

FIGURE 26

Sagittal view of Envelope of Total Movement Space in the dentulous subject.

The posterior boundary a - á of the Envelope of Total Movement Space in the sagittal view was interrupted in the middle by an obtuse angle indicating the point of compulsory protrusive excursion of the condyles.

The jaw point could be forced into a position .5 mm. distal to the intercuspal position at the same inter-occlusal level.

The anterior boundary formed by the path 'b' initiated from the maximally protruded position (M.P.P.) almost vertically, indicating a combined protrusive excursion of the condyles.

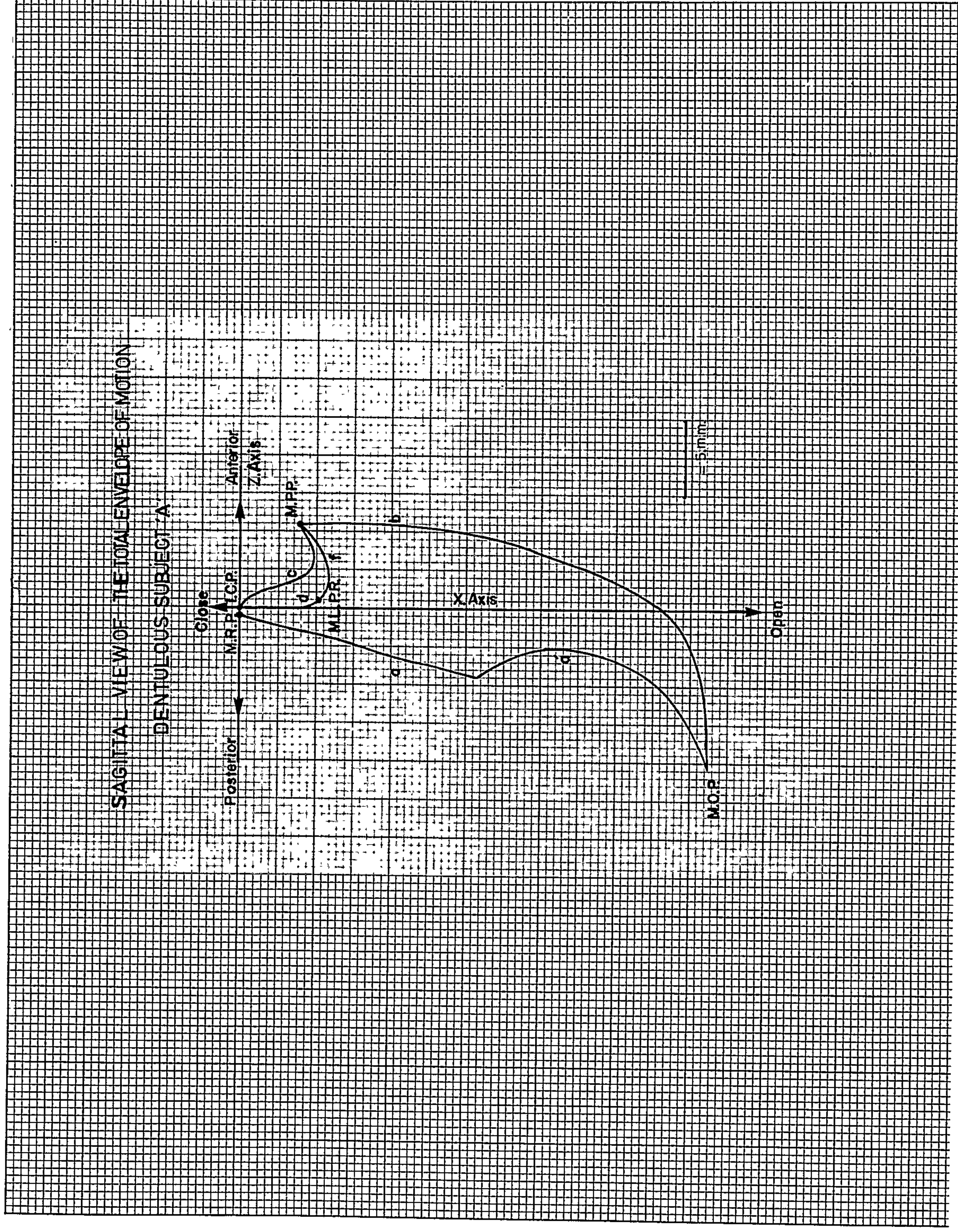


Fig.No.26 .

FIGURE 27

The Frontal view of the Total Envelope of Motion in the dentulous subject presented a shield-like outline form. The capacity for lateral motion was greater on the left side, even at the inter-occlusal level the left lateral path 'e' reached Y axis .7 mm. laterally to the intercuspal position. The right lateral path 'd' reached Y axis, .2 mm. laterally to the intercuspal position.

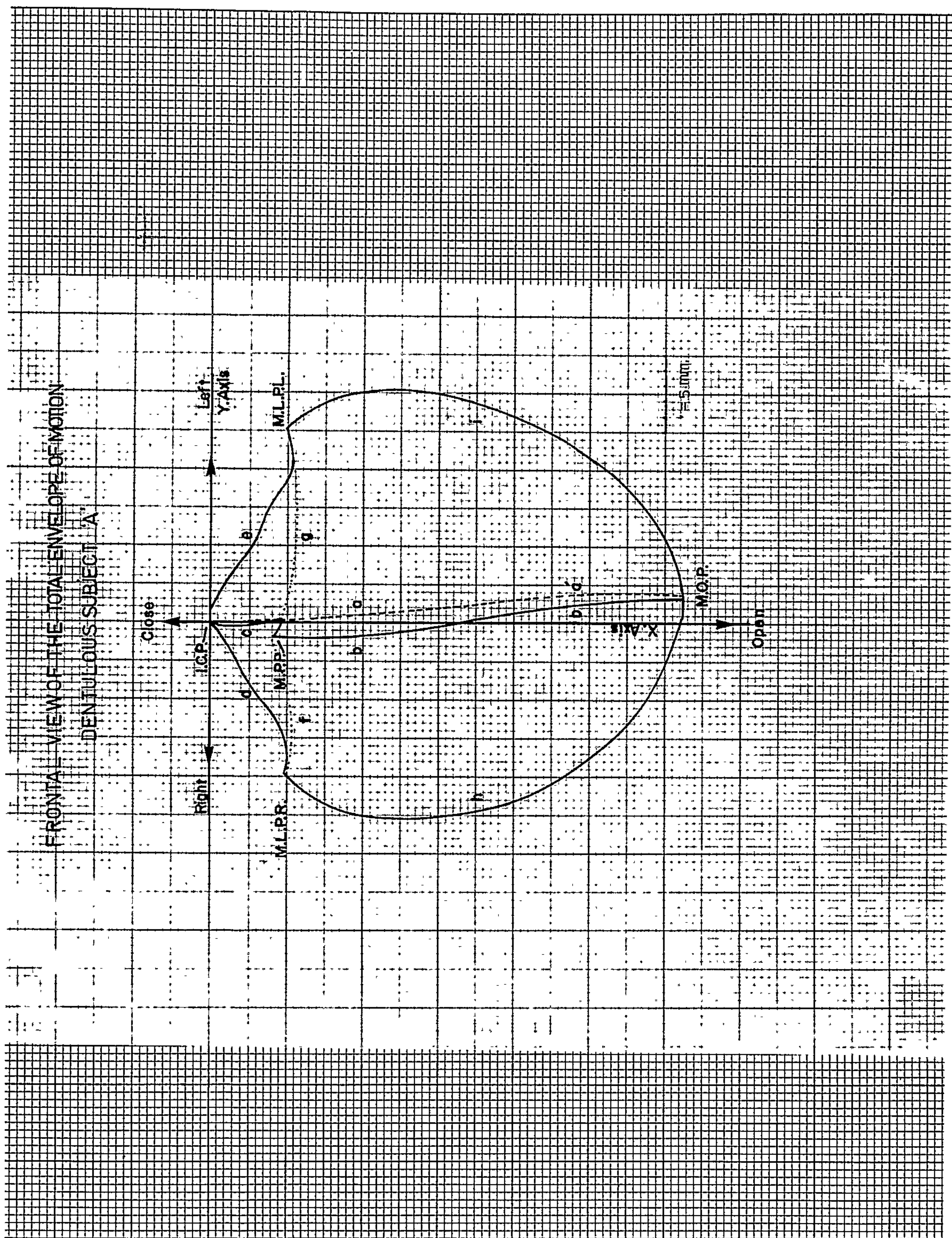


Fig.No.27.

FIGURE 28

Terminal parts of the closing strokes in two cycles of the exercise "open slightly, close and clench during swallowing" in the three edentulous subjects. All the strokes reach intercuspal position directly without any intercuspal gliding, indicating that the intercuspal position in the dentures coincided with the retruded maxillomandibular relationship, which was the apex of the gothic arch tracing.

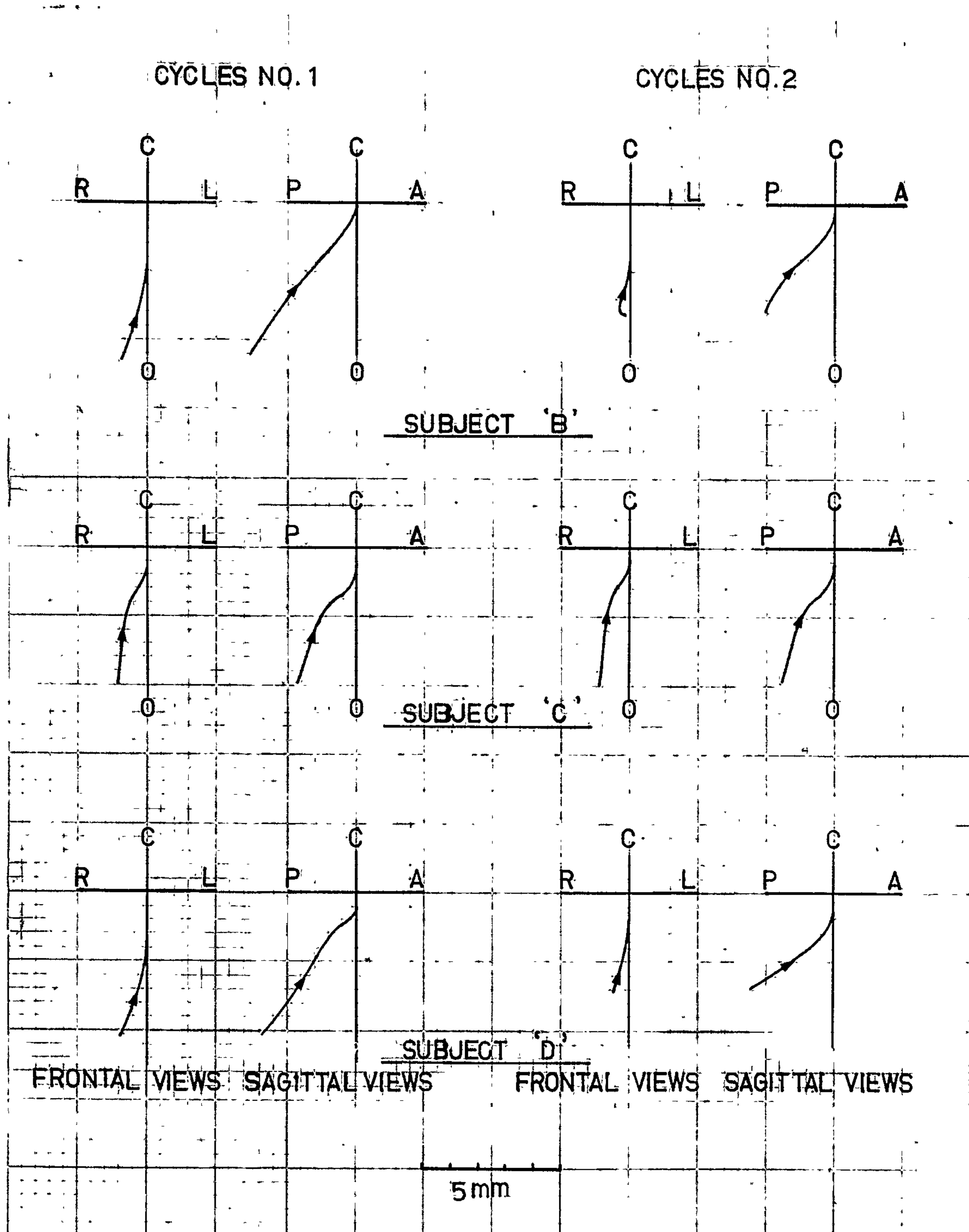


Fig.No.28 .

FIGURE 29

Horizontal views of the Envelopes of Total Movement Space in edentulous subjects B, C, and D.

1. The jaw point could be shifted farther distally from the intercuspal position.
2. The posterior superior lateral border paths approached the Maximally Retruded Position M.R.P. from a distolateral direction.
3. The capacity for distal motion was greater on the right or the preferred side.
4. The capacity for lateral motion was greater on the left or the non preferred side.
5. The Maximally Protruded Positions M.P.P. are located closer to the Z axis.

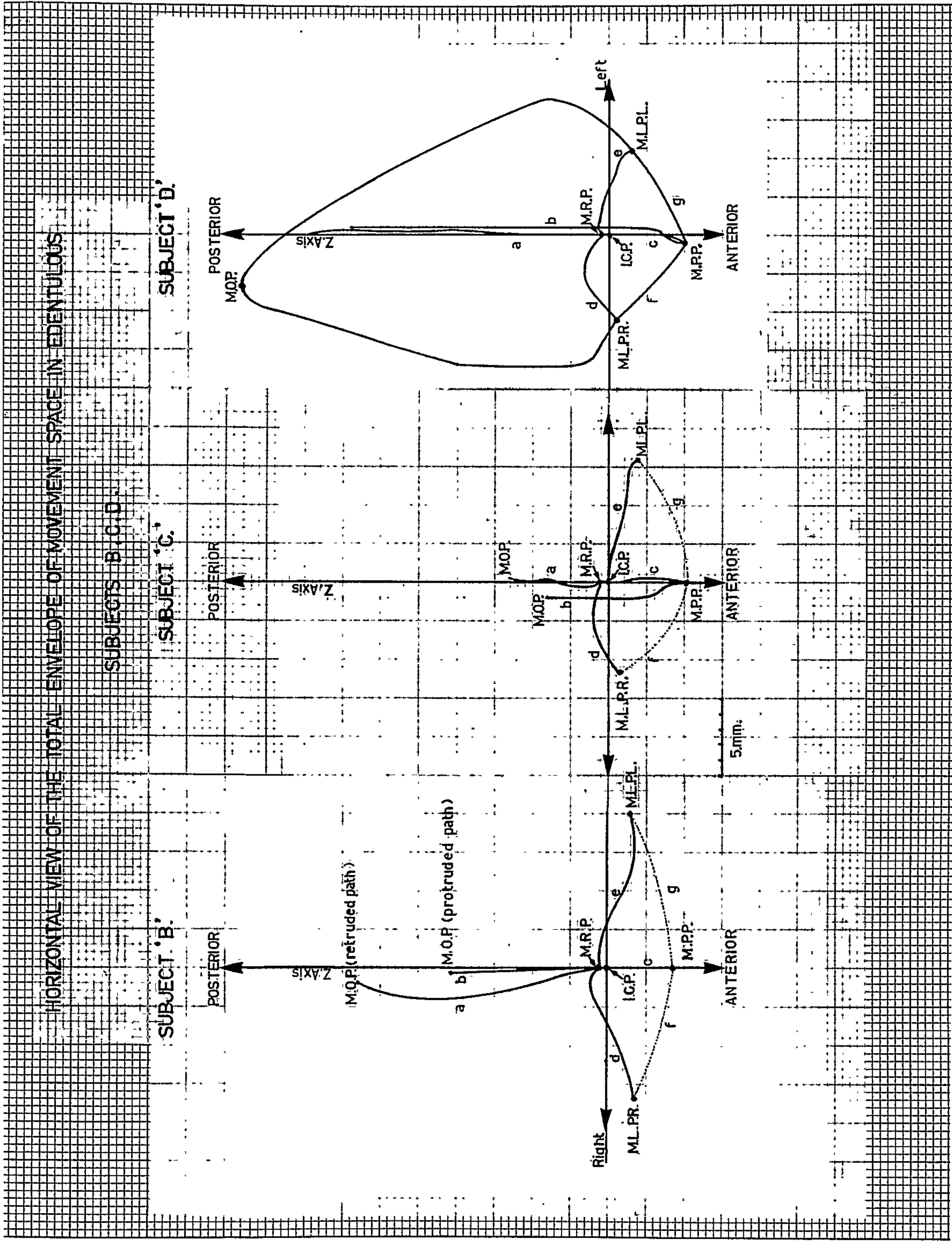


Fig.No.29 .

FIGURE 30

Horizontal views of the occlusal boundaries of the Envelopes of Total Movement Space in edentulous subjects B, C, and D.

1. The lateral acute angles on the right or preferred side were greater than on the left side, both were greater than in the dentulous subject.
2. The posterior superior lateral movement paths passed further distally than the Y axis more so on the preferred side (right side).
3. The Maximally Lateral Positions on the left side were farther away from the intercuspal position than on the right side.

HORIZONTAL VIEW OF THE OCCLUSAL BOUNDARY OF THE TOTAL MOVEMENT SPACE IN EDENTULOUS SUBJECTS.

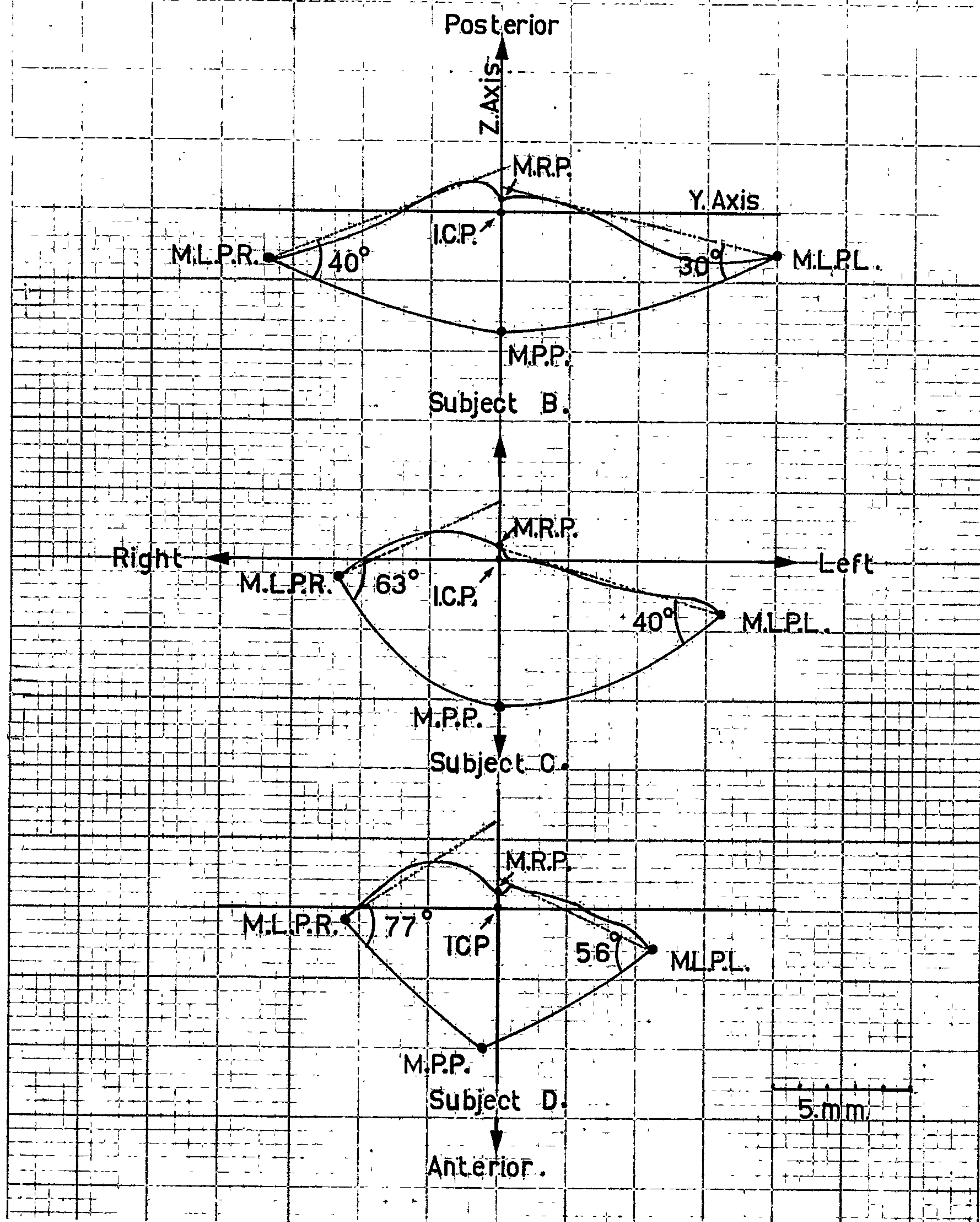


Fig. No.30.

FIGURE 31

Extreme wide opening of the mouth in edentulous subjects resulted in displacement of the lower dentures from the foundation.

In subject D. the bulbous form of the lower alveolar ridge provided mechanical means of retention and very little displacement was seen.

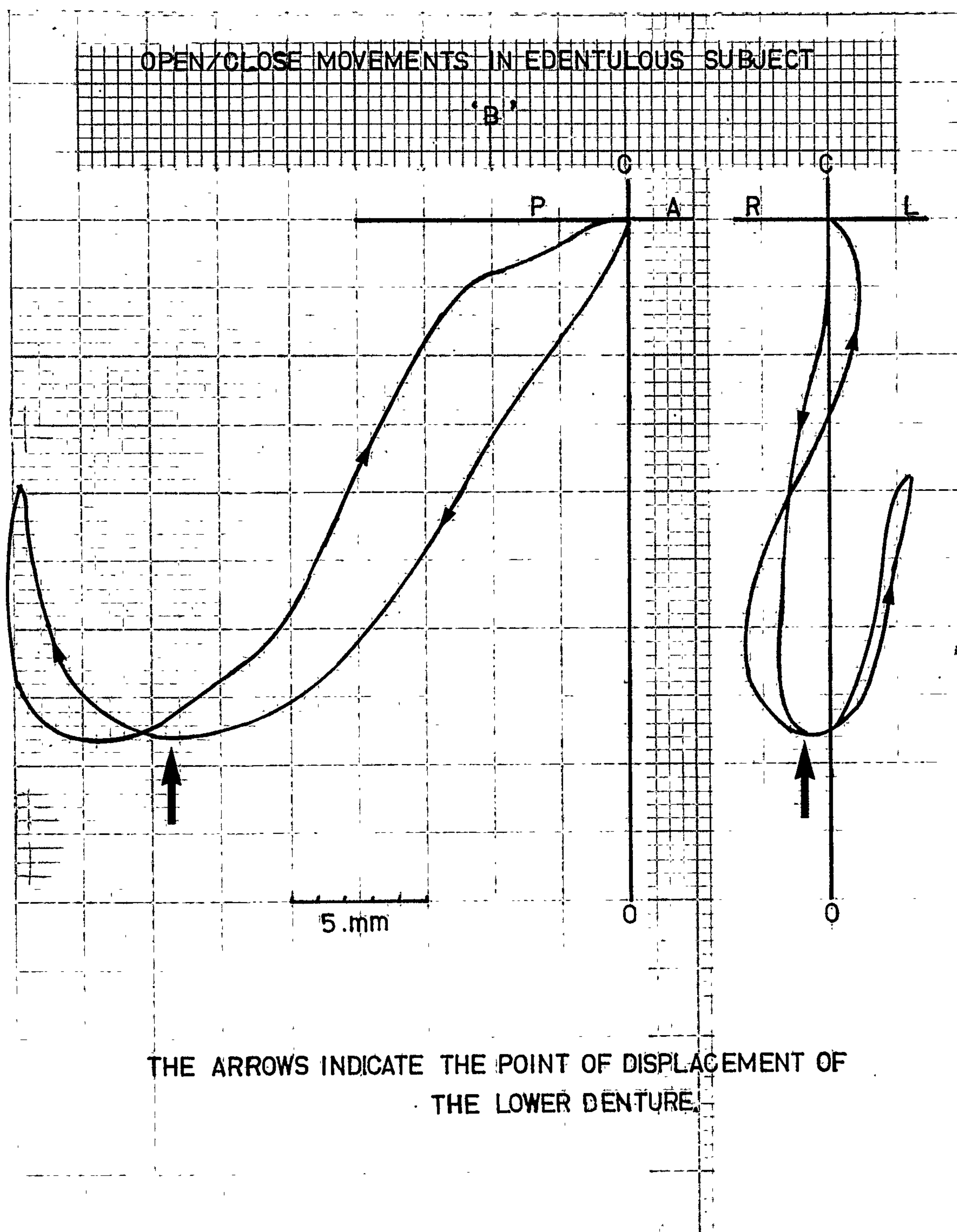


Fig.No.31.

FIGURE 32

Sagittal views of the Envelopes of Total Movement Space in the edentulous subjects B, C, and D.

1. The jaw point could be shifted farther distally from the intercuspal position.
2. The posterior superior lateral border movement paths approached M.R.P. from a distolateral and inferior direction.
3. The maximally retruded open/close movement paths did not show any angle in the middle.
4. The maximally protruded positions and the protrusive path were closer to the Z axis than in the dentulous. This may be due to lower cusp height in the artificial dentures.

SAGITTAL VIEW OF THE TOTAL ENVELOPE OF MOVEMENT STAGE IN EDENTULOUS

SUBJECTS B,C,D

SUBJECT B

SUBJECT C

SUBJECT D

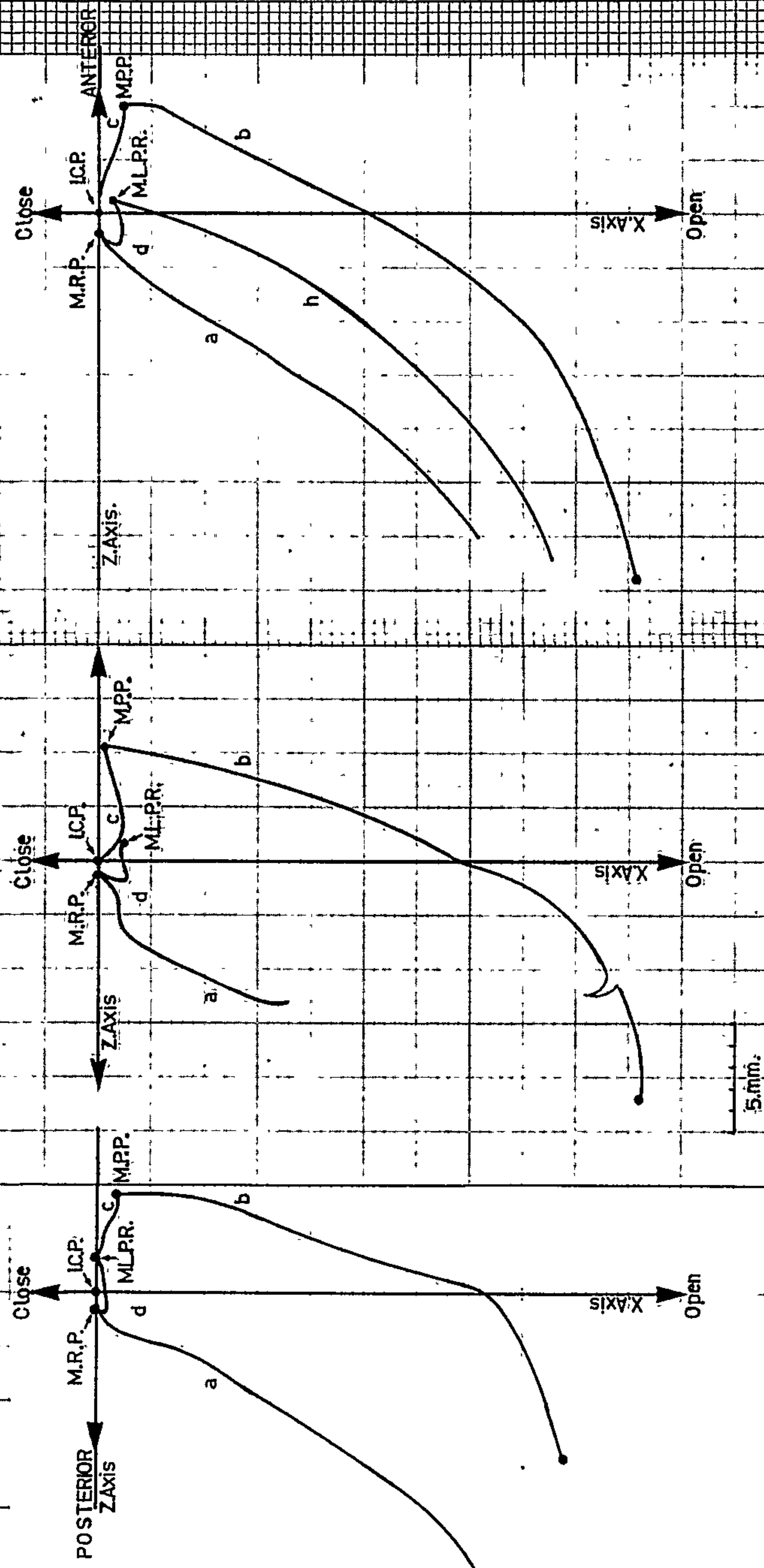


Fig.No.32 .

FIGURE 33

Tangents were drawn to the initial 0.5 mm. of the protrusive border paths and angles between the tangents and Z axis measured as protrusive cuspal guidance angles.

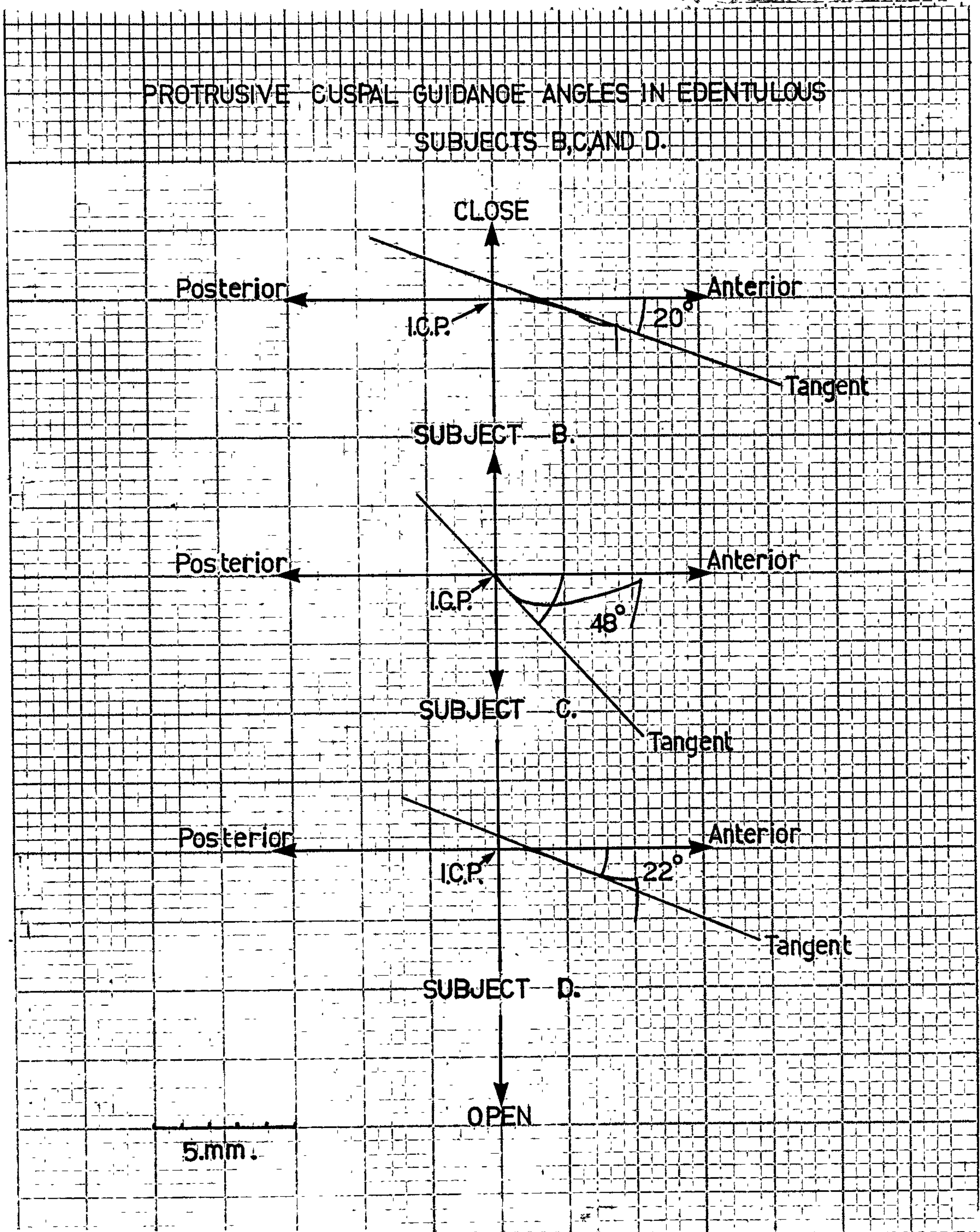


Fig.No.33.

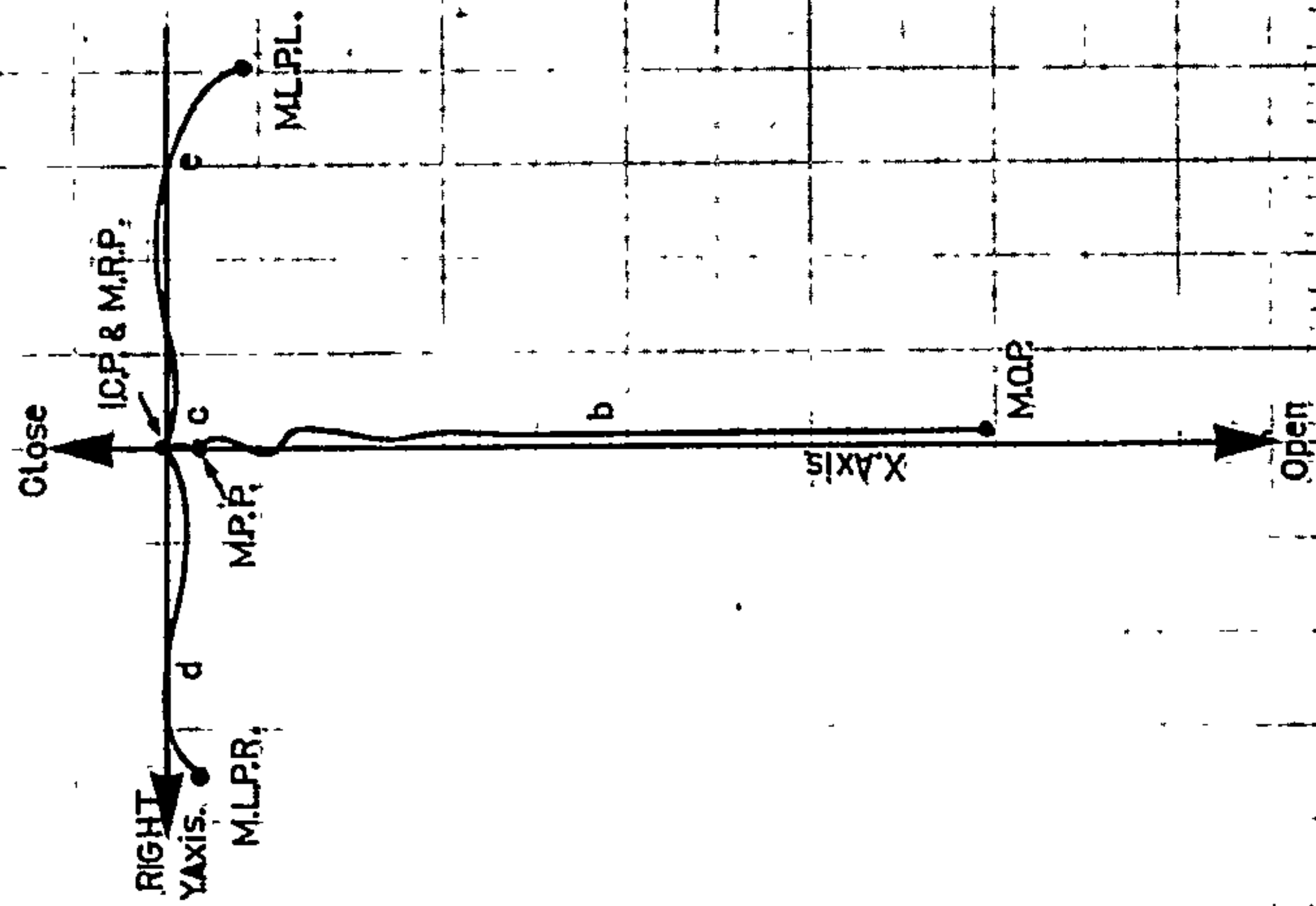
FIGURE 34

The Frontal views of the Envelopes of Total Movement Space in the edentulous subjects: Similar to the dentulous subject the envelope was shield-like in outline form but smaller in dimensions. The Maximally lateral positions were closer to the Y axis, this may be due to the lower cusp height in the artificial dentures.

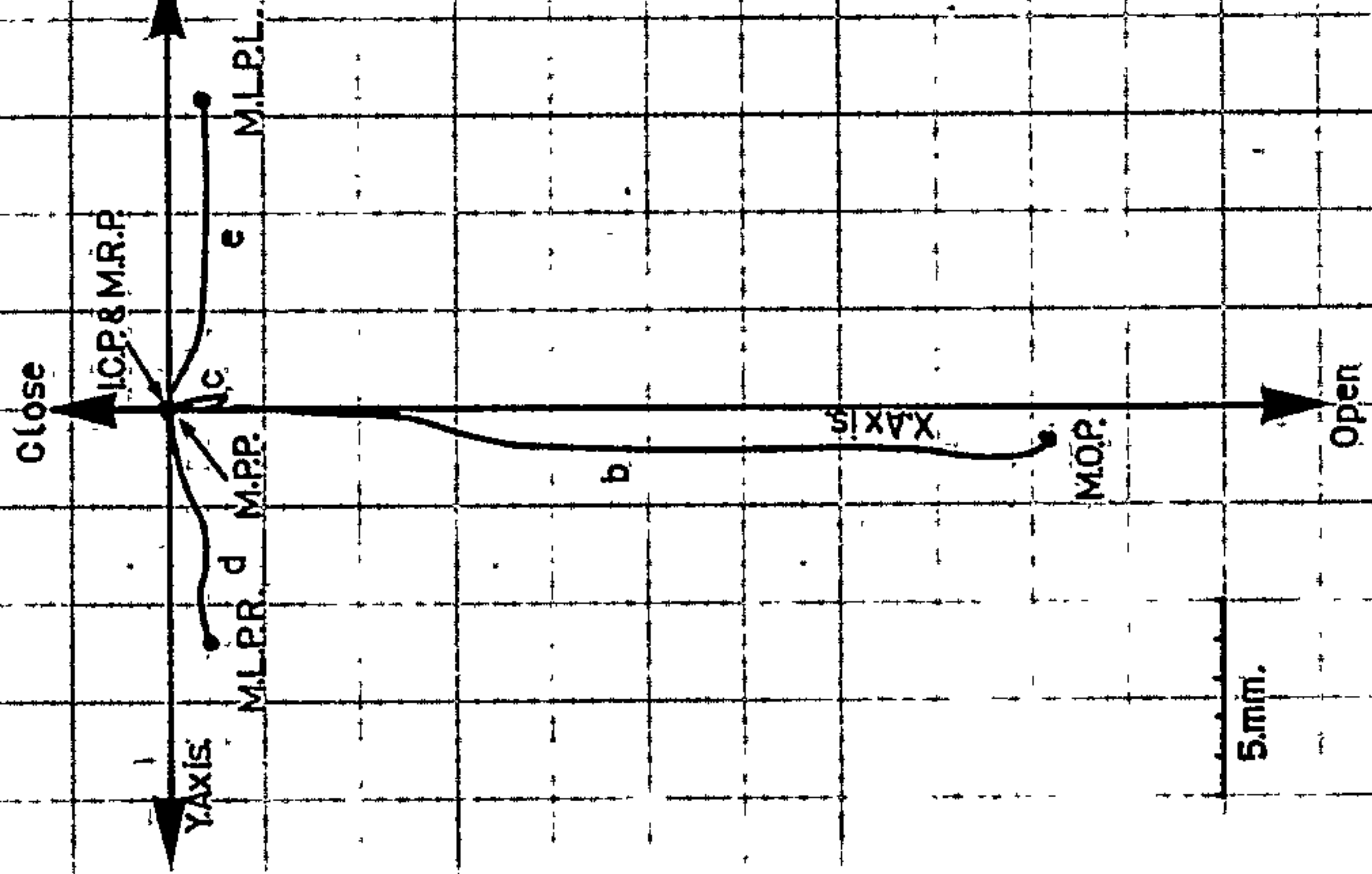
FRONTAL VIEW OF THE TOTAL ENVELOPE OF MOVEMENT SPACE IN EDENTULOUS

SUBJECTS B,C,D

SUBJECT B.



SUBJECT C.



SUBJECT D.

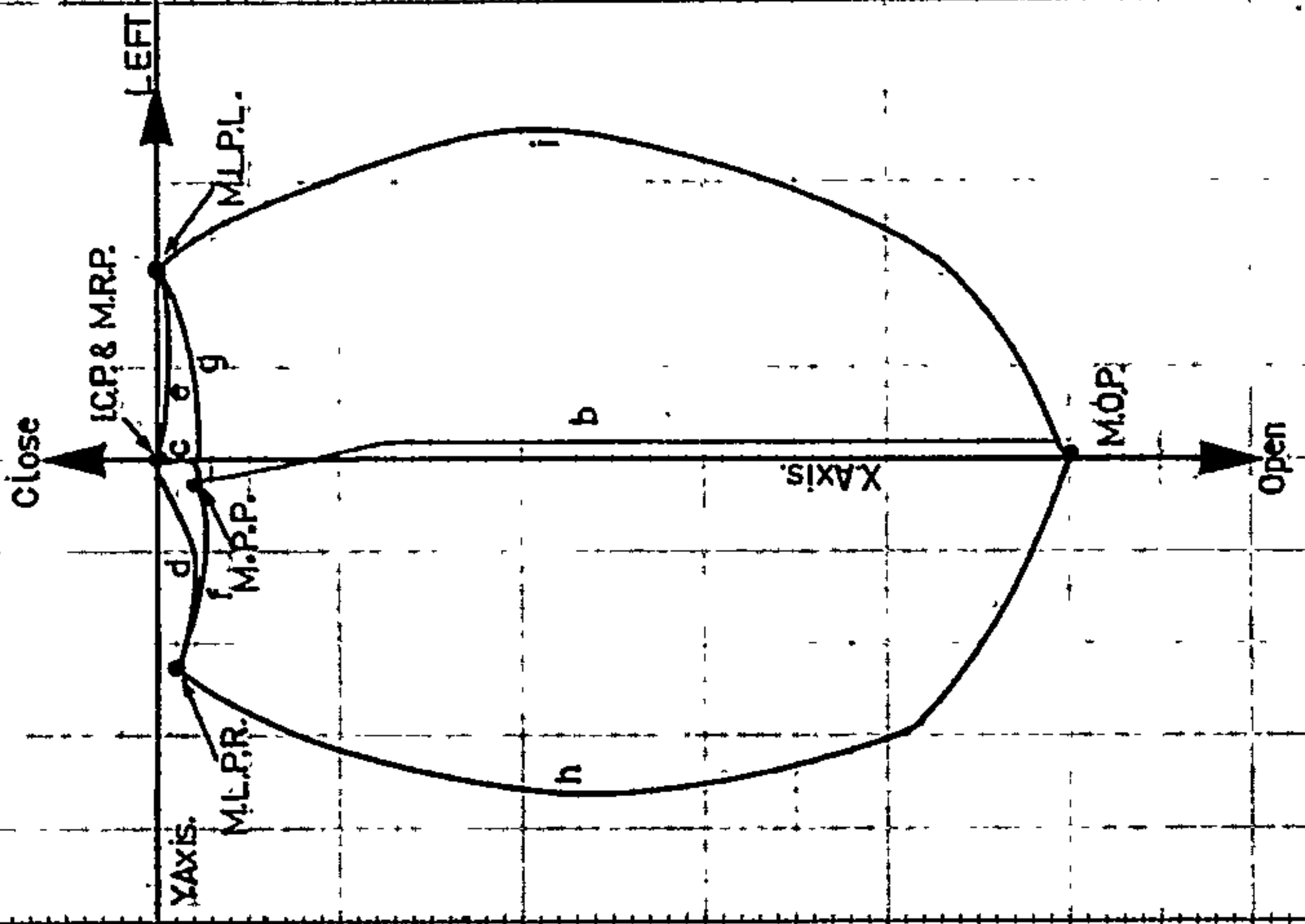


Fig.No.34 .

FIGURE 35

The lateral cuspal guidance angles were lesser than those in the dentulous subject.

LATERAL CUSPAL GUIDANCE ANGLES IN EDENTULOUS SUBJECTS B,C,&D,

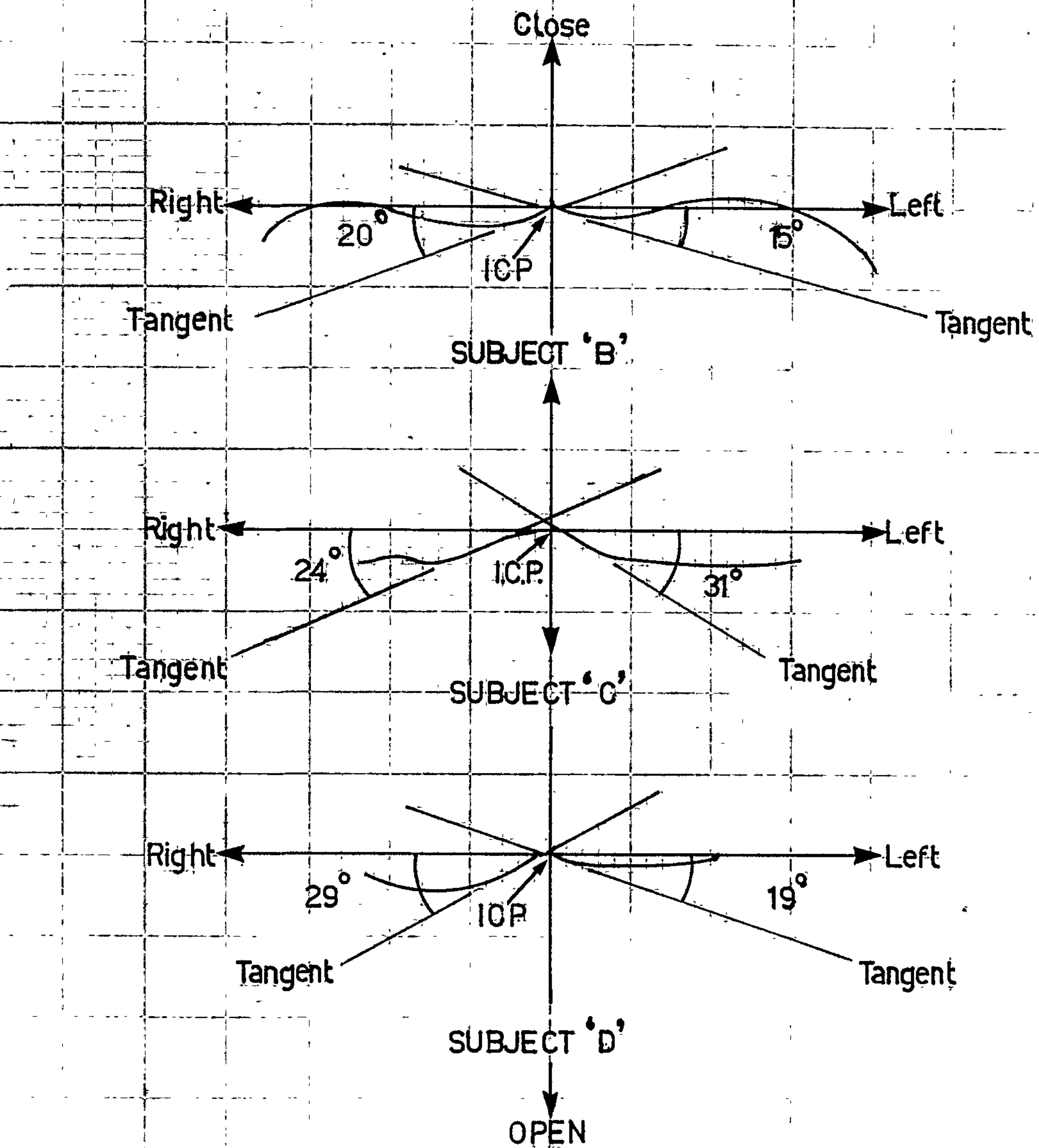


Fig.No.35.

FIGURE 36

Simulated chewing ad lib. Dentulous Subject A.

- (i) All cycles initiated from and terminated in intercuspal position.
- (ii) The cycles initiated on the left side or non-preferred side.
- (iii) Reached maximal opening on the left side.
- (iv) Only cycle No. 4 showed "Loop" formation at maximal opening.
- (v) The closing strokes generally passed on the preferred or right side and closer to C.V.A.
- (vi) In the sagittal view all cycles initiated on the anterior aspect indicating a protrusive excursion of the entire mandible.
- (vii) The location of maximally open position closer to or anterior to C.V.A. also indicated a translatory protrusive movement of the mandible.
- (viii) Protrusive component was also evident in most of the closing strokes, retrusive movement appeared only in the terminal parts of the closing stroke.
- (ix) The closing strokes in cycles No. 2, 4, 6 indicate a direct closure without any cuspal guidance. The opening strokes in cycles No. 1, 3, and 4 show cuspal guidance due to tangent angles lesser than the maximal measured in the envelope of movement space.
Cycles No. 1 and 4 show cuspal guidance in the opening strokes in both frontal and sagittal views.

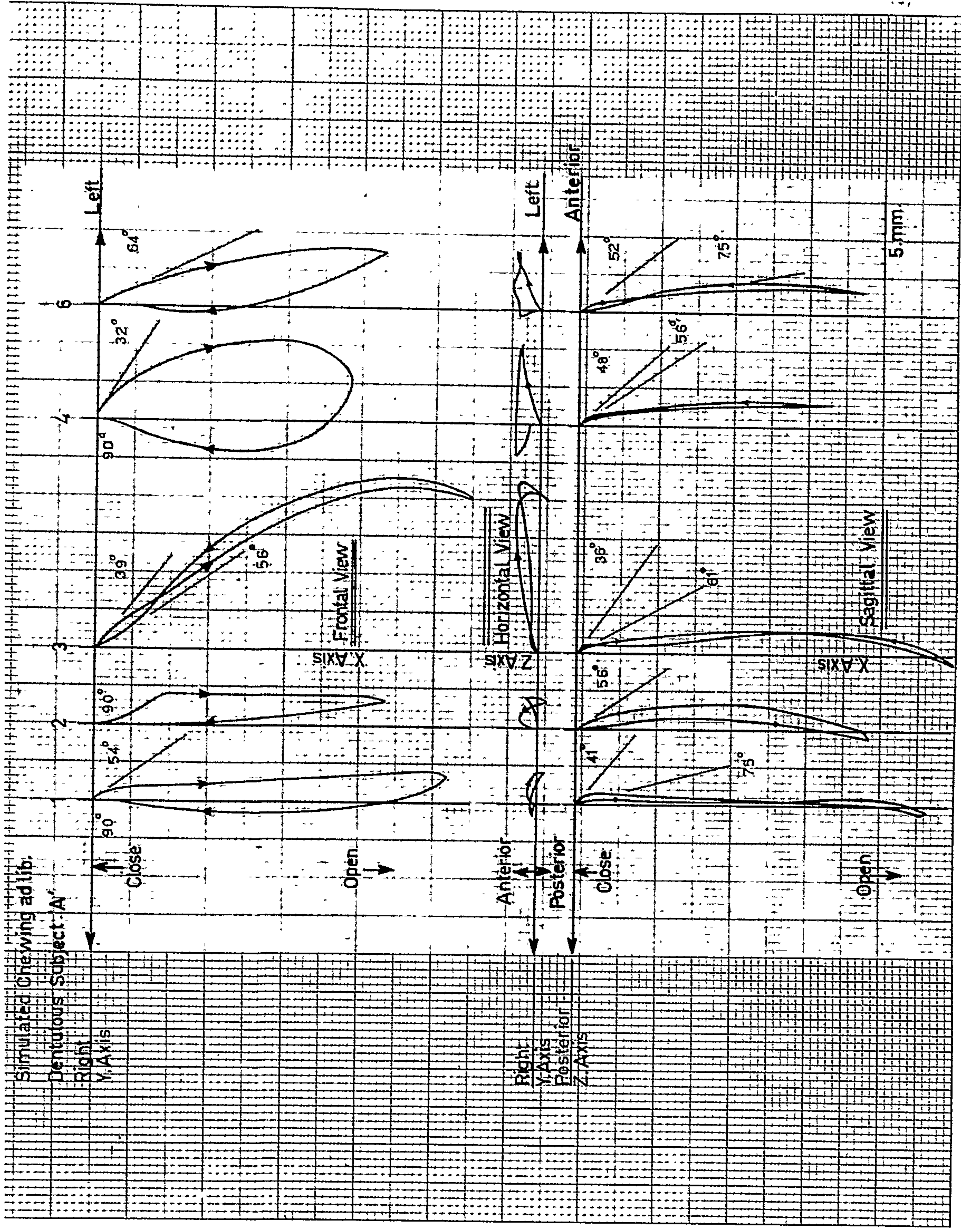


Fig. No.36 .

FIGURE 37

Simulated chewing on the Right Side in Dentulous Subject A.

1. All cycles initiated from and terminated in intercuspal position.
2. The opening strokes commenced on the ipsilateral and also contralateral side, and on the anterior aspect of C.V.A.
3. The maximal opening was reached on the side the opening stroke initiated. Only in one cycle the maximal opening was located on appreciable distance distal to C.V.A.
4. The closing strokes generally passed on the ipsilateral side and anteriorly to the C.V.A.
5. The opening and closing strokes show abrupt midcourse changes.
6. The closing strokes may pass anteriorly or posteriorly to the C.V.A. or the opening stroke.
7. The tangent angles in the opening and closing strokes in the frontal and sagittal views are also indicated; these can be compared to Table No. 14 for cuspal guidance assessments.

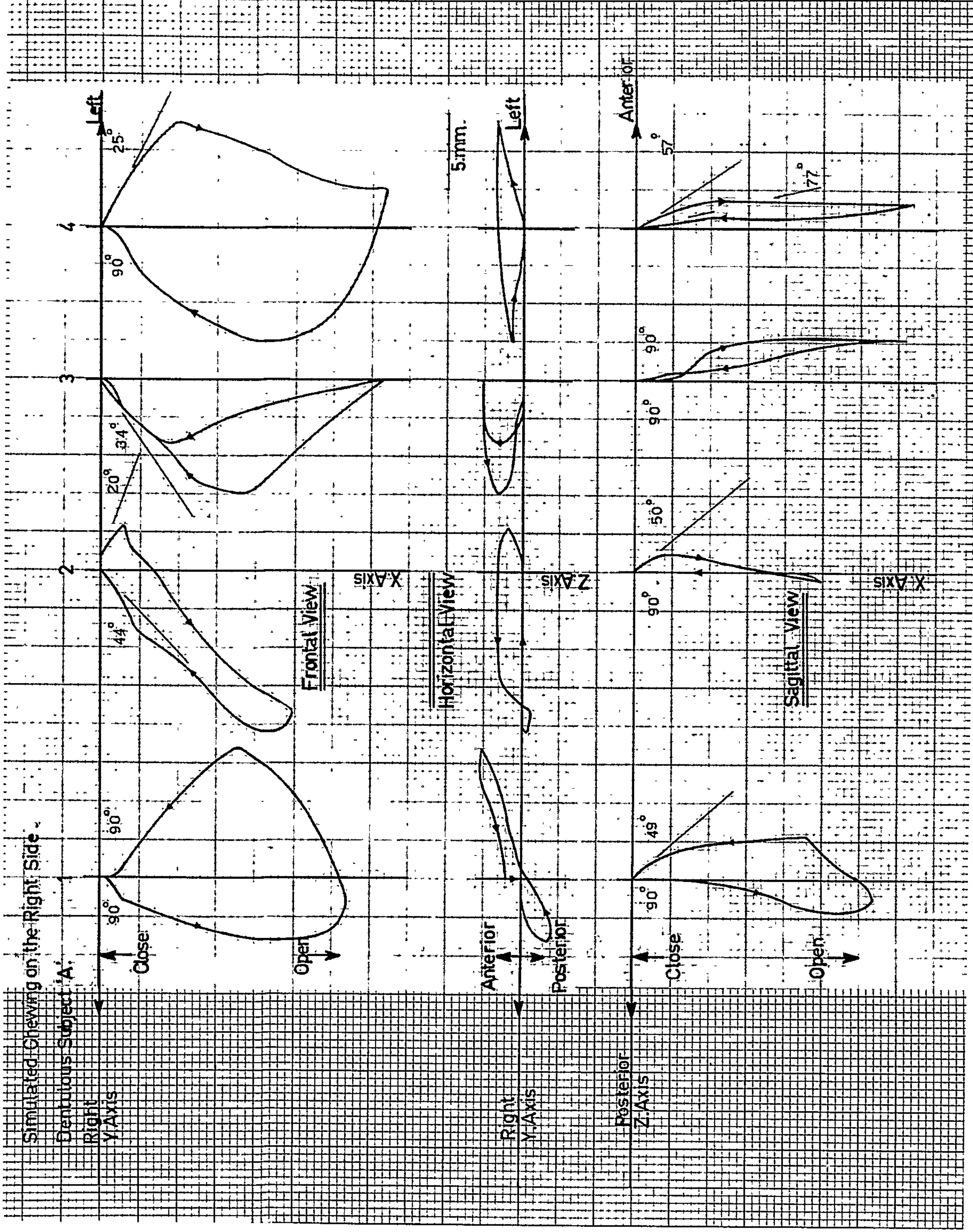


Fig.No.37.

FIGURE 38

Simulated chewing on the left side in Dentulous Subject A.

1. The four cycles are executed in different directions though all initiate from and terminate in, intercuspal position.
2. The tangent angles are also indicated and can be compared to Table No. 15 for assessment.

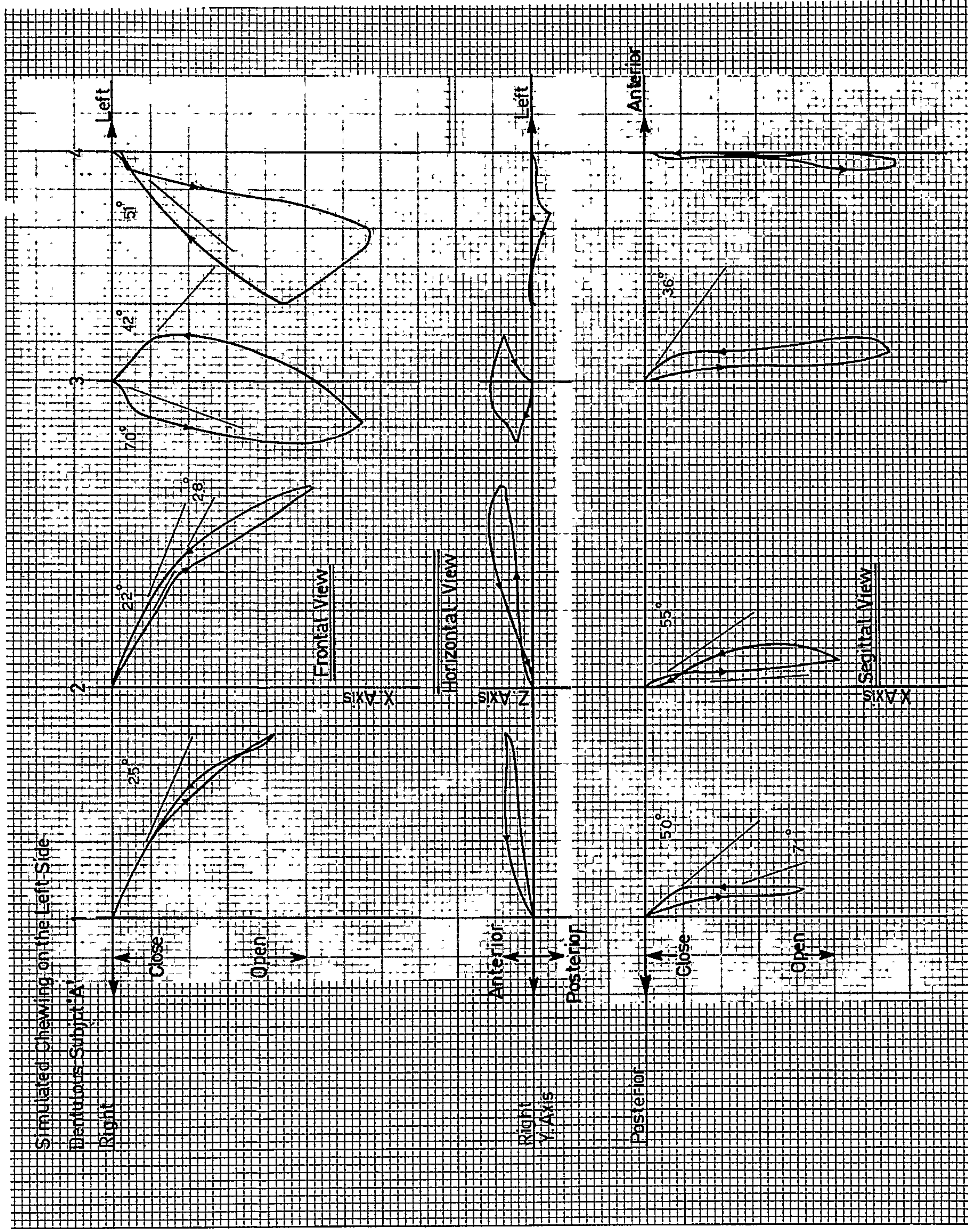


Fig.No.38.

FIGURE 39

Envelope of Movement Space used during Simulated chewing movements in Dentulous Subject A.

1. The ad lib. performance showed a narrow well contained outline form. While simulated chewing on the right and left sides showed wider and irregular patterns.
2. The ad lib. performance and performance on the right side under instructions both occurred on the same side but differ considerably in pattern of movement space used.
3. During performance on the left side all the cycles were executed in different directions.

ENVELOPE OF MOVEMENT SPACE USED DURING SIMULATED CHEWING EXERCISES IN DENTULOUS SUBJECT 'A'

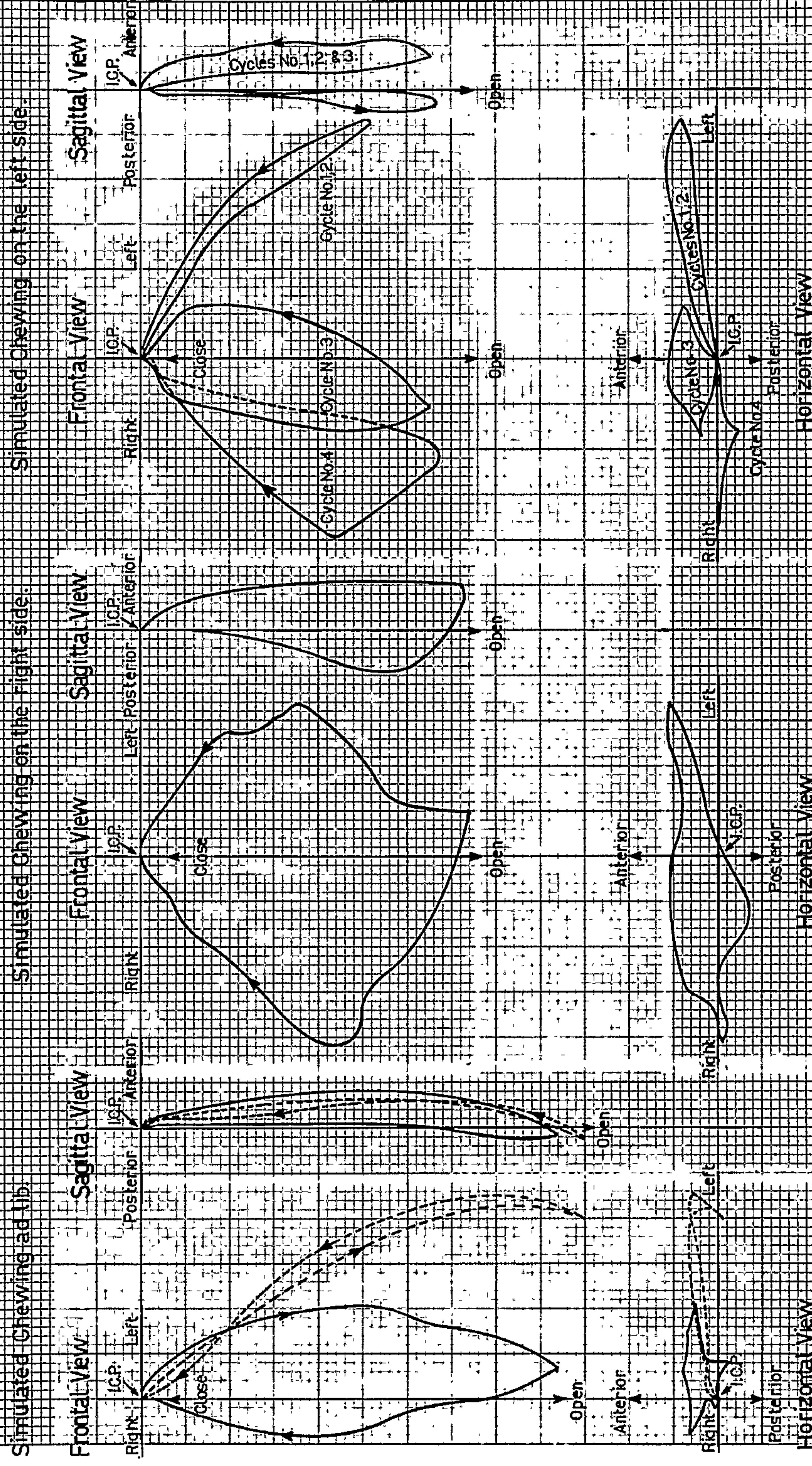


Fig.No.39.

FIGURE 40

Simulated chewing ad lib. Edentulous Subject B.

1. All cycles initiated from and terminated in intercuspal position.
2. The opening stroke commenced on the preferred side, reached maximal opening on the preferred side.
3. The closing strokes generally passed closer to the C.V.A. in the frontal view.
4. In the frontal view all opening strokes initiated with cuspal guidance while the closing strokes generally terminated directly.
5. The opening stroke in cycle No. 1 showed a protrusive cuspal guidance. (Table No. 17)

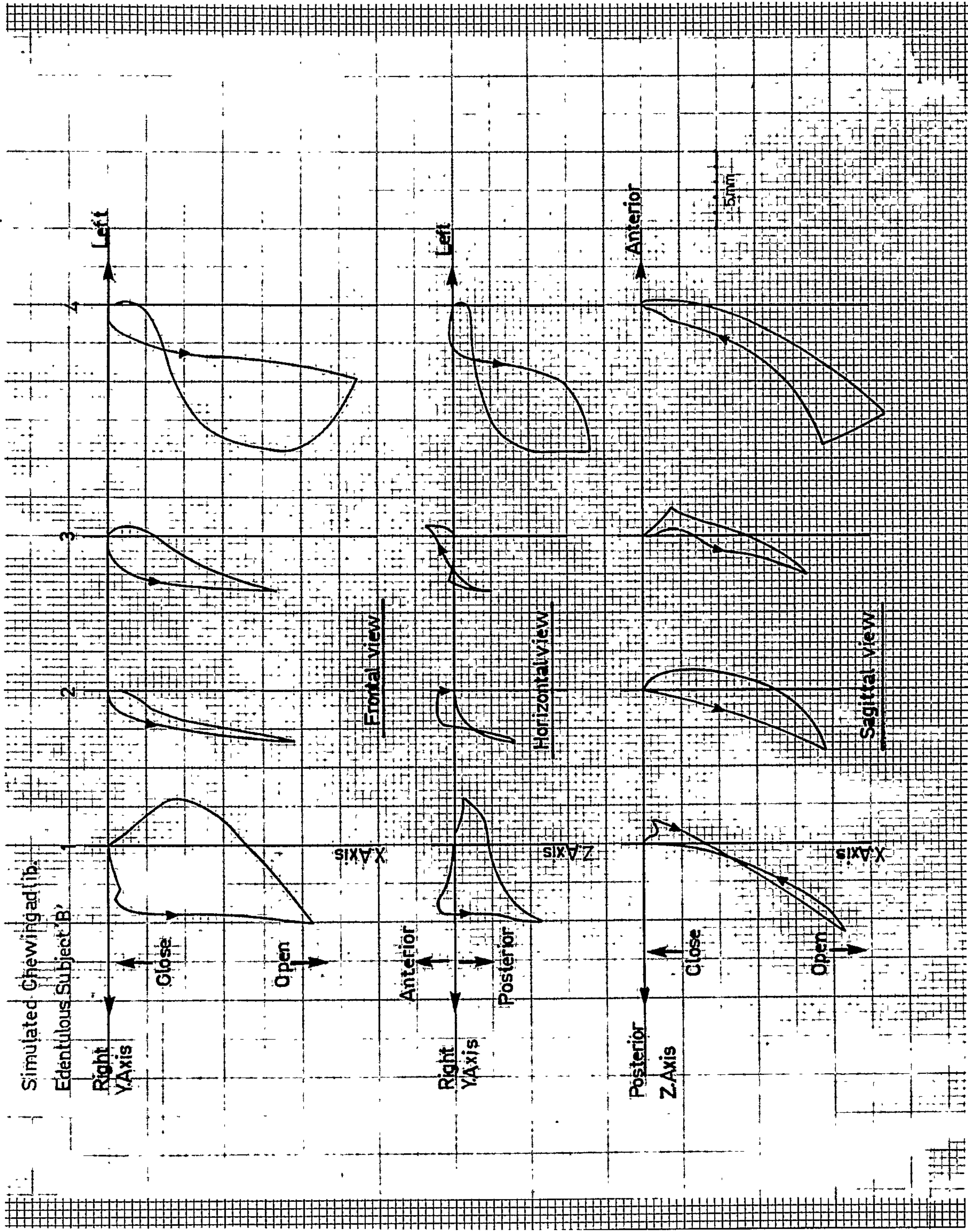


Fig.No.40.

FIGURE 41

Simulated chewing on the Right Side in Edentulous Subject B.

1. The movements initiated from and also terminated in positions other than the intercuspal position.
2. All movements commenced on the right side (the preferred side), reached maximal opening on the right side.
3. The cycles were executed distally to the C.V.A. and the closing strokes passed distally to the opening strokes.
4. None of the cycles showed any cuspal guidance.

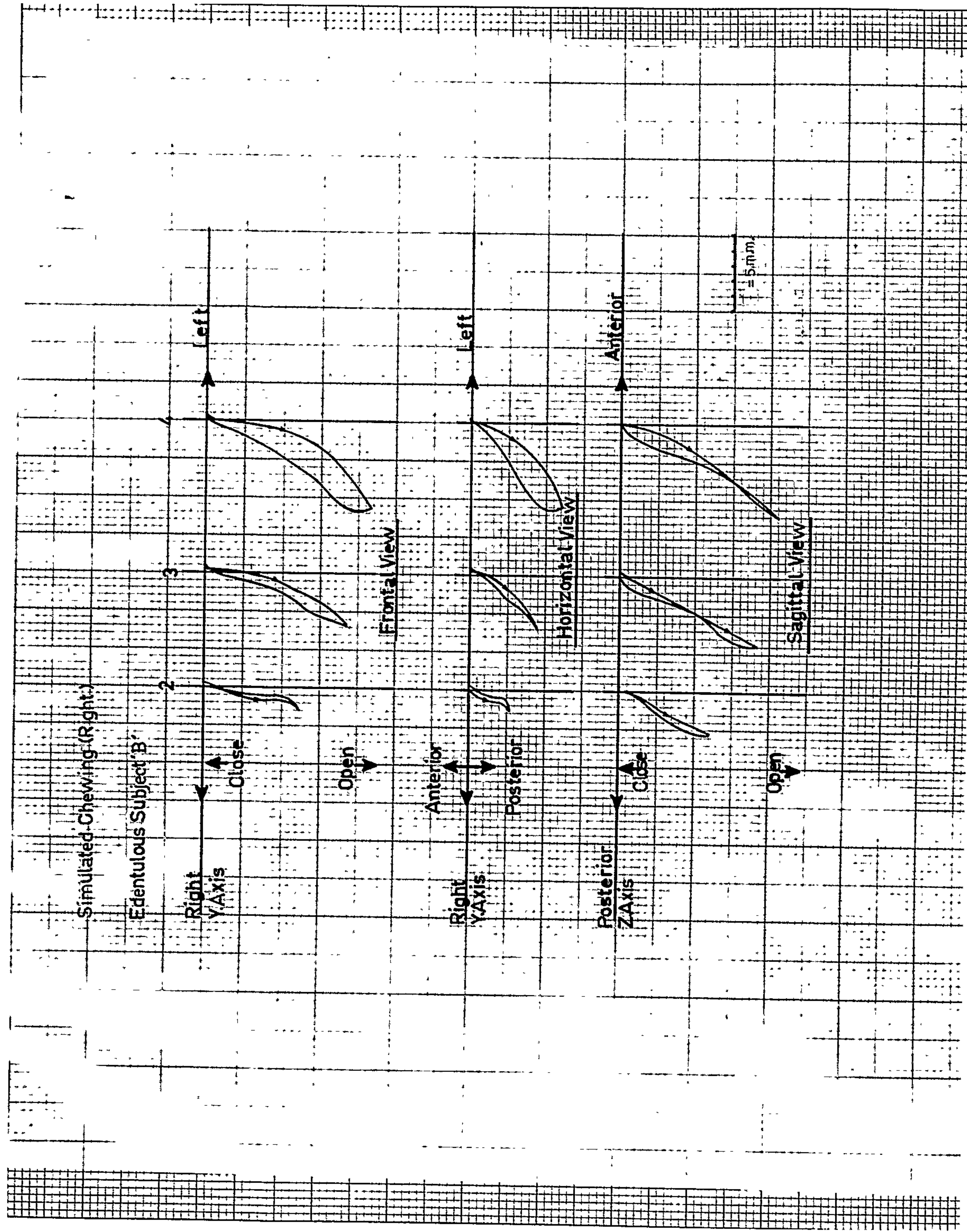


Fig.No.41.

FIGURE 42

Simulated chewing left side Edentulous Subject B.

1. The cycles generally initiated from and terminated in positions other than intercuspal position.
2. The cycles were executed distally to the C.V.A. and the closing stroke passed distally to the opening strokes.

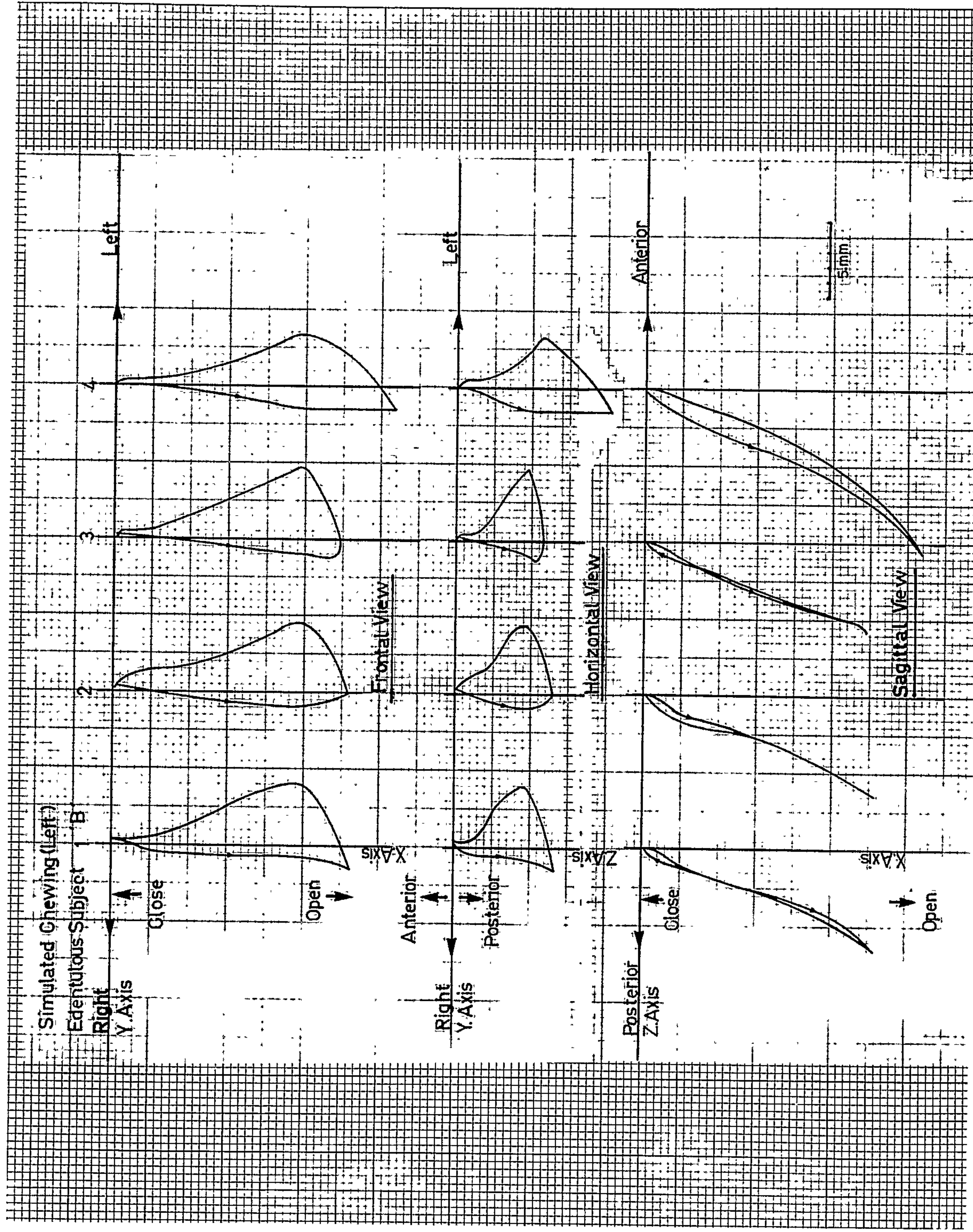


Fig.No.42 .

FIGURE 43

Simulated chewing exercises in Edentulous Subject C.

1. ad lib. performance:-

- (a) Cycles initiated from and terminated in various positions even located distally to the intercuspal position.
- (b) There was considerable lateral movement at maximal opening which showed a "Loop" formation.
- (c) The closing strokes generally pass anterior to the opening strokes.
- (d) Cycles No. 1, 3, 4 show influence of cuspal guidance in both opening and closing strokes but only in the Frontal view. (See Table No. 17).

2. Simulated chewing on the right and left sides:

- (a) Opening stroke in cycle No. 1 showed cuspal guidance in both frontal and sagittal views.
- (b) The amplitude of movements was much smaller than during ad lib. performance but possibly is an individual variation.

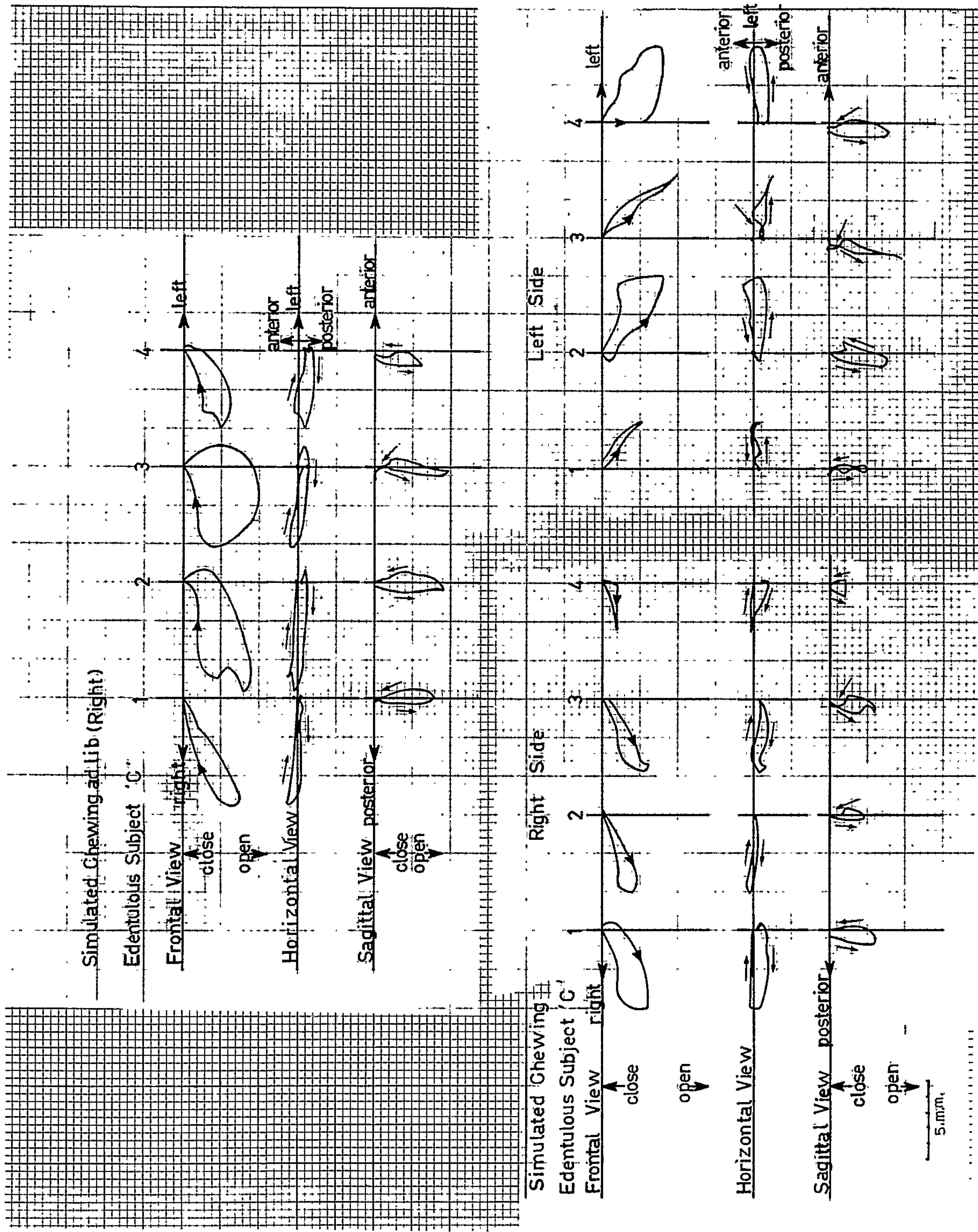


Fig.No.43.

FIGURE 44

Simulated chewing exercises in Edentulous Subject D.

1. ad lib. Performance: Although the movements appear to be straight open and close excursions along the median plane the subject indicated that he was exerting more force on the right side. Cycle No. 2 showed retrusive cuspal guidance in the opening stroke while cycles No. 1, 3, 4 showed protrusive cuspal guidance in the closing strokes. All closing strokes passed distally to the opening stroke and also distally to the C.V.A.
2. Simulated chewing on the designated sides showed a more irregular performance.

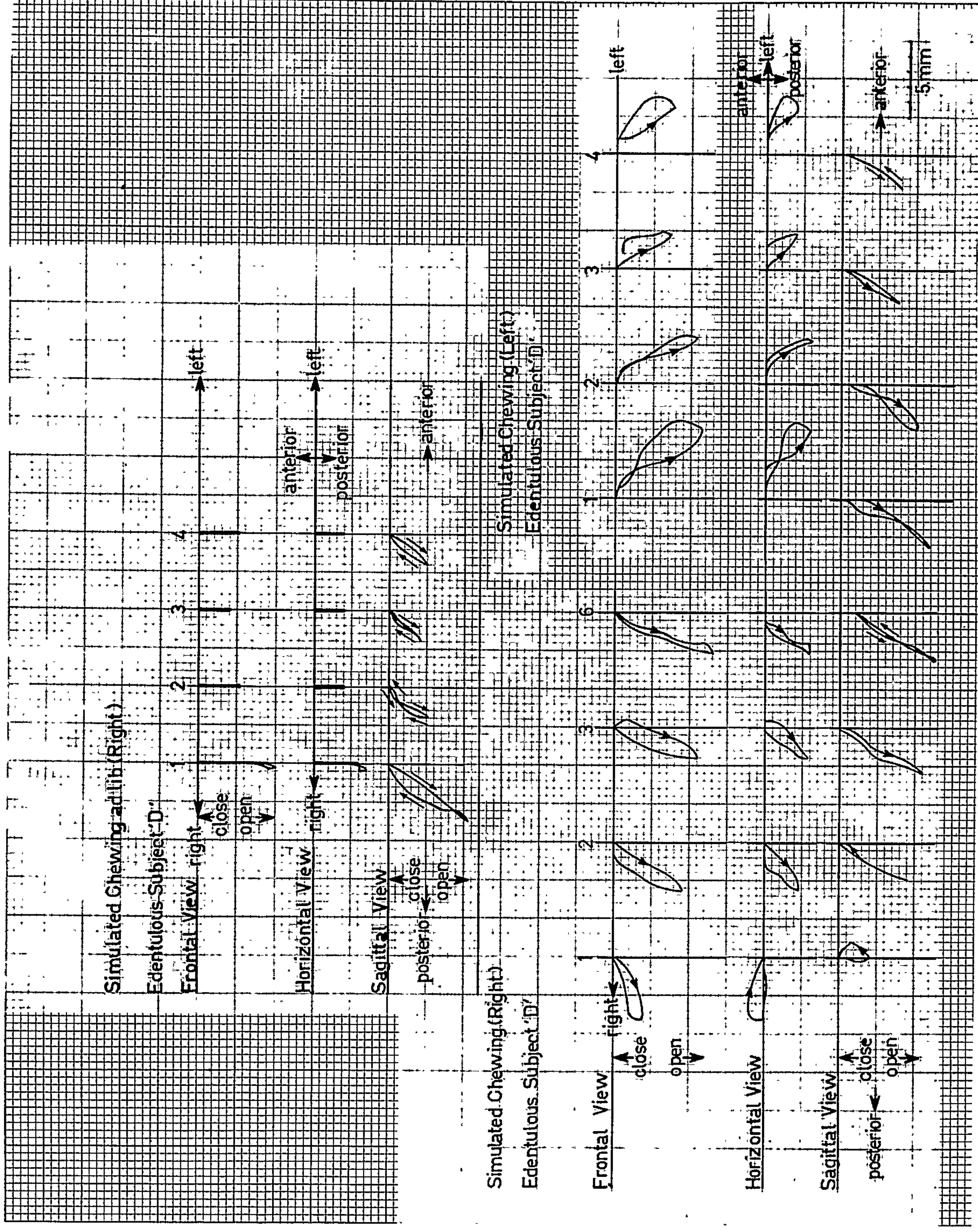


Fig.No.44 .

FIGURE 45

Simulated chewing ad lib. exercise in Edentulous Subject E.

All cycles initiated from and terminated in intercuspal position. The cycles were executed distally to the C.V.A. and the closing strokes passed distally to the opening strokes. All opening strokes showed cuspal guidance at their commencement.

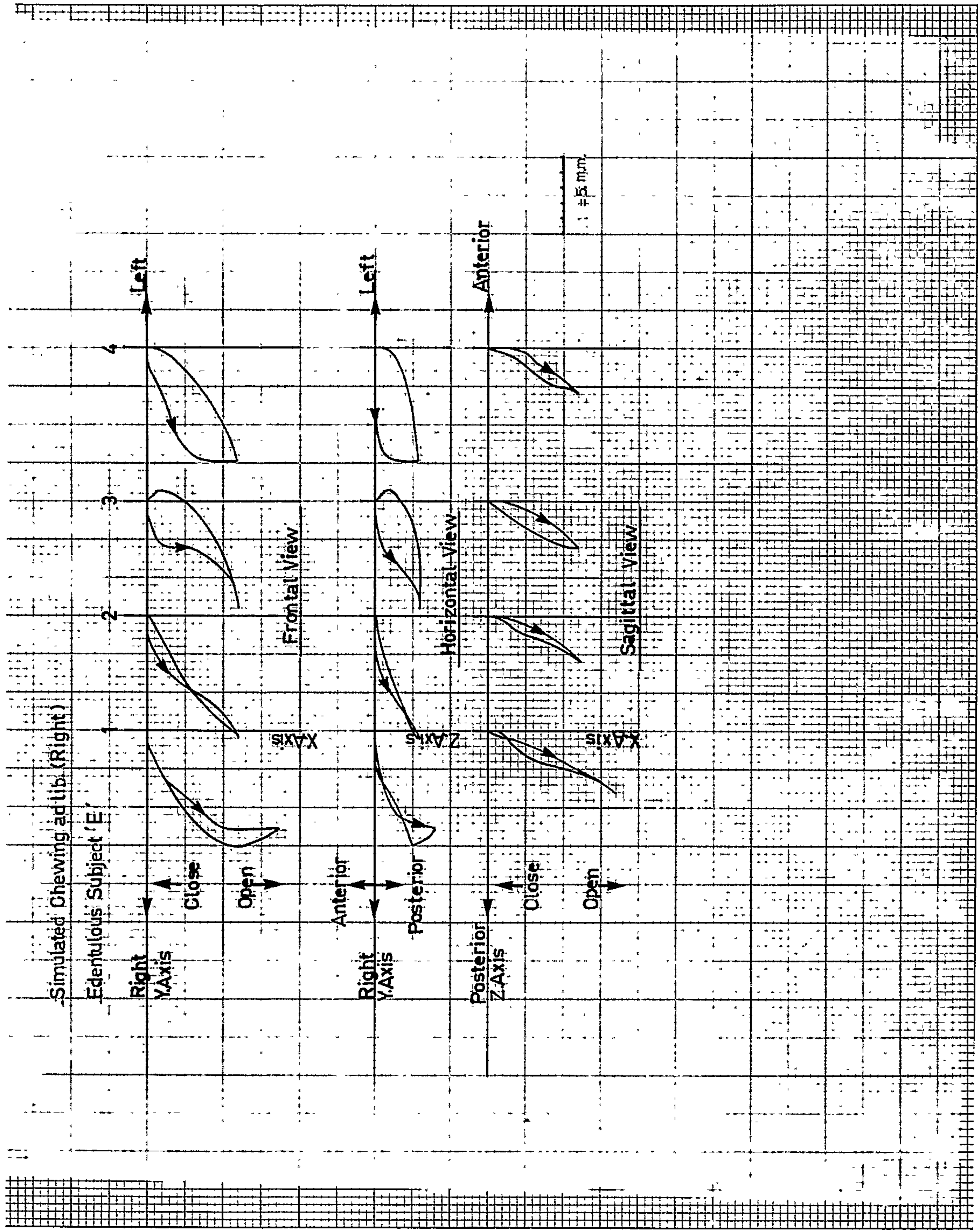


Fig.No.45 .

FIGURE 46 and 47

Simulated chewing on the Right and Left Sides in Edentulous Subject E.

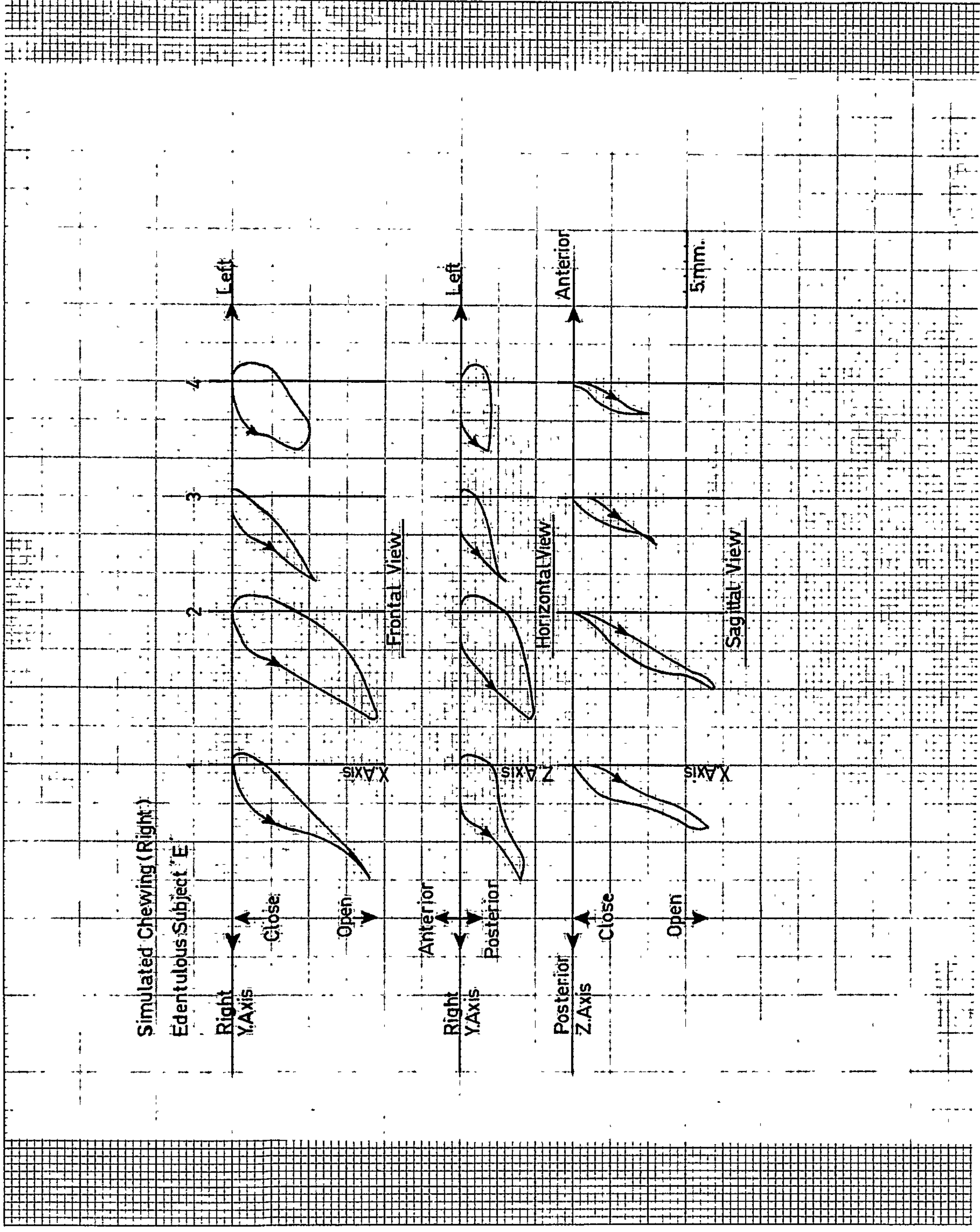


Fig.No.46.

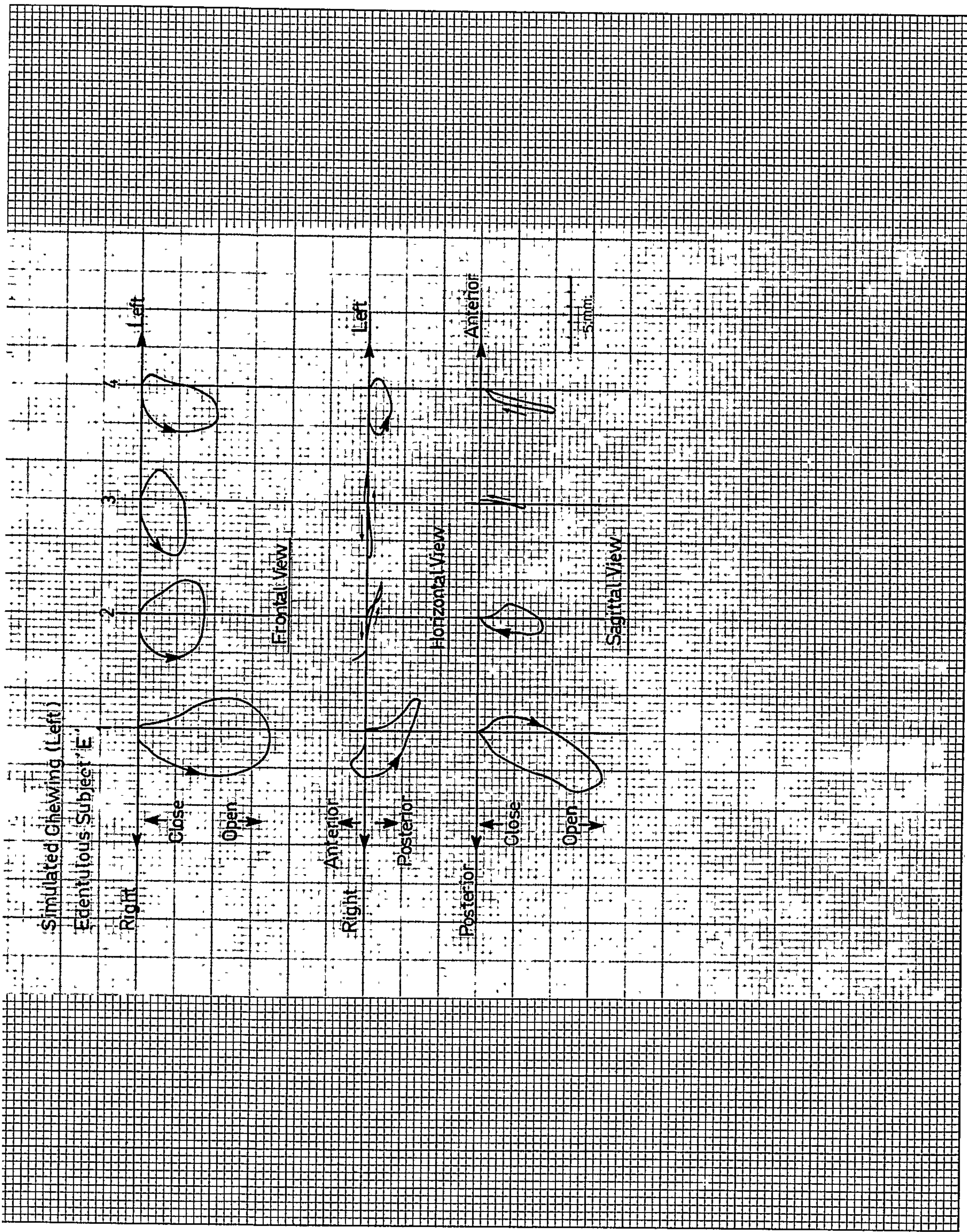


Fig.No.47 .

FIGURE 48

Envelope of Movement Space used during ad lib. Simulated Chewing exercises in Edentulous Subjects B, C, D and E.

1. There are considerable variations in the outline forms of the space used in different subjects.
2. The outline form is more irregular than in the dentulous subject.
3. Most of the space used is located on the preferred side and posterior to the C.V.A.

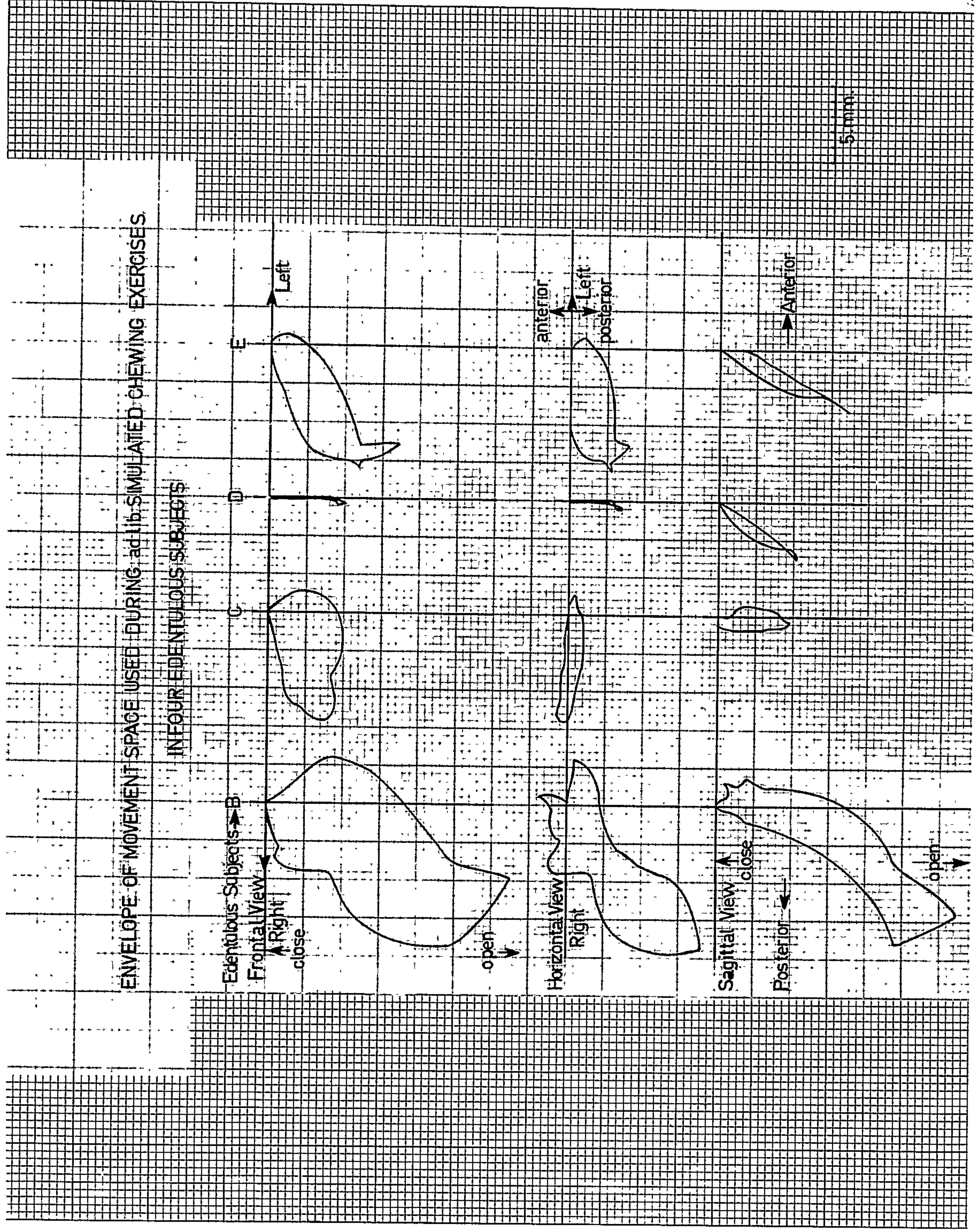


Fig.No.48 .

FIGURE 49

Envelope of Movement Space used during Simulated chewing exercises on the Right and Left sides, in the Edentulous Subjects B, C, D and E.

The edentulous performance on the sides is more irregular than ad lib. performance. The performance on the left side is more irregular than on the right side, and the entire performance is much more irregular than the ad lib. performance in the Dentulous subject.

ENVELOPE OF MOVEMENT SPACE USED DURING SIMULATED CHEWING EXERCISES ON THE RIGHT AND LEFT SIDES

IN FOUR EDENTULOUS SUBJECTS

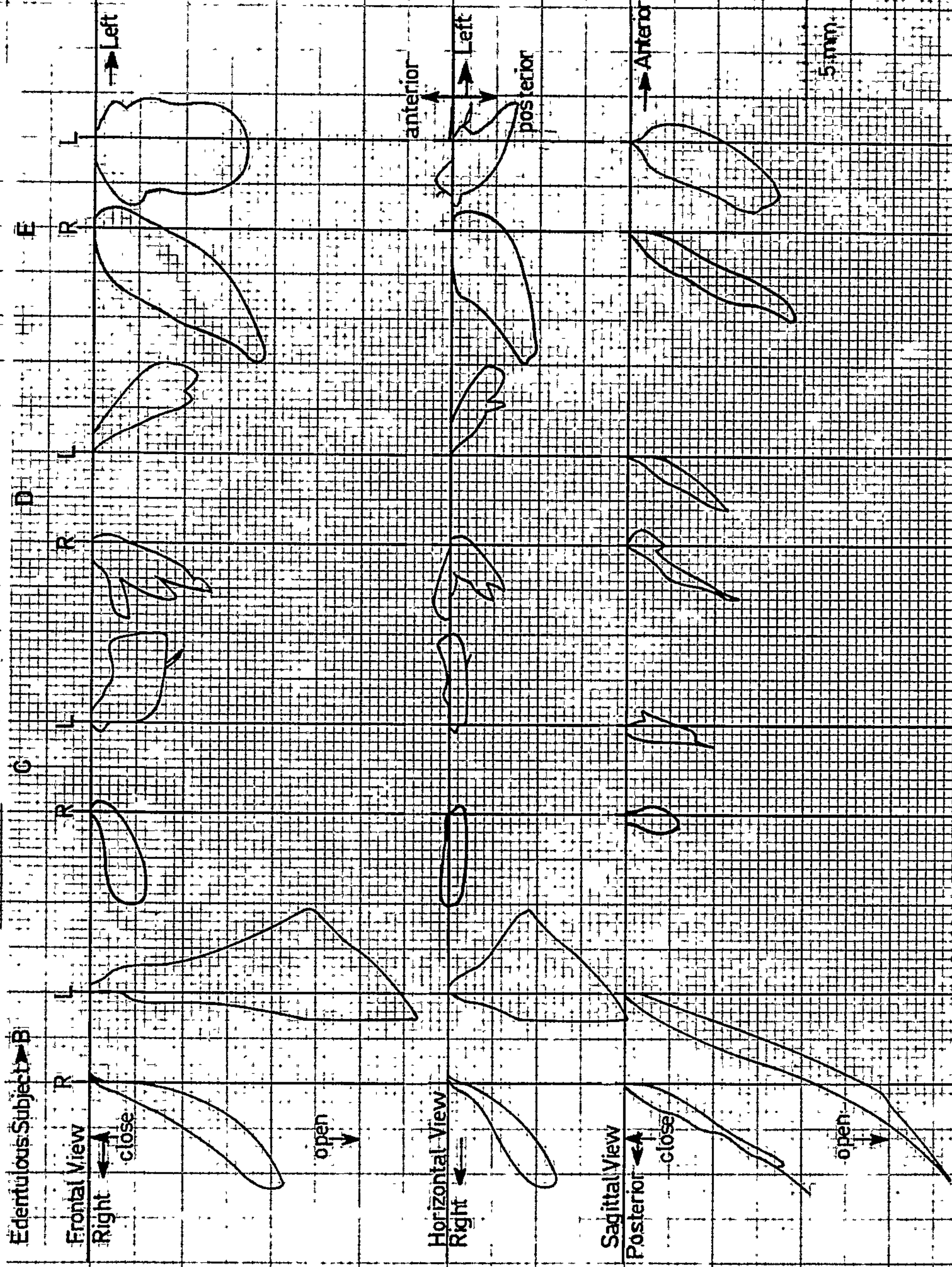


Fig.No.49 .

FIGURE 50

Masticatory Movements in Dentulous Subject A; during P.C. ad lib. Exercise.
1st. and 2nd Phases

Only the first cycle initiated from the intercuspal position. All subsequent cycles initiated from open mouth positions. All cycles in the 2nd Phase were performed on the left side although the subject was chewing the food between the teeth on the right side. Cycle No. 3, Sagittal view displays the sliding deflective cuspal guidance in the opening stroke. Cycle No. 4, Frontal view displays sliding deflective cuspal guidance in the closing stroke. Cycle No. 8, Sagittal view shows sliding deflective cuspal guidance in the closing stroke. Cycle No. 5, Frontal and Sagittal views is an example of direct masticatory cycle. Only the first cycle is performed in the posterior quadrant on the preferred side.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' DURING P.C. ad lib. EXERCISE.

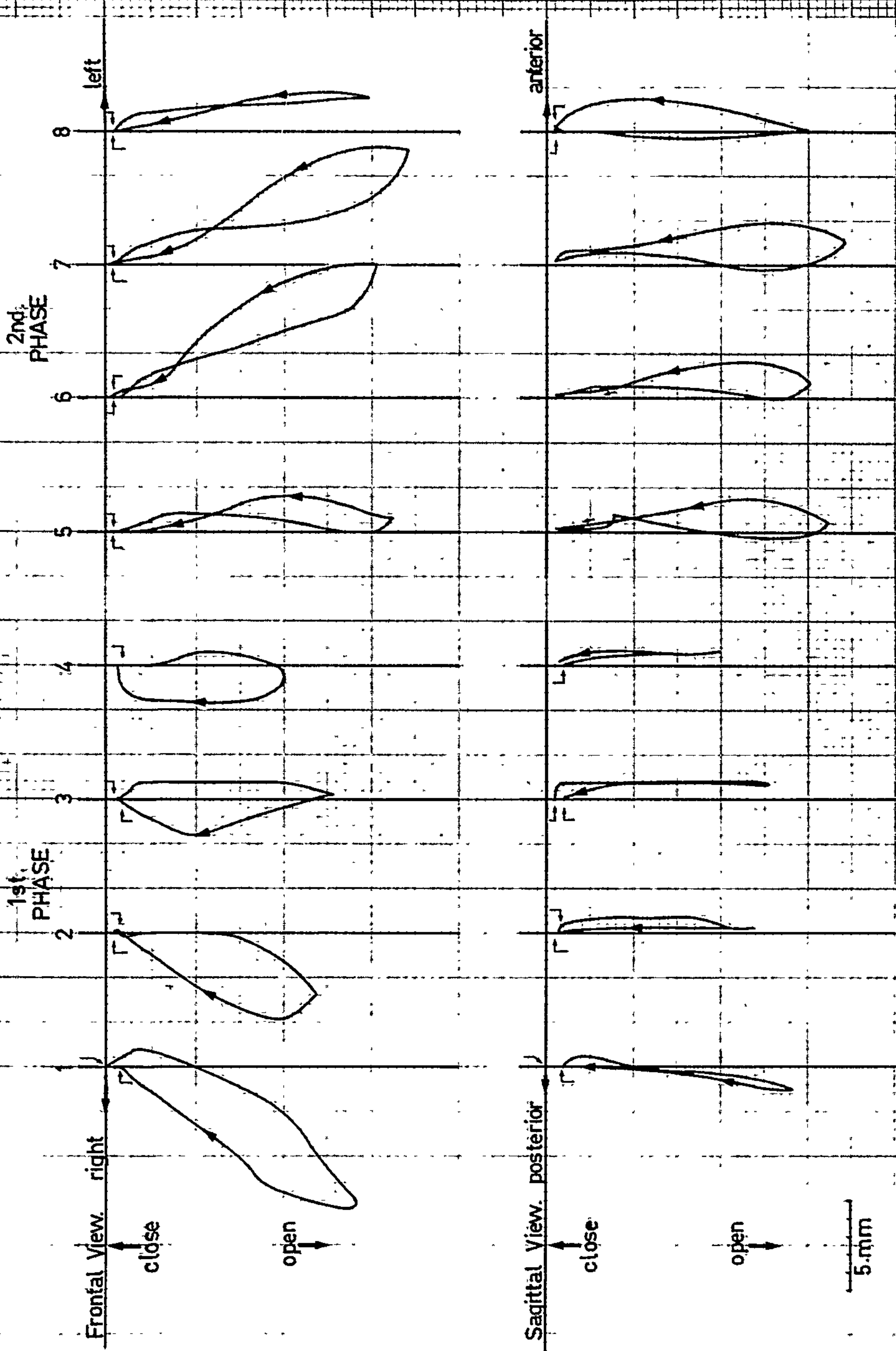


Fig.No.50.

FIGURE 51

Masticatory Movements in Dentulous Subject A. During P.C. ad lib Exercise
3rd. Phase

The closing strokes in cycles No. 9 and 11 terminate in Point reflective cuspal guidance and change into opening strokes for cycles No. 10 and 12 respectively. These opening strokes form acute angles with the preceding closing strokes. Cycles No. 9 and 11. The opening strokes are interrupted by closing movements before maximally open positions are reached. These manoeuvres were intended for relocation of food on the occlusal table.

In the 2nd. Phase (Fig. No. 50) and 3rd. Phase although the subject chewed the food between the teeth on the Right Side, the closing strokes generally followed a course from the Left to the Right. Thus the Right side showed the conventional Balancing Side occlusal relations and the Left the Working Side relations.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' DURING P.C. and Iib. EXERCISE.



Fig.No.51.

FIGURE 52

Masticatory Movements in Dentulous Subject 'A', During P.C.F.M. ad lib Exercise
1st. and 2nd. Phases.

The first cycle initiates from the intercuspal position and is performed in the posterior quadrant on the preferred side.
Cycle No. 4 shows cuspal guidance in both Frontal and Sagittal views.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' **DURING P.C.F.M.ed lib. EXERCISE.**

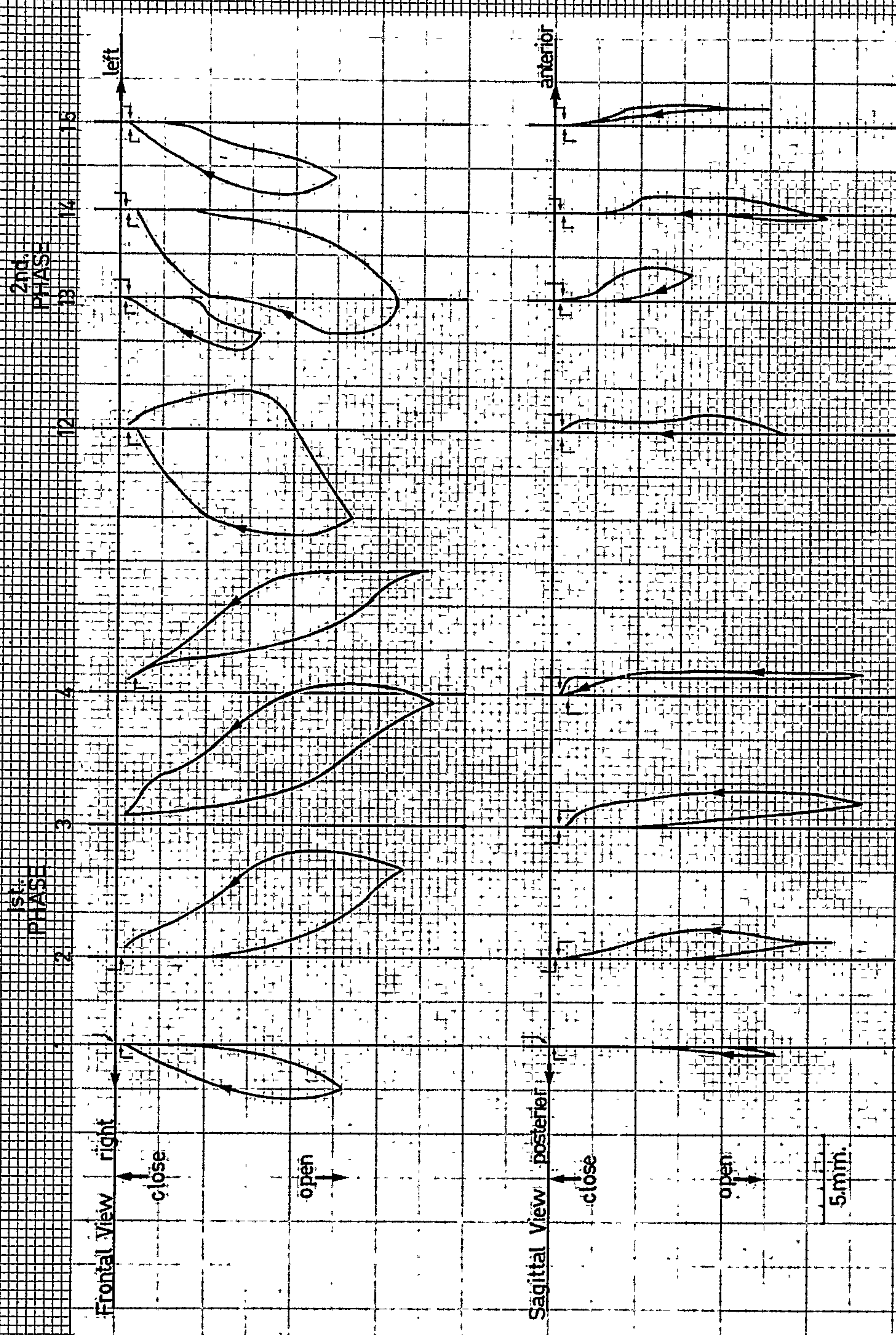


Fig.No.52 .

FIGURE 53

Masticatory Movements in Dentulous Subject 'A', During P.C.F.M. ad lib. Exercise.
3rd. Phase

Due to abundance of food in the mouth which mixed with saliva formed an easily flowing paste, the masticatory cycles became vertical with very little deviations. All cycles initiated and terminated directly. The points of initiation and termination of the cycles were located on the C.V.A. in the Frontal and Sagittal views, separated from the intercuspal position by a thickness of food between the teeth.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' **DURING P.C.F.M.ad lib. EXERCISE.**

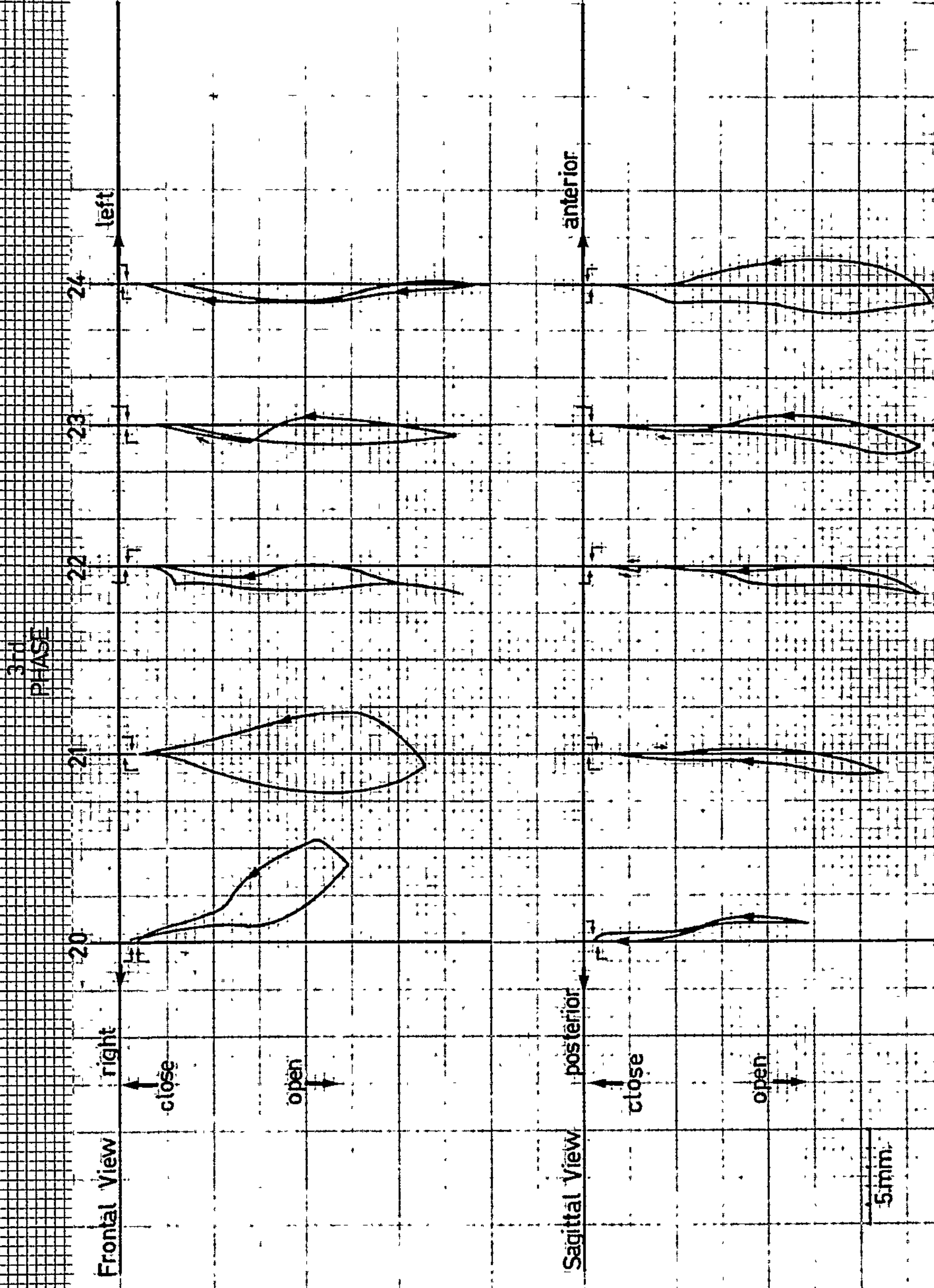


Fig.No.53 .

FIGURE 54

Masticatory Movements in the Dentulous Subject 'A' During M.C. ad lib. Exercise.

1st Phase.

In the Frontal view all closing strokes passed on the preferred side. In the Sagittal view all cycles were performed posterior to the C.V.A. The masticatory cycles show greater vertical length than other exercises. The cycles show very little lateral deviation.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' DURING M.C. 11b. EXERCISE 1st. PHASE

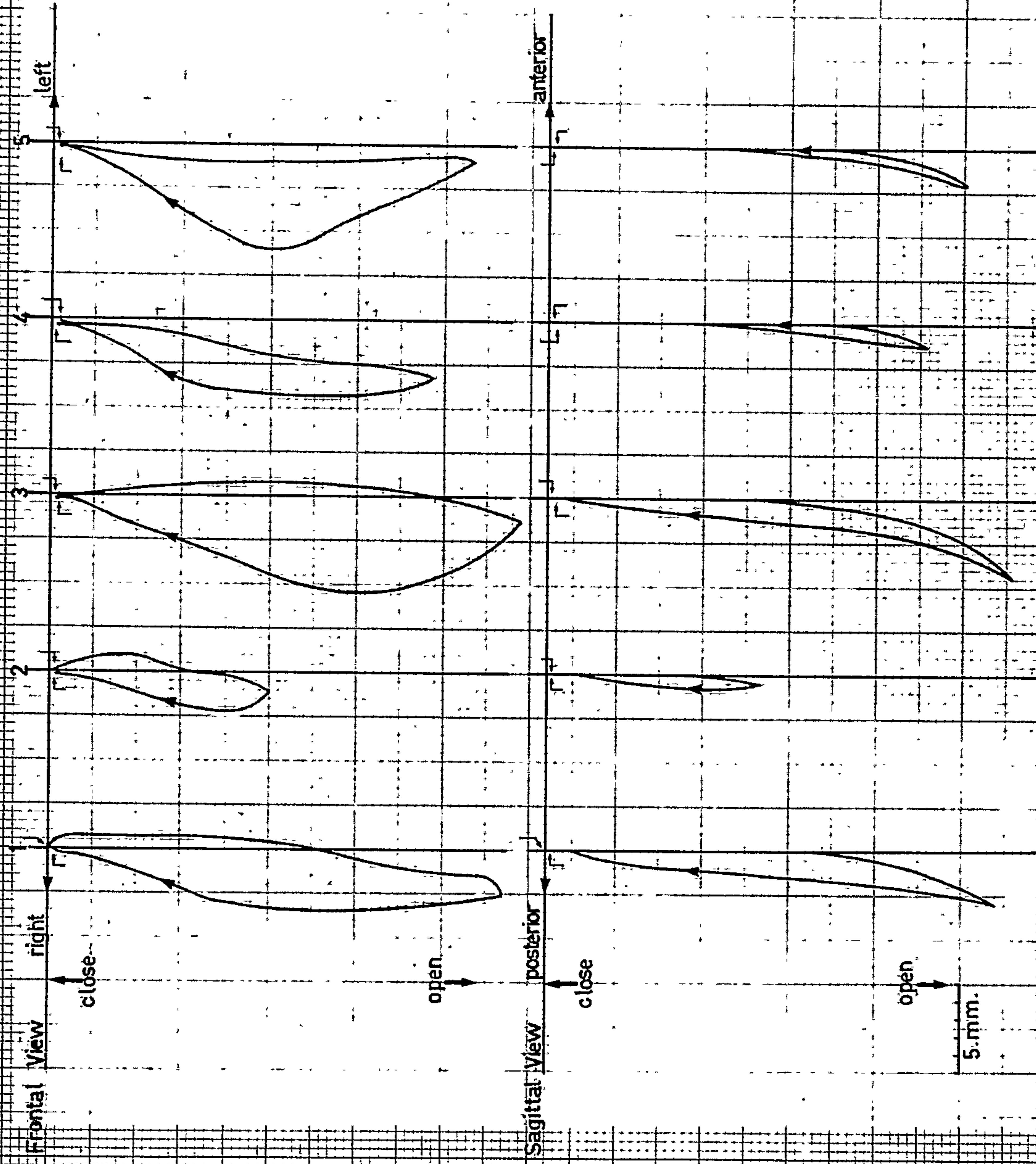


Fig.No.54 .

FIGURE 55

Masticatory Movements in the Dentulous Subject 'A' During 'M.C. ad lib.' Exercise
2nd Phase.

All the cycles were of the direct type without any cuspal guidance. Cycles No. 10, 11, 12 and 13 were performed mostly on the non-preferred side and anterior to the C.V.A.

In cycle No. 14, the closing strokes were performed in the posterior quadrant on the preferred side. Cycle No. 15 was performed completely on the preferred side and posterior to C.V.A.

The cycles show maximum vertical length in the entrie experiment.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' DURING M.C. 40 lb. EXERCISE 2nd PHASE.

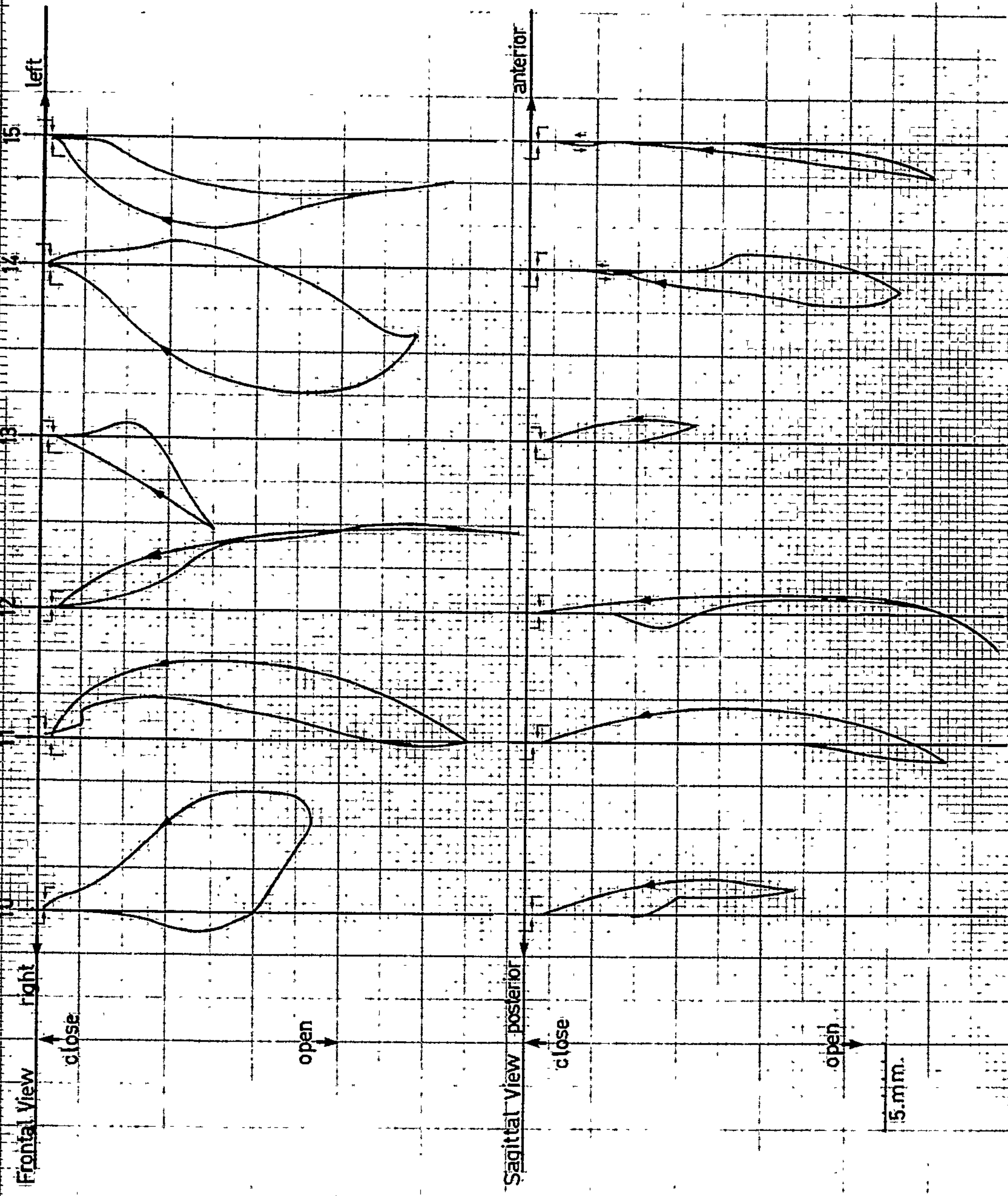


Fig.No.55.

FIGURE 56

Masticatory Movements in Dentulous Subject 'A' During 'M.C. ad lib.' Exercise
3rd Phase

Cycles No. 19, 21 and 22 show interruptions in the opening strokes for relocation of food bolus.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' **DURING M.C. ad lib. EXERCISE 3rd. PHASE.**

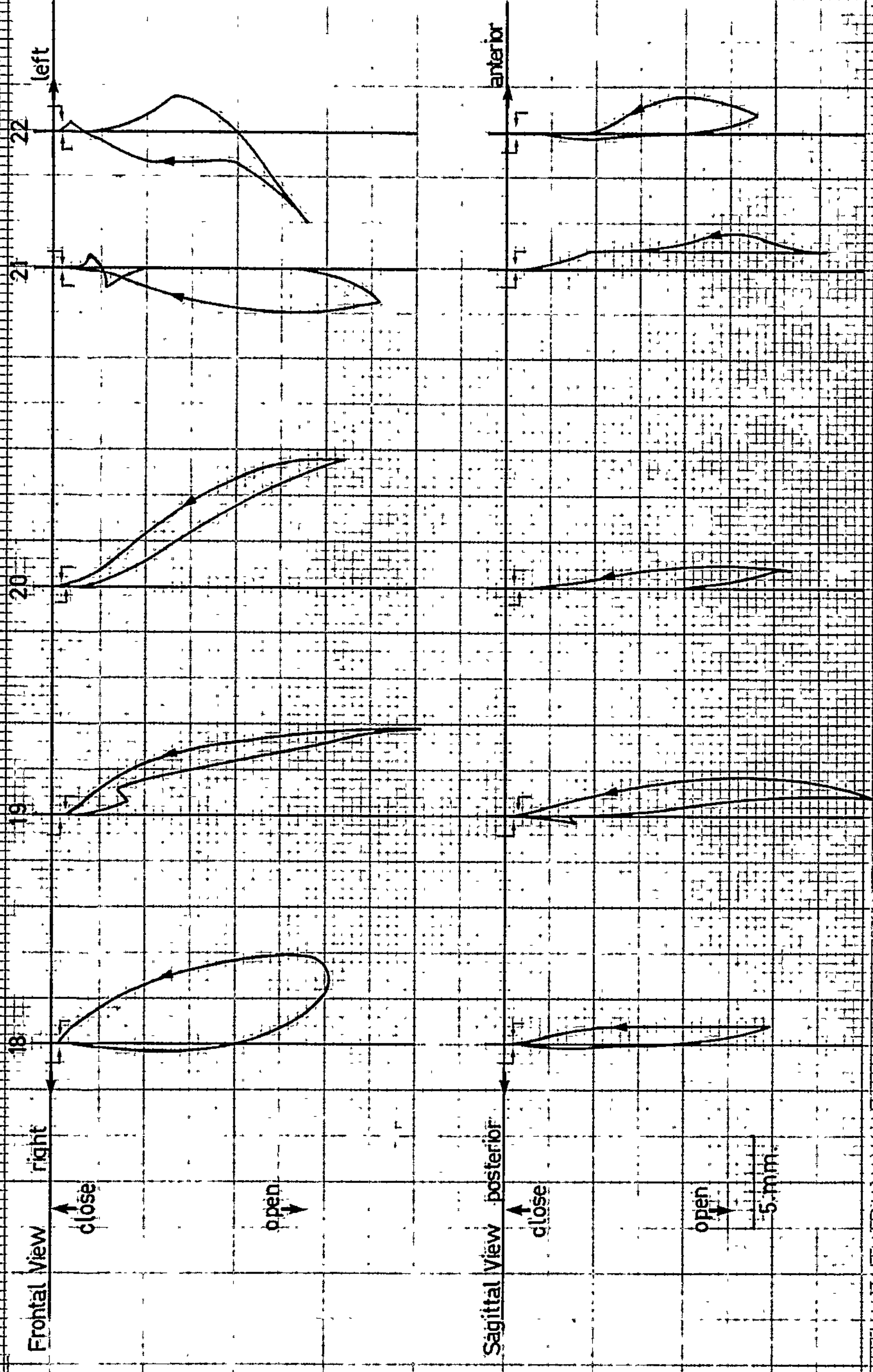


Fig.No.56 .

FIGURES 57, 58 and 59

Masticatory Movements in Dentulous Subject 'A' During "S.D.C. ad Lib." Exercise

1st., 2nd. and 3rd. Phases

The food was crushed during the first cycle (No. 1a) which was performed posterior to the C.V.A. All cycles terminate in open-mouth positions, indicating food jamming of occlusal surfaces. The lateral and protrusive components in the terminal parts of the closing strokes and initial parts of the opening strokes represent attempts at dislodgement of the jammed food from the occlusal surfaces. As the mastication progressed, the cycles terminated closer to the intercuspal position than in the earlier parts of the sequence. The greater vertical length of the masticatory cycles may be related to the harder consistency of sugar drops, the closing strokes gaining momentum from the length of the stroke.

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' **DURING S.D.C. of lib. EXERCISE 1st. PHASE**

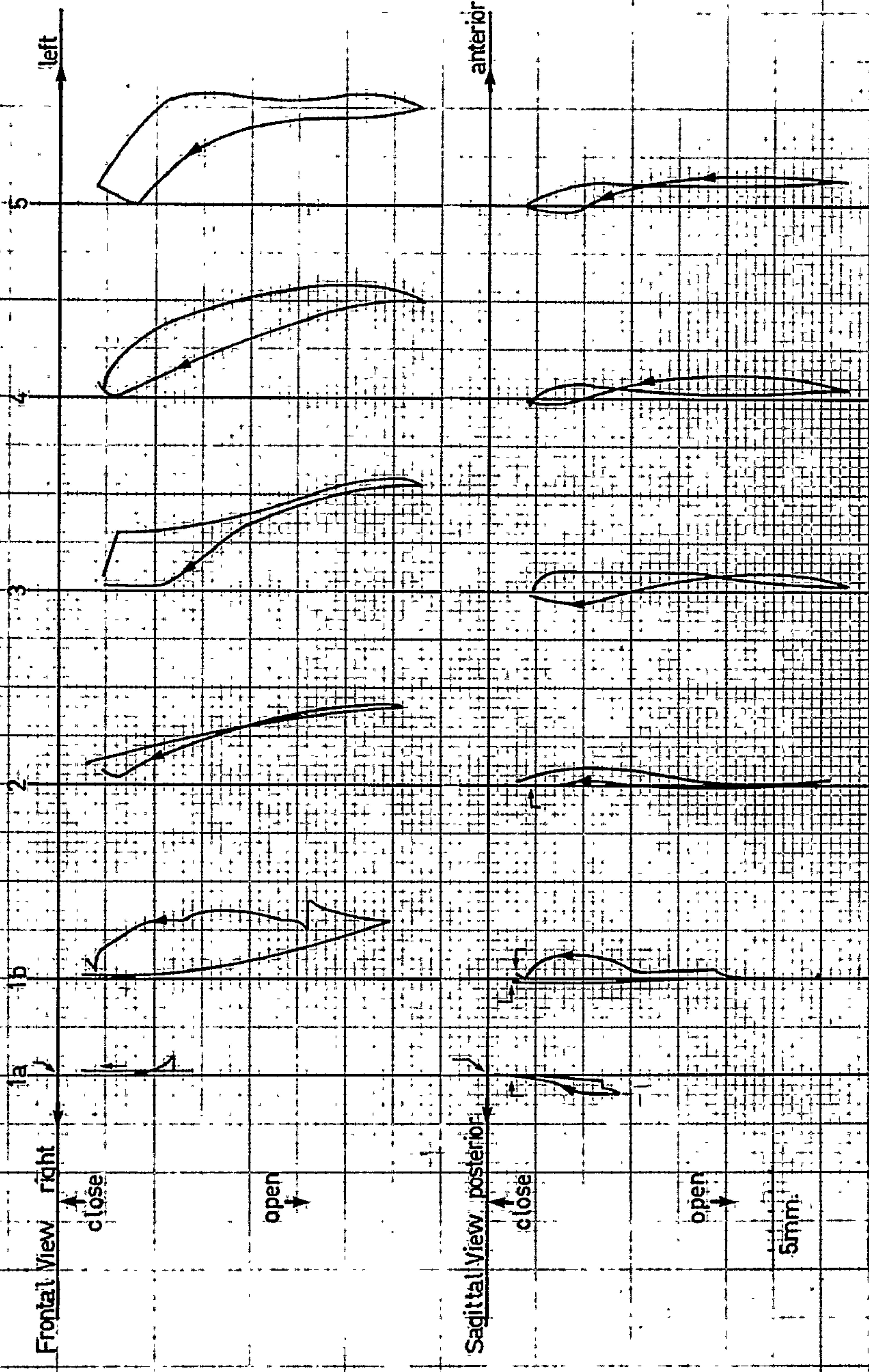


Fig.No.57 .

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' **DURING S.D.C. of lib. EXERCISE 2nd. PHASE.**

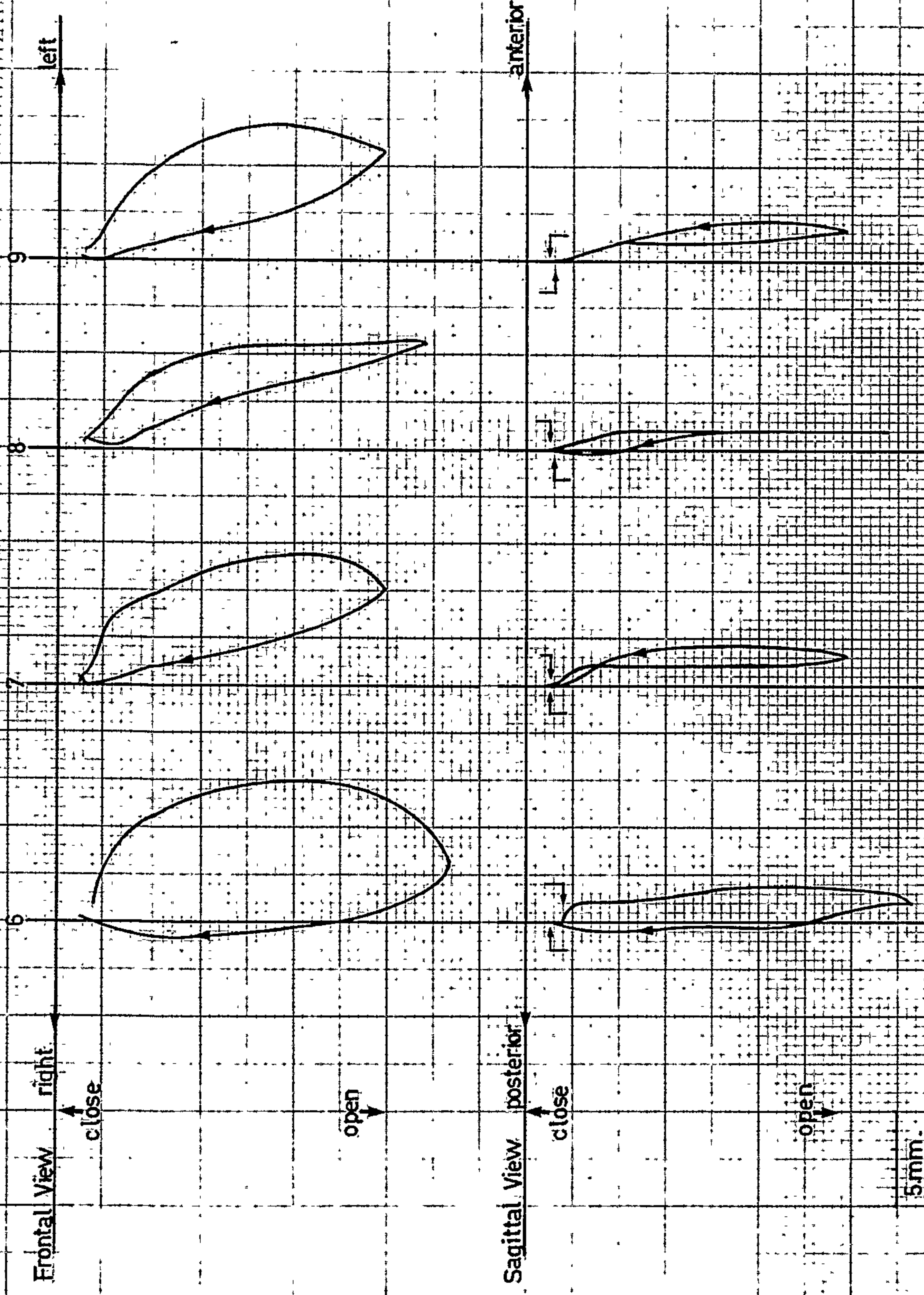


Fig.No.58 .

MASTICATORY MOVEMENTS IN DENTULOUS SUBJECT 'A' DURING S.D.C. and lib. EXERCISE 3rd. PHASE

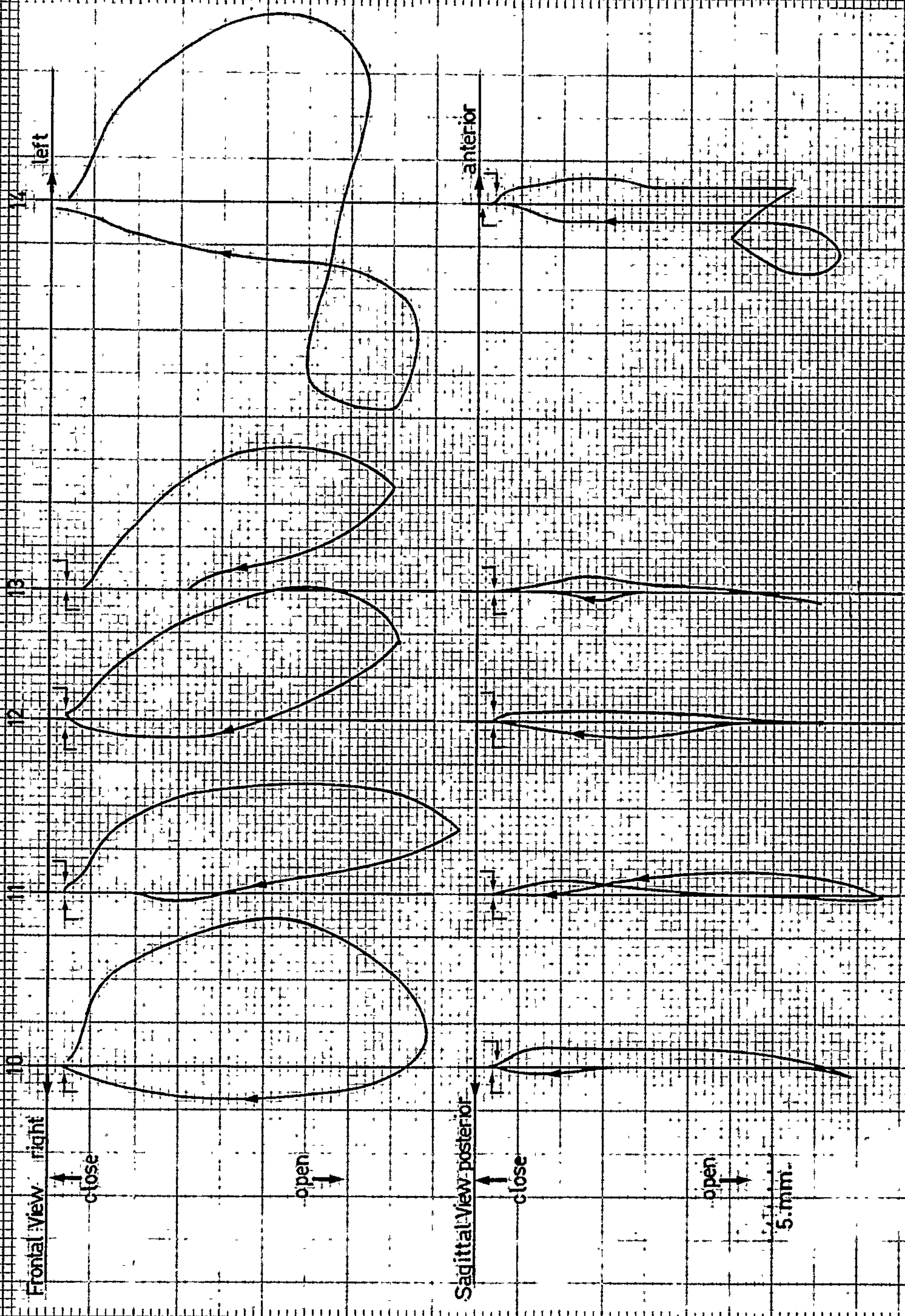


Fig.No.59 .

FIGURES 60 and 61

Envelopes of movement space in Subject 'A' During "P.C. ad lib.", "P.C.F.M. ad lib.", "M.C. ad lib." and "S.D.C. ad lib." Exercises.

ENVELOPE OF MOVEMENT SPACE IN SUBJECT A.

M.C.ad.lib.

S.DC.ad.lib.

Right

Left

Close
↓

Open
↓

Frontal view

Sagittal view

Posterior
←

Anterior
↓

M.C.ad.lib.

Sagittal view

Anterior
→

INITIAL PHASE
INTERMEDIATE PHASE
TERMINAL PHASE

5mm

S.DC.ad.lib.

Posterior
↓

Horizontal views

24/

Fig.No.61.

FIGURE 62

Masticatory Movements in Edentulous Subject 'B'

During "P.C. ad lib." Exercise. The subject chewed the food between the teeth on the right side. Throughout the exercise only Cycle No. 2 terminated in open-mouth position and Cycle No. 3 initiated from open-mouth position. All other cycles initiated from and terminated in closed-mouth positions. In the Frontal view the cycles initiated from closed-mouth positions on the right or the preferred side or zero point, on the zero point, and also from positions on the left or the non-preferred side of the zero point, but most of the movement was executed on right or the preferred side of the C.V.A. In the Sagittal view the movements initiated from and terminated in positions posterior to the zero point or on the zero point. In all the cycles the movements were performed posterior to the C.V.A. and the closing strokes passed further distally to the opening strokes. In the Frontal view only Cycle No. 5 shows Sliding Deflective Cuspal Guidance in both opening and closing strokes, all other cycles showed Point Reflective Cuspal Guidance. The opening stroke initiated from the point of termination of the preceding closing stroke, the two forming an acute angle between them. Cycles No. 2, 5, 11, 12, 13, 14, 23 and 25 can be classed as food finding excursions, the maximally open positions show "Loop" formation in the Frontal or Sagittal views.

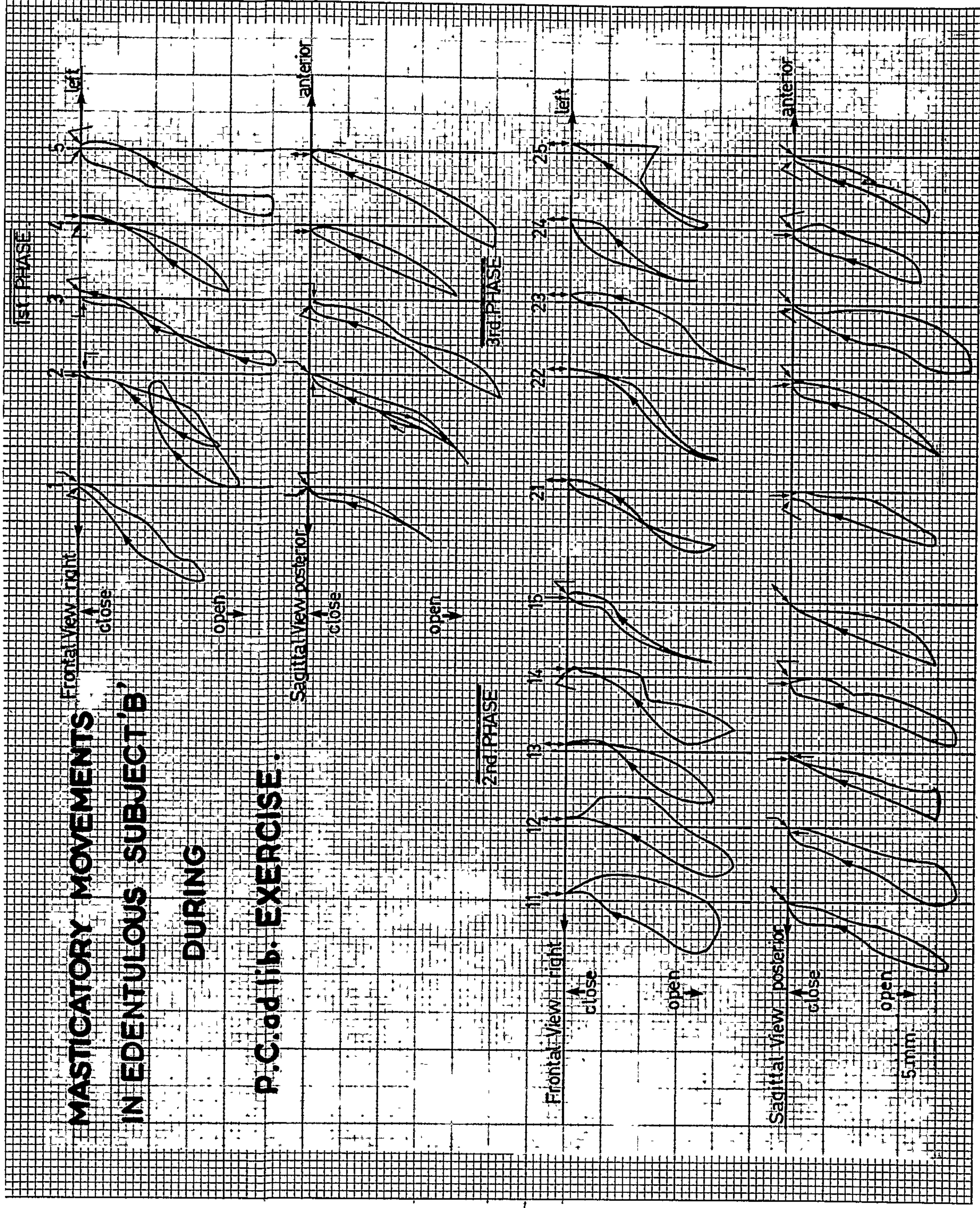


Fig.No.62.

FIGURE 63

Masticatory Movements in Edentulous Subject 'B' During "P.C.F.M. ad lib." Exercise.

Whereas in the Frontal view most of the masticatory cycles initiate from and terminate in the Zero Position, in the Sagittal view almost all the cycles initiated from and terminated in closed-mouth positions distal to the Zero Position and the closing strokes passed distally to the opening strokes and the C.V.A.

The incidence of cuspal guidance was higher in the 2nd and 3rd Phases than during the 1st Phase. The incidence of sliding cuspal guidance was higher in the Frontal view and point cuspal guidance higher in the Sagittal view. The incidence of sliding cuspal guidance was higher in the Frontal view of the opening strokes during the 1st and 3rd Phases and of the closing strokes during the 2nd Phase. (Table No. 87)

MASTICATORY MOVEMENTS

IN

EDENTULOUS SUBJECT 'B'

DURING

P.C.F.M. od lib. EXERCISE

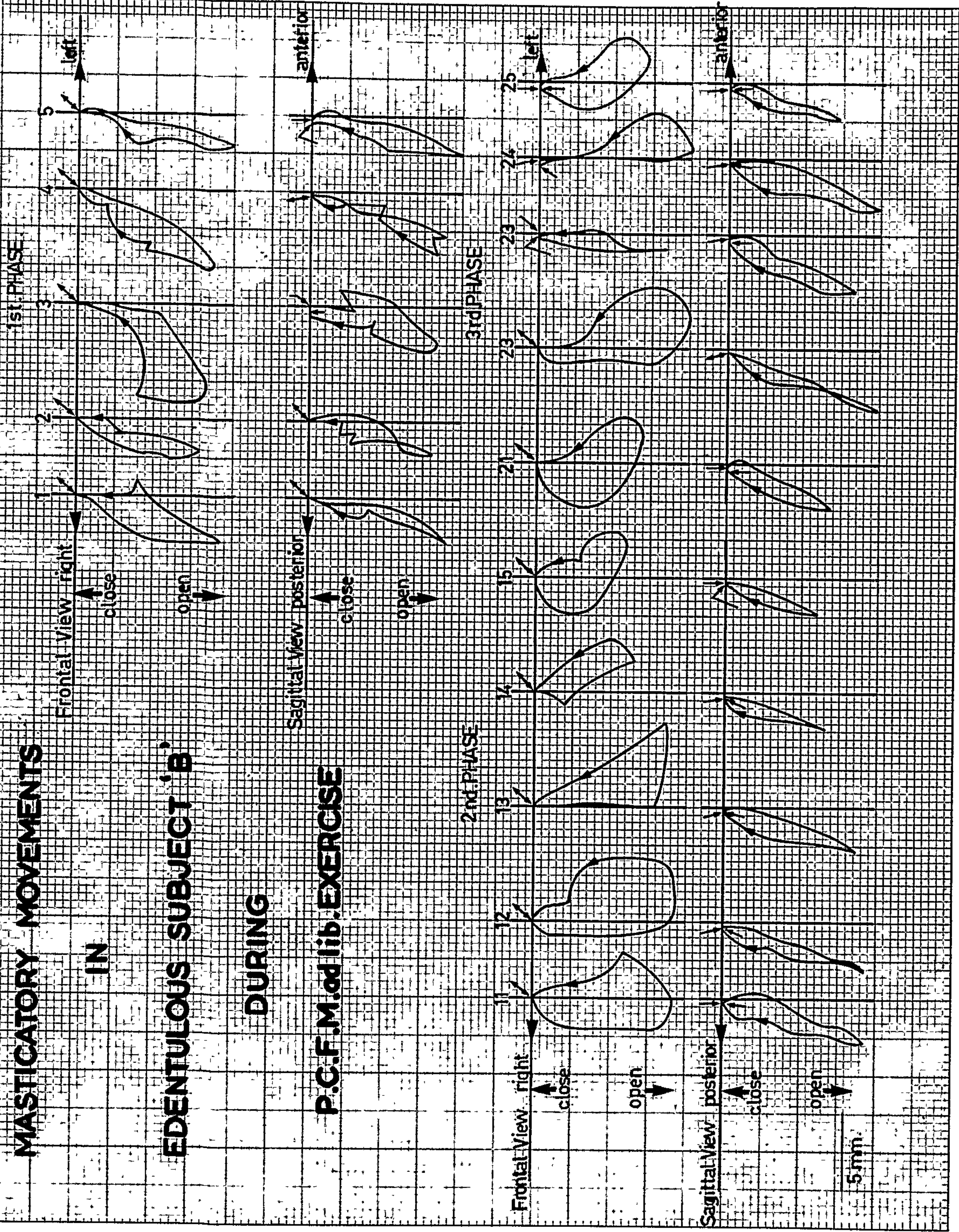


Fig.No.63.

FIGURE 64

Masticatory Movements in Edentulous Subject 'B' during "M.C. ad lib." Exercise.

Similar to the Dentulous Subject 'A' the masticatory cycles in the Edentulous Subject 'B' involved greater mouth opening than in other exercises. The Frontal views of the opening strokes generally show sliding cuspal guidance, while that of the closing strokes generally show point cuspal guidance.

Again in the Frontal view the maximally open positions during the 2nd Phase, show wide "Loop" formations indicating a rolling action on the bolus and the closing strokes terminate in a direct manner. The Sagittal views during the phase show protrusive sliding cuspal guidance.

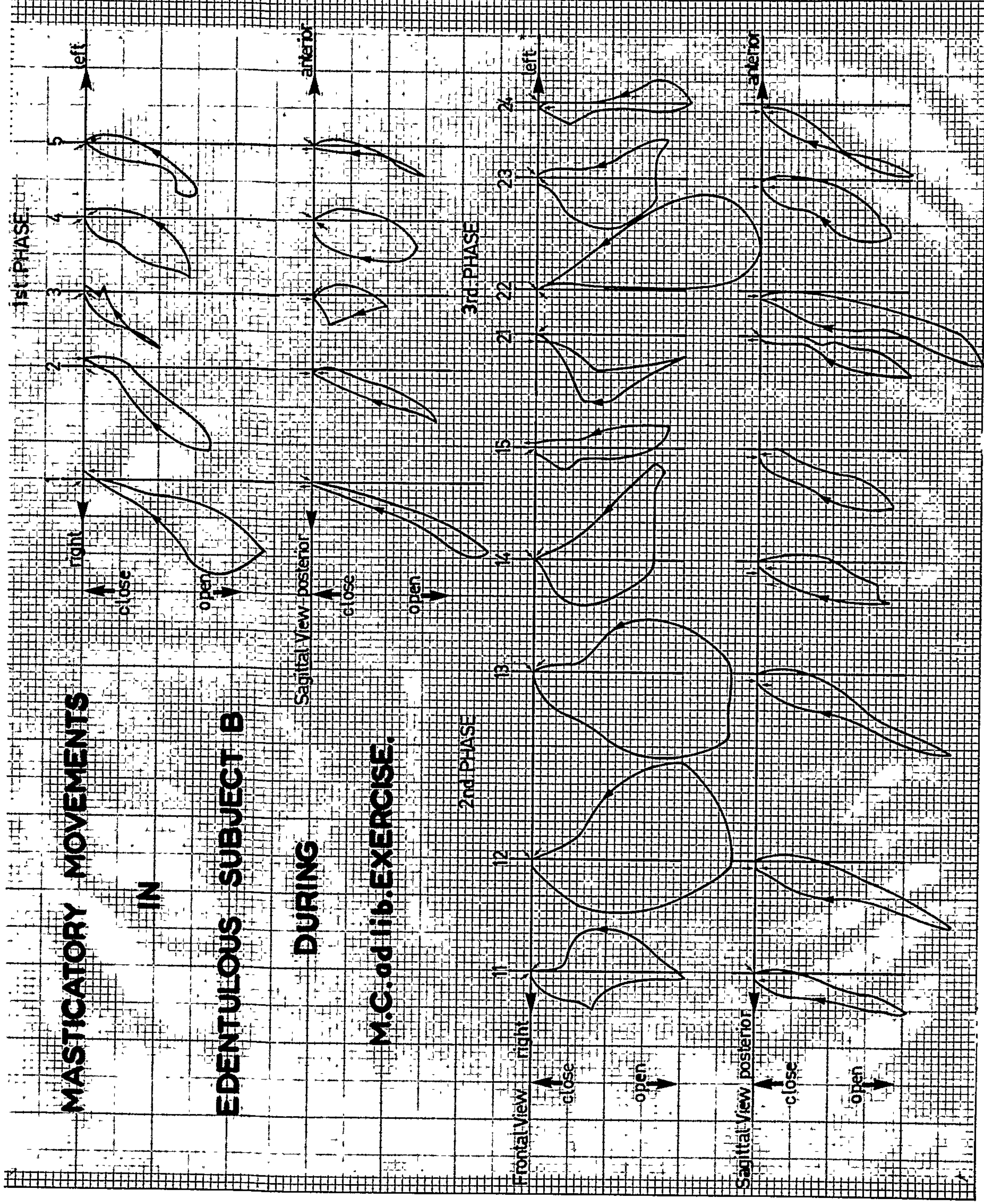


Fig.No.64.

FIGURE 65

Masticatory Movements in Edentulous Subject 'B' During "S.D.C. ad lib." Exercise.

In the Frontal View the masticatory cycles during the 1st Phase follow a more vertical pattern. In the subsequent phases the lateral component in the movements increases, possibly to dislodge the jammed food from the occlusal surfaces.

Cycle No. 11 shows a closing stroke ending in a sliding cuspal guidance. The sliding cuspal guidance continues into the opening stroke of the cycle No. 12.

In the Sagittal View the closing strokes generally passed distally to the opening strokes and the C.V.A.

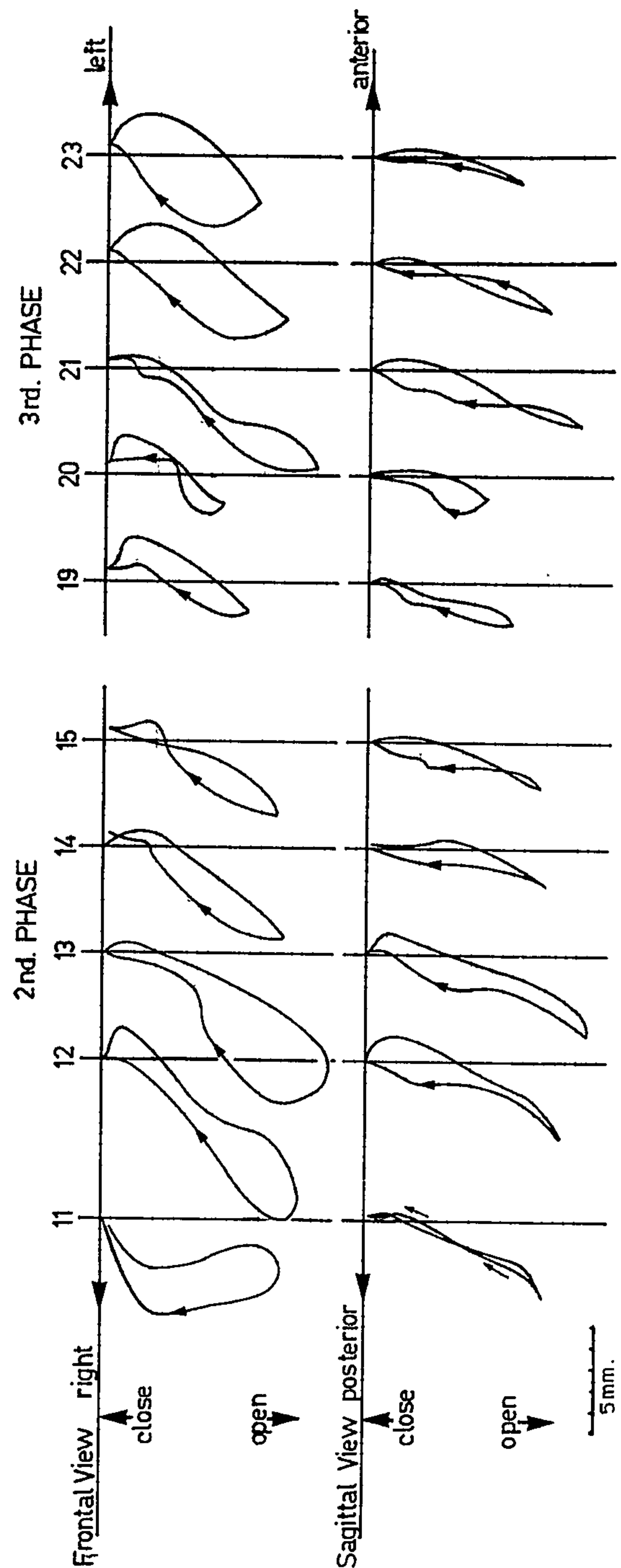
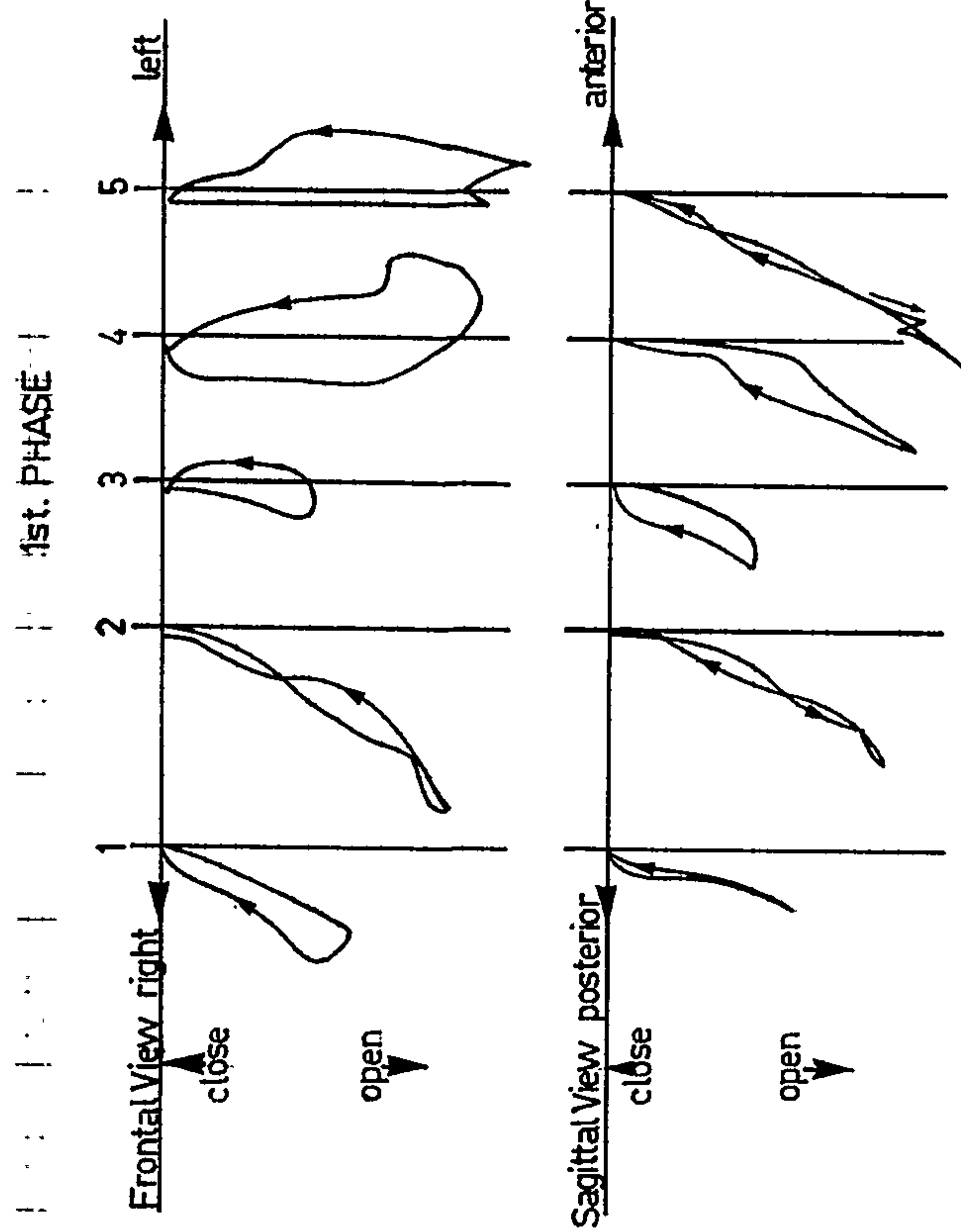
MASTICATORY MOVEMENTS

IN

EDENTULOUS SUBJECT 'B'

DURING

S.D.C.-ad lib. EXERCISE.



662K

FIGURES 66-74

Envelopes of movement space used during the four exercises in the four edentulous subjects.

The Frontal, Sagittal and Horizontal views of the envelopes of functional movement space are displayed.

With the exception of Subject 'C' most of the space used was located on the preferred side and posterior to the C.V.A. This is most evident in the horizontal view.

In the Subject 'C' although the movements occurred anterior to the C.V.A. these were performed on the preferred side.

The envelopes were generally more irregular than in the Dentulous Subject.

ENVELOPE OF MOVEMENT SPACE USED DURING P.C. and I.B. EXERCISE IN EDENTULOUS SUBJECTS 'B' AND 'C'

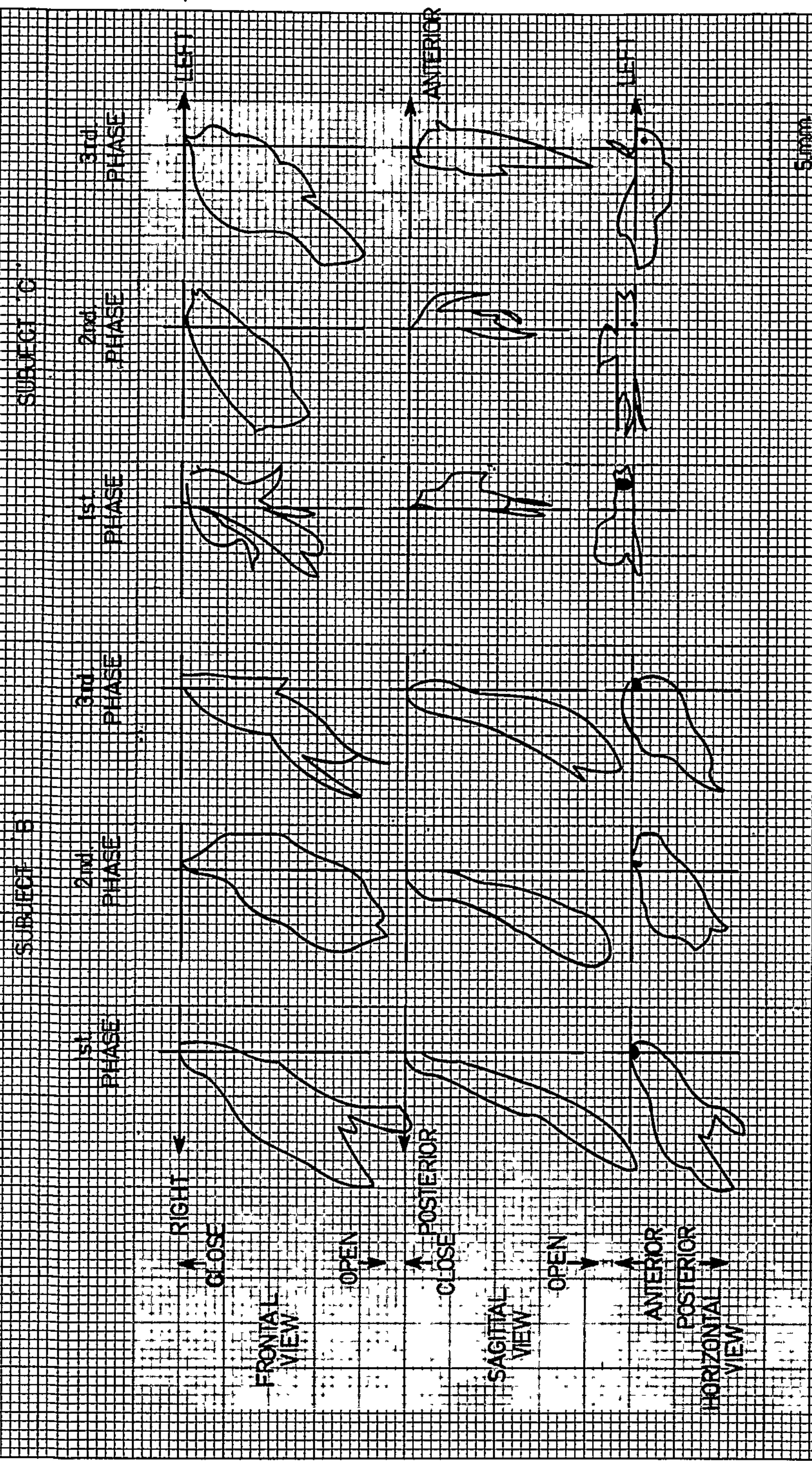


Fig.No.66.

ENVELOPE OF MOVEMENT SPACE USED DURING P.C.ed.lib. EXERCISE IN EDENTULOUS SUBJECTS 'D'AND'E'

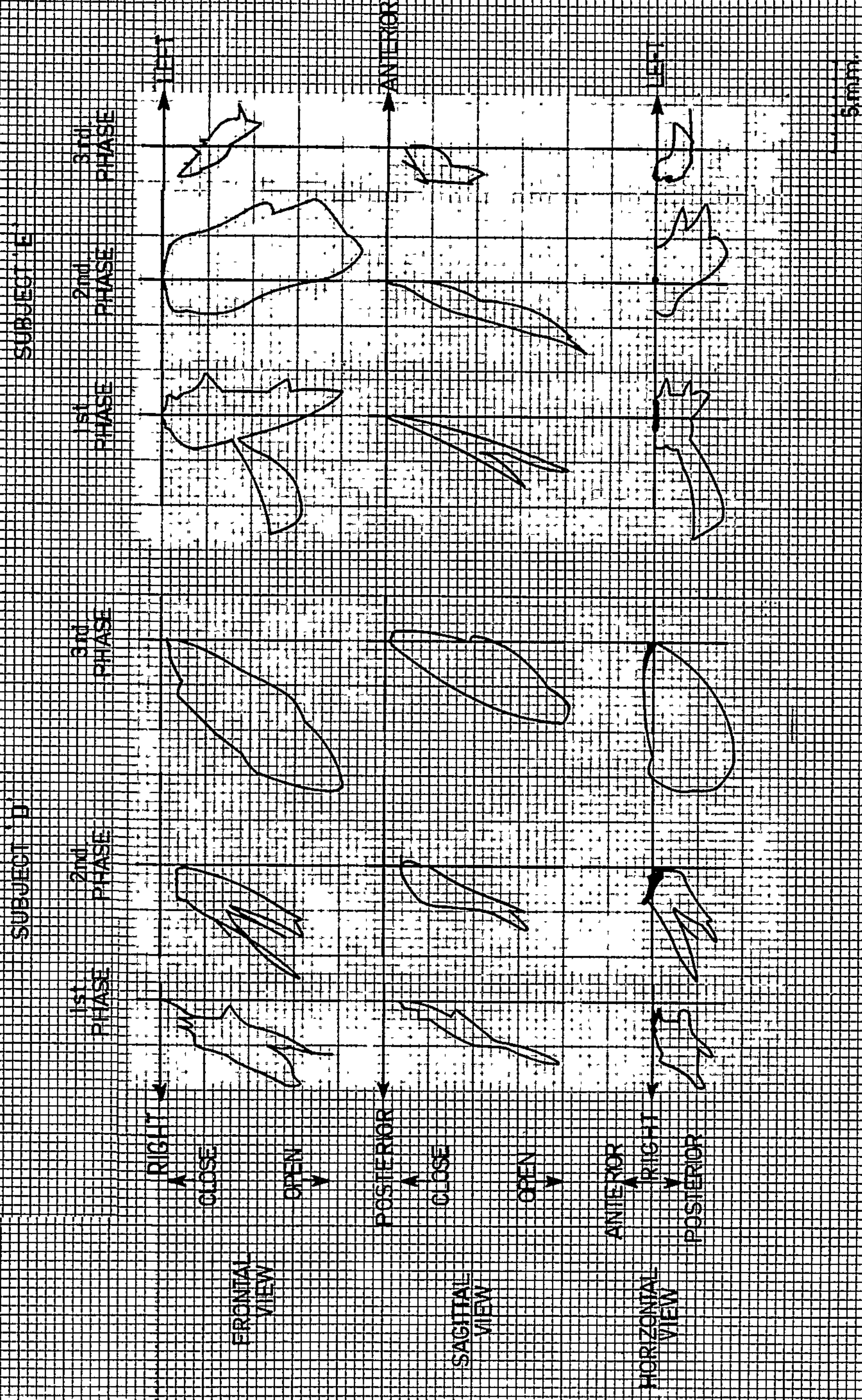


Fig.No.67.

ENVELOPE OF MOVEMENT SPACE USED DURING P.C.F.M. drill.

EXERCISE IN EDENTULOUS SUBJECTS 'B' AND 'C'.

SUBJECT 'B'

SUBJECT 'C'

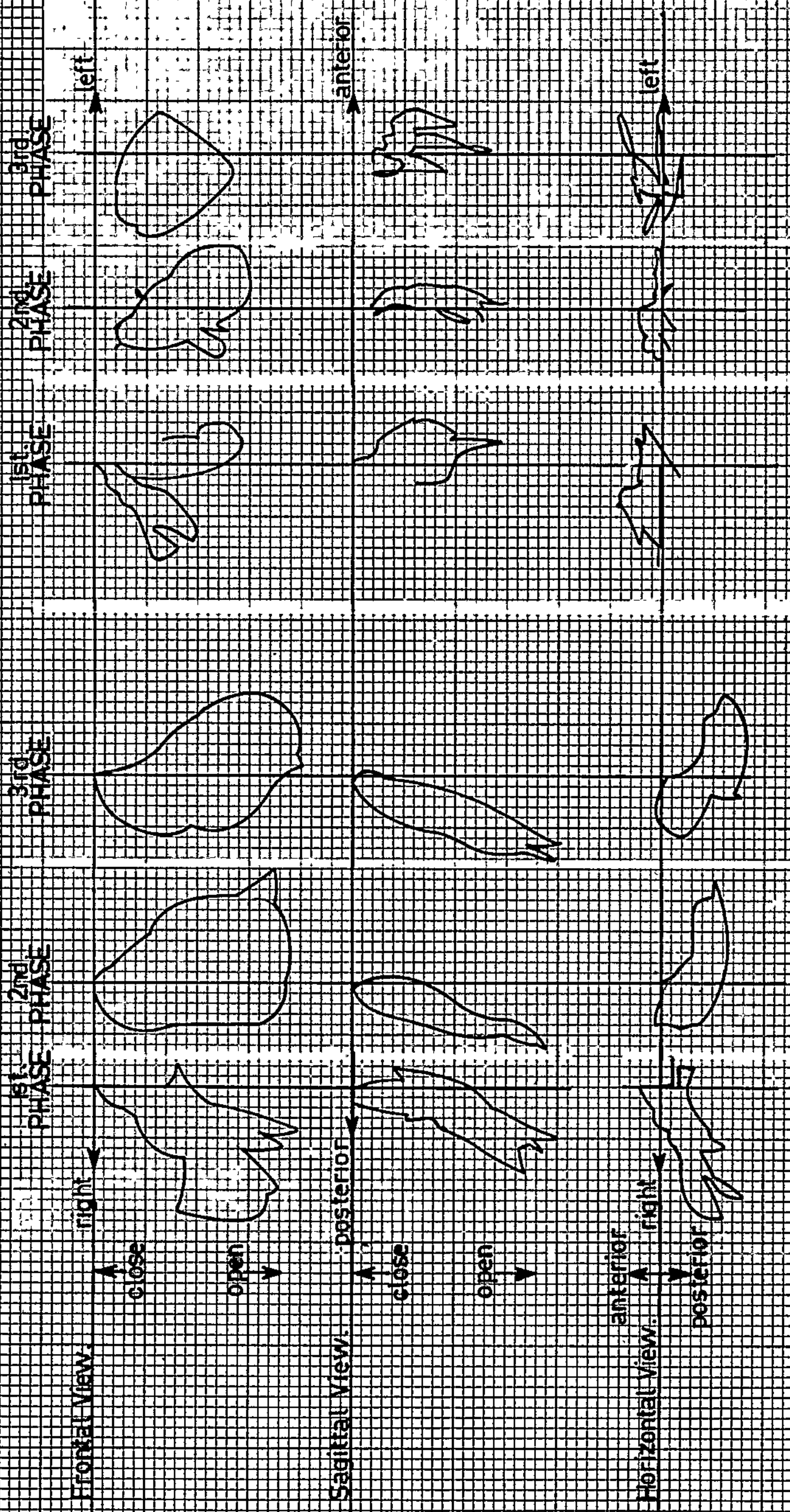


Fig.No.68.

ENVELOPE OF MOVEMENT SPACE USED DURING P.C.F.M. and Iib.

EXERCISE IN EDENTULOUS SUBJECT 'E'.

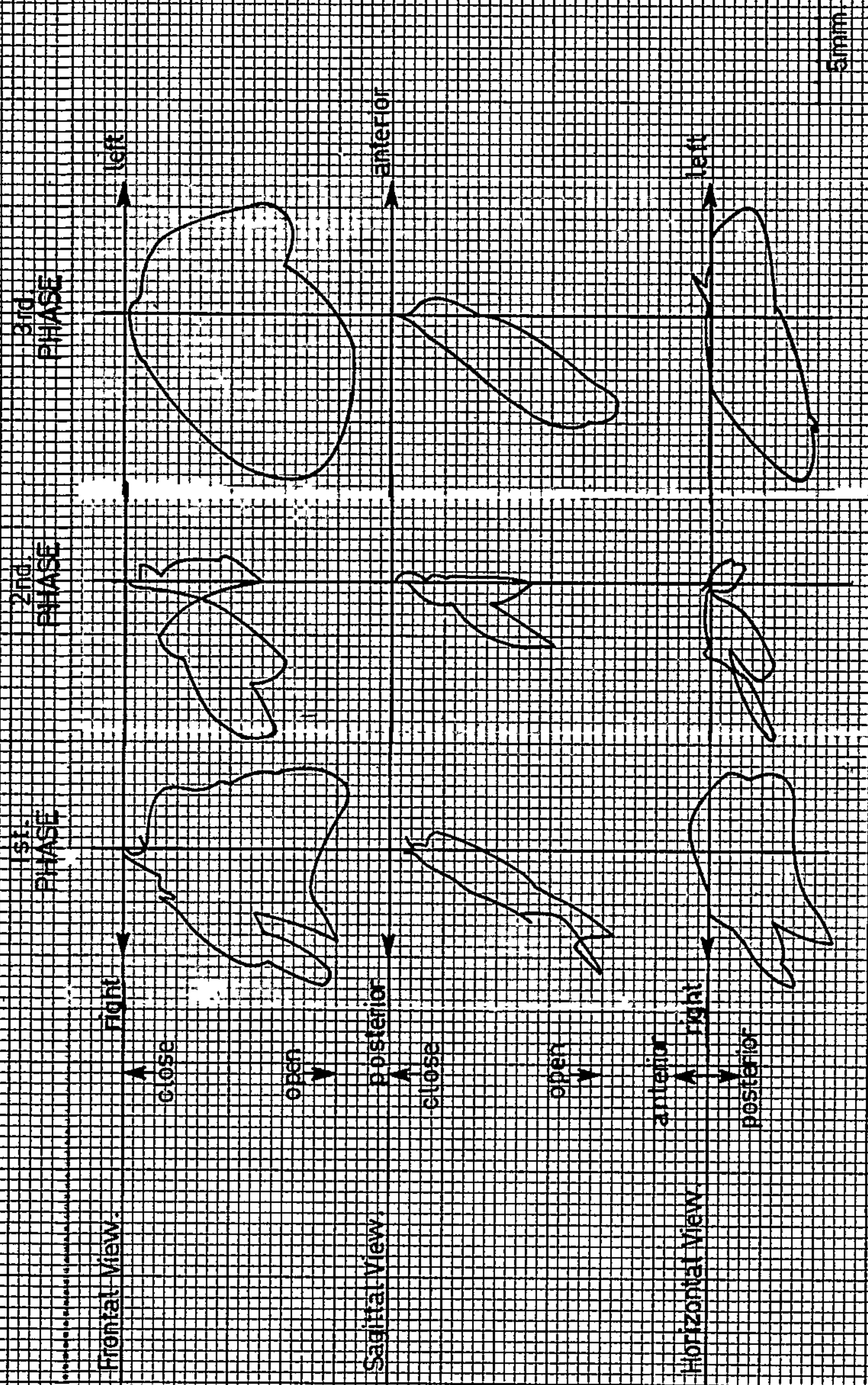


Fig.No.69 .

ENVELOPE OF MOVEMENT SPACE USED DURING M.C. and lib.

EXERCISE IN EDENTULOUS SUBJECT B.

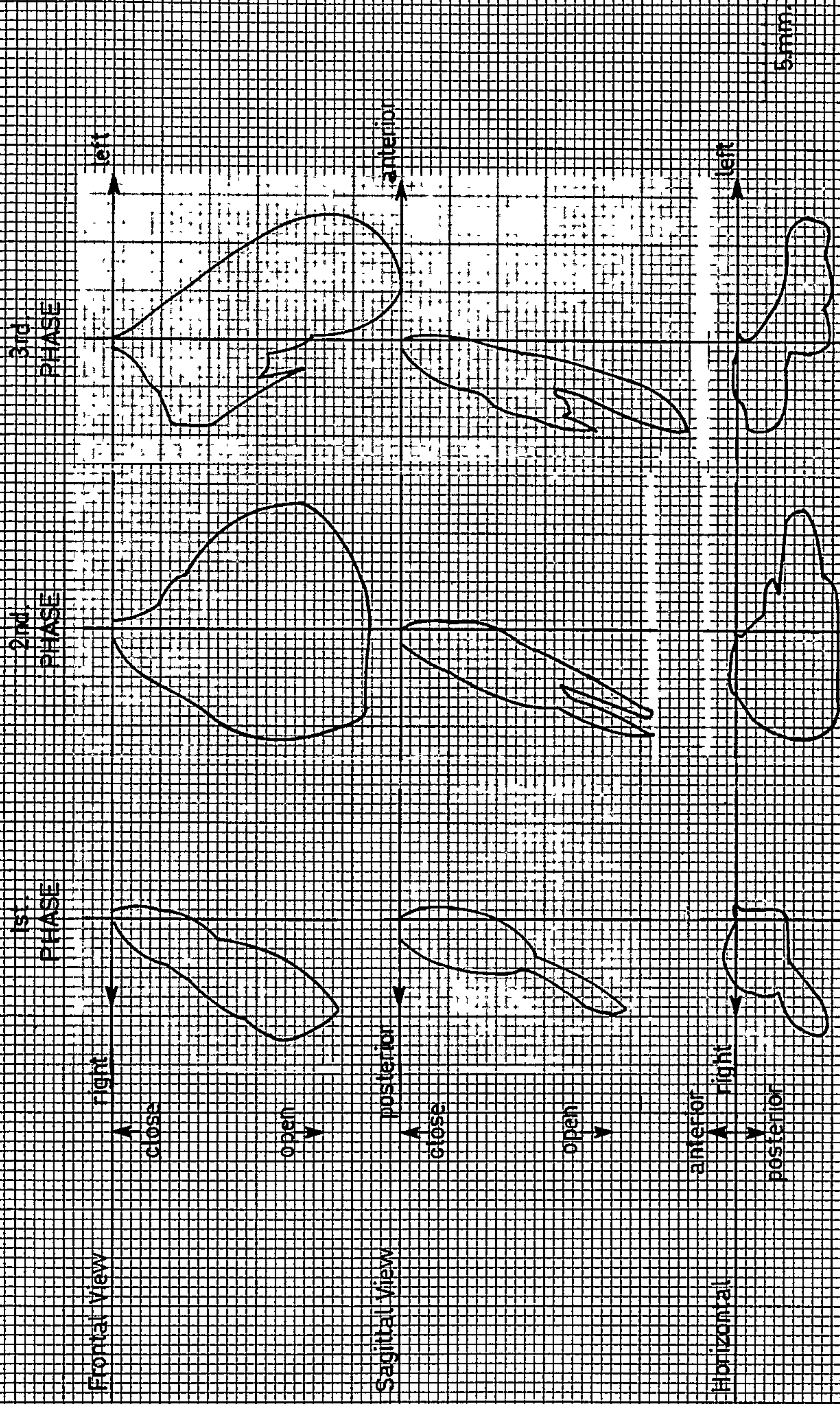


Fig.No.70.

ENVELOPE OF MOVEMENT SPACE USED DURING M.C. and lib. EXERCISE IN EDENTULOUS SUBJECTS 'C' AND 'D'.

SUBJECT 'C'

SUBJECT 'D'

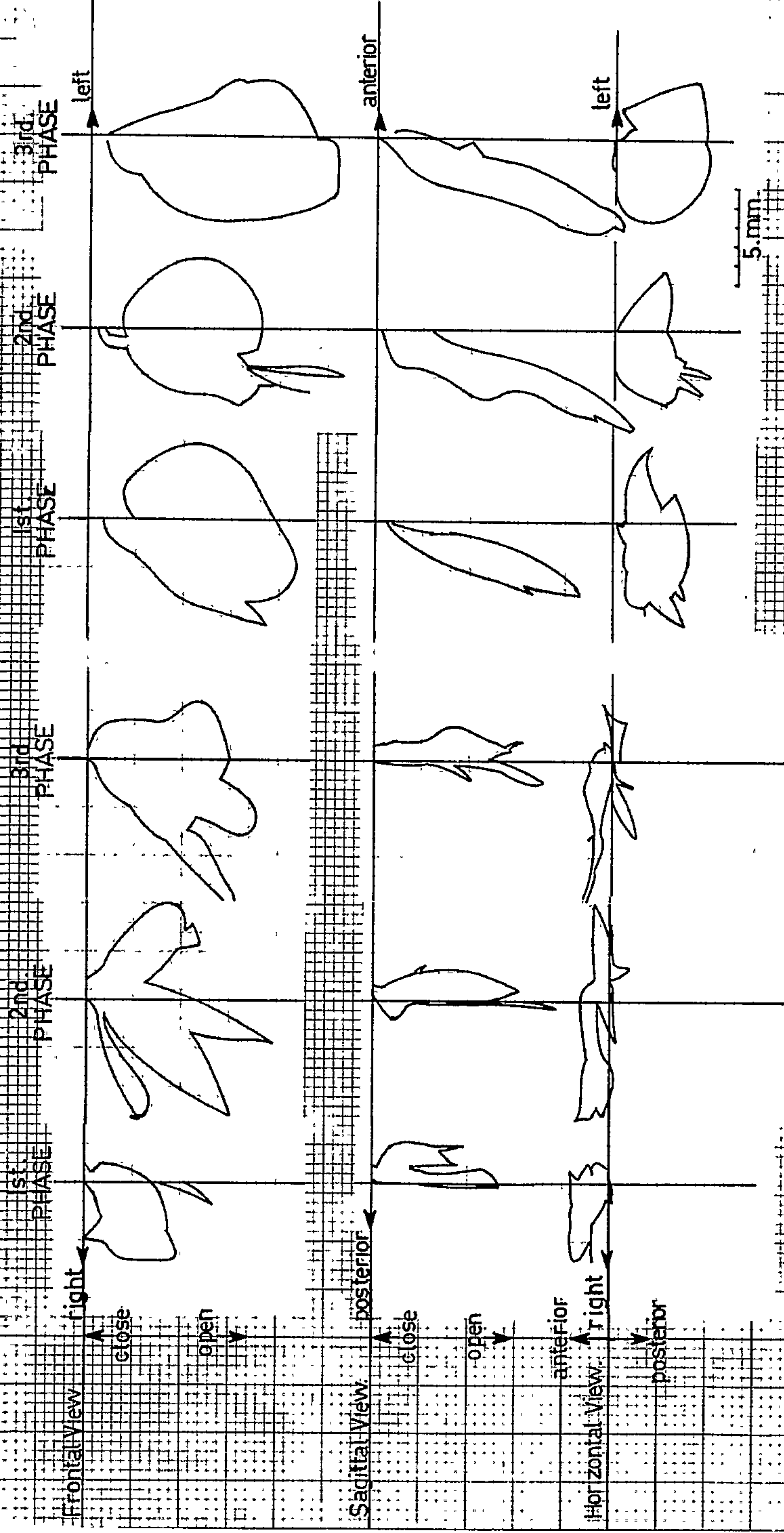


Fig.No.71.

ENVELOPE OF MOVEMENT SPACE USED DURING M.C. addib.

EXERCISE IN EDENTULOUS SUBJECT 'E'.

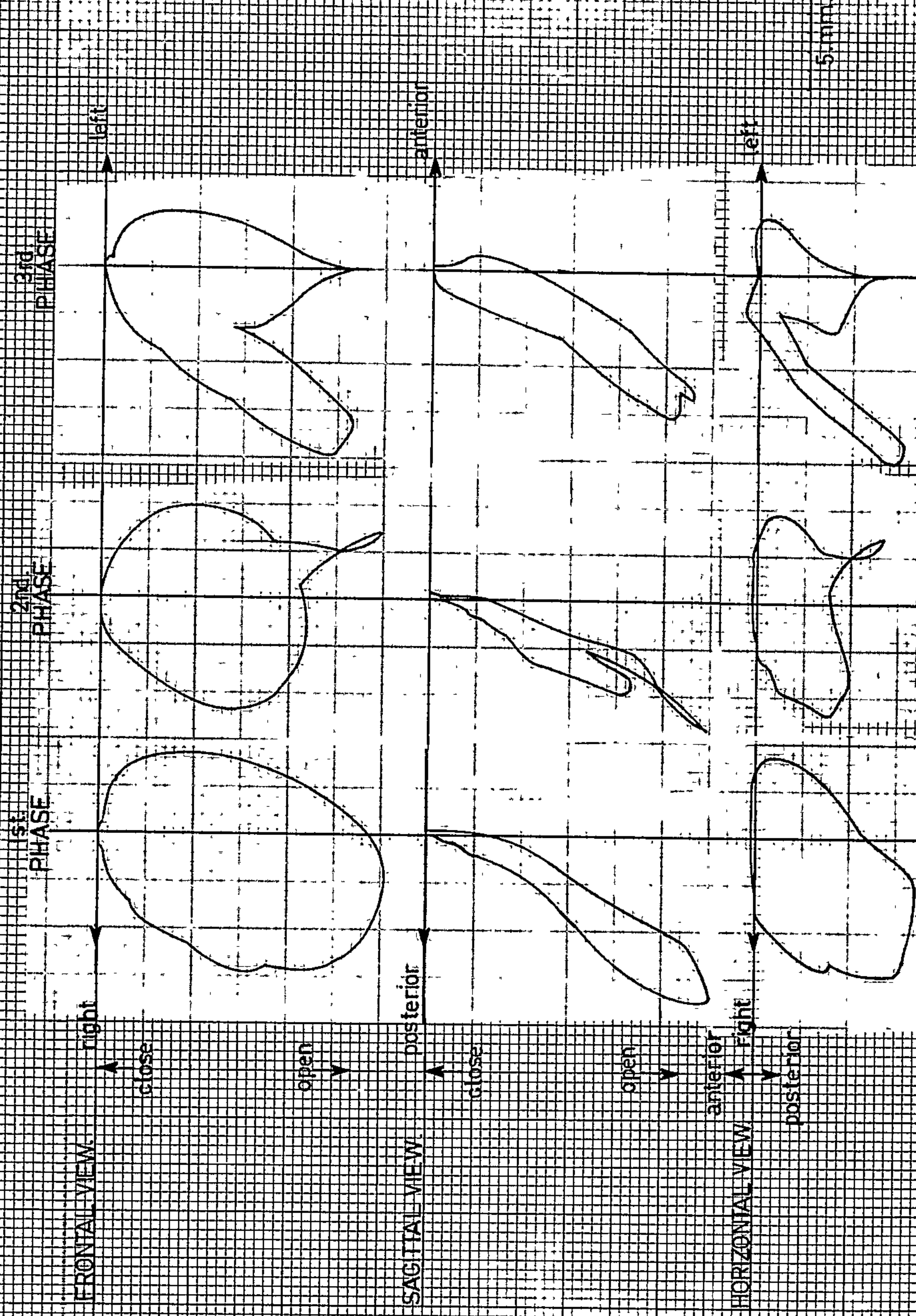


Fig.No.72.

ENVELOPE OF MOVEMENT SPACE USED DURING S.D.C.adlib. EXERCISE IN EDENTULOUS SUBJECTS 'B' AND 'C'.

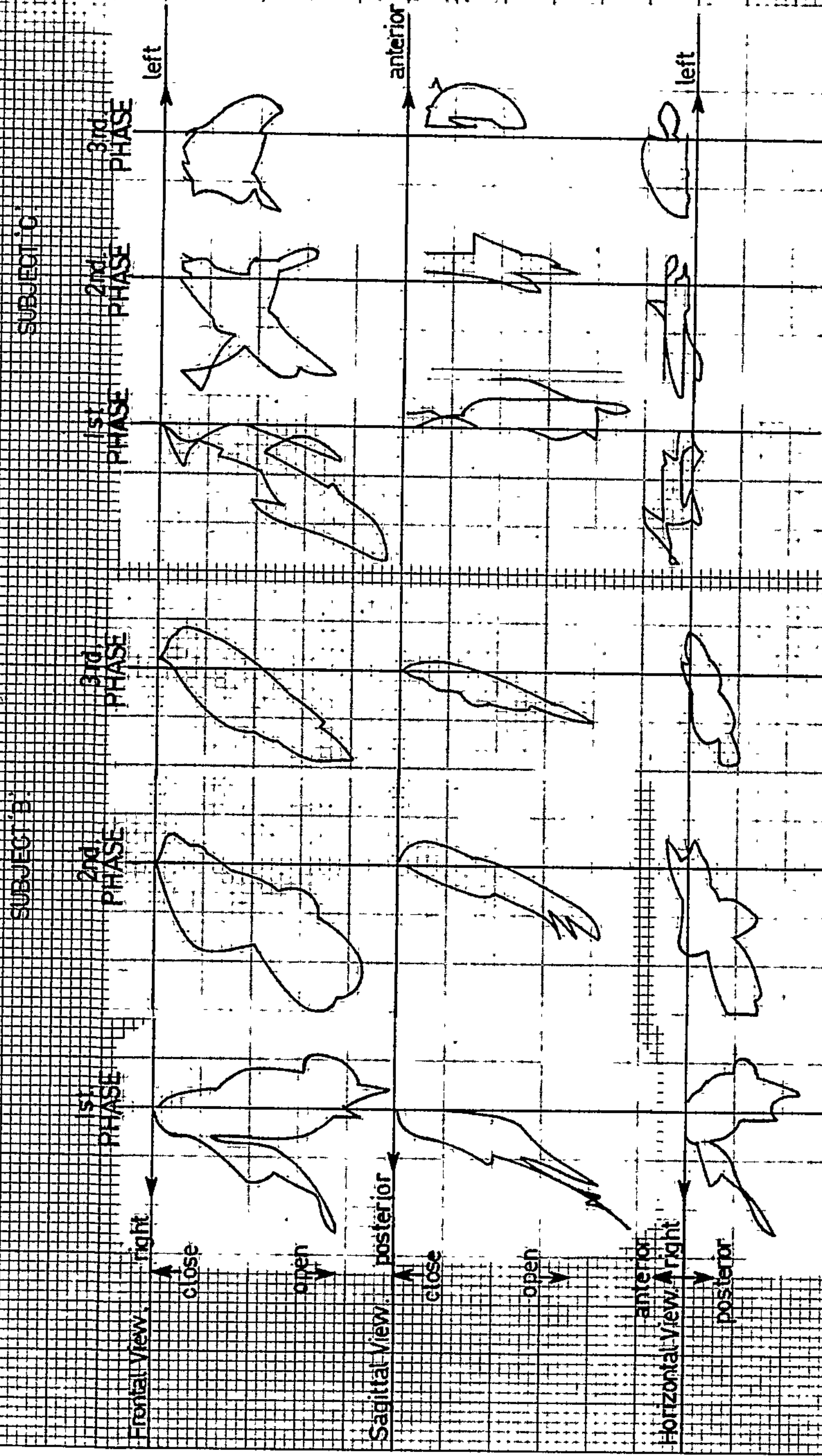


Fig.No.73.

ENVELOPE OF MOVEMENT SPACE USED DURING S.D.C. ad lib.

EXERCISE IN EDENTULOUS SUBJECTS 'D' AND 'E'.

SUBJECT 'D'

1st PHASE 2nd PHASE 3rd PHASE

Frontal View

right
close

open

Sagittal View

posterior

close

open

Horizontal View

right

posterior

SUBJECT 'E'

1st PHASE 2nd PHASE 3rd PHASE

left

anterior

left

5mm

Fig.No.74 .

TRANSPARENCIES NO. 75 and 76

The transparencies were aligned to the Masticatory
Cycle outline forms for the assessment of
Cuspal Guidance.

Transparency for Verification of Cuspal Guidance in The Dentulous

Subject

'A'

X Axis

Y Axis

Right

Lateral Movement Path

Z Axis

Left

Lateral Movement Path

Protrusive

Movement Path

X Axis

5 mm

11.2

Transparency For Verification Of Cuspal Guidance In The Dentulous

Subject
'A'

X Axis

Y Axis

Right

Lateral Movement Path
Z Axis

Left

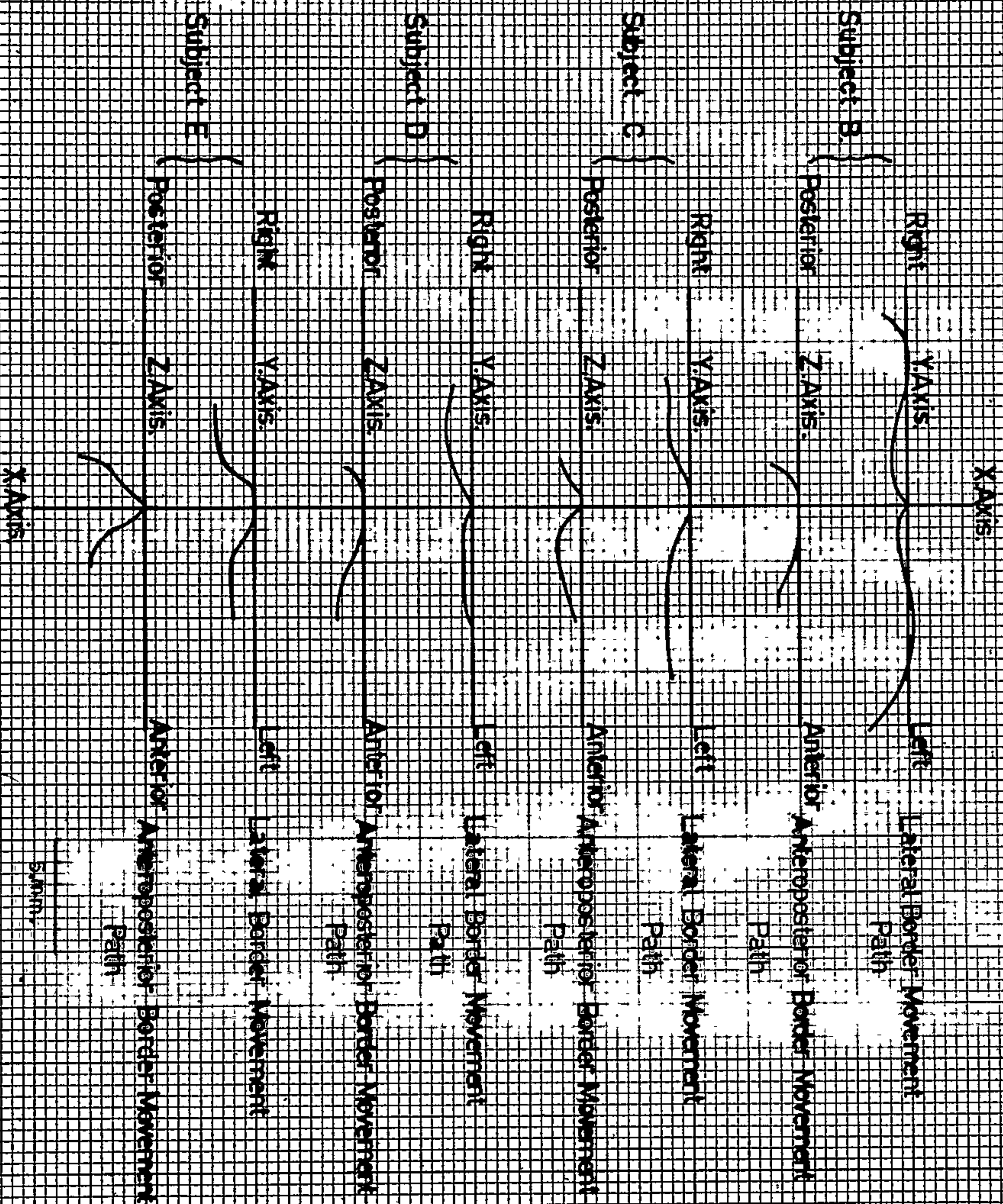
Lateral Movement Path

Protrusive
Movement Path

X Axis

5 mm

Transparency For Verification Of Cuspal Guidance In Edentulous Subjects



Transparency For Verification Of Cuspal Guidance In Edentulous Subjects

Subject B.

Right
Posterior

Right

Y Axis

Z Axis

Left

Anterior

Anteroposterior Border Movement

Path

Right

Y Axis

Z Axis

Left

Anterior

Anteroposterior Border Movement

Path

Subject C

Posterior

Right

Y Axis

Z Axis

Left

Anterior

Anteroposterior Border Movement

Path

Subject D

Posterior

Right

Y Axis

Z Axis

Left

Anterior

Anteroposterior Border Movement

Lateral Border Movement

Subject E

Posterior

X Axis

Anterior

Anteroposterior Border Movement

Path

APPENDIX IV

SIMULTANEOUS MANDIBULOGRAPHY AND ELECTROMYOGRAPHY

SIMULTANEOUS MANDIBULOGRAPHY AND ELECTROMYOGRAPHY

As indicated earlier this present investigation is a part of a more detailed study in the Kinetics of Mastication. The electromyographic activity of the muscles was recorded simultaneously to the mandibulographic recording during the different exercises. The two records were synchronized by feeding the same time signal impulse to both recording devices. Thus it was possible to relate the muscular activity to the actual movement as it occurred and could be displayed as in Figs. No. 77, 78, 79.

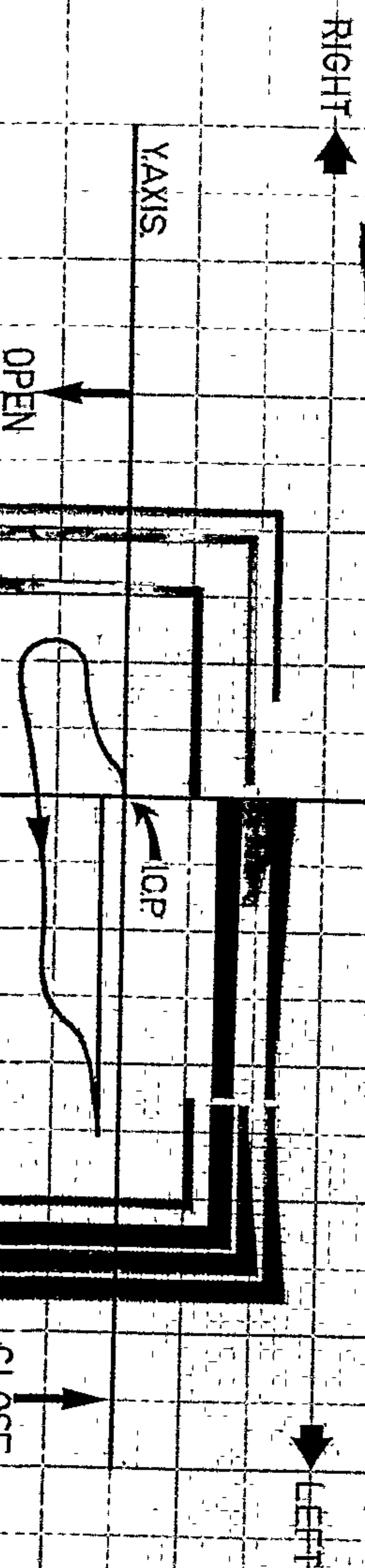
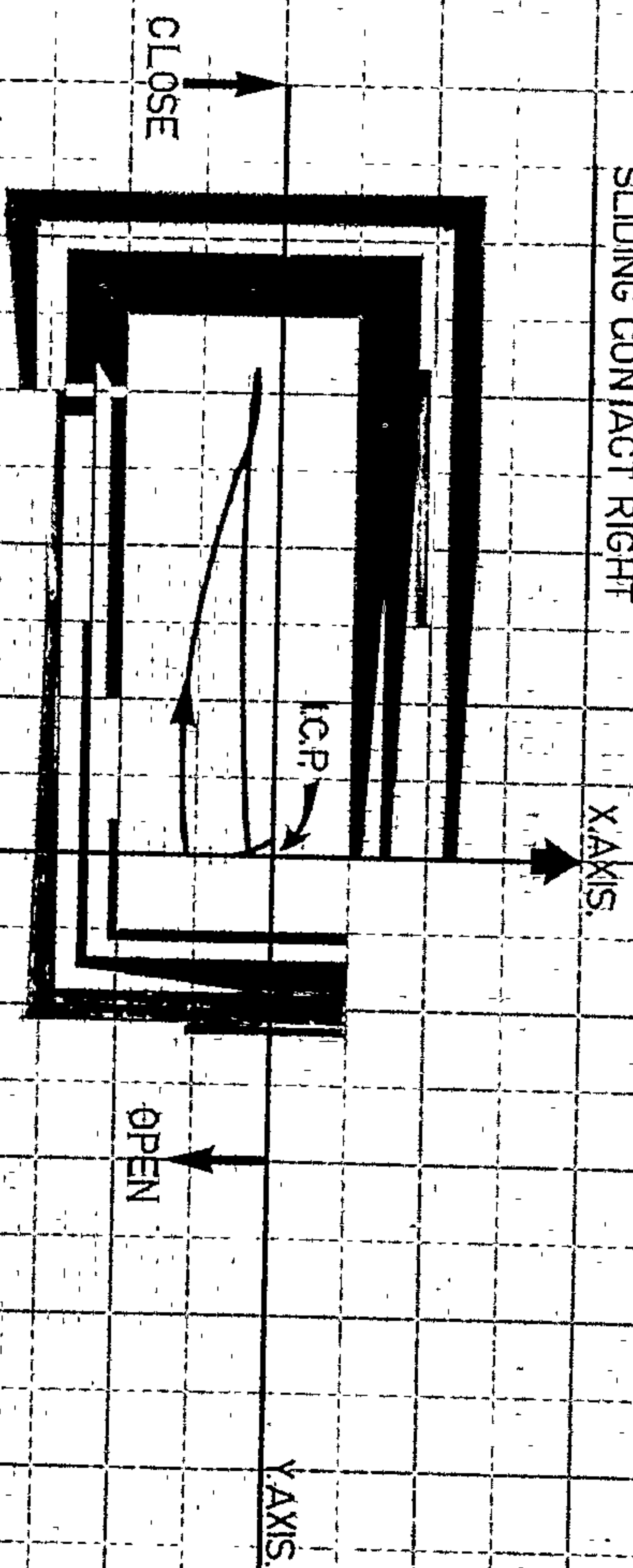
Fig. No. 77, displays "Sliding Contact Lateral" excursions on the right and left sides in an Edentulous Subject 'F'. The elevator as well as the depressor muscles and also the muscles on the right and left sides show activity virtually throughout the movement. This pattern of activity bears out the contentions by Basmajain⁽⁸¹⁾, that agonists, synergists and antagonists acting at the same time indicate lack of training for the performance of the movement.

Figs. No. 78 and 79 display the four masticatory cycles and the part played by some of the muscles of mastication in the Edentulous Subject 'F' during "P.C.F.M. ad lib." exercise. The subject chewed the food on the right side. During the opening strokes both the agonist and the antagonist muscles, i.e. Digastric, Masseter and also Anterior Temporalis showed activity. Similarly, during the closing strokes the action of elevator muscles was accompanied by the action of depressor muscle Digastric, particularly in the terminal part of the movement. The pattern of muscular activity differed in the four cycles showing the variability of the function of mastication.

The illustrations display the versatility of the Photo-Electric system of mandibulography used for this investigation.

SLIDING CONTACT LATERAL EXCURSIONS OF THE JAW POINT AND THE MUSCLES OF MASTICATION

SLIDING CONTACT RIGHT



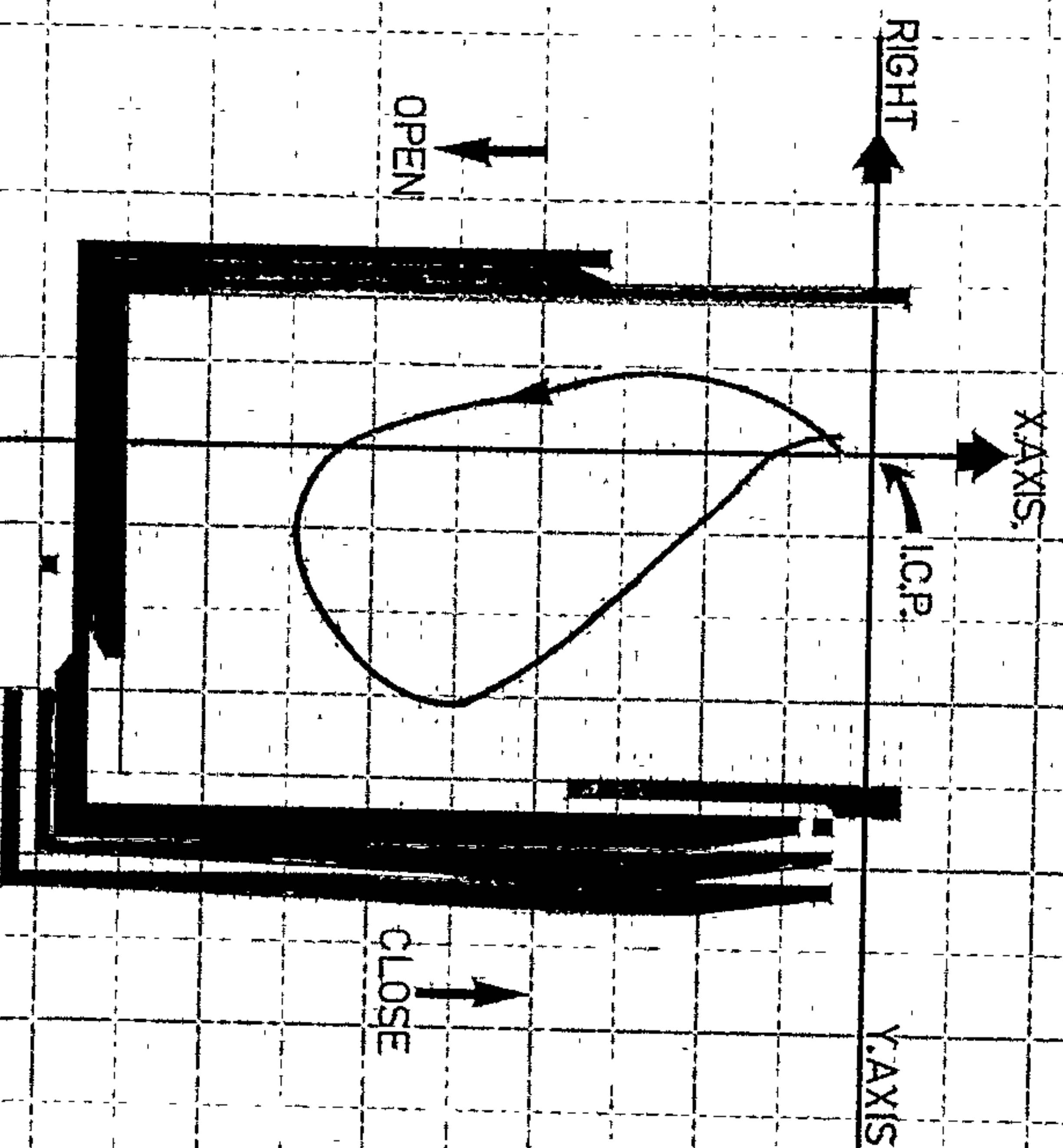
LEFT MASSETER
LEFT ANT. TEMPORALIS
RIGHT ANT. TEMPORALIS
RIGHT DIGASTRIC

5 mm

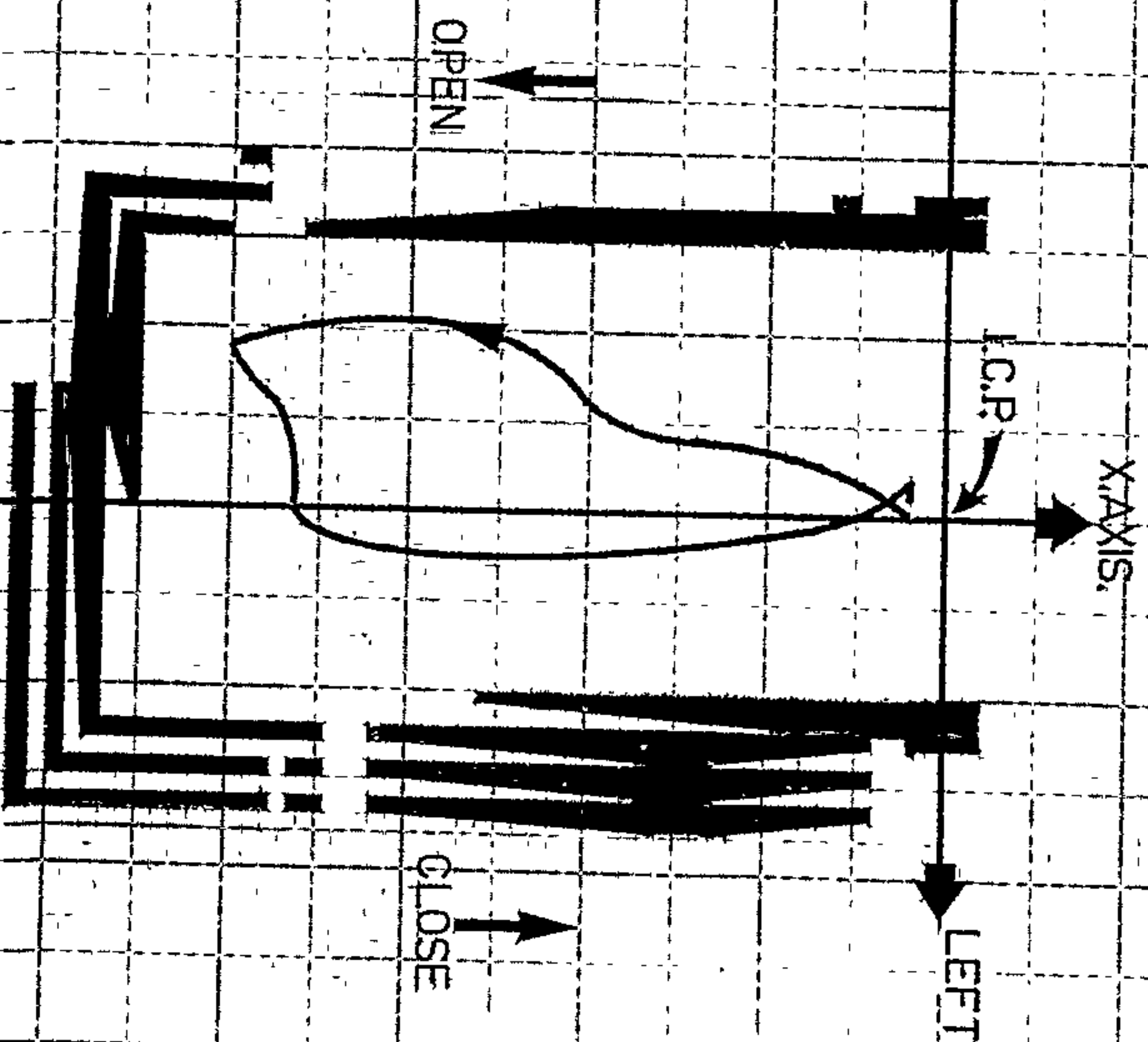
EDENTULOUS SUBJECT 14

MASTICATORY MOVEMENTS DURING PCFEM and LIB EXERCISE (FRONTAL VIEW) **AND SOME OF THE MUSCLES OF MASTICATION.**

CYCLE No.1.



CYCLE No.3.



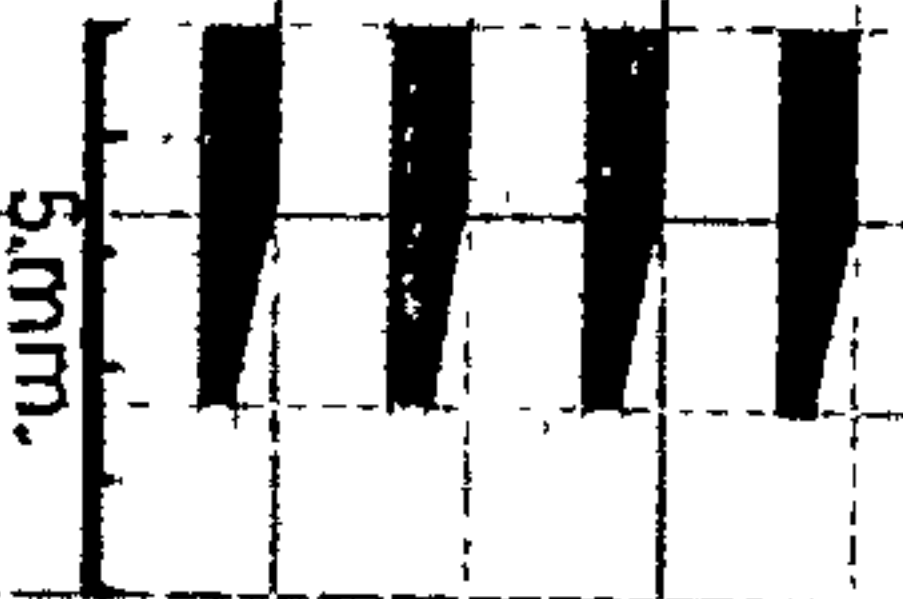
RIGHT MASSETER

LEFT ANT. TEMPORALIS

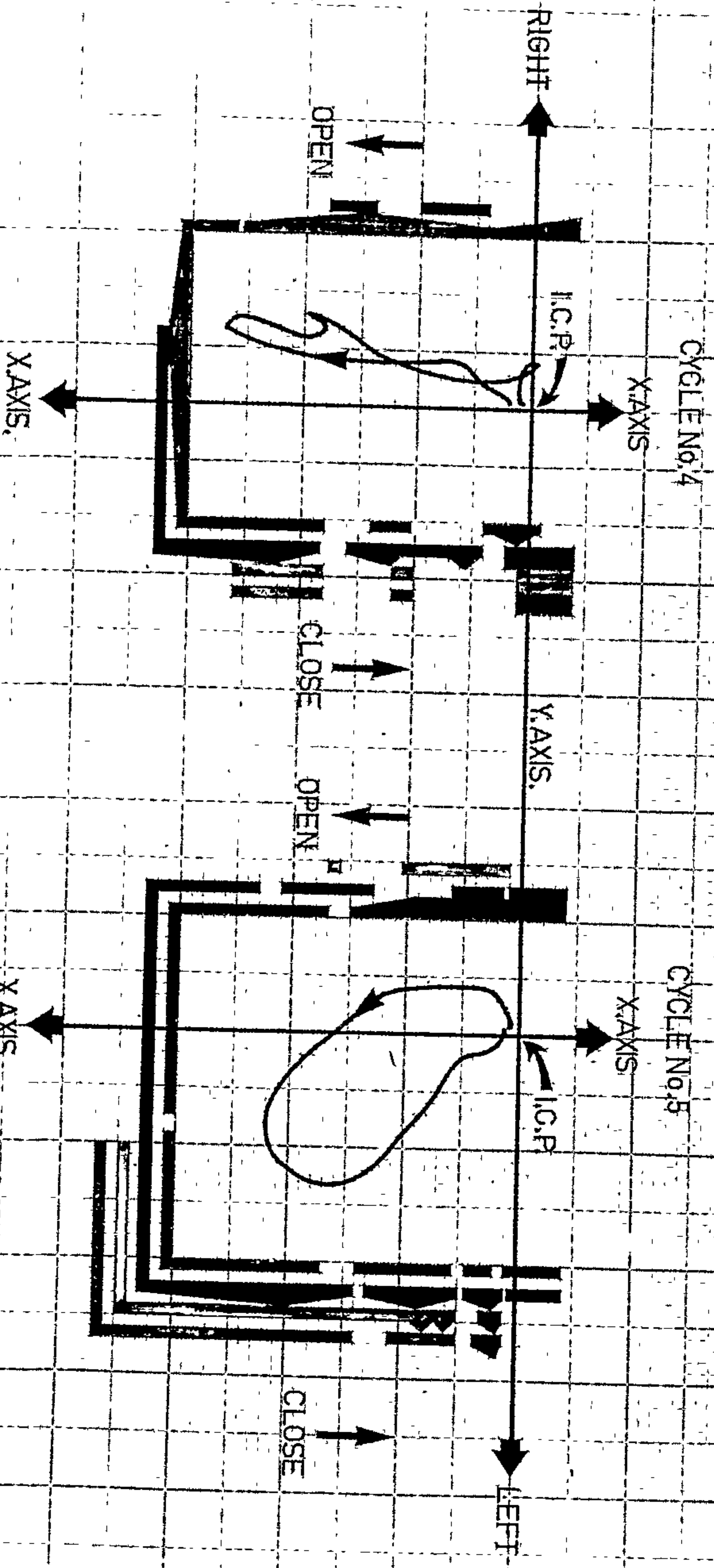
RIGHT ANT. TEMPORALIS

RIGHT DIAPHRAGM

EDENTULOUS SUBJECT 'F'



MASTICATORY MOVEMENTS DURING PCF.M. odlib.EXERCISE (FRONTAL VIEW) **AND SOME OF THE MUSCLES OF MASTICATION.**



- RIGHT MASSETER
 - LEFT ANT. TEMPORALIS
 - RIGHT ANT. TEMPORALIS
 - RIGHT D. GASTRIC
- 5mm.