
- 2. STRAIGHT + ROTATION
- 3. INDETERMINATE
- 4. INDETERM. + ROTATION
- 5. ROTATION
- 6. CURVED + ROTATION
- 7. CURVED
- 8. CYCLICAL
- 1. POINTED
- 2. ANGULAR
- 3. SMOOTH

PATHS

DIRECTION CHANGES

100%

75

50

25

0

100%

75

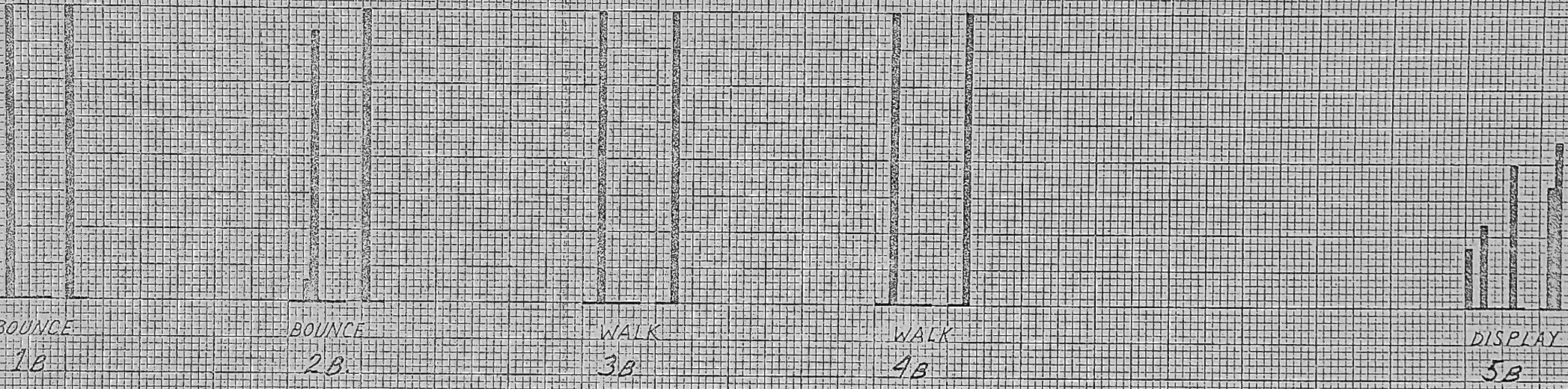
50

25

0



GIRLS



MEN

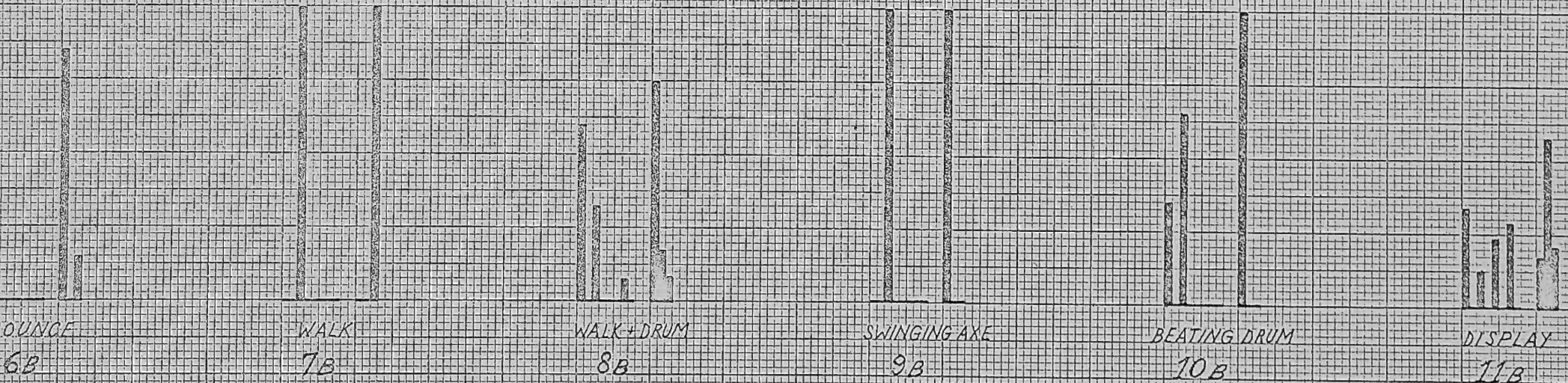


TABLE II - TRACE FORM USE IN DANCE



KEY

PERCENT OF TOTAL NUMBER OF MOVEMENT SEGMENTS

0 5 10 15 20 25 30

DURATION OF MOVEMENT - SEGMENTS IN NUMBER OF FRAMES (24 FR.\* = 1 SEC.)

100%

75

50

25

0

100%

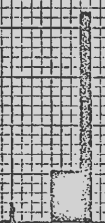
75

50

25

0

GIRLS



BOUNCE  
2c



WALK  
3c



WALK  
4c



DISPLAY  
5c

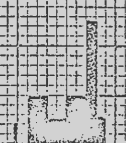
MEN



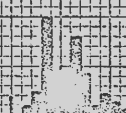
WALK  
7c



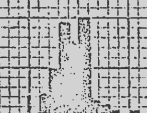
WALK + DRUM  
8c



SWINGING AXE  
9c



BEATING DRUM  
10c



DISPLAY  
11c

TABLE III - DURATION OF MOVEMENT SEGMENTS IN DANCE

#### D. Synchrony between Body Parts

The synchrony indexes for the eleven dance instances are:

	<u>Girls</u>		<u>Men</u>
1.	1.00 (bounce)	6.	.98 (bounce)
2.	.93 (bounce)	7.	.94 (walk)
3.	.76 (walk)	8.	.95 (walk with drumming)
4.	.78 (walk)	9.	0.00 (swinging axe)
5.	.65 (display)	10.	.58 (beating drum)
		11.	.70 (display)

The figures for 9 and 10 diverge radically from the other instances probably as a result of being computed only in respect to the arms. Consequently they are not considered in the following comments.

There is a clear difference in synchrony between the three dance steps as performed by the girls. The greatest synchrony occurs during the bounce step and the least synchrony during the display step. In the case of the men, only the display step is noticeably different. In both men and girls, the display step has markedly lower synchrony than the others.

#### E. Summary

The results of a detailed examination of eleven instances of dance show that the three dance steps (bounce,



walking, and display) can be most clearly differentiated in terms of body part use and trace form. Synchrony and duration give a somewhat less clear differentiation between the three steps.

### The Analysis of Individual Movement in Other Activities

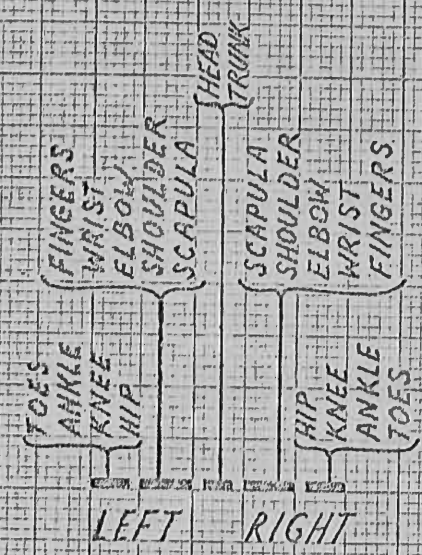
We now turn to an examination of individual movement in fourteen selected activities other than dance. The selection of twenty-three instances ranges from light handicrafts to heavy physical labor. It includes several instances of decorating the face in preparation for dance and one instance of handling wealth items. ( See Appendix II, diagrams 12 - 32.)

#### A. Body Part Use

Three different kinds of major body part use may be seen on the graphs on Table IV (12A - 32A on the following pages).

1. All major body parts participate in the activity (12A, 13aA, 13bA, 15A, 17A, 18A, 19A, 20A, 27A, 31A).
2. The arms are active either alone or in conjunction with other body parts (14aA, 14bA, 16A, 21A, 22A, 23A, 24A, 25A, 26A, 28A, 29A).
3. The legs are active either alone or in conjunction with some other body parts (30A, 32A). The legs predominate over all other body parts (31A).

TABLE IV - BODY PART USE IN SELECTED DAILY ACTIVITIES



100%  
PERCENT OF TOTAL  
USE POSSIBLE PER  
BODY PART  
0

KEY

100%

0

CLEARING GRASS  
12 A

PLANTING TUBERS  
13 a A

REACHING FOR TUBERS  
13 b A

100%

0

TAKING OUT HOT STONES  
14 a A

PICKING UP HOT STONE  
14 b A

PUTTING IN HOT STONES  
15 A

KEUFFEL & ESSER CO.



10 X 10 INCHES  
7 X 10 INCHES  
NCH  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

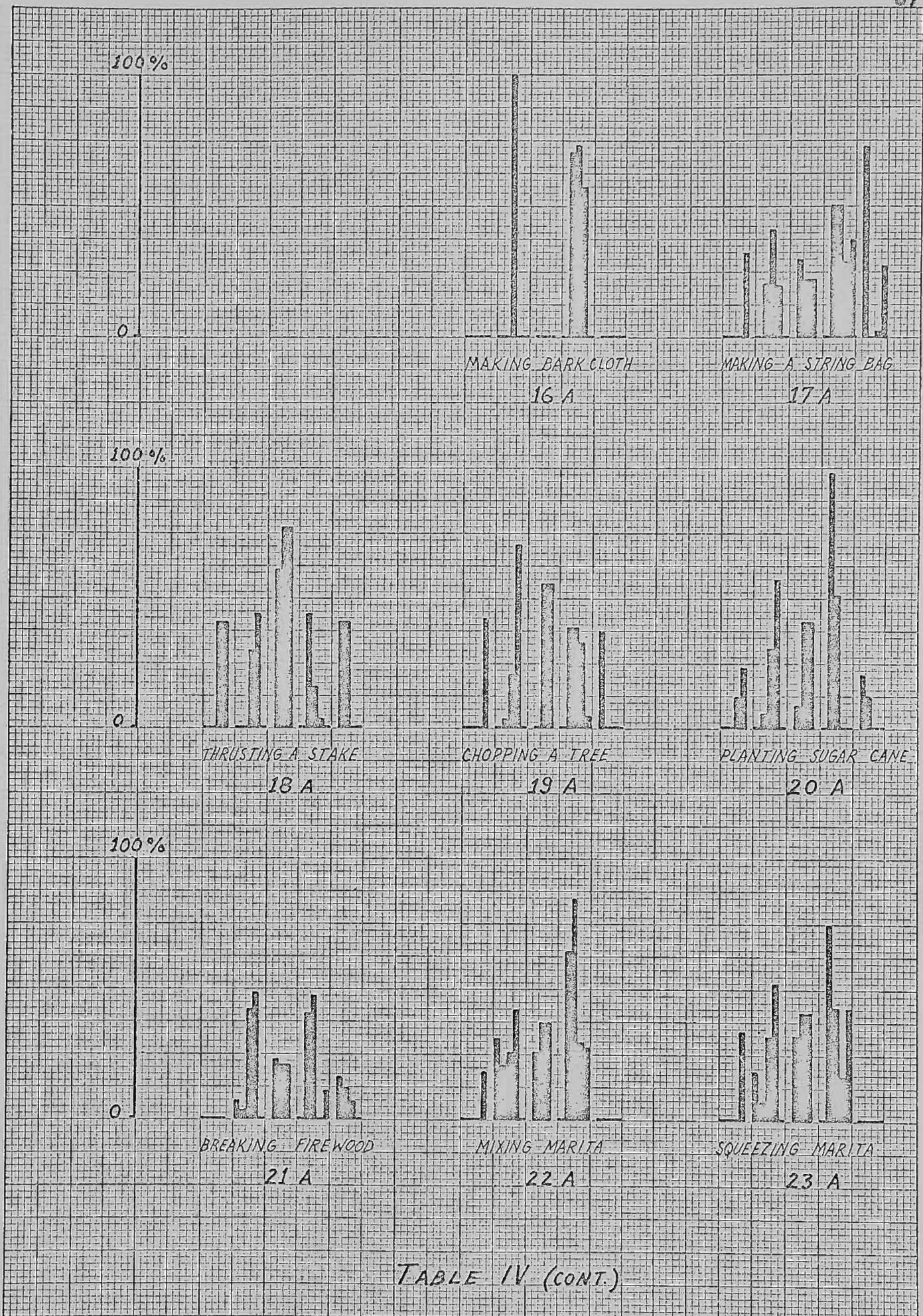


TABLE IV (CONT.)



100%

0

OILING BODY  
24 A

PAINTING FACE  
25 A

PAINTING FACE  
26 A

100%

0

PICKING UP SHELLS  
27 A

FASTENING FEATHER  
28 A

FASTENING FEATHER  
29 A

100%

0

WALKING WITH LOAD  
30 A

WALKING DOWNHILL  
31 A

WALKING UPHILL  
32 A

TABLE IV (CONT.)

The first two kinds of major body part use each occur in a variety of activities. The third corresponds to walking. Walking is the only activity that can be clearly recognized by a glance at the body part use graphs.

An inspection of the graphs in terms of continuity of body part use shows no examples of all the active limbs moving continuously. There are, however, five examples (15A, 16A, 20A, 30A, 32A) in which one joint is constantly moving throughout the activity. Two of these instances are walking. The three others are: putting stones into an earth oven (15A), making backcloth (16A), and planting sugar cane (20A). In all the other activities, the body parts move only part of the time.

There is a tendency for the most proximal joint (either shoulder or hip) to move more than the more distal joint (elbow or knee). Shoulder predominance can be seen in fourteen cases (12A, 13aA, 14aA, 14bA, 15A, 18A, 19A, 20A, 23A, 24A, 26A, 28A, 31A, 32A). Hip predominance occurs in nine cases (13aA, 13bA, 17A, 20A, 21A, 27A, 30A, 31A, 32A). In a few cases the elbow and knee move more than the proximal joint (elbow - 16A, 17A, 25A, 31A; knee - 14bA). In a few other cases one arm moves with the shoulder predominating while the other arm moves with the elbow predominating (13bA, 21A, 22A, 27A, 29A). One such case occurs in leg movement (12A).

## B. Trace Form Use

An inspection of the graphs of trace form (see Table V on the following page) shows one of the graphs to be recognizably different (30B). This graph represents walking. Not one of the other activities, including the other two instances of walking (31B, 32B), can be clearly distinguished from the others on the basis of these graphs.

By inspecting all the graphs excluding 30B, some basic tendencies of trace form use become apparent.

1. During any activity it is possible to use from one to eight paths. In a majority of the cases (12 out of 23) four paths are used.

a) In four cases indeterminate paths predominate (12B, 30B, 31B, 32B).

b) In the remaining nineteen cases, straight, curved, or a combination of straight and curved paths predominate over indeterminate or rotating paths.

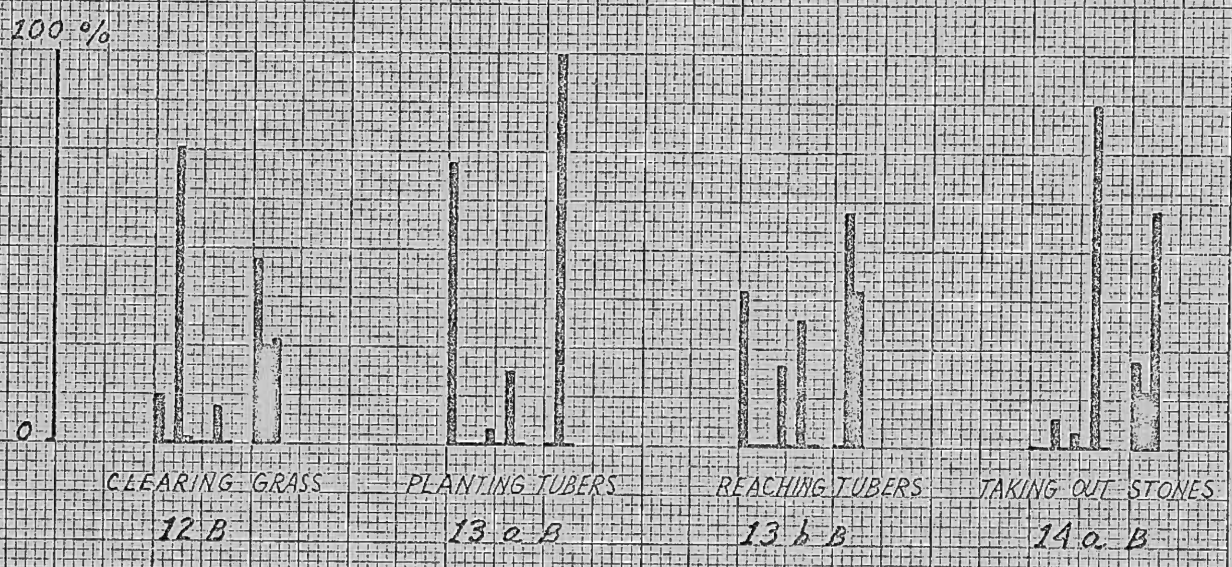
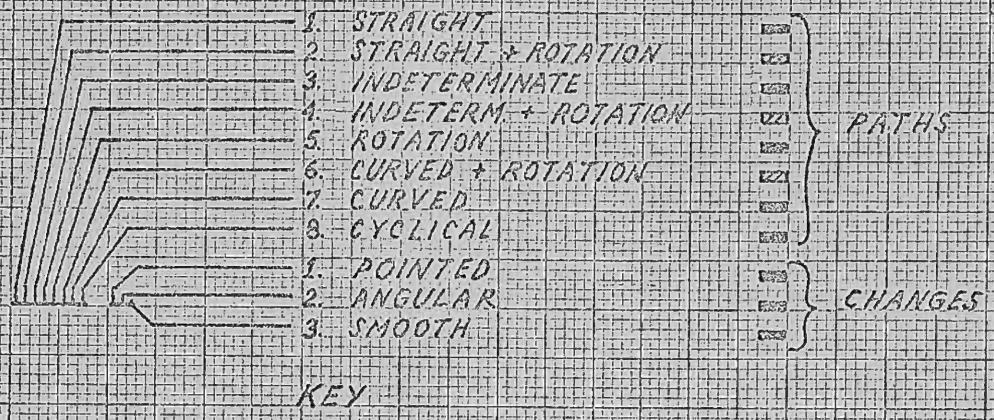
c) Rotating paths occur in seventeen cases and they never predominate (13aB, 13bB, 14aB, 14bB, 15B, 16B, 17B, 18B, 21B, 22B, 23B, 24B, 26B, 27B, 29B, 31B, 32B).

d) Several instances occur of rotating paths combined with other paths. In two cases rotation is combined with indeterminate paths (16B, 25B). In two cases rotation is combined with straight paths (14bB, 15B). In six cases



TABLE V - TRACE FORM USE IN SELECTED DAILY ACTIVITIES

PERCENT OF EACH TRACE FORM USED



10 x 10 INCH MADE IN U.S.A. KEUFFEL & ESSER CO.



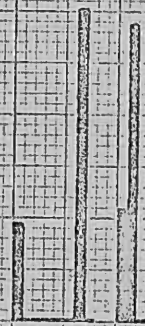
100%

0

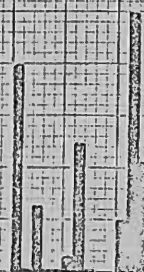
THRUSTING A STAKE  
18 B



CHOPPING A TREE  
19 B



PLANTING SUGAR CANE  
20 B



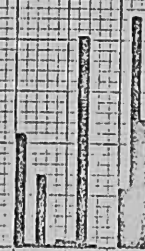
100%

0

BREAKING FIREWOOD  
21 B



MIXING MARITA  
22 B



SQUEEZING MARITA  
23 B

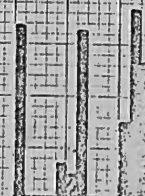


TABLE V (CONT.)



100%

0

OILING BODY  
24 B

PAINTING FACE  
25 B

PAINTING FACE  
26 B

100%

0

PICKING UP SHELLS  
27 B

FASTENING FEATHER  
28 B

FASTENING FEATHER  
29 B

100%

0

WALKING WITH LOAD  
30 B

WALKING DOWNHILL  
31 B

WALKING UPHILL  
32 B

TABLE V (CONT.)

1 1/2 X 10 INCH  
7 X 10 INCHES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

rotation is combined with curved paths (17B, 20B, 22B, 23B, 27B, 29B).

2. During any activity it is possible to use from one to three types of direction change. There is a tendency to use two or three types. In twenty out of the twenty-three cases either angular, smooth, or a combination of both predominate over pointed changes. The exceptions are 16B, 12B and 25B.

### C. Duration of Movement Segments

By scanning all the graphs (see Table VI on the following pages), one (16C - making bark cloth) appears to have a markedly different pattern from the others. In the activity represented by this graph, the duration of all movement segments falls within a continuous range between  $1/24$  second and  $1/4$  second. In all other graphs the range of the durations of movement segments is much greater.

A general statement may be made to the effect that Maring movement in daily life as represented by the present twenty-three instances utilizes movement segments that range from a minimum<sup>1</sup> of  $1/24$  of a second to a maximum of  $1-3/4$  seconds, with an emphasis on durations between  $1/4$  and  $1/2$  second.

---

<sup>1</sup>The value of  $1/24$  of a second given for the minimum length of movement segments is imposed by the speed at which the film was taken (24 frames per second). Only if the film were taken at a greater speed would it be possible to investigate whether or not  $1/24$  of a second is the actual minimal length of Maring movement segments.



TABLE VI - DURATION OF MOVEMENT SEGMENTS  
IN SELECTED DAILY ACTIVITIES

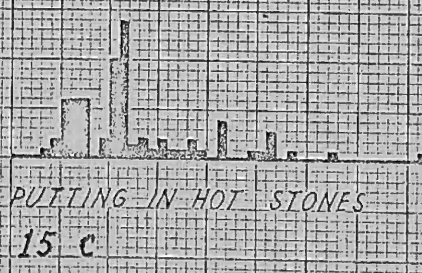
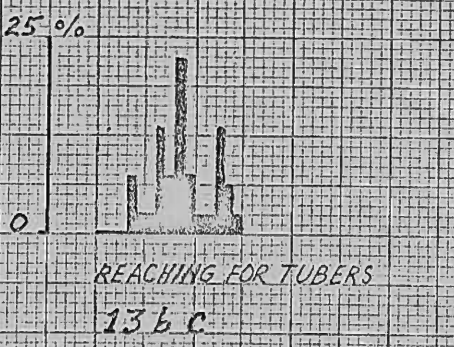
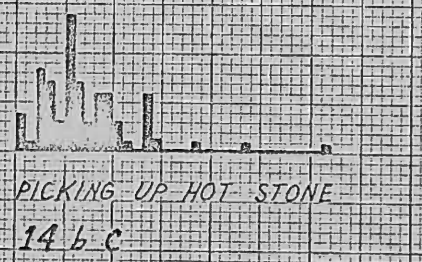
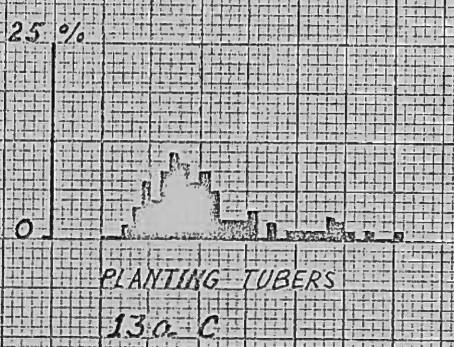
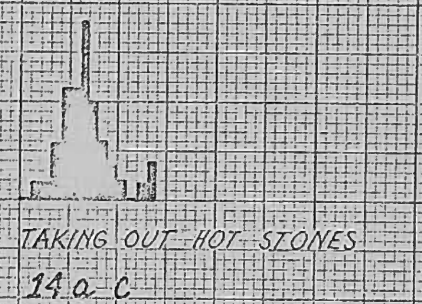
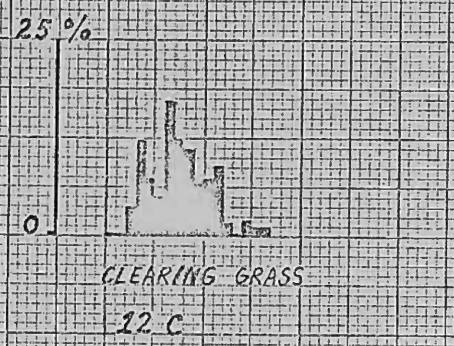
PERCENT OF TOTAL NUMBER OF MOVEMENT SEGMENTS

25 %

KEY

0 5 10 15 20 25 30

DURATION OF MOVEMENT SEGMENTS IN NUMBER OF FRAMES (24 FR. = 1 SECOND)



10 T  
132  
1/2 X 10 INCHES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



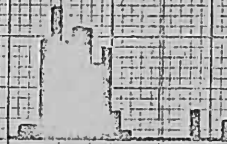
25%

0



MAKING BARKCLOTH

16 C



CHOPPING A TREE

19 C

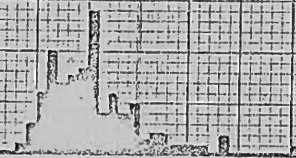
25%

0



MAKING A STRING BAG

17 C

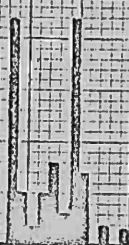


PLANTING SUGAR CANE

20 C

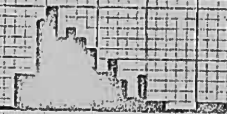
25%

0



THRUSTING A STAKE

18 C



BREAKING FIREWOOD

21 C

TABLE VI (CONT)



25 %

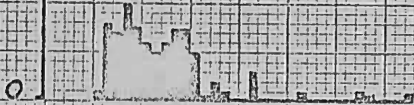


MIXING MARITA  
22 C



PAINTING FACE  
25 C

25 %

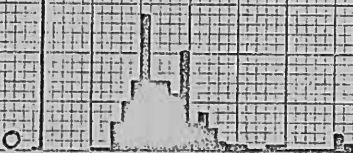


SQUEEZING MARITA  
23 C



PAINTING FACE  
26 C

25 %



OILING BODY  
24 C



PICKING UP SHELLS  
27 C

TABLE VI (CONT)

132  
7 X 10 INCHES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



25 %

0

FASTENING FEATHER

28 C

25 %

0

FASTENING FEATHER

29 C

WALKING DOWNHILL

31 C

25 %

0

WALKING WITH A LOAD

30 C

WALKING U'HILL

32 C

TABLE VI (CONT.)

KEUFFEL & ESSER CO.  
MADE IN U.S.A.

In all but one case less than 27 per cent of the movement segments in an activity make use of one duration. In the exceptional case (16C) one duration occurs in 33 per cent of all movement segments.

On the basis of this particular sample, different patterns of distribution of duration of movement segments cannot be associated with any specific daily activities.

#### D. Synchrony between Body Parts

In the twenty-three instances of daily activity there is an even spread of values of the synchrony index from a low of .30 (26, 32) to a high of .81 (16, 19). No clustering occurs around any one value, and no particular kind of activity can be differentiated from any other in terms of high or low synchrony values.

#### WOMEN

12. (clearing grass)	.68
13a. (planting tubers)	.43
13b. (reaching for tubers)	.51
14a. (taking out hot stones)	.47
14b. (picking up hot stones)	.72
15. (putting in hot stones)	.34
16. (making barkcloth)	.81
17. (making a string bag)	.44

## MEN

18.	(thrusting a stake)	.77
19.	(chopping a tree)	.81
20.	(planting sugar cane)	.45
21.	(breaking firewood)	.54
22.	(mixing marita)	.65
23.	(squeezing marita)	.63

## GIRL

24.	(oiling body)	.39
25.	(painting face)	.44
26.	(painting face)	.30
27.	(	

## MEN

27.	(picking up shells)	.51
28.	(fastening a feather)	.37
29.	(fastening a feather)	.51

## WOMEN

30.	(walking with a load)	.61
31.	(walking downhill)	.57
32.	(walking uphill)	.30

The Comparison of Individual Movement  
in Dance and Daily Activities

A. Body Part Use

The use of body part in dance and daily life can best be compared in terms of four categories: major body part use, continuity of movement of a limb throughout an activity, predominance of proximal over distal joints, and number of body parts used.

1. Major Body Part Use

In the examples of daily life activities three patterns can be distinguished:

- a) All major body parts are used.
- b) One or both arms are used predominantly either alone or together with some other major body parts.
- c) The legs are used predominantly.

In the examples from dance three patterns also occur:

- d) legs only are used
- e) legs and one arm are used
- f) legs and all other major body parts are used.

Although pattern f) may be considered a sub-division of pattern a), patterns d), e), and f) may be subsumed under pattern c): dance is related to those daily activities in which the use of legs predominates, e.g. walking.



## 2. Continuity of Movement of one Limb throughout an Activity

In both dance and daily life we notice continuity of movement of a limb throughout some activities. Only in dance, however, do we encounter examples of all the active parts moving continuously. The bounce step emphasizes a continuous use of active body parts, which occurs in some activities: walking, planting sugar cane, preparing an earth oven, and making barkcloth.

## 3. Predominance of Proximal over Distal Joints

In both dance and daily activities proximal joint movement predominates over distal joint movement in the majority of instances examined here. When distal movement predominates, it always occurs in one arm or leg only. The other limb, if moving, exhibits the usual predominance of proximal joint movement.

## 4. Number of Body Parts Used

A count of the number of body parts used in the instances of non-dance activities shows that from two to sixteen body parts are used out of a possible twenty-one, with a clustering at eleven and twelve. A similar count for dance shows that six to fourteen body parts are used, with a clustering at eight. A wider range of body parts, then, is used in everyday activities than in dance (see Table VII, figure 1, p. 105).

## B. Trace Form

Out of a possible maximum of eleven trace forms, our instances of Maring activities other than dance make use of from two to nine, with a clustering at seven trace forms per activity (see Table VII, figure 2, p.105). Straight and curved paths and angular direction changes are predominant. In the instances of Maring dance, two to seven trace forms are used with a clustering at two. Indeterminate paths predominate, and direction changes are either pointed or smooth but rarely angular. In twenty of the twenty-three instances of daily activity no trace form approaches 100 per cent of use. In three instances -- walking (30B), making barkcloth (16B), and planting tubers (13aB) -- one trace form does approach 100 per cent. It is this concentration upon one trace form that is emphasized in dance.

## C. Duration of Movement Segments

Two aspects of the duration of movement segments are useful in comparing Maring dance with other movement. These are the durations that are used, and the range of units of duration over which the movement segments of each activity are spread.

Most of the durations of movement segments in activities other than dance are clustered between  $1/4$  and  $1/2$  second. In dance the clustering occurs between  $1/12$  and

1/3 of a second. The durations of movement segments in dance vary from 1/24 to 22/24 of a second. In the instances of other activities the variation is almost twice as large: 1/24 to 43/24 of a second.

The range of durations in non-dance activities lies between six and forty-one units with a clustering between twenty-one and twenty-eight units (see Table VII, figure 3, p. 105). In dance the range is between three and nineteen units, with a clustering between seven and eleven. Maring dance, then, utilizes the lower part of the range of durations of movement segments used in other Maring activities.

#### D. Synchrony between Body Parts

The synchrony between active body parts varies in non-dance activities from .30 to .81 and in dance from .65 to 1.00 (see Table VII, figure 4, p. 105). The range of synchrony in dance overlaps the upper part of the range utilized in daily activities, and -- unlike body part use, trace form, and duration -- extends beyond it. Dance, then emphasizes a high value of synchrony.

#### E. Summary

Table VII summarizes graphically the relationship between Maring dance and other movements in terms of the four aspects of movement examined in this study.



TABLE VII - COMPARISON

FIGURE 1. NUMBER OF BODY PARTS USED

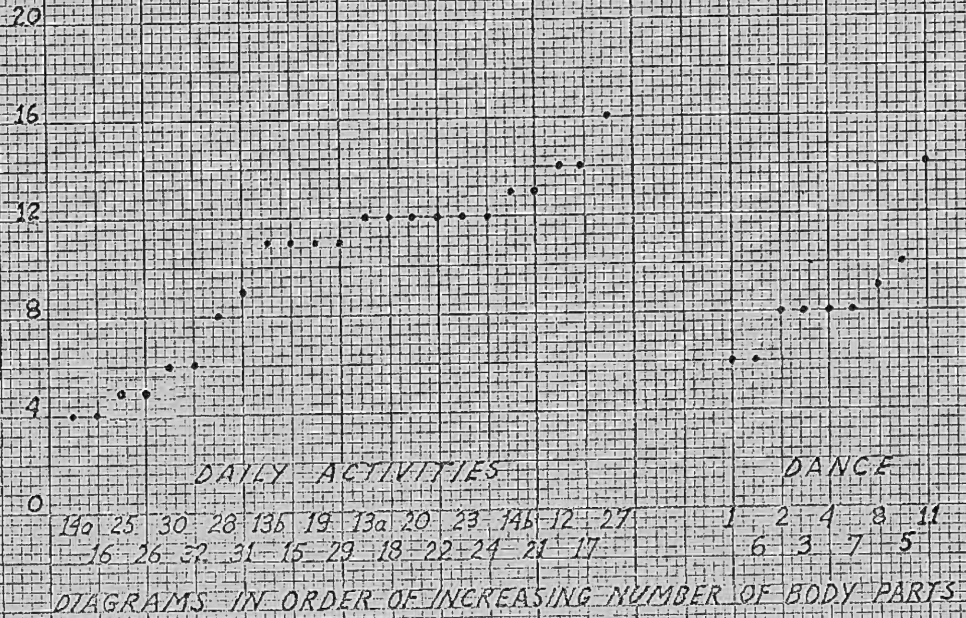
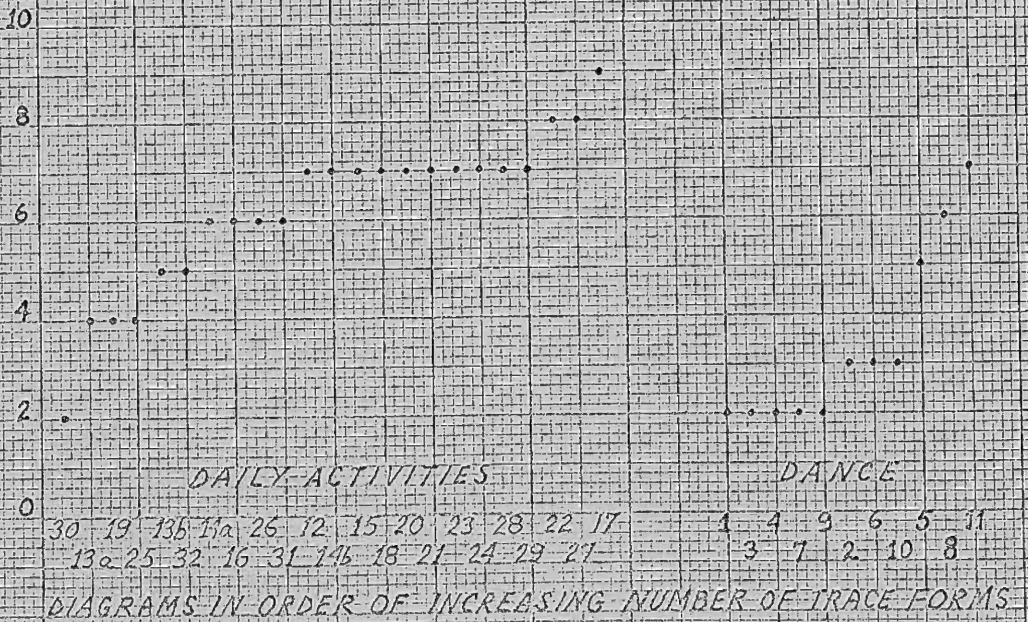


FIGURE 2. NUMBER OF TRACE FORMS USED





COMPARISON OF DANCE AND DAILY ACTIVITIES

FIGURE 3. SPREAD OF DURATIONS

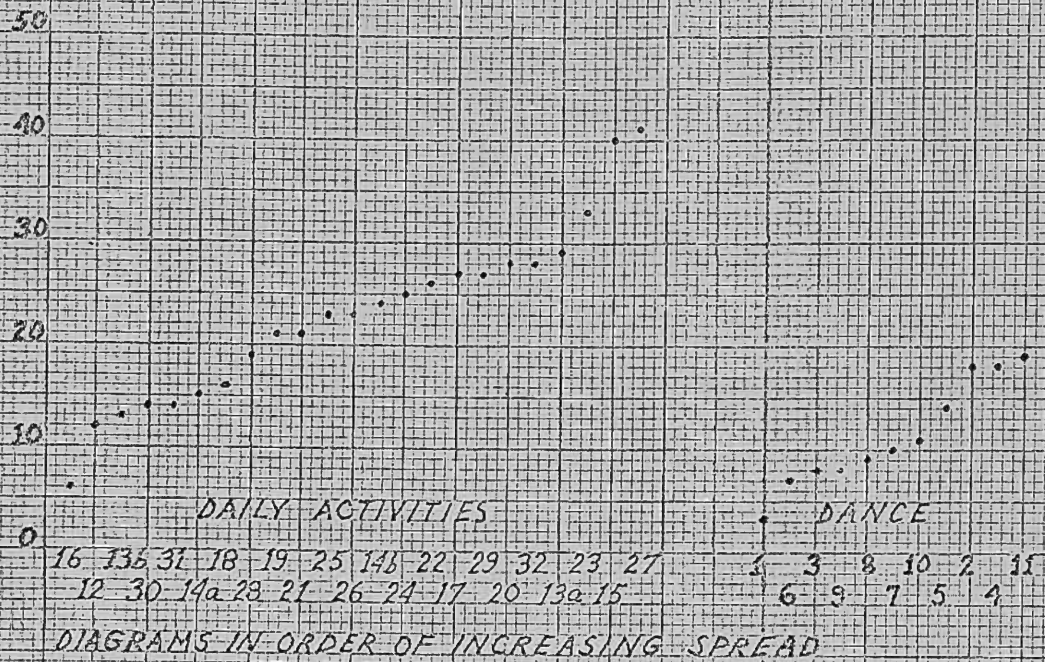
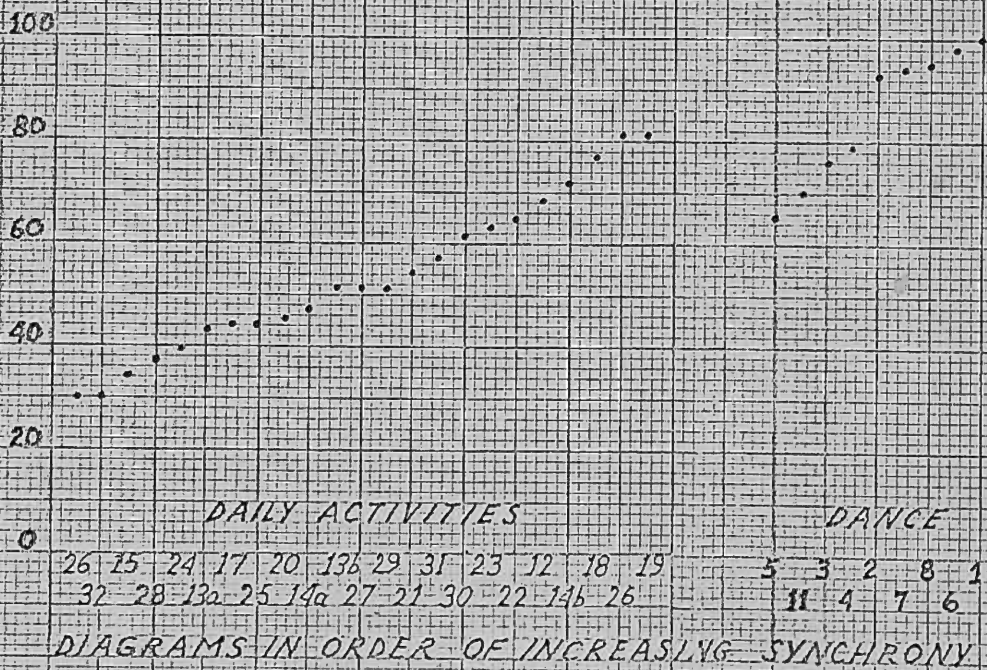


FIGURE 4. SYNCHRONY INDEX





In terms of the number of body parts used, the number of trace forms, and the range of durations of movement segments, dance utilizes a part of the range provided by movement occurring in daily activities. Dance steps utilize the lowest portion of the range of durations and trace forms, and the middle portion of the range of body parts. In the case of synchrony, the range in dance overlaps the upper part of the range of other activities and extends beyond it to the maximum possible value of 1.00.

We may note which activities are most related to dance in terms of each movement aspect. Walking utilizes body part use and trace form as dance does. A woman making barkcloth (16) utilizes a pattern of trace form use and duration use which closely resembles dance, but a different pattern of body parts. A man thrusting a heavy stake (18), a girl decorating her face (24), a man handling wealth objects (27), a man planting sugar cane (20), a man breaking firewood (21), and a man mixing pandanus (22) all use a combination of trace forms similar to the combination of the man's display step (11). Making barkcloth (16), chopping a tree (19), thrusting in a stake (18), picking up hot stones with wooden tongs (14), clearing grass (12), and making a string bag (22), all exhibit a high value of synchrony that overlaps the synchrony values used in dance.

## The Analysis of Group Movement in Dance

### A. Formation

Upon inspection of the maps of group movement in Maring dance (Appendix IV), seven distinguishable formations can be seen.

- 1) Row
- 2) Bank
- 3) Clump
- 4) Circle
- 5) Column
- 6) Split column
- 7) Individuals relating to a dance contingent

1) Row: A row is formed by people placed side by side, all roughly oriented in one direction. People in a row are spectators and the row never moves as a unit. Rows occur exclusively around the edges of the dance ground. People forming a row may be either standing or sitting, may engage in conversation with each other or in handicrafts, or may turn their attention exclusively to the dancers. The distance between individuals varies from near enough to touch to beyond arm's reach. (See Plate XV:1.)

2) Bank: A bank is formed by a double or triple row. It usually develops when there are too many spectators in one place along the edge of the dance ground to fit in a single

row. Such a bank formation is as variable, in terms of distance between individuals, orientation of individuals, stance, and attention, as the row. (See Plate XV:2.)

Another kind of bank formation was once observed (Appendix IV, map 2b.). This formation, composed of dancers, was more regular: all the individuals faced one direction, standing, all at about arm's reach from each other. This formation occurred in the middle of the dance ground rather than on an edge, and it moved as a whole.

3) Clump: The clump is formed by a number of dancers all roughly oriented toward the middle of the group. The distance between individuals in a clump varies from within forearm's reach to within arm's reach, but touching rarely occurs. Clumps occur anywhere within the dance ground. (See Plate XVI:2.).

4) Circle: The circle is formed by a single line of dancers moving counter-clockwise around an open space, each man facing in the direction of the progression with his left side toward the center of the circle. The distance between individuals varies from forearm's reach to beyond arm's reach. The circles are formed on the dance ground. (Reel 2:Bl.)

5) Column: A column is a group of two to four dancers side by side, followed by at least three other such rows.

Neither the lines nor the rows in the column are exact, but the dancers tend to keep a distance between forearm's reach and arm's reach. All the men in a column face forward, in the direction of the progression of the column. Columns move over the entire area of the dance ground. (See Plate XVI:1.)

6) Split Column: A split column is a formation consisting of two neatly formed lines of men facing each other while moving. The men in one row move to their left, in the other row to their right, so that the whole formation progresses in one direction. This formation was observed only once. (See Appendix IV, map 11a.)

7) Individuals relating to a dance contingent: In a number of instances several men dance ahead of the main formation. These men usually dance beyond arm's reach of the formation, varying the distance constantly and sometimes reaching a distance of approximately twenty feet from the main group and from each other. The orientation of these dancers changes constantly, each one relating separately to the group as a whole and to the principal line of direction in which the group is moving. These men are independent of each other. Occasionally they dance backwards, or in the midst of a clump. (See Appendix IV, map 10.)



Generalizing on the basis of these seven kinds of formation, one can say that four basic kinds of orientation are used in Maring Dance:

- a) Side-by-side
- b) Face-to-back
- c) Facing a common center
- d) Face-to-face

The row is an extension of the side-by-side orientation. The bank can be considered a combination of side-by-side and face-to-back, emphasizing side-by-side. The column is a combination of face-to-back and side-by-side, emphasizing face-to-back. The circle formation utilizes face-to-back in such a way as to create a file closing upon itself. The clump formation emphasizes facing a common center. The split column is a combination of side-by-side and face-to-face. The individuals who dance ahead of the formations utilize face-to-face, side-by-side, and face-to-back orientations.

The distances between individuals in Maring dance contingents vary primarily between forearm's reach and arm's reach. Individuals dancing ahead of groups constantly vary distance. The distances between spectators is also more varied, but does not change so frequently in any given time period.

By observing the placement of individuals on the dance ground one notices two distinct sets of people: spectators

around the edges (Plate XV), and dancers in the middle (Plate XVI). The clearcut order implied by this simple description may occasionally be partly obscured by the movement of spectators from one side of the ground to another and by dancers leaving their contingents for a rest or to adjust their feather headdresses.

The size of formations varies from one dance occasion to another. At the girls dance (Appendix IV, Map 13), the largest size achieved by the group was eight. This is considerably smaller than the size of most of the dance contingents at a kaiko or konj kaiko gathering. It was not possible to make precise counts from the film record of individuals in the large gatherings, but the dance contingents were estimated to be on the order of thirty men each, and the total gathering at the Tsembaga konj kaiko was estimated to be about 1,000 people (Rappaport 1968:216).

It should be particularly noted that formations are not precise. The term "clump" may convey the desired degree of inexactness, but "column," "circle," and "row" imply more exactness than is usually observed. Individuals do not have a constant place in the formation of a dance contingent and seem to drift within it during the course of the dance. The movement of the individuals who are dancing ahead of the group emphasizes this flexibility.

## B. Pathways

In this study five types of path (straight, indeterminate, curved, cyclic and rotating) and three kinds of direction changes (pointed, angular and smooth) are considered. Two kinds of direction changes (angular and smooth) and three of the paths (straight, curved, and cyclical) appear in the maps of group movement. The paths and changes of direction are combined in such a way that the predominant pathway traversed by the column formation is a large curve joined with smooth changes and occasional angular changes of direction.

The circle formations move in a rotating path. The clump formation, the row formation, and the bank formation of the spectators do not create any pathway at all. The bank formation of dancers creates straight paths going in opposite directions linked smoothly by tightly curved paths. Such a combination of paths creates a back-and-forth pattern. This back-and-forth pattern is also created by the men dancing in front of the bank formation. Men dancing ahead of the column and clump traverse the most complex pathways (Appendix IV, map set 12): curved paths crossing over each other to create looped patterns of a kind not observed in individual body movement.

Pathways are traversed on all parts of the dance ground and do not have any particular spatial focus, with two exceptions: the bank of dancers which forms in front of the pave moves directly toward and away from the pave, and the individuals dancing in front of the bank move directly back and forth between the bank formation and the pave; the other case of direct orientation of a path in a specific direction is the path of the individual dancers ahead of the contingent. They always dance in relationship to their own contingent. With the exception of these two cases, pathways were traversed on all parts of the dance ground and did not have any particular spatial focus. When many groups are dancing at once pathways are created within the limitations of crowding: a column circumvents a group or weaves its way between clumps and other moving columns. Neither dance contingents nor individuals confront each other directly. Both the individuals receiving pork and the accompanying dance contingents were oriented toward the pave which acted as a shield between them and the men of the host clancluster.

The Analysis of Group Movement in Daily Life

A. Formation

Formations seen in daily life are based upon the following four types of orientation:



- 1) side-by-side (Plate V:1)
- 2) face-to-back (Plate V)
- 3) face-to-face (Plate VI)
- 4) face-to-side (Plate III, IV:2)

The size of these formations is small, usually on the order of two or three people. Larger numbers of people gather in houses, yards, and crossroads, but do not arrange themselves in a formation with any clear orientation (Plates III, XII). At such gatherings constellations are determined by two general principles of location in space:

- a) the edge of the space is occupied
- b) the sexes are divided
  - i) men usually uphill from women (Plate IV)
  - ii) men closest to a man's house, women closest to a woman's house (Plate XII:3).

Within any group the small, clearly oriented clusters are usually formed by mothers and infants, mothers and young daughters, adolescent boys, and adolescent girls.

#### B. Pathways

In daily life there is a strong tendency for individuals to move separately, each one engaged in his own interests and activities. There are few situations in which a formation is created and moves as a unit. The usual situation is a family

group or a group of men or women on their way to or from a garden or visiting from one village to another. These people then form a single file which moves along the narrow paths through the terrain (Plate VII). In another situation boys imitating dance formed a single file that moved in a circle (Reel 30: 264).

The Relationship between Group Movement  
in Dance and Daily Life

Dance formations utilize the basic principles of orientation which can be seen in the small clusters of people in daily life. Spectators at dance gatherings locate themselves according to the principle of standing around the edge of space, and they cluster in little groups using side-by-side and face-to-back orientation with irregular distances between the individuals.

Unique to dance are the size and regularity of formations, and the many types of formations that move through space as a whole. The pathways these formations create are remarkable in terms of their lack of exact shaping, in which respect they resemble the irregular pathways created in daily activities. The only specific and repeated pathways are created when groups or individuals move in reference to a specific external object, either the pave or the dance contingent. Analogous occasions in daily life did not appear

in the instances mapped, and no comparison of this point can be made.

## CHAPTER VI - CONCLUSIONS

### A Technical Comparison of Dance and Daily Activities

#### Among the Maring

It has been the aim of the present study to examine the hypothesis that Maring "dance /is/ a formalized and repetitious use of movement patterns that /are/ frequent and important in /the/ everyday life" of the Maring (Lomax, Bartenieff and Paulay 1966:2).

On the basis of the detailed analysis presented in Chapter Five, this hypothesis can be confirmed.

Maring movement patterns used in daily activities become stereotyped and are repeated in all the analyzed instances of dance. This set of patterns can be designated as Maring signature behavior. Whether working, dancing, or engaged in other activities, the Maring are constantly sending the message "I am a Maring." Simultaneously they are sending other messages, such as "I am dancing." The signature message - "I am a Maring" - is, in part, sent by the fact that the movement remains within the established range. The "differential-activity message" - "I am dancing" - is, in part, sent by the specific segment of the total range used. Table VII (P. 105) provides a composite illustration of Maring signature behavior in terms of body part use,

trace form, duration, and synchrony. As regards body part use, trace form use, and duration, dance selects a limited portion of the range provided by the activities of daily life. As regards synchrony between body parts dance selects the upper part of the range of synchrony of daily activities and extends it to the highest possible value. In terms of formation and group movement, dance uses principles of group formation that may be seen in daily life, but extends them to cases involving larger numbers of people.

The three dance steps may be differentiated from the instances of everyday movement analyzed here on the basis of the four aspects of movement examined in detail. The bounce step is distinguishable on the basis of synchrony alone from any of the other activities. It is further distinguishable on the basis of the predominance of leg motion and the continuity of movement of the active limbs throughout the whole performance of the step. The bounce step uses fewer trace forms than all daily movements except simple walking. Two of the three examples of bounce step given have a smaller spread of duration of movement segments than any daily activity save one, making bark cloth.

The walking step as performed by men is also distinguishable from daily movement on the basis of synchrony alone. The girls perform the walking step in such a manner that the



synchrony value falls within the range used in daily activities, but is much higher than the synchrony value of ordinary walking. There are fewer trace forms utilized in the walking step than in all daily activities except making bark cloth.

The display step is not distinguishable from daily activities on the basis of synchrony. A detailed examination of Tables I - VI (Chap. V) in an attempt to answer the question, "What does differentiate the display step from walking?" (to which it is particularly similar in terms of body part use), reveals only a minimal differentiation produced by trace form. There are more straight paths and angular direction changes in the man's display step than there are in walking. If these two movement patterns are, in fact, so similar, why does the display step strike the observer as such a specific pattern? Apart from such obvious characteristics as the dress of the performer and the locality and occasion during which the display step is seen, there are other aspects that make it distinguishable. One, which is covered in the analysis of group movement, is the pathway created through space by the person performing the display step: he dances separately from a dance contingent and creates a path with oscillations and loops in front of it. In terms of the aspects used in the present study, this is the most important characteristic of the display step. Two aspects of movement not considered in this study also differentiate the display

step from daily movement: the speed of the moving limbs, and the area in which the limbs are moving.

The above indicates that other aspects of movement could be considered in a similar study and might be found crucial both in the attempt to make distinctions between the movement patterns that we immediately perceive, and in an effort to describe signature behavior more fully. Speed and area are both aspects used in the Choreometrics project and found meaningful for the distinction of cultural movement styles. In the case of the study of the Maring these aspects are not crucial in distinguishing dance from daily activities. They might, however, prove crucial if an attempt were to be made to distinguish Maring signature behavior from the signature behavior of other New Guinea Highlands groups.

#### An Examination of Activities that Resemble Dance

Once the detailed analysis has been made, it is possible to view a larger body of film in order to note the occasions and activities during which movement patterns typical of dance occur.<sup>1</sup> On the basis of repetitive viewing, it can be stated that movement patterns of Maring dance appear in two forms in daily activities:

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<sup>1</sup>Due to the arbitrarily discontinuous nature of the 1963 Maring research film, this more general analysis must be at the level of ethnographic description, rather than at the level of strict context analysis (Schefflen 1965).

a) A complete dance movement pattern appears -- a dance step is performed by children imitating dance, and it occurs in standardized expressive gestures.

b) A partial dance movement pattern appears -- the trace form, duration, and synchrony use are the same as in an actual dance step, but body part use is different.

Examining cases of the appearance of complete dance movement patterns in daily life, one can observe the display step and the bounce step occurring on numerous occasions. The display step occurs in teasing behavior between boys: occasionally between age mates, but usually directed at a younger child. The bounce step occurs when excitement is expressed. It is sometimes accompanied by pretended drumming. Such excitement may be caused by the killing of a lizard (Reel 60A:579-581), by the sight of a remarkable object (often elicited by the sight of European goods) (Reel 59:573-574), or by the sight of a mock fight (Reel 60A:583).

Examining cases of the partial occurrence of dance movement patterns, the predominance of pointed changes of direction seen in the bounce step may also be seen in a number of working activities -- in particular, chopping wood (Reel 1:1-2; Reel 2:9-10, 15-19), sharpening knives (Reel 28B:246-249), tamping the soil after planting banana suckers (Reel 3:24-25), and reeling in twine when making a string bag (Reel 26:236; Reel 49:468-471). Pointed changes also pre-

dominate in many sequences of baby care. An infant may be jiggled, in order to comfort it, either in the arms or in the string bag (Reel 37:336-338). In a typical way of playing, the infant is bounced up and down (Reel 33:295-296).

The bounce step, in which stereotyping and repetition is most clear, occurs in both complete and partial form in daily life. The display step occurs in complete form in every day life as taunting, and walking can be considered as a partial form of either the display or the walking step.

#### Qualitative Elements in Maring Signature Behavior

We will now consider qualitative characteristics of Maring signature behavior. In most daily activities there are external factors to which movement must to some extent conform. For example, there is an object in a fixed position in space with a certain weight, which must be dealt with in a specific amount of time. These external determinants influence movement by requiring certain uses of body part, space, and time. However, saying that practical daily activities are related to external necessities does not imply that the use of specific tools determines the movement pattern. In fact, Choreometrics demonstrates otherwise. The handling of most tools falls within a certain range of movement patterns, so that individuals whose movement patterns stem from different cultural styles may each handle the same tool differently.

Maring dance is related to external objects only to the extent that the dancer must control his body in order to keep it upright and move it over the ground. Since Maring dance is less determined by physical necessity than are the activities of daily life, it is reasonable to assume that it is in dance that signature behavior can be best identified. These movement preferences can be most conveniently discussed under three headings: handling the body, handling time, handling space.

A. Handling the Body

The Maring treatment of the body, as seen in the dance, is to hold the trunk as one unit and leave it unchanged as the arms manipulate weapons or drums. The legs move the whole body through space.

B. Handling of Time

The Maring handling of time, as seen in the dance, exhibits two major characteristics: no complex rhythmic patterns occur; each dancer has his own individual tempo, slightly different from most of the other dancers. Dancers performing the various steps do not start and stop at exactly the same moment. The individual use of time in the three dance steps displays a very simple treatment. The range of durations of movement segments seen in everyday activities is narrowed and shifted to the lowest end of the scale.



The exploding of bamboo, which signals the beginning of some of the dance events (in particular the sortie of the host dance contingent onto the dance ground), is consistent with Maring handling of time: the explosion is a signal, but it cannot be produced at a given moment. The explosion is the result of the process of burning, and the exact moment of its occurrence cannot be predicted. One might hypothesize that the moment of explosion can be predicted by the men who place the sticks of bamboo on the fires, at least within the range of time variation that they consider important or comfortable. One could also hypothesize that the Maring range of synchrony probably coincides with the range of indefiniteness of time within which the bamboos explode.

The style of handling time among the Maring is also evident in the way the events of the ritual cycle are timed: these events are triggered by natural or social events, rather than being dictated by any sort of calendrical regularization of the continuous succession of days. Even in regard to natural time, e.g. the falling of night, there was a lack of close synchrony in the events of the konj kaiko. The falling of night interrupted the progression of events, and this progression was picked up the following morning. An important part that had occurred after dark was repeated, and the ceremonies continued on to their conclusion.

### C. Handling of Space

When a Maring relates to a specific object in daily activity, there is a predominance of straight and curved paths in the trace forms he creates. In dance, when he is not relating to a specific object, the type of path that predominates is indeterminate. This confirms the Choreometric characterization of the Maring as using vague transitions in space. When the individual is not constrained by a work activity, he has a tendency to become spatially inexact.

The same tendency may be perceived in group movement. In daily life, paths are usually constrained by the environment. Pathways are intimately related to the environment, winding along ridges, going up and down slopes, crossing streams and rivers -- sometimes on stepping stones, sometimes on a fallen tree -- climbing over the fences dividing yards and gardens from bush, going through the open shadows of the forest, passing under sorcery arches (see Plates II, X, XI). Maring pathways guide movement through a complex series of natural textures and heights requiring complex bodily adjustments. The Maring make little effort to simplify these paths -- either by making them smoother, or by giving them specific direction. In dance, when groups and individuals are moving in a large, cleared, and partially leveled area, they could in theory create complex paths. In fact their paths are simple and, with few exceptions, lack clearly defined shape or direction.

On the basis of the analysis of Maring use of trace forms and pathways, we must conclude that the Maring characteristically exhibit a vague attitude toward space. Only when constrained do they adopt a specific attitude that becomes visible in the clarity of the paths they produce.

Spatial vagueness can further be observed in the Maring treatment of area. Land is named in terms of areas, and many named areas compose the territory of each clan-cluster. The boundaries of these territories, at the point where the main paths enter them, are ritually marked by the thrusting of painted stakes into the ground on either side of the path and, occasionally, by an archway that covers it.

A hamlet is given the name of the area in which it is located. Within a hamlet the arrangement of houses relates to the terrain, not to abstract spatial principles (see Appendix V). Each house is placed in a yard, which is protected from pigs either by steep banks (Plate III) or by fences (Plate XI:2). Men's houses consist of one large room, while women's houses are divided into a front room and a back room for sleeping. The front room is further subdivided into an area for cooking and eating and an area for pig-pens. With the exception of a rack for drying wood, it is the structural parts of the house, rather than especially provided places, that are used for hanging string bags, sorting vegetables, and for storage (Plate XIII).

Maring gardens are also areas upon which no abstract spatial order is imposed. The garden, totally surrounded by a fence to keep pigs out, is subdivided into smaller areas by tree trunks that are too large to be moved and which serve as convenient paths, and by smaller tree trunks, placed as markers between plots. Each of these plots belongs to a particular woman who plants and picks only in her own plot. The arrangement of plants within the plots also has no geometrical order. (See Clarke 1966:351f., and Reels 3, 18.)

The treatment of the dance ground is another illustration of the Maring attitude toward area. The dancers move about the dance ground without creating any clear or repeated pathways and without emphasizing any particular part of the area. The spectators are spread along the edges, and their attention is focused diffusely and changes constantly.

In daily life there are few gatherings during which a whole group concentrates its attention upon one focal point. If there is one focal point it usually concerns only two or three people and it is usually within arm's reach -- most often food or a handicraft (Reel 54:509-513). In a large gathering, Maring do not usually group themselves so they can see a single focal point.

During the konj kaiko the attention of an unusually large number of people is focussed upon one area. Within this area visual and auditory attention are, for the most part, diffuse. It is only during the pork presentation that dancers and spectators are more specifically oriented to the pave fence. The recipients must dance toward and away from the window in the pave, and the spectators watch and also listen to the calling of recipient's names. The focus on this specific point, more direct than usual, becomes diffuse again as soon as the pork presentation is complete.

Another way of considering Maring use of space falls outside of a strict consideration of movement, and looks instead to the design of Maring handicrafts. Two kinds of decorations were made by every man in the Simbai Valley and were visible at any dance gathering -- feather headdresses and facial painting (see Plate XIV). Feather headdresses are circular (designed to encircle the head), and frequently are worn together with one long plume sticking out from the center. Facial painting usually emphasizes the nose -- a line is drawn along the nose and may extend up to the forehead. Occasionally each side of the face is painted a different color (Reel 35B), the nose serving as the dividing line. Once a whole face was seen painted black. On many occasions people could be observed who had merely put spots of color on their



noses or their cheeks, without any special care for the contours of the face or for the design.

The only form of graphic art is found on shields. (Plate XII:2) They are not used in the dance and since warfare is no longer allowed most shields are neglected and are relegated for use as front doors of men's houses. The overall shape of the shields is not absolutely exact, probably due to the limitations of the large pieces of wood used as material. The design is marked by series of small holes in the heavy wood. The placement of the design on the surface does not exhibit care for exactness.

Belts and arm bands woven from rattan, on the other hand, exhibit an exact form which is probably not so much a matter of the preference of the weaver, but a matter of the nature of the material -- if the weaving is not done exactly it will not work at all.

Arrow points, which are carved, also exhibit a great deal of exactness, except when they are made by young boys. There are a number of different arrow point designs, all involving complex geometrical three-dimensional design. The designs are angular and repetitive (Plate XVIII). The exactness of arrow point design and execution contrasts with the usual Maring design, which is usually either gross, or inexact, or both.<sup>1</sup>

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<sup>1</sup> Further areal research may show that the arrow design which the Maring use has a widespread distribution.

The shapes of Maring houses are clearly stereotyped. The usual dwelling house is long, square at the entrance, and curved in the back. Ritual houses (ringi ying and timbi ying) are circular and surround a tall center pole.

The designs made by the Maring, then, are predominantly angular (weaving, arrow points, shields), with a few circular shapes (ritual house, feather headdress), and they range from inexact to precise.

Having investigated qualitative characteristics of signature behavior among the Maring, it is interesting to note Rappaport's observation about the tempo of Maring work. He reports upon the activity of clearing underbrush that he observed as a part of a study of energy expenditure (Rappaport 1968:256f.). He notes that there is an "evenness of the tempo both through time and between individuals..." (259). He concludes that by further study we might gain "insights into optimal tempos for particular tasks or complexes of tasks." On the basis of the present study of movement aspects, it would seem that tempo is not the only movement feature relating to energy expenditure. In addition to "optimal tempos," there may be optimal uses of body parts and of trace forms. For example, the Maring emphasis on patterns of reversing<sup>1</sup> may relate to energy expenditure. It may be that, in addition

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<sup>1</sup>The category called reversing -- a combination of paths and pointed changes of direction -- corresponds to the Choreometric category of simple reversal.

to the adjustments mentioned by Rappaport which should be made when applying energy expenditure figures to populations other than those from which the figures were compiled -- namely adjustments for climate, dietary deficiencies, and differences in weight in the objects being maneuvered -- further adjustments should be considered in regard to the differences in the movement patterns employed by different populations.

#### Dance as Signature Behavior

Dance provides an occasion in Maring life for the extended use of reversing -- paths linked by pointed changes of direction, such as up-and-down or back-and-forth -- within a social context. Reversing occurs in the expression of excitement of Maring boys when they imitate the bounce step. It further occurs in a standardized expressive gesture of excitement, which is identical in shape to the gesture used in reeling string with the hand. In addition, reversing occurs in the desultory chopping and picking at the ground that can be seen at various social occasions as a minor involvement (Reel 28B:246-249), and is particularly noticeable at gatherings during which an argument takes place (Reel 9). During all such occasions, however, activities involving reversing are pursued by each individual separately. At a dance, groups form in which the major involvement of every individual is expressed by a movement of reversing.

The above supports Sach's statement that "all dance is originally the motor reflex of intense excitement and of increased activity ... the unorganized individual dance must stand next to the choral dance, which represents the organized excitement reflex of a community." (Sachs 1963:139).

Further considerations about the significance of the forms of Maring dance may be investigated. These considerations are based upon inspection, and only detailed context analysis could reveal the extent to which these forms have emic significance in the Maring communication system. Let us start from the rationale of the kaiko. Kaiko, in particular the konj kaiko, is an expression of solidarity between allies (Rappaport 1968:188), and at the same time an expression of equivalence between groups that might become antagonists should events precipitate it (165). The kaiko may then be described as an occasion containing ambivalence. If this is true, two items of form may be given particular significance.

First, the display step. In daily life, when this step is performed by little boys, it is done in an attitude of hostility and teasing. In dance, the display step is performed by only a few men in each dance contingent and only for a short time. A certain amount of hostility is thus expressed by the men performing this step during a kaiko gathering, but this hostility is limited both by the

number of men performing it and by the short time during which it occurs.

Second, the pave fence as it is used by the host group. The pave shields the host group from the visiting spectators and dance contingents while preparations are being made, while the pork is presented, and while the host group readies itself to breach the pave and join the rest of the groups on the dance ground. In everyday life, individuals engaged in an argument do not confront one another directly, but locate themselves out of view of each other. Often the terrain is a sufficient shield, at other times houses are used as visibility barriers. The use of the pave fence may be analogous: it may represent a visibility barrier between parties who stand in a somewhat hostile relationship to one another.

It is tempting to draw a further analogy between the image presented by the pave and the appearance of the body of a person in a hostile situation. In a hostile situation, the body is held as one rigid unit while bursts of emphatic speech come from the mouth which is often the only visibly moving part of the body. Thus, while a great deal of talk may be heard, the rigid body presents an unperturbed surface to the hostile opponent. During the konj kaiko, a great deal of activity is necessary on the part of the men of the host group: pork, fat, and salt must be constantly brought to the window of the pave, attention must be paid that recipients



are called in the proper order and that the right bundles of pork get to the right people. If the konj kaiko is a somewhat hostile situation, the active and disorderly appearance of the busy host men should not be visible to the men of the confronting groups. Since neither the host group as a whole, nor the host men are able to present an unperturbed surface, the pave fence is used instead to shield all the activity.

One may further speculate that the stages of gathering during the kaiko year are analogous to the stages of gathering that a Maring child must go through in learning to be a center of his peers' attention. A Maring baby is the center of attention for the person who is holding him. As the child learns to walk and run, he plays with groups of children, acting as one member of a group whose attention may be centered on someone else or on an object or activity. Then (at about the age of three or four), a stage of teasing occurs. Older children run at the child from all directions. The child is encouraged to throw sticks or stones at his tormenters, some of whom try to grab the sticks from him and taunt him with the display step. When the child has learned to hold his own, he is no longer thus confronted, and he joins his peers in their games or in taunting a younger child.

An analogous set of stages may be seen in the pattern of gatherings during the kaiko year. The host group relates

to one or two other groups at a time in the small kaiko dances throughout the year (analogous to the dual relationships between child and mother or single playmates). At the konj kaiko the host group becomes a center of attention which a large number of other groups confront all at once (analogous to the confrontation of the child by all his peers). Finally, having presented pork to all the allies (analogous to withstanding successfully the confrontation), the host group breaks out of its separate place and joins the other groups, dancing as an equal in an area in which no one group is the center of attention. The konj kaiko, therefore, is, at group level, a demonstration of equivalence which utilizes the same format visible in the demonstration of equivalence of a child to his peers.

#### Summary

The present study has examined in detail specific aspects of movement patterns and the relationship between these patterns in dance and in selected daily activities among the Maring. By utilizing a method which separates aspects of movement, we were enabled to make a detailed analytic description. By defining the range of these aspects in Maring movement patterns seen in everyday activities, and by placing dance movements within or in relationship to this

range, it has been demonstrated that Maring dance is a formalized and repetitious use of movement patterns occurring in daily life. It has also been shown that Maring dance, in so far as it is Maring signature behavior, is a special form of the message "I am a Maring."

The movement analysis has brought into focus certain characteristics of the Maring. The Maring impose little rhythmic structure upon the natural passage of time, and they impose little spatial structure upon their physical environment. Both of these characteristics appear in Maring signature behavior which is simple and inexact in regard to time, vague in regard to space, and monolithic in regard to body use. This study confirms the findings of the Choreometric analysis of the Maring.

The movement analysis also provides material with which to speculate, suggesting aspects of events as being worthwhile for detailed observation, and allowing us to shift our attention to events at more macroscopic levels where we again perceive the stylistic characteristics visible in signature behavior.

A visual summary of the basic points investigated  
in this study is presented as:

"Maring in Motion:  
An Analysis of Movement Style  
among a New Guinea People"

an 18 minute, 16mm. color film distributed by:

Center for Mass Communication of Columbia University Press  
440 West 110 Street  
New York, N.Y. 10025

APPENDIX I - PLATES

These plates are taken from the set of 241 black-and-white 35 mm. still films photographed in the Simbai Valley by Marek and Allison Jablonko between March, 1963, and February, 1964.

The prints have not been retouched. Two prints (Plate XIV: 2 and 3) are portions cropped from larger pictures. None of the other prints have been cropped.

The location in which each picture was taken is given in terms of place names which appear either on the map on p. 27, or in terms of place names or the number of the nearest house as they appear on the maps in Appendix V.

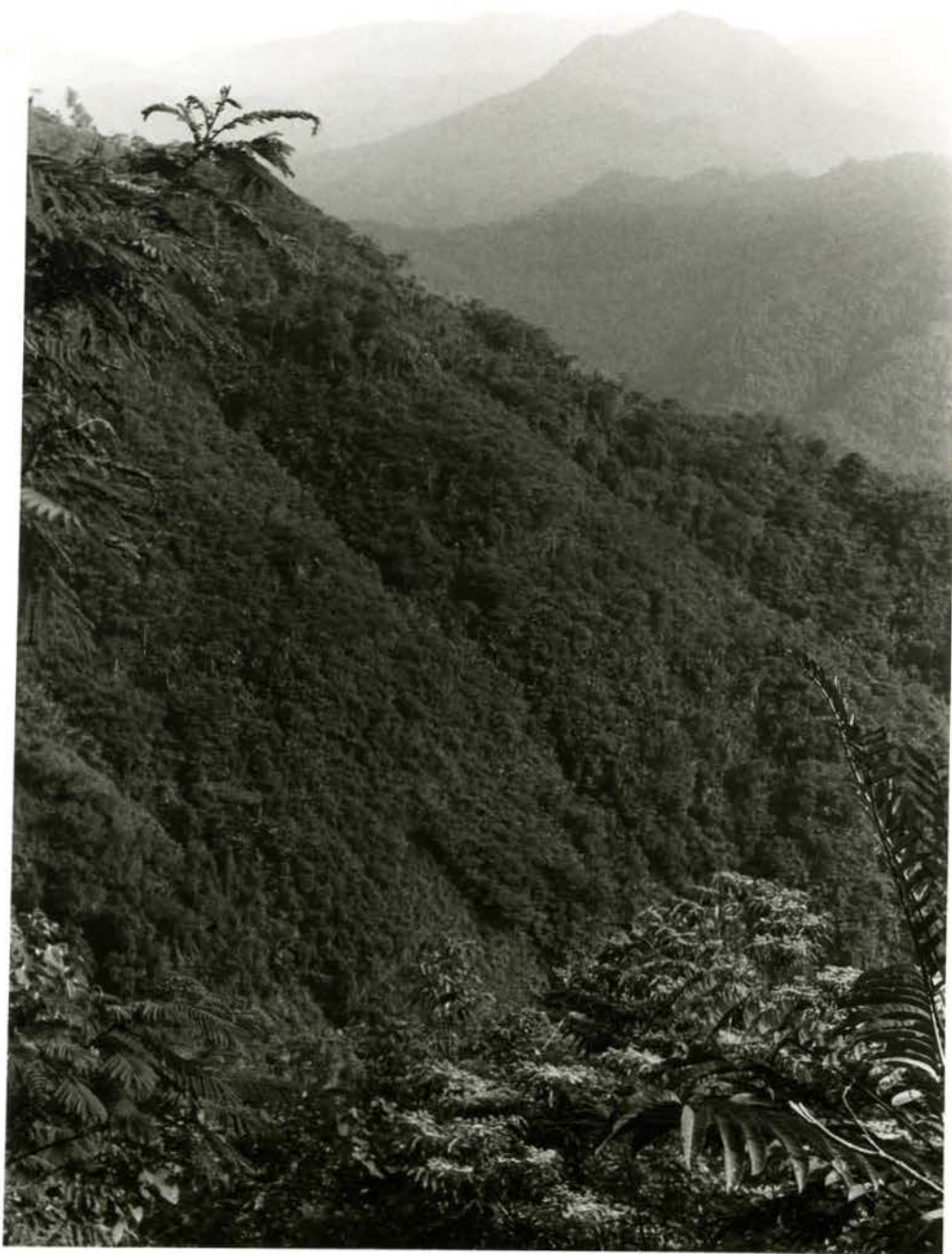
The number of the roll and the frame appears at the end of each explanation.



PLATE I - LANDSCAPE

View from Gunts over the Rigahn valley and west  
along the Simbai Valley to the Bank mountain.

(46:28)



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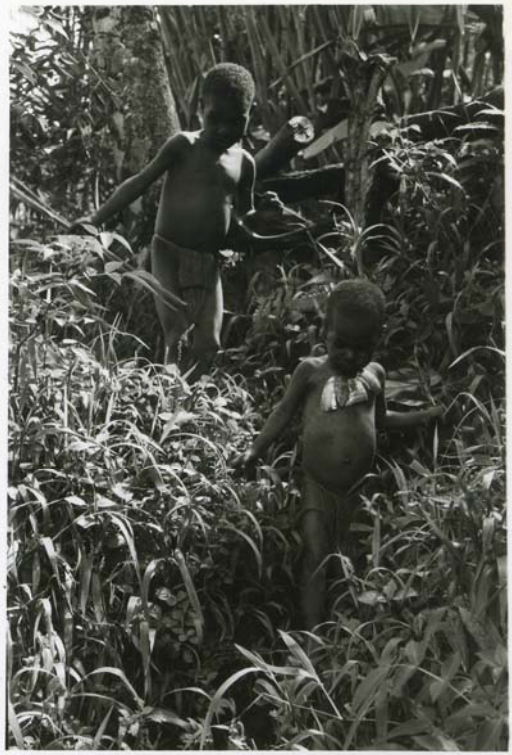
PLATE I

PLATE II - PATHS

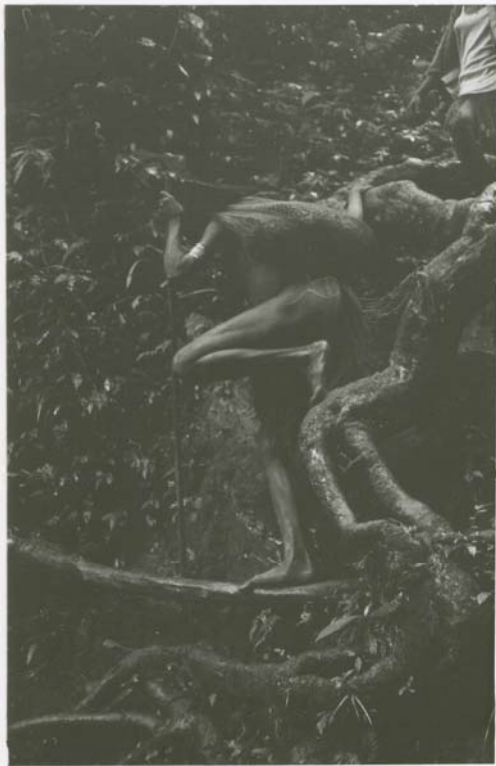
- 1. The path between Gunts and Tenegump. (19:13)
- 2. One of the paths entering a yard in Tenegump (24).  
(150:24)
- 3. One of the paths down to the Rigahn River. (78:6)
- 4. Women crossing the Rigahn River on the way home  
from gardening. (53:5)



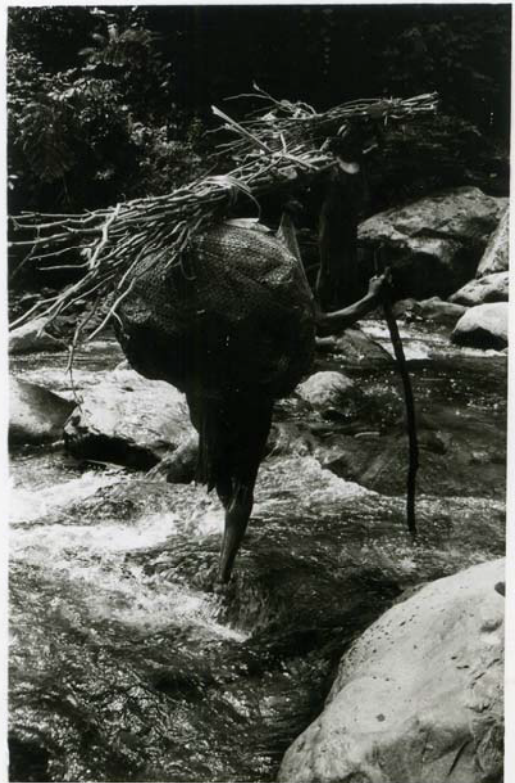
1



2



3



4

PLATE III - YARD

A boy out hunting for grasshoppers stops to visit with a grandfather who is minding the small children of his family while their parents are working in the gardens. On the right, in the background, is the wife's house (22). The husband's and grandfather's house (23) is on the extreme right. Running along the left is the main path traversing the Tenegump hamlet. (203:6)

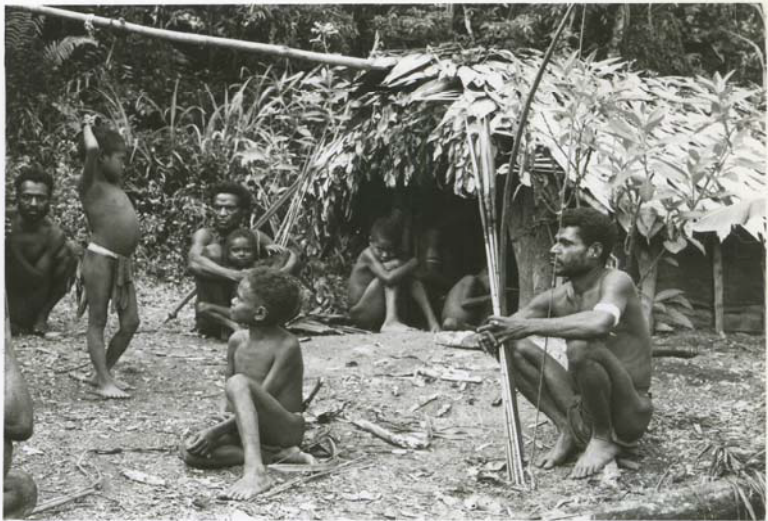




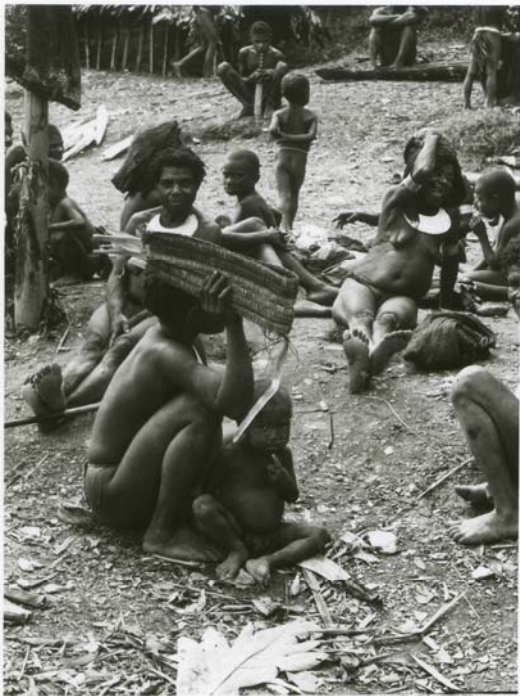
PLATE III

PLATE IV - MORNING GATHERING IN HAMLET

1. Men of the Fungai clan and some visitors gather for early morning conversation in the upper part of a central yard of Tenegump (9). (28:24-25)
2. Women and children of the Fungai clan gather in the downhill part of the central yard (10). Before leaving for their gardens, women warm themselves in the sun, making twine and string bags (Neo-Melanesian bilum) while they talk. Uphill, in the background, some of the men are visible. (28: 18-19)



1



2

PLATE V - FORMATIONS:

SIDE-BY-SIDE and FACE-TO-BACK

1. A woman and her husband's sister sit in the family's yard (23) making twine. The woman's son plays in front of her. (153:35)
2. The wife of a Fungai man delouses another Fungai man in the anthropologists' yard (30). (93:4)





1

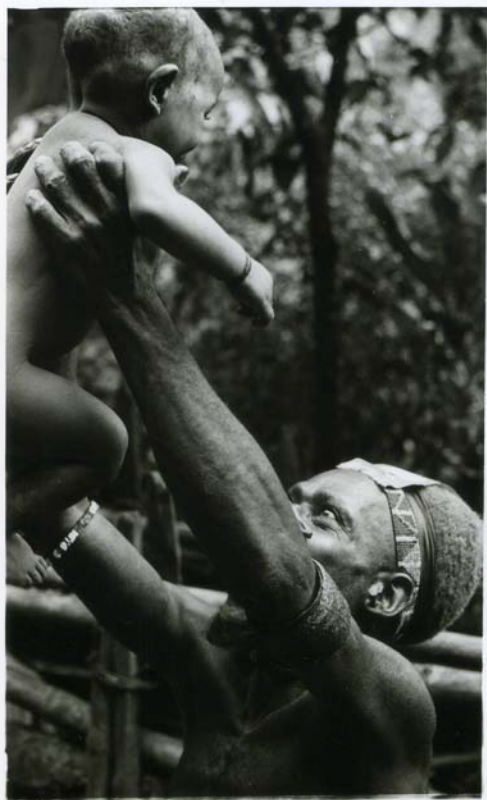


2



PLATE VI - FORMATIONS: FACE-TO-FACE

1. A woman greets a visitor carrying a child (7). (29:12)
2. A father plays with his son in his wife's yard (5).  
(47:18)
3. A mother plays with her son in the anthropologists' yard (29). (229: 28-29)



2



1



3

PLATE VII - FORMATIONS: SINGLE FILE

Women and their daughters pass through the main yard  
of Tenegump (10). (61:12)



PLATE VII

PLATE VIII - GARDEN WORK: CLEARING FOREST

A man of the Fungai clan fells the trees at a garden site after having cleared away the underbrush. In the area between Tababe and Fogaikump. (42:36)



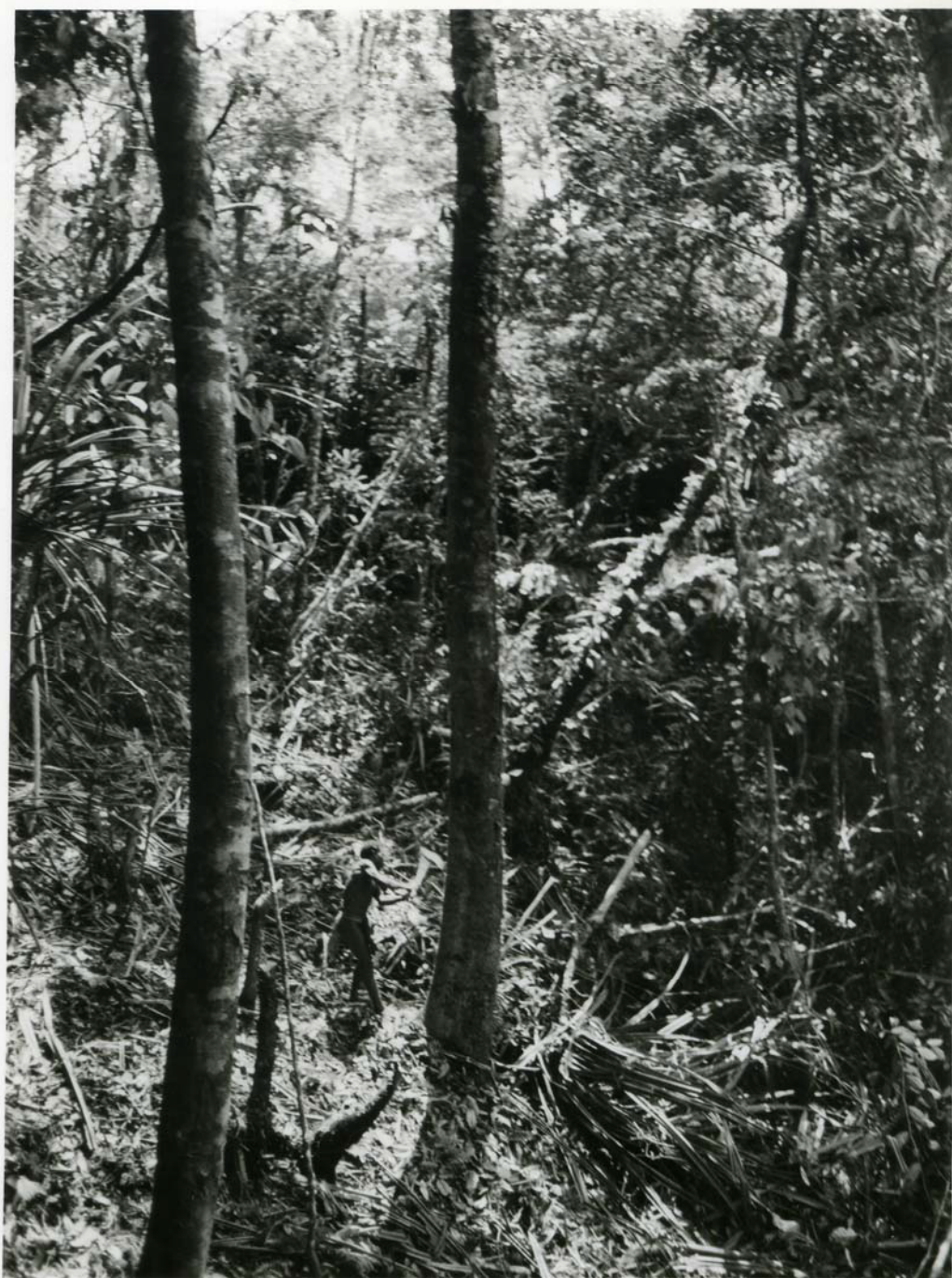


PLATE VIII

PLATE IX - WORK

1. A woman digs sweet potatoes for the evening meal. In the right foreground manioc can also be seen. Above Tenegump hamlet. (44:29)
  
2. A man chops firewood for the evening. During the clearing of gardens logs are split and stacked to dry. Later, when needed, the wood is chopped into convenient pieces and carried to the hamlet. Konokamb. (46:36)



1



2

PLATE X - RITUAL ARCH

The path leading from Tenegump to Gunts is spanned by a ritual arch where it enters the traditional dance ground of the Fungai clan. Since the last kaiko took place there, the ground has become overgrown. The trees in the foreground produce edible leaves (Maring - nenk; Neo-Melanesian - tulip). The ritual arch was constructed during the illness of a local man in order to discourage hostile spirits from entering the area of the hamlet. In the background, across the dance ground, a row of banana trees edge the path going from Gunts to Tababe. (57:19)





PLATE X



PLATE XI - RETURN FROM GARDEN TO HAMLET

1. A woman leaves her garden above the Tenegump hamlet, crossing the stile next to an old mango tree.  
(45: 6-7)
  
2. Followed by her son she goes along the path toward her husband's house (18). In addition to vegetables for the evening meal, she has also collected some bundles of firewood. (45:24)



PLATE XII - EVENING GATHERINGS

1. At the crossing of paths from Gunts, Ganegai, and Tenegump, women gather in the afternoon sun. On the left a mother and her daughter pick the stems off nenk leaves while talking with the other women who are pausing on their way home from the gardens.

(139:16-17)

2. A little girl peeks into a man's house (10). She knows that she is not allowed to enter a man's house. The entrance is closed at night with the old shield on which the outline of the design can still be seen. (110:14)

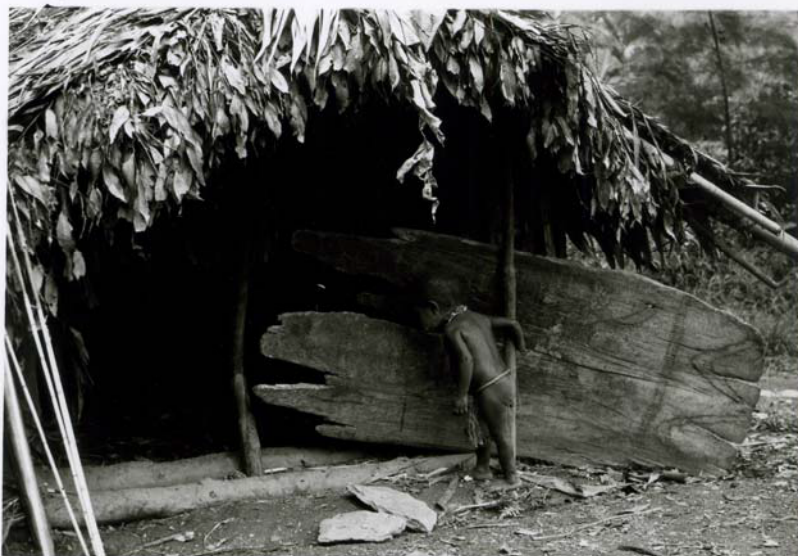
3. A family gathers for the evening meal at the mother's house (28). On the right the father and eldest son prepare a small earth oven in which to cook a variety of pandanus which can not be eaten by both men and women unless it is cooked separately for each sex. To the left a bamboo water carrier rests against the fence which surrounds the pigs' area of the woman's yard and house. Two young pigs are with the family, being scratched and fed scraps.

(51:35)





1



2



3

PLATE XIII - MARING HOUSES

1. A woman sorts the food she has picked for the evening meal. She uses the roof of her house as a working surface (19). (45:30-31)
2. The inside of a newly-constructed man's house as seen from the entrance before the thatch has been put on (18). (63:4)
3. The inside of a woman's house (1). On the left, a pair of wooden tongs and large stones for making the earth oven are lying on the floor. String bags, axes, a bushknife, and strips of bark which will later be made into twine are all stuck behind the wall posts. The rack for drying firewood hangs from the ceiling. (238:40)
4. After dark, supper is eaten in the mother's house (24). The stones for the earth oven are piled on the left. The fence separating the pig-pens from the living space is on the right. (238:68)





1



2



3



4

PLATE XIV - FEATHER HEADDRESSES  
AND FACIAL DECORATIONS

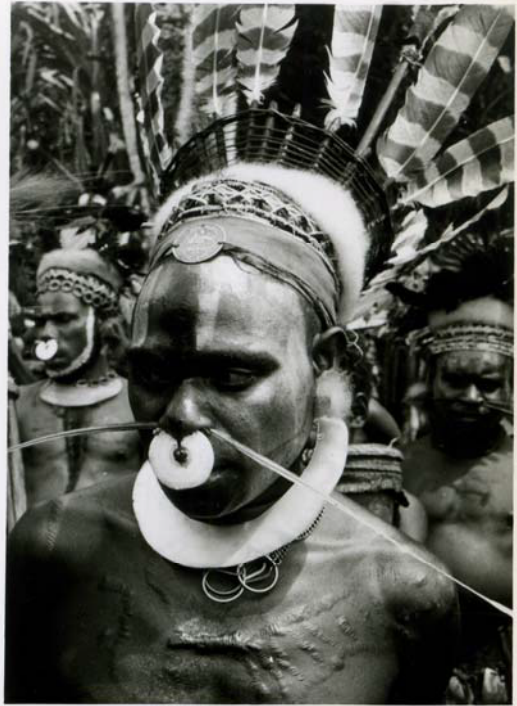
1. On the edge of the Dikai dance ground during a pause in the dancing, a man adjusts a red parrot feather mounted on a flexible stick in the center of a circlet of cockatoo feathers. The young man watches in a mirror. Both men wear loincloths richly decorated with marsupial fur. (4:4)
2. The Luluai (government-appointed official) of the Fungai-Korama clancluster is dressed for the celebration honoring A. P. Vayda at his departure from the field. The Luluai has inserted in his septum thin strips of gold-lip shells and a cassowary quill into the end of which a tuft of marsupial fur has been stuffed. (116:7)
3. At the same occasion, the Tultul (government-appointed official, second in command) of the Angoiang clan wears tufts of marsupial fur in his ears, and a spiral shell and two feathers in his septum. No explanation for the scars on his chest could be elicited. The basketry base for the feather head-dress (kabang kai) is clearly visible. (116:5)



1



2



3

PLATE XIV



PLATE XV - DANCE GROUND: SPECTATORS

1. Standing in front of a dance shelter, women look out over the Dikai dance ground where men are dancing. (4:9)
  
2. Men, women, and a resting dancer line the edge of the Dikai dance ground. (4:17)





PLATE XVI - DANCE GROUND: DANCERS

1. Column: A column of dancers traverse the Dikai dance ground in the walking step. Several of them are drumming, while three carry axes and one wields arrows.  
(4:18)
  
2. Clump: Having traversed the dance ground in a column, the men gather in a clump and, continuing singing and drumming, they perform the bounce step in place.  
(4:19)



PLATE XVII - DANCERS AND SPECTATORS

1. A dance contingent from the Jimi Valley arrives in Gunts for the send-off of A. P. Vayda. They dance across the old Fungai dance ground.  
(122:15-16)
  
2. Fungai women and their visiting friends, who are carrying sleeping mats, look over the fence into the anthropologists' yard (29) where men are dancing in honor of A. P. Vayda. (122:16-17)

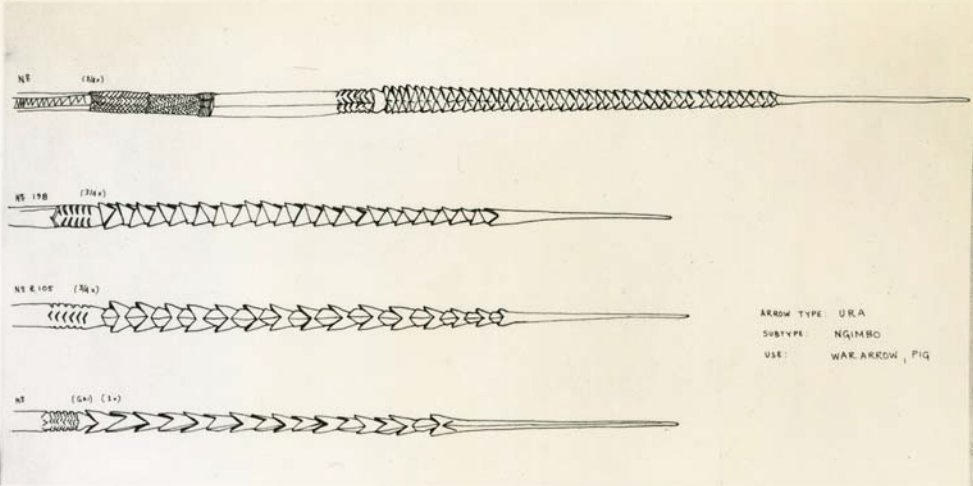


PLATE XVIII - ARROW POINTS

From Sketches by A. Jablonko of arrows in the Rappaport's collection.

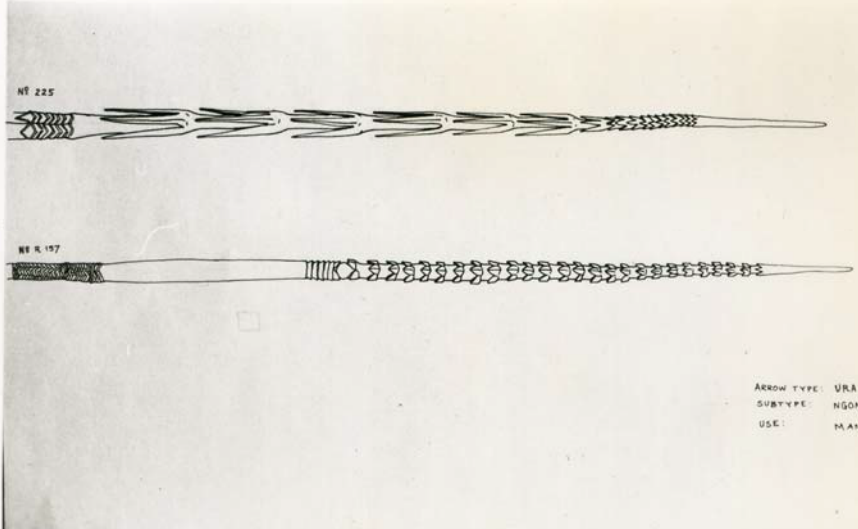
1. Four varieties of the gimbo sub-type of ura arrow which are used for pigs or in warfare.  
(171:11)
2. Two varieties of the gombapoka sub-type of ura arrow which are used for men or pigs. (171:15)
3. Two varieties of the tongdi sub-type of mungwa arrow which are used for hunting birds.  
(171:4)





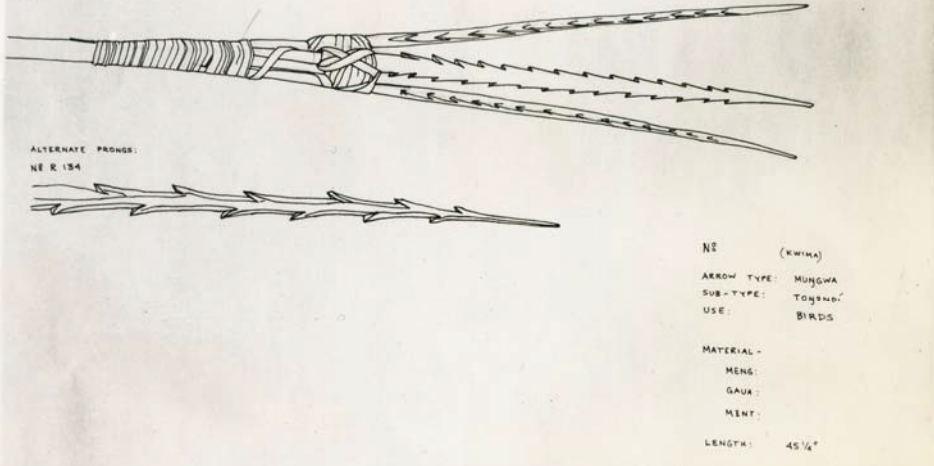
ARROW TYPE: URA  
 SUBTYPE: NGIMBO  
 USE: WAR, ARROW, PIG

1



ARROW TYPE: URA  
 SUBTYPE: NGOMBAOKA  
 USE: MAN, PIG, ETC.

2



NE (KWINA)  
 ARROW TYPE: MUNGWA  
 SUB-TYPE: TOHEND  
 USE: BIRDS  
 MATERIAL -  
 MENG:  
 GAUA:  
 MINT:  
 LENGTH: 45 1/4"

3

APPENDIX II - DIAGRAMS OF INDIVIDUAL MOVEMENT

APPENDIX II

## Key to descriptions:

Number: TITLE

Name of person and/or  
clan or clancluster  
membershipLocation of diagrammed activity  
in Maring Research Film  
63-JAB-Reel:roll.Place of activityLocation of diagrammed activity  
in other films: FC<sup>1</sup> or MDDM<sup>2</sup>  
Total number of frames<sup>3</sup>Date of activityNumber of  
diagrammed  
frames.Number in the  
original order  
of diagramming  
(0#)General description of  
activitySub-divisions of  
activity - identified  
by frame numbers<sup>4</sup>Sketch - identified by  
diagram number and  
frame number.

<sup>1</sup>The diagrams with an FC# are to be found on the film "Jablonko Diagrammed Sequences." Réel 1: 1, 2, 3, 6, 7, 9, 10, 11, 12, 13, 19, 20, 21, 25 (printed from the first work print). Reel 2: 14, 15, 16, 17, 18, 22, 28, 30 (printed from a print of the first work print with consequent rediction of quality) available through:

Dance Notation Bureau: Center for Movement  
Research and Analysis  
8 East 12 Street  
New York, N.Y. 10003

An "X" usually marks the frame which is counted as 0. The "X" in shots 7 and 11 marks frame 1.

<sup>2</sup>The shots indicated by MDDM [ ] are to be found in a visual summary of the basic points investigated in this study which is presented as "Maring in Motion: An Analysis of Movement Style among a New Guinea People," an 18 minute, 16mm. color film distributed by:

Center for Mass Communication of Columbia  
University Press  
440 West 110 Street  
New York, N.Y. 10025

The location of the sequence in the film is indicated by the numbers in brackets.

<sup>3</sup>These numbers indicate the total length of the shot from which the diagrammed sequence was taken.

<sup>4</sup>The different phases of the activities vary in the degree to which they occur between one frame and another. Whereas contact of the heel or the toe with the ground can be specified to the exact frame (if the image is detailed enough), the beginning and end of other sub-divisions of activities are rather matters of judgment. The frame-numbers of sub-divisions given here are, then, general indications, meant primarily to give the reader of the diagrams a picture of the activity during which the body parts move and create the trace forms which are precisely notated.

# KEY TO DIAGRAMS OF INDIVIDUAL MOVEMENT

NUMBER TITLE

FRAMES

24 FR. = 1 SEC.

BODY PART USE	STAFF	LEFT	STEPS →	→	FOOT IN FULL CONTACT WITH EARTH			
				→	FOOT IN PARTIAL CONTACT WITH EARTH			
			TOES		BODY PART NOT VISIBLE DURING WHOLE SEQUENCE			
			ANKLE		BODY PART NOT VISIBLE DURING WHOLE SEQUENCE			
			KNEE		BODY PART NOT VISIBLE DURING WHOLE SEQUENCE			
			HIP		BODY PART NOT VISIBLE DURING WHOLE SEQUENCE			
			FINGERS		BODY PART NOT VISIBLE DURING PART OF SEQUENCE			
			WRIST		BODY PART NOT VISIBLE DURING PART OF SEQUENCE			
			ELBOW		BODY PART NOT VISIBLE DURING PART OF SEQUENCE			
			SHOULDER		BODY PART NOT VISIBLE DURING PART OF SEQUENCE			
			SCAPULA		BODY PART NOT VISIBLE DURING PART OF SEQUENCE			
			HEAD		ACTIVE MOVEMENT			
			CHEST		MOVEMENT TOO SMALL TO SEE CLEARLY, OR CAUSED BY GRAVITATIONAL PULL			
			PELVIS		INFERRED MOVEMENT			
			BODY PART USE	STAFF	RIGHT	SCAPULA		INFERRED MOVEMENT
SHOULDER		INFERRED MOVEMENT						
ELBOW		INFERRED MOVEMENT						
WRIST		INFERRED MOVEMENT						
FINGERS		INFERRED MOVEMENT						
HIP		INFERRED MOVEMENT						
KNEE		INFERRED MOVEMENT						
ANKLE		INFERRED MOVEMENT						
TOES		INFERRED MOVEMENT						
LEG		CHANGE IN THE DIRECTION OF MOVEMENT						
ARM		CHANGE IN THE DIRECTION OF MOVEMENT						
HEAD		CHANGE IN THE DIRECTION OF MOVEMENT						
TRUNK		CHANGE IN THE DIRECTION OF MOVEMENT						
ARM		ABRUPT CHANGE IN THE SPEED OF MOVEMENT WITH NO CHANGE OF DIRECTION						
LEG		ABRUPT CHANGE IN THE SPEED OF MOVEMENT WITH NO CHANGE OF DIRECTION						
TRACE FORM	STAFF	LEFT	LEG		STRAIGHT			
			ARM		INDETERMINATE			
			ARM		ROTATING			
			HEAD		CURVED			
			HEAD		CYCLICAL			
			TRACE FORM	STAFF	RIGHT	TRUNK		POINTED
						TRUNK		ANGULAR
						ARM		SMOOTH (NO MARK BETWEEN PATHS)
						LEG		SMOOTH (NO MARK BETWEEN PATHS)
						LEG		TRACE FORM NOT CLEARLY VISIBLE

0 TO 3 20  
7 X 10 INCHES  
MADE IN U. S. A.  
KEUFFEL & ESSER CO.



## 1. GIRL PERFORMING BOUNCE STEP

Tsembaga clan cluster

63-JAB-1: 7,8

Dikai dance ground

FC# 1 + 2 0 - 140 fr.

July 7, 1963

40 - 94 fr. 0# 23B

The girl wearing red ribbons, on the right of the clump formation, performs the bounce step with the other Tsembaga girls.

Sub-divisions:

Bounces: (indicated from one "high" to the next "high".

45 - 58

58 - 72

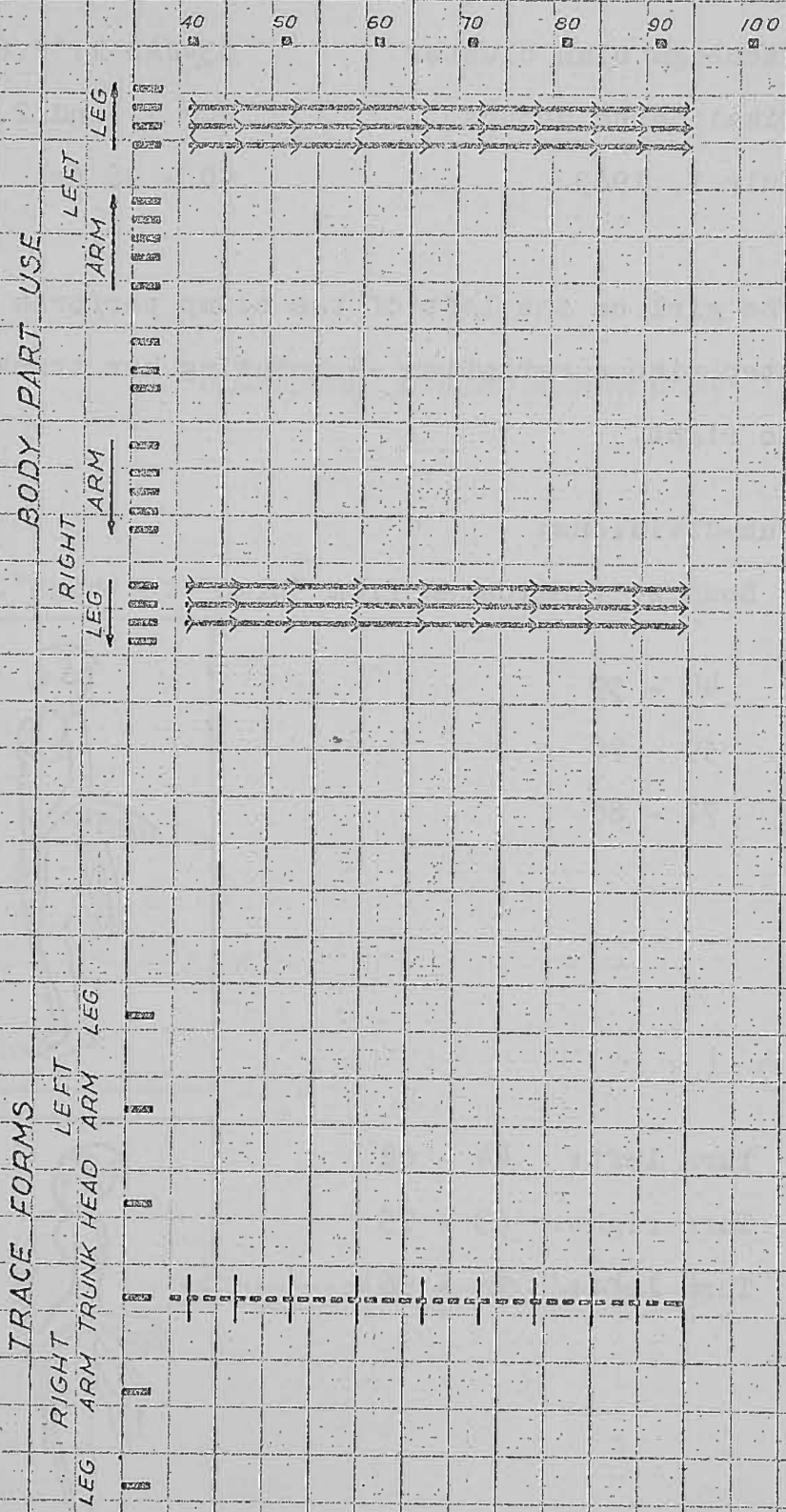
72 - 83

83 - 93



Comments: There may be a slight alternation in the amount that each knee bends, but it cannot be clearly enough seen on the film to be diagrammed.

# I. GIRL PERFORMING BOUNCE STEP



## 2. GIRL PERFORMING BOUNCE STEP (VARIATION)

Tsembaga clan cluster

63-JAB-1:7,8

Dikai dance ground

FC# 1. and 2. 0 - 140 fr.

July 7, 1963

40 - 96 fr. 0# 23A

The girl on the left of the clump performs the bounce step with a variation -- rotating her trunk from left to right.

## Sub-divisions:

Bounces (indicated from "high" to "high").

44 - 59

59 - 72

72 - 86



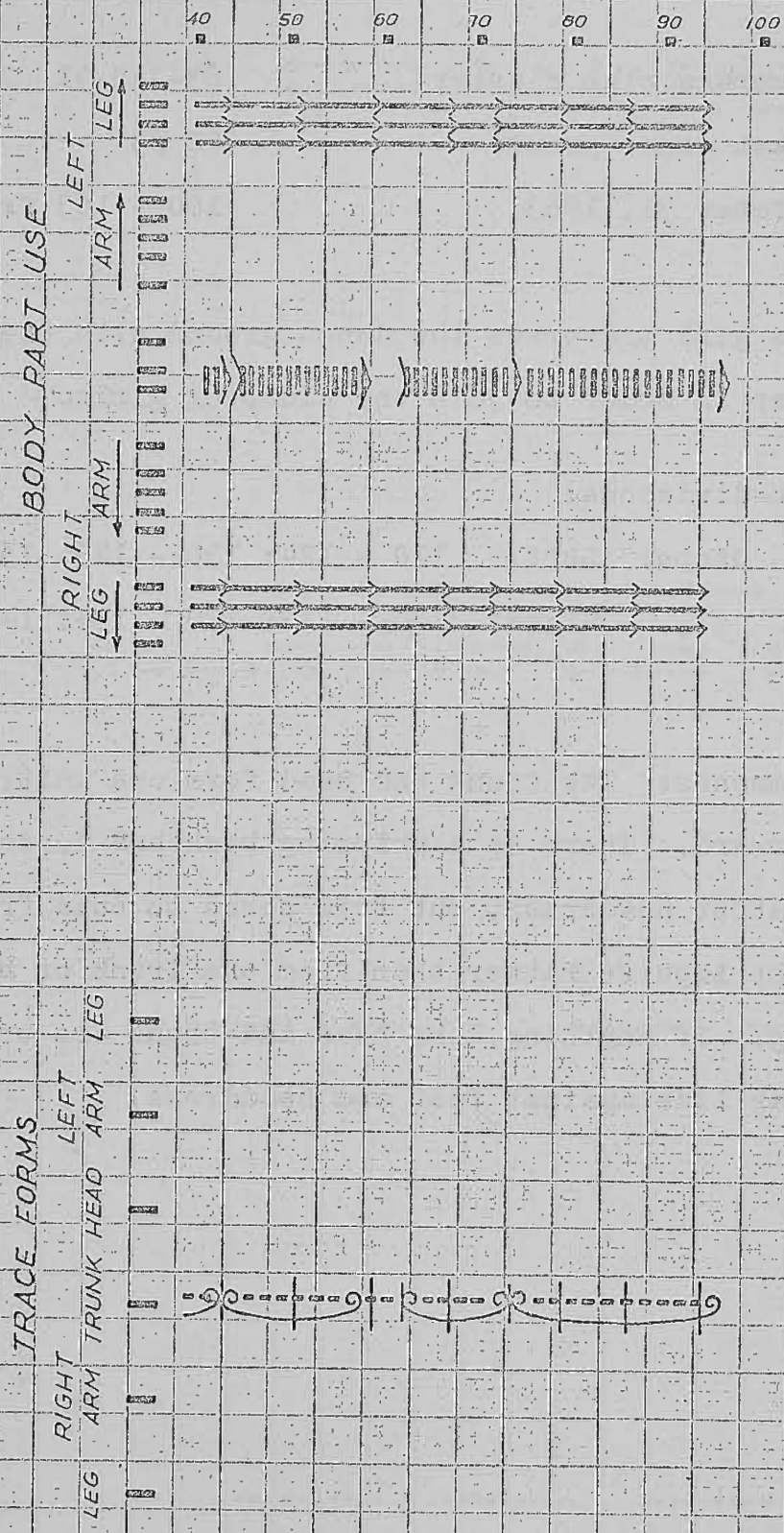
Turn left: 44 - 62

Turn right: 63 - 75

Turn left: 75 - 96



## 2. GIRL PERFORMING BOUNCE STEP (VARIATION)



## 3. GIRL PERFORMING WALKING STEP

Tsembaga clan cluster	63-JAB-31: 277
Dikai dance ground	FC #3
October 31, 1963	100 - 163 fr. 0# 13

The girl traverses the dance ground with the walking step in order to join the clump of girls.

## Sub-divisions:

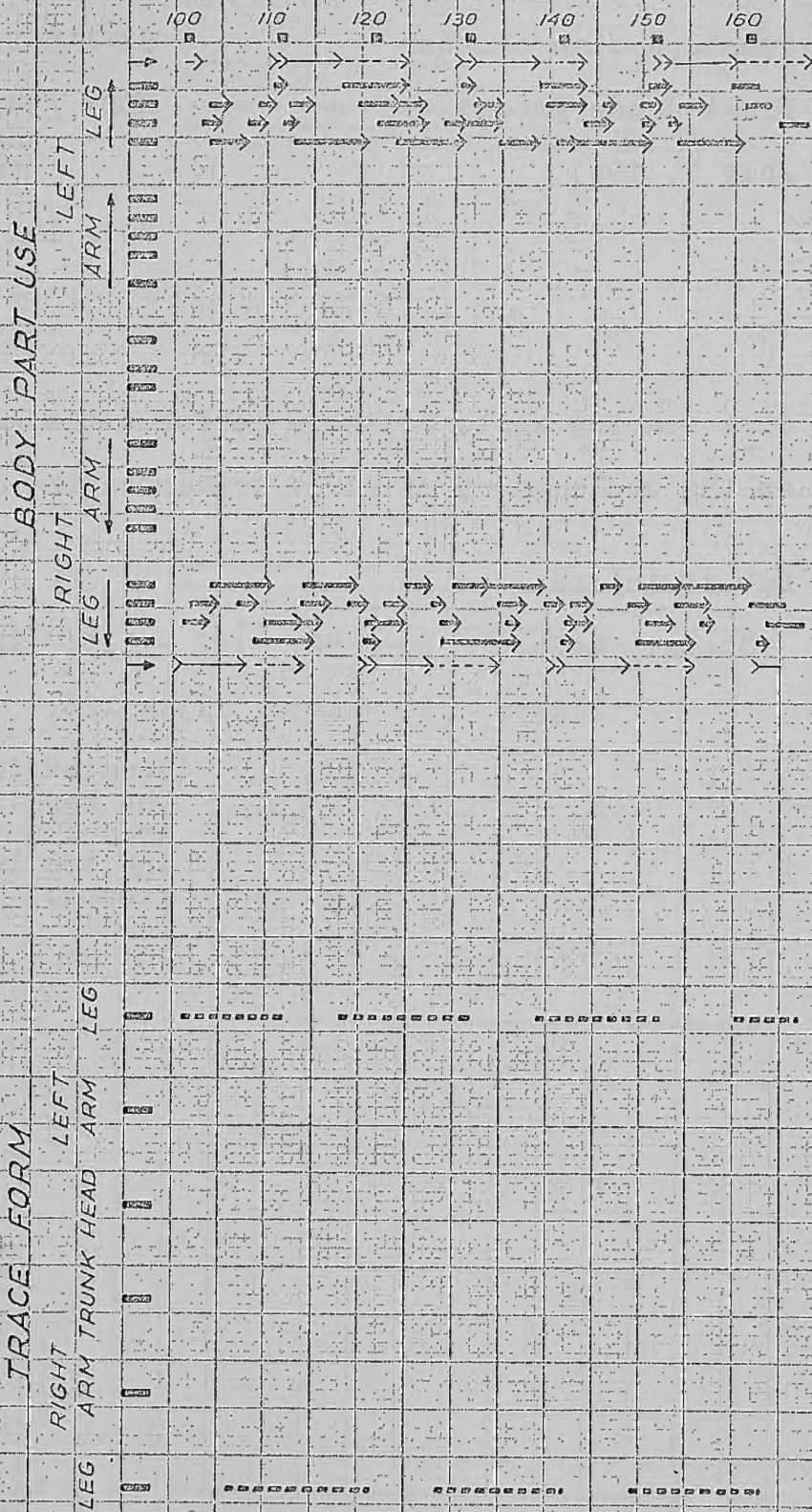
Steps: Left: 110 - 124; 130 - 143; 151-- 167

Right: 100 - 113; 120 - 134; 140 - 155

Comments: The trunk and head form one unit, moving forward. There is a whipping back and forth of the feather headdress, but this seems to come from the foot impulse rather than from the trunk or head rocking. If anything, the head and trunk are trying to stabilize against feet and headdress.



### 3. GIRL PERFORMING WALKING STEP



## 4. GIRL PERFORMING WALKING STEP

Tsembaga clan cluster

63-JAB-1: 8

Dikai dance ground

MDDM  $\overline{347}$  feet 17 frames  
through 356 feet 33  
frames $\overline{7}$ 

July 7, 1963

80 - 141 fr. 0# 24

Girl wearing white feathers performs the walking step as the whole group of girls traverses the dance ground.

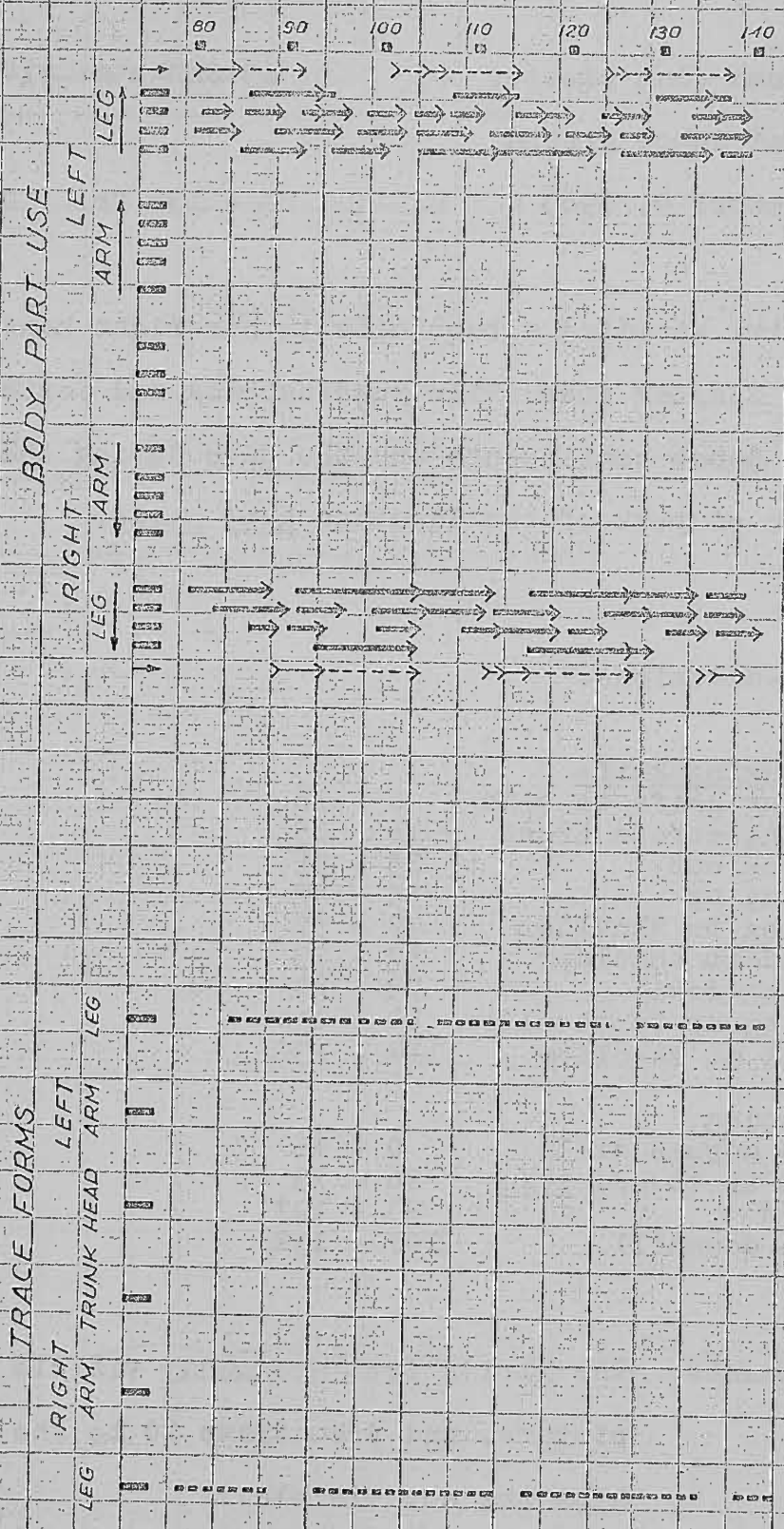
## Sub-divisions:

Steps: Left: 80 - 92; 102 - 115; 125 - 138

Right: 90 - 105; 113 - 128;

(counted from the time the heel touches the ground until the time the toe leaves the ground.)

# 4. GIRL PERFORMING WALKING STEP



## 5. GIRL PERFORMING DISPLAY STEP

Dia-

Tuguma clan cluster

63-JAB-35A: 314

Dikai dance ground

November 9, 1963

0 - 132 fr. 0# 37

A girl wielding a bushknife in her right hand performs the display step while running back and forth between the dance contingents and the pave during the presentation of pork of the Tsembaga konj kaiko.

## Sub-divisions:

Swinging knife

Swing knife to side	- 0 - 16
swing across front	- 16 - 25
swing out	25 - 35
swing up	35 - 47
swing to shoulder	47 - 57
hold at shoulder	57 - 73
swing down	73 - 84
swing up to shoulder	84 - 114
hold at shoulder	114 - 132

Running

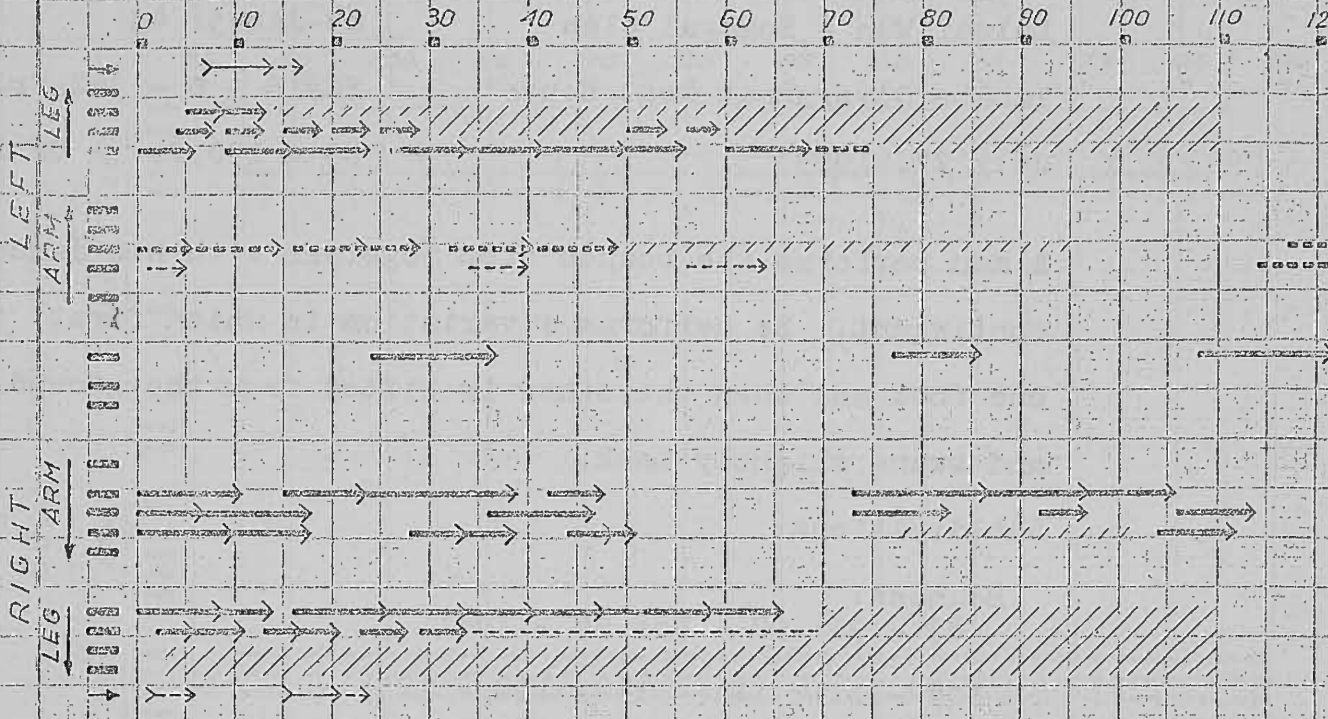
Run across hill	0 - 26
run up toward <u>pave</u>	26 - 73
turn	73 - 107
run downhill	107 - 132

Comments: The girl's feet are partly visible in the picture, and from frame 70 to the end her hips are not visible.

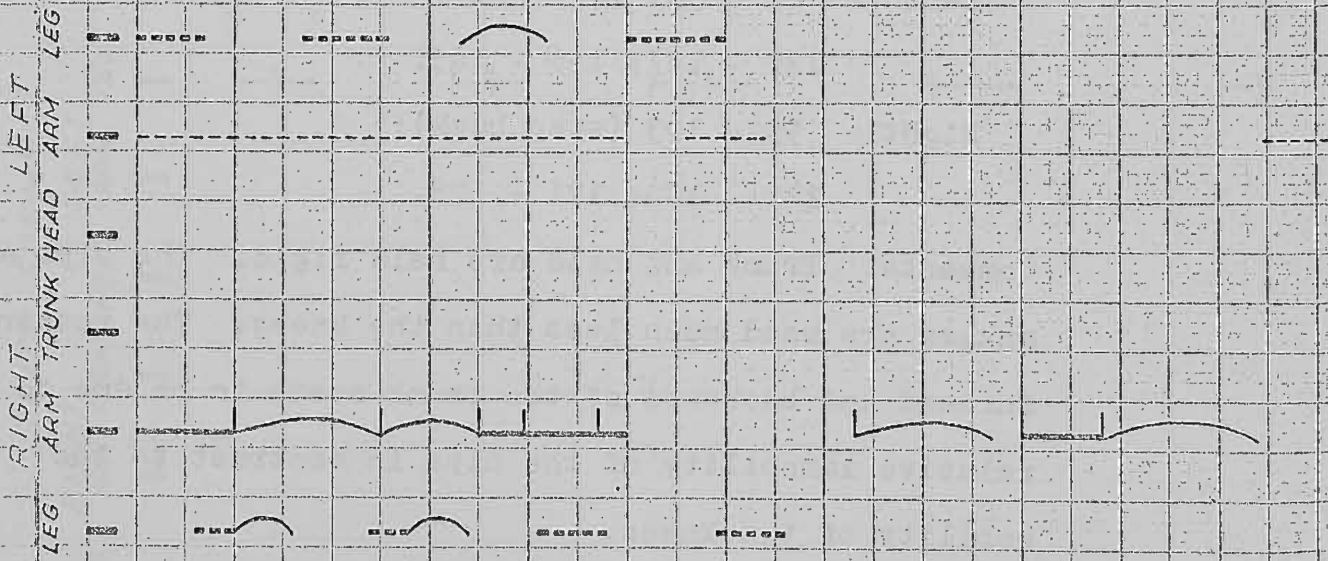


# 5. GIRL PERFORMING DISPLAY STEP

BODY PART USE



TRACE FORMS





## 6. MAN PERFORMING BOUNCE STEP

Luluai Wun - Bomagai clan	63-JAB-5: 43
Tababe Government Rest House	FC# 6 0 - 342 fr.
July 27, 1963	80 - 190 fr. 0# 27

A man performs the bounce step together with his dance contingent. He performs a variation in which first one foot and then the other is lifted from the ground and swung slightly back.

## Sub-divisions:

## Bounces:

83 - 90; 90 - 96; 96 - 104;

104 - 111; 111 - 118; 118 - 125;

125 - 133; 133 - 140; 140 - 146;

146 - 154; 154 - 161; 161 - 167;

167 - 173; 173 - 182; 182 - 189.

## Feet swung back and forth:

Left - 85 - 93; 107 - 114;

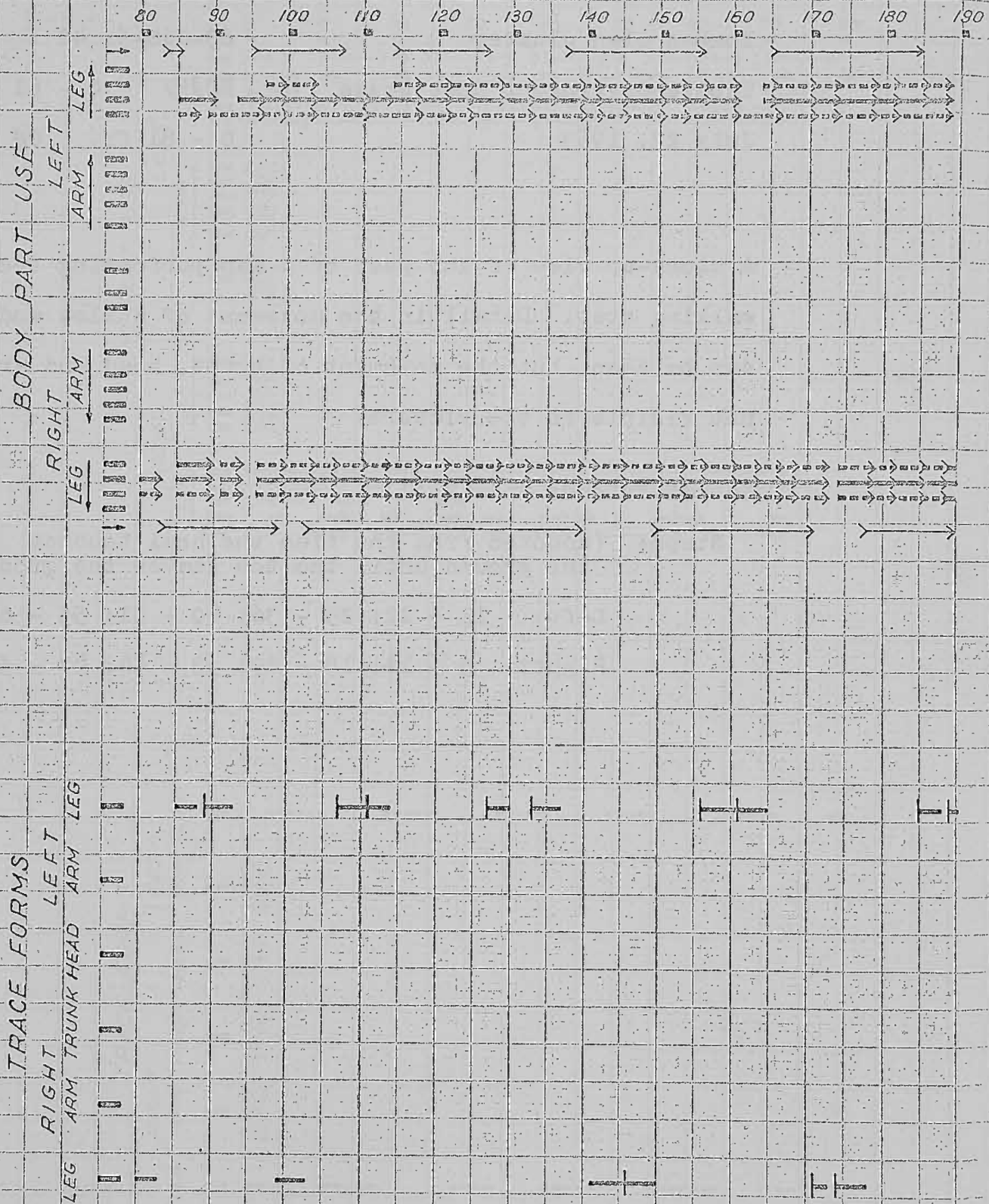
127 - 137; 156 - 165;

Right - 99 - 103 (step back);

141 - 150; 171 - 178.

Comments: Trunk and head are held rigid. The hips and ankles are used much less than the knees. The rocking forward and backward of the trunk seems to be due to the relative immobility of the hips in contrast to the mobility of the knees.

# 6 MAN PERFORMING DANCE STEP



## 7. MAN PERFORMING WALKING STEP (CLOSE-UP VIEW)

Yomban clan cluster	63-JAB-5: 42
Tababe Government Rest House	FC# 7 0 - 81 fr.
July 27, 1963	0 - 81 fr. 0# 26

A close-up view of the feet of a man performing the walking step. Detail in the movement of ankles and toes can be seen, but the movement of trunk, head and arms is not visible in the picture.

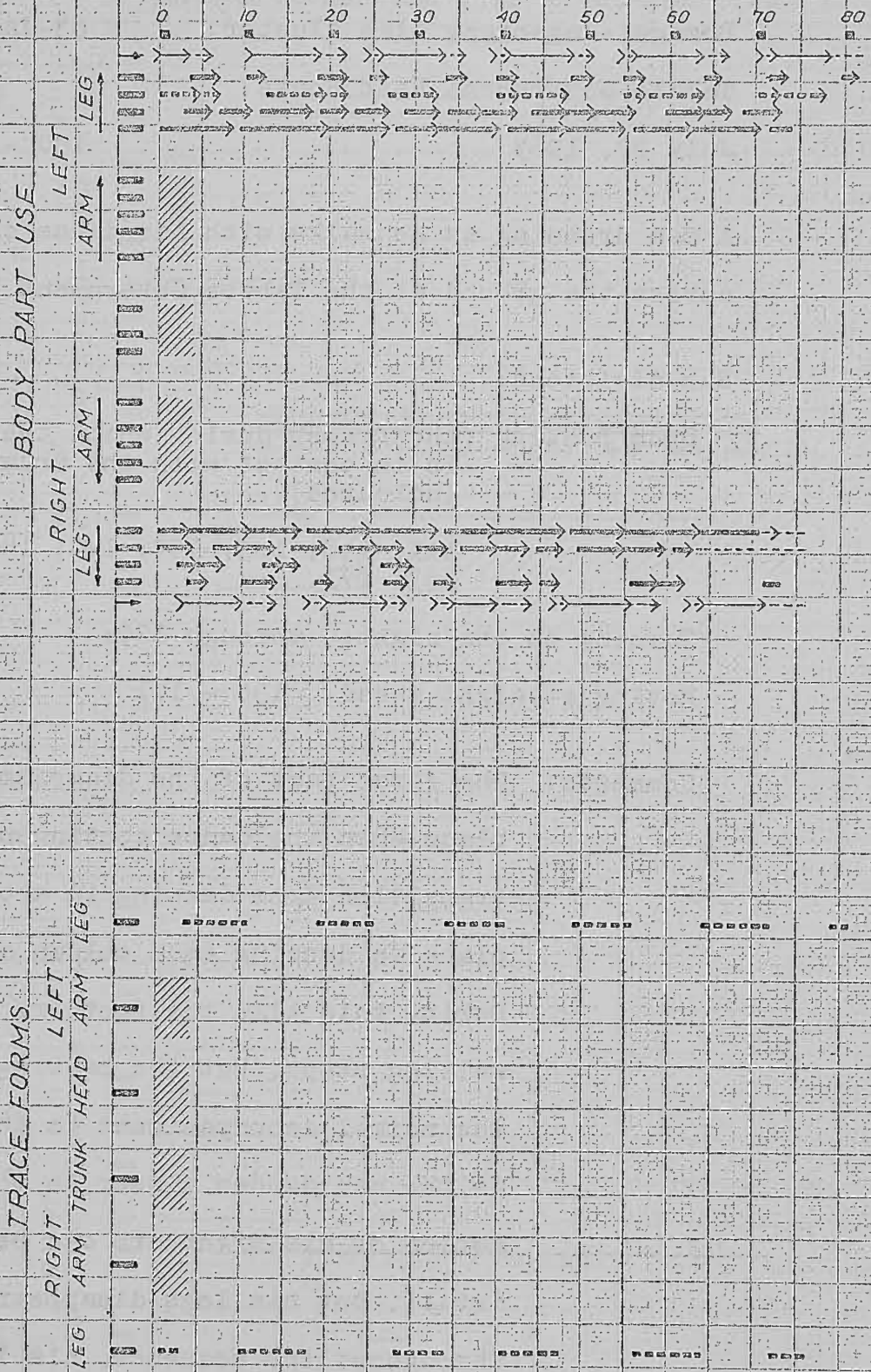
## Sub-divisions:

Steps: (counted from the time the heel touches the ground until the toe leaves the ground.)

Left: 11 - 22; 25 - 36; 40 - 51; 55 - 67;

Right: 3 - 14; 18 - 29; 33 - 44; 47 - 59;

# 7. MAN PERFORMING WALKING STEP (CLOSE-UP VIEW)





## 8. MAN PERFORMING WALKING STEP AND DRUMMING

Bomagai-Angaoiang clan cluster 63-JAB-5: 43

Tababe Government Rest House

July 27, 1963

100 - 171fr. 0# 28

A man drumming as he walks with his dance contingent across the ground at the Tababe Government Rest House.

## Sub-divisions:

Drum beating (the frames during which the right hand is in contact with the drum head are indicated):

111; 118; 125; 133; 140; 148; 155;  
163; 171.

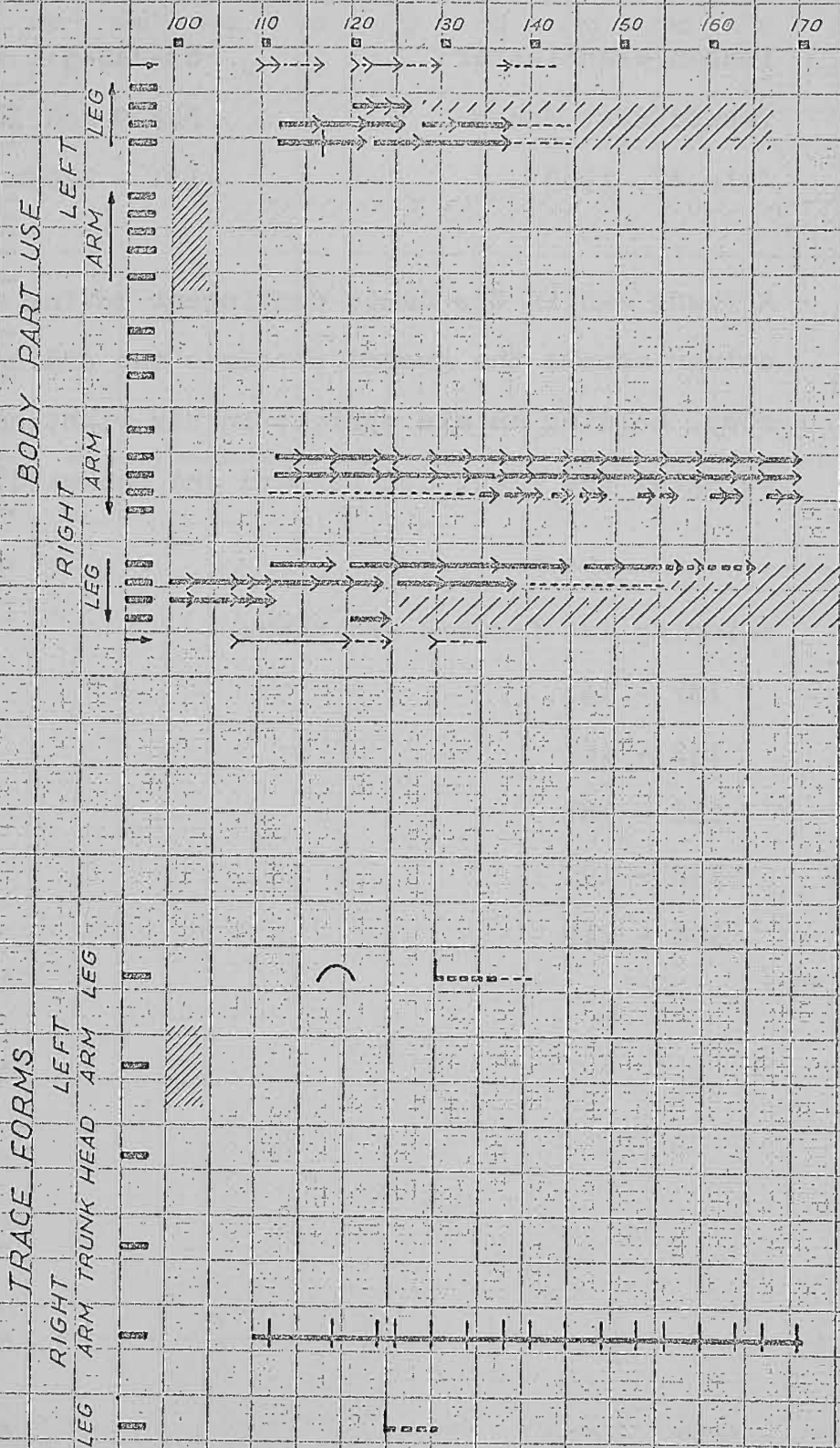
Turning to the right: through 129;

Moving straight ahead: 130 - 171

Comments: The first part of the diagrammed sequence takes place when the dance contingent is making a transition from dancing in a clump at one place to dancing as a column across the ground. During this time the footwork is not plain walking steps, but the beating of the drum is the normal accompaniment to the walking step. As the man dances closer to the camera, the action of his right arm can be seen in greater detail, but his legs disappear from the frame. Throughout the sequence, his left arm is not visible at all.



# 8. MAN PERFORMING WALKING STEP AND DRUMMING



## 9. YOUNG MAN PERFORMING WALKING STEP WITH AXE

Yomban clancluster

63-JAB-5: 43

Tababe Rest House

FC# 9 and 10; 0 - 283 fr.

July 27, 1963

131 - 220fr. 0# 30

A young man in the dance contingent moving as a column across the ground performs the ordinary walking step, holding an axe upright in his right hand and swinging the right arm forward and backward.

Swinging axe forward and back:

137 - 151

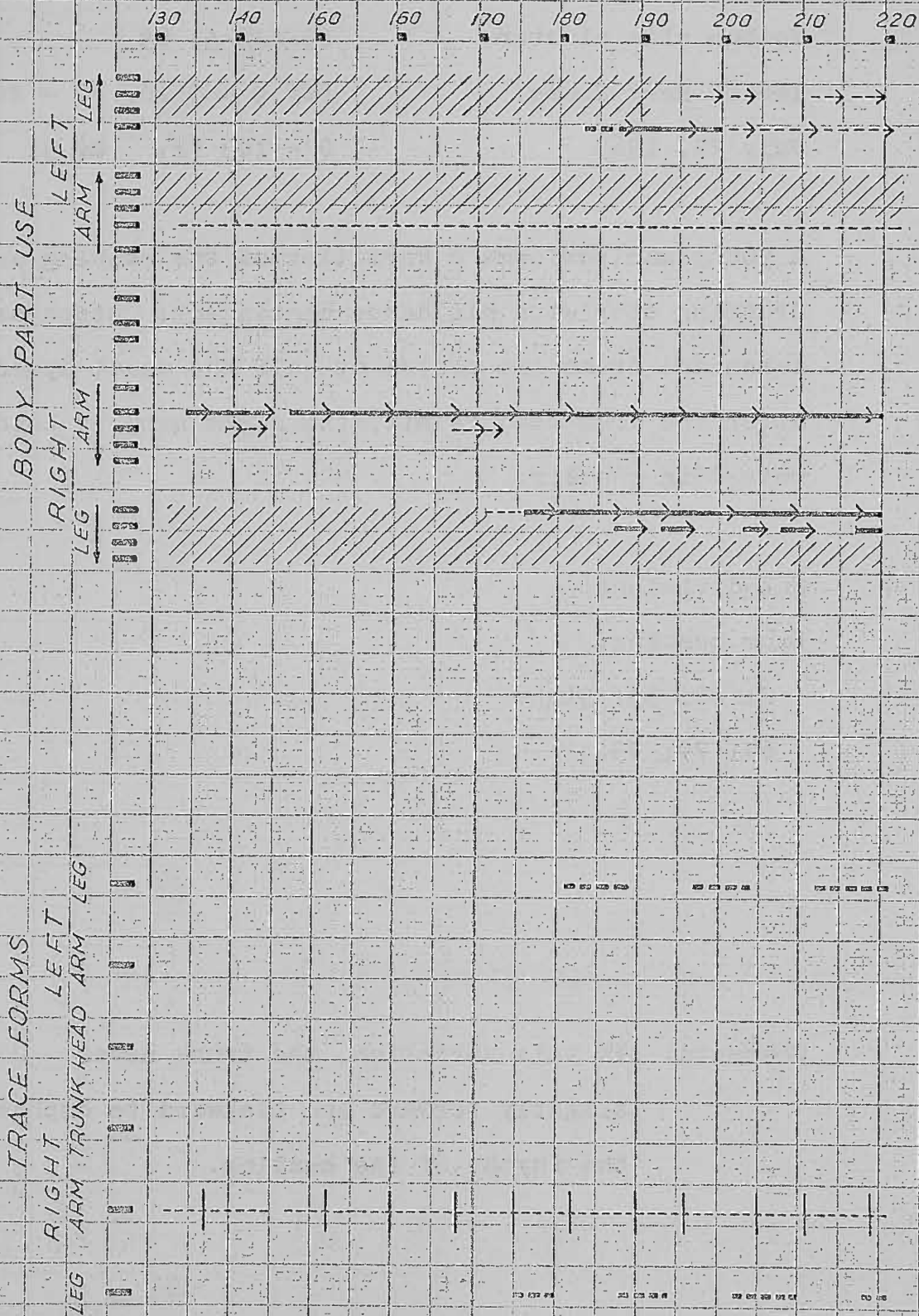
152 - 167

168 - 181

182 - 195

196 - 210

# 9. YOUNG MAN PERFORMING WALKING STEP WITH AXE



## 10. MAN BEATING DRUM

Yomban clan cluster	63-JAB-5: 43
Tababe Rest House	FC# 9 and 10; 0 - 283 fr.
July 27, 1963	0 - 103 fr. 0# 31

A young man performs a variation of the walking and drumming step with his dance contingent: steps are taken and drums are beaten at half the usual speed. After the drum-head is hit, the right hand is held poised in the air.

Sub-divisions:

Drum beating:

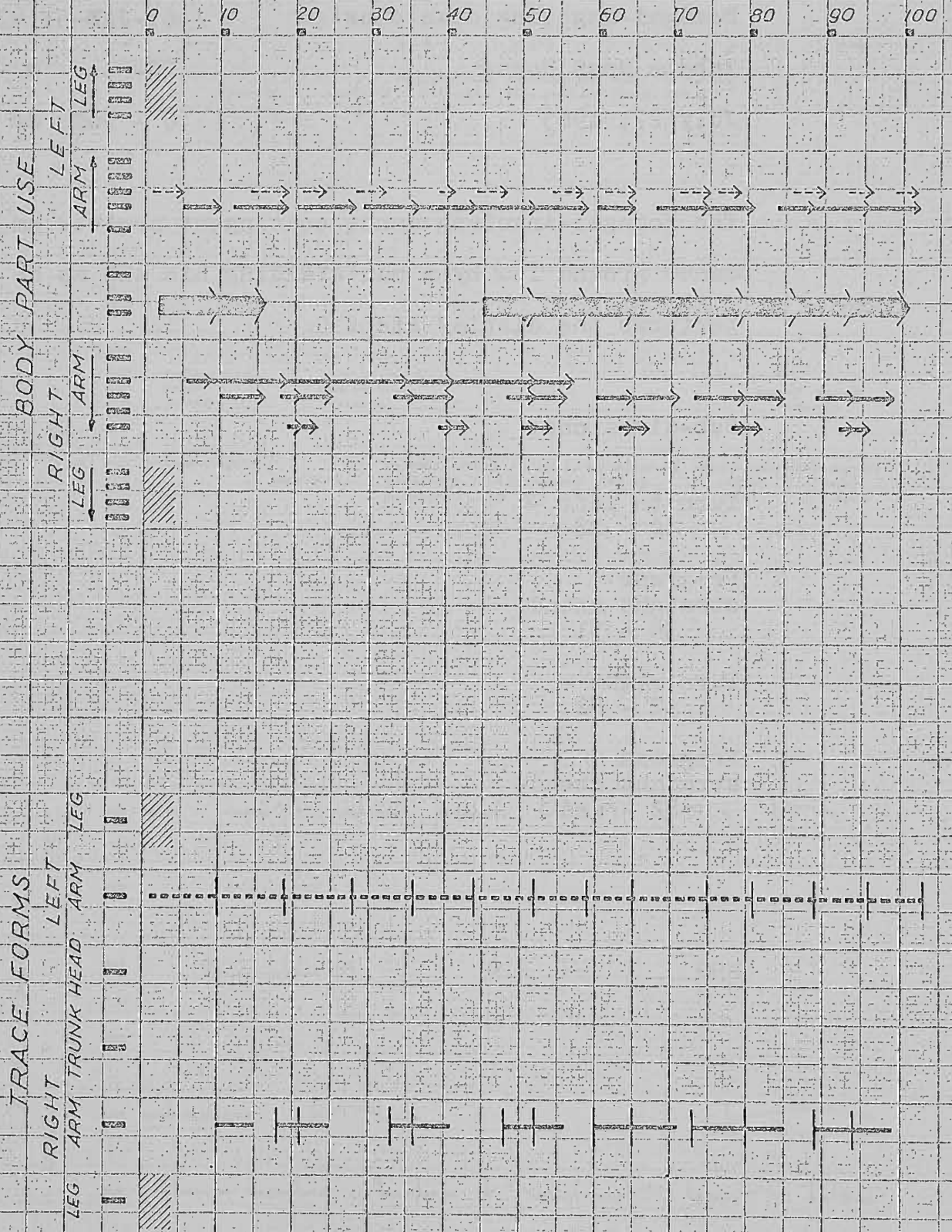
2; 20; 35; 51;

64; 79; 93.

Comments: In this variation, the trunk moves slightly forward and backward to emphasize the rhythm of the beating.



# 10. MAN BEATING DRUM





## 11. MAN PERFORMING DISPLAY STEP

Bomagai-Angoiang clan cluster

63-JAB-5: 43

Tababe Rest House

FC# 11 0 - 96 fr.

July 27, 1963

0 - 96fr. 0# 36

The Bomagai-Angoiang dance contingent arrives on the dance ground led by a man wielding his axe as he performs the display step.

## Sub-divisions:

Turn to left -  
0 - 28

Progress  
straight ahead-  
34 - 51

Turn right -  
52 - 82

Progress  
straight ahead-  
82 - end

# II. MAN PERFORMING DISPLAY STEP



## 12. WOMAN CLEARING GRASS

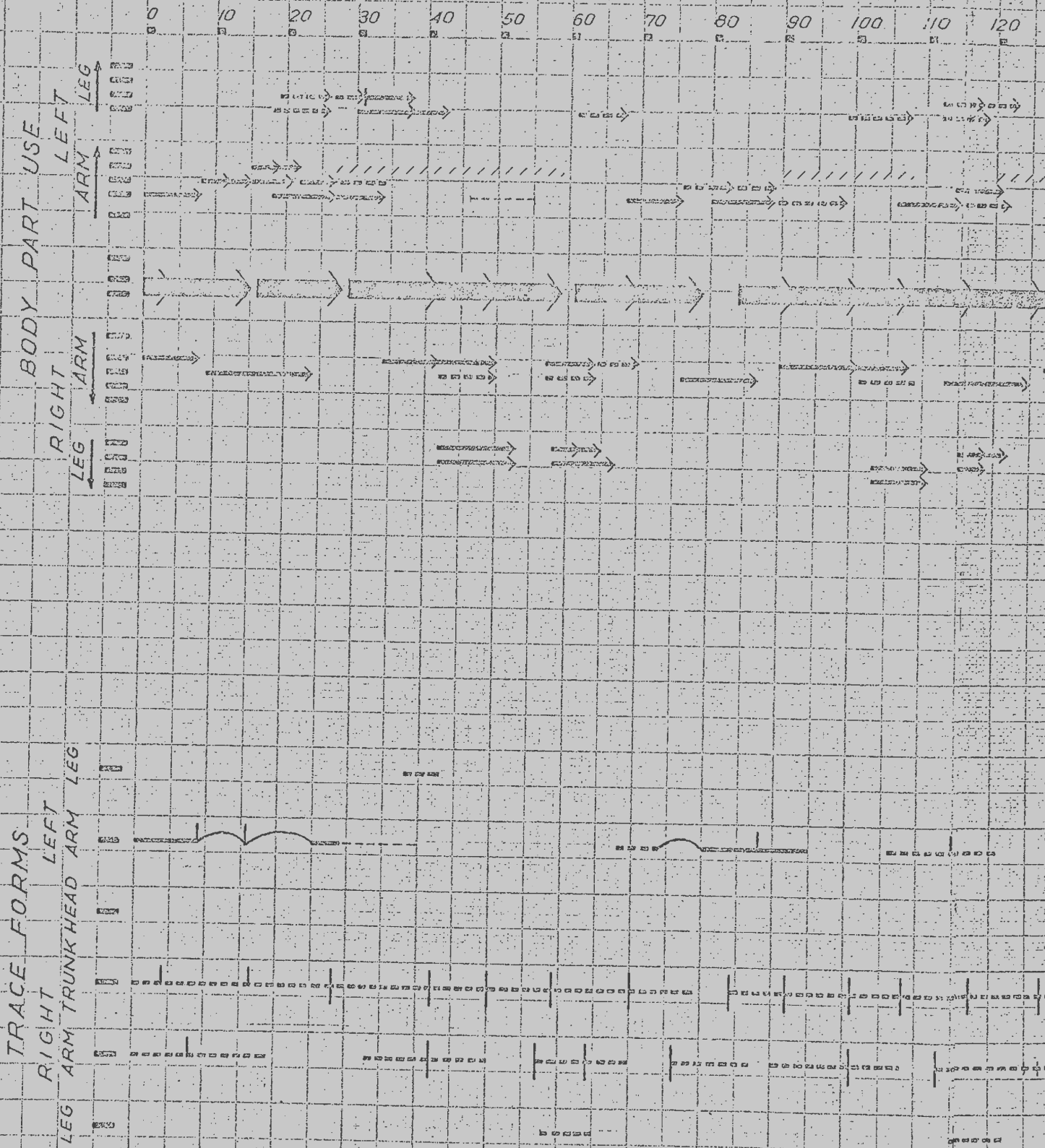
Atemp - Tsembaga clancluster 63-JAB-2: 9, 10  
 Tsbema garden FC #12 0 - 475 fr.  
 July 9, 1963 o - 550 fr. 0# 32

A woman works at the first stage of garden clearing - clearing away underbrush. She holds a bushknife in her right hand and chops at the bunches of grass she grasps in her left hand. She shakes the bunches of grass to rid them of earth and then throws them away to her left. She works most of the time bent at the hips and rocking back and forth with her whole body to aid the cutting and pulling out of the grass.

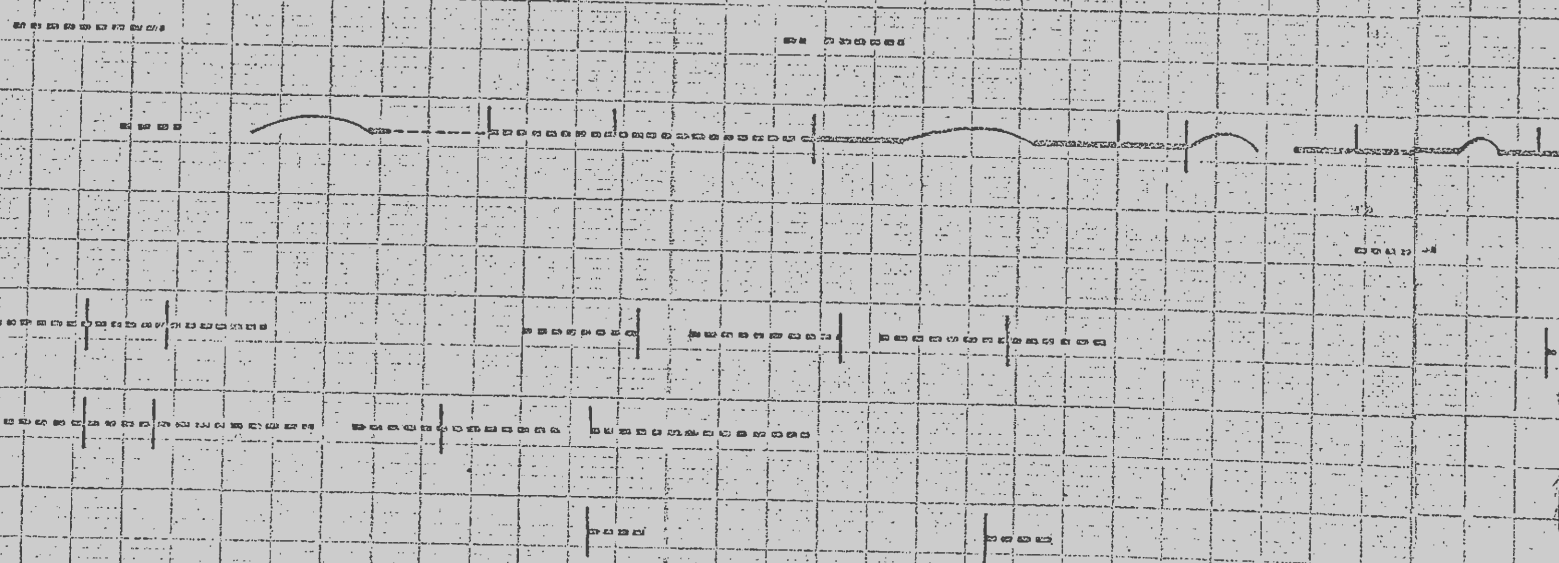
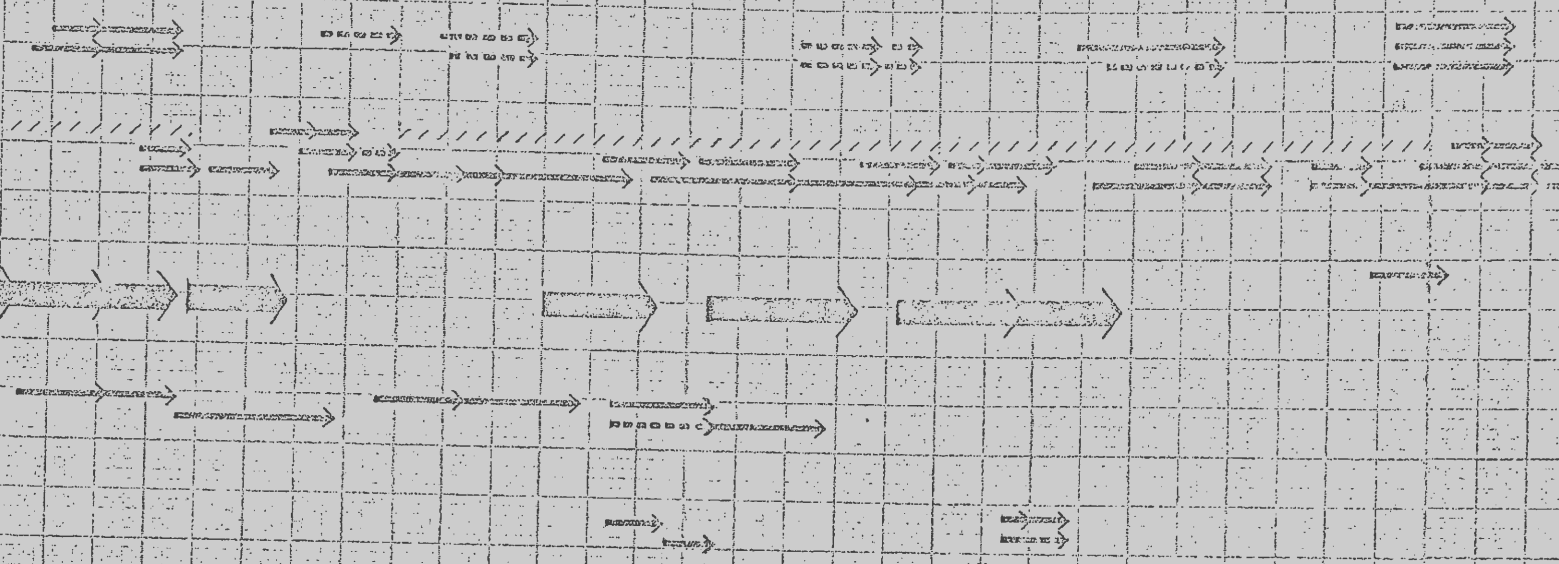
## Phrases of the activity:

Pull and throw away	0 - 33
Cut	34 - 50
Cut	51 - 63
Throw away	64 - 75
Grasp	76 - 88
Cut	89 - 108
Throw away	109 - 126
Cut and throw away	127 - 162
Cut and throw away	163 - 186
Reach and grasp	187 - 208
Throw away	209 - 232
Pick up once	233 - 247
Pick up again	248 - 263
Grasp and pick up bundle of grass	267 - 296
Shake grass once	296 - 312
Shake and drop	313 - 319
Brush scarf back over shoulder	320 - 344
Reach for grass	345 - 366
Cut grass and pull it back	367 - 392
Throw away	393 - 415
Grasp grass	424 - 435
Cut	436 - 455
cut	456 - 479
Stand and hold stump	480 - 486

# 12. WOMAN CLEARING GRASS

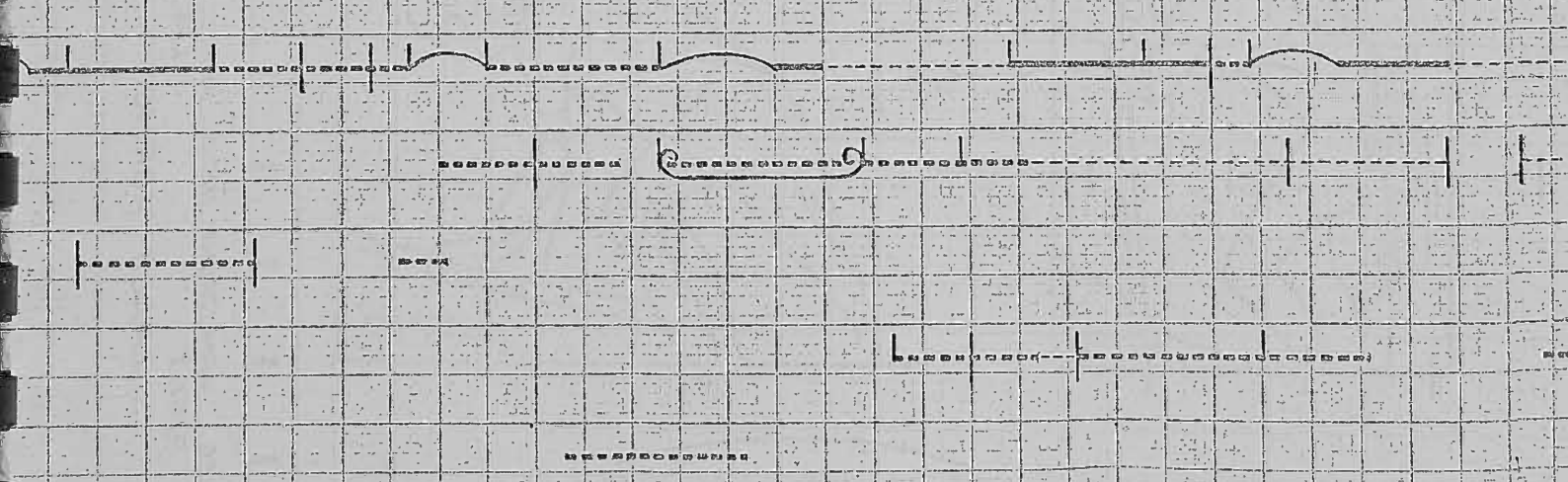
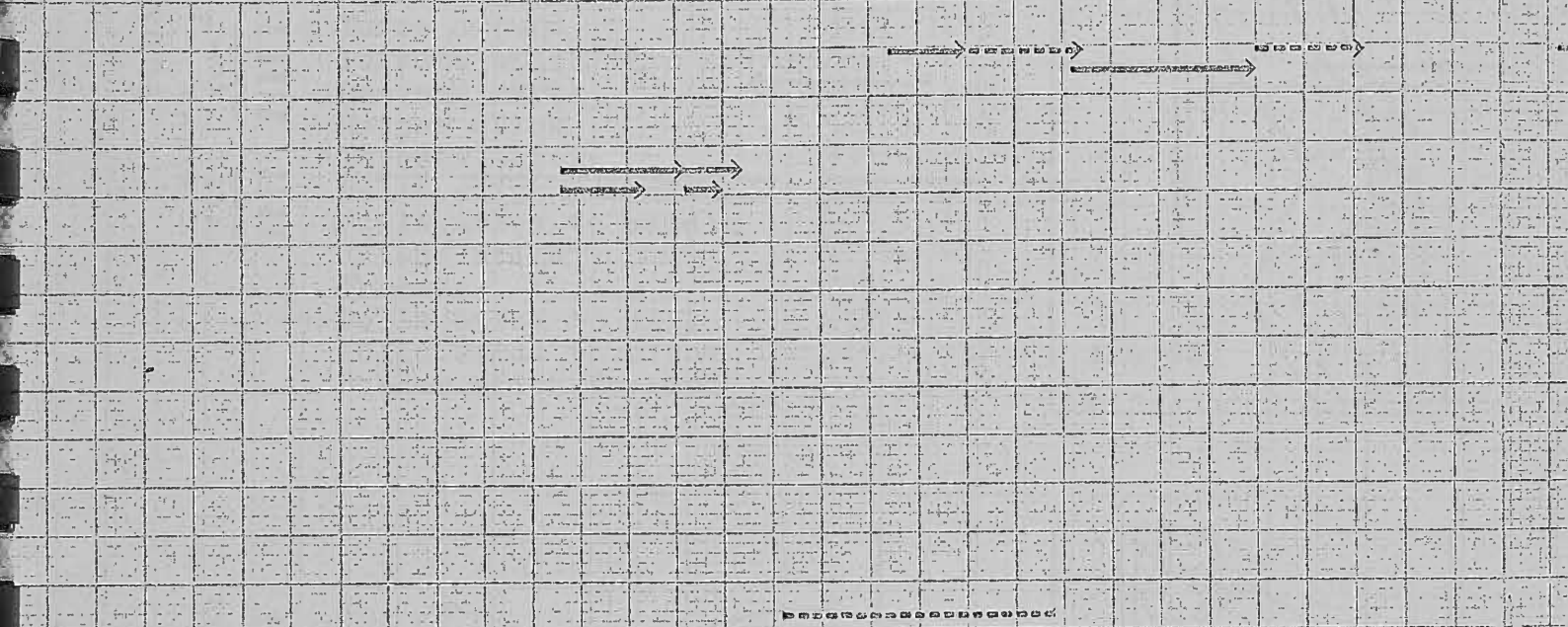
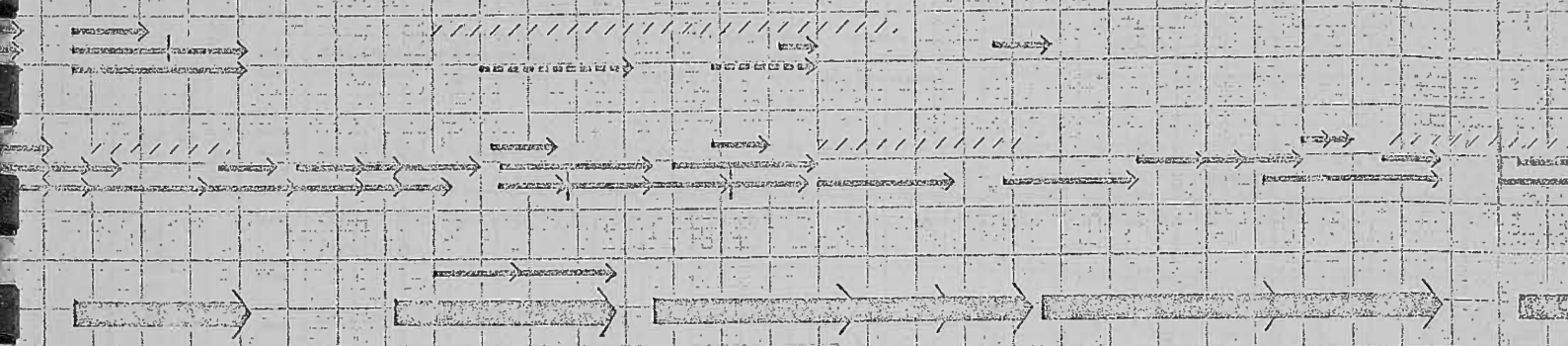


130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280

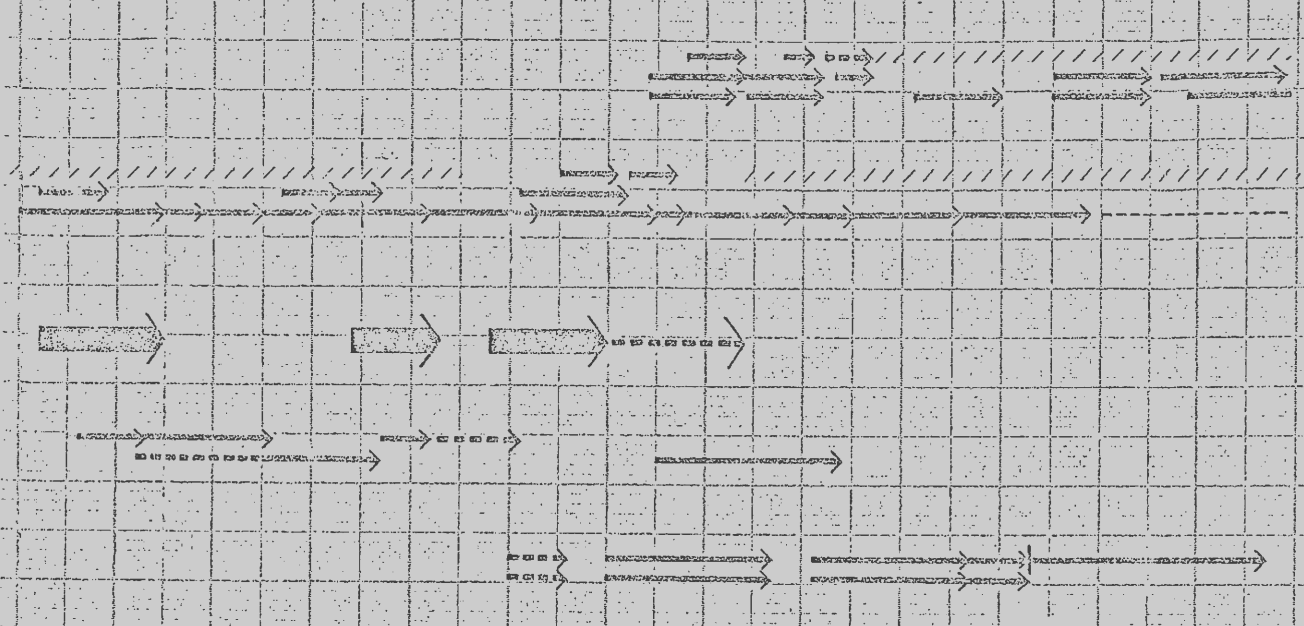




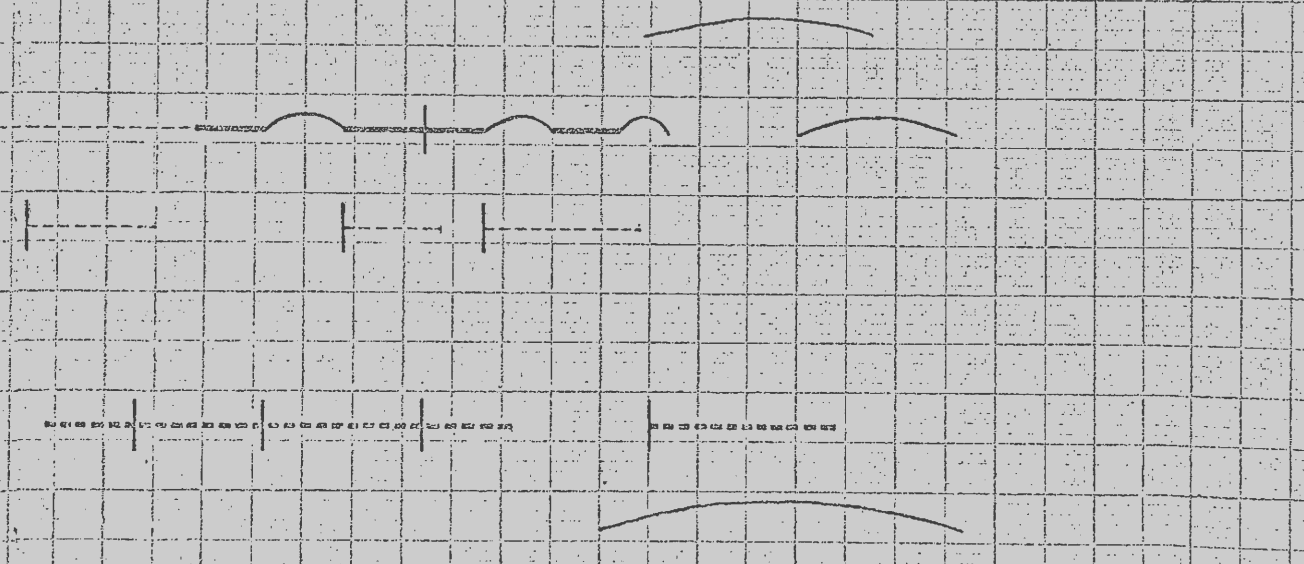
280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430



430 440 450 460 470 480 490 500 510 520 530 540 550 560



LEG LEFT  
ARM LEFT  
ARM RIGHT  
LEG RIGHT  
BODY PART USE



LEG LEFT  
ARM LEFT  
ARM TRUNK HEAD  
LEG RIGHT  
TRACE FORMS

## 13A. GIRL PLANTING TUBERS USING A PLANTING STICK

Kum - Fungai clan

63-JAB-18: 156

Andyngai garden

FC #13 240 - 800 fr.

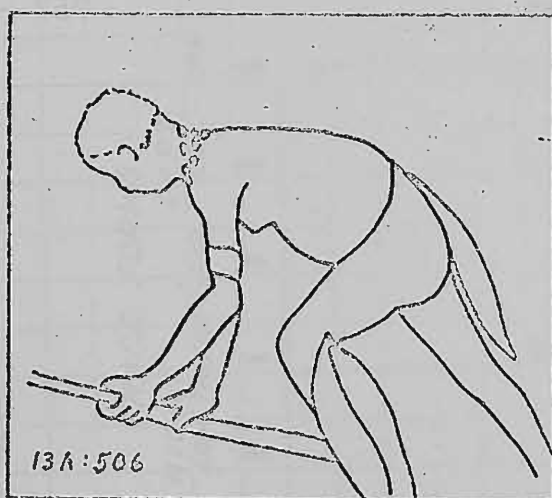
August 21, 1963

240 - 560 fr.; 0# 41

A girl makes holes in the earth of her garden plot and then picks up tubers from a pile in the center of the plot in preparation for planting them in the holes.

## Sub-divisions of activity:

Turns around	240	-	285
Thrusts stick into earth	286	-	290
Loosens earth	291	-	320
Raises stick	321	-	333
Thrusts stick	334	-	340
Pulls stick to left	341	-	392
Pulls stick to middle	393	-	416
Raises stick	417	-	428
Thrusts	429	-	436
Pulls stick to left	437	-	505
Pulls stick to right	506	-	537
Pushes stick forward	538	-	558



## 13b. GIRL REACHING INTO PILE FOR MORE TUBERS

Kum - Fungai clan	63-JAB-18: 156
Andyangai garden	FC #13 240 - 800 fr.
August 21, 1963	560 - 800 fr.; 0# 41B

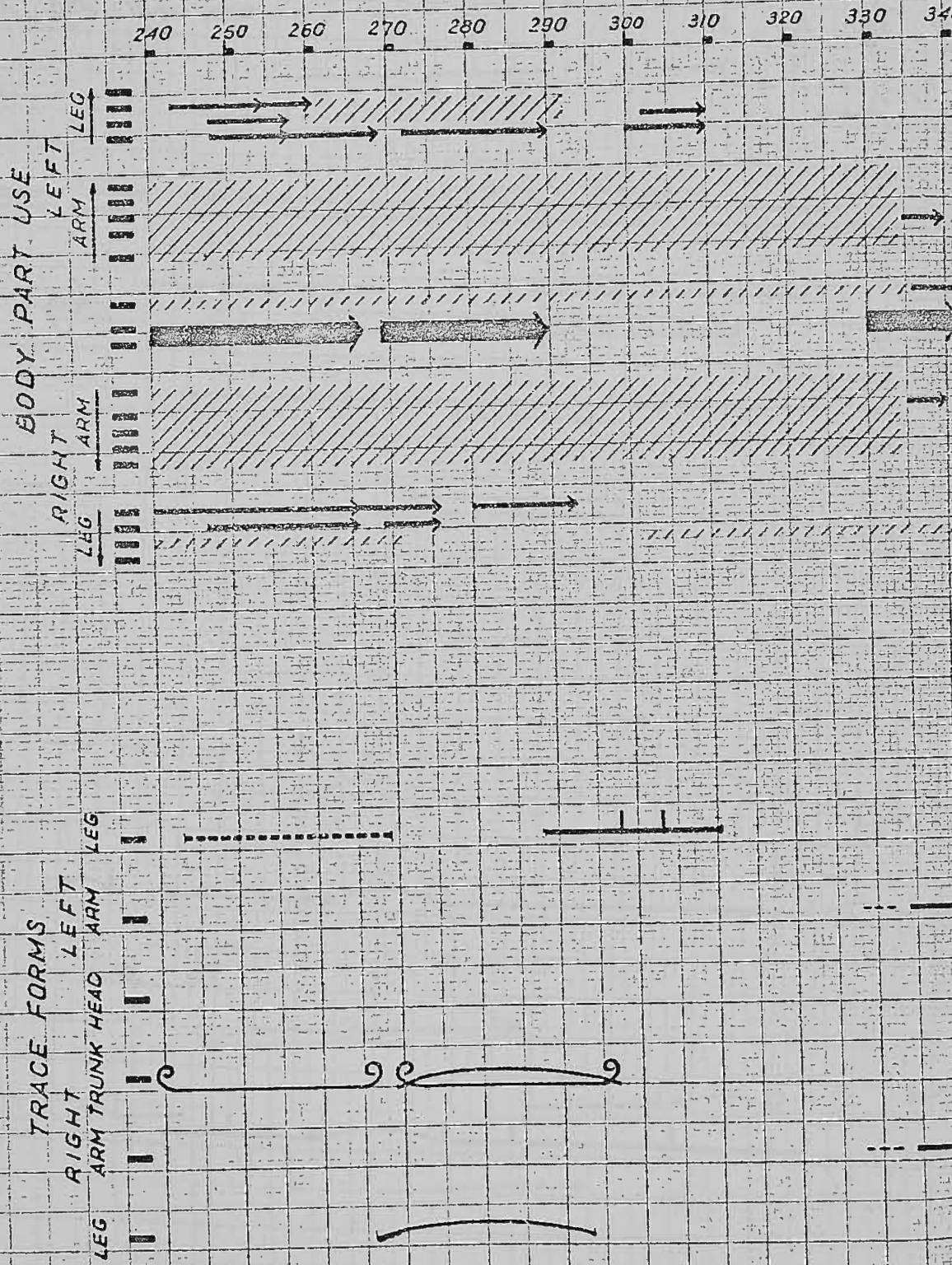
The girl turns away from the planting stick which is in the earth and reaches for tubers in the pile in the center of her garden plot. Having chosen tubers to plant, she turns back to the planting stick.

## Sub-divisions of the activity:

Turns left and takes two steps toward pile of tubers	560 - 601
Sorts through tubers with right hand	602 - 670
Sorts with both hands	671 - 698
Picks up tubers with right hand	699 - 718
Left hand holds tubers also as	719 - 728
She turns to right and takes two and a half steps toward digging stick	729 - 800
Meanwhile she lets go of tubers with right hand	757 - 800

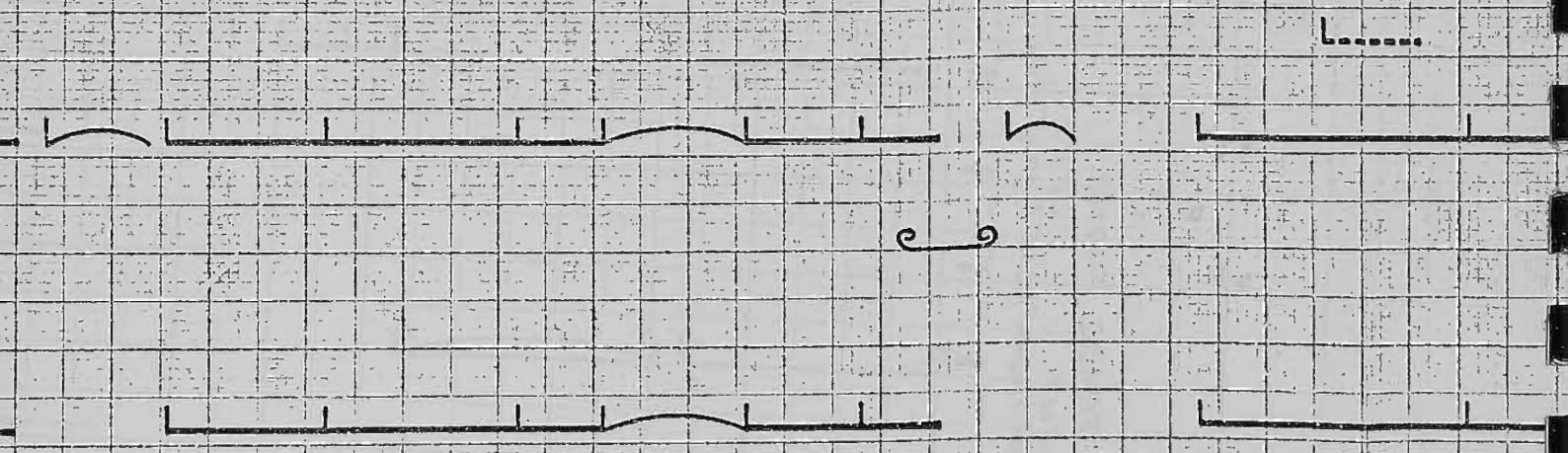
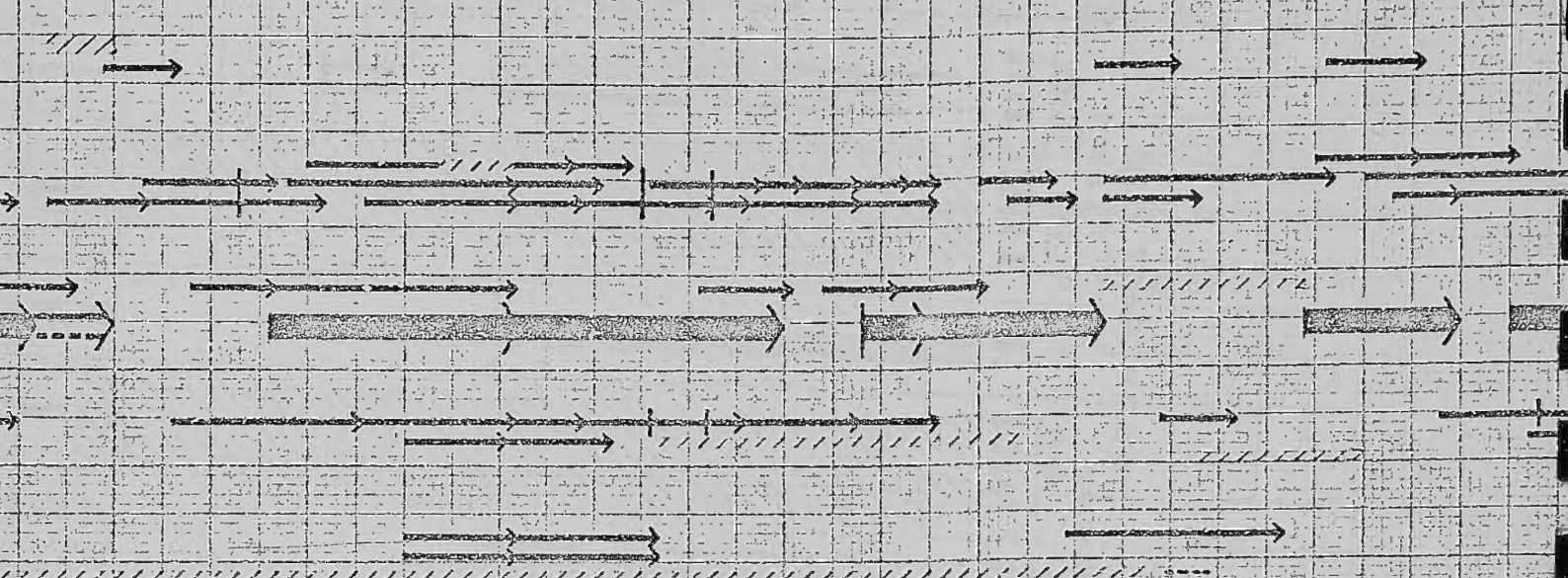


# 13. GIRL PLANTING TUBERS

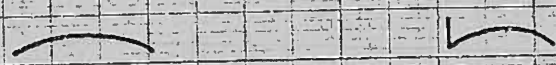
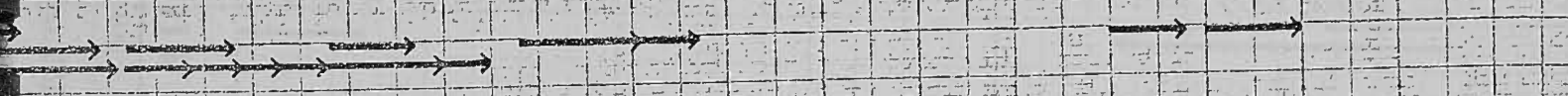




340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500

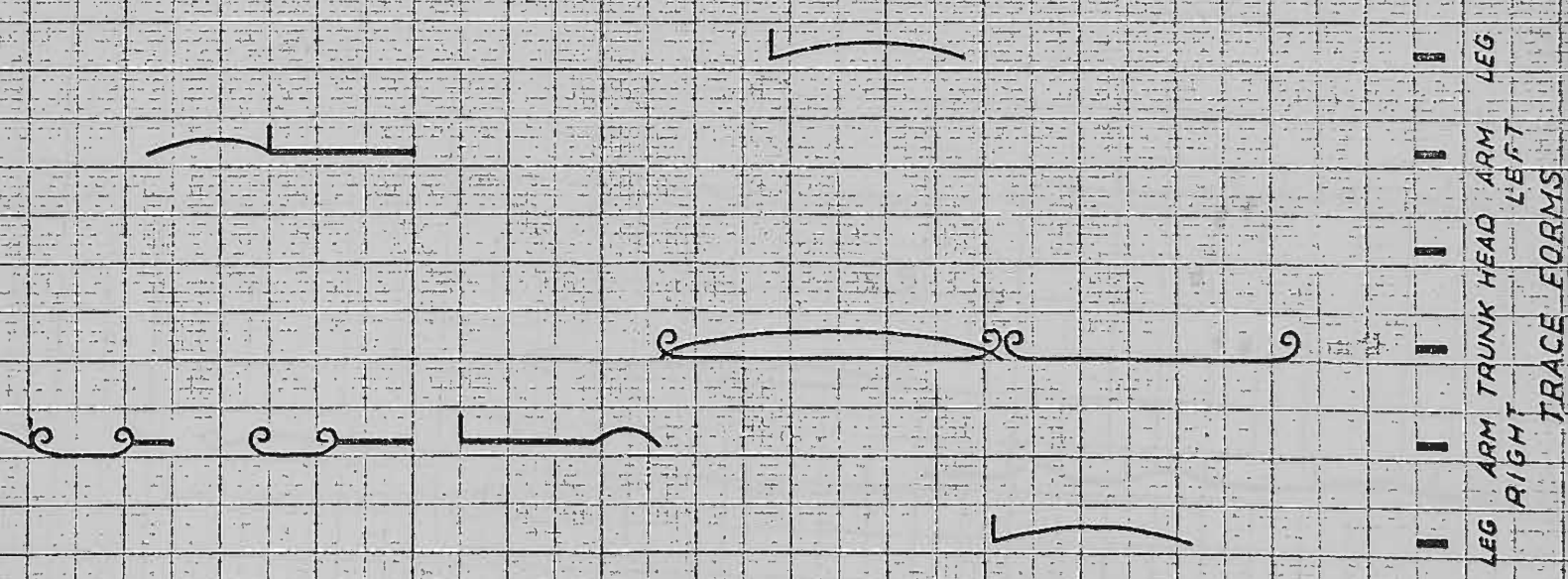
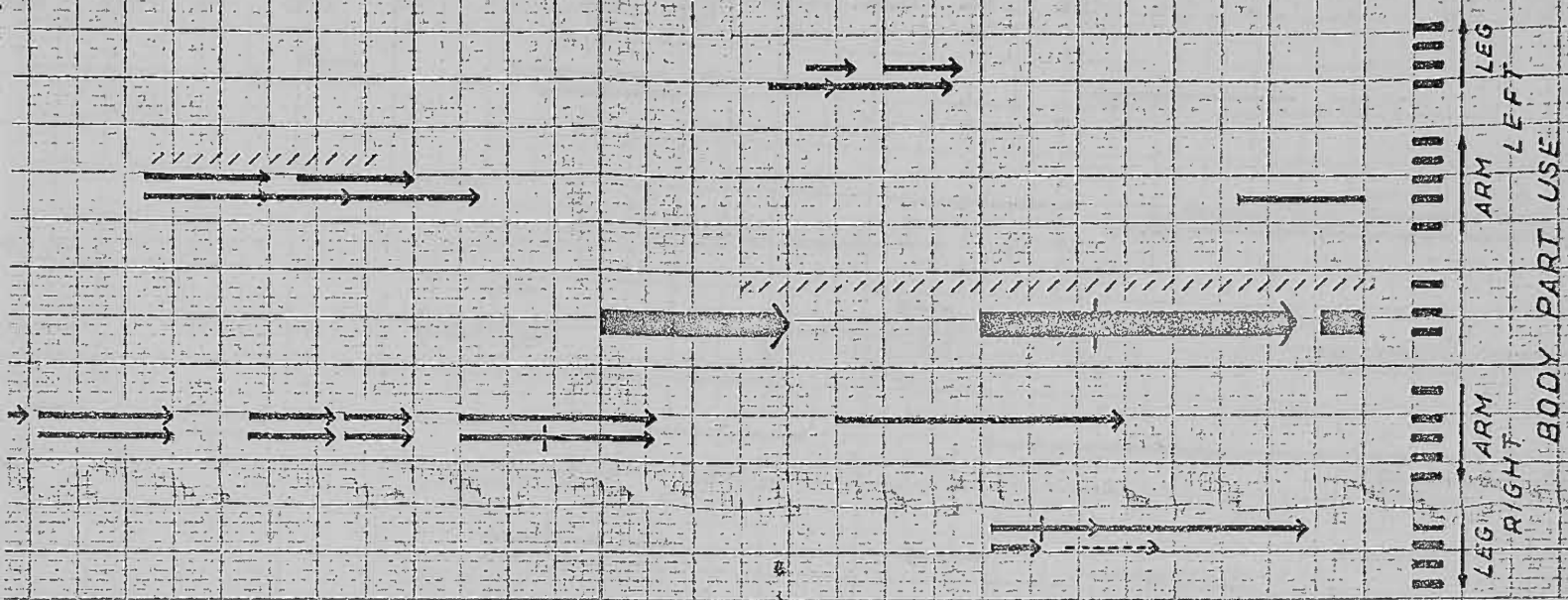


500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650





550 670 680 690 700 710 720 730 740 750 760 770 780 790 800



## 14A. WOMAN TAKING HOT STONES OUT OF A FIRE

Ke - Fungai clan

63-JAB-43A: 400

Kabi's yard - Tenegump

FC #14 0 - 470 fr.

November 25, 1963

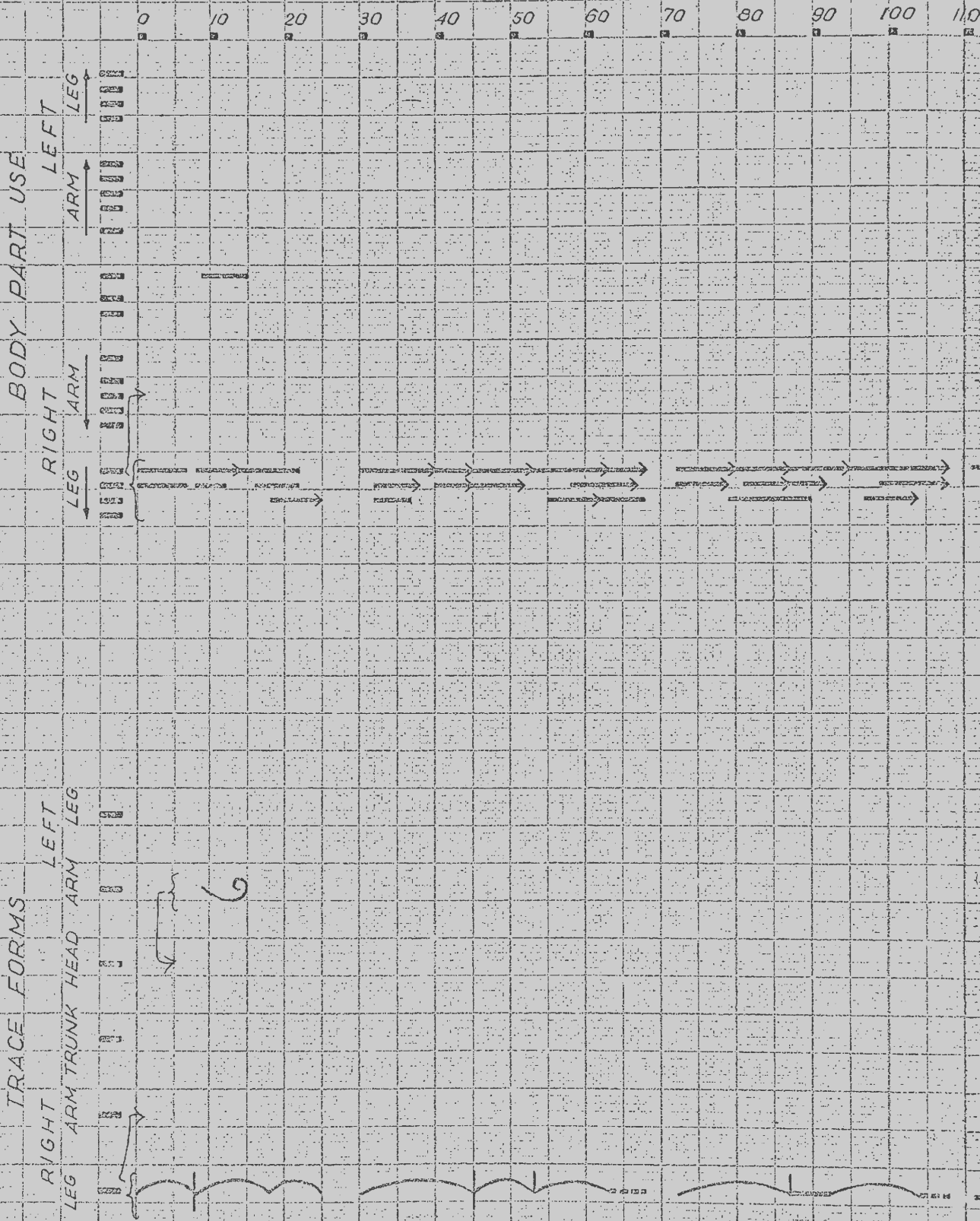
0 - 200 fr.; 0# 7A

A woman holds a pair of wooden tongs in her right hand, and, leaning over the fire on which stones are being heated with which to prepare an earth oven, she picks up stones, one at a time, in the tongs and throws them toward the earth oven. Her left arm is immobile, helping to support her leaning body on her left thigh.

Comments: Moving hot stones is an almost daily cooking task for women. Usually, the whole job is performed by one woman alone, rather than by two women in sequence (see 15).

A surprising amount of curved path is created in this activity.

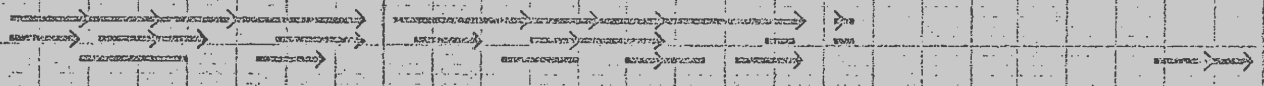
# 14A. WOMAN TAKING HOT STONES OUT WITH WOODEN TONGS





# STONES OUT OF A FIRE INGS

70 80 90 100 110 120 130 140 150 160 170 180 190 200



## 14B. WOMAN PICKING UP A HOT STONE WITH WOODEN TONGS

Ke - Fungai clan

63-JAB-43A: 400

Kabi's yard - Tenegump

FC #14 0 - 470 fr.

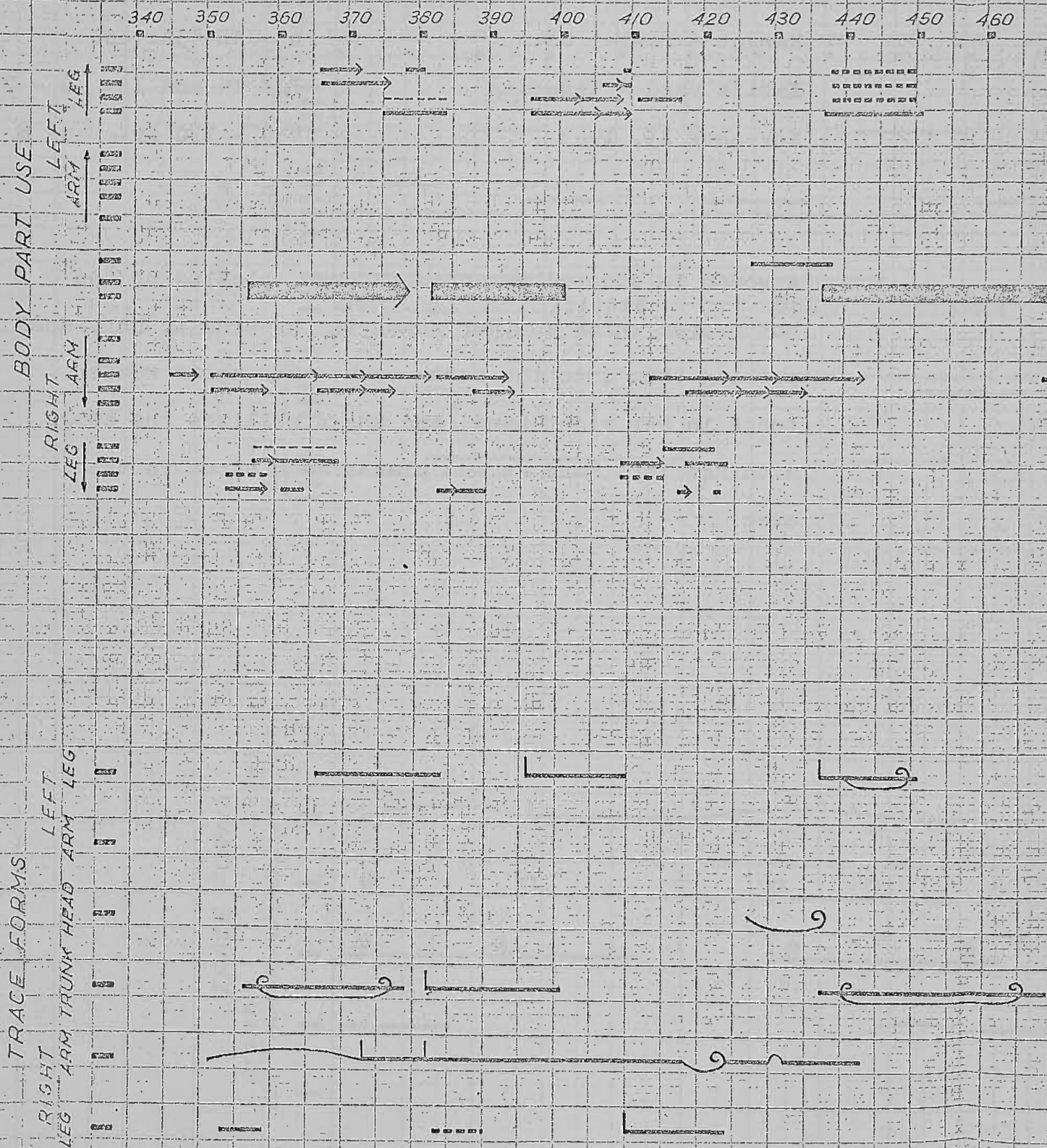
November 25, 1963

340 - 470 fr.; 0# 7B

One of the stones which the woman has thrown (see 14A) has fallen short. She steps toward it, picks it up in the wooden tongs, and throws it towards the earth oven.

Comments: The woman turns and steps toward the stone, reaching toward it at 390, but misjudging the distance, so she must take an additional two steps forward.

# 14 B WOMAN PICKING UP A HOT STONE WITH WOODEN TONGS



## 15. WOMAN PUTTING HOT STONES INTO AN EARTH OVEN

Kanant - Fungai Clan

63-JAB-43A: 400

Kabi's yard - Tenegump

FC# 14 and 15; 0 - 750 fr.

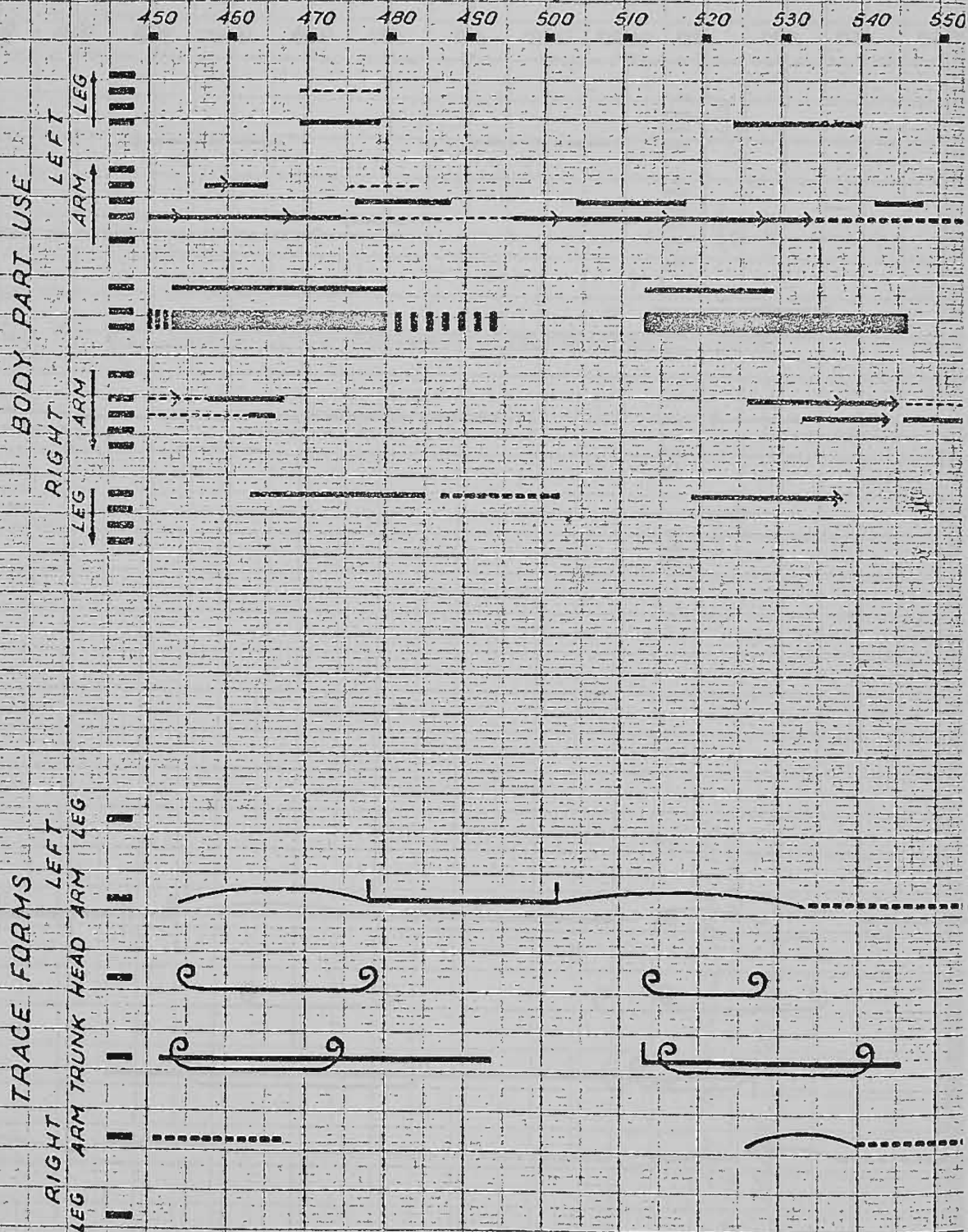
November 25, 1963

450 - 730 fr. 0# 8

A woman is stooped by an earth oven, picking up the hot stones which another woman is throwing to her, and putting them into the earth oven. She holds wooden tongs in her right hand, and she stabilizes the tongs with her left hand as she places each stone in the oven.

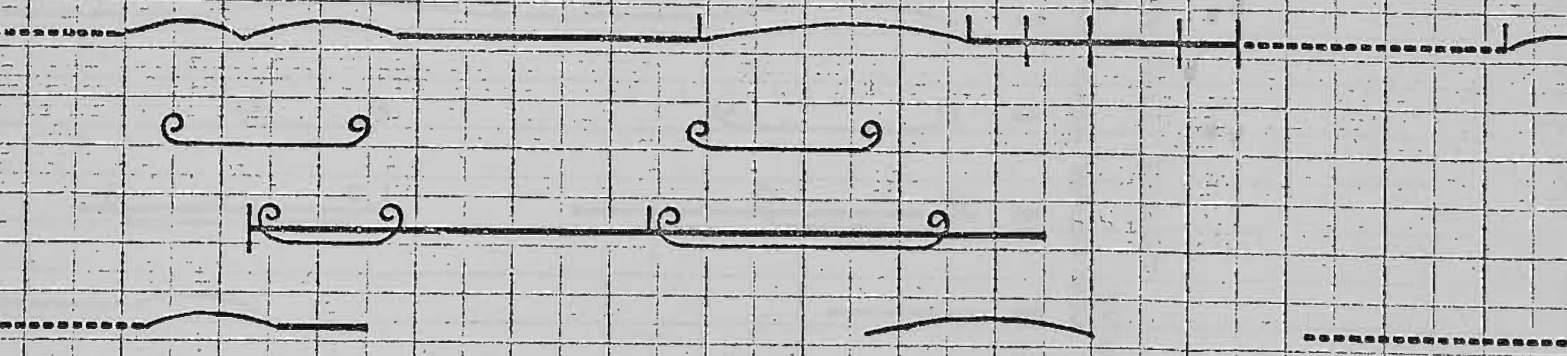
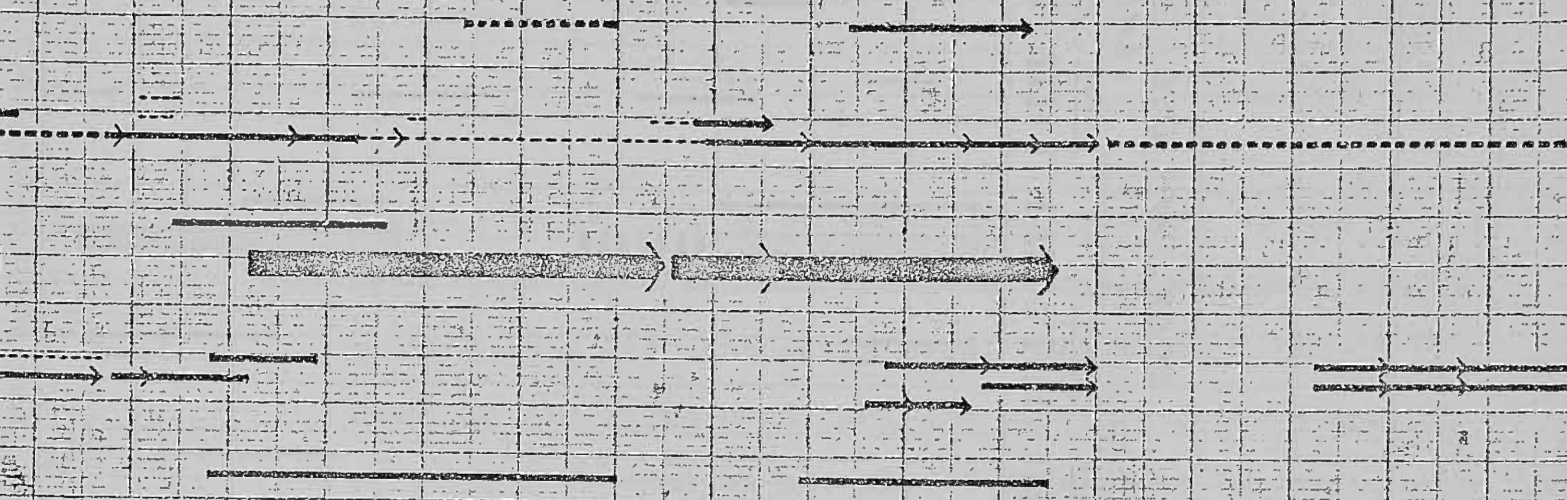


# 15. WOMAN PUTTING HOT STONES IN



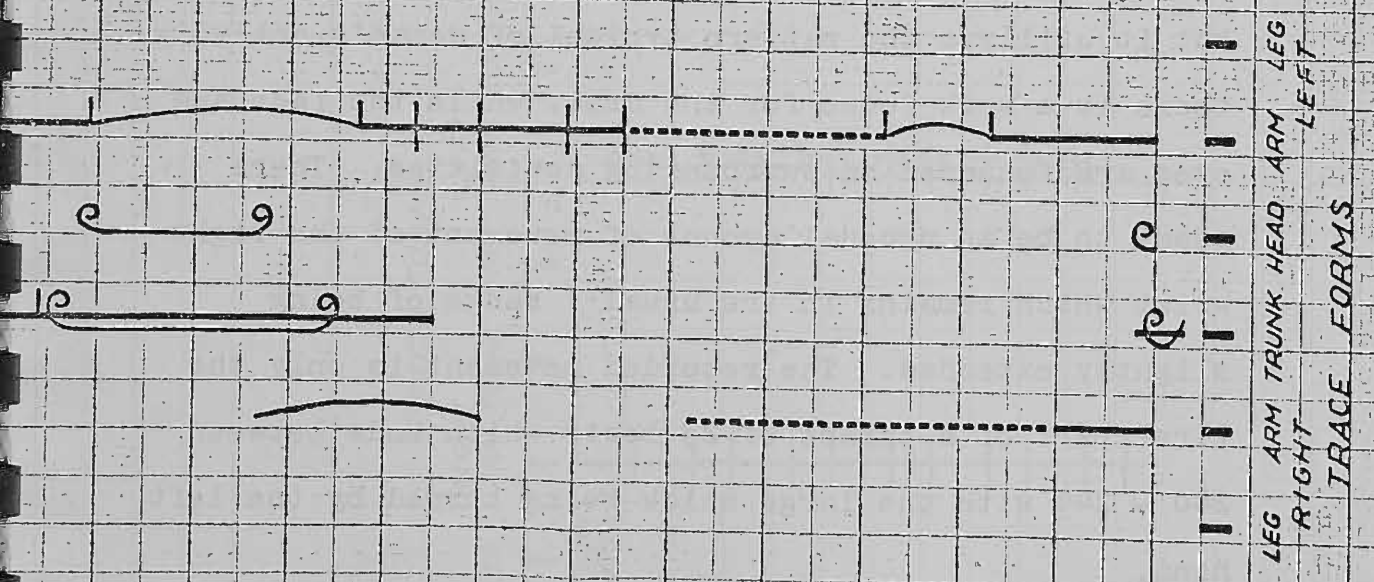
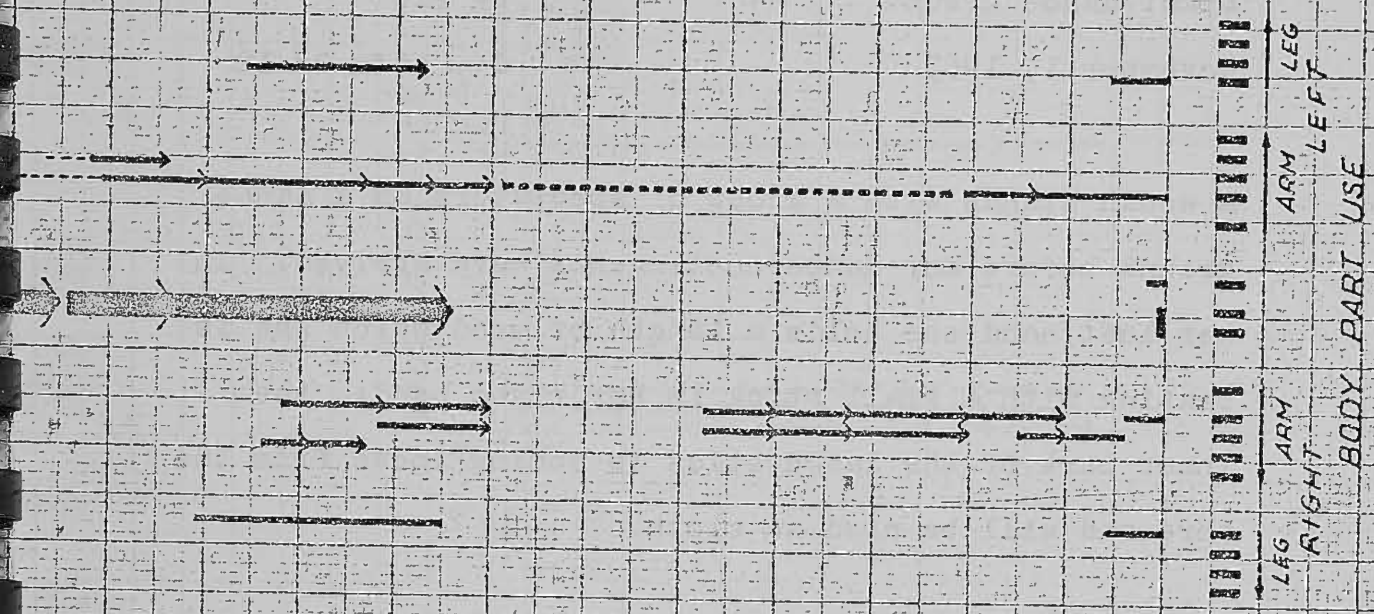
# INTO AN EARTH OVEN

550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700





0 620 630 640 650 660 670 680 690 700 710 720 730



16. WOMAN BEATING A STICK TO MAKE BARKCLOTH

Atemp - Tsembaga clan cluster	63-JAB-31: 279
Dikai dance ground	FC #16
November 1, 1963	0 - 56fr. 0# 12

A woman stands with a group of spectators on a dance ground before any dance contingents have arrived. In her left hand she holds a length of wood which she is beating with a small stick in her right hand: the inner bark of the large stick is coming loose from the core and will be used as cloth.

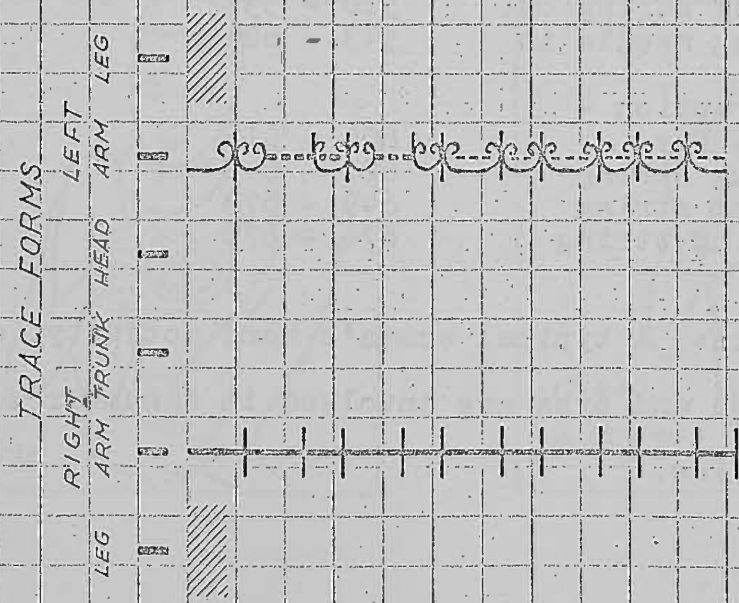
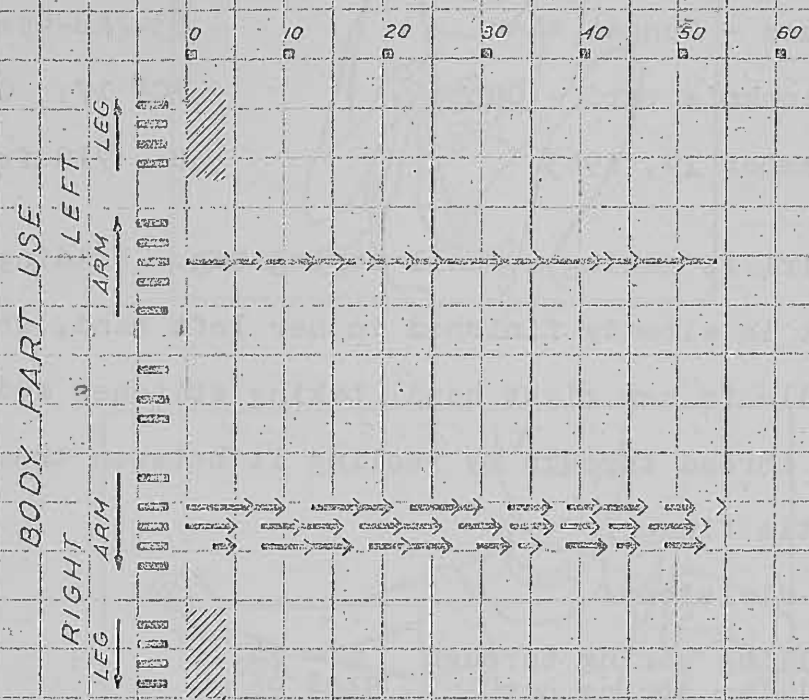
Sub-divisions:

Beats (indicated when the two sticks are in contact):

3 - 5; 13 - 15; 23 - 25; 34 - 35; 44 - 45; 54 - 55.

Comments: Beating barkcloth was seen only this once, but it utilizes the pattern typical of woman's activity: there is a work focus for the arms, while the face and eyes are focussed on surrounding activities. There seems to be an unusual amount of movement of the right wrist which remains in the usual range of being slightly extended. The recorded movement is only the first part of a phrase of 23 beats which ends between 240 - 244 with the large stick being turned by the left hand.

# 16. WOMAN BEATING A STICK TO MAKE BARKCLOTH





## 17. GIRL MAKING A STRING BAG

Tukume - Fungai clan	63-JAB-49: 468-471
Jablonko's yard - Gunts	FC# 17; 0 - 717 fr.
December 14, 1963	0 - 710 fr. 0# 22

A girl is making a small string bag. Holding the part that is already finished in her left hand, she holds the needle in her right hand, taking stitches and pulling the thread through by reeling it between thumb and little finger.

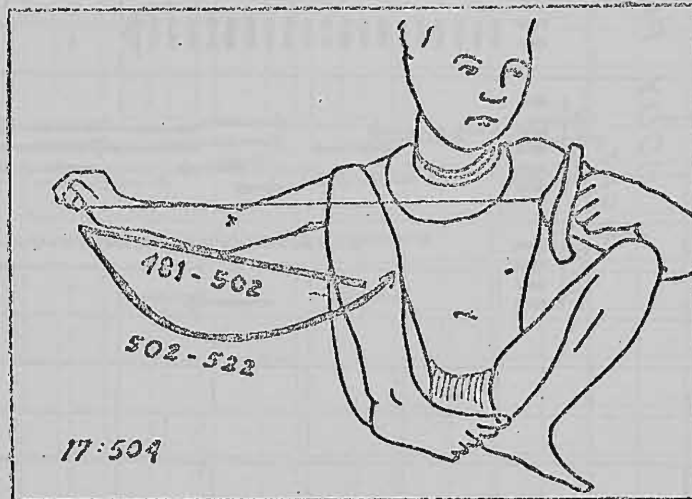
## Sub-divisions:

Pulling string through	4 - 74
Pulling string out	81 - 96
Pulling string through	107 - 213
Pulling string out	221 - 236
Putting needle in	255 - 306
Pulling string	307 - 320
Reeling string	320 - 340
Dropping string	340 - 343
Pulling string through	361 - 477
Straightening string	478 - 506
Pulling string out	520 - 537
Putting needle in	543 - 604
Interruption - swat fly	604 - 617
Pulling string	627 - 648
Reeling string	649 - 673
Dropping string	674 - 678

Comments: A typical woman's hand activity, done while the face and eyes are involved in a number of surrounding activities.



17-375



17-509



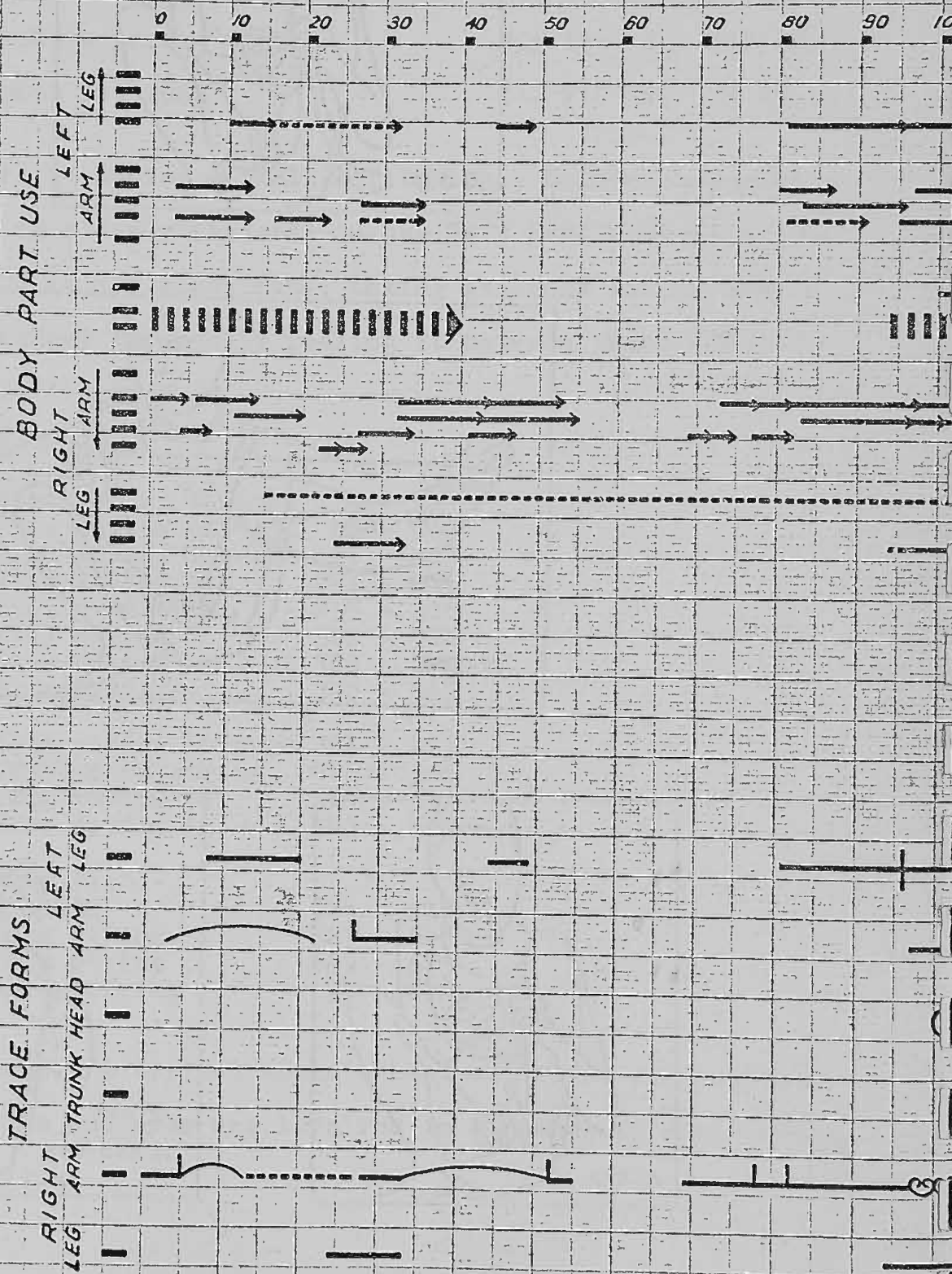
17-573



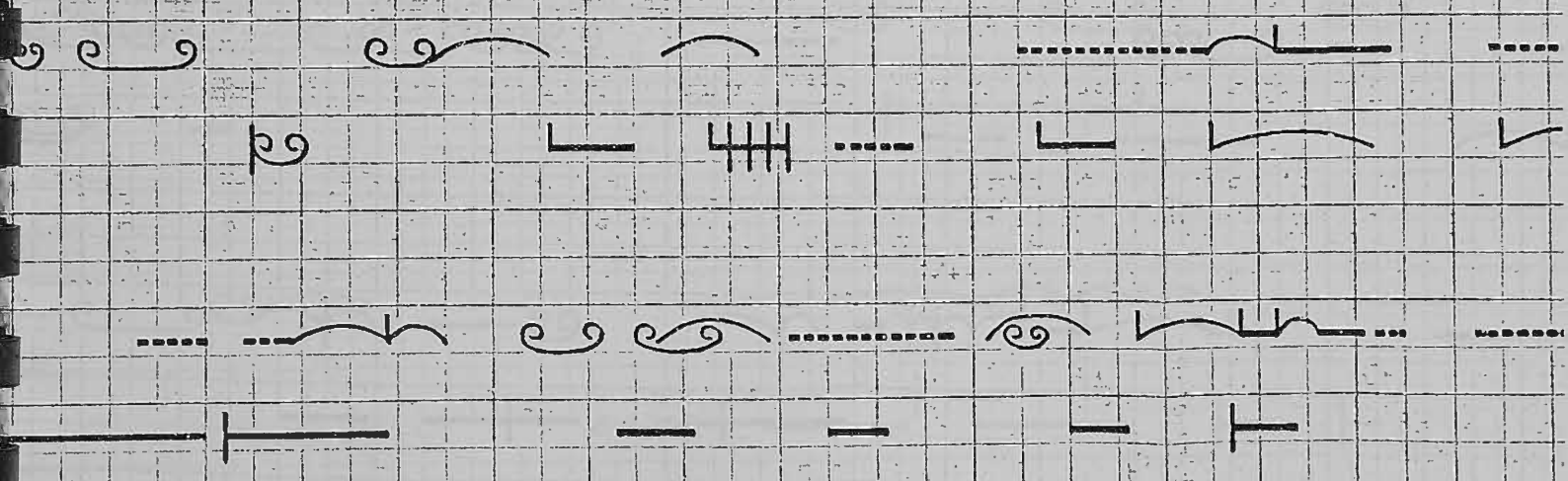
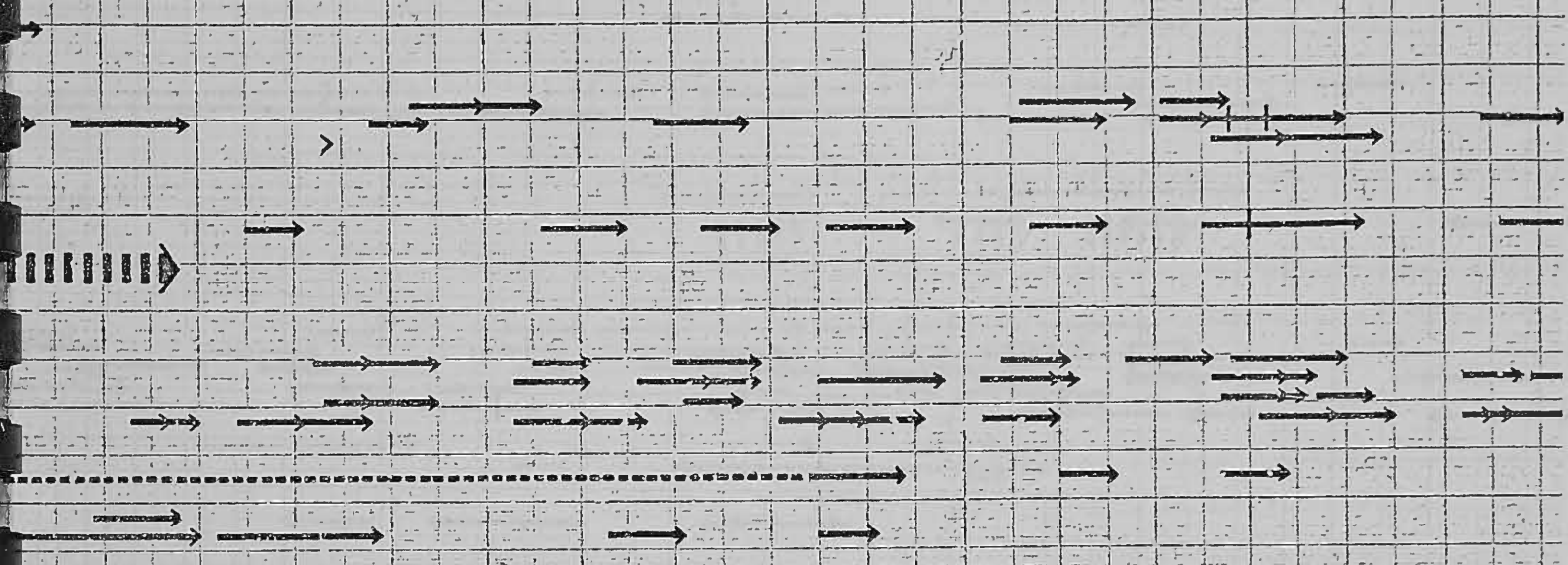
17-650

↔ 650-659

# 17. GIRL MAKING A STRING BAG

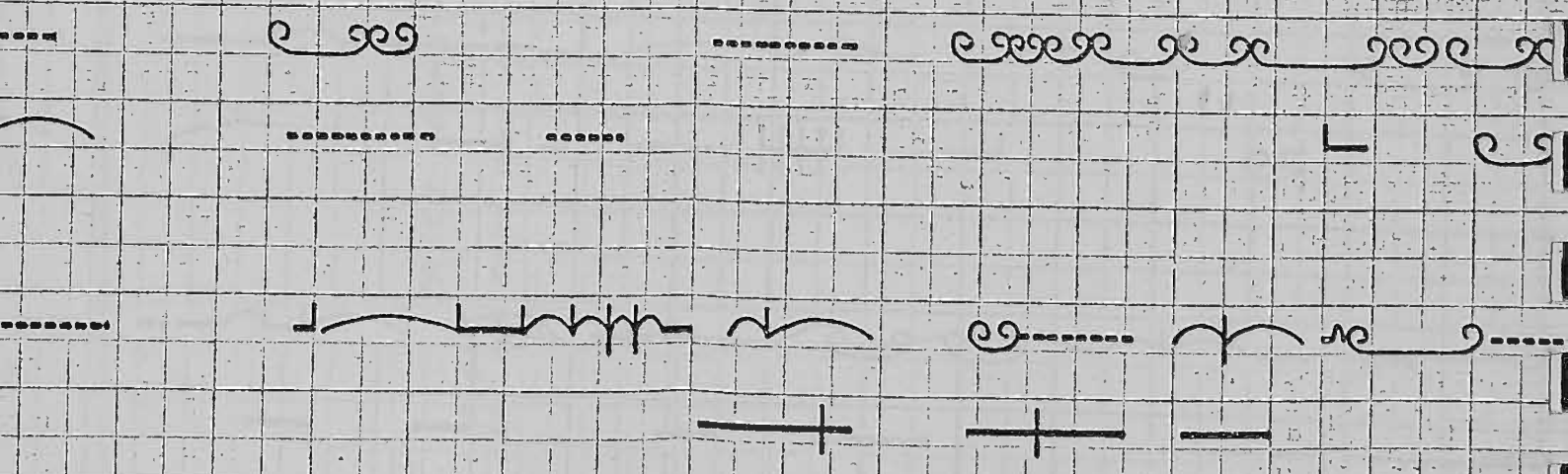
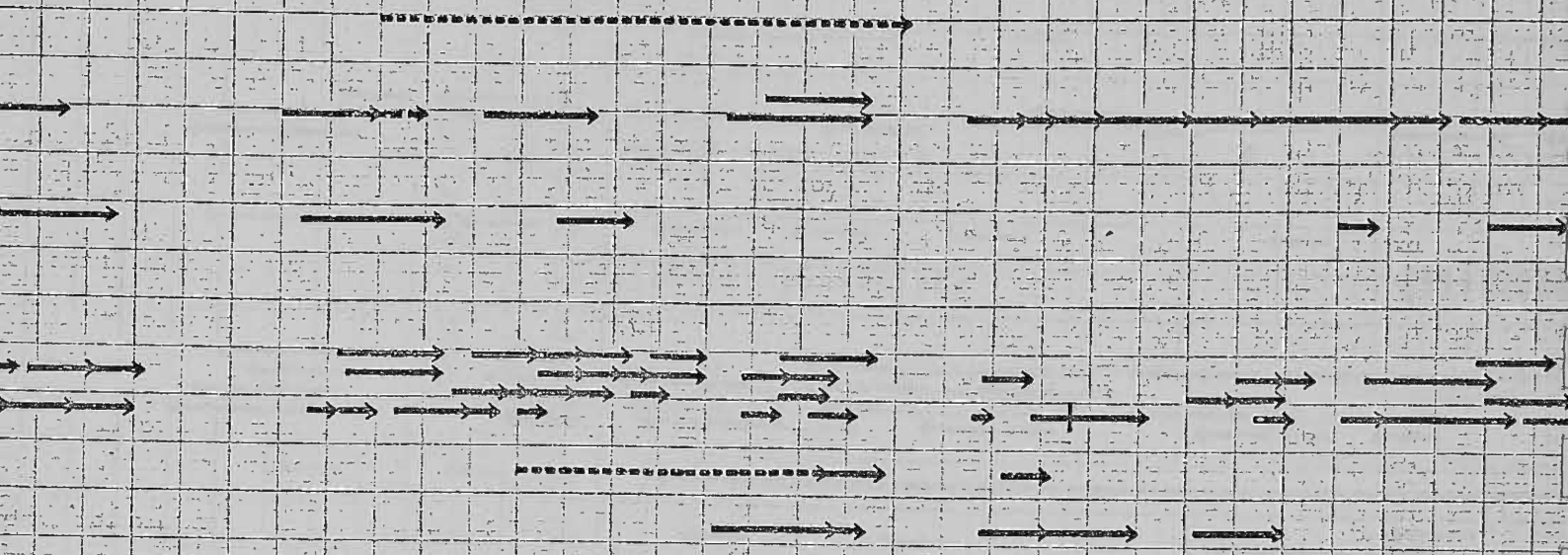


120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270

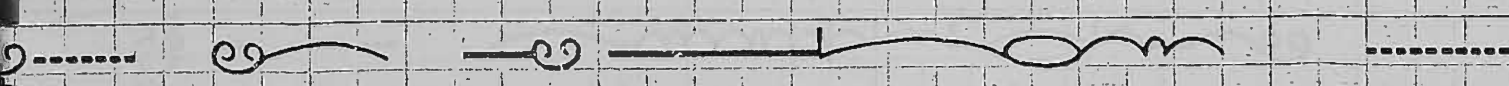
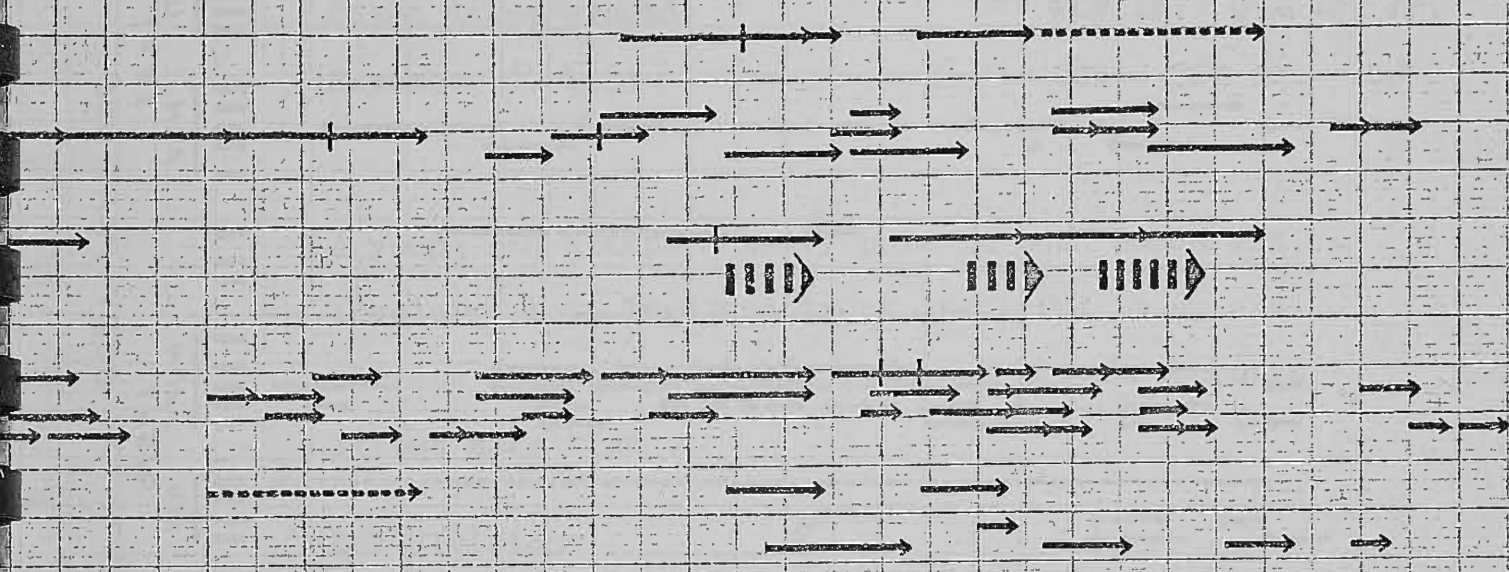




270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420



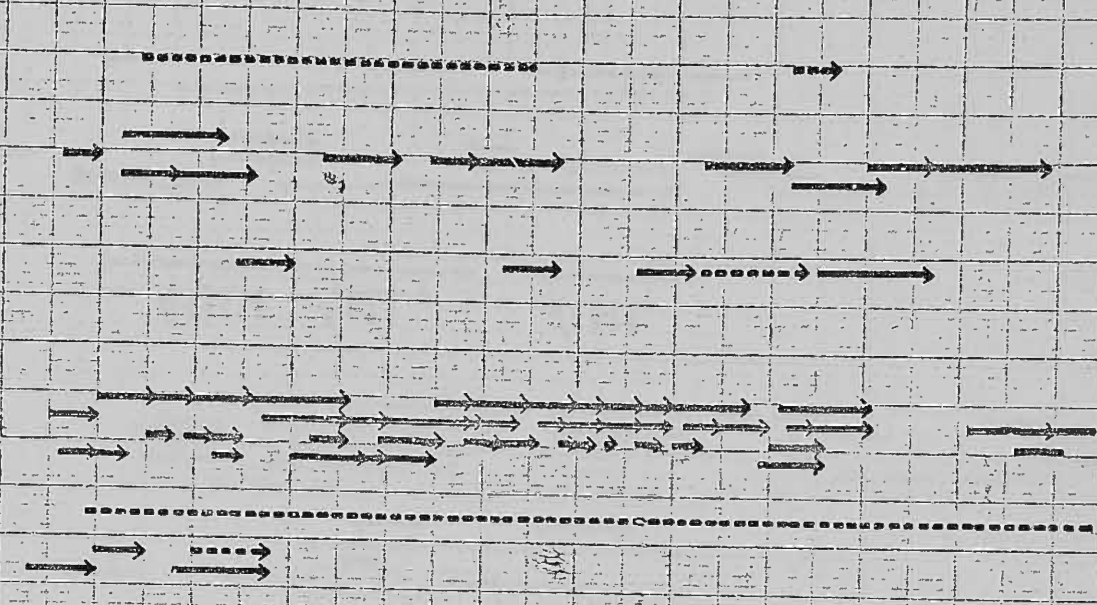
20 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580



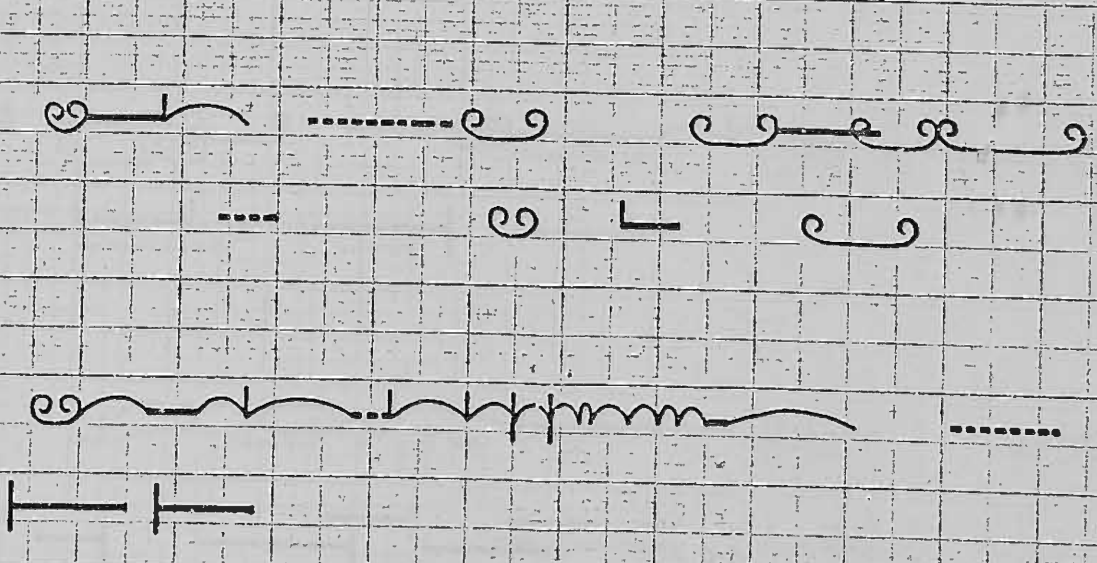
HIP  
BIG TOE



580 590 600 610 620 630 640 650 660 670 680 690 700 710



LEG LEFT  
ARM LEFT  
ARM RIGHT  
LEG RIGHT  
BODY PART USE



LEG RIGHT  
ARM TRUNK HEAD  
ARM LEG LEFT  
TRACE FORMS

## 18. YOUNG MAN THRUSTING A HEAVY STAKE INTO THE EARTH

Pambo - Tsembaga clan cluster	63-JAB-35A: 311
Dikai dance ground	FC# 18; 0 - 422 fr.
November 9, 1963	200 - 327 fr. 0# 10

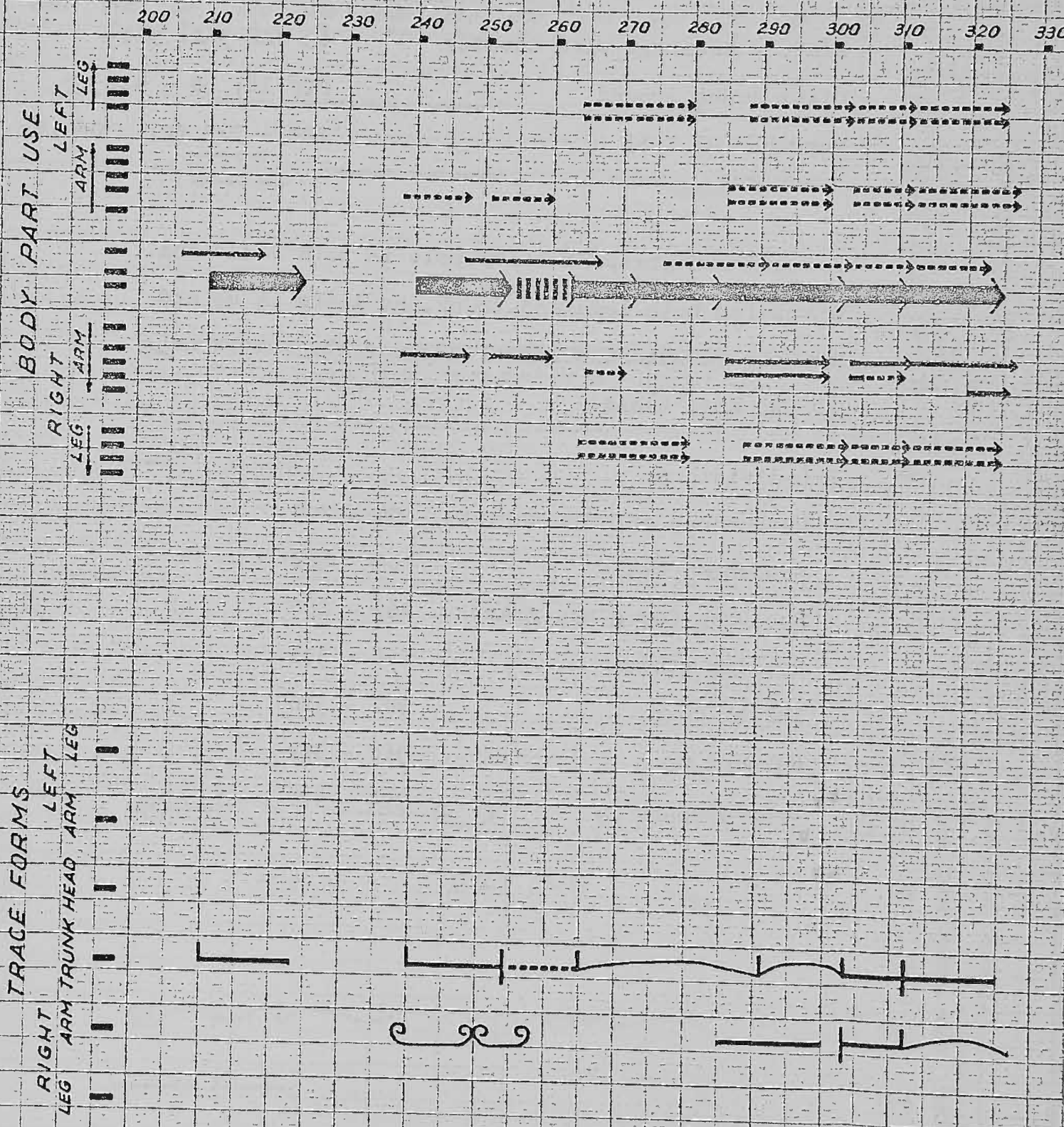
A young man grasps a heavy pole in both hands and, involving both legs and trunk, he lifts it up and thrusts it onto the earth, loosens it, and thrusts it two more times.

## Sub-divisions:

Rebound up after a thrust	194 - 209
Loosening stake	209 - 262
Stooping for a new grasp	262 - 280
Raising stake	280 - 301
Thrust down	301 - 310
Rebound up	310 - 324
Loosening	324 - 422



# 18. YOUNG MAN THRUSTING A HEAVY STAKE INTO THE EARTH



## 19. YOUNG MAN CHOPPING A TREE

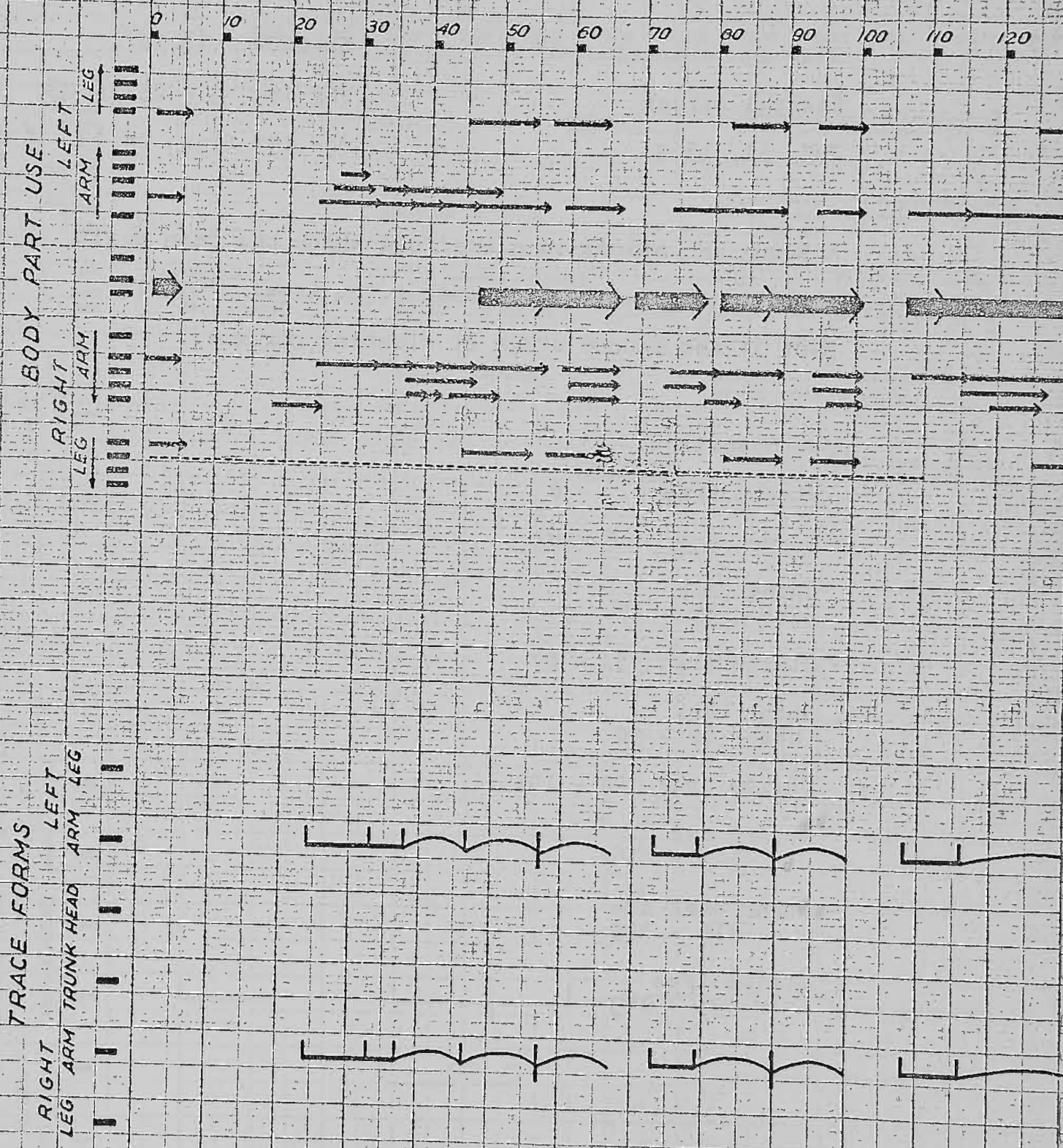
Tsembaga clan cluster	63-JAB-2: 15,16
Kakapai garden	FC# 19 0 - 251 fr.
July 11, 1963	0 - 143 fr. 0# 33

A young man stands on a scaffold which has been built against a tree, and he chops at the tree. This is part of the second stage of clearing gardens.

## Sub-divisions:

Strike tree	- 6
Loosen axe	6 - 42
Swing back axe	42 - 57
Strike tree	57 - 67
Swing back axe	67 - 90
Strike tree	90 - 101
Loosen axe	101 - 116
Swing back axe	116 - 135
Strike tree	135 - 143

# 19. YOUNG MAN CHOPPING A TREE

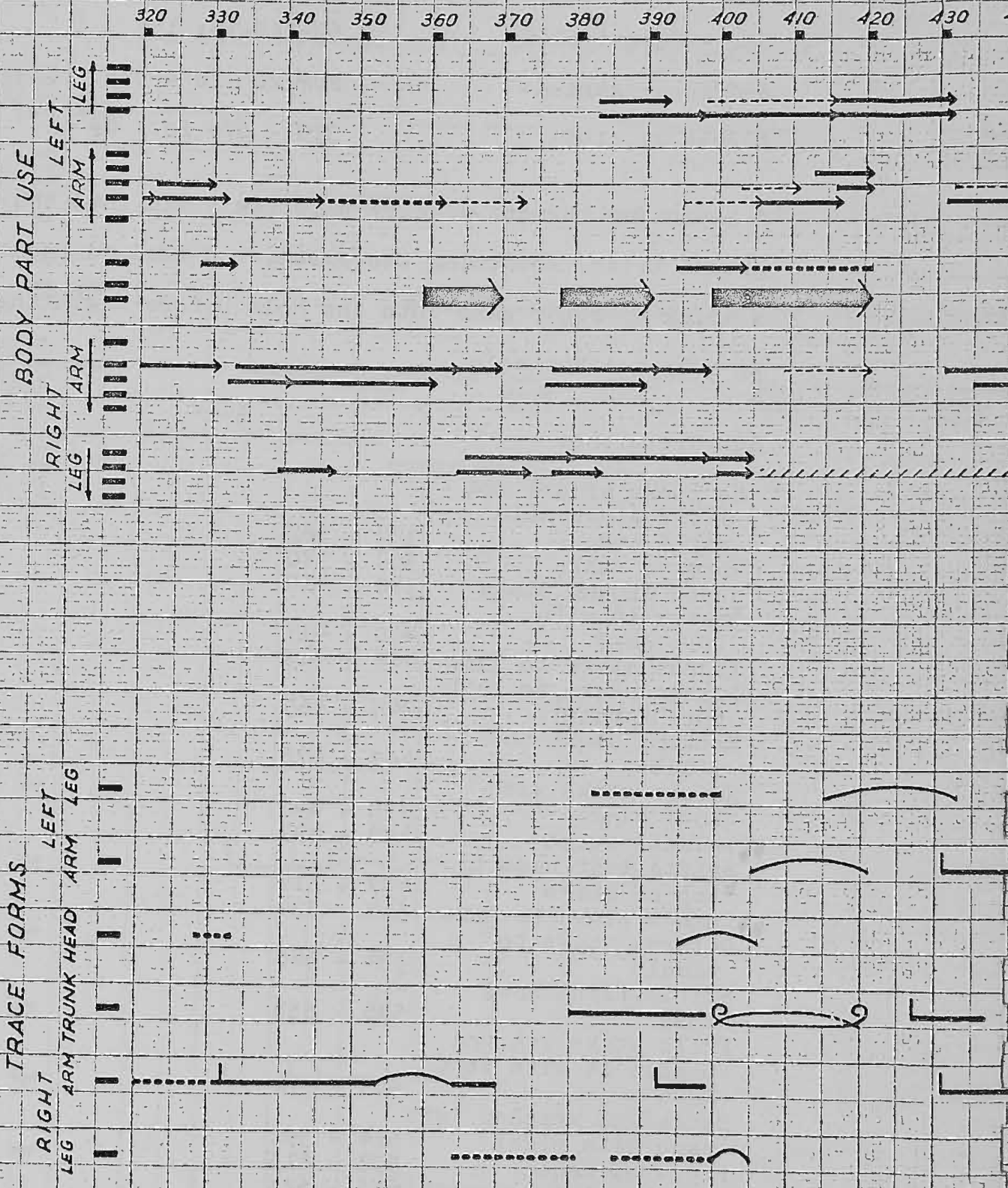




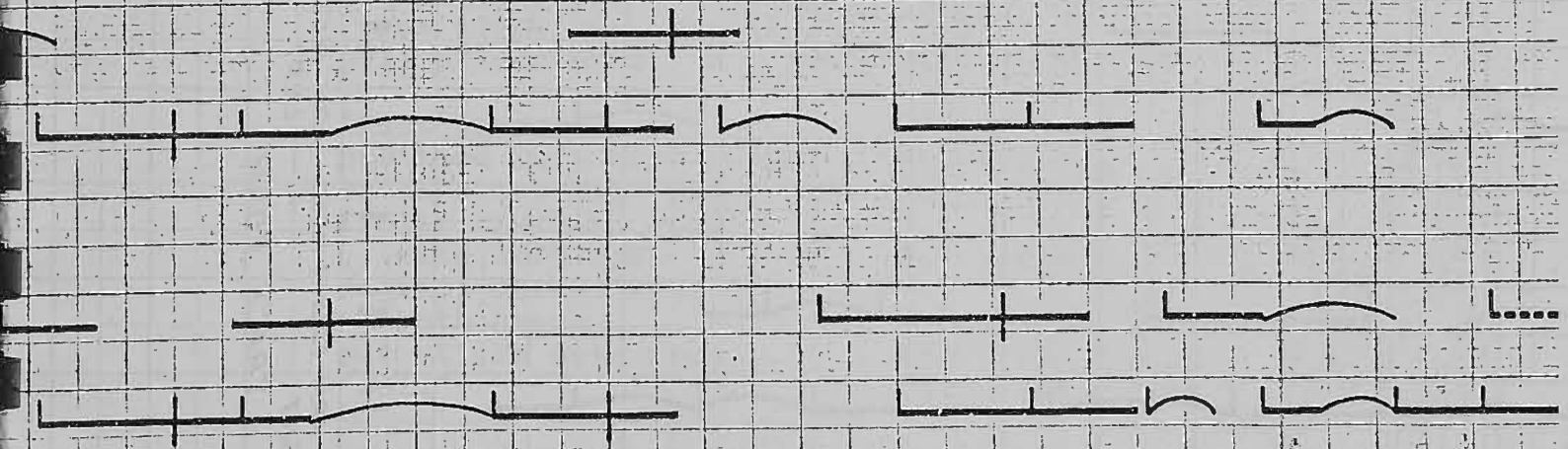
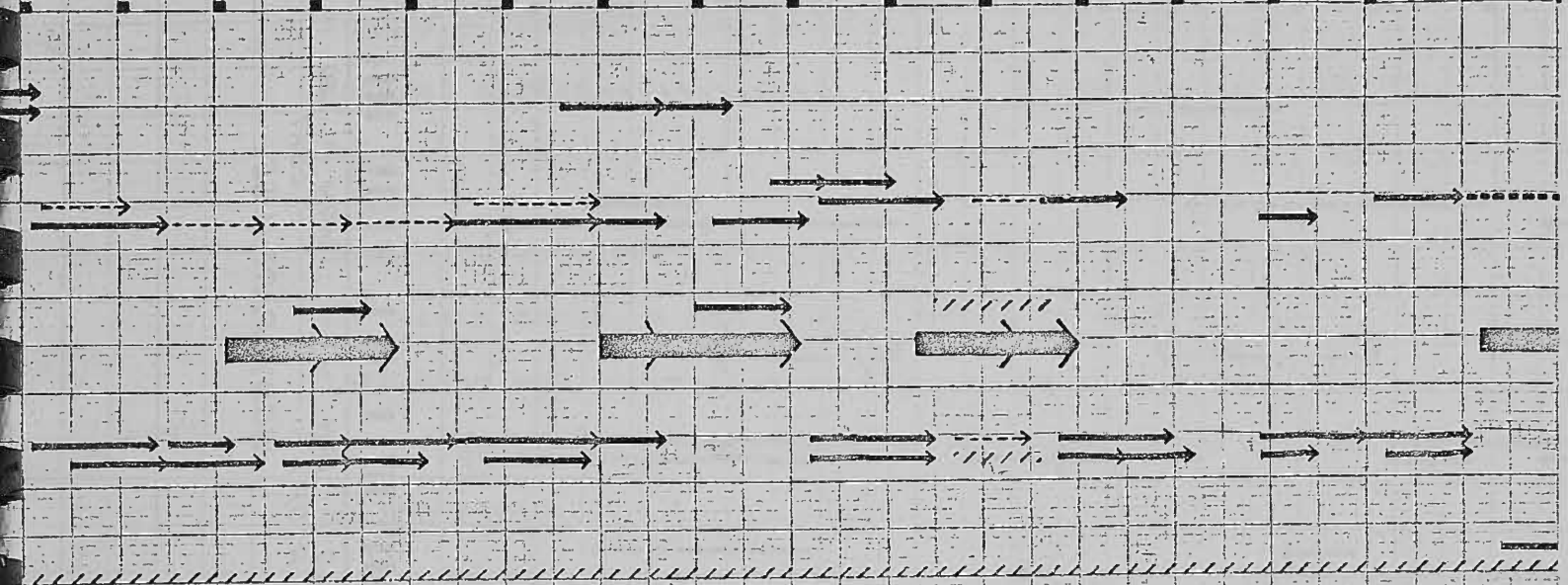




# 20. MAN PLANTING SUGAR CANE



430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590







## 21. MAN BREAKING A STICK INTO FIREWOOD

Kombra - Tsembaga clan cluster

63-JAB-2: 19

Kakapai garden

FC# 21 0 - 320 fr.

July 11, 1963

0 - 293 fr. off 35

Bending over close to a small fire on which he plans to cook a snack, a man holds a stick of wood in his left hand and chops it with the axe in his right hand. He breaks it apart with both hands and lays the pieces on the fire.

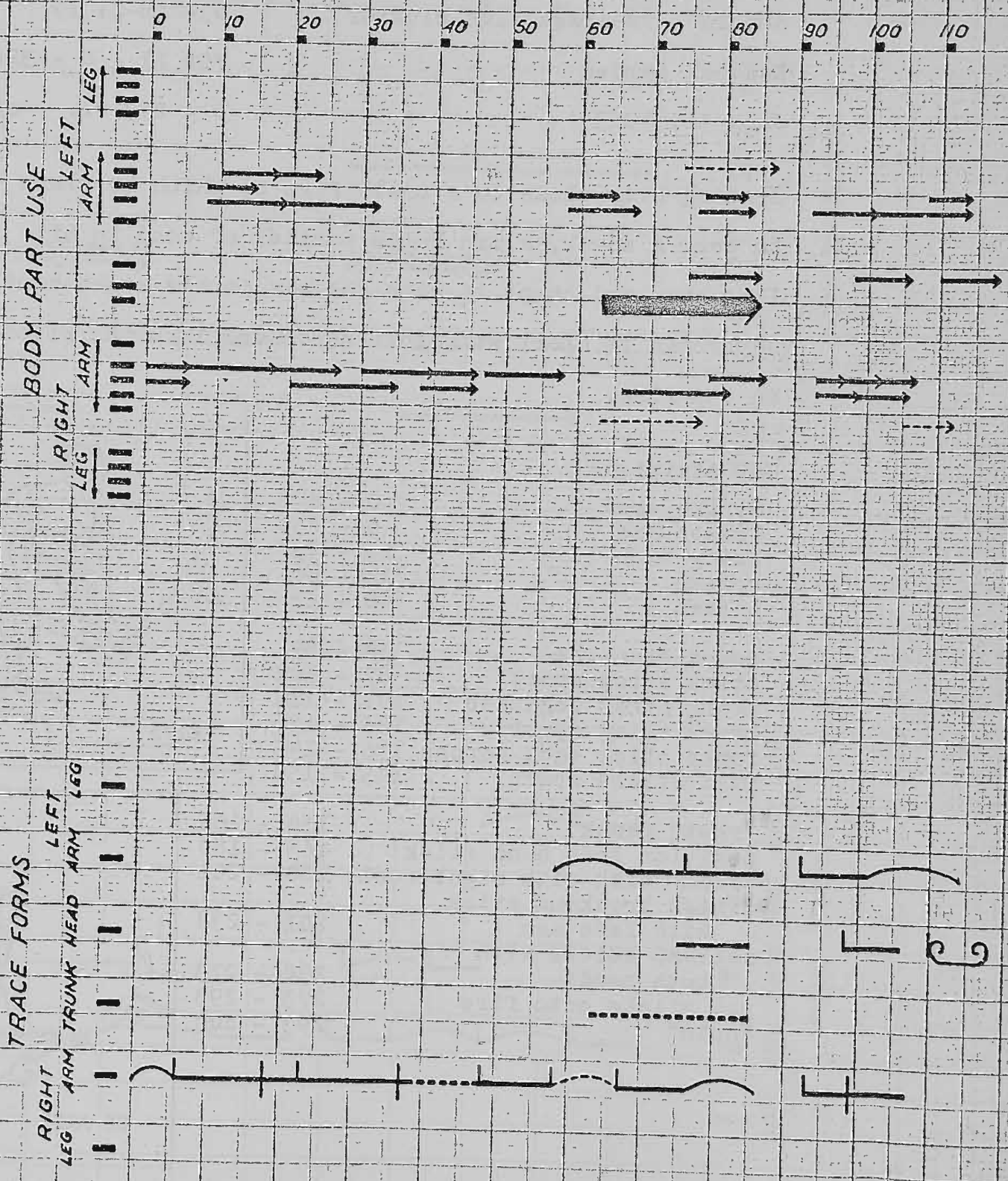
## Sub-divisions:

Strike wood	0 - 6	
loosen axe	6 - 23	
swing back	23 - 35	
strike	37 - 48	
loosen	48 - 58	
Stand straight	58 - 87	
break stick apart	87 - 102	
bring hands together	102 - 125	
break stick apart	125 - 136	
force stick back across	136 - 145	
pull sticks apart	145 - 154	
"rest" pause	154 - 165	
position left hand stick	165 - 180	
break stick with right foot	180 - 201	
finish breaking stick with left arm	201 - 238	
regrasp sticks with both hands	238 - 273	
put sticks onto fire	273 - 293	
"hold"	293 - cut	



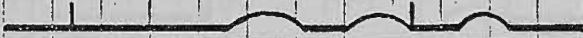
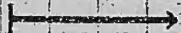
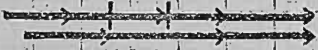


# 21. MAN BREAKING A STICK INTO FIREW

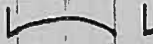


WOOD

120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270

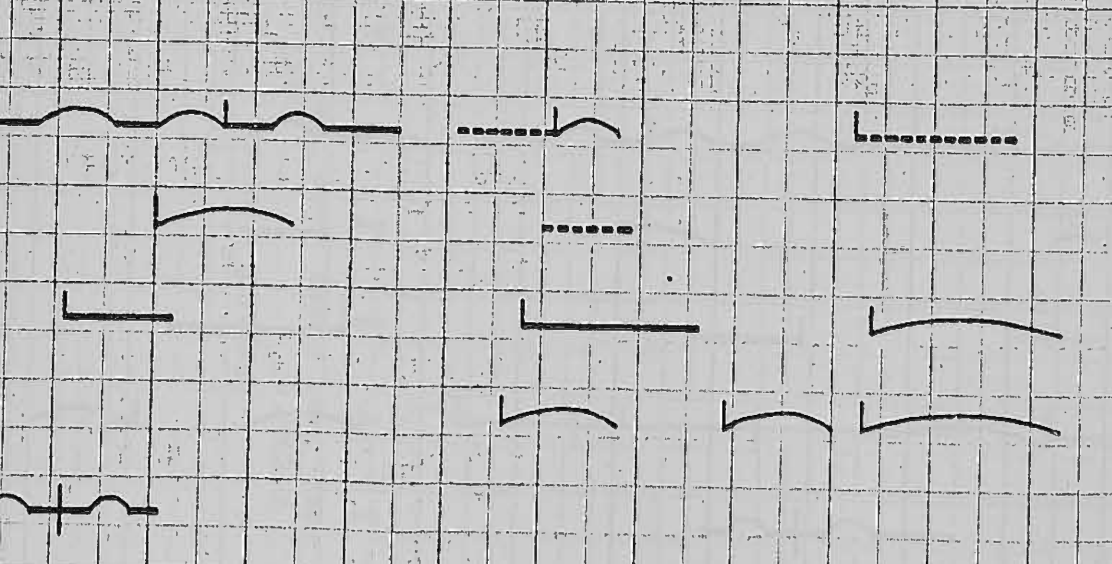
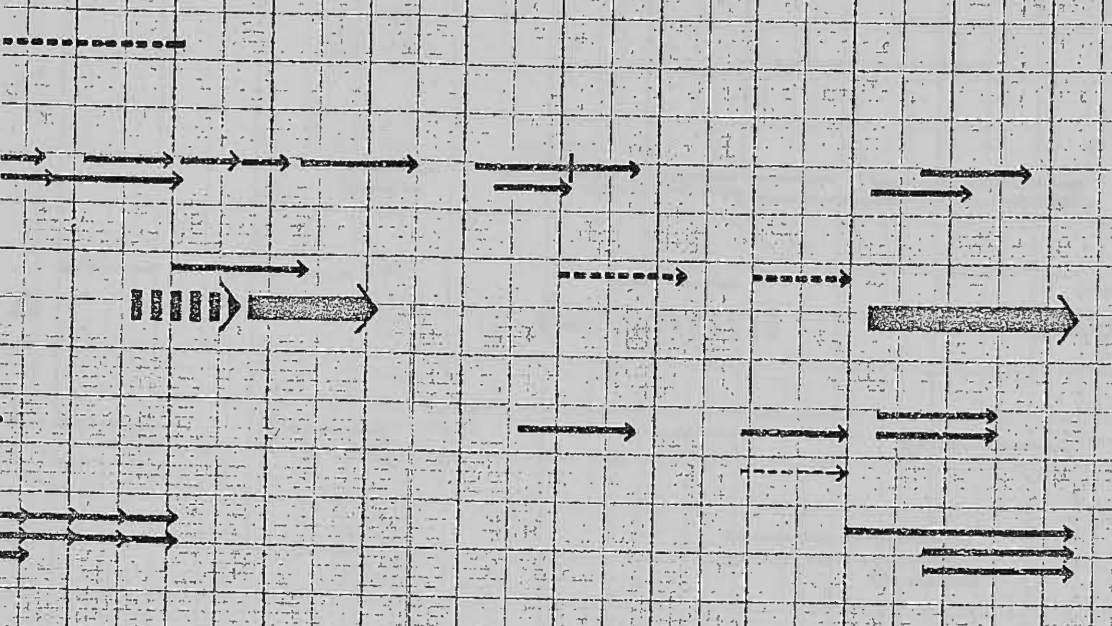


9





190 200 210 220 230 240 250 260 270 280 290 300



LEG ARM LEG  
RIGHT BODY PART USE  
LEFT

LEG ARM TRUNK HEAD ARM LEG  
RIGHT TRACE FORMS  
LEFT

## 22. YOUNG MAN MIXING MARITA PANDANUS FRUIT

Konduai - Fungai clan

63-JAB-43B: 409

Kabi's yard - Tenegump

FC# 22 0 - 1290 fr.

November 25, 1963

0 - 453 fr. 0# 44

A young man stoops in front of a pile of freshly cooked pandanus and ferns. He sorts out ferns and pandanus, squeezing the pandanus and taking bites as he works. This pandanus is a common food for about nine months of the year. It may be prepared by both men and women.

## Sub-divisions:

Holds out a bite to  
a woman with left  
hand 0 - 48

Squeezes pandanus 49 - 131

Shakes juice off  
hands 132 - 163

Licks right hand 164 - 199

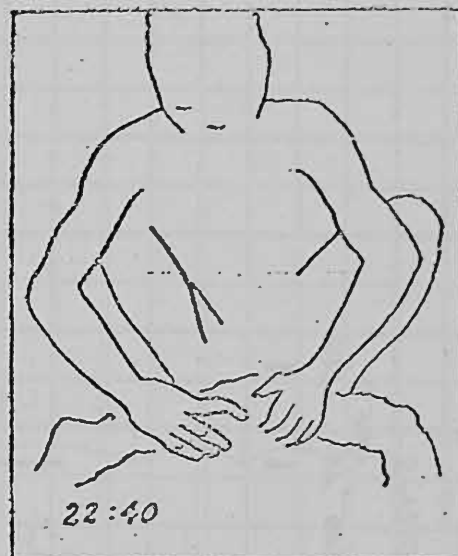
Picks bits off left  
hand and licks  
left hand 200 - 243

Eats a leaf 244 - 285

Puts a fern in middle of pile 286 - 308

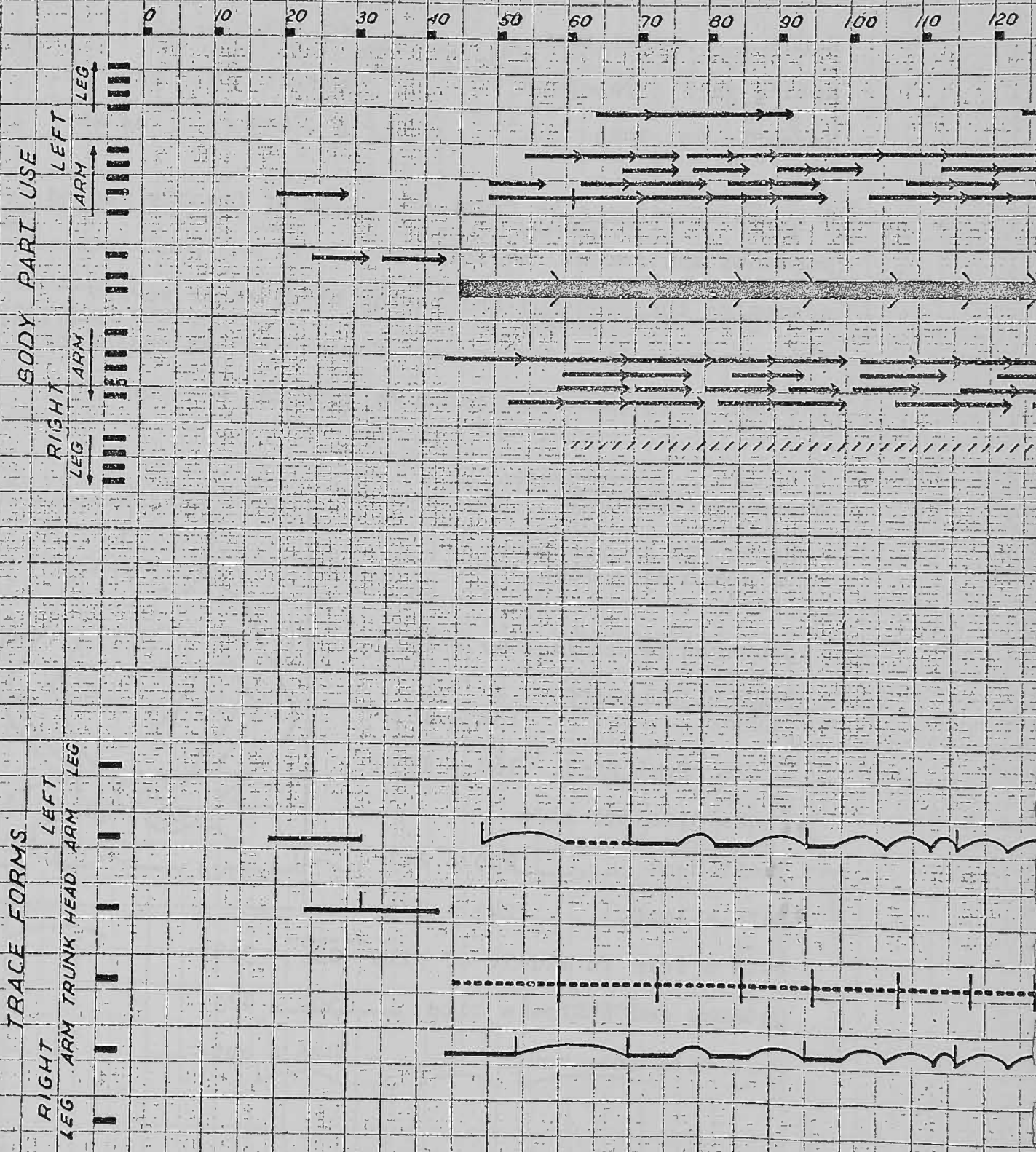
Gathers and shakes a bite 309 - 425

Pops bite into mouth 426 - cut

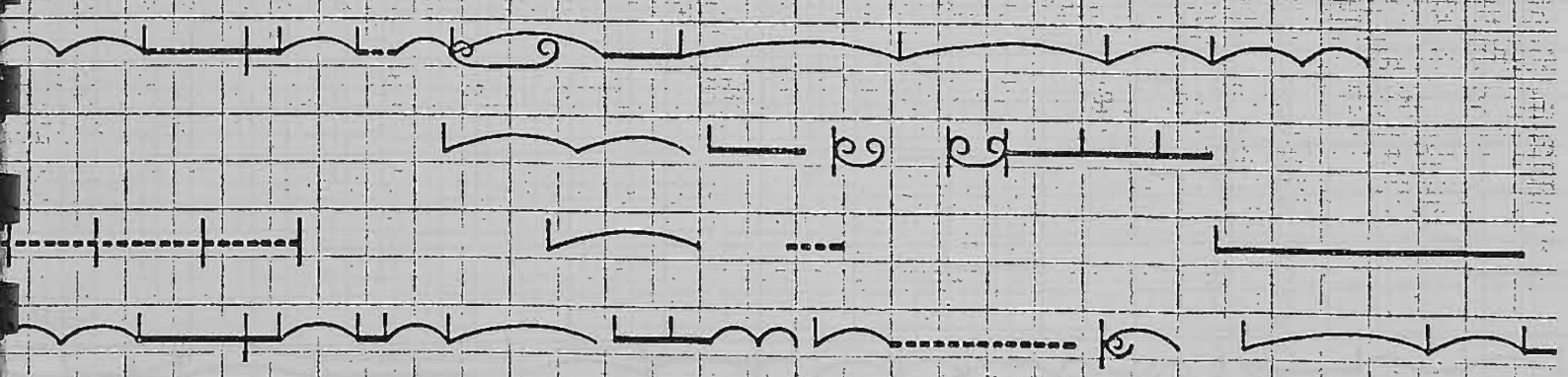
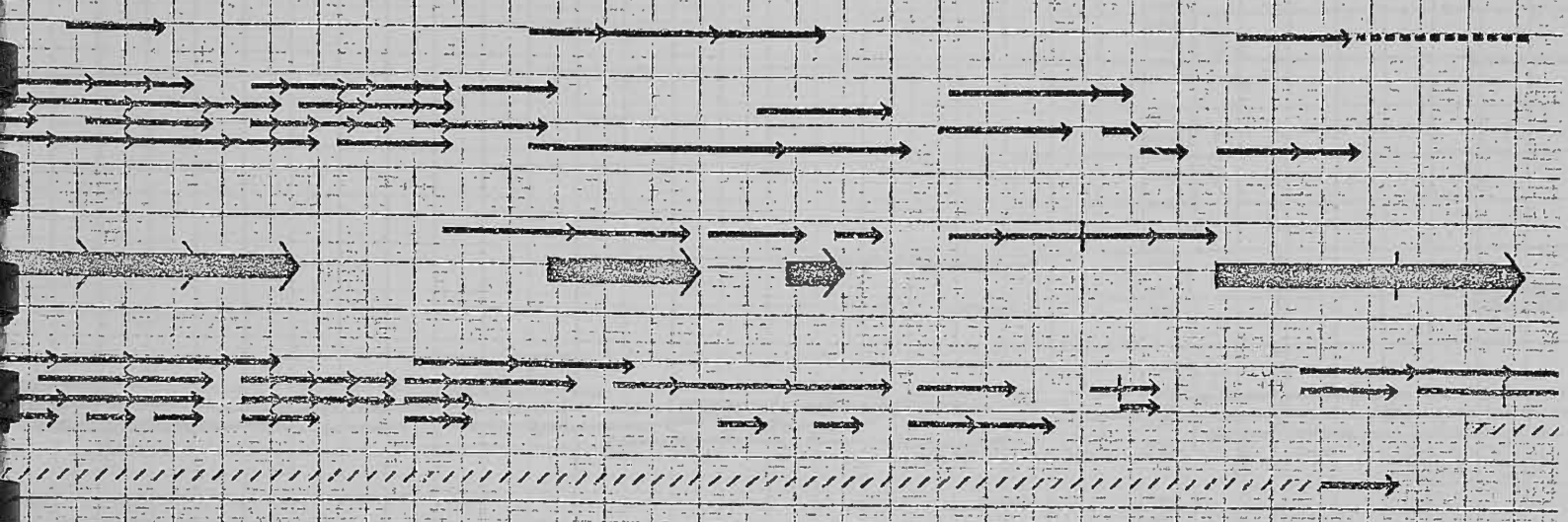




# 22. YOUNG MAN MIXING MARITA FRUIT

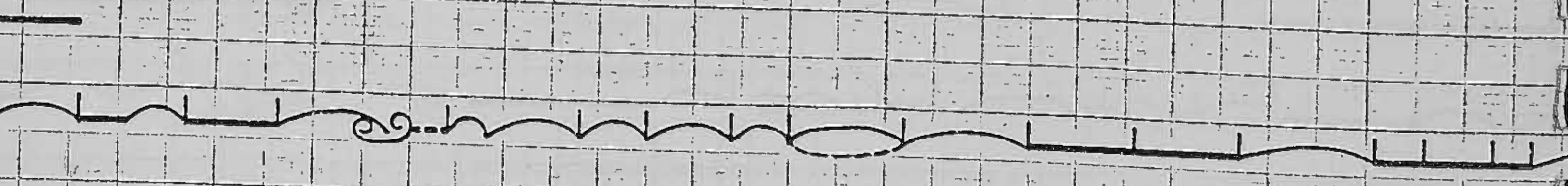
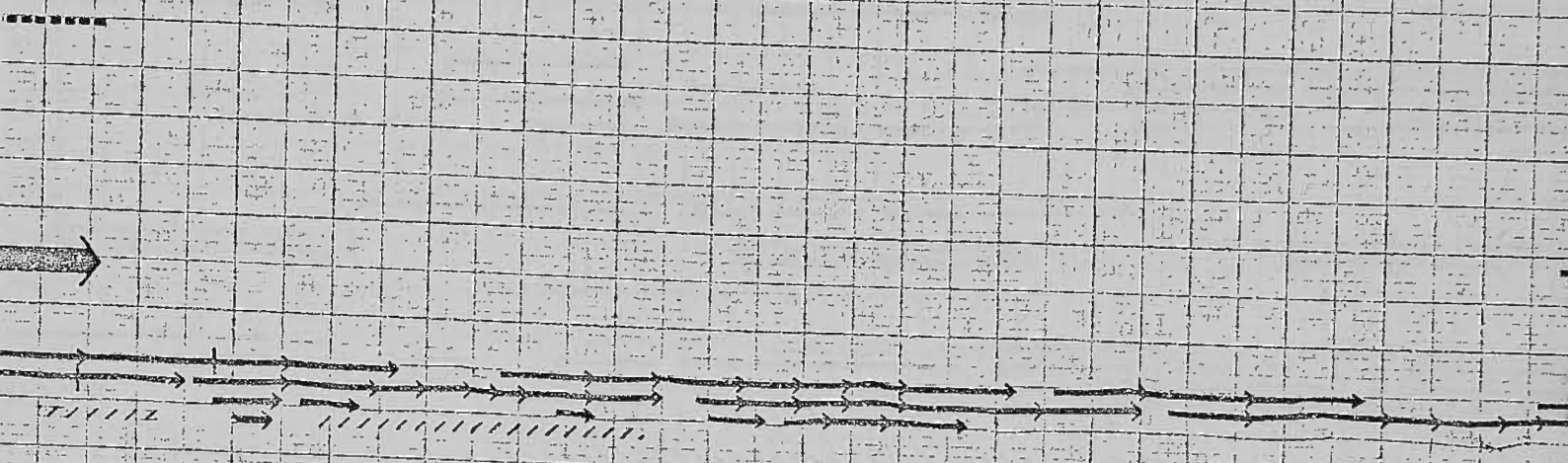


120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280





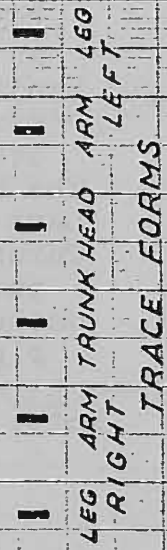
270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420



350 360 370 380 390 400 410 420 430 440 450 460



BODY PART USE



TRACE FORMS



## 23. MAN SQUEEZING JUICE FROM MARITA PANDANUS FRUIT

Kondibia - Fungai clan 63-JAB-51: 491

Kondibia's Yard - Tenegump FC #23

December 19, 1963 0 - 209 fr. 0# 45

A man stoops in front of a bark container full of freshly cooked pandanus fruit. He gathers handfuls in both hands together, turns to his right, and squeezes the juice over a pile of cooked greens.

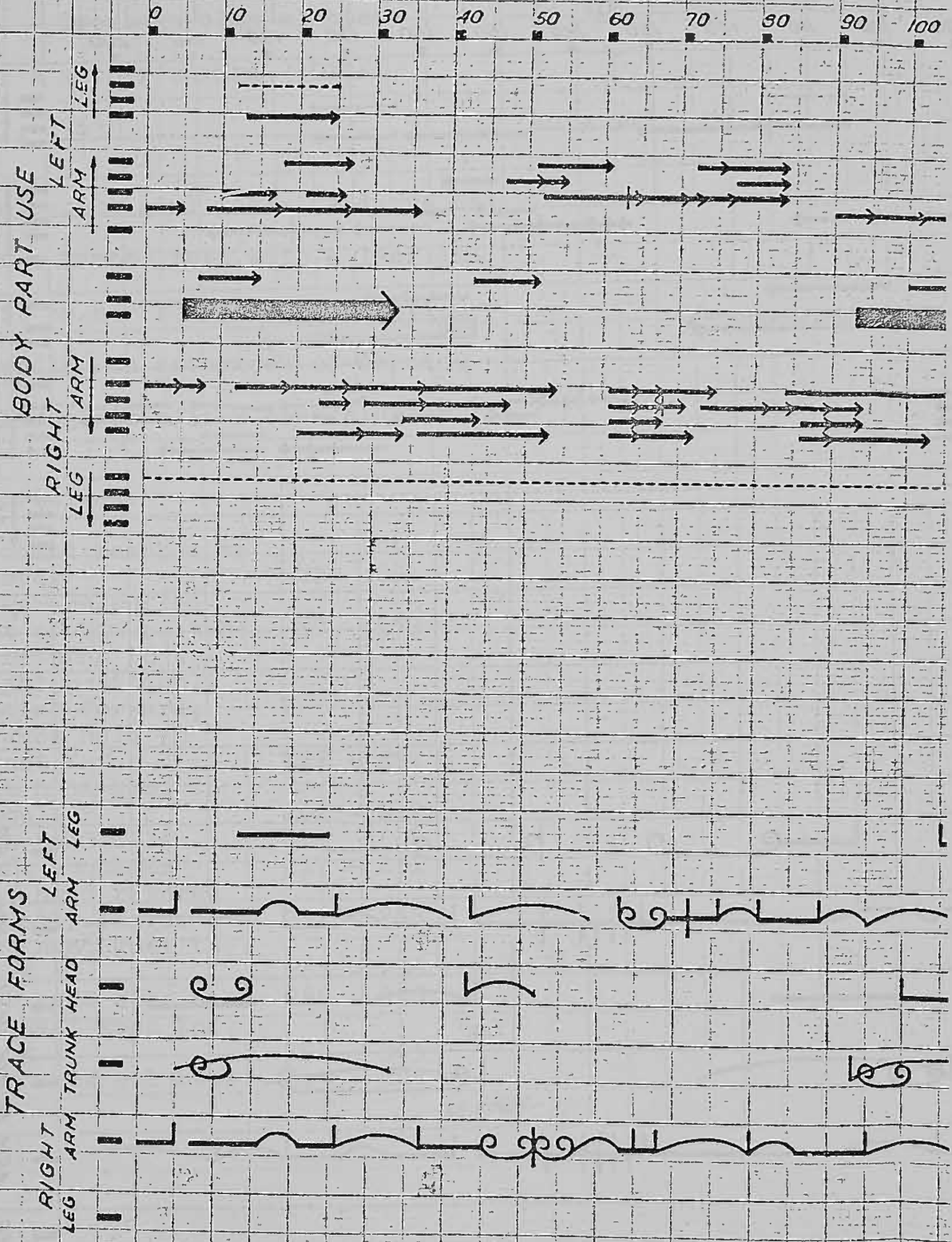
## Sub-divisions:

End of previous shake	5
Turns back to pandanus and puts squeezed handful down	5 - 26
Gathers a new handful in right hand	26 - 52
Puts handful in left hand and shakes juice off right hand	52 - 63
Puts handful back in right hand and shakes juice off left hand	63 - 76
Puts handful back in left and shakes right	76 - 87
Closes right palm over handful and begins to squeeze as body turns	87 - 100
Hands squeeze with increasing strength until they are over pile of greens	100 - 133
The handful is shaken	133 - 141
Last strong shake	141 - 155
Turns back to pandanus and puts squeezed handful down	155 - 180
Gathers a new handful in right hand.	180 - cut



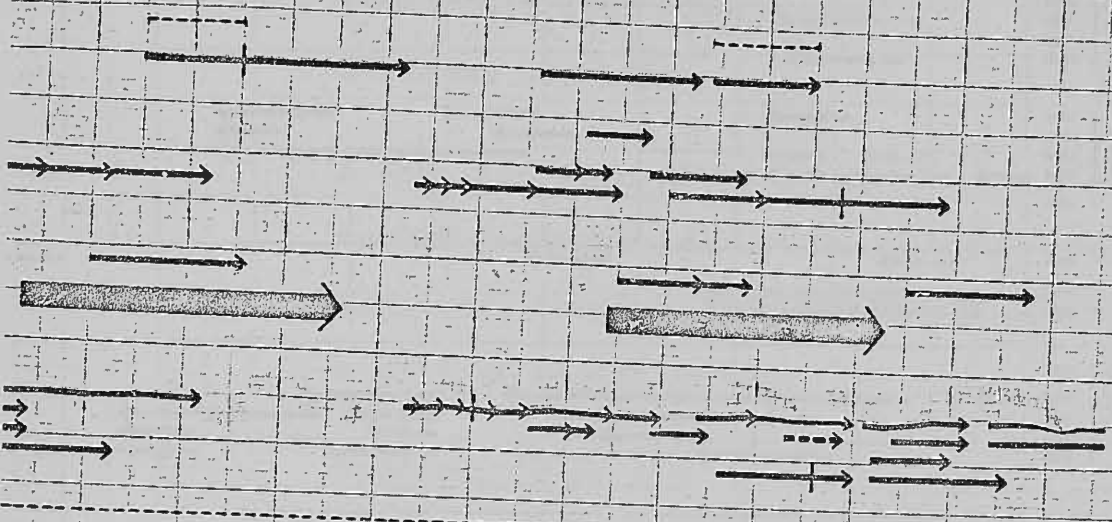
Note: The last squeeze in the shot was diagrammed. It begins at 8 feet and 31 frames from the beginning of the shot. "0" is counted as the first frame on which both of the man's hands are below his right knee on the last strong shake of the squeeze preceding the one diagrammed.

# 23. MAN SQUEEZING JUICE FROM MA

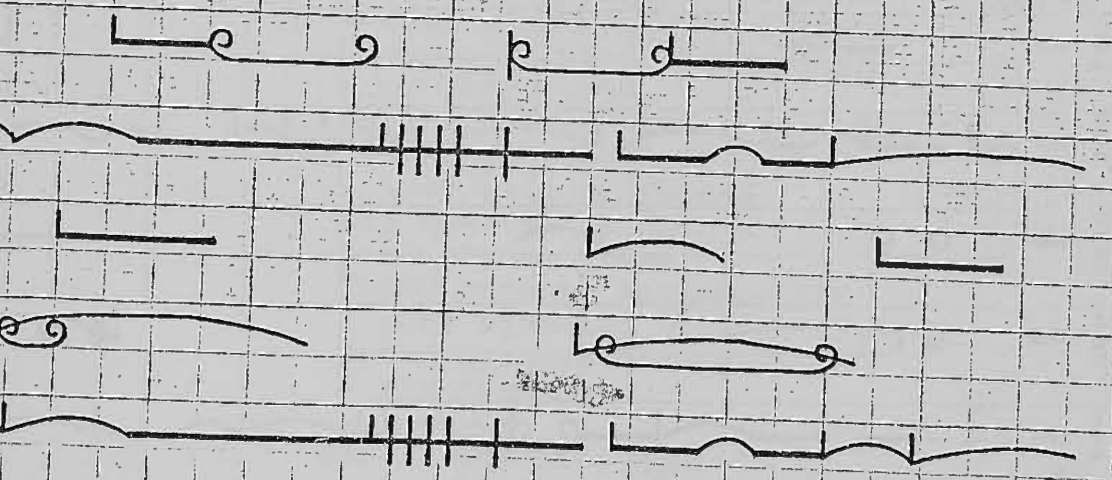


# 1 MARITA FRUIT

90 100 110 120 130 140 150 160 170 180 190 200



LEG LEFT  
ARM LEFT  
BODY PART USE  
ARM RIGHT  
LEG RIGHT



LEG LEFT  
ARM LEFT  
TRUNK HEAD  
LEG RIGHT  
ARM RIGHT  
TRACE FORMS

## 24. GIRL RUBS HER BODY WITH PANDANUS OIL

Mungar - Tsembaga clan cluster

63-JAB-1: 5

Mungar's mother's yard - Dikai

July 7, 1963

40 - 345 0# 19

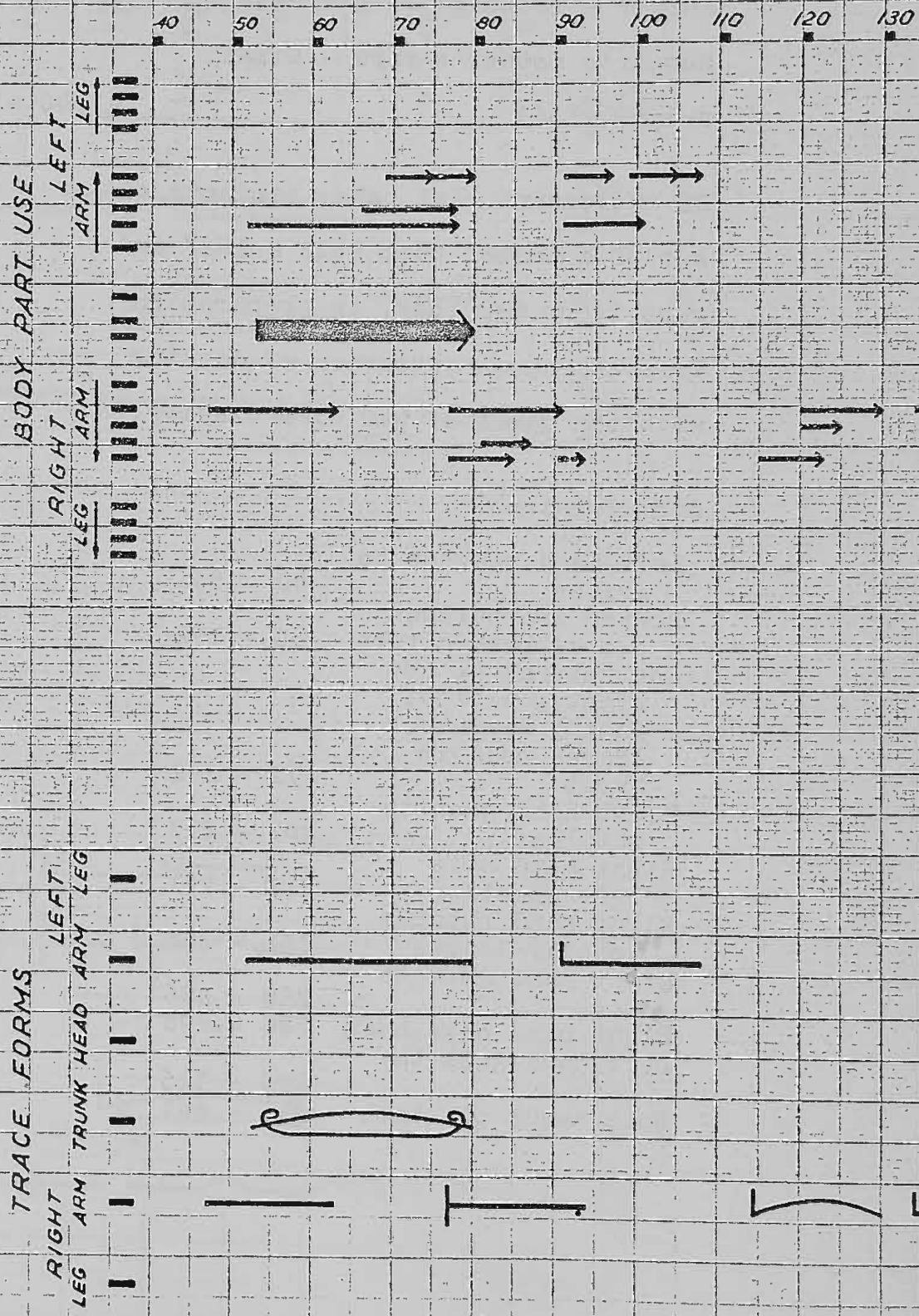
An adolescent girl takes pandanus oil out of a bamboo tube with a leaf and rubs it on her body, in preparation to spending an afternoon of dancing with the girls of her clan cluster.

## Sub-divisions:

Left hand reaches to leaves	40 - 80
Leaves are pulled out of bamboo tube	80 - 172
She returns to upright position, facing forward, leaves held in front	172 - 202
Right hand goes to shoulder	202 - 217
Right hand oils left shoulder	217 - 251
Right hand returns to oily leaves	251 - 268
Right hand goes to back	268 - 286
Right hand oils back	286 - 298
Left hand goes to back	298 - 315
Both hands oil back	315 - cut

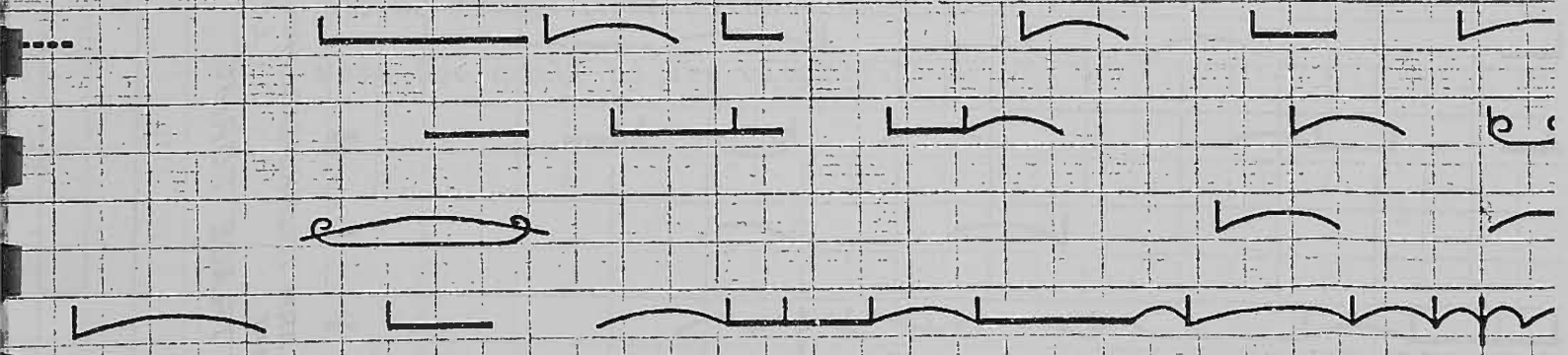
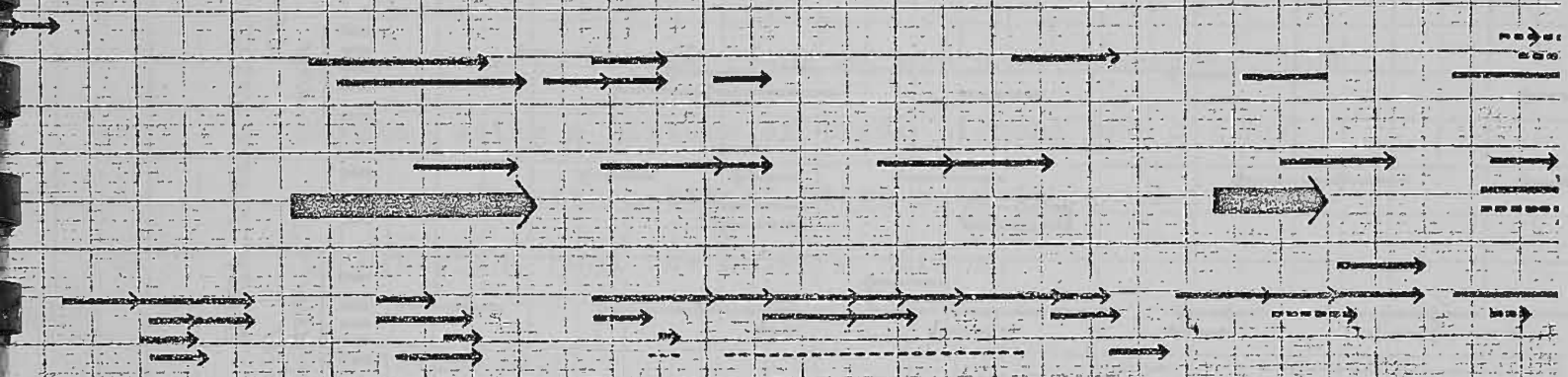


# 24. GIRL RUBS HER BODY WITH



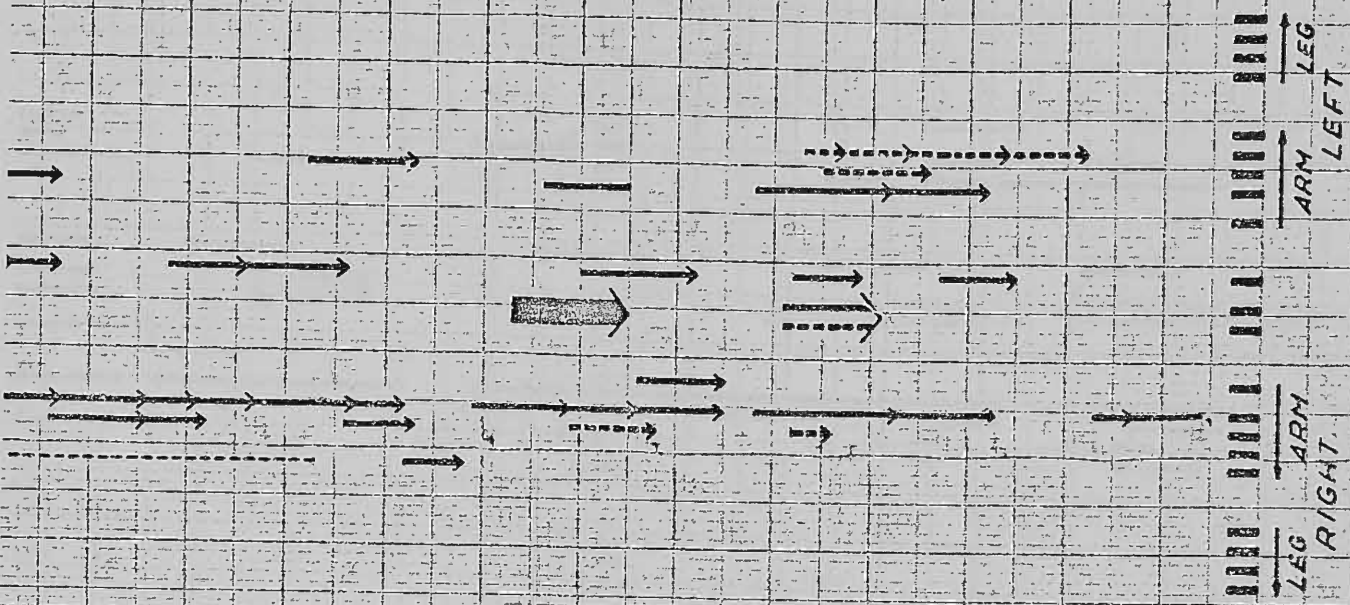
INDANUS OIL

150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300

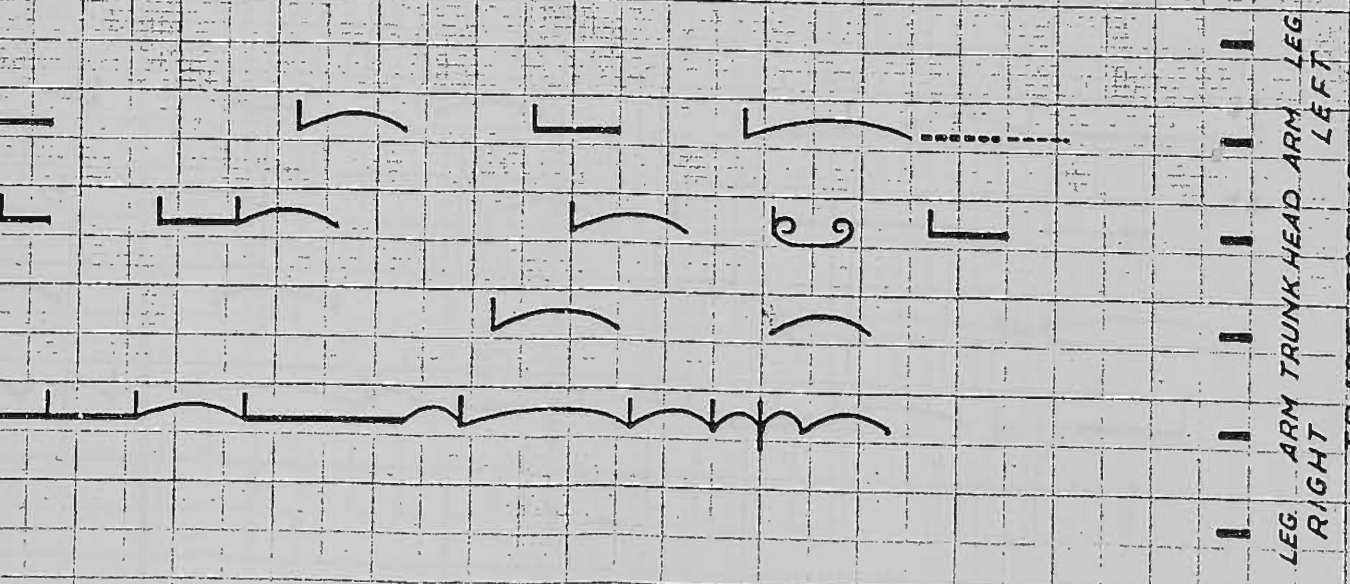




0 230 240 250 260 270 280 290 300 310 320 330 340



BODY PART USE



TRACE FORMS

## 25. GIRL PAINTING HER NOSE

Mungar - Tsembaga clan cluster	63-JAB-1: 5
Mungar's mother's yard - Dikai	FC# 25 0 - 230 fr.
July 7, 1963	0 - 140 0# 20

The girl puts yellow lines on her nose, forehead, and cheeks, using a mixture of trade pigment and oil and applying it with a bit of stick held in her left hand. In her right hand she holds a mirror.

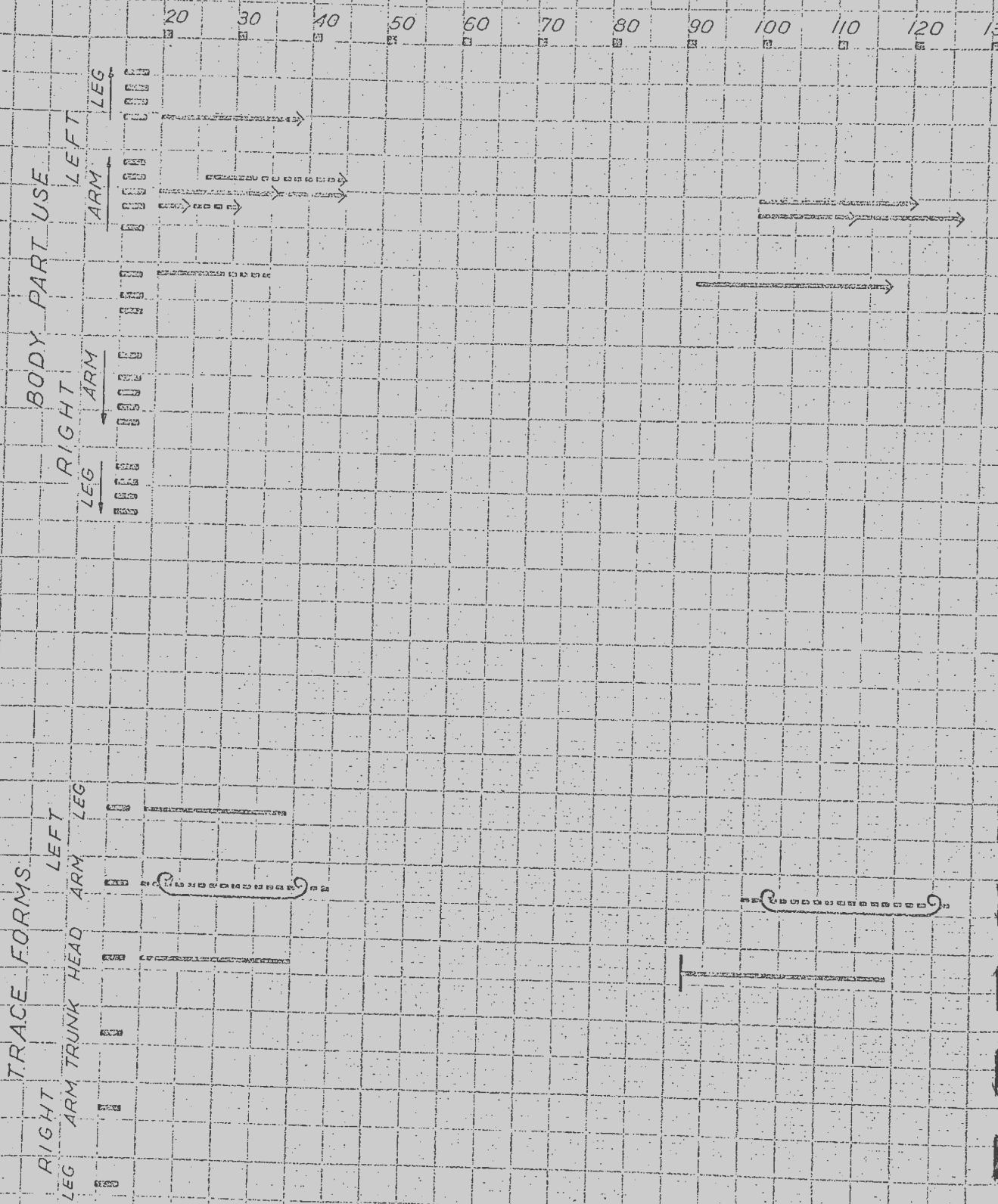
## Sub-divisions:

Paints nose	0 - 20
Lowers hand to pigment	20 - 39
Gets pigment on stick	39 - 92
Raises hand to nose	92 - 128
Paints nose	128 - end

Comments: only the lowering and raising of the left hand was diagrammed - the movements of getting pigment on the stick and of applying it to the nose were too small to see clearly.



# 25. GIRL PANTING HER FACE



## 26. GIRL PAINTING HER FACE (CLOSE-UP VIEW)

Mungar - Tsembaga clan cluster

63-JAB-1: 5

Mungar's mother's yard - Dikai

MDDM / 294 feet 15  
frames through  
299 feet 35  
frames

July 7, 1963

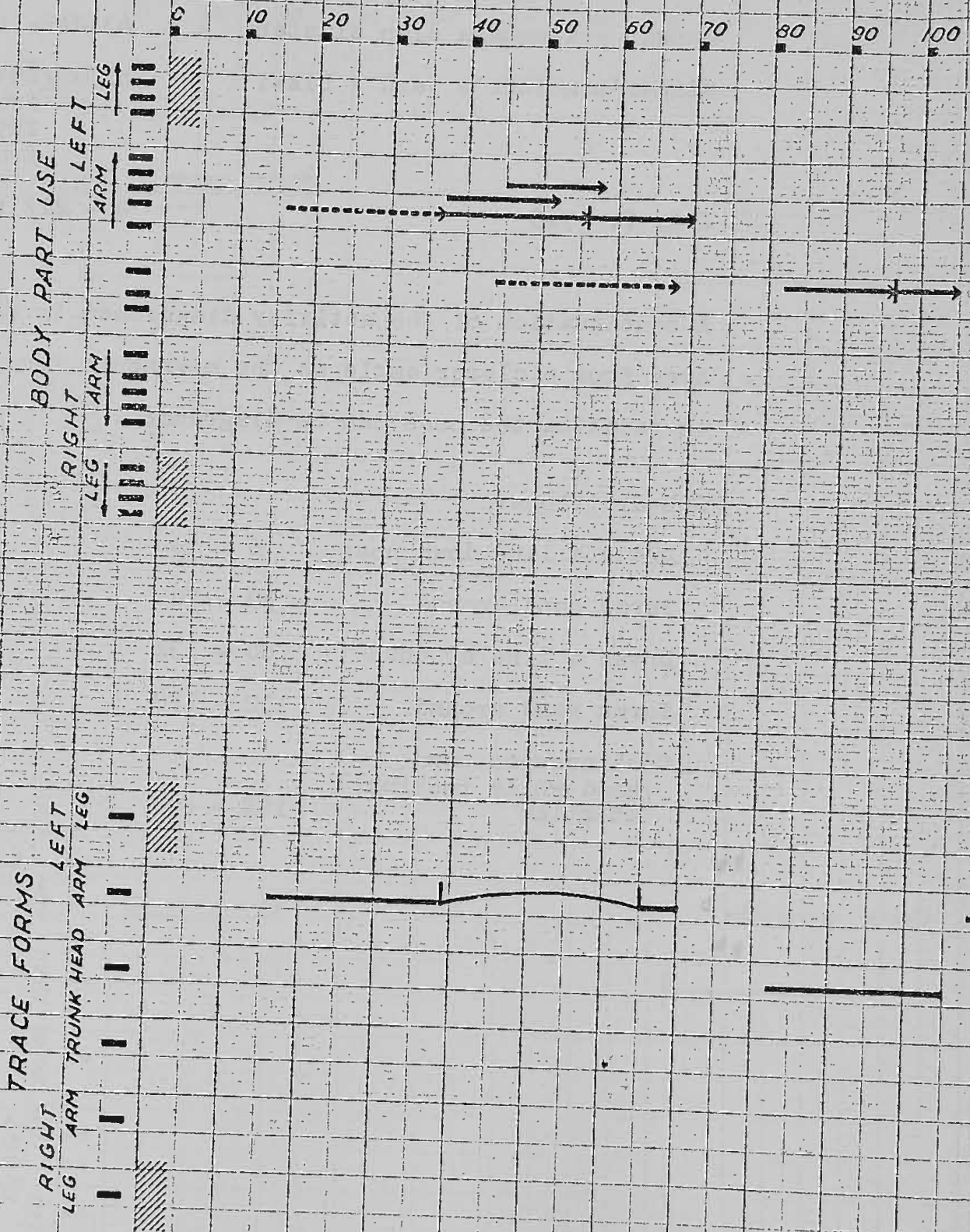
0 - 212 fr. 0# 21

A continuation of the activity diagrammed in #26, seen from a closer angle so the movements involved in painting the nose can be diagrammed.

## Sub-divisions:

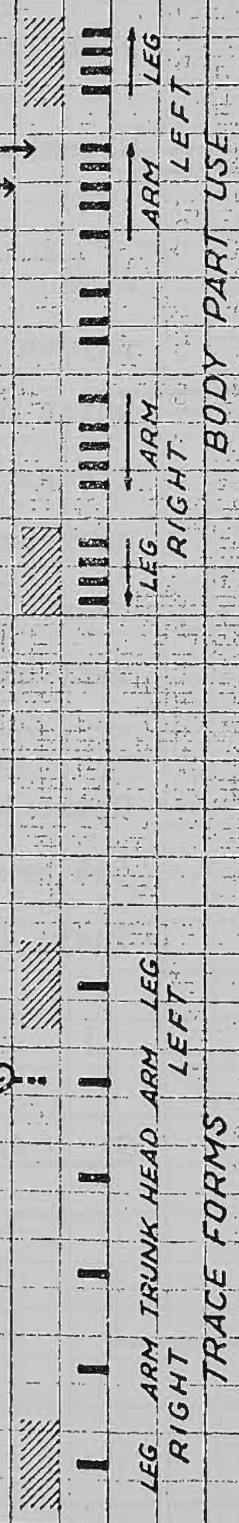
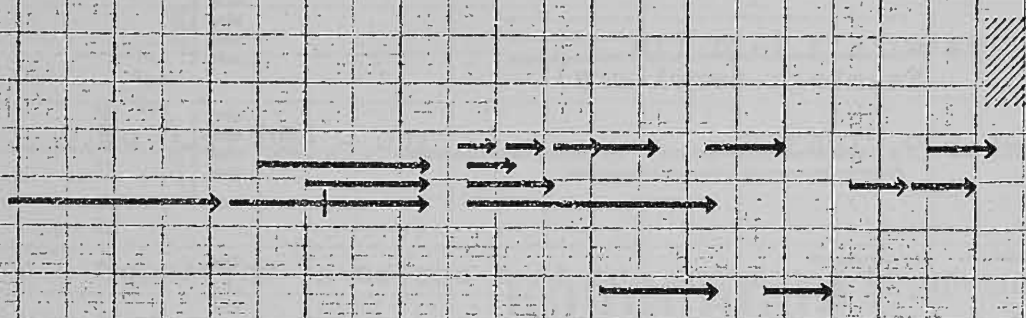
Draws a line down nose	0 - 39
Turns hand around	39 - 70
Draws a line up nose	80 - 132
Turns hand around	132 - 188
Continues to turn hand while looking at stick	188 - end

# 26. GIRL PAINTING HER FACE (CLOSE-U



SE-UP VIEW)

100 110 120 130 140 150 160 170 180 190 200 210



LEG ARM HEAD TRUNK  
RIGHT LEFT  
LEG ARM LEFT  
ARM LEFT  
ARM RIGHT  
LEG RIGHT  
LEG ARM TRUNK HEAD ARM LEG  
RIGHT LEFT  
TRACE FORMS  
BODY PART USE



## 27. MAN PICKING UP VALUABLE SHELLS

Ambrakwi-amongai clan

63-JAB-35A: 309

Rambor's wife's yard (in  
Tsembaga territory)

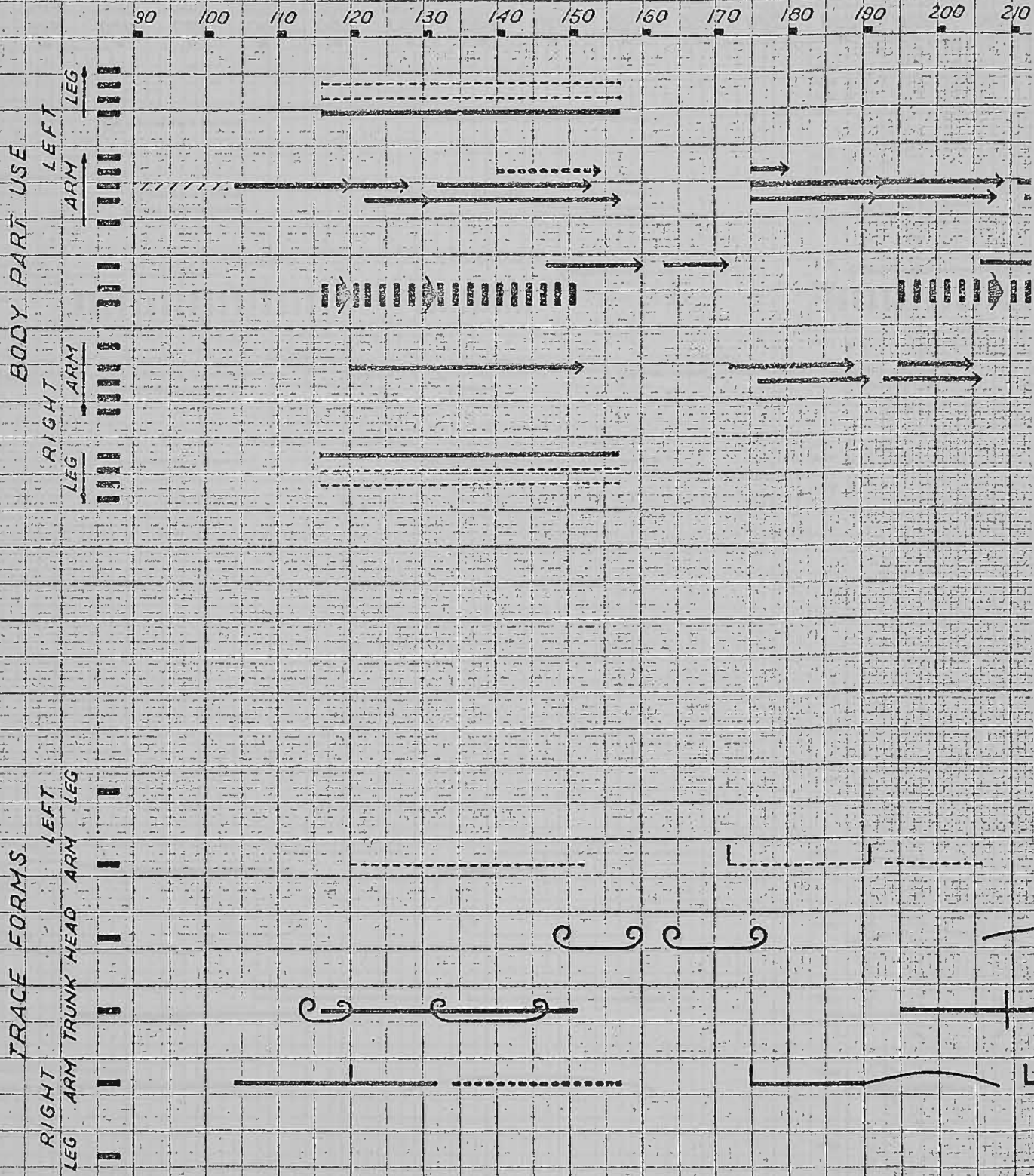
November 9, 1963

100 - 486 fr. 0# 9

A man who is receiving one in a series of marriage payments for his sister stoops in front of a mat on which his sister's son has spread out the wealth items: axes, pork, salt, beads, and gold-lip shells. He reaches for the shells with his right hand, turns them around and puts them carefully in a pile in his left hand.

Comments: Here one sees the usual isolated use of the arm with some trunk support of the movement. There is more wrist movement than usual.

# 27. MAN PICKING UP VALUABLE SHELLS











## 28. YOUNG MAN FASTENING A FEATHER TO HIS HEADDRESS

Akis - Tsembaga clan cluster

63-JAB-31: 280

Muk's yard - Dikai

FC# 28 0 - 277 fr.

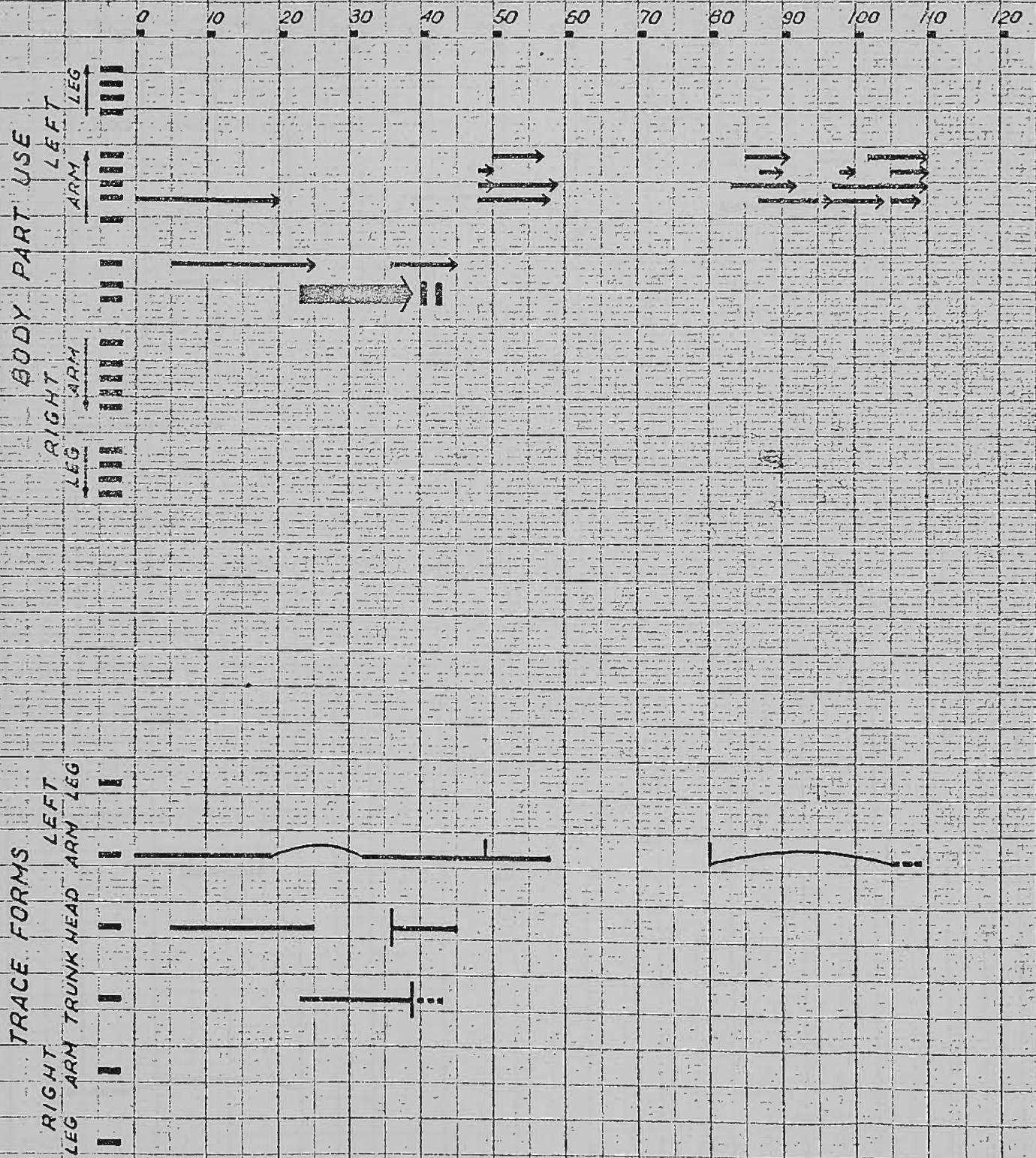
November 1, 1963

0 - 262fr. 0# 16

The young man has a pair of King of Saxony bird feathers (noma punt) in his septum, and he bends them in arcs on each side of his face and fastens the tips to the front of his headdress.

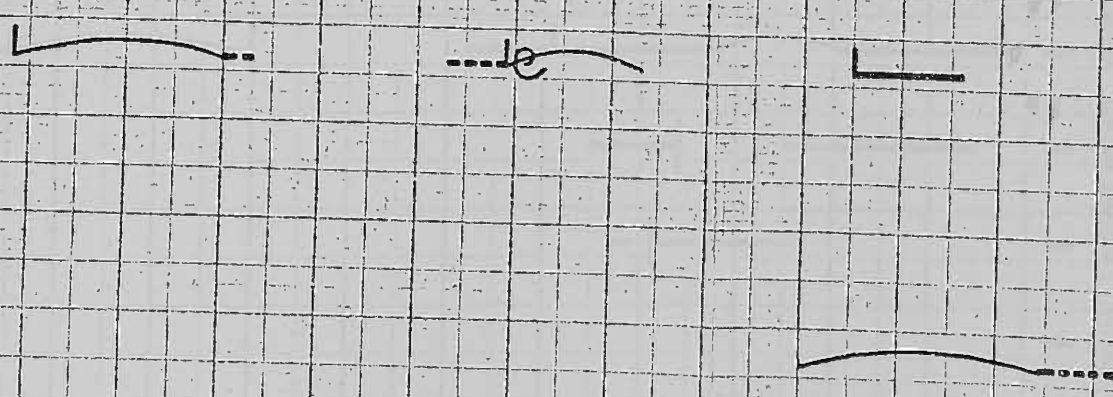
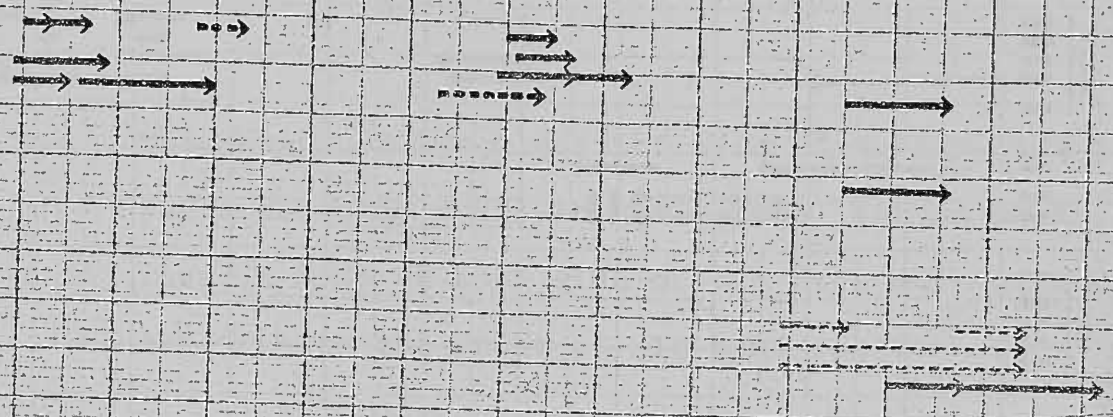
Comments: There is more use of wrist and fingers than usual.

# 28. YOUNG MAN FASTENING A FEATHER TO



# HIS HEADDRESS

130 140 150 160 170 180 190 200 210 220 230 240 250 260 270



LEG ARM TRUNK HEAD ARM LEG  
RIGHT LEFT  
LEG ARM TRUNK HEAD ARM LEG  
RIGHT LEFT

## 29. YOUNG MAN FINISHES FASTENING A FEATHER TO HIS HEADDRESS.

Akis - Tsembaga clancluster

63-JAB-31: 280

Muk's yard - Dikai

FC #29

November 1, 1963

220 - 350 fr. 0# 17

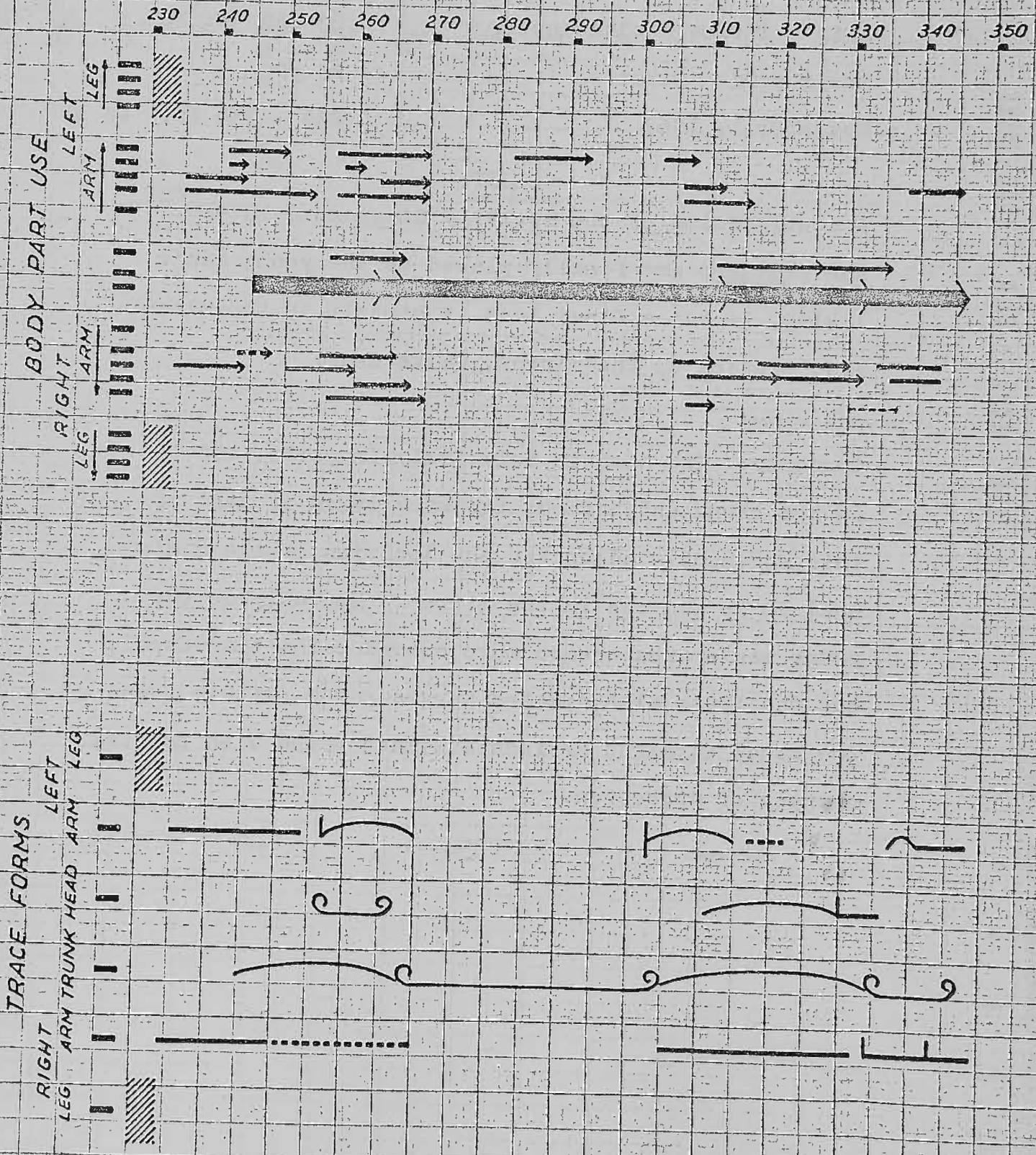
A continuation of the activity diagrammed in #28.

The feathers are finally placed to the young man's liking, he has a final look at himself in the mirror, and, picking up the mirror, walks away.

Comments: The head is relatively immobile, and it is the trunk which forms the background of most of this movement - adjusting the location of the man's head so he can see in the mirror. Not only do the young man's arms create more curved paths than usual, but the trunk also creates curved paths, rather than the usual straight or indeterminate paths with pointed changes of direction.



29 YOUNG MAN FINISHES FASTENING A FEATHER TO HIS HEADDRESS



## 30. WOMAN WALKING WITH A LOAD ACROSS EVEN GROUND

Unknown

63-JAB-35A: 315,316

Dikai dance ground.

FC# 30 0 - 156 fr.

November 9, 1963

50 - 110 fr. 0# 38

A woman arriving at the konj kaiko of the Tsembaga clan cluster walks across the dance ground carrying her string bag heavily laden.

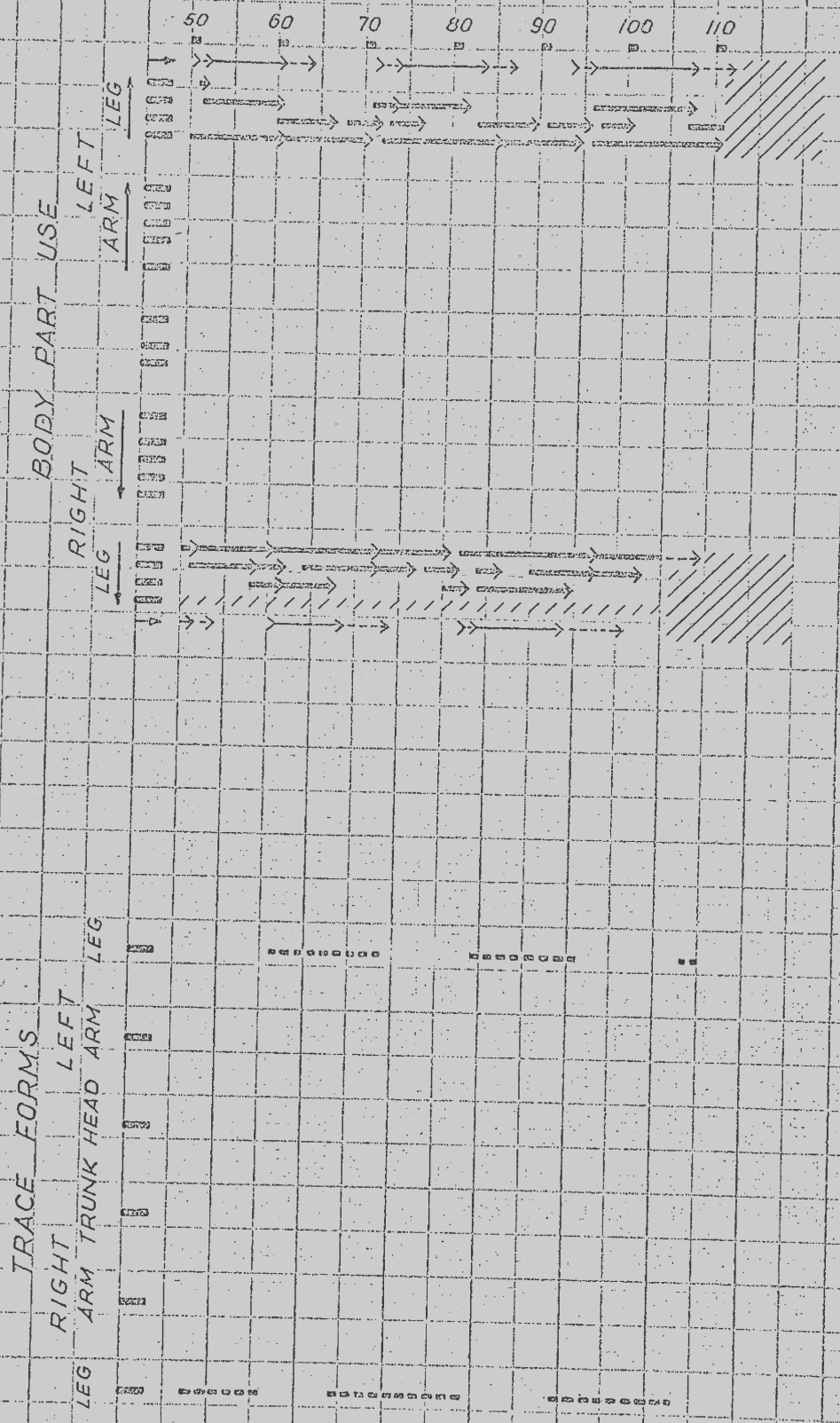
## Sub-divisions:

Steps - (indicated from the time the heel touches the ground, until the time the toe leaves the ground).

Left: 51 - 64; 72 - 87; 94 - 112

Right: 61 - 74; 83 - 101

# 30. WOMAN WITH A HEAVY LOAD WALKING ACROSS EVEN GROUND



## 31. GIRL WALKING DOWNHILL

Tukume - Fungai clan

63-JAB-13: 103

Andyangai garden

August 11, 1963

1350 - 1446 fr. 0# 39

A girl participating in the burning of a garden walks downhill over rough, cleared earth.

## Sub-divisions:

Reach out for stick in  
ground

- 1356

Hold onto stick while  
walking around it

1356 - 1397

Let go of stick and  
bring right arm  
to chest

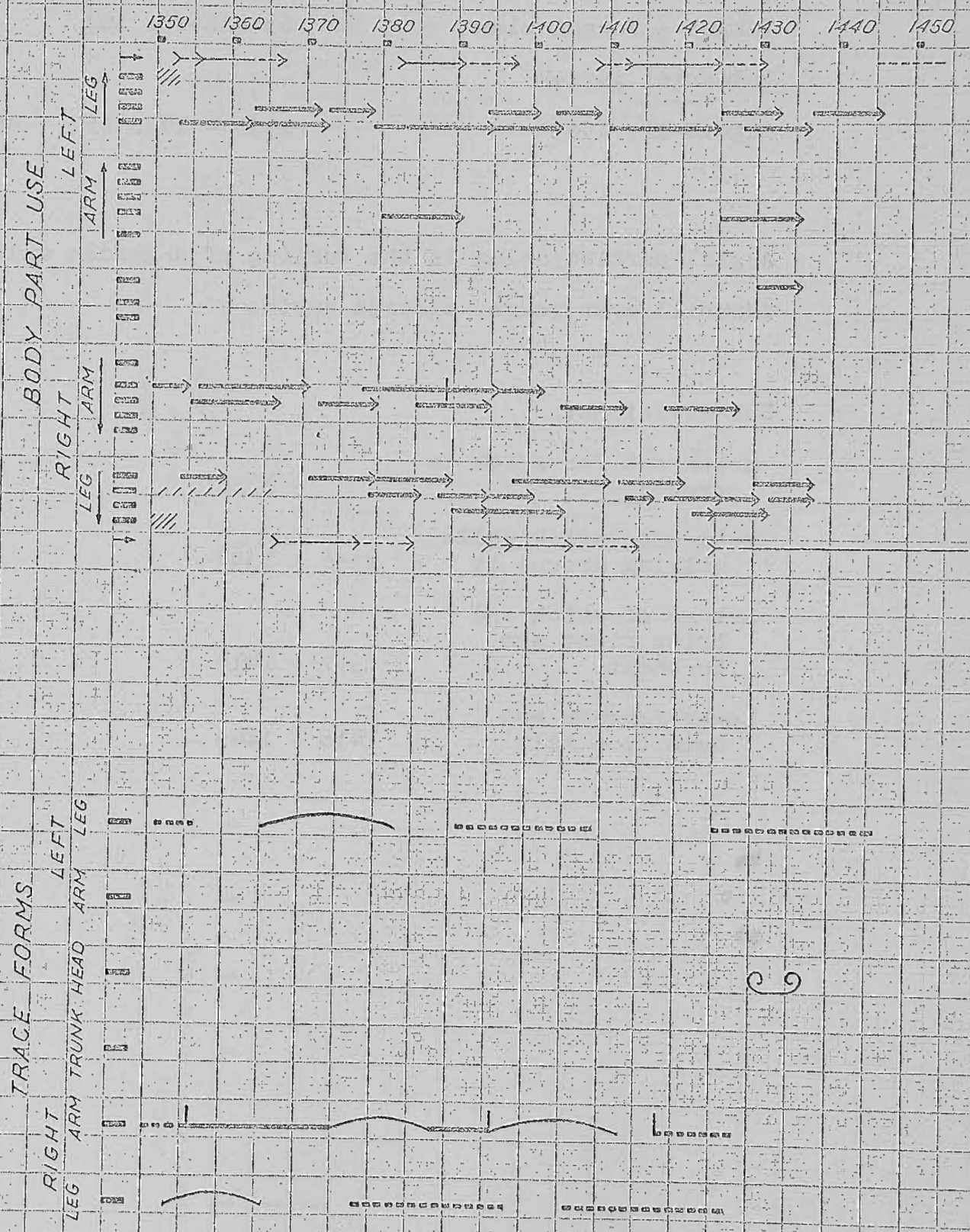
1397 - 1414

Lower forearm and  
come to a halt

1418 - 1446



# 31. GIRL WALKING DOWNHILL



## 32. WOMAN WALKING UPHILL

Gandim - Fungai clan

63-JAB-15: 124

Path in Tenegump

August 16, 1963

40 - 150 fr. 0# 40

A woman walks up a steep hill, holding her small daughter's hand in her right hand, and leaning on her digging stick with her left hand.

## Sub-divisions:

Left arm advances digging  
stick

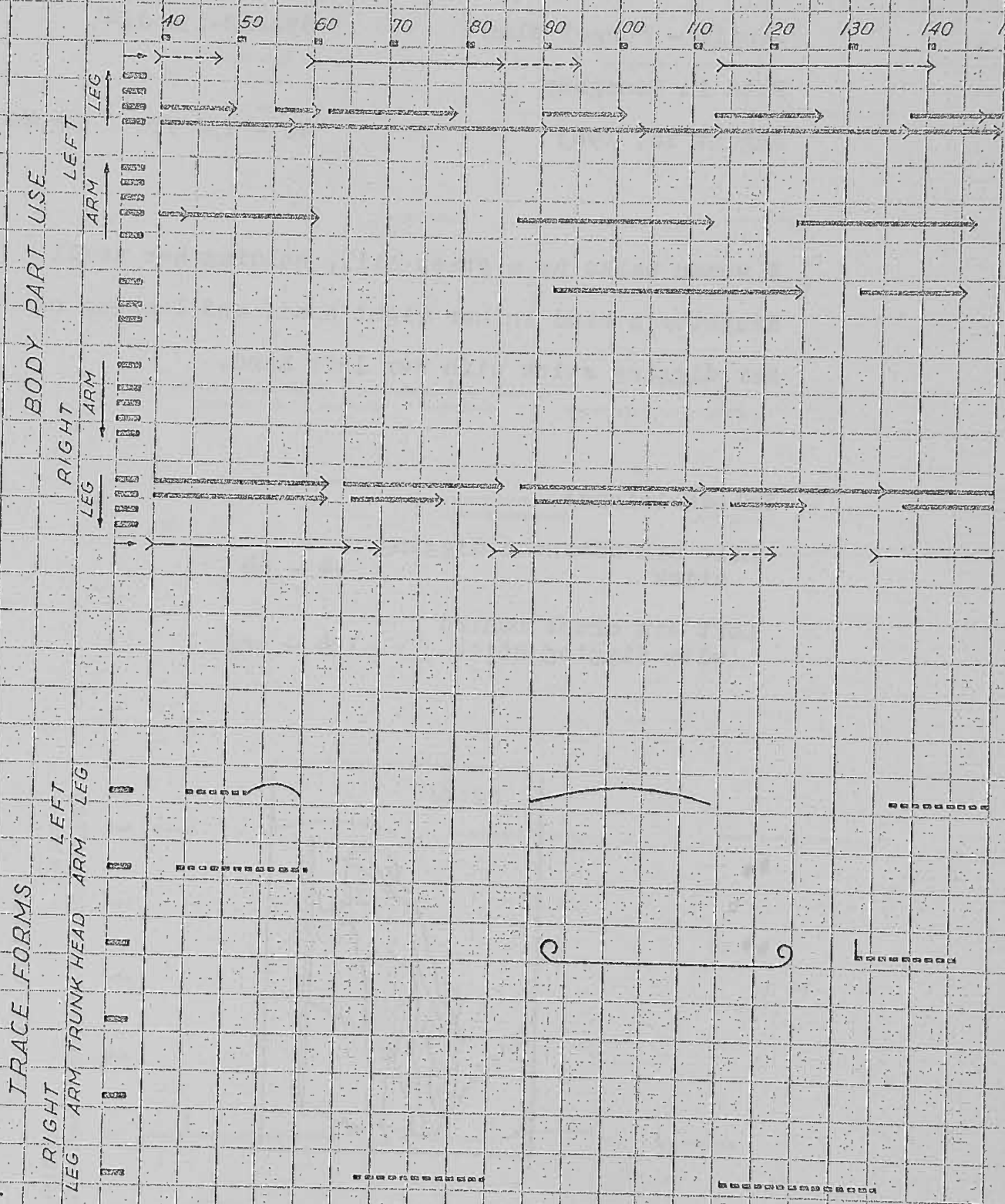
44 - 64

Left arm drops behind  
with digging stick

124 - end



# 32 WOMAN WALKING UPHILL



APPENDIX III - DIAGRAMS OF GROUP SYNCHRONY



# KEY TO DIAGRAMS OF GROUP SYNCHRONY

NUMBER TITLE

FRAMES 24 FRAMES = 1 SEC.

PERSON

#

LEFT FOOT  
DRUM  
RIGHT FOOT

FOR DIAGRAMS 1, 2, 4

— FOOT IN FULL CONTACT WITH EARTH

- - - HEEL OR TOES IN CONTACT WITH EARTH

>-> HEEL MAKES FIRST CONTACT

>-> TOES MAKE FIRST CONTACT

□ HAND IN CONTACT WITH DRUM

FOR DIAGRAM 3

□ LOWEST PART OF EACH BOUNCE STEP

## 1. GIRLS PERFORM WALKING STEP

Tsembaga clan cluster	63-JAB-1: 8
Dikai Dance Ground	MDDM
July 7, 1963	200 - 320 fr.; 0# 25

## 2. MEN STAMP AT THE EDGE OF A STOOPING CONTINGENT

Tuguma clan cluster	63-JAB-31: 280 - 281
Dikai Dance Ground	MDDM
November 1, 1963	0 - 110 fr.; 0# 14

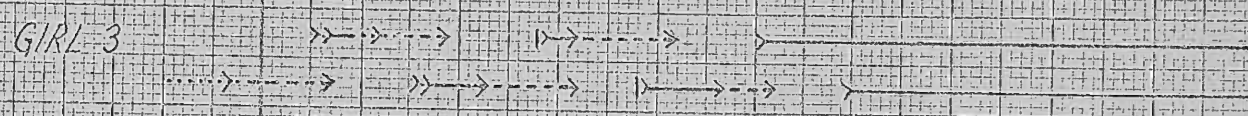
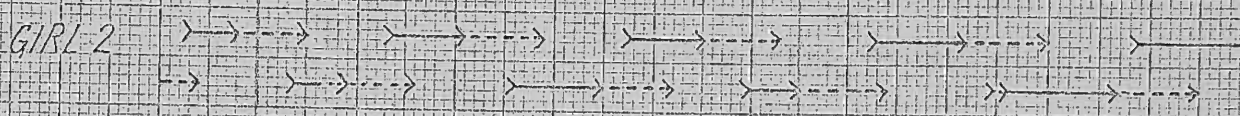
See maps 10 a - c. (Appendix IV)

## 3. MEN PERFORMING BOUNCE STEP

Bomagai-Angoiang clan cluster	63-JAB-5: 43
Tababe Rest House	
July 27, 1963	0 - 100 fr.; 0# 29

# 1. GIRLS PERFORM WALKING STEP

200 210 220 230 240 250 260 270 280 290 300





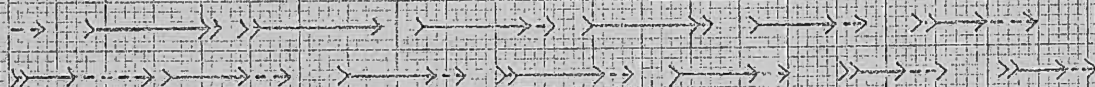
### 2. MEN STAMP AT THE EDGE OF A STOOPING CONTINGENT

0 10 20 30 40 50 60 70 80 90 100 110

MAN 1



MAN 2



MAN 3



### 3. MEN PERFORMING BOUNCE STEP

0 10 20 30 40 50 60 70 80 90 100 110

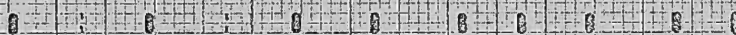
MAN 1



MAN 2



MAN 3



MAN 4





4. MEN PERFORMING WALKING STEP AND DRUMMING

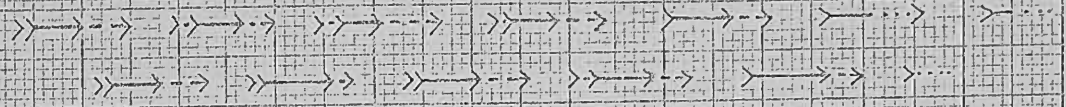
Tuguma clan cluster	63-JAB-31: 280 - 281
Dikai Dance Ground	MDDM
November 1, 1963	40 - 160 fr.; 0# 18

- Man 1 - just emerges from behind tree at frame 46: wears wide white and brown marsupial fur and yellow bird of paradise, and carries an axe.
- Man 2 - to the left and in front of man 1; dances bent over, beating drum; wears no decoration.
- Man 3 - Begins about ten feet behind man 1 and catches up; beats drum; wears a red wig and a red parrot feather.
- Man 4 - directly behind man 3; beats drum; wears a long black feather (karant).
- Man 5 - to the left of man 4; wears short white feather headdress and a white arm band on his right arm.
- Man 6 - behind man 5; wears black feathers with a red parrot in the middle.
- Man 7 - boy to the right of man 6.
- Man 8 - little boy to the right of man 7.
- Man 9 - on the far left; wears nothing on his head.

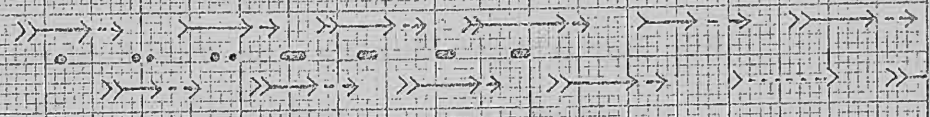
# 4. MEN PERFORMING WALKING STEP AND DRUMMING

40 50 60 70 80 90 100 110 120 130 140 150

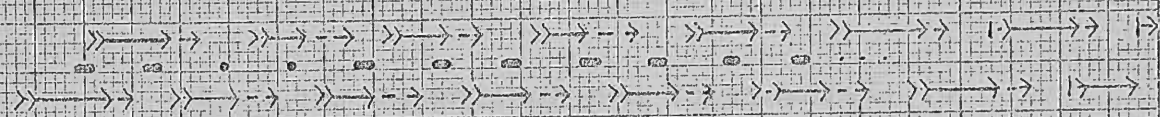
MAN 1



MAN 2



MAN 3



MAN 4



MAN 5



MAN 6



MAN 7



MAN 8



MAN 9



7 INCHES KEUFFEL & ESSER CO.

APPENDIX IV - MAPS OF FORMATIONS  
AND PATHWAYS

- A. Formations during the konj kaiko: maps 1 - 8
- B. Formations during the visit of the Tuguma dance contingent to the Dikai dance ground: maps 9 - 11
- C. Pathways of men dancing at the head of a contingent: map 12
- D. Formation of girls dancing: map 13
- E. Pathways of men sacrificing pigs: maps 14 - 16

Key to explanations:

<u>Map</u>	
Number	Explanation. (number of film)
	(#) Detailed events in sequence on one map.

KEY TO MAPS OF GROUP FORMATION AND PATHWAYS

⊥ ○ MAN

⊥ ○ WOMAN

\* ○ TREE

⊖ PIG

→ PATHWAY OF ONE PERSON

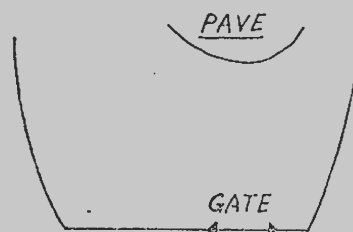
→▷ PATHWAY OF GROUP

... DISCONTINUITY IN MAPPING

⊥ STRIKING A PIG WITH A CLUB

x RAISING AND LOWERING CLUB

○ A GROUP



SCHEMATIZED OUTLINE  
OF DIKAI DANCE GROUND



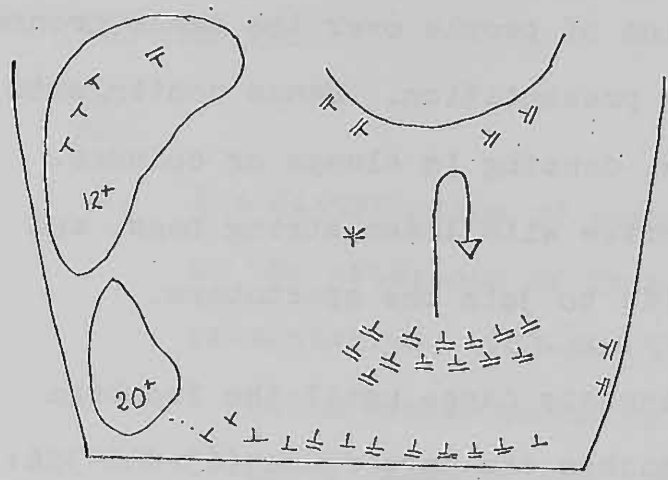
- 2
- A. The Konj Kaiko, Dikai dance ground, November 9, 1963, (63-JAB-35A).

Map

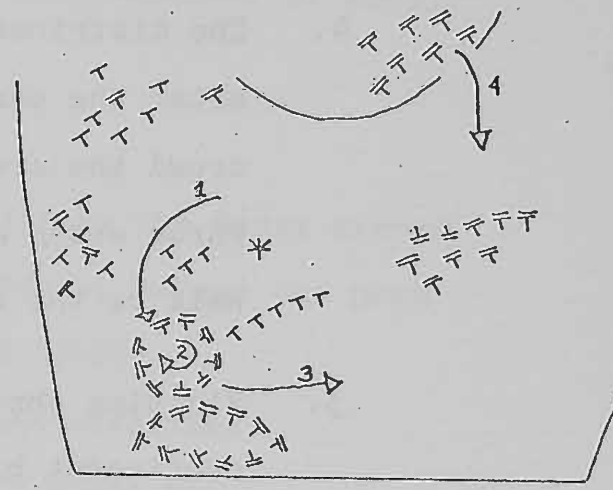
1. The distribution of people over the dance ground on the afternoon of November 9, before the pork presentation. (63-JAB-35A: 312)
  - (1) A dancer walks to the sidelines.
  - (2) A Tsembaga man walks among the people, gesturing and shouting for silence.
2. One dance contingent approaches the pave fence to receive presentations of pork (63-JAB-35A: 312).
  - a. The recipient goes to the pave and a young man flanking him dances back and forth in front of the pave.
  - b. The whole dance contingent goes to the pave and then turns and goes back across the dance ground after the recipient has gotten his bundle of pork.
3. Another recipient of pork goes to the pave flanked by young men and one young girl wielding a bushknife (63-JAB-35A: 314).

4. The distribution of people over the dance ground after the pork presentation. Dance contingents crowd the area, dancing in clumps or columns. Three women arrive with laden string bags, and walk to the side to join the spectators.
5. Visiting contingents dance until the Tsembaga contingent breaches the pave fence (63-JAB-35A: 315).
  - (1) A contingent moves through the crowd in a column.
  - (2) The contingent dances briefly in a circle.
  - (3) The contingent again traverses the area as a column.
  - (4) The Tsembaga contingent breaches the pave.

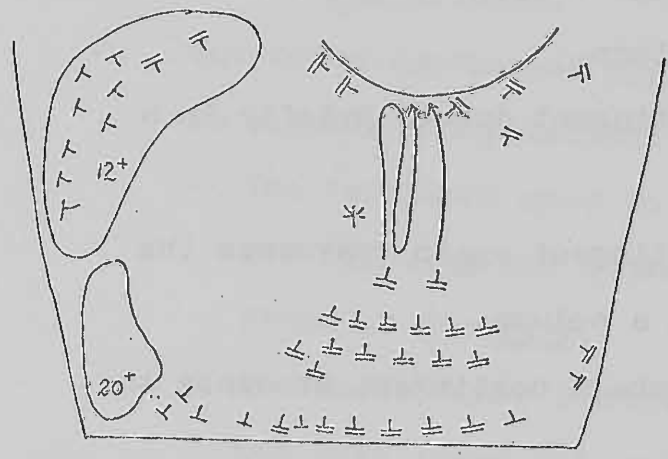
MAPS on following page.



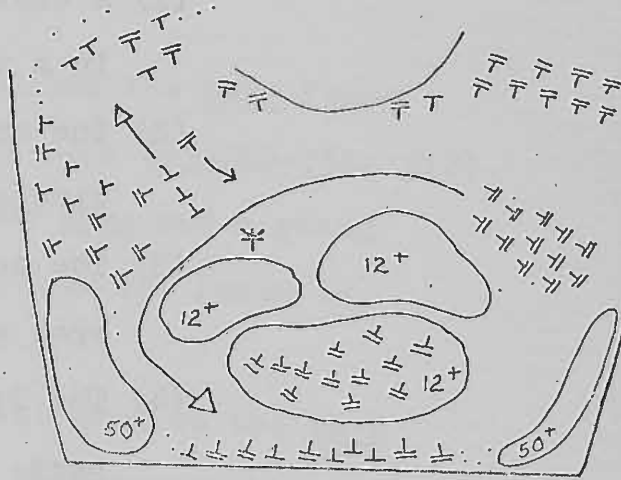
2b



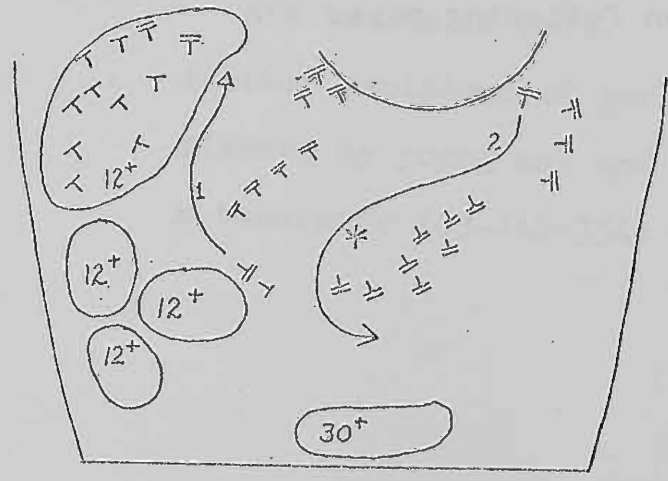
5



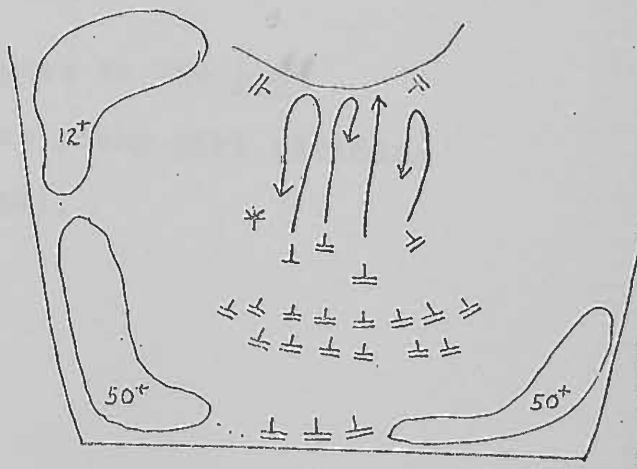
2a



4



1

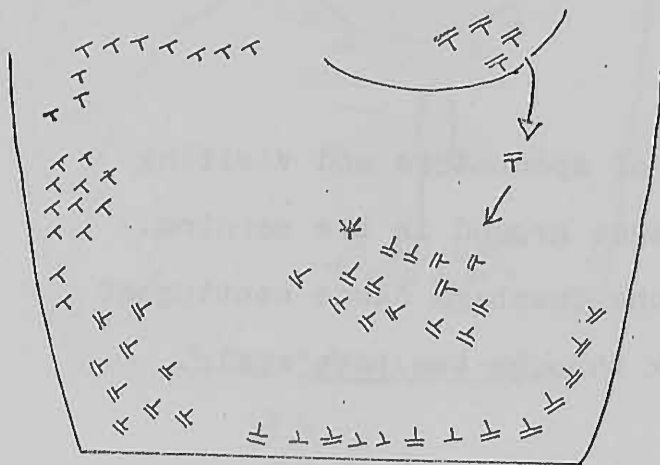


3

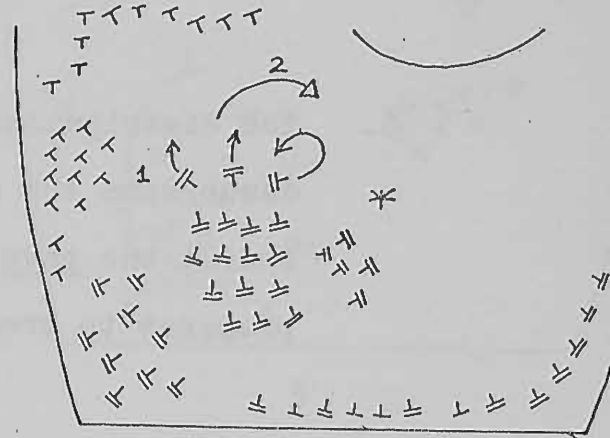
The Konj Kaiko, Dikai dance ground, November 10, 1963,  
(63-JAB-35B).

6. The distribution of spectators and visiting dancers on the dance ground in the morning. Inside the pave the Tsembaga dance contingent prepares to break through the pave again.
  
7.
  - a. The Tsembaga dance contingent breaches the pave.
  - b. It forms a column which traverses the dance ground.
  - c.
    - (1) The contingent is led by three men dancing independently,
    - (2) as the whole contingent traverses the area.

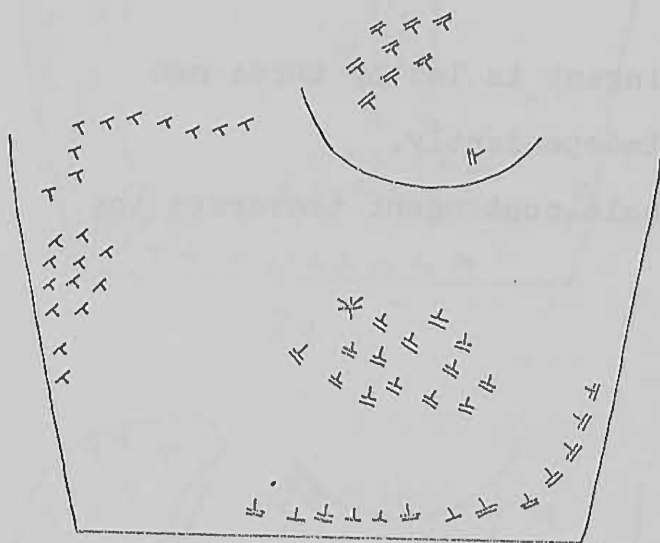




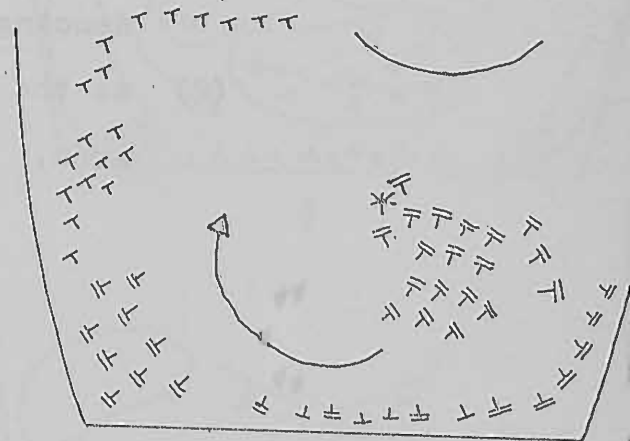
7a



7c

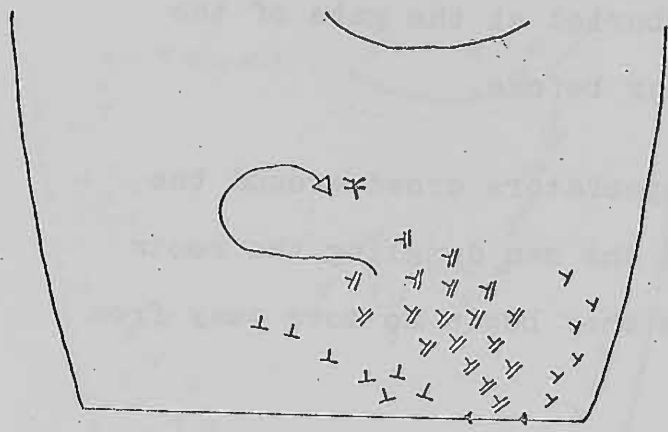


6

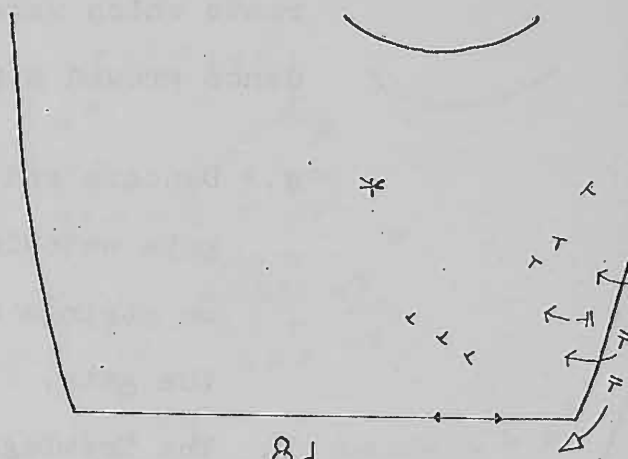


7b

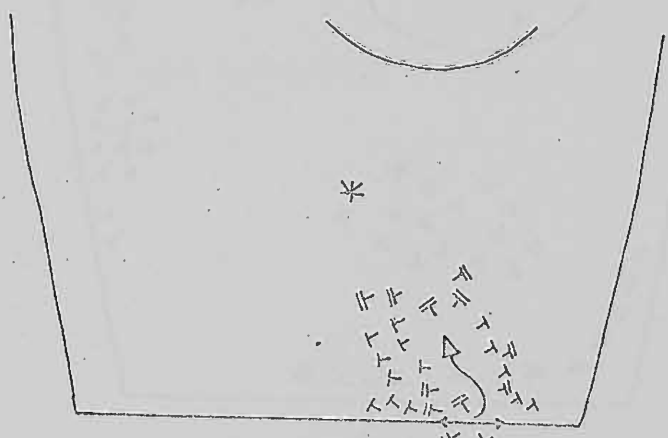
8. The kaiko is brought to a close by digging up roots which were buried at the gate of the dance ground a year before.
  - a. Dancers and spectators crowd around the gate watching the men dangling the roots on strings as they begin to move away from the gate.
  - b. The Tsembaga dance contingent traverses the dance ground, led by the men carrying the roots.
  - c. The dance contingent leaves the ground and goes along a path to the west.
  - d. The men return, walking.



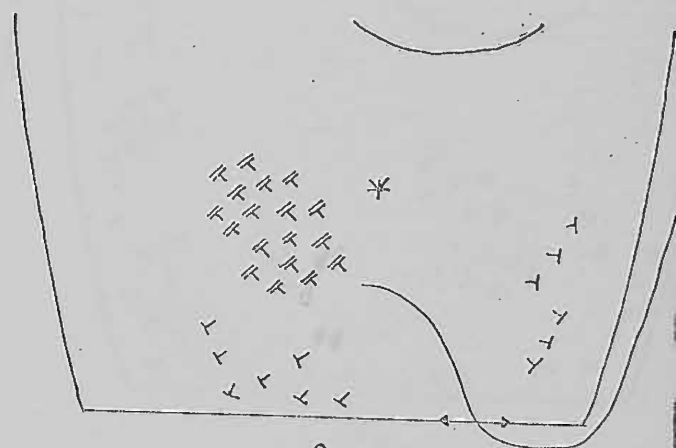
8b



8d



8a

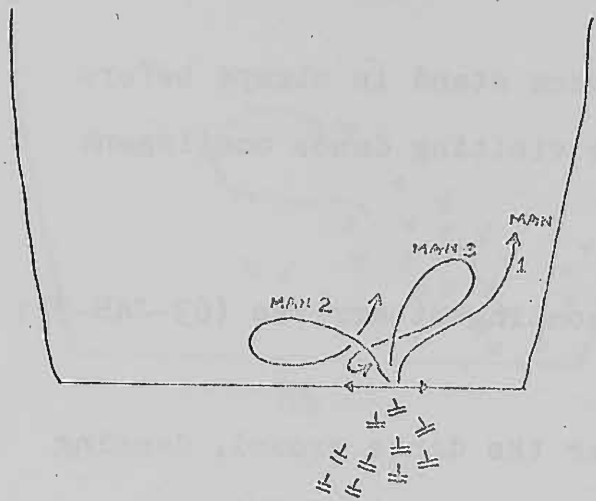


8c

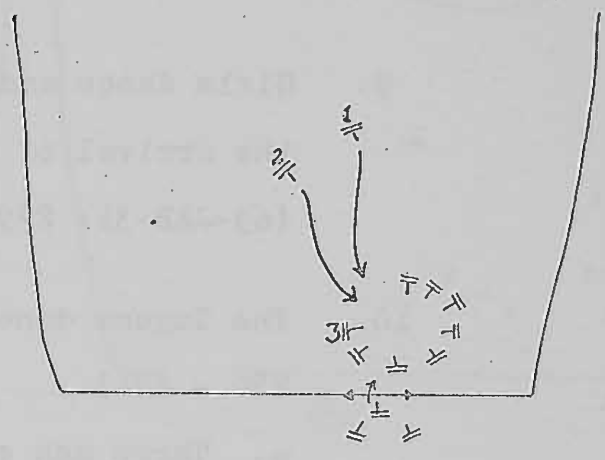
B. The Visit of the Tuguma Dance Contingent to the Dikai Dance Ground, November 1, 1963 (63-JAB-31).

9. Girls dance and women stand in clumps before the arrival of the visiting dance contingent (63-JAB-31: 279).
10. The Tuguma dance contingent arrives (63-JAB-31: 280 - 281).
  - a. Three men enter the dance ground, dancing independently at the head of the contingent.
  - b. As the dance contingent crosses the gate, the three men continue dancing independently.
  - c. When most of the contingent is inside the dance ground, the dancers stoop in a clump.

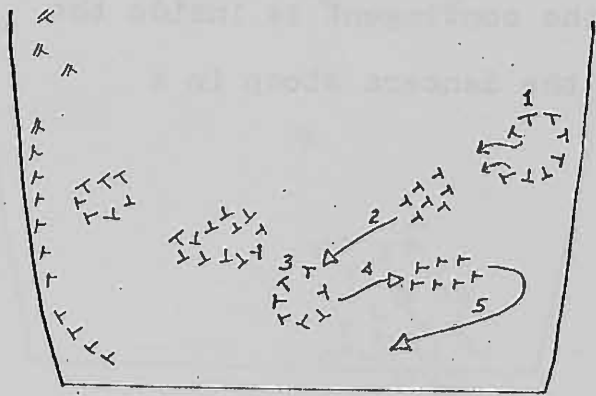




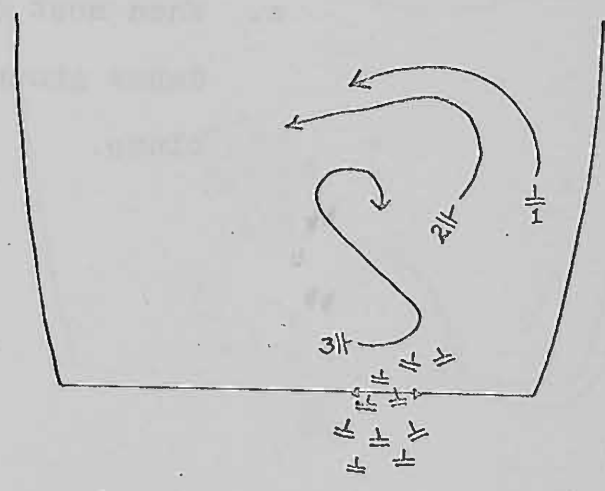
10a



10c



9



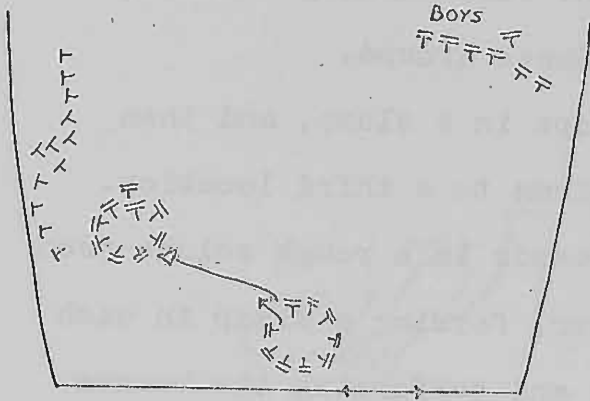
10b

## 10. (continued...)

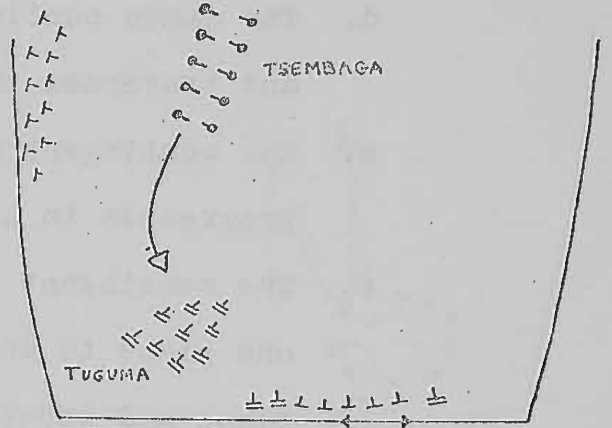
- d. The dance contingent forms a rough column and traverses the dance ground.
- e. The contingent stoops in a clump, and then progresses in a column to a third location.
- f. The contingent proceeds in a rough column from one place to another, forming a clump in each place and stooping and performing the bounce step.

## 11. The Tsembaga dance contingent joins the Tuguma contingent (63-JAB-31: 282).

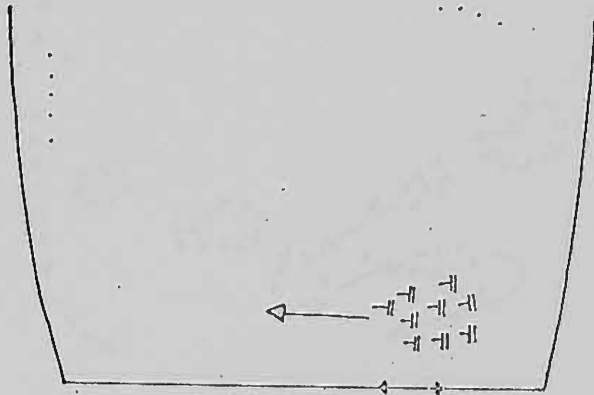
- a. The Tsembaga dance contingent enters from the uphill side of the dance ground in a split column.



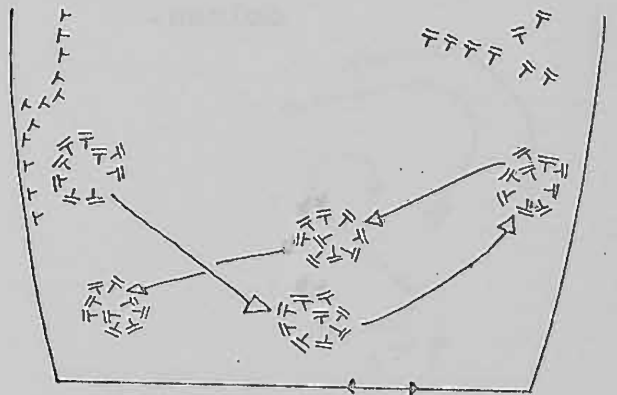
10e



11a



10d

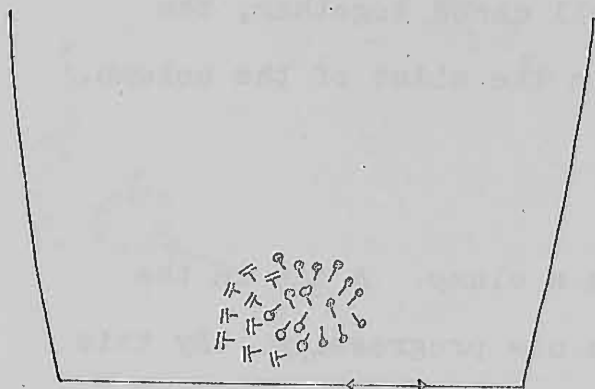


10f

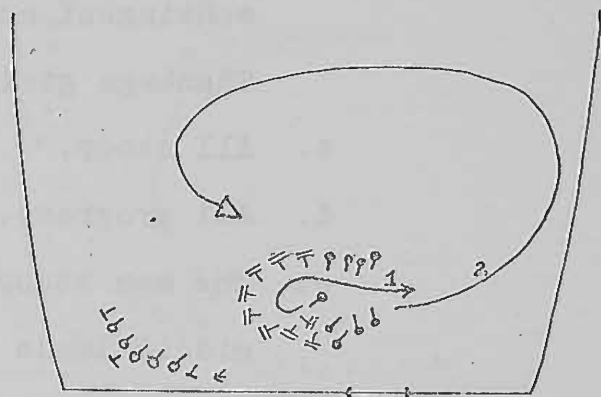
## 11. (continued...)

- b. The Tsembaga contingent joins the Tuguma contingent and all dance together, the Tsembaga girls in the midst of the column.
- c. All stoop.
- d. All progress.
- e. The men stoop in a clump. A man in the middle leads the new progression. By this time, the girls have left the dance contingent and have joined the spectators along the edges of the dance ground.

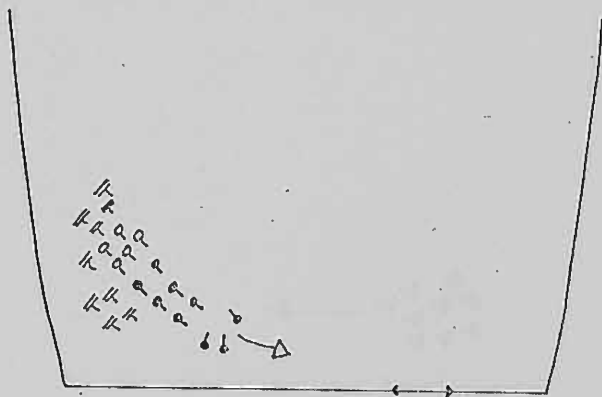




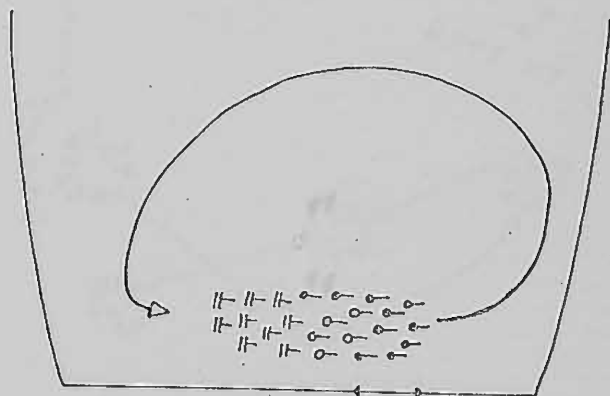
11c



11e



11b



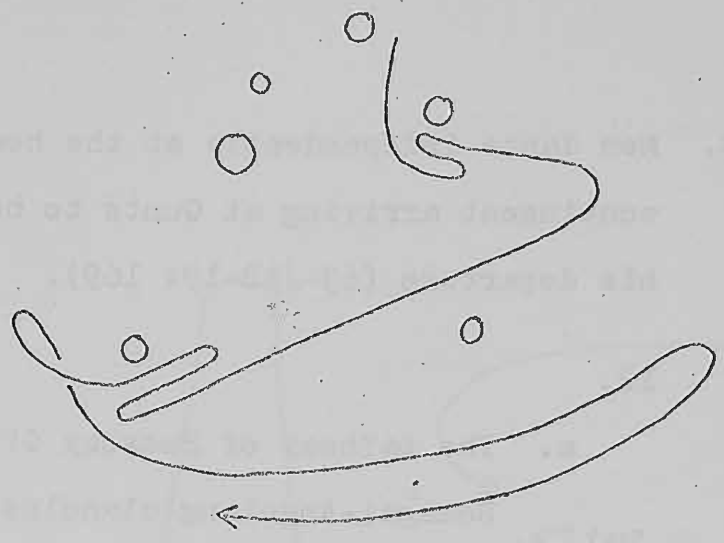
11d

C. Men dance independently at the head of a dance contingent arriving at Gunts to honor A.P. Vayda at his departure (63-JAB-19: 169).

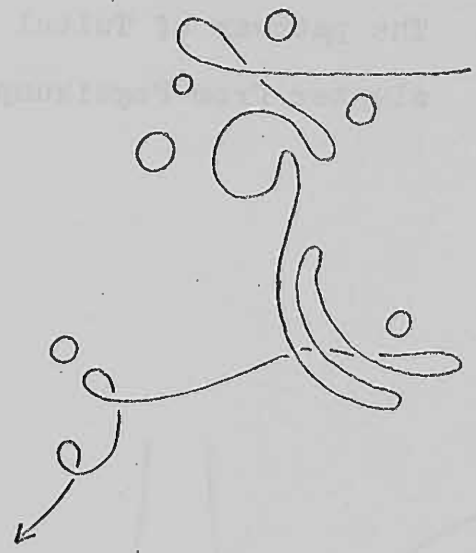
12.

- a. The pathway of Bossboy Giribo of the Bomagai-Angoiang clancluster.
- b. The pathway of Luluai Wun of the Bomagai-Angoiang clancluster.
- c. The pathway of Tultul Gara of the clancluster from Fogaikump.

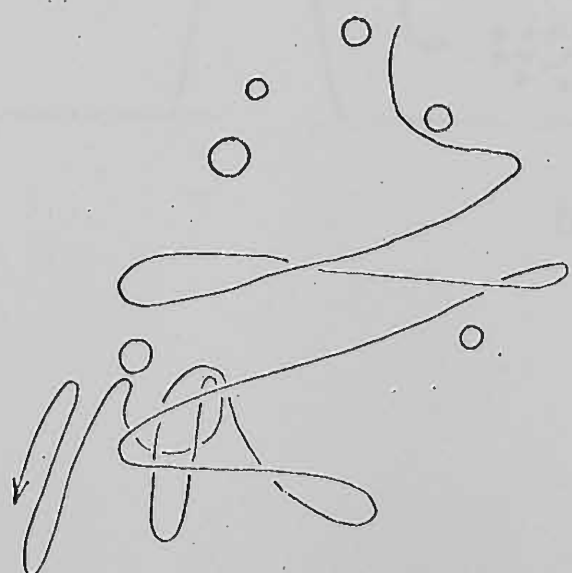
12 a



12 b



12 c



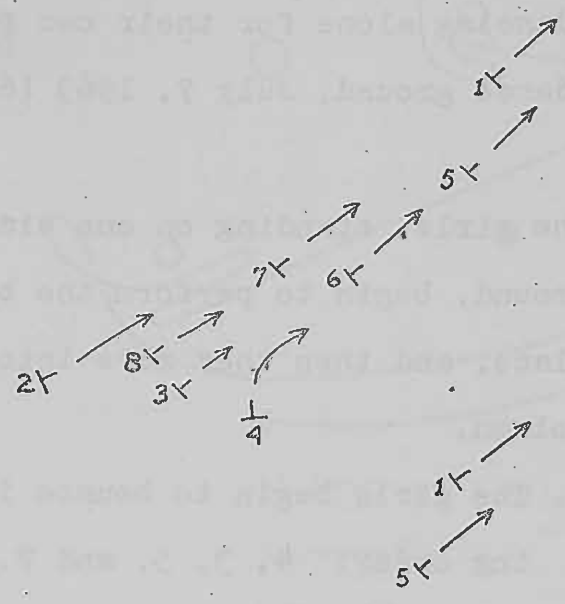
D. Girls dancing alone for their own pleasure on the Dikai dance ground, July 7, 1963 (63-JAB-1: 7 - 8).

13. The girls, standing on one side of the dance ground, begin to perform the bounce step in place, and then they move into a rough column.

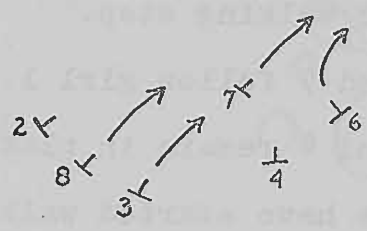
- a. The girls begin to bounce in the following order: 4, 3, 5, and 7. Then girl 1 begins the walking step.
- b. Girls 5 and 7 follow girl 1.
- c. Girls 2 and 4 remain in place after all the others have started walking.
- d. Girls 2 and 4 also join the column.



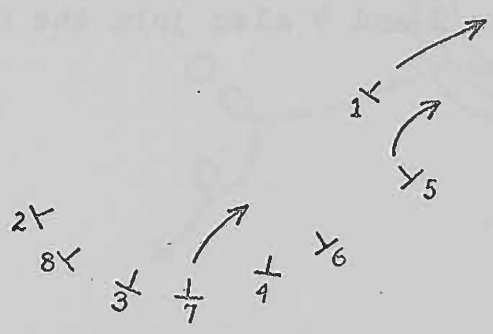
13 d



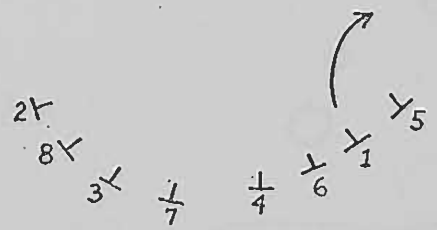
13 c



13 b



13 a

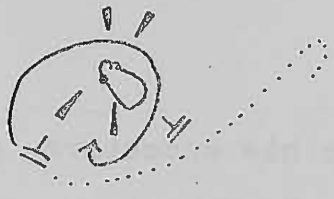


E. Sacrificing pigs in a raku, Raku Numengump, November 8, 1963, (63-JAB-33).

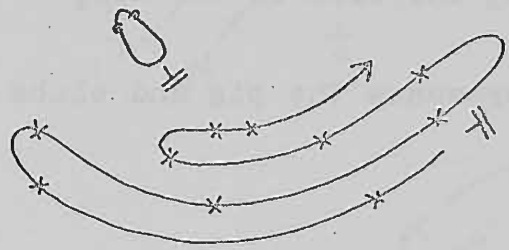
14. A man calls out to his ancestors, goes closer to the pig, and clubs it twice.

15.

- a. A man paces back and forth by the pig, calling out to his ancestors, twisting the club in his palms, and irregularly raising the club in the air.
- b. He approaches the pig and clubs it four times.



15b



15a



14

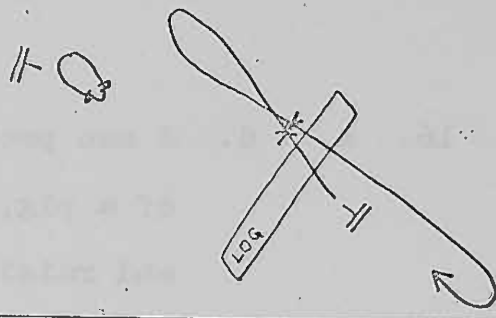
16. a. - d. A man paces back and forth in front  
of a pig, calling out to his ancestors  
and raising the club as he twists it.

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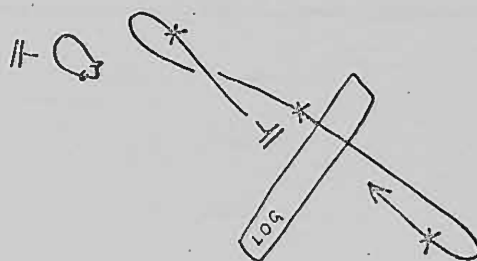
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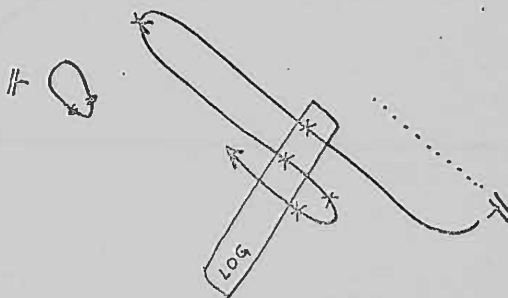




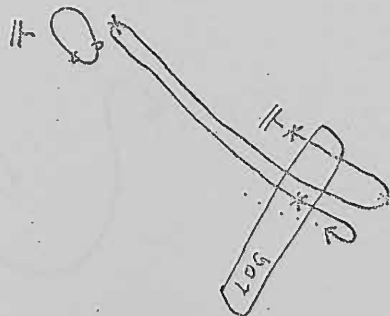
16d



16c

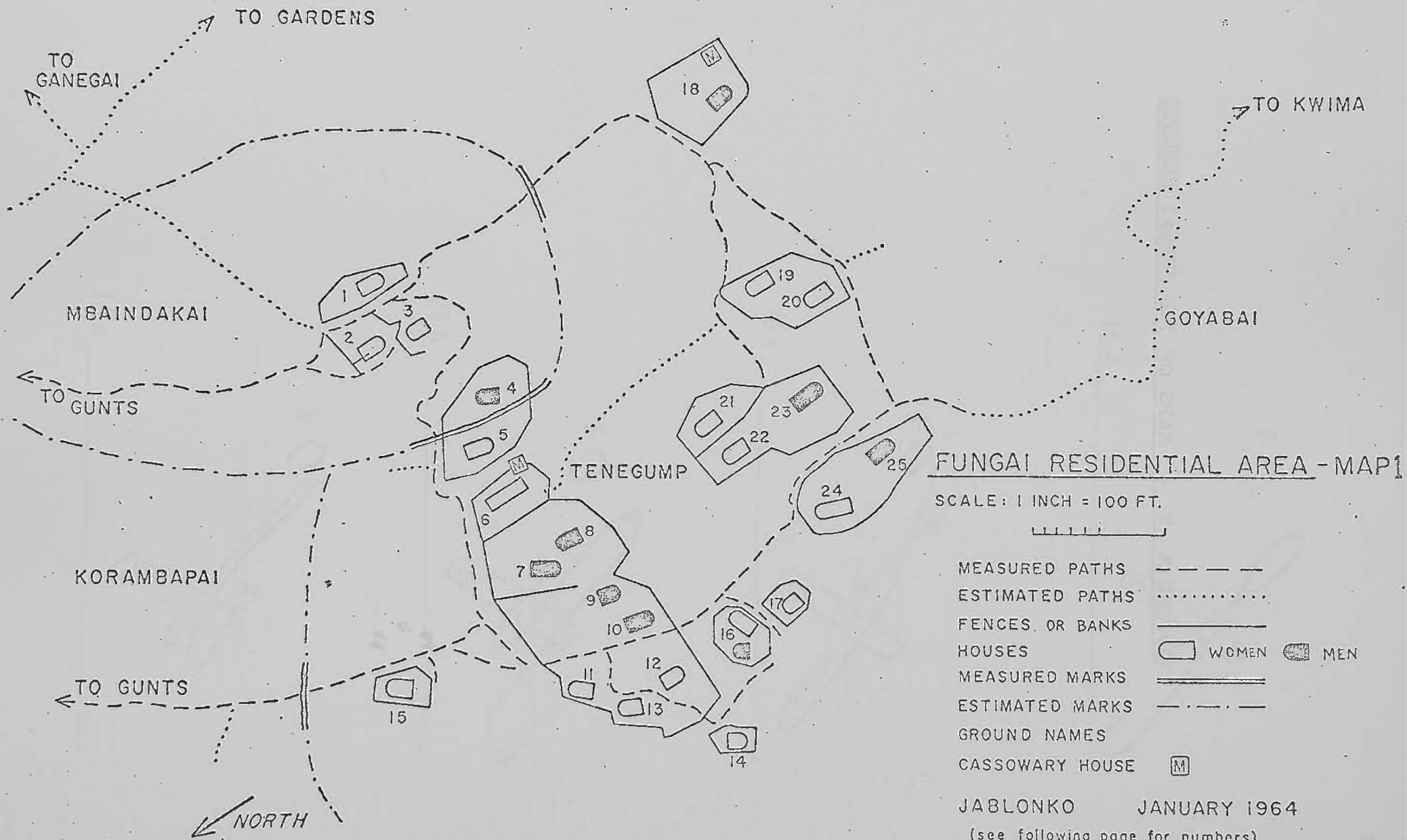


16b



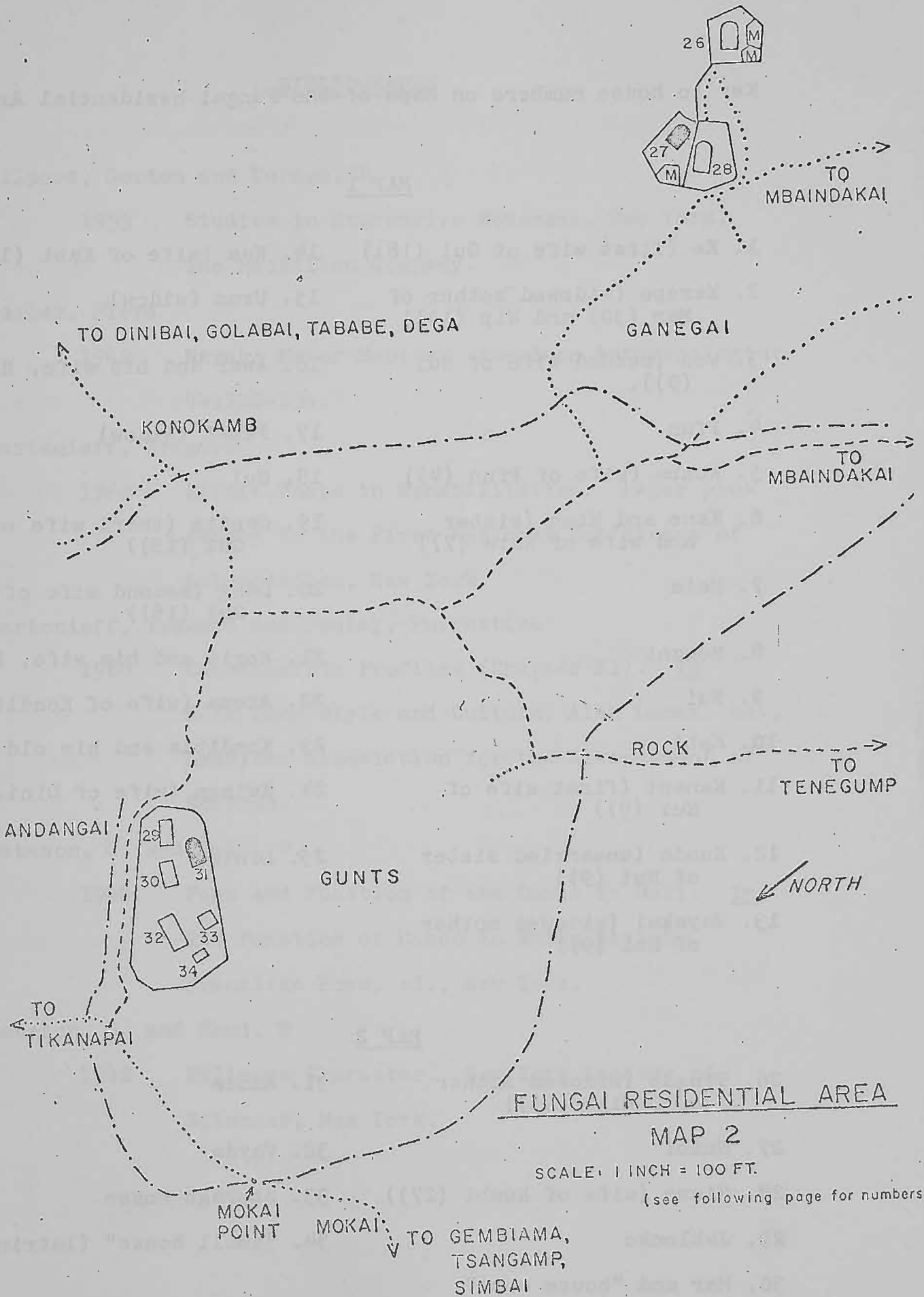
16a

APPENDIX V - MAPS OF THE FUNGAI HAMLETS



JABLONKO JANUARY 1964

(see following page for numbers)





Key to house numbers on Maps of the Fungai Residential Area.

MAP 1

- |   |                                     |
|---|-------------------------------------|
| 1. Ke (first wife of Gul (18))                      | 14. Kua (wife of Kabi (10))         |
| 2. Kerepe (widowed mother of Mar (30) and Wip (10)) | 15. Urum (widow)                    |
| 3. Weu (second wife of Nui (9)).                    | 16. Awar and his wife, Rika         |
| 4. Pfun   | 17. Pawai (widow)                   |
| 5. Komba (wife of Pfun (4))                         | 18. Gul                             |
| 6. Kane and Mben (sister and wife of Naia (7))      | 19. Gandim (third wife of Gul (18)) |
| 7. Naia   | 20. Dang (second wife of Gul (18))  |
| 8. Nomani   | 21. Korip and his wife, Rango       |
| 9. Nui  | 22. Atema (wife of Kondibia (23))   |
| 10. Kabi  | 23. Kondibia and his old father     |
| 11. Kanant (first wife of Nui (9))                  | 24. Kwingn (wife of Dinige (25))    |
| 12. Kunda (unmarried sister of Nui (9))             | 25. Dinige                          |
| 13. Wayakai (widowed mother of Nui (9))             |                                     |

MAP 2

- |  |                             |
|--|-----------------------------|
| 26. Tingde (widowed mother of Dinige (25)) | 31. Ambia                   |
| 27. Numbi                                  | 32. Vayda                   |
| 28. Minme (wife of Numbi (27))             | 33. Storage house           |
| 29. Jablonko                               | 34. "small house" (latrine) |
| 30. Mar and "house cook"                   |                             |

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